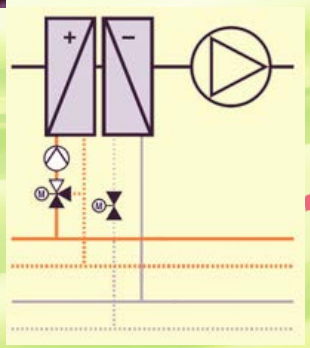
Asia Pacific Globe Valves with Actuators

Technical Databook

Version 1.0



Belimo Asia Pacific

BELIMO

Contents

Max. Close-off Pressure - Globe Valve Series

AP Globe Valve					NV../NVK.. 1000N, 20mm			SV.. 1500N, 20mm			AVK..* 2000N, 32mm			EV.. 2500N, 40mm			RV.. 4500N, 40mm		
Types	DN (mm)	2-way	3-way	Kvs (m3/h)	△Ps 2-way (bar)	△Pmax 2-way (bar)	△Ps △Pmax 3-way (bar)	△Ps 2-way (bar)	△Pmax 2-way (bar)	△Ps △Pmax 3-way (bar)	△Ps 2-way (bar)	△Pmax 2-way (bar)	△Ps △Pmax 3-way (bar)	△Ps 2-way (bar)	△Pmax 2-way (bar)	△Ps △Pmax 3-way (bar)	△Ps 2-way (bar)	△Pmax 2-way (bar)	△Ps △Pmax 3-way (bar)
PN25 0~130°C Internal Screw	15	H2015X-S	H3015X-S	1.9	8	8	8												
	20	H2020X-S	H3020X-S	4.4	8	8	8												
	25	H2025X-S	H3025X-S	8	6	6	6												
	32	H2032X-S	H3032X-S	10	5.5	5.5	5.5												
	40	H2040X-S	H3040X-S	20	4.5	4.5	4.5	7	7	7									
	50	H2050X-S	H3050X-S	32	3	3	3	5	5	5									
PN16 0~150°C Flange	65	H6065W-SP	H7065W-S	50				16	10	4.5									
	80	H6080W-SP	H7080W-S/D	80							16	10	2	16	10	2.7	16	10	3.5
	100	H6100W-SP	H7100W-S/D	125										16	10	2	16	10	3
	125	H6125W-SP	H7125W-S/D	200										16	10	1.5	16	10	2
	150	H6150W-SP	H7150W-S/D	300										16	10	1	16	10	1.5
	200	H6200W-SP	H7200W-S	520													16	10	1.3
	250	H6250W-SP	H7250W-S	750													16	10	0.8

Non-fail Safe						
On/Off	AC/DC 24V	NV24A-TPC	SV24A-TPC		EV24A-TPC	
	AC 230V	NV230A-TPC	SV230A-TPC		EV230A-TPC	
Modulating	AC/DC 24V	NV24A-SZ-TPC	SV24A-SZ-TPC		EV24A-SZ-TPC	RV24A-SZ
Multifunction		NV24A-MP-TPC	SV24A-MP-TPC		EV24A-MP-TPC	RV24A-MF
MP-Bus						
Electronic Fail Safe						
3-point control	AC/DC 24V	NVK24A-3-TPC		AVK24A-3-TPC*		
	AC 230V	NVK230A-3		AVK230A-3		
MP-Bus	AC/DC 24V	NVK24A-MP-TPC		AVK24A-MP-TPC*		

* Only available through VC

△Pmax is maximum permitted pressure difference for long service life across control path A-AB, referred to the whole range of opening.

△Ps is closing pressure at which the linear actuator can still seal the valve tightly allowing for the appropriate leakage rate.

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	1000N	1500N	2500N	4500N
New Generation Globe Valve Actuator	**NV..A**	**SV..A**	**EV..A**	**RV..A**
Open/Close, 3-point, AC/DC 24V, 50/60Hz	NV24A-TPC	SV24A-TPC	EV24A-TPC	
AC 230V, 50/60Hz	NV230A-TPC	SV230A-TPC	EV230A-TPC	
Modulating control signal DC (0)0.5-10V, Feedback DC (0)0.5-10V, 50/60Hz	NV24A-SZ-TPC	SV24A-SZ-TPC	EV24A-SZ-TPC	RV24A-SZ
Multifunction, MP-Bus, 50/60Hz Control signal variable DC (0)0.5-32V, Feedback signal variable DC (0)0.5-10V	NV24A-MP-TPC	SV24A-MP-TPC	EV24A-MP-TPC	RV24A-MF
Running Time	150s (variable on -MF and -MP)			
Stroke	20mm	20mm	40mm	40mm
Sound Power Level	Max. 55dB(A)	Max. 45dB(A)	Max. 55dB(A)	Max. 65dB(A)
Manual Override	Gear disengagement with push-button			
Electrical Connection	1m cable, -TPC (Terminal with 1m cable)			
Direction of Rotation	Selected by switch			
Position Indicator	Mechanical 5..20mm		Mechanical 5..40mm	
Degree of Protection	IP54			
EMC	CE in accordance with 2004/108/CE			
Certification IEC/EN	Certified to IEC/EN 60730-1, IEC.EN 60730-2-14			
Ambient Temperature	0°C..+50°C			
Non-operation temperature	-40°C..+80°C			
Ambient Humidity	95% r.h., non-condensing			

		1000N	2000N
Supercap Electronic Fail-Safe Actuator		**NVK..A**	**AVK..A**
3-point control AC/DC 24V, 50/60Hz		NVK24A-3-TPC	AVK24A-3-TPC
AC 230V, 50/60Hz		NVK230A-3	AVK230A-3
Multifunction, MP-Bus, 50/60Hz Control signal variable DC (0)0.5-32V, Feedback signal variable DC (0)0.5-10V		NVK24A-MP-TPC	AVK24A-MP-TPC
Running Time	Standard Power off position	150s 35s	
Stroke		20mm	32mm
Sound Power Level	Standard Power off position	55dB(A) 60dB(A)	60dB(A) 60dB(A)
Manual Override		Gear disengagement with push-button	
Electrical Connection		1m Cable, -TPC (Terminal with 1m cable)	
Direction of Rotation		Selected by switch	
Emergency stop direction		Selected by switch	
Position Indicator		Mechanical 5..20mm	Mechanical 5..32mm
Degree of Protection		IP54	
EMC		CE in accordance with 2004/108/CE	
Certification IEC/EN		Certified to IEC/EN 60730-1, IEC.EN 60730-2-14	
Ambient Temperature		0°C..+50°C	
Non-operation temperature		-40°C..+80°C	
Ambient Humidity		95% r.h., non-condensing	

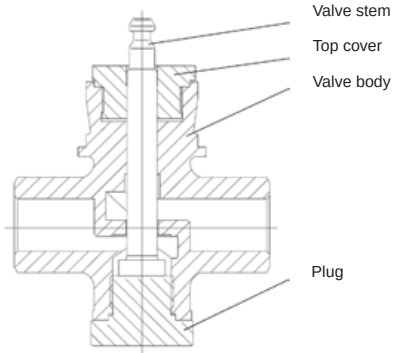
The New Globe Valve Actuators

Based on the technology that has already proven itself in rotary actuators a million times over, Belimo is now bringing a new generation of globe valve actuators to the market to complete the comprehensive standarised actuator concept. To further enhance the field of application, the entire product range has been expanded to a power spectrum of 1000 to 4500N naturally to the usual Belimo quality standards. The compact design permits installation in stationary heating, ventilation and air conditioning systems where space is restricted. The new range is characterised by simple and intuitive handling, from mechanical connection to adjusting parameters.

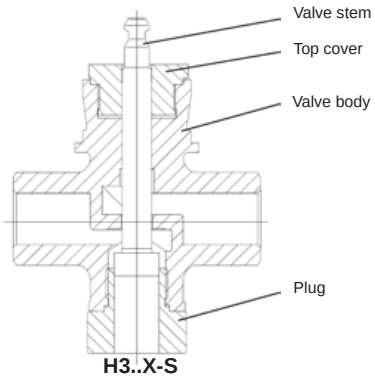
Throttling Valves and Mixing Valves

Belimo globe valves have been designed for a long service life in closed-loop circuits carrying cold, warm or hot water. Internal thread or flanged end valves are available. The design of Belimo globe valves has been greatly improved in several important ways. Various optimised features have been incorporated with the aim of increasing their service life and reducing maintenance costs. The valves are always supplied as a turnkey functional solution, i.e. together with a suitable linear actuator. There are several alternative actuator types offering different actuating force ratings and emergency control functions.

Component parts of the globe valve: H2..X-S and H3..X-S

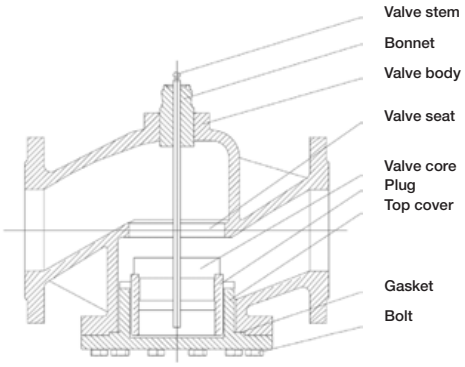


H2..X-S

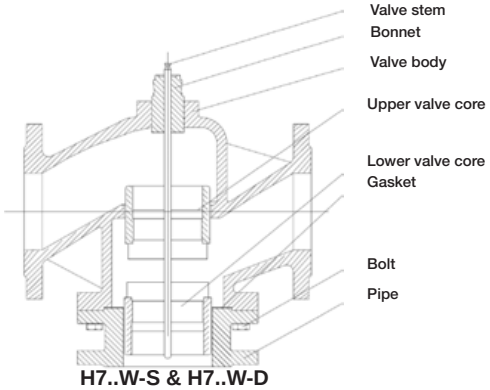


H3..X-S

Component parts of the globe valve: H6..W-SP, H7..W-S (mixing) and H7..W-D (diverting)

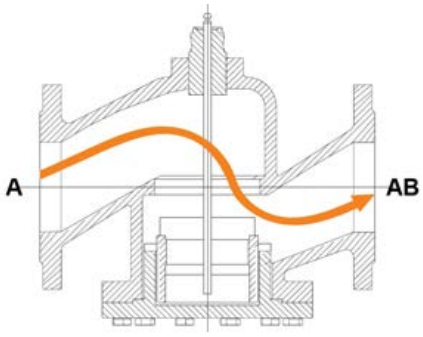


H6..W-SP



H7..W-S & H7..W-D

Balancing Core Structure



When valve is fully closed, differential pressure increases gradually. A small amount of water will sneak into the seat through a tiny hole. This allows pressure within the seat to assimilate with the inlet pressure. Pressure load on seat will be minimised. Therefore, high close-off pressure can be achieved.

Inlet pressure = A, outlet pressure = AB

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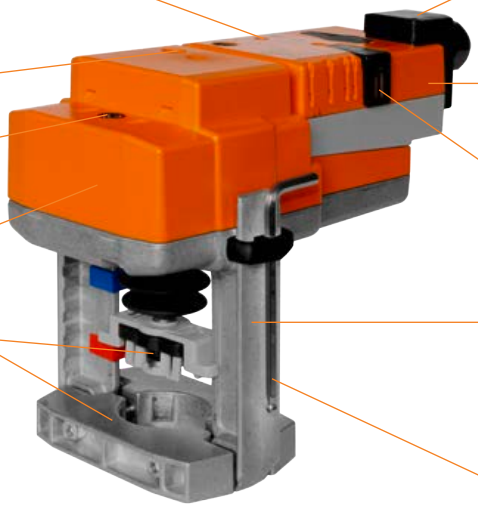
Standard Globe Valve Actuator



External adaptation push-button and LED status indicators

Slot for hand crank

Slot for auxiliary switch (optional)

Newly developed secondary drive

New, simplified connections for all Belimo valves

IP54 connecting terminals with 1m cable

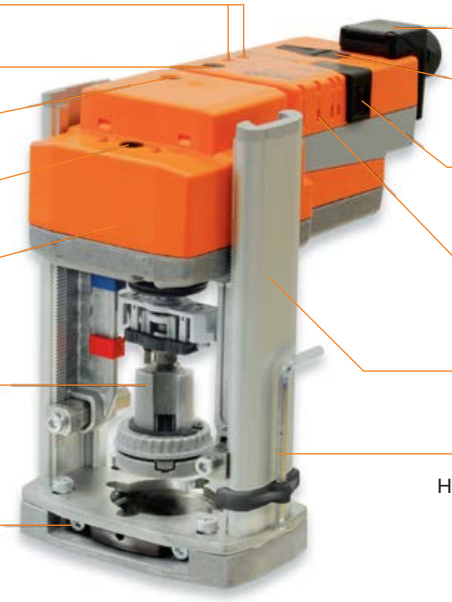
Primary unit based on the tried and tested Belimo rotary actuators

Temporary and permanent gear disengagement

Newly designed bracket as part of the globe valve actuator

A hexagon socket screw key for all installation and adjustment work (attached to the actuator)

Retrofit Globe Valve Actuator



Adaptation push-button and LED status indicators

Direction of stroke switch

Slot for hand crank

Slot for auxiliary switch (optional)

Newly developed secondary gearing

New, universal valve neck adaption for third-party valves

New, universal valve stem adaption for third-party valves

IP54 connecting terminals

Service tool socket for Parameterisation

Temporary and permanent gear disengagement

Actuator technology based on the tried and tested Belimo rotary actuators

Bracket for the plug-in module of the actuator

Hexagon allen key for all installation and adjustment work

Globe valves, 2-way, with internal thread

- For open and closed cold and warm water systems
- For modulating water-side control of air handling units and heating systems
- VAV reheat

Type overview

Type	K_{VS} [m³/h]	DN [mm]	Stroke [mm]	S_V	$\triangle P_S$ [kPa]
H2015X-S	1.9	15	10	>50	800
H2020X-S	4.4	20	10	>50	800
H2025X-S	8	25	15	>50	600
H2032X-S	10	32	20	>50	550
H2040X-S	20	40	20	>50	450 / 700
H2050X-S	32	50	20	>50	300 / 500

$\triangle P_S$ will be variant depends on actuator selection.

Technical data

Functional data	Flow media	Cold and hot water, Refrigerant (R12, R22, R134a, R202), water with max. 50% volume of glycol, Hydrazine, Phosphate
	Temperature of medium	0°C ... +130°C
	Rated pressure P_S	2500kPa (PN25)
	Flow characteristic	Control path A – AB: equal percentage (to VDI/VDE 2173) n(gl) = 3, optimised in the opening range
	Rangeability S_V	See «Type overview»
	Leakage rate	Max. 0.02% of kvs value (DIN EN 1349 and DIN EN 60534-4)
	Pipe connection	Internal thread to ISO 7/1
	Stroke	See «Type overview»
	Valve closing point	Up (▲)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Body	Stainless steel SS304
	Valve cone	Stainless steel SS304
	Valve stem	Stainless steel SS304
	Valve seat	Stainless steel SS304
	Stem gland seal	EPDM O-Ring
Dimensions / Weights	Dimensions and weights	See «Dimensions and weights»

V1.0..12.2013 • Subject to modification

Safety notes

- This globe valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The recognised rules should be applied when determining the flow characteristic of final controlling elements.

Product features

Mode of operation

The globe valve is operated by an NV or SV series linear actuator. The linear actuators are controlled by a standard modulating or 3-point control system and move the cone of the valve, the throttling device, to the opening position dictated by the control signal.

Flow characteristic

An equal-percentage flow characteristic is produced by profiling the valve cone.

Manual operation

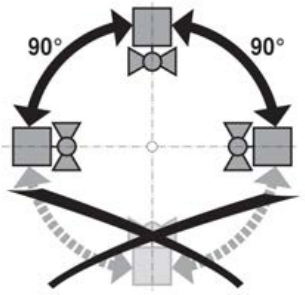
On the NV or SV linear actuator, the valve stem can be actuated manually using a hexagonal key.

Installation notes

Recommended mounting positions

The globe valve may be mounted either **vertically** or **horizontally**.

It is not permissible to mount the globe valve with the stem pointing downwards.



Water quality requirements

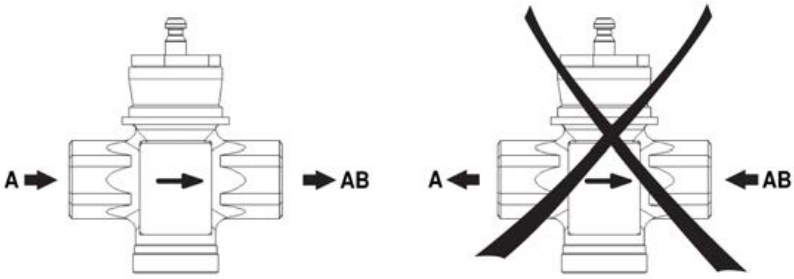
- The water quality requirements specified in VDI 2035 must be adhered to.

Maintenance

- Globe valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers**.
- The globe valves and linear actuators are maintenance-free.

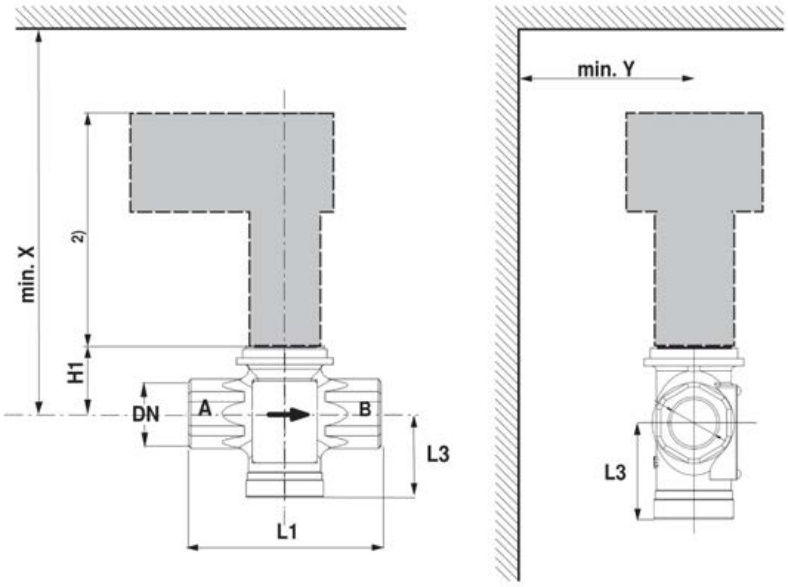
Direction of flow

- Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the linear actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
- The system must not be returned to service until the globe valve and the linear actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.
- The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the globe valve can be damaged.



Dimensions and weights

Dimensional drawings



DN [mm]	L1 [mm]	H1 [mm]	L3 [mm]	X[1)] [mm]	Y[1)] [mm]	Weight [kg]
15	80	25.5	38	296	100	1
20	80	28	40	299	100	1.1
25	100	32	44	303	100	1.5
32	103	35	47	306	100	1.8
40	122	40.5	52	311	100	2.4
50	138	47	65	318	100	3.4

1) Minimum distance with respect to the valve centre.
2) The actuator dimensions can be found on the respective actuator data sheet.

Globe valves, 3-way, with internal thread

- For open and closed cold and hot water systems
- For modulating water-side control of air handling units and heating systems

Type overview

Type	K_{VS} [m^3/h]	DN [mm]	Stroke [mm]	S_V	$\triangle P_S$ [kPa]
H3015X-S	1.9	15	10	>50	800
H3020X-S	4.4	20	10	>50	800
H3025X-S	8	25	15	>50	600
H3032X-S	10	32	20	>50	550
H3040X-S	20	40	20	>50	450 / 700
H3050X-S	32	50	20	>50	300 / 500

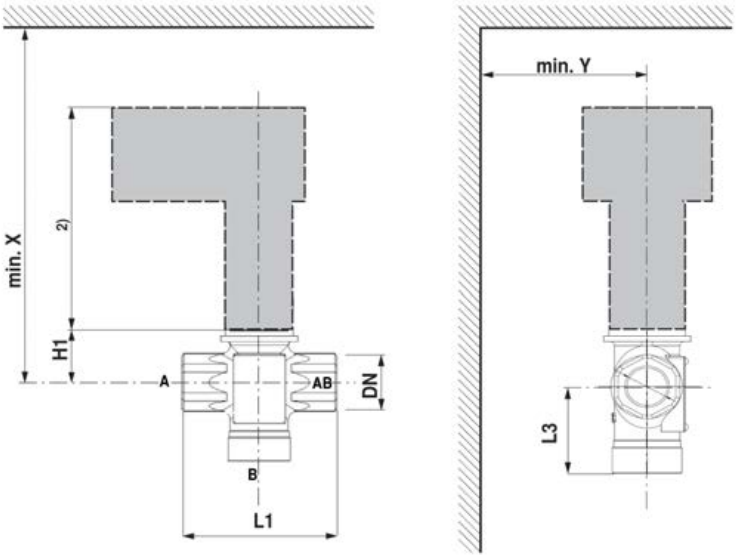
$\triangle P_S$ will be variant depends on actuator selection.

Technical data

Functional data	Flow media	Cold and hot water, Refrigerant (R12, R22, R134a, R202), water with max. 50% volume of glycol, Hydrazine, Phosphate
	Temperature of medium	0°C ... +130°C
	Rated pressure P_S	2500kPa (PN25)
	Flow characteristic	Control path A–AB, B-AB: equal percentage (to VDI/VDE 2173) n(gl) = 3, optimised in the opening range
	Rangeability S_V	See «Type overview»
	Leakage rate	Max. 0.02% of kvs value on all path (DIN EN 1349 and DIN EN 60534-4)
	Pipe connection	Internal thread to ISO 7/1
	Stroke	See «Type overview»
	Valve closing point	Up (▲)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Body	Stainless steel SS304
	Valve cone	Stainless steel SS304
	Valve stem	Stainless steel SS304
	Valve seat	Stainless steel SS304
	Stem gland seal	Teflon
Dimensions / Weights	Dimensions and weights	See «Dimensions and weights»

Dimensions and weights

Dimensional drawings



DN [mm]	L1 [mm]	H1 [mm]	L3 [mm]	X 1) [mm]	Y 1) [mm]	Weight [kg]
15	80	25.5	49	296	100	0.8
20	80	28	51	299	100	1.1
25	100	32	55	303	100	1.6
32	103	35	62	306	100	1.8
40	122	40.5	71	311	100	2.3
50	138	47	85	318	100	3.3

1) Minimum distance with respect to the valve centre.
2) The actuator dimensions can be found on the respective actuator data sheet.

V1.0 .11.2013 • Subject to modification

Safety notes

- This globe valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The recognised rules should be applied when determining the flow characteristic of final controlling elements.

Product features

Mode of operation

The globe valve is operated by an NV or SV series linear actuator. The linear actuators are controlled by a standard modulating or 3-point control system and move the cone of the valve, the throttling device, to the opening position dictated by the control signal.

Flow characteristic

An equal-percentage flow characteristic is produced by profiling the valve cone. The bypass exhibits a linear characteristic curve.

Manual operation

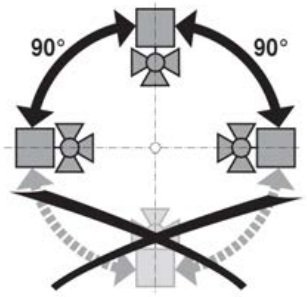
On the NV or SV linear actuator, the valve stem can be actuated manually using a hexagonal key.

Installation notes

Recommended mounting positions

The globe valve may be mounted either **vertically** or **horizontally.**

It is not permissible to mount the globe valve with the stem pointing downwards.



Water quality requirements

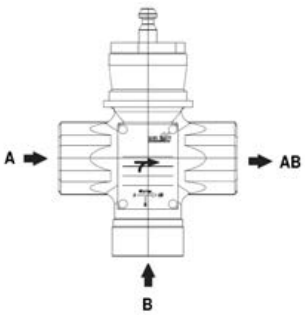
- The water quality requirements specified in VDI 2035 must be adhered to.
- Globe valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers.**

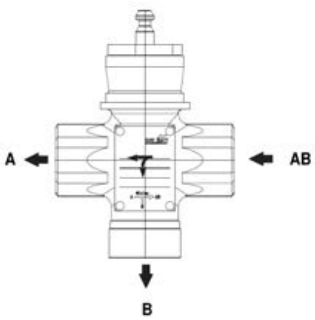
Maintenance

- The globe valves and linear actuators are maintenance-free.
- Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the linear actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
- The system must not be returned to service until the globe valve and the linear actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.

Direction of flow

- The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the globe valve can be damaged.





Globe valves, 2-way, with flange PN16

- For closed cold and hot water systems
- For modulating water-side control of air handling units and heating systems

Type overview

Type	K_{vs} [m³/h]	DN [mm]	Stroke [mm]	S_v	$\triangle P_s$ [kPa]
H6065W-SP	50	65	20	>50	1600
H6080W-SP	80	80	30	>50	1600
H6100W-SP	125	100	40	>50	1600
H6125W-SP	200	125	40	>50	1600
H6150W-SP	300	150	40	>50	1600
H6200W-SP	520	200	40	>50	1600
H6250W-SP	750	250	40	>50	1600

Technical data

Functional data	Flow media	Cold and hot water, Refrigerant (R12, R22, R134a, R202), water with max. 50% volume of glycol, Hydrazine, Phosphate
	Temperature of medium	0°C ... +150°C
	Rated pressure P_s	1600kPa (PN16)
	Flow characteristic	Control path A – AB: equal percentage (to VDI/VDE 2173) n(gl) = 3, optimised in the opening range
	Rangeability S_v	See «Type overview»
	Leakage rate	Max. 0.02% of kvs value (DIN EN 1349 and DIN EN 60534-4)
	Pipe connection	Flange to ISO 7005-2 (PN16)
	Stroke	See «Type overview»
	Valve closing point	Up (▲)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Body	Stainless steel SS304
	Valve cone	Stainless steel SS304
	Valve stem	Stainless steel SS304
	Valve seat	Stainless steel SS304
	Stem gland seal	Teflon
Dimensions / Weights	Dimensions and weights	See «Dimensions and weights»

V1.0..12.2013 • Subject to modification

Safety notes

- This globe valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The recognised rules should be applied when determining the flow characteristic of final controlling elements.

Product features

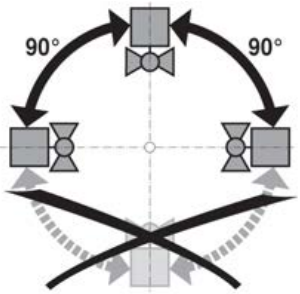
Mode of operation
The globe valve is operated by an SV, EV or RV series linear actuator. The linear actuators are controlled by a standard modulating or 3-point control system and move the cone of the valve, the throttling device, to the opening position dictated by the control signal.

Flow characteristic
An equal-percentage flow characteristic is produced by profiling the valve cone.

Manual operation
On the SV, EV or RV linear actuator, the valve stem can be actuated manually using a hexagonal key.

Installation notes

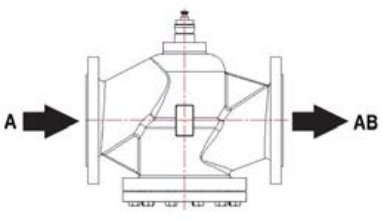
Recommended mounting positions
The globe valve may be mounted either **vertically** or **horizontally**.
It is not permissible to mount the globe valve with the stem pointing downwards.

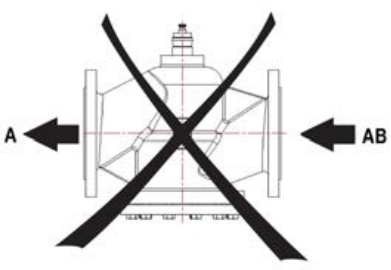


Water quality requirements
- The water quality requirements specified in VDI 2035 must be adhered to.
- Globe valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers.**

Maintenance
- The globe valves and linear actuators are maintenance-free.
- Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the linear actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
- The system must not be returned to service until the globe valve and the linear actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.

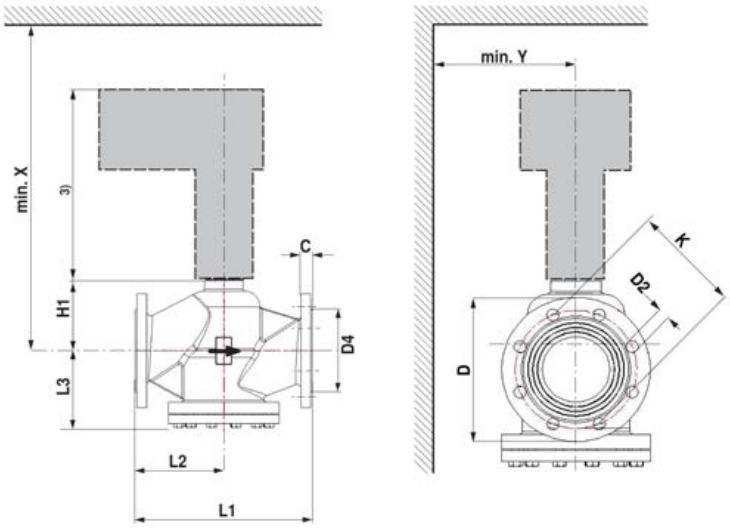
Direction of flow
- The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the globe valve can be damaged.





Dimensions and weights

Dimensional drawings



DN [mm]	B [mm]	D [mm]	D2 [mm]	D4 [mm]	K [mm]	L1 [mm]	L2 [mm]	L3 [mm]	H1 [mm]	X 2) [mm]	Y 2) [mm]	Weight [kg]
65	22	185	4-18	118	145	290	145	115	105	376	665	18.5
80	22	200	8-18	132	160	310	155	130	118	502	665	25
100	23	220	8-18	156	180	350	175	150	135	519	665	35.6
125	24	250	8-18	184	210	400	200	175	160	544	665	50.6
150	25	285	8-22	211	240	480	240	200	169	553	665	71.5
200	26	340	12-22	266	295	500	250	236	263	647	665	112.7
250	31	405	12-26	319	355	600	300	295	315	699	665	202

2) Minimum distance with respect to the valve centre.

3) The actuator dimensions can be found on the respective actuator data sheet.

V1.0..12.2013 • Subject to modification

Globe valves, 3-way, with flange PN16

- For closed cold and hot water systems
- For modulating water-side control of air handling units and heating systems

Type overview

Type	K_{VS} [m³/h]	DN [mm]	Stroke [mm]	S_V	$\triangle P_S$ [kPa]
H7065W-S	50	65	20	>50	450
H7080W-S	80	80	30	>50	270 / 350
H7100W-S	125	100	40	>50	200 / 300
H7125W-S	200	125	40	>50	150 / 200
H7150W-S	300	150	40	>50	100 / 150
H7200W-S	520	200	40	>50	130
H7250W-S	750	250	40	>50	80

$\triangle P_S$ will be variant depends on actuator selection.

Technical data

Functional data	Flow media	Cold and hot water, Refrigerant (R12, R22, R134a, R202), water with max. 50% volume of glycol, Hydrazine, Phosphate
	Temperature of medium	0°C ... +150°C
	Rated pressure P_S	1600kPa (PN16)
	Flow characteristic	Control path A–AB, B-AB: equal percentage (to VDI/VDE 2173) n(gl) = 3, optimised in the opening range
	Rangeability S_V	See «Type overview»
	Leakage rate	Max. 0.02% of kvs value on all path (DIN EN 1349 and DIN EN 60534-4)
	Pipe connection	Flange to ISO 7005-2 (PN16)
	Stroke	See «Type overview»
	Valve closing point	Up (▲)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Body	Ductile iron GGG40
	Valve cone	Stainless steel SS304
	Valve stem	Stainless steel SS304
	Valve seat	Stainless steel SS304
	Stem gland seal	Teflon
Dimensions / Weights	Dimensions and weights	See «Dimensions and weights»

Safety notes

- This globe valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The recognised rules should be applied when determining the flow characteristic of final controlling elements.

Product features

Mode of operation

The globe valve is operated by an SV, EV or RV series linear actuator. The linear actuators are controlled by a standard modulating or 3-point control system and move the cone of the valve, the throttling device, to the opening position dictated by the control signal.

Flow characteristic

An equal-percentage flow characteristic is produced by profiling the valve cone. The bypass exhibits a linear characteristic curve.

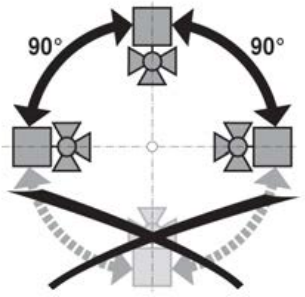
Manual operation

On the SV, EV or RV linear actuator, the valve stem can be actuated manually using a hexagonal key.

Installation notes

Recommended mounting positions

The globe valve may be mounted either **vertically** or **horizontally**.
It is not permissible to mount the globe valve with the stem pointing downwards.



Water quality requirements

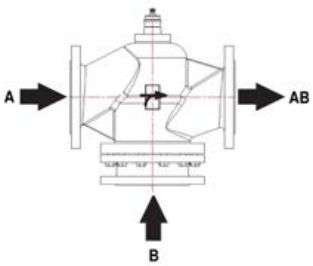
- The water quality requirements specified in VDI 2035 must be adhered to.
- Globe valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers.**

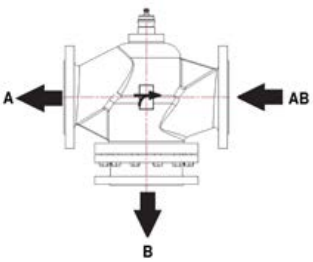
Maintenance

- The globe valves and linear actuators are maintenance-free.
- Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the linear actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
- The system must not be returned to service until the globe valve and the linear actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.

Direction of flow

- The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the globe valve can be damaged.



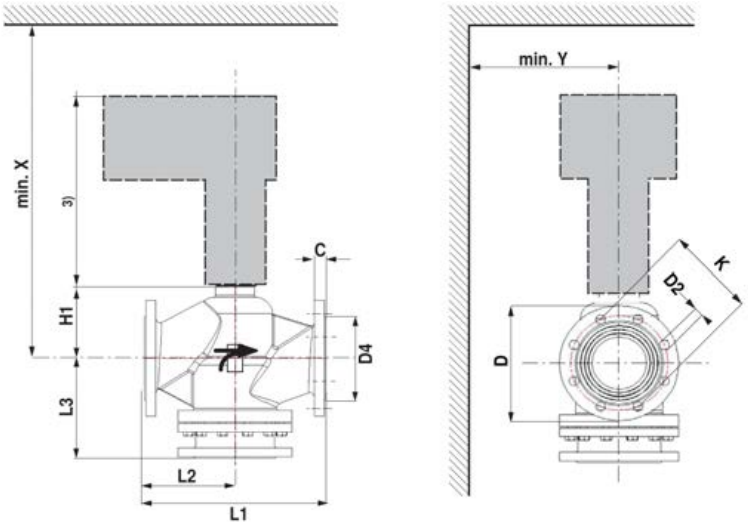


H7065W-S only

V1.0 .11.2013 • Subject to modification

Dimensions and weights

Dimensional drawings



DN [mm]	C [mm]	D [mm]	D2 [mm]	D4 [mm]	K [mm]	L1 [mm]	L2 [mm]	L3 [mm]	H1 [mm]	X [mm]	Y [mm]	Weight [kg]
65	22	185	4-18	118	145	290	145	115	105	376	150	22.5
80	22	200	8-18	132	160	310	155	182	118	502	150	28.8
100	23	220	8-18	156	180	350	175	200	135	519	150	40.6
125	24	250	8-18	184	210	400	200	240	160	544	150	55.4
150	25	285	8-22	211	240	480	240	268	169	553	150	76.3
200	26	340	12-22	266	295	500	250	320	263	647	150	125.6
250	31	405	12-26	319	355	600	300	400	315	699	150	230

3) The actuator dimensions can be found on the respective actuator data sheet.

H7..W-D

Globe valves, 3-way, with flange PN16

- For closed cold and hot water systems
- For modulating water-side control of air handling units and heating systems
- For Diverting application only

Type overview

Type	K_{vs} [m³/h]	DN [mm]	Stroke [mm]	S_v	$\triangle P_s$ [kPa]
H7080W-D	80	80	30	>50	270 / 350
H7100W-D	125	100	40	>50	200 / 300
H7125W-D	200	125	40	>50	150 / 200
H7150W-D	300	150	40	>50	100 / 150

$\triangle P_s$ will be variant depends on actuator selection.

Technical data

Functional data	Flow media	Cold and hot water, Refrigerant (R12, R22, R134a, R202), water with max. 50% volume of glycol, Hydrazine, Phosphate
	Temperature of medium	0°C ... +150°C
	Rated pressure P_s	1600kPa (PN16)
	Flow characteristic	Control path A–AB, B-AB: equal percentage (to VDI/VDE 2173) n(gl) = 3, optimised in the opening range
	Rangeability S_v	See «Type overview»
	Leakage rate	Max. 0.02% of kvs value on all path (DIN EN 1349 and DIN EN 60534-4)
	Pipe connection	Flange to ISO 7005-2 (PN16)
	Stroke	See «Type overview»
	Valve closing point	Up (▲)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Body	Ductile iron GGG40
	Valve cone	Stainless steel SS304
	Valve stem	Stainless steel SS304
	Valve seat	Stainless steel SS304
	Stem gland seal	Teflon
Dimensions / Weights	Dimensions and weights	See «Dimensions and weights»

Safety notes

- This globe valve has been designed for use in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The recognised rules should be applied when determining the flow characteristic of final controlling elements.

Product features

Mode of operation

The globe valve is operated by an EV or RV series linear actuator. The linear actuators are controlled by a standard modulating or 3-point control system and move the cone of the valve, the throttling device, to the opening position dictated by the control signal.

Flow characteristic

An equal-percentage flow characteristic is produced by profiling the valve cone. The bypass exhibits a linear characteristic curve.

Manual operation

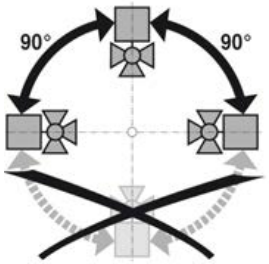
On the EV or RV linear actuator, the valve stem can be actuated manually using a hexagonal key.

V1.0 .11.2013 • Subject to modification

Installation notes

Recommended mounting positions

The globe valve may be mounted either **vertically** or **horizontally**. It is not permissible to mount the globe valve with the stem pointing downwards.



Water quality requirements

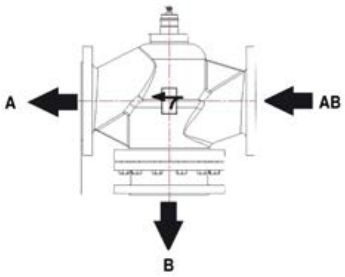
- The water quality requirements specified in VDI 2035 must be adhered to.
- Globe valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers.**

Maintenance

- The globe valves and linear actuators are maintenance-free.
- Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the linear actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
- The system must not be returned to service until the globe valve and the linear actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.

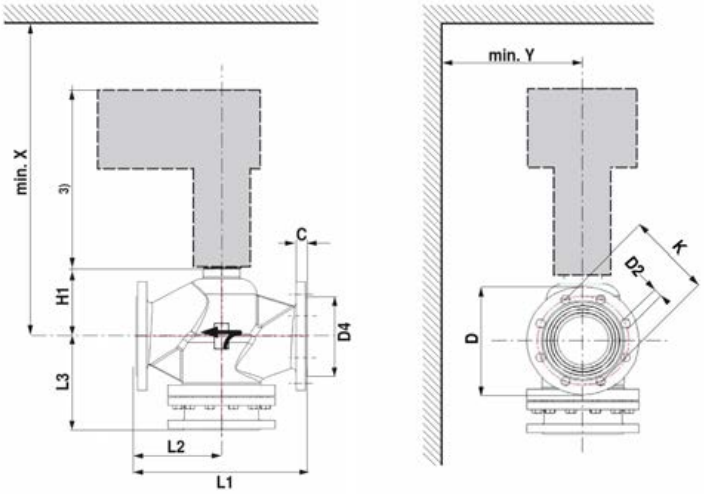
Direction of flow

- The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the globe valve can be damaged.



Dimensions and weights

Dimensional drawings



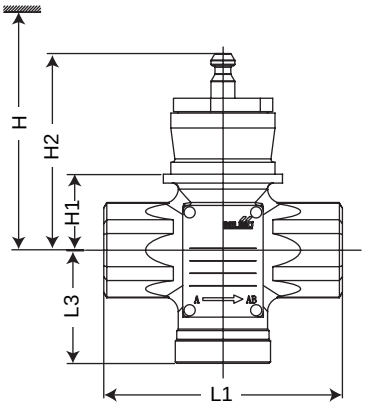
DN	C	D	D2	D4	K	L1	L2	L3	H1	X	Y	Weight
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
80	22	200	8-18	132	160	310	155	182	118	502	150	28.8
100	23	220	8-18	156	180	350	175	200	135	519	150	40.6
125	24	250	8-18	184	210	400	200	240	160	544	150	55.4
150	25	285	8-22	211	240	480	240	268	169	553	150	76.3

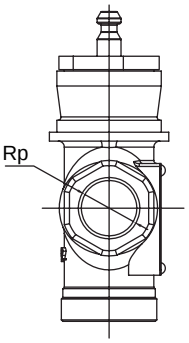
3) The actuator dimensions can be found on the respective actuator data sheet.

Dimensions

H2..X-S Globe valve 2-way series, PN25

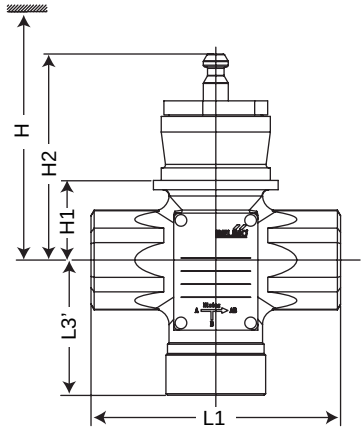
Model Type	DN		Dimension[mm]					Weight (kg)
	In	mm	L1	L3	H1	H2	H	
H2015X-S	1/2”	15	80	38	25.5	66	296	1.0
H2020X-S	3/4”	20	80	40	28	68.5	299	1.1
H2025X-S	1”	25	100	44	32	72.5	303	1.5
H2032X-S	1-1/4”	30	103	47	35	75.5	306	1.8
H2040X-S	1-1/2”	40	122	52	40.5	81	311	2.4
H2050X-S	2”	50	138	65	47	87.5	318	3.4

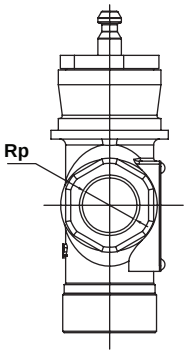




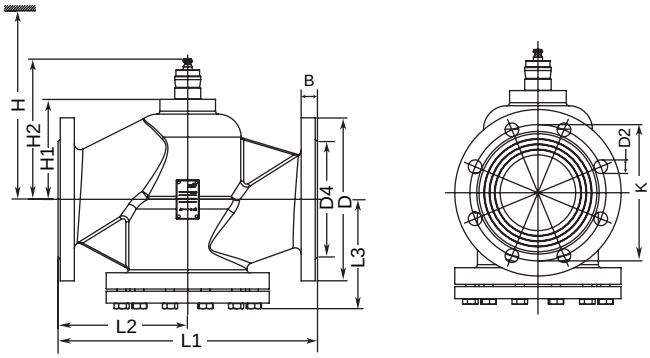
H3..X-S Globe valve 3-way series, PN25

Model Type	DN		Dimension[mm]					Weight (kg)
	In	mm	L1	L3’	H1	H2	H	
H3015X-S	1/2”	15	80	49	25.5	66	296	0.8
H3020X-S	3/4”	20	80	51	28	68.5	299	1.1
H3025X-S	1”	25	100	55	32	72.5	303	1.6
H3032X-S	1-1/4”	30	103	62	35	75.5	306	1.8
H3040X-S	1-1/2”	40	122	71	40.5	81	311	2.3
H3050X-S	2”	50	138	85	47	87.5	318	3.3



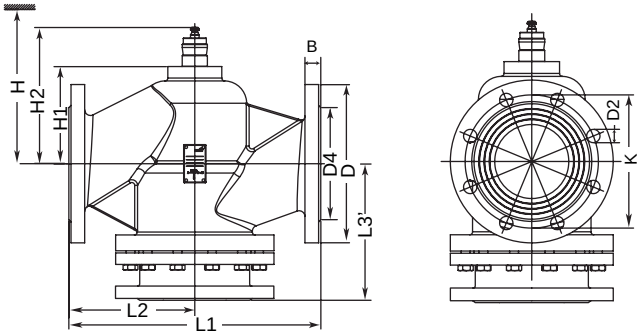


Dimensions



H6..W-SP Globe valve 2-way series, PN16

Model Type	DN	Dimension[mm]											Weight (kg)
	mm	B	D	D2	D4	K	L1	L2	L3	H1	H2	H	
H6065W-SP	65	22	185	4-18	118	145	290	145	115	105	145.5	376	18.5
H6080W-SP	80	22	200	8-18	132	160	310	155	130	118	172.5	502	25.0
H6100W-SP	100	23	220	8-18	156	180	350	175	150	135	189.5	519	35.6
H6125W-SP	125	24	250	8-18	184	210	400	200	175	160	214.5	544	50.6
H6150W-SP	150	25	285	8-22	211	240	480	240	200	169	223.5	553	71.5
H6200W-SP	200	26	340	12-22	266	295	500	250	236	263	317.5	647	112.7
H6250W-SP	250	31	405	12-26	319	355	600	300	295	315	369.5	699	202.0



H7..W-S Globe valve 3-way series and H7..W-D (diverting), PN16

Model Type	DN	Dimension[mm]											Weight (kg)
	mm	B	D	D2	D4	K	L1	L2	L3	H1	H2	H	
H7065W-S	65	22	185	4-18	118	145	290	145	155	105	145.5	376	22.5
H7080W-S	80	22	200	8-18	132	160	310	155	182	118	172.5	502	28.8
H7080W-D	80	22	200	8-18	132	160	310	155	182	118	172.5	502	28.8
H7100W-S	100	23	220	8-18	156	180	350	175	200	135	189.5	519	40.6
H7100W-D	100	23	220	8-18	156	180	350	175	200	135	189.5	519	40.6
H7125W-S	125	24	250	8-18	184	210	400	200	240	160	214.5	544	55.4
H7125W-D	125	24	250	8-18	184	210	400	200	240	160	214.5	544	55.4
H7150W-S	150	25	285	8-22	211	240	480	240	268	169	223.5	553	76.3
H7150W-D	150	25	285	8-22	211	240	480	240	268	169	223.5	553	76.3
H7200W-S	200	26	340	12-22	266	295	500	250	320	263	317.5	647	125.6
H7250W-S	250	31	405	12-26	319	355	600	300	400	315	369.5	699	230.0

NV24A-TPC

Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- Control: Open-close, 3-point
- Nominal stroke 20mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	1.5W
	Power consumption in rest position	0.5W
	Power consumption for wire sizing	3VA
	Connection supply / control	Terminals 4mm² and cable 1m, 3 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	45dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.32kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The 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.

V1.0..12.2013 • Subject to modification

Product features

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual control with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

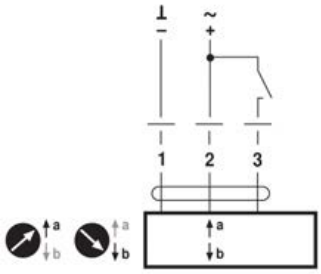
Description	Type
Auxiliary switch	S2A-H

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

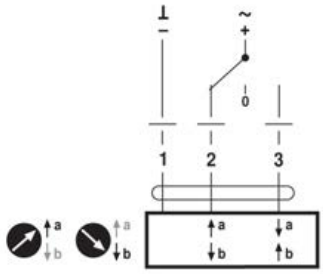
Wiring diagrams

AC/DC 24V, open-close (one-wire)



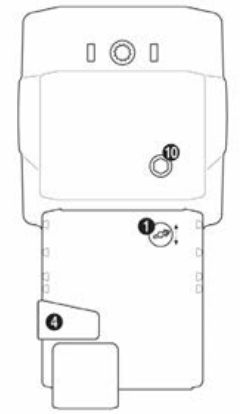
Cable colours:
1 = black
2 = red
3 = white

AC/DC 24V, 3-point



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

Indicators and operating controls



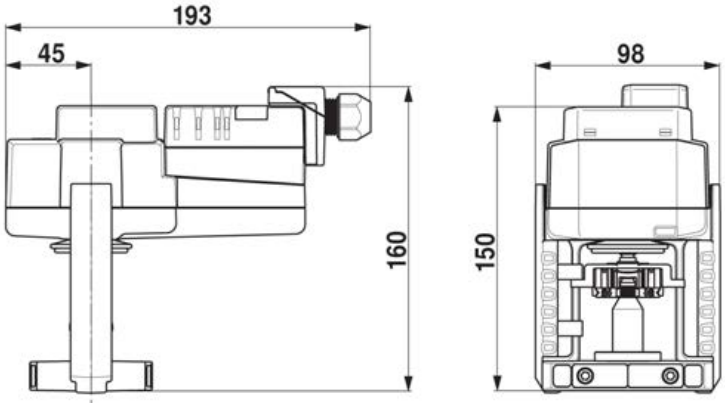
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



V1.0..12.2013 • Subject to modification

Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC 230V
- Control: Open-close, 3-point
- Nominal stroke 20mm

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	2W
	Power consumption in rest position	1W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 3 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	45dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.32kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual control with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

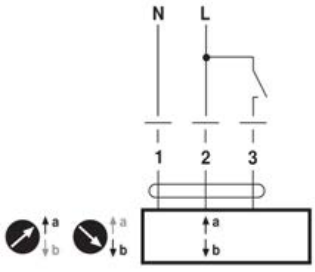
Description	Type
Auxiliary switch	S2A-H

Electrical installation

Notes • Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

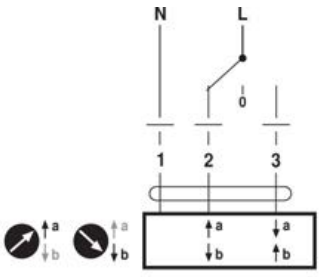
Wiring diagrams

AC 230V, open-close (one-wire)



Cable colours:
1 = blue
2 = brown
3 = white

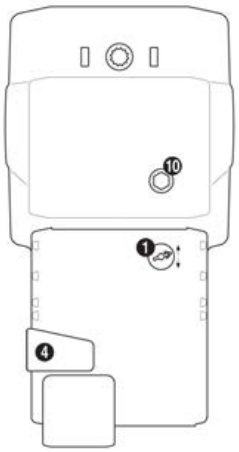
AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white

V1.0 .11.2013 • Subject to modification

Indicators and operating controls



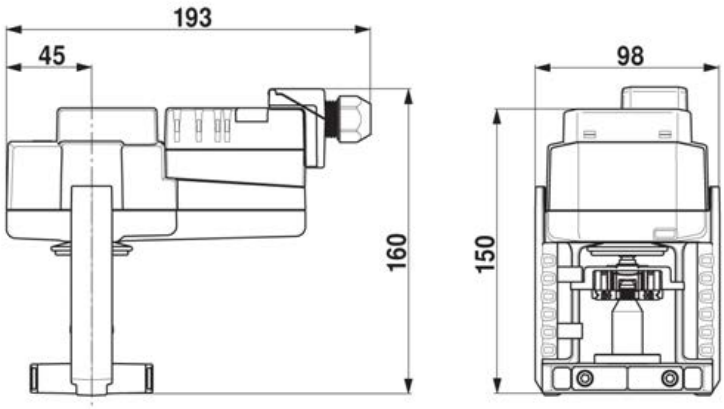
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



NV24A-SZ-TPC

Modulating globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- Control: modulating DC (0)0.5V...10V
- Nominal stroke 20mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	1.5W
	Power consumption in rest position	0.5W
	Power consumption for wire sizing	3VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	45dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.34kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.

V1.0..12.2013 • Subject to modification

Safety notes

- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the “Adaption” button. The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

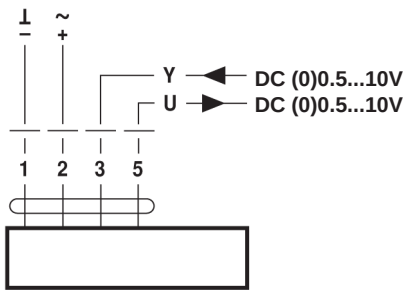
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible
- Direction of stroke switch factory setting: Actuator spindle retracted.

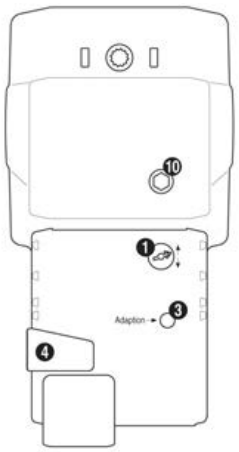
Wiring diagrams

AC/DC 24V, modulating



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

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

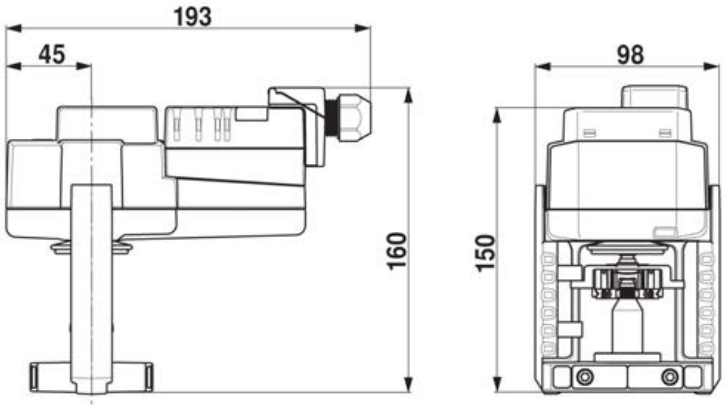
(3) Push-button and LED display yellow
Off: Standard mode
Illuminated: Adaption procedure active
Press button: Triggers stroke adaption, followed by standard mode

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



Communication-capable globe valve actuator
for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 20mm

MP-BUS®

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	3W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	45dB(A)
	Sound power level motor note	55dB(A) @ 90s running time
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.36kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Adjustable-parameter actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.
The actuator then moves into the position defined by the positioning signal.

Accessories

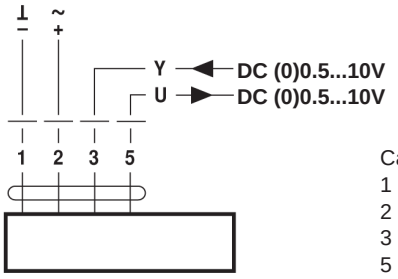
	Description	Type
Electrical accessories	Auxiliary switch add-on, 2 x SPDT	S2A-H
Service tools	Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
	Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

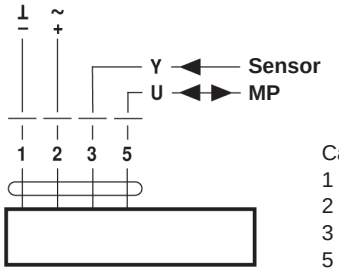
Wiring diagrams

AC/DC 24V, modulating



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

Operation on the MP-Bus

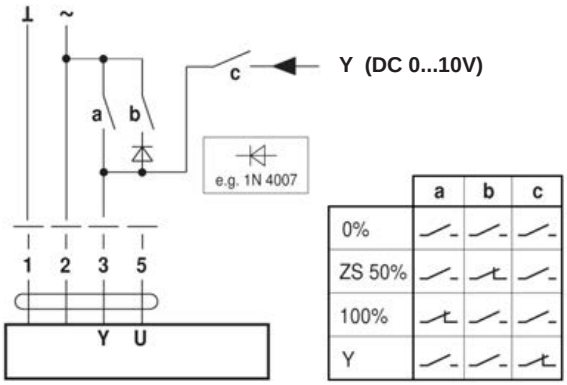


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

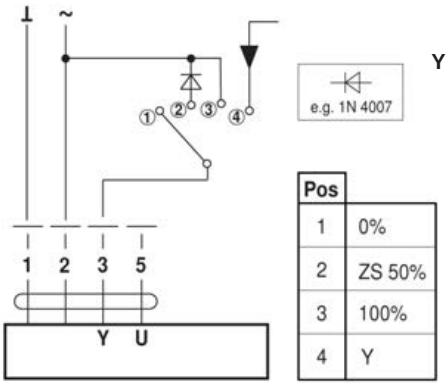
Functions with basic values

Override control with AC 24V with relay contacts



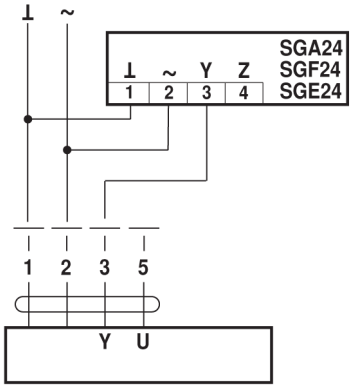
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⌐	⌐
100%	⌐	⌐	⌐
Y	⌐	⌐	⌐

Override control with AC 24V with rotary switch

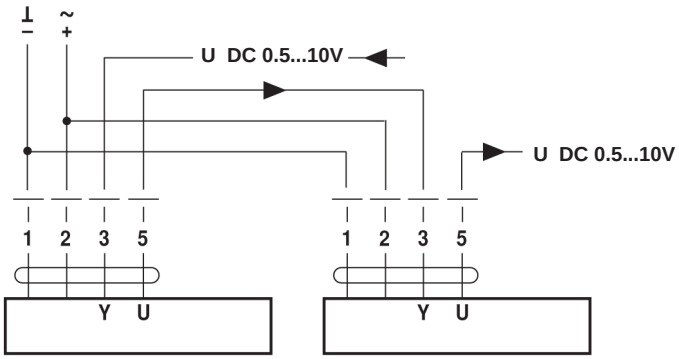


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%

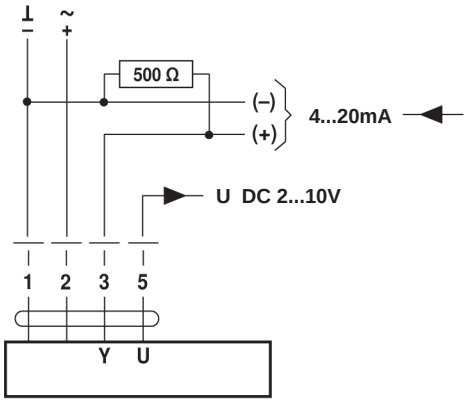


Follow-up control (position-dependent)



Functions

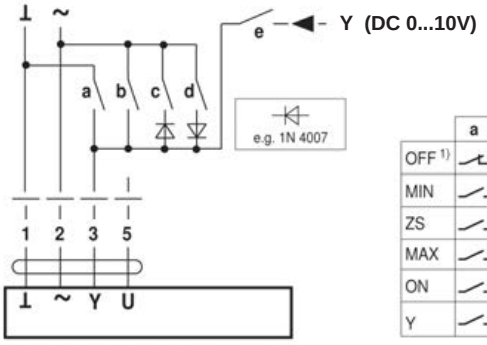
Control with 4...20mA via external resistor



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

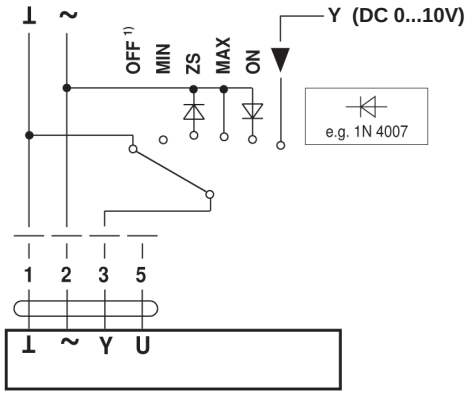
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	t				
MIN					
ZS			t		
MAX		t			
ON				t	
Y					t

Override control and limiting with AC 24V with rotary switch

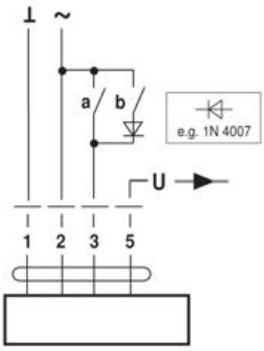


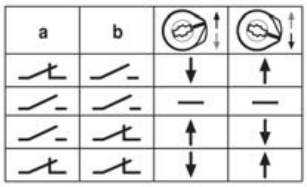
1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

V1.0 .11.2013 • Subject to modification

Functions

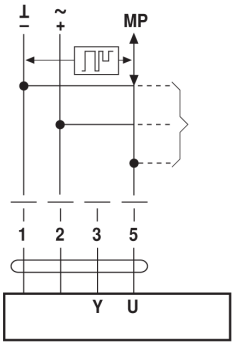
AC 24V, 3-point





Functions when operated on MP-Bus

Connection on the MP-Bus

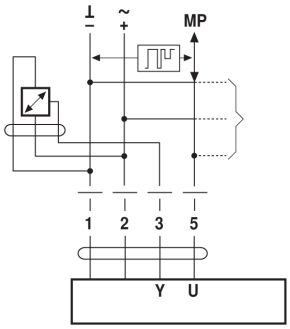


Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology

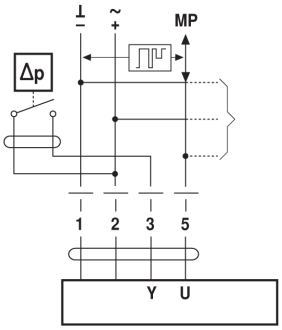
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



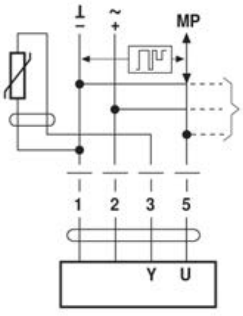
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

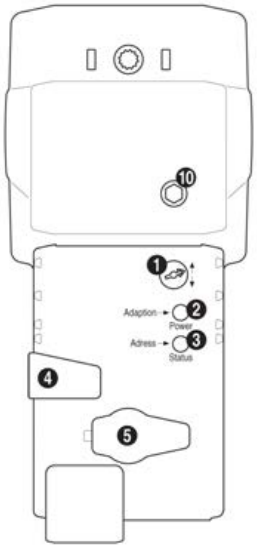
Connection of passive sensors



Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated in green: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) Push-button and LED display yellow
Off: Standard mode
Flickering: MP communication active
Illuminated: Adaption procedure active
Blinking: Request for addressing from MP master
Press button: Confirmation of addressing

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

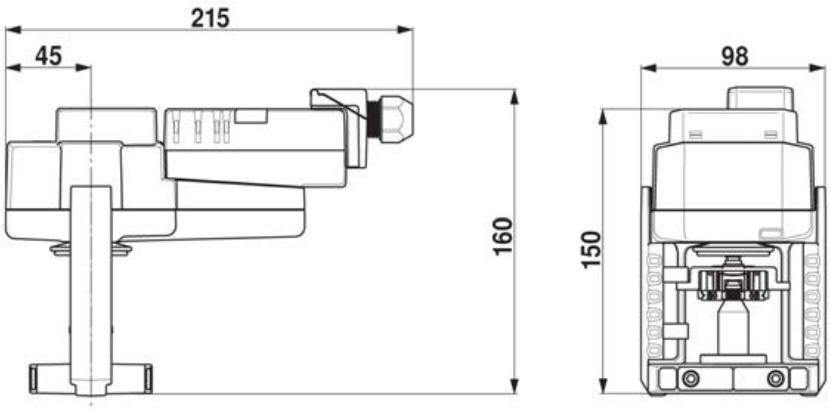
(5) Service plug
For connecting the parameterisation and service tools

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

LED displays (2, green) and (3, yellow)
green: Off; yellow: Illuminated;
Check the supply connections. The phases may have been switched.

Dimensions [mm]

Dimensional drawings



Globe valve actuator for 2-way and 3-way globe valves

- **Actuating force 1500N**
- Nominal voltage AC/DC 24V
- Control: Open-close, 3-point
- Nominal stroke 20mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	3W
	Power consumption in rest position	0.5W
	Power consumption for wire sizing	5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 3 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	35dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.34kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual control with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

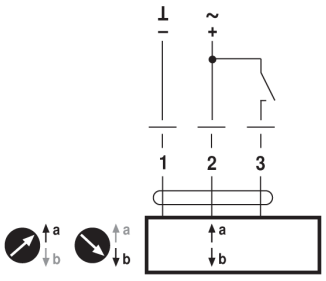
Description	Type
Auxiliary switch	S2A-H

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

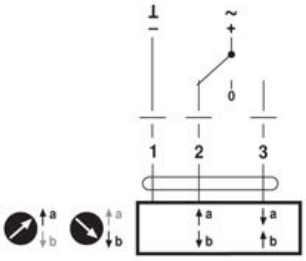
Wiring diagrams

AC/DC 24V, open-close (one-wire)



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

AC/DC 24V, 3-point



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

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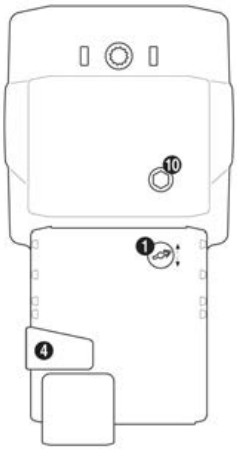
Indicators and operating controls



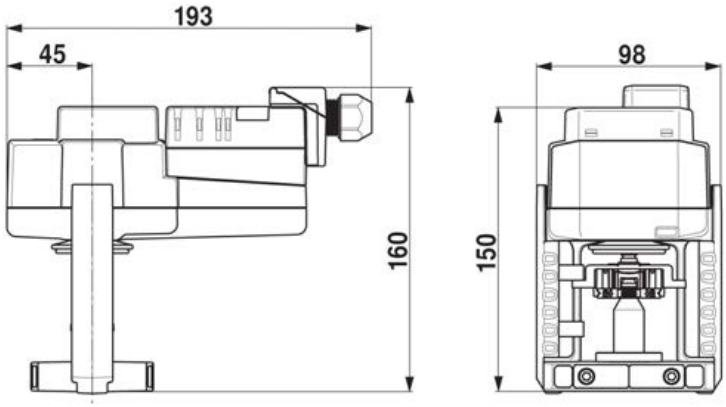
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



SV230A-TPC

Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1500N
- Nominal voltage AC 230V
- Control: Open-close, 3-point
- Nominal stroke 20mm

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	3.5W
	Power consumption in rest position	1W
	Power consumption for wire sizing	6.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 3 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	35dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.4kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The 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.

V1.0..12.2013 • Subject to modification

Product features

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual control with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

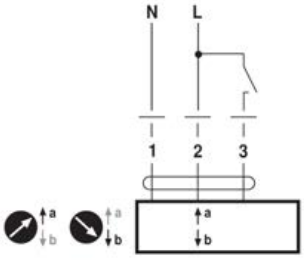
Description	Type
Auxiliary switch	S2A-H

Electrical installation

Notes • Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

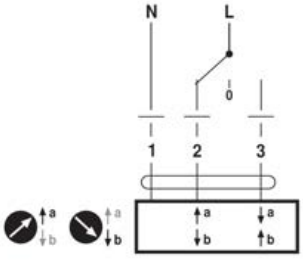
Wiring diagrams

AC 230V, open-close (one-wire)



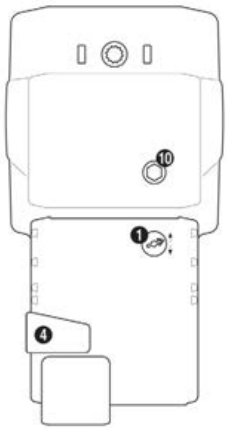
Cable colours:
1 = blue
2 = brown
3 = white

AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white

Indicators and operating controls



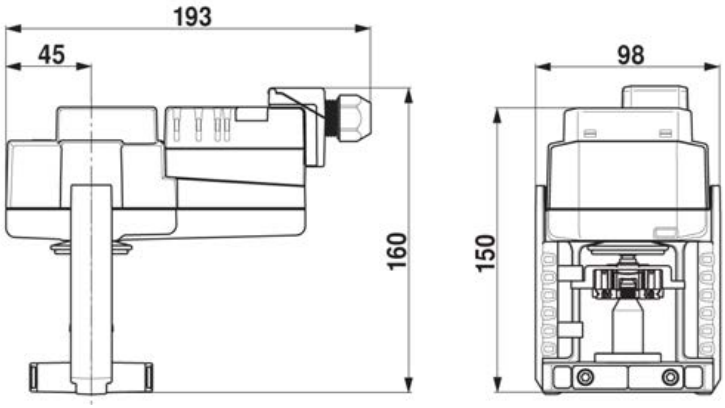
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



Modulating globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1500N
- Nominal voltage AC/DC 24V
- Control: modulating DC (0)0.5V...10V
- Nominal stroke 20mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	3.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	35dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.39kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.

Safety notes

• The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the “Adaption” button. The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

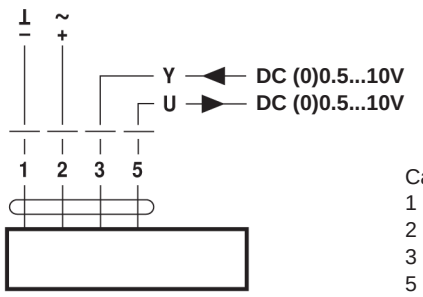
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC/DC 24V, modulating



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

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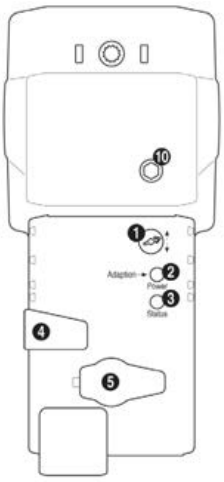
Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) LED display yellow
Off: Standard mode
Illuminated: Adaption procedure active

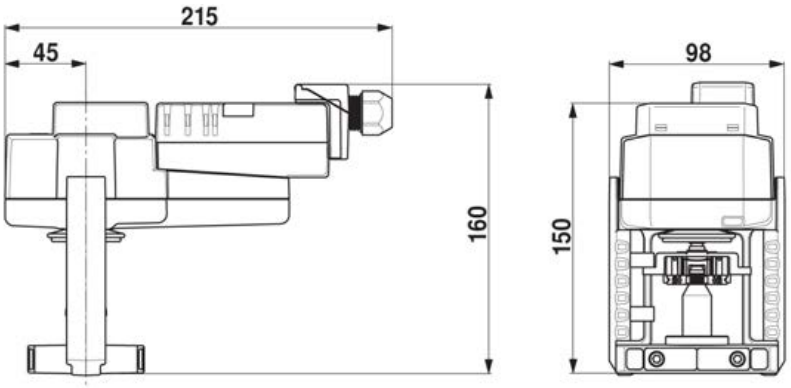
(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(5) Service plug
No function

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



SV24A-MP-TPC

Communication-capable globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1500N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 20mm

MP-BUS

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	3.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	35dB(A)
	Sound power level motor note	45dB(A) @ 90s running time
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.39kg

V1.0..12.2013 • Subject to modification

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Adjustable-parameter actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.
The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Service tools

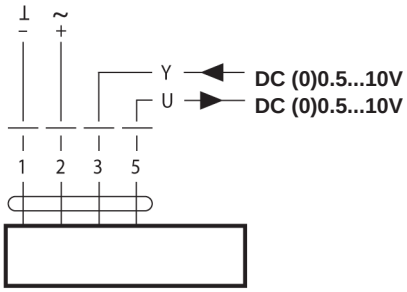
Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

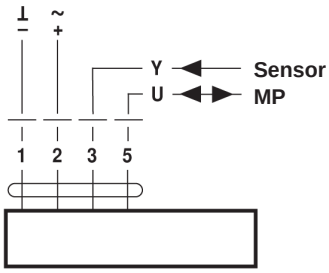
Wiring diagrams

AC/DC 24V, modulating



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

Operation on the MP-Bus

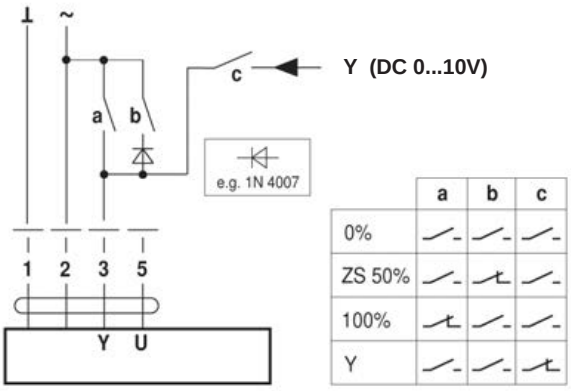


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

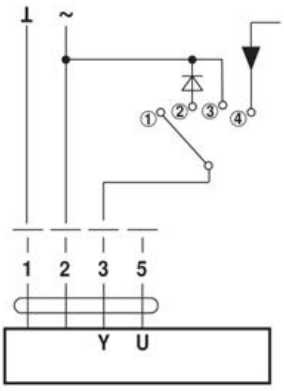
Functions with basic values

Override control with AC 24V with relay contacts



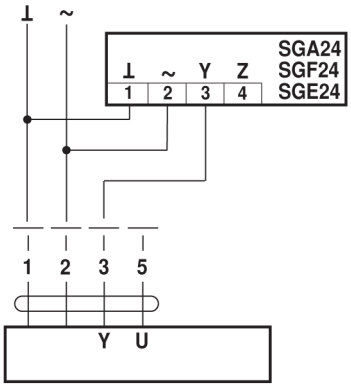
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⌐	⌐
100%	⌐	⌐	⌐
Y	⌐	⌐	⌐

Override control with AC 24V with rotary switch

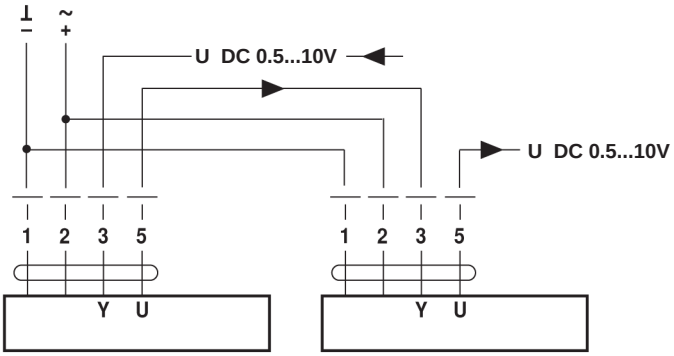


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%



Follow-up control (position-dependent)



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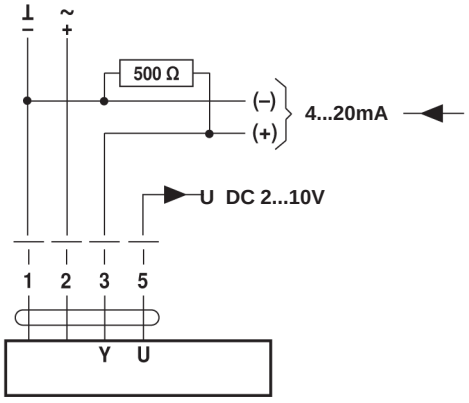
Functions

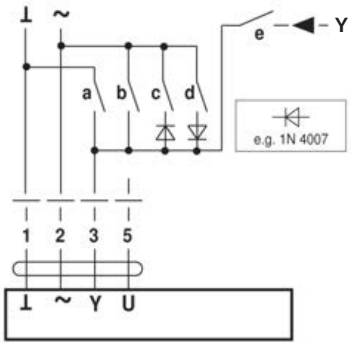
Control with 4...20mA via external resistor



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

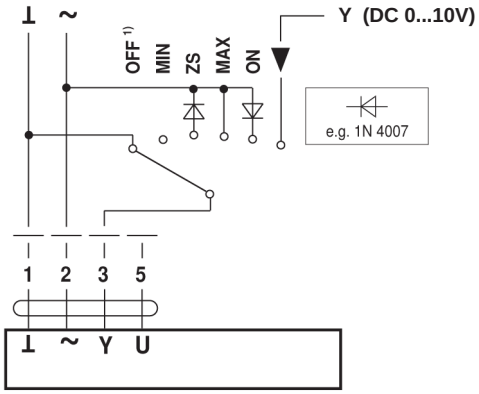
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	⌐	_	_	_	_
MIN	_	_	_	_	_
ZS	_	_	⌐	_	_
MAX	_	⌐	_	_	_
ON	_	_	_	⌐	_
Y	_	_	_	_	⌐

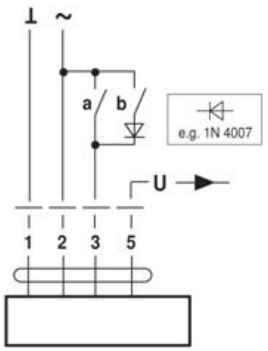
Override control and limiting with AC 24V with rotary switch



1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

Functions

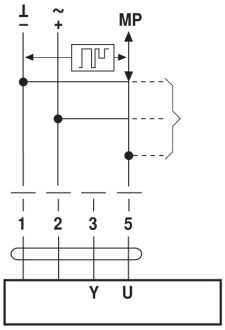
AC 24V, 3-point



a	b		
⊥	~	↓	↑
~	~	—	—
~	⊥	↑	↓
⊥	⊥	↓	↑

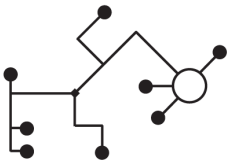
Functions when operated on MP-Bus

Connection on the MP-Bus



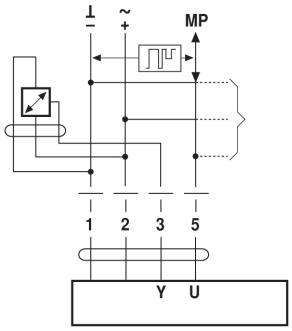
Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology



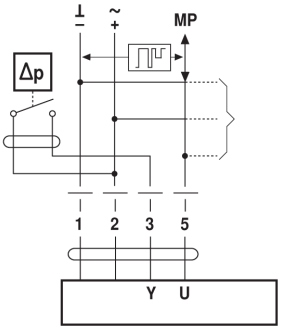
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



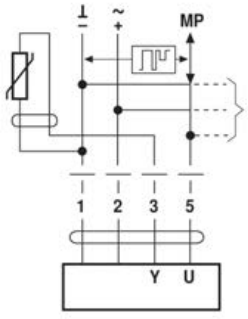
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

Connection of passive sensors

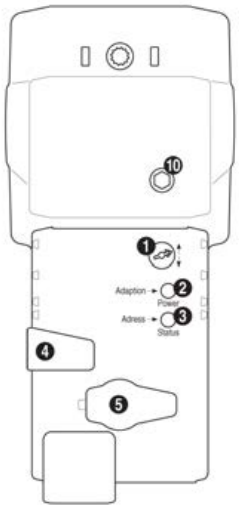


Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

V1.0 .11.2013 • Subject to modification

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated in green: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) Push-button and LED display yellow
Off: Standard mode
Flickering: MP communication active
Illuminated: Adaption procedure active
Blinking: Request for addressing from MP master
Press button: Confirmation of addressing

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

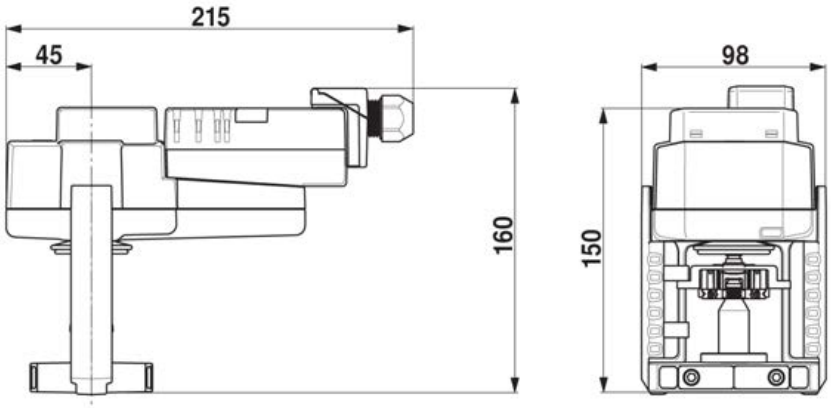
(5) Service plug
For connecting the parameterisation and service tools

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

LED displays (2, green) and (3, yellow)
green: Off; yellow: Illuminated;
Check the supply connections. The phases may have been switched.

Dimensions [mm]

Dimensional drawings



EV24A-TPC

Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 2500N
- Nominal voltage AC/DC 24V
- Control: Open-close, 3-point
- Nominal stroke 40mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2.5W
	Power consumption in rest position	0.5W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 3 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2500N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	40mm
	Actuating time	150s/40mm
	Sound power level motor max.	55dB(A)
	Position indication	Mechanical 5...40mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.22kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The 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.

V1.0..12.2013 • Subject to modification

Product features

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / engaged. The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

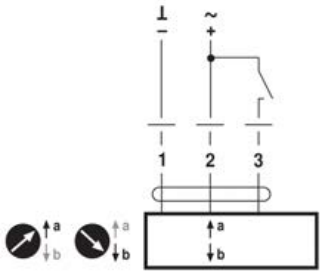
Description	Type
Auxiliary switch	S2A-H

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

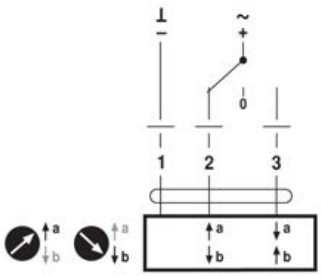
Wiring diagrams

AC/DC 24V, open-close (one-wire)



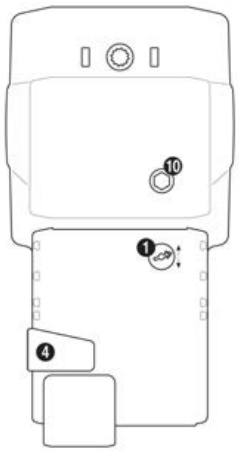
Cable colours:
1 = black
2 = red
3 = white

AC/DC 24V, 3-point



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

Indicators and operating controls



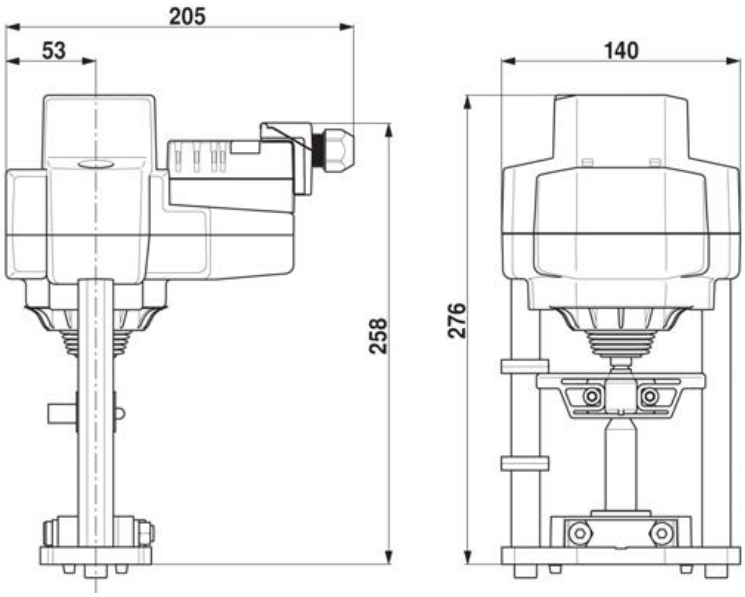
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 2500N
- Nominal voltage AC 230V
- Control: Open-close, 3-point
- Nominal stroke 40mm

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	5.5W
	Power consumption in rest position	1W
	Power consumption for wire sizing	9.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 3 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2500N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	40mm
	Actuating time	150s/40mm
	Sound power level motor max.	55dB(A)
	Position indication	Mechanical 5...40mm stroke
Safety	Protection class IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.25kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / engaged. The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

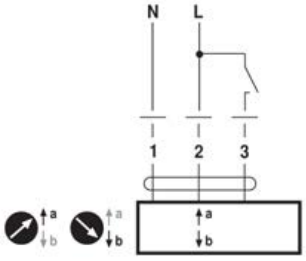
Description	Type
Auxiliary switch	S2A-H

Electrical installation

Notes • Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

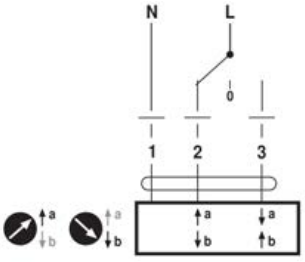
Wiring diagrams

AC 230V, open-close (one-wire)



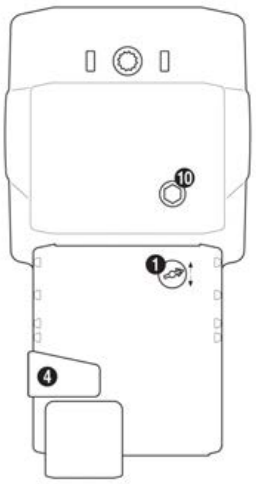
Cable colours:
1 = blue
2 = brown
3 = white

AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white

Indicators and operating controls



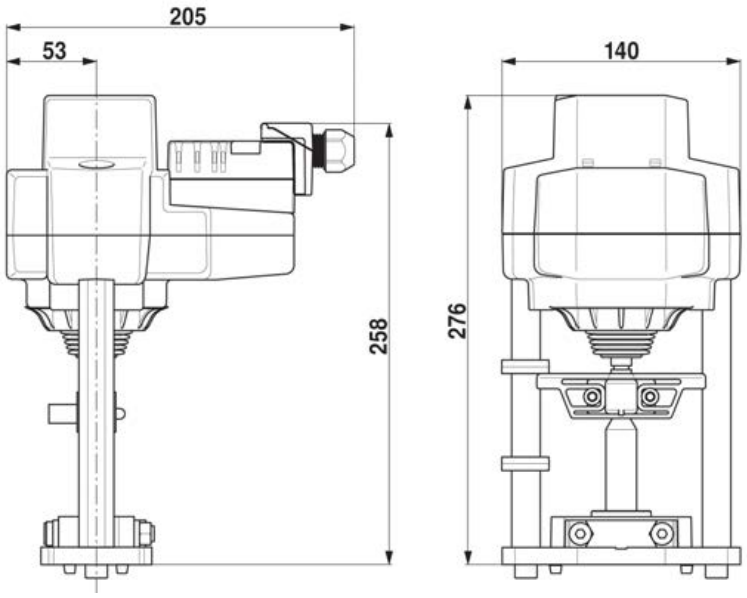
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



EV24A-SZ-TPC

Modulating globe valve actuator for 2-way and 3-way globe valves

- Actuating force 2500N
- Nominal voltage AC/DC 24V
- Control: modulating DC (0)0.5V...10V
- Nominal stroke 40mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	4W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	6VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	40mm
	Actuating time	150s/40mm
	Sound power level motor max.	55dB(A)
	Position indication	Mechanical 5...40mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.32kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.

V1.0..12.2013 • Subject to modification

Safety notes

- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the “Adaption” button. The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

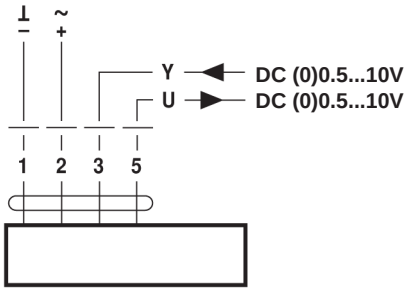
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible
- Direction of stroke switch factory setting: Actuator spindle retracted.

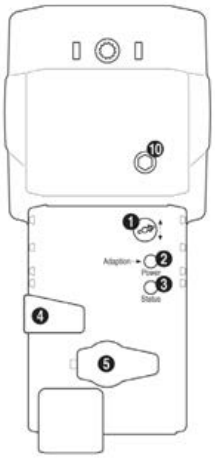
AC/DC 24V, modulating

Wiring diagrams



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

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) LED display yellow
Off: Standard mode
Illuminated: Adaption procedure active

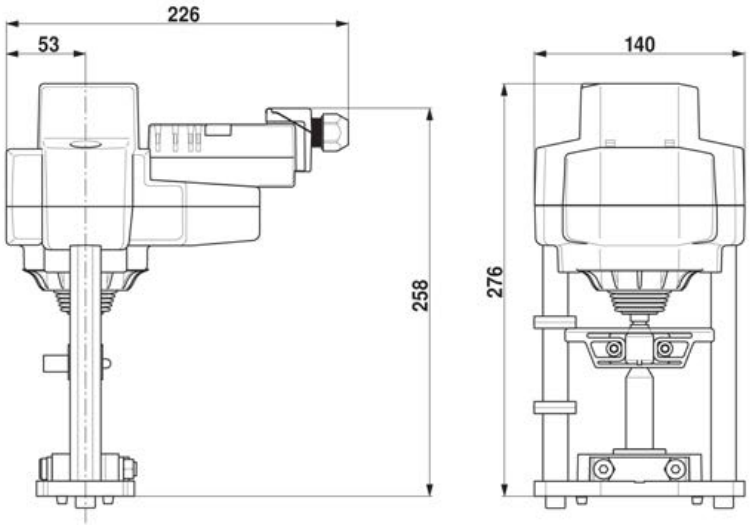
(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(5) Service plug
No function

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



Communication-capable globe valve actuator
for 2-way and 3-way globe valves

- Actuating force 2500N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 40mm

MP-BUS®

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	4W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	6VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	40mm
	Actuating time	150s/40mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	55dB(A)
	Sound power level motor note	55dB(A) @ 90s running time
	Position indication	Mechanical 5...40mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.32kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Adjustable-parameter actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.
The actuator then moves into the position defined by the positioning signal.

Accessories

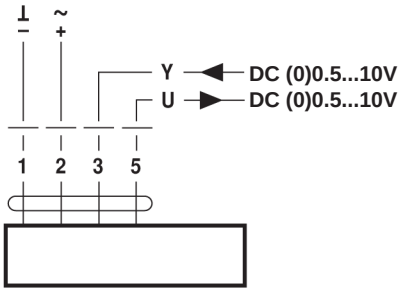
	Description	Type
Electrical accessories	Auxiliary switch add-on, 2 x SPDT	S2A-H
Service tools	Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
	Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

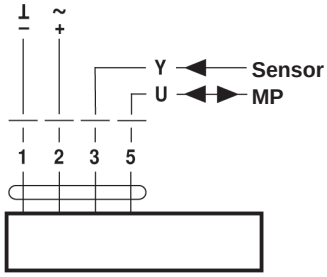
Wiring diagrams

AC/DC 24V, modulating



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

Operation on the MP-Bus

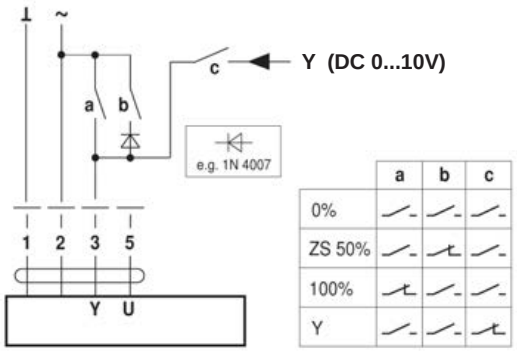


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

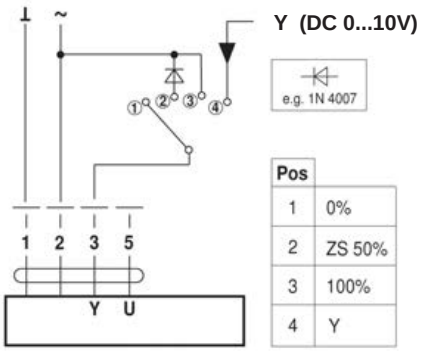
Functions with basic values

Override control with AC 24V with relay contacts



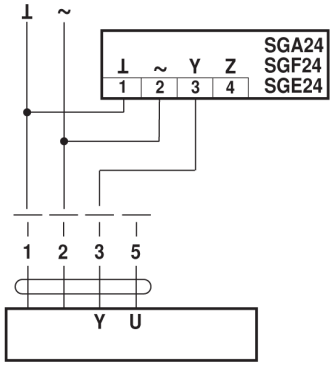
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⌐	⌐
100%	⌐	⌐	⌐
Y	⌐	⌐	⌐

Override control with AC 24V with rotary switch

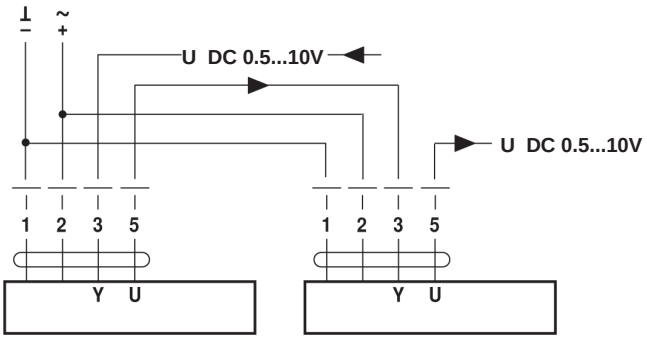


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%

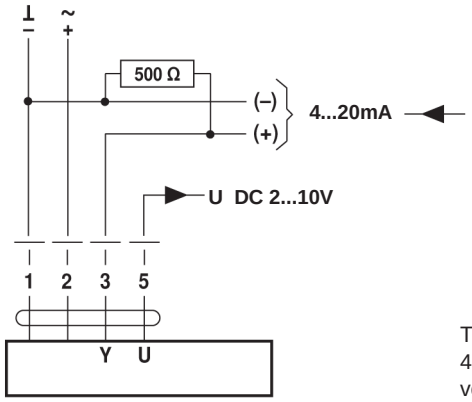


Follow-up control (position-dependent)



Functions

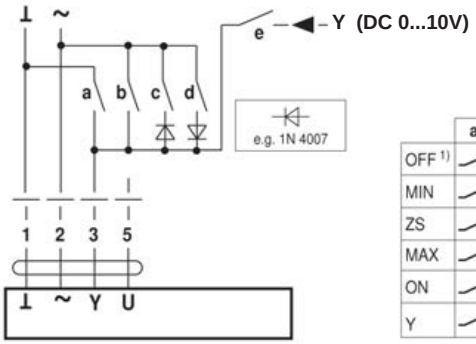
Control with 4...20mA via external resistor



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

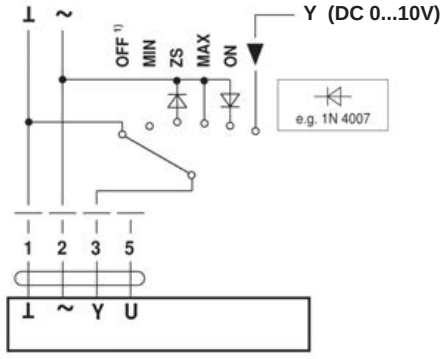
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	t				
MIN					
ZS			t		
MAX		t			
ON				t	
Y					t

Override control and limiting with AC 24V with rotary switch



1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

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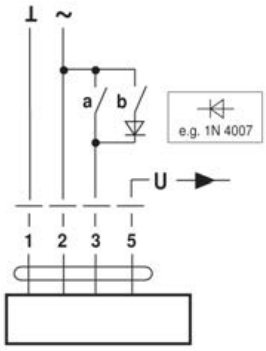
Functions

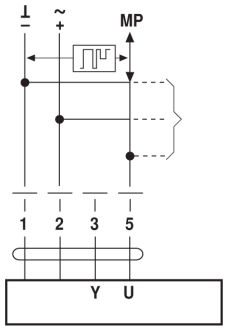
AC 24V, 3-point



a	b		
⊥	~	↓	↑
~	~	—	—
~	⊥	↑	↓
⊥	⊥	↓	↑

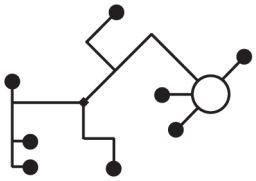
Functions when operated on MP-Bus

Connection on the MP-Bus



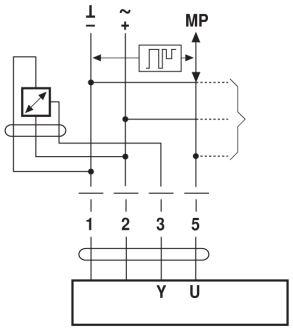
Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology



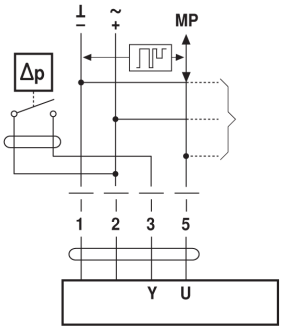
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



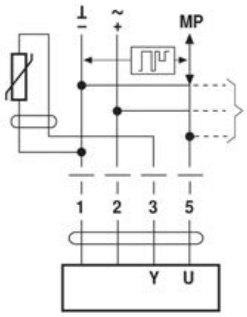
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

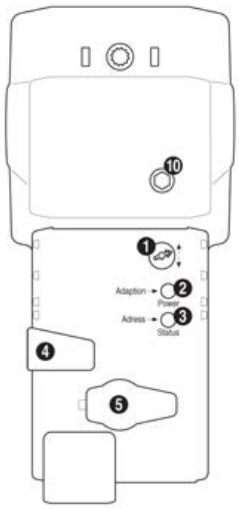
Connection of passive sensors



Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated in green: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) Push-button and LED display yellow
Off: Standard mode
Flickering: MP communication active
Illuminated: Adaption procedure active
Blinking: Request for addressing from MP master
Press button: Confirmation of addressing

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

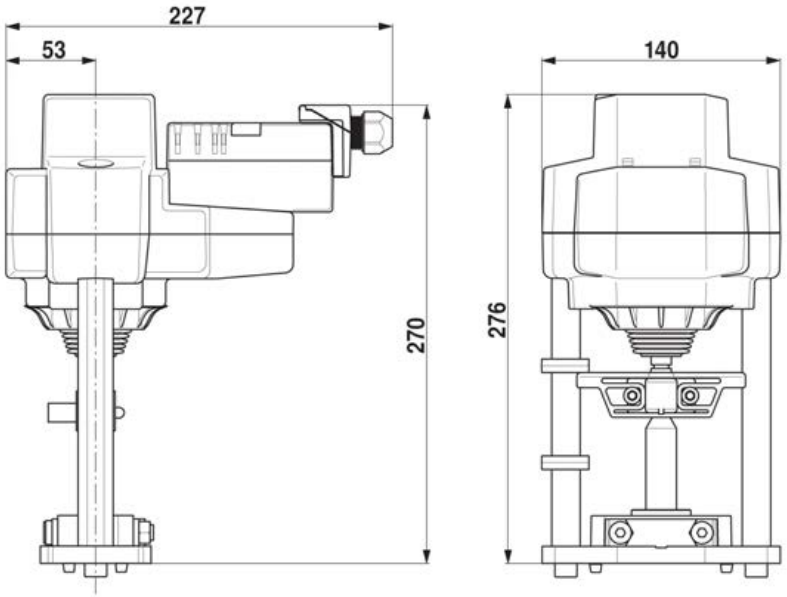
(5) Service plug
For connecting the parameterisation and service tools

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

LED displays (2, green) and (3, yellow)
green: Off; yellow: Illuminated;
Check the supply connections. The phases may have been switched.

Dimensions [mm]

Dimensional drawings



Modulating globe valve actuator for 2-way and 3-way globe valves

- Actuating force 4500N
- Nominal voltage AC/DC 24V
- Control: modulating DC (0)0.5V...10V
- Nominal stroke 40mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	6W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	11VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	4500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	40mm
	Actuating time	150s/40mm
	Sound power level motor max.	55dB(A)
	Position indication	Mechanical 5...40mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.35kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.

Safety notes

- The cable must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.

When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.

Manual triggering of the adaption can be carried out by pressing the “Adaption” button. The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

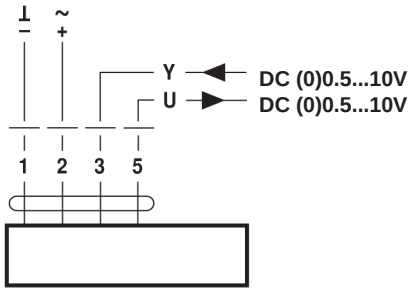
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible
- Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

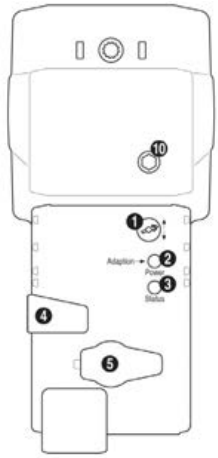
AC/DC 24V, modulating



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

V1.0 .11.2013 • Subject to modification

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) LED display yellow
Off: Standard mode
Illuminated: Adaption procedure active

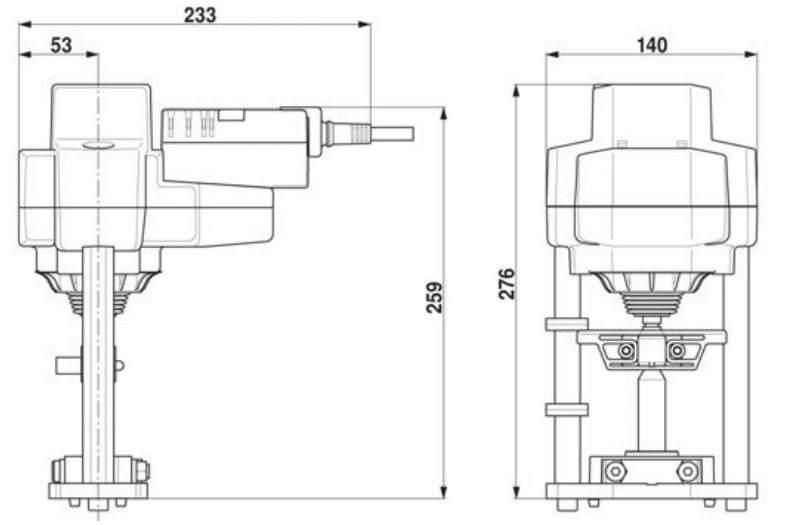
(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(5) Service plug
No function

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



RV24A-MF

Parameterisable globe valve actuator for 2-way and 3-way globe valves

- Actuating force 4500N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 40mm

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	6W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	11VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	4500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	40mm
	Actuating time	150s/40mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	55dB(A)
	Sound power level motor note	65dB(A) @ 90s running time
	Position indication	Mechanical 5...40mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.35kg

V1.0..12.2013 • Subject to modification

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Adjustable-parameter actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Direct mounting
Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Combination valve/actuator
Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.

When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.

Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.

The actuator then moves into the position defined by the positioning signal.

Accessories

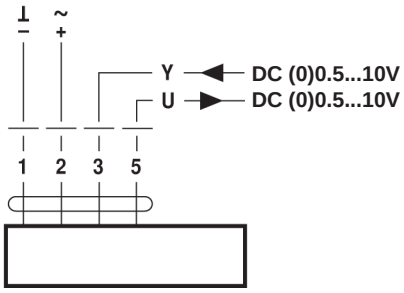
	Description	Type
Electrical accessories	Auxiliary switch add-on, 2 x SPDT	S2A-H
Service tools	Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
	Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC/DC 24V, modulating

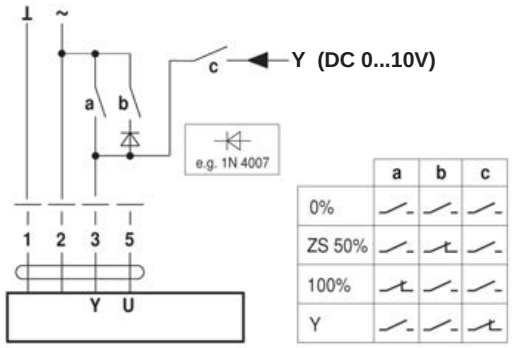


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

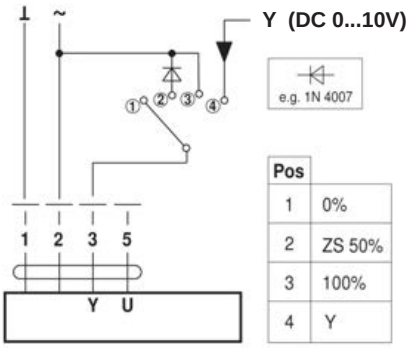
Functions with basic values

Override control with AC 24V with relay contacts



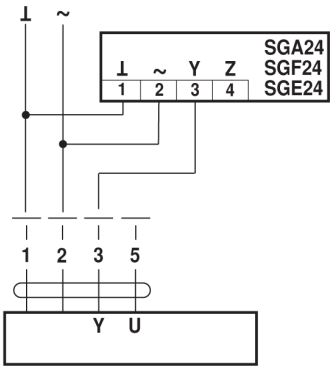
	a	b	c
0%			
ZS 50%			
100%			
Y			

Override control with AC 24V with rotary switch

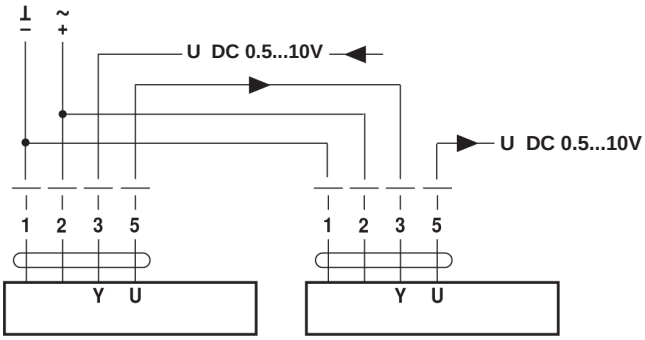


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%

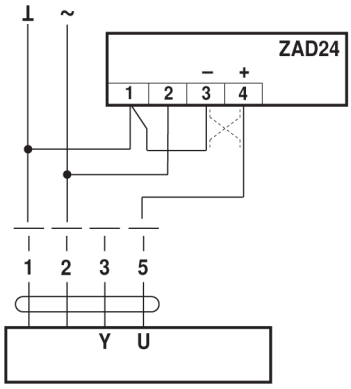


Follow-up control (position-dependent)

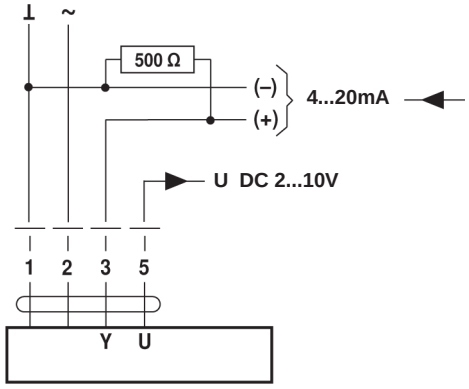


Functions

Position Indication

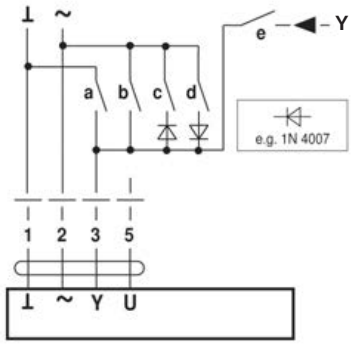


Control with 4...20mA via external resistance



Functions for actuators with specific parameters

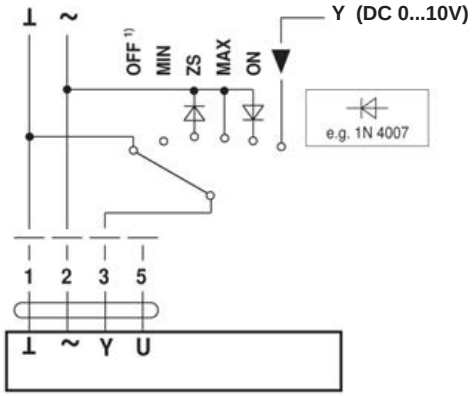
Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	t				
MIN					
ZS			t		
MAX		t			
ON				t	
Y					t

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

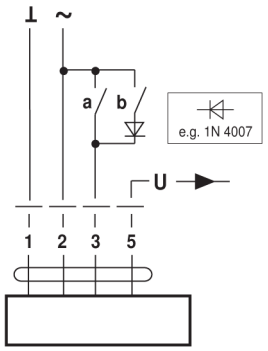
Override control and limiting with AC 24V with rotary switch



1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

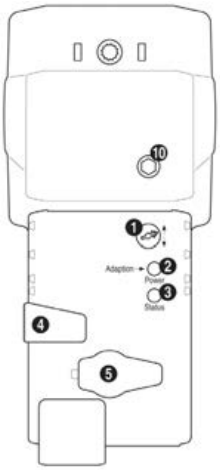
Functions

AC 24V, 3-point



a	b		
⏚	⏦	↓	↑
⏦	⏦	—	—
⏦	⏚	↑	↓
⏚	⏚	↓	↑

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated in green: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) LED display yellow
Off: Standard mode
Illuminated: Adaption procedure active

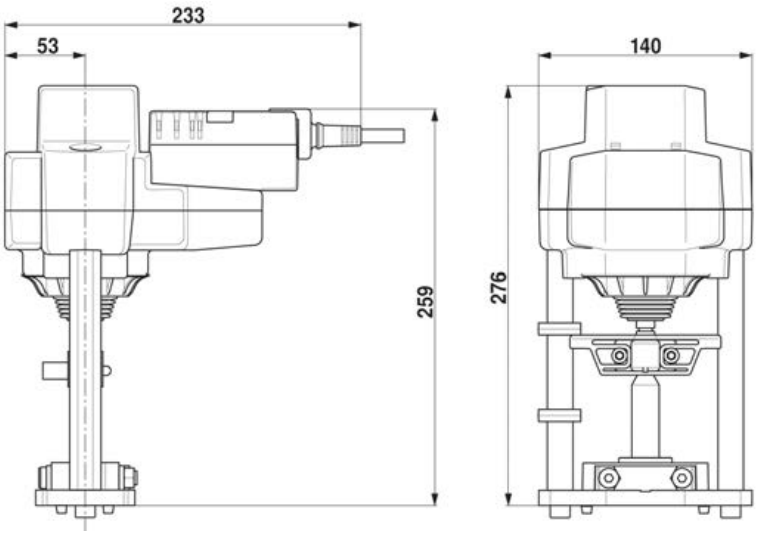
(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(5) Service plug
For connecting the parameterisation and service tools

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



V1.0..12.2013 • Subject to modification

Globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- 3-point control
- Nominal stroke 20mm
- Design life SuperCaps 15 years

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2.5W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	6VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Adjusting emergency setting position	Actuator spindle retracted / extended, adjustable (POP rotary knob)
	Manual override	Gear disengagement with push-button
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Actuating time emergency control function	35s/20mm
	Sound power level motor max.	55dB(A)
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5…20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.61kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation

The actuator moves the valve to the desired operating position at the same time as the integrated capacitors are loaded.

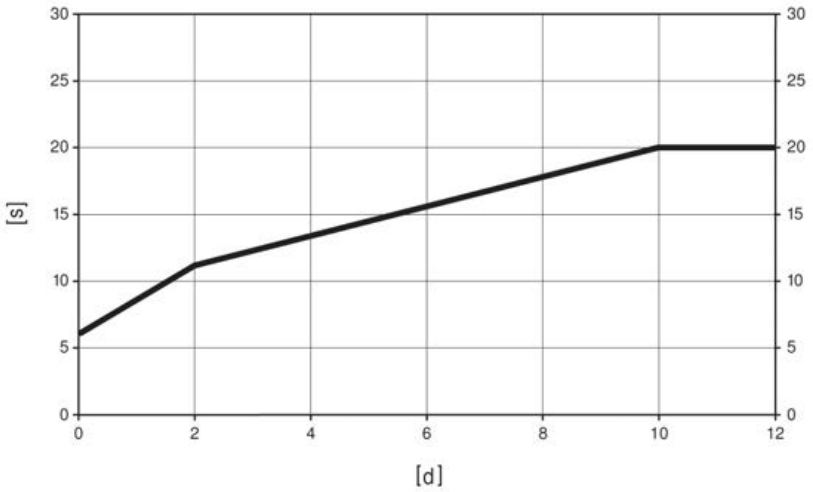
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time



[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

	[d]				
	0	1	2	7	≥10
[s]	6	9	11	16	20

Delivery condition (capacitors)

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

Direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.

The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP). The POP range is in reference to the maximum height of stroke of the actuator.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

V1.0 .11.2013 • Subject to modification

Accessories

Electrical accessories

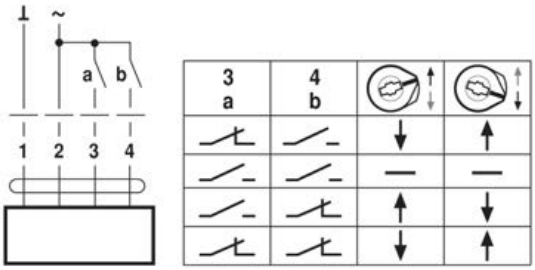
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible
- Direction of stroke switch factory setting: Actuator spindle retracted.

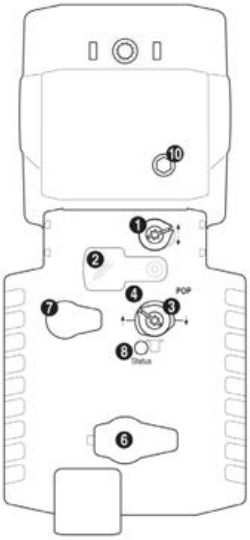
Wiring diagrams

AC 24V, 3-point



Cable colours:
1 = black
2 = red
3 = white
4 = white

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

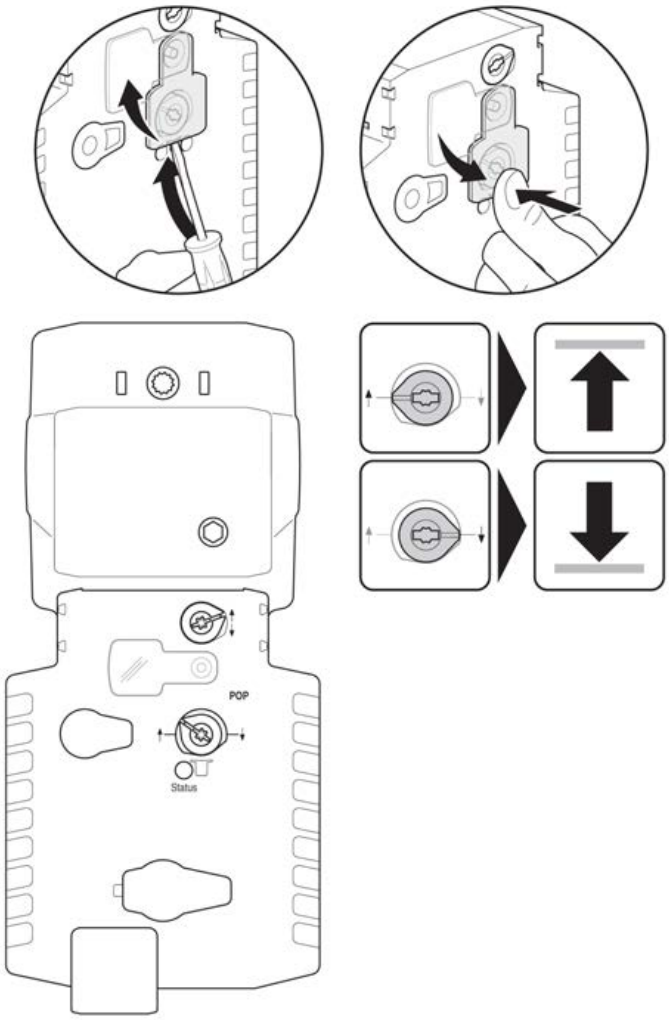
(6) No function

(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(8) LED displays
Green: Off, Not in operation / Pre-charging time SuperCap / Faulty SuperCap
Green: Illuminated, in operation OK
Green: Blinking, POP function active

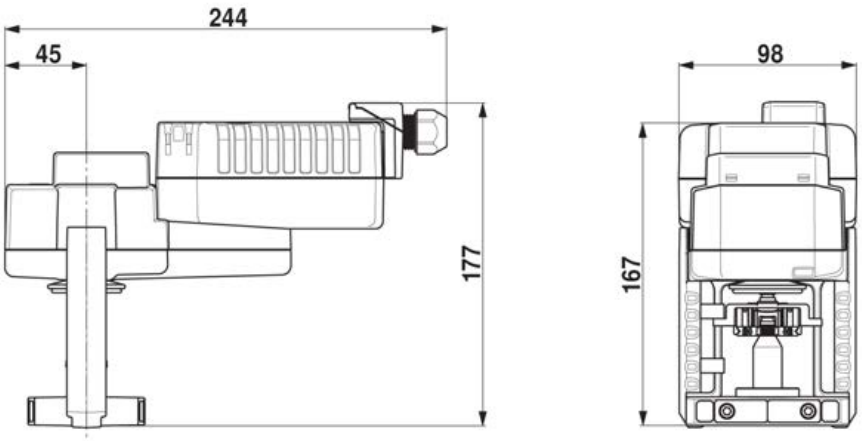
(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



Globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC 230V
- 3-point control
- Nominal stroke 20mm
- Design life SuperCaps 15 years

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	2W
	Power consumption in rest position	1W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Adjusting emergency setting position	Actuator spindle retracted / extended, adjustable (POP rotary knob)
	Manual override	Gear disengagement with push-button
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Actuating time emergency control function	35s/20mm
	Sound power level motor max.	56dB(A)
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5…20mm stroke
Safety	Protection class IEC/EN	II protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.63kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation

The actuator moves the valve to the desired operating position at the same time as the integrated capacitors are loaded.

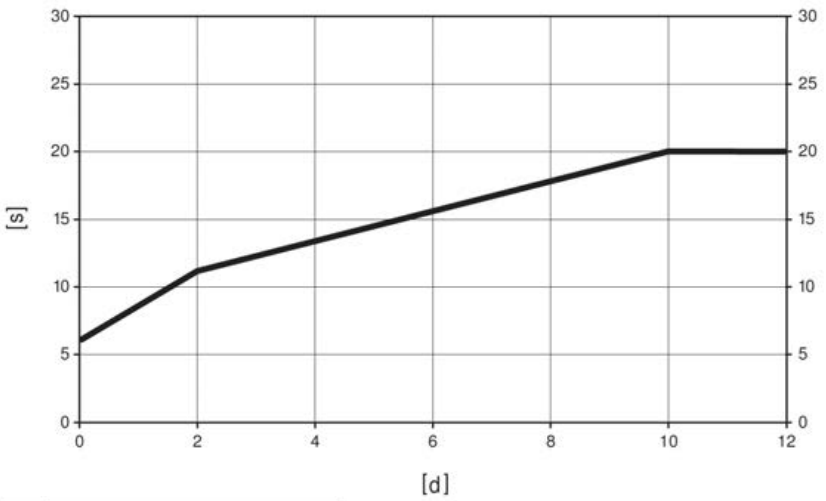
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time



	[d]				
	0	1	2	7	≥10
[s]	6	9	11	16	20

[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

Delivery condition (capacitors)

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

Direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.

The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP). The POP range is in reference to the maximum height of stroke of the actuator.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

Accessories

Electrical accessories

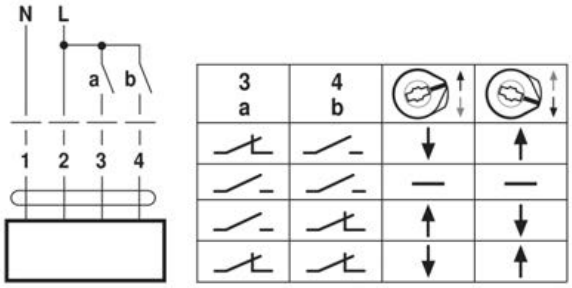
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes • Parallel connection of other actuators possible
• Direction of stroke switch factory setting: Actuator spindle retracted.

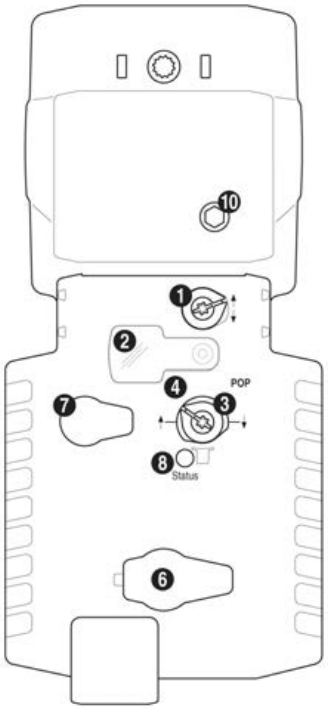
Wiring diagrams

AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white
4 = white

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

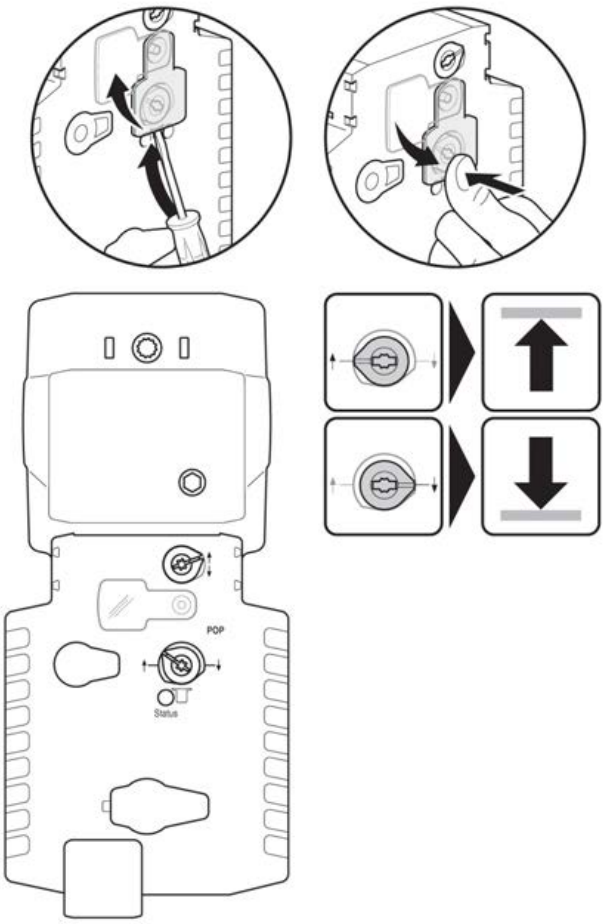
(6) No function

(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(8) LED displays
Green: Off, Not in operation / Pre-charging time SuperCap / Faulty SuperCap
Green: Illuminated, in operation OK
Green: Blinking, POP function active

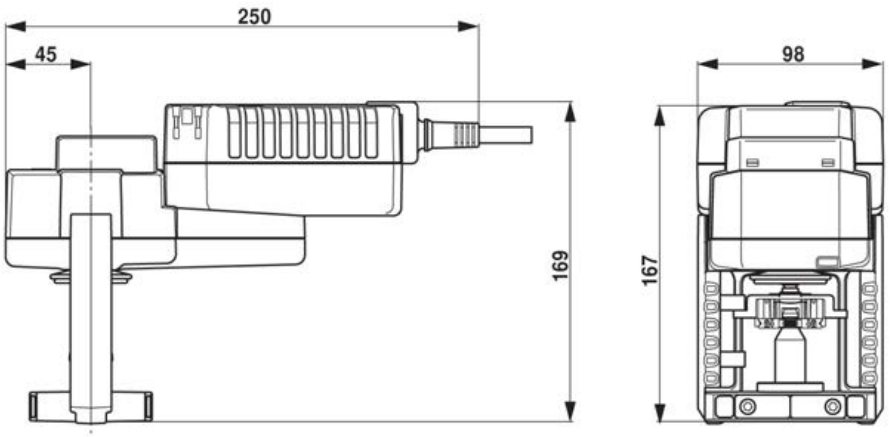
(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



Communication-capable globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 20mm
- Design life SuperCaps 15 years

MP-BUS®

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2.5W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	6VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Adjusting emergency setting position	Actuator spindle 0...100%, adjustable (POP rotary knob)
	Bridging time (PF) variable	1...10s
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Actuating time emergency control function	35s/20mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	55dB(A)
	Sound power level motor note	55dB(A) @ 90s running time
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3

Technical data

Safety	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	1.61kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation

The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal at the same time the integrated capacitors are being charged.

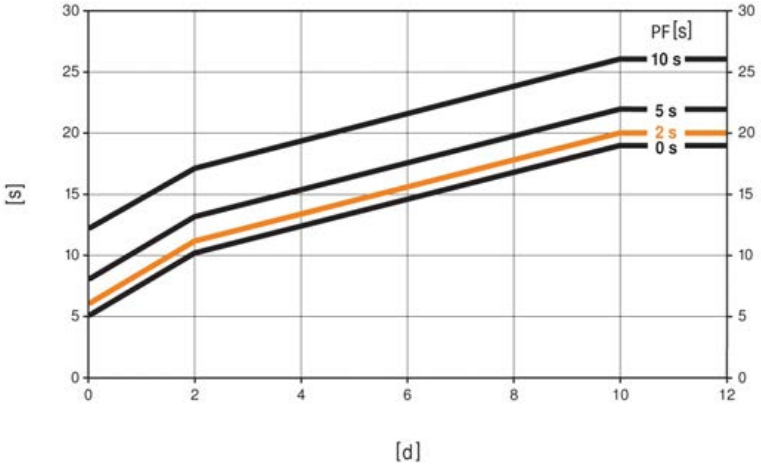
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on the following factors:
– Duration of the voltage interruption
– PF delay time (bridging time)

Typical pre-charging time



PF[s]	[d]				
	0	1	2	7	≥10
0	5	8	10	15	19
2	6	9	11	16	20
5	8	11	13	18	22
10	12	15	17	22	26
	[s]				

[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

Calculation example: In the event of an electricity interruption of 3 days and a set bridging time (PF) of 5s, the actuator requires a pre-charging time of 14s (see graphic) after the voltage has been reconnected.

Product features

Delivery condition (capacitors)

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

Adjustable-parameter actuators

The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.

The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation. The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Adaption of stroke range

The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.

Manual triggering of the adaption can be carried out by pressing the “Adaption” button or with the PC-Tool.

The actuator then moves into the position defined by the positioning signal.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP) from 0% to 100% in 10% increments.

The rotary knob is in reference to the adapted or programmed height of stroke.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

Settings: The rotary knob must be set to the “Tool” position for retroactive settings of the emergency setting position with the Belimo service tool MFT-P. Once the rotary knob is set back to the range 0…100%, the manually set value will have positioning authority.

Bridging time (PF)

Electricity interruptions can be bridged up to a maximum of 10s.

In the event of an electricity interruption, the actuator will remain stationary in accordance with the set bridging time. If the electricity interruption is greater than the set bridging time, then the actuator will move into the selected emergency setting position (POP).

The bridging time set ex-works is 2s. This can be modified at the site of operations with the use of the Belimo service tool MFT-P.

Settings: The rotary knob must not be set to the “Tool” position!

Only the values need to be entered for retroactive adjustments of the bridging time with the Belimo service tool MFT-P.

Accessories

Electrical accessories

Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Service tools

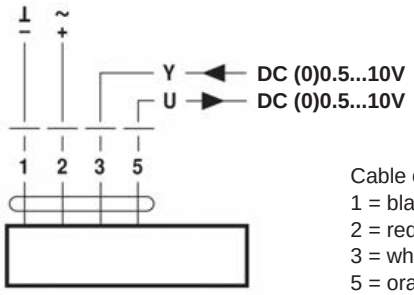
Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

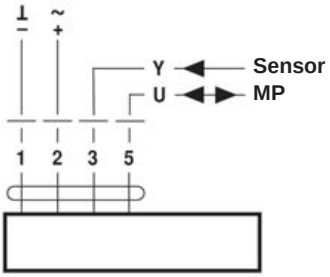
Wiring diagrams

AC/DC 24V, modulating



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

Operation on the MP-Bus

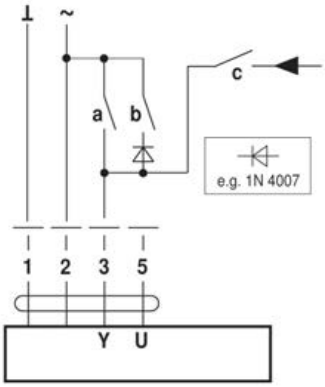


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

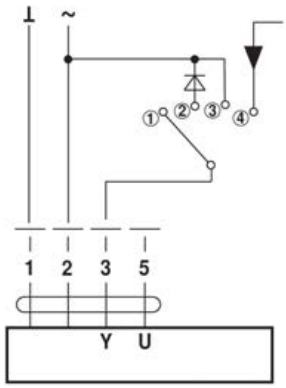
Functions with basic values

Override control with AC 24V with relay contacts



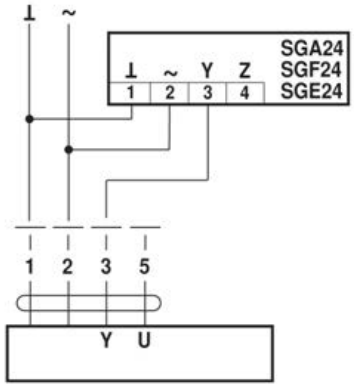
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⌙	⌐
100%	⌙	⌐	⌐
Y	⌐	⌐	⌙

Override control with AC 24V with rotary switch

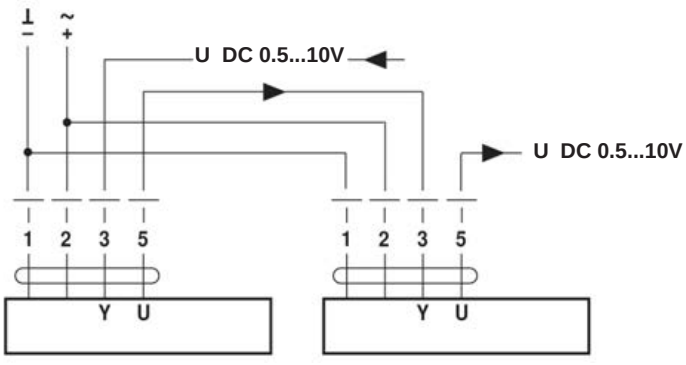


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%



Follow-up control (position-dependent)



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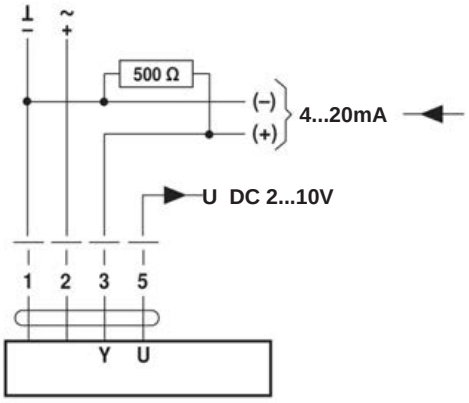
Functions

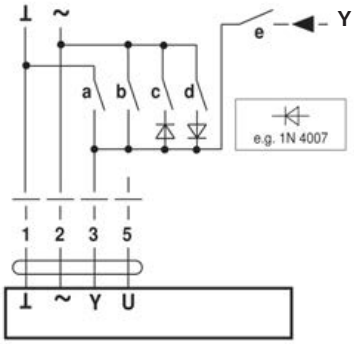
Control with 4...20mA via external resistor



The 500Ω resistor converts the 4...20mA current signal to a voltage signal DC2...10V

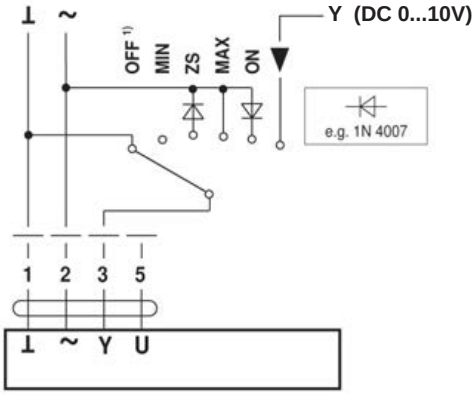
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF 1)	⌐	_	_	_	_
MIN	_	_	_	_	_
ZS	_	_	⌐	_	_
MAX	_	⌐	_	_	_
ON	_	_	_	⌐	_
Y	_	_	_	_	⌐

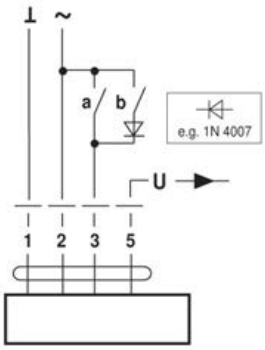
Override control and limiting with AC 24V with rotary switch



1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

Functions

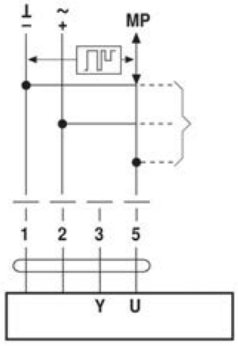
AC 24V, 3-point



a	b		
⊥	⊥	↓	↑
⊥	⊥	—	—
⊥	⊥	↑	↓
⊥	⊥	↓	↑

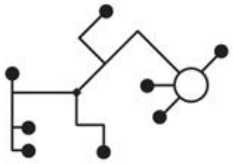
Functions when operated on MP-Bus

Connection on the MP-Bus



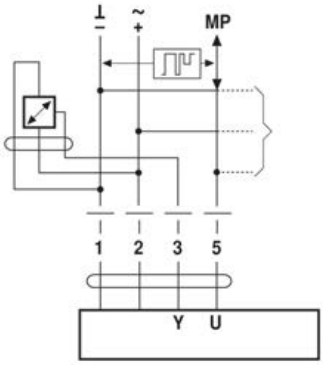
Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology



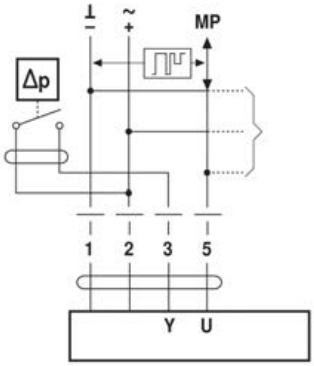
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



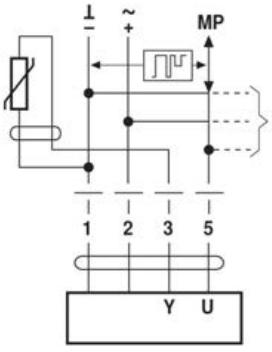
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

Connection of passive sensors



Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

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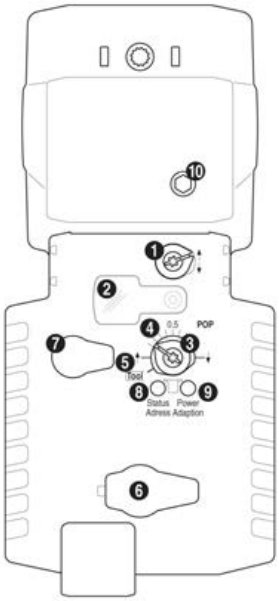
Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

(5) Position for adjustment with tool

(6) Service plug
For connecting the parameterisation and service tool**s**

(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

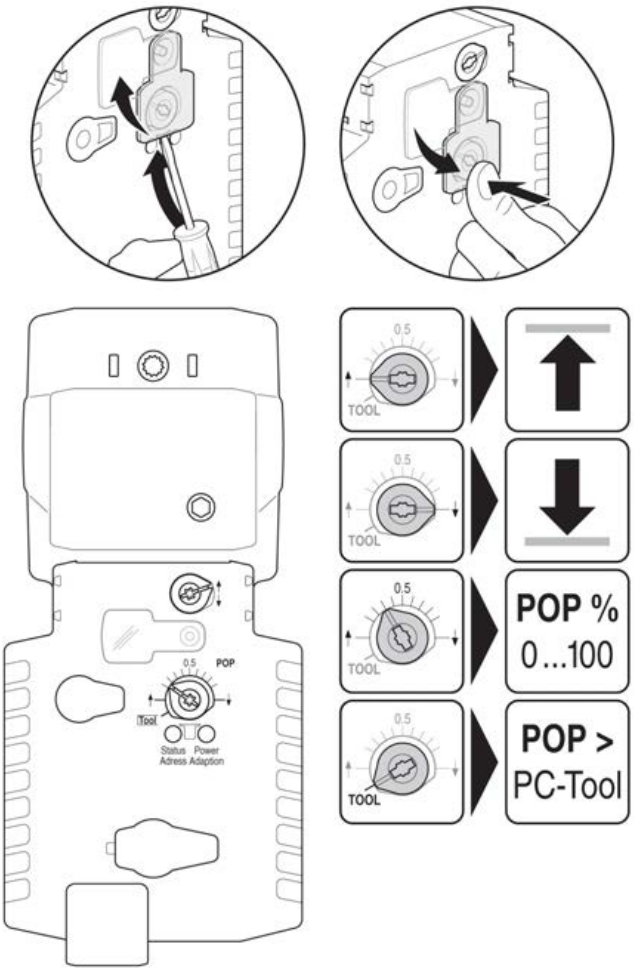
(8) Push-button and LED display yellow
Press button: Confirmation of addressing

(9) Push-button and LED display green
Press button: Triggers stroke adaption, followed by standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

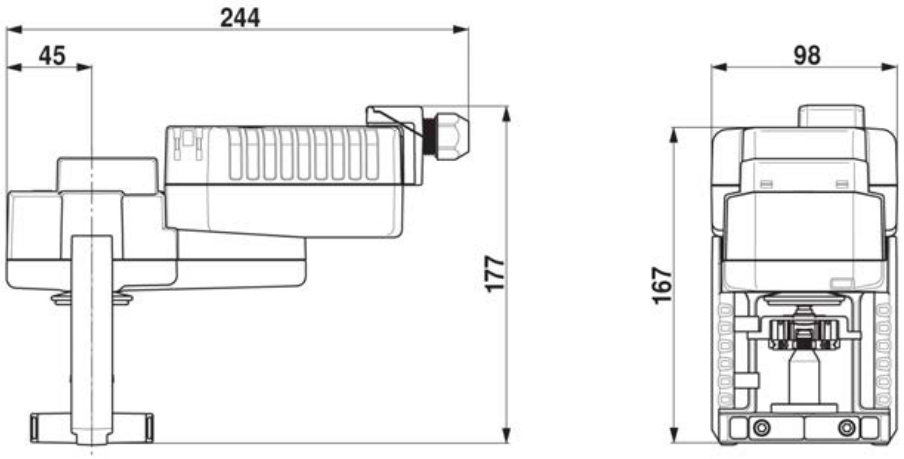
LED displays (8, yellow) and (9, green)
Yellow: Off; Green: Illuminated; In operation OK
Yellow: Off; Green: Blinking; POP function active
Yellow: Illuminated; Green: Off; Pre-charging time SuperCap / Faulty SuperCap / Wiring error in supply
Yellow: Off; Green: Off; Not in operation
Yellow: Illuminated; Green: Illuminated; Adaption procedure active
Yellow: Flickering; Green: Illuminated; Communication active

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



Globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 2000N
- Nominal voltage AC/DC 24V
- 3-point control
- Nominal stroke 32mm
- Design life SuperCaps 15 years

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	5W
	Power consumption in rest position	2W
	Power consumption for wire sizing	9.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2000N
	Adjusting emergency setting position	Actuator spindle retracted / extended, adjustable (POP rotary knob)
	Manual override	Gear disengagement with push-button
	Nominal stroke	32mm
	Actuating time	150s/32mm
	Actuating time emergency control function	35s/32mm
	Sound power level motor max.	60dB(A)
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5…32mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.46kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation

The actuator moves the valve to the desired operating position at the same time as the integrated capacitors are loaded.

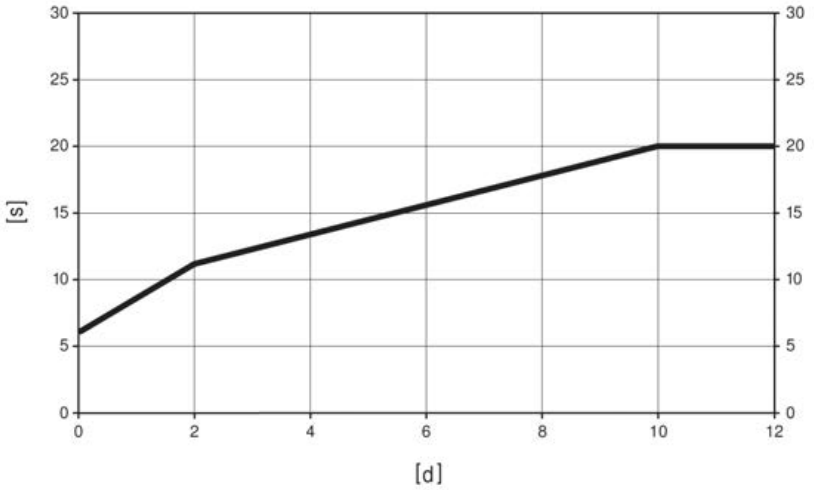
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time



[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

	[d]				
	0	1	2	7	≥10
[s]	6	9	11	16	20

Delivery condition (capacitors)

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

Direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.

The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP). The POP range is in reference to the maximum height of stroke of the actuator.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

Accessories

Electrical accessories

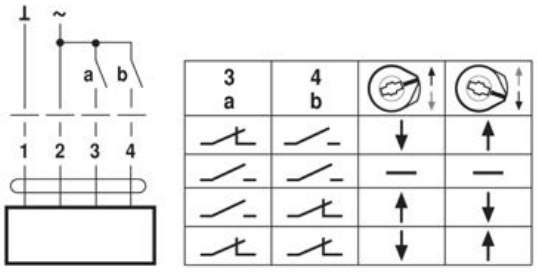
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible
- Direction of stroke switch factory setting: Actuator spindle retracted.

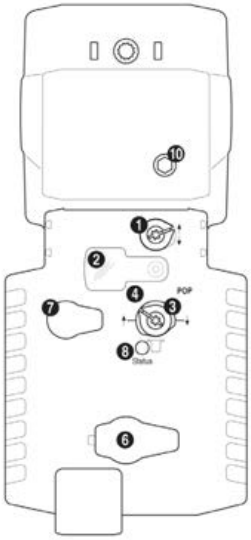
Wiring diagrams

AC/DC 24V, 3-point



Cable colours:
1 = black
2 = red
3 = white
4 = white

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

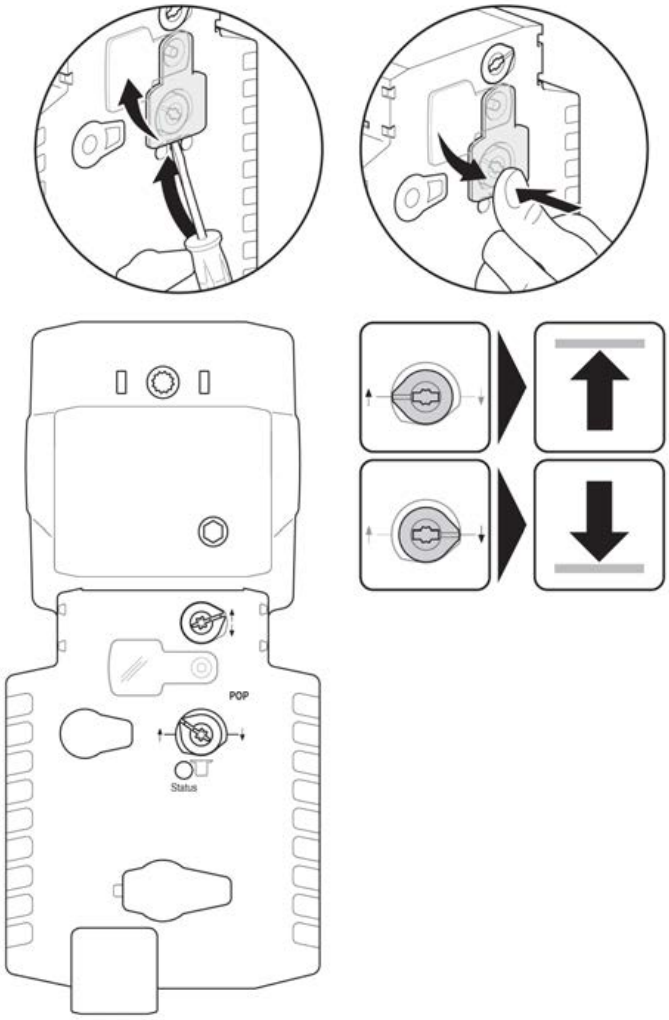
(6) No function

(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(8) LED displays
Green: Off; Not in operation / Pre-charging time SuperCap / Faulty SuperCap
Green: Illuminated; In operation OK
Green: Blinking; POP function active

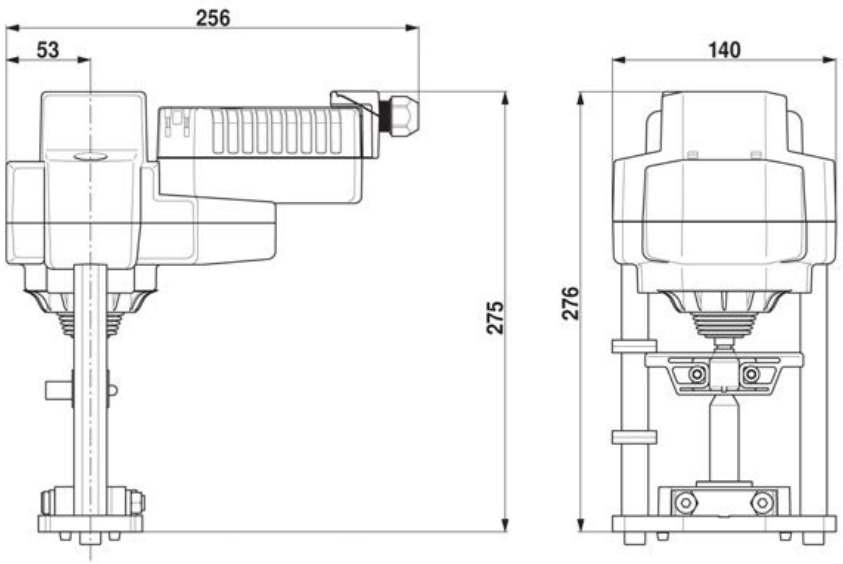
(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



Globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 2000N
- Nominal voltage AC 230V
- 3-point control
- Nominal stroke 32mm
- Design life SuperCaps 15 years

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	3.5W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	6.5VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2000N
	Adjusting emergency setting position	Actuator spindle retracted / extended, adjustable (POP rotary knob)
	Manual override	Gear disengagement with push-button
	Nominal stroke	32mm
	Actuating time	150s/32mm
	Actuating time emergency control function	35s/32mm
	Sound power level motor max.	60dB(A)
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5…32mm stroke
Safety	Protection class IEC/EN	II protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE according to 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	4.4kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation

The actuator moves the valve to the desired operating position at the same time as the integrated capacitors are loaded.

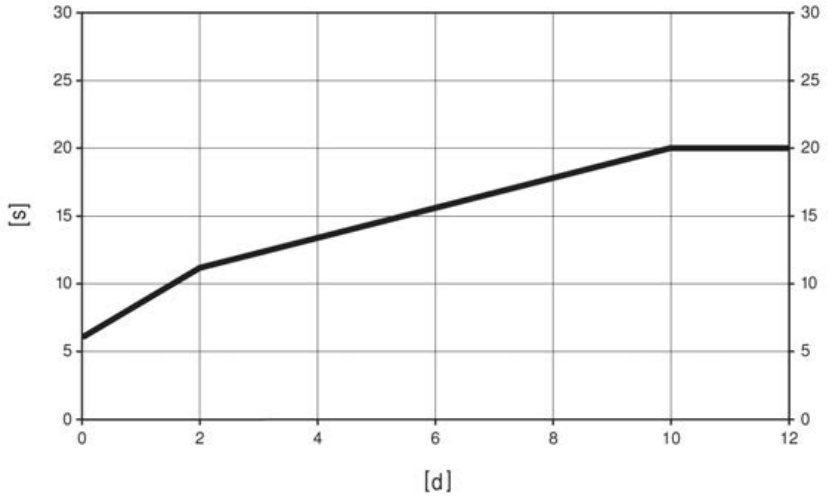
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time



[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

	[d]				
	0	1	2	7	≥10
[s]	6	9	11	16	20

Delivery condition (capacitors)

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

Direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.

The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.
When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP). The POP range is in reference to the maximum height of stroke of the actuator.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

V1.0 .11.2013 • Subject to modification

Accessories

Electrical accessories

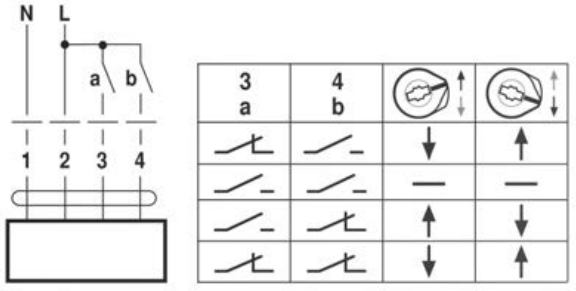
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes • Parallel connection of other actuators possible
• Direction of stroke switch factory setting: Actuator spindle retracted.

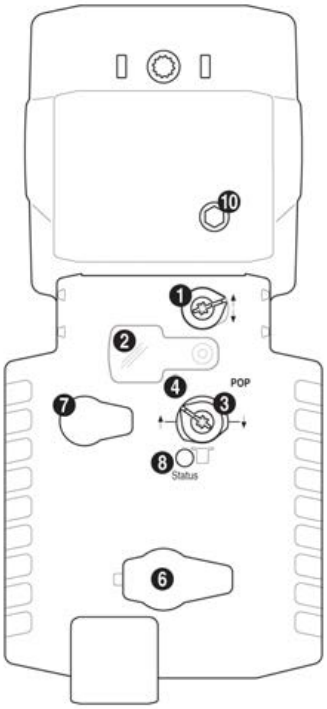
Wiring diagrams

AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white
4 = white

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

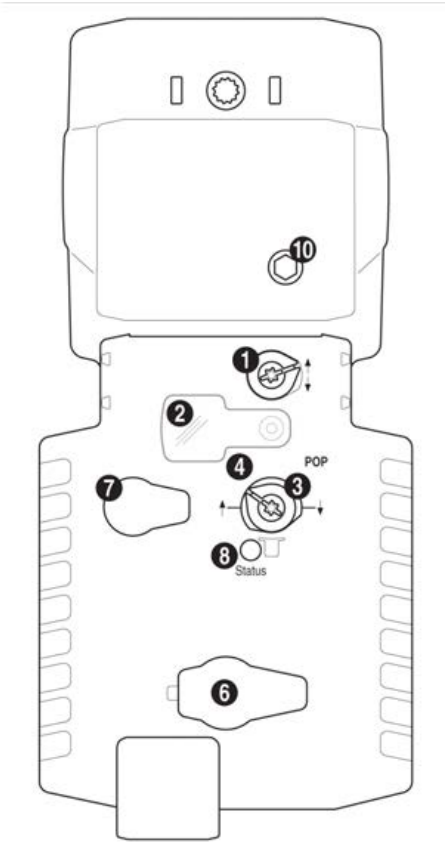
(6) No function

(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(8) LED displays
green: Off; Not in operation / Pre-charging time SuperCap / Faulty SuperCap
green: Illuminated; In operation OK
green: Blinking; POP function active

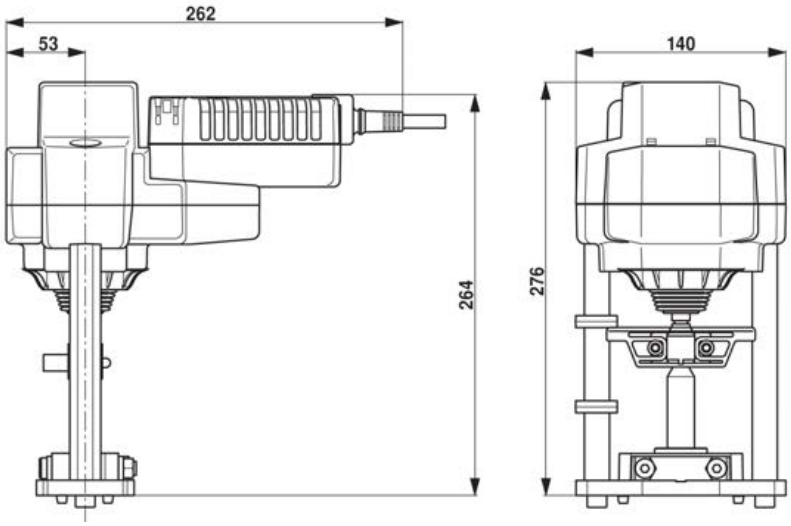
(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



Communication-capable globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 2000N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 32mm
- Design life SuperCaps 15 years

MP-BUS®

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	5W
	Power consumption in rest position	2W
	Power consumption for wire sizing	9.5VA
	Connection supply / control	Terminals 4mm² and cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	2000N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Adjusting emergency setting position	Actuator spindle 0...100%, adjustable (POP rotary knob)
	Bridging time (PF) variable	1...10s
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button
	Nominal stroke	32mm
	Actuating time	150s/32mm
	Actuating time emergency control function	35s/32mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	60dB(A)
	Sound power level motor note	60dB(A) @ 90s running time
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5...32mm stroke
Safety	Service life design life	15 years
	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	0.8kV

Technical data

Safety	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
Weight	Maintenance	Maintenance-free
	Weight approx.	4.46kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation

The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal at the same time the integrated capacitors are being charged.

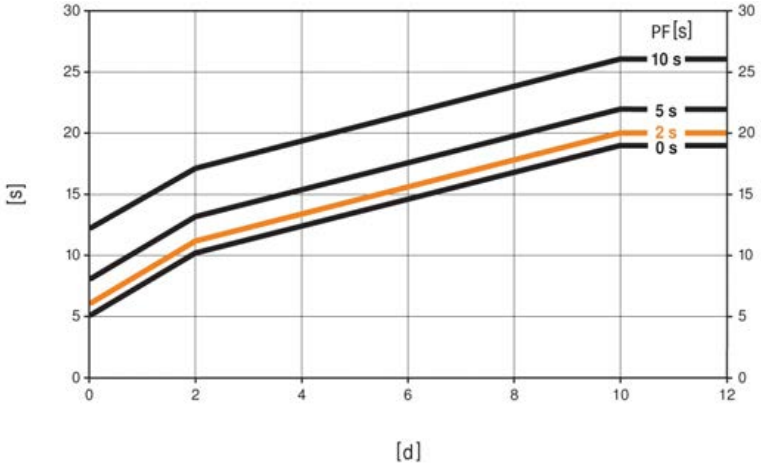
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on the following factors:
– Duration of the voltage interruption
– PF delay time (bridging time)

Typical pre-charging time



PF[s]	[d]				
	0	1	2	7	≥10
0	5	8	10	15	19
2	6	9	11	16	20
5	8	11	13	18	22
10	12	15	17	22	26
	[s]				

[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

Calculation example: In the event of an electricity interruption of 3 days and a set bridging time (PF) of 5s, the actuator requires a pre-charging time of 14s (see graphic) after the voltage has been reconnected.

Product features

Delivery condition (capacitors)

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

Adjustable-parameter actuators

The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Direct mounting

Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated through 360° on the valve neck.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.

The stroke can be adjusted by using a hexagon socket screw key (5mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Combination valve/actuator

Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation. The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Adaption of stroke range

The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.

Manual triggering of the adaption can be carried out by pressing the “Adaption” button or with the PC-Tool.

The actuator then moves into the position defined by the positioning signal.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP) from 0% to 100% in 10% increments.

The rotary knob is in reference to the adapted or programmed height of stroke.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

Settings: The rotary knob must be set to the “Tool” position for retroactive settings of the emergency setting position with the Belimo service tool MFT-P. Once the rotary knob is set back to the range 0…100%, the manually set value will have positioning authority.

Bridging time (PF)

Electricity interruptions can be bridged up to a maximum of 10s.

In the event of an electricity interruption, the actuator will remain stationary in accordance with the set bridging time. If the electricity interruption is greater than the set bridging time, then the actuator will move into the selected emergency setting position (POP).

The bridging time set ex-works is 2s. This can be modified at the site of operations with the use of the Belimo service tool MFT-P.

Settings: The rotary knob must not be set to the “Tool” position!

Only the values need to be entered for retroactive adjustments of the bridging time with the Belimo service tool MFT-P.

Accessories

Electrical accessories

Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Service tools

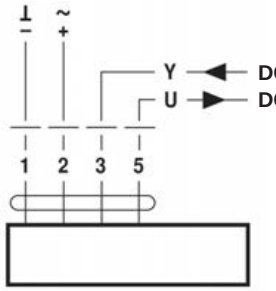
Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

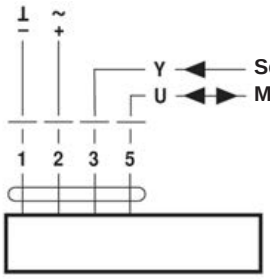
Wiring diagrams

AC/DC 24V, modulating



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

Operation on the MP-Bus

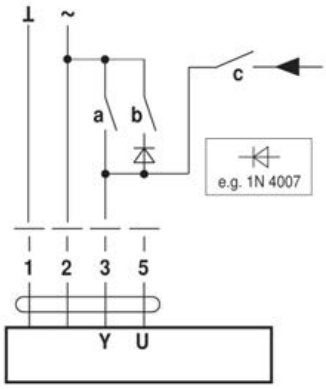


Cable colours:
1 = black
2 = red
3 = white
5 = orange

Functions

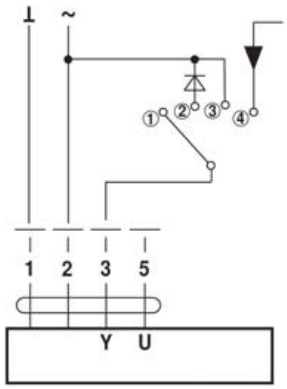
Functions with basic values

Override control with AC 24V with relay contacts



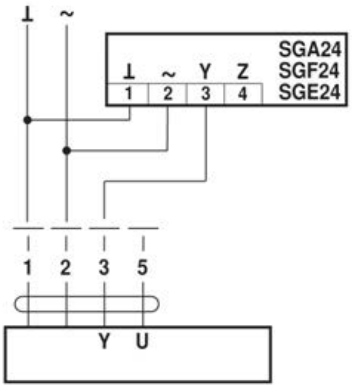
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⌐	⌐
100%	⌐	⌐	⌐
Y	⌐	⌐	⌐

Override control with AC 24V with rotary switch

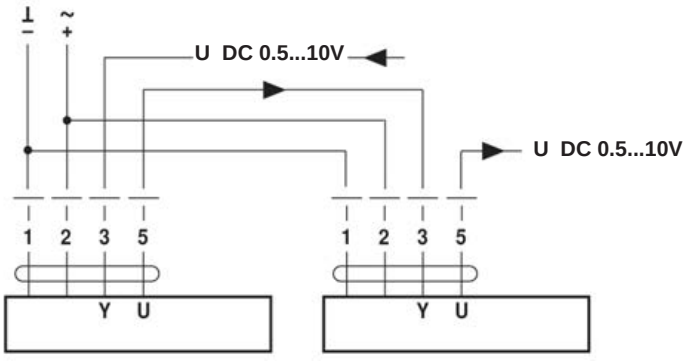


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%



Follow-up control (position-dependent)



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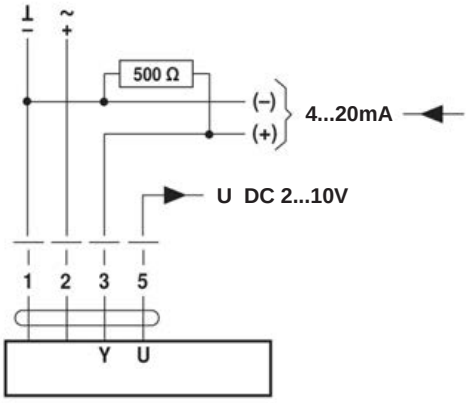
Functions

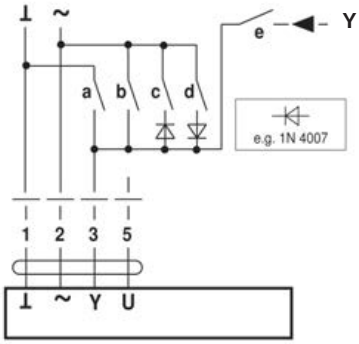
Control with 4...20mA via external resistor



The 500Ω resistor converts the 4...20mA current signal to a voltage signal DC2...10V

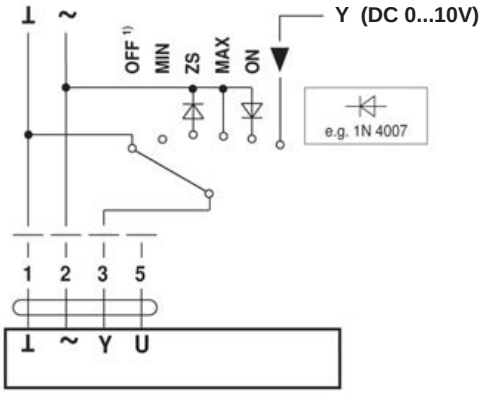
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	t				
MIN					
ZS			t		
MAX		t			
ON				t	
Y					t

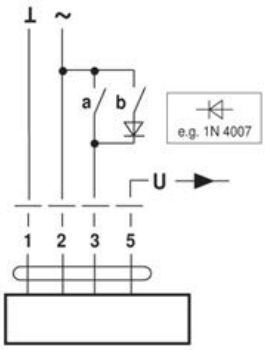
Override control and limiting with AC 24V with rotary switch



1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

Functions

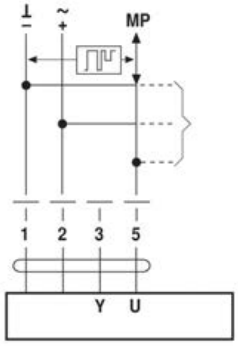
AC 24V, 3-point



a	b		
⊥	⊥	↓	↑
⊥	⊥	—	—
⊥	⊥	↑	↓
⊥	⊥	↓	↑

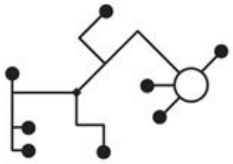
Functions when operated on MP-Bus

Connection on the MP-Bus



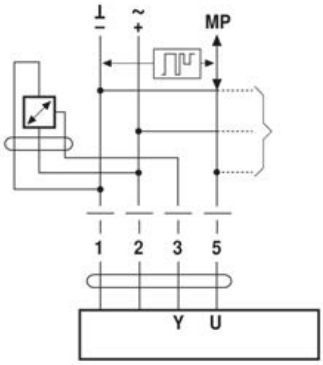
Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology



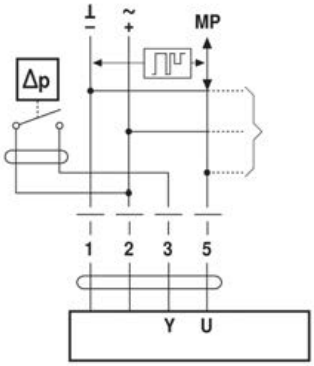
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



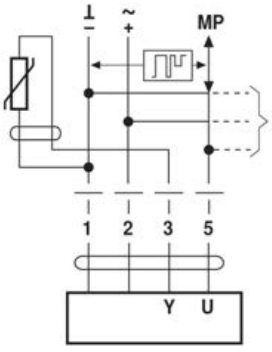
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

Connection of passive sensors



Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

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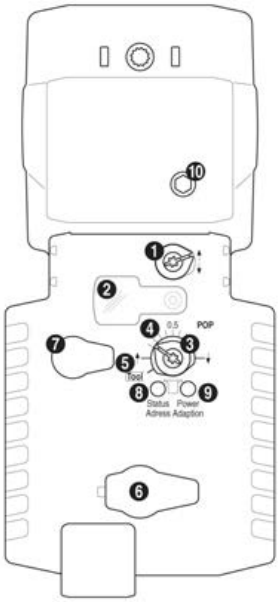
Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

(5) Position for adjustment with tool

(6) Service plug
For connecting the parameterisation and service tools

(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

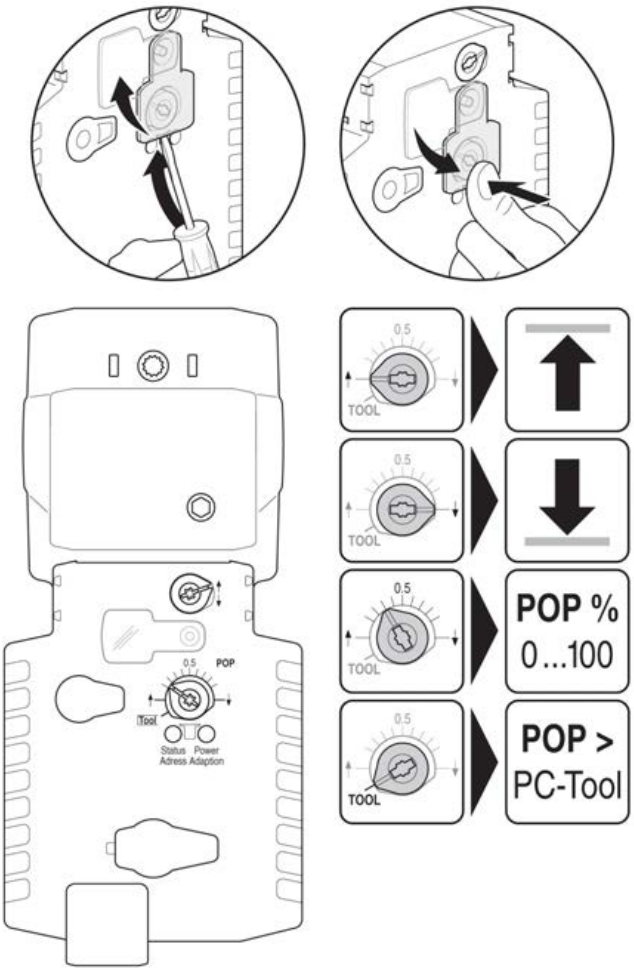
(8) Push-button and LED display yellow
Press button: Confirmation of addressing

(9) Push-button and LED display green
Press button: Triggers stroke adaption, followed by standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

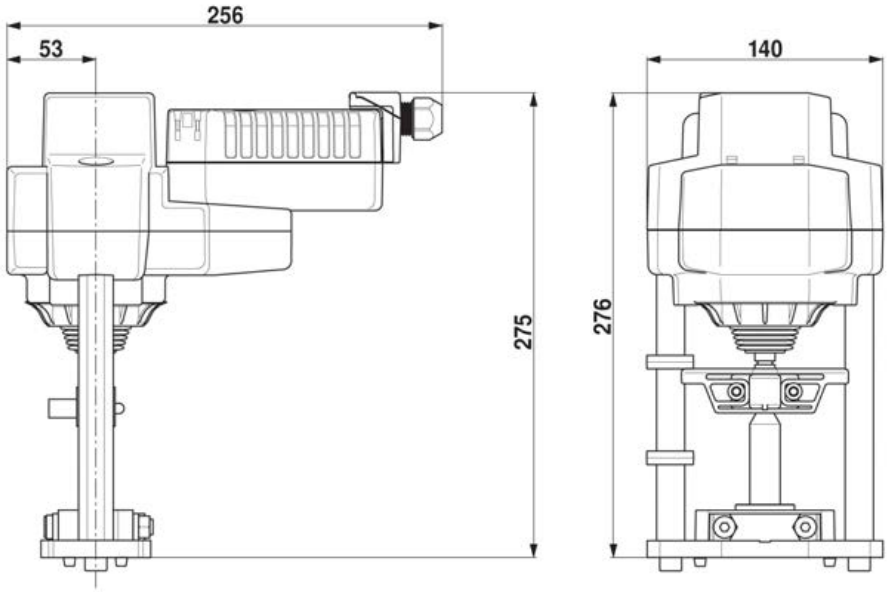
LED displays (8, yellow) and (9, green)
Yellow: Off; Green: Illuminated; In operation OK
Yellow: Off; Green: Blinking; POP function active
Yellow: Illuminated; Green: Off; Pre-charging time SuperCap / Faulty SuperCap / Wiring error in supply
Yellow: Off; Green: Off; Not in operation
Yellow: Illuminated; Green: Illuminated; Adaption procedure active active
Yellow: Flickering; Green: Illuminated; Communication active

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



Universal Linkage Selection Guide (For NV..-RE, SV..-RE only)

Control Valve Manufacturer Valve Range		DN[mm] min. / max.	DN25 or below, Actuating force: 1000N			DN80 or below, Actuating force: 1500N		
			On/Off AC/DC 24V	MP-Bus / Modulating AC/DC 24V 2..10V/0..10V	On/Off AC 230V	On/Off AC/DC 24V	MP-Bus / Modulating AC/DC 24V 2..10V/0..10V	On/Off AC 230V
ARI / Johnson EU	BR485/486/487	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	BR486	15 / 50						
Belimo	S6..	20 / 80	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
Cazzaniga	V2BM	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	V3BM	15 / 50						
Controlli	VSB	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	VMB	15 / 50						
	VSB...F	15 / 50						
	VMB...F	15 / 50						
Danfoss	(H)VF2	25 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	(H)VF3	15 / 50						
	(H)VL2	15 / 50						
	(H)VL3	15 / 50						
	(H)VRB2	15 / 50						
	(H)VRB3	15 / 50						
	(H)VRG2	15 / 50						
	(H)VRG3	15 / 50						
	(H)VE2	25 / 50						
	(H)VFS2	15 / 20						
	VR2	15 / 25						
Elesta	BKG	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	BKF	15 / 50						
Honeywell	V5011R	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	V5013R	15 / 50						
	V5015	25 / 80						
	V5049A	15 / 65						
	V5050A	15 / 80						
	V5095A	20 / 80						
	V5328A	15 / 80						
	V5329A	15 / 80						
	V5329C	15 / 80						
HORA	BR206GF	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	BR206GG	15 / 50						
	BR216GF	15 / 50						
	BR216GG	15 / 50						
	BR216RA	15 / 50						
	BR216RA-TW	15 / 50						
	BR216RGA	1/2“/ 2“						
	BR225RG	15 / 25						
	BR306GF	15 / 50						
	BR306GG	15 / 50						
	BR316GF	15 / 50						
	BR316GG	15 / 50						
	BR316RA	15 / 50						
	BR316RA-TW	15 / 50						
	BR316RGA	15 / 50						
	BR316RGA MS	3/4”						

Notes:

The list of linkages is continually growing; if the valve is not on the list, contact your nearest Belimo representative.

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BELIMO

Control Valve Manufacturer Valve Range		DN[mm] min. / max.	DN25 or below, Actuating force: 1000N			DN80 or below, Actuating force: 1500N		
			On/Off AC/DC 24V	MP-Bus / Modulating AC/DC 24V 2..10V/0..10V	On/Off AC 230V	On/Off AC/DC 24V	MP-Bus / Modulating AC/DC 24V 2..10V/0..10V	On/Off AC 230V
Johnson	VB7216	20 / 20						
	VB7216	15 / 25						
	VB7216	32 / 50						
	VB7816	15 / 25						
	VB7816	32 / 50						
	VBD-4xx4	15 / 40						
	VBD-4xx8	15 / 40						
	VBF-0xx4	15 / 50						
	VBF-0xx8	15 / 50						
	VBF-2xx4	15 / 50						
	VBF-2xx8	15 / 50						
	VG7201	15 / 20						
	VG7201	25 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	VG7203	15 / 20						
	VG7203	25 / 50						
	VG7401	15 / 20						
	VG7401	25 / 50						
	VG7403	15 / 20						
	VG7403	25 / 50						
	VG7802	15 / 20						
	VG7802	25 / 50						
	VG7804	15 / 20						
	VG7804	25 / 50						
	VG7 xx 1	15 / 50						
	VG82xx/	15 / 40						
	VG88xx/	15 / 40						
Kieback & Peter	RB	15 / 50						
	RB..-BK	15 / 50						
	RB..SO17	15 / 50						
	RB..SO17-BK	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	RF	15 / 50						
	RF..-BF	15 / 50						
	RK	15 / 50						
	RK..-BF	15 / 50						
LDM	RV102 EBK	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
MUT	MK	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
Osby	MTV	15 / 50						
	MTR	15 / 50						
	GTV	25 / 40	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	RTV	25 / 40						
	BTV	25 / 40						
Ram	Ram	15 / 40	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
Riccius+Seibt	RGV315 /4	15 / 15	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
Samson	V2001	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
Satchwell	MJF	15 / 32						
	MZ	15 / 15	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	VSF	15 /32						
	VZ	15/ 50						

Notes:

The list of linkages is continually growing; if the valve is not on the list, contact your nearest Belimo representative.

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BELIMO

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			On/Off AC/DC 24V	MP-Bus / Modulating AC/DC 24V 2..10V/0..10V	On/Off AC 230V	On/Off AC/DC 24V	MP-Bus / Modulating AC/DC 24V 2..10V/0..10V	On/Off AC 230V
Sauter	B6F..F	15 / 50						
	B6G..F	15 / 50						
	B6R..F	15 / 50						
	B6S..F	15 / 50						
	B4F..F	20 / 32						
	BT43B	15 / 40						
	BXD..F	15 / 40						
	BXE..F	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	V1T	15 / 15						
	V6F..F	15 / 50						
	V6G..F	15 / 50						
	V6R..F	15 / 50						
	V6S..F	15 / 50						
	VXD..F	15 / 50						
	VXE..F	15 / 50						
Siemens	VPF52E	15 / 40						
	VPF52F	15 / 40						
	VVF21	15 / 80						
	VVF31	25 / 80						
	VVF40	15 / 80						
	VVF41	15/80						
	VVF45	50						
	VVF52	15 / 40	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	VVF61	15 / 32						
	VVG41	15 / 50						
	VXF21	20 / 80						
	VXF31	25 / 80						
	VXF40	15 / 80						
	VXF41	15 / 40						
	VXF61	15 / 32						
	VXG41	15 / 50						
SpiraxSarco	B Series	15 / 50						
	K Series	15 / 50						
	LE31	15 / 50						
	LE33	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	KE43	15 / 50						
	KE71	15 / 50						
	KE73	15 / 50						
	MKII	15 / 50						
TAC	V241	15 / 50						
	V294	15 / 15	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	V294	20 / 32						
	V341	15 / 50						
Trend	V348	15 / 50						
	GIBT/21	15 / 50						
	GIBT/31	15 / 50	NV24A-RE	NV24A-MP-RE	NV230A-RE	SV24A-RE	SV24A-MP-RE	SV230A-RE
	GIBF/21	15 / 50						
	GIBF/31	15 / 50						

Notes:

The list of linkages is continually growing; if the valve is not on the list, contact your nearest Belimo representative.

NV24A-RE

Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- Control: Open-close, 3-point
- Nominal stroke 20mm

RETROFIT

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	1.5W
	Power consumption in rest position	0.5W
	Power consumption for wire sizing	3VA
	Connection supply / control	Terminals 4mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	45dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.53kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The 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.

V1.0..12.2013 • Subject to modification

Product features

Installation on third-party valves

The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, providing it is permitted by the size of the installed

Installation on Belimo valves

Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override

Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

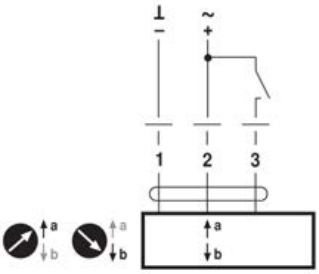
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

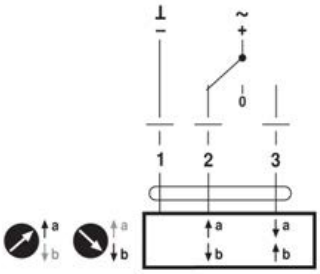
Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

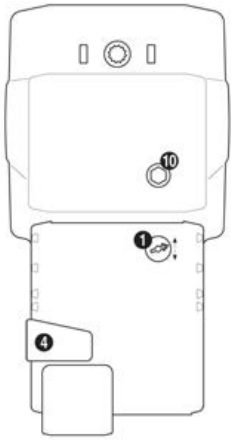
AC/DC 24V, open-close (one-wire)



AC/DC 24V, 3-point



Indicators and operating controls



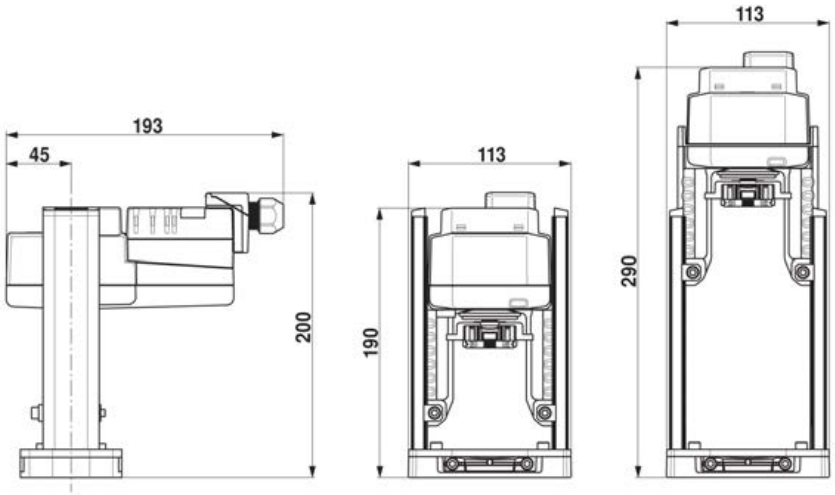
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC 230V
- Control: Open-close, 3-point
- Nominal stroke 20mm

RETROFIT

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	2W
	Power consumption in rest position	1W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Terminals 4mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	45dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated current voltage supply	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.53kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Installation on third-party valves

The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, providing it is permitted by the size of the installed valve.

Installation on Belimo valves

Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override

Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

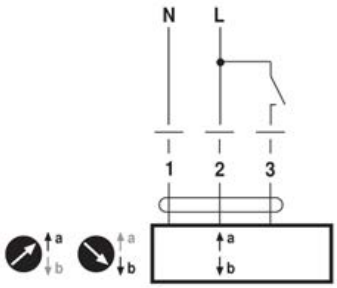
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

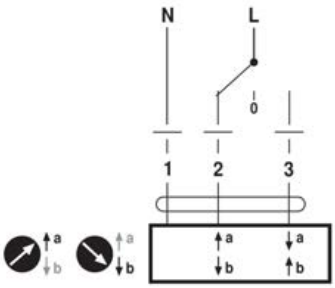
Notes • Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC 230V, open-close (one-wire)



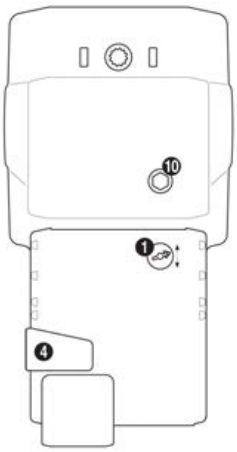
AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white

V1.0 .11.2013 • Subject to modification

Indicators and operating controls



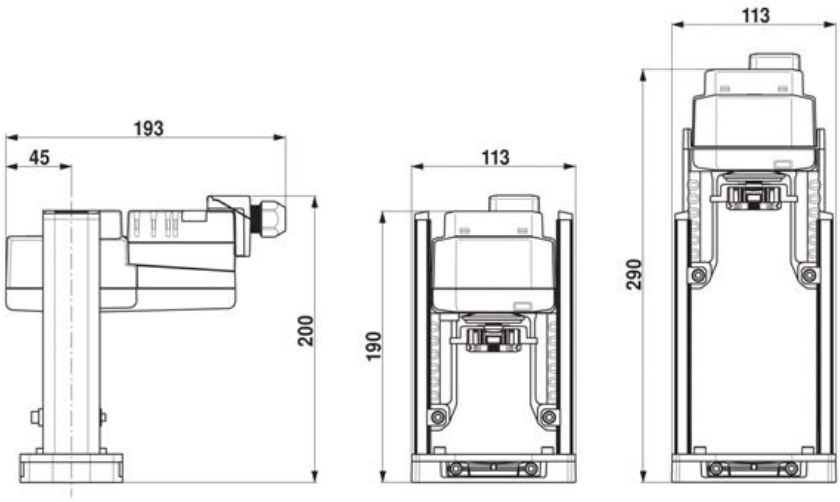
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



NV24A-MP-RE

Communication-capable globe valve actuator
for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5V...10V, variable
- Nominal stroke 20mm

MP-BUS
RETROFIT

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	3W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Terminals 4mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	45dB(A)
	Sound power level motor note	55dB(A) @ 90s running time
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.5kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Adjustable-parameter actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Installation on third-party valves
The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, provided it is permitted by the size of the installed valve.

Installation on Belimo valves
Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.
The actuator then moves into the position defined by the positioning signal.

Accessories

Electrical accessories

Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Service tools

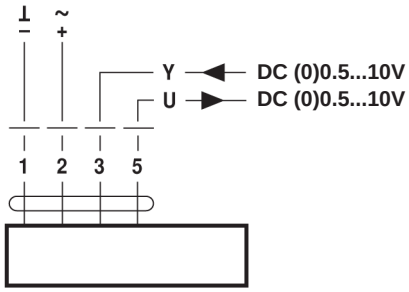
Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

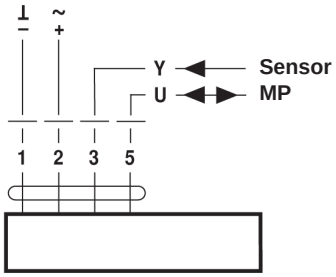
Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC/DC 24V, modulating



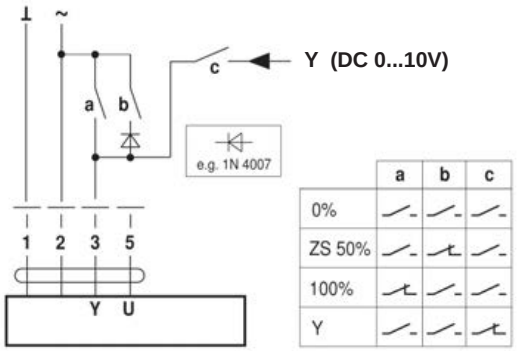
Operation on the MP-Bus



Functions

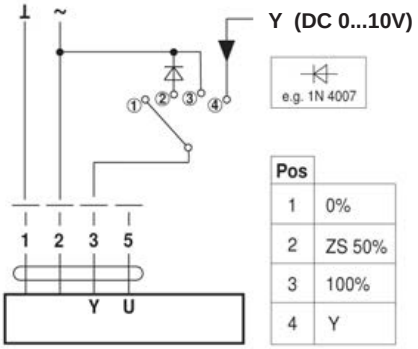
Functions with basic values

Override control with AC 24V with relay contacts



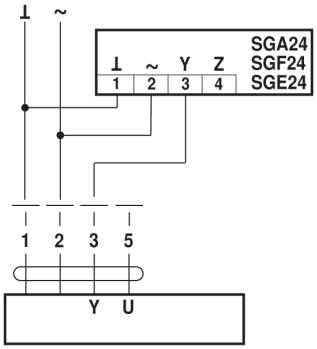
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⊥	⌐
100%	⊥	⌐	⌐
Y	⌐	⌐	⊥

Override control with AC 24V with rotary switch

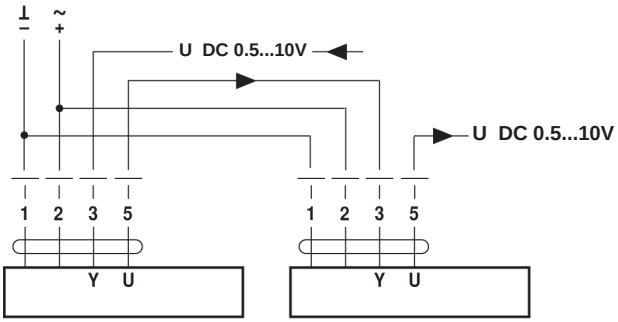


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%

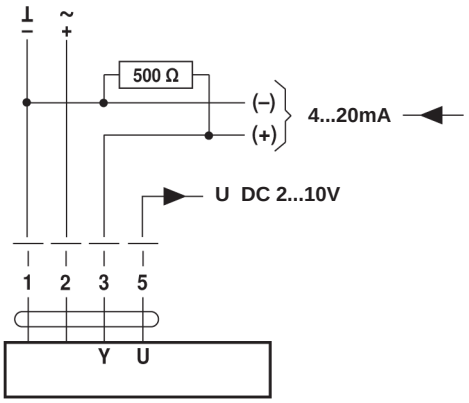


Follow-up control (position-dependent)



Functions

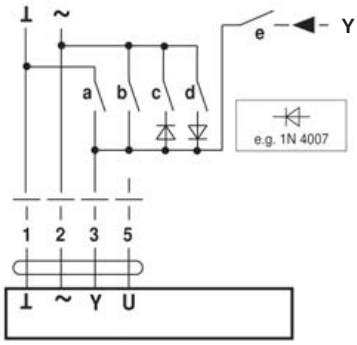
Control with 4...20mA via external resistor



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

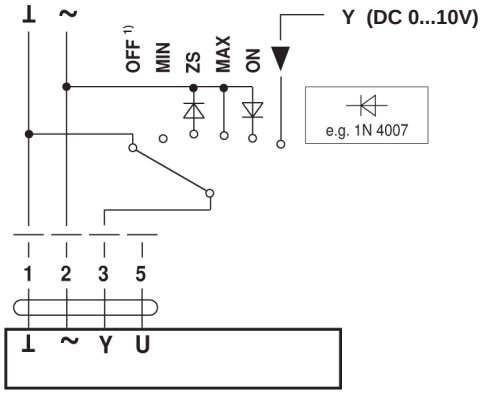
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	t				
MIN					
ZS			t		
MAX		t			
ON				t	
Y					t

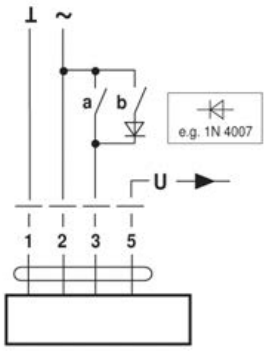
Override control and limiting with AC 24V with rotary switch

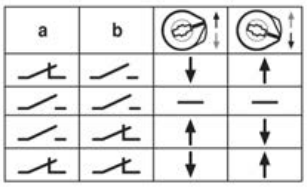


1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

Functions

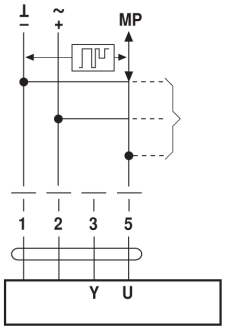
AC 24V, 3-point





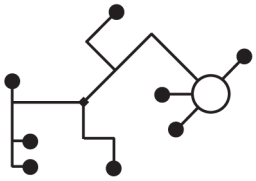
Functions when operated on MP-Bus

Connection on the MP-Bus



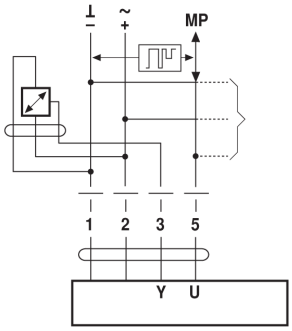
Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology



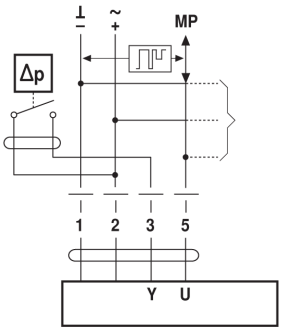
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



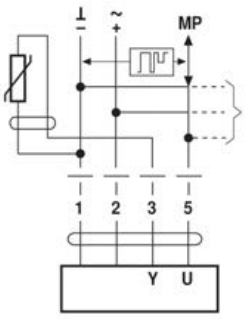
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

Connection of passive sensors

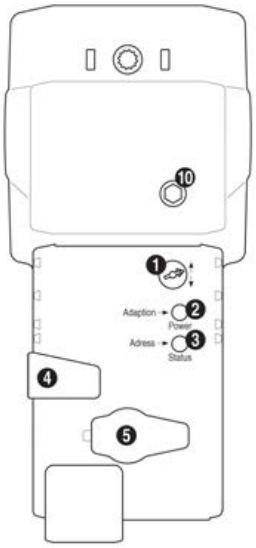


Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

V1.0 .11.2013 • Subject to modification

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated in green: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) Push-button and LED display yellow
Off: Standard mode
Flickering: MP communication active
Illuminated: Adaption procedure active
Blinking: Request for addressing from MP master
Press button: Confirmation of addressing

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

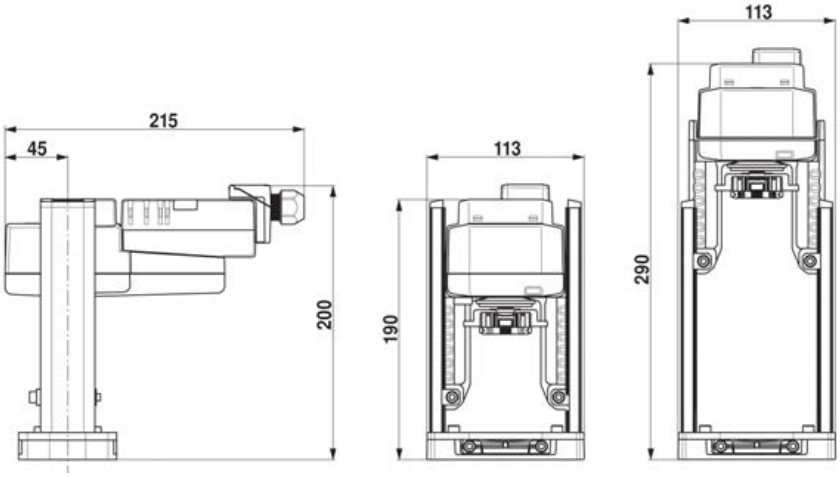
(5) Service plug
For connecting the parameterisation and service tools

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

LED displays (2, green) and (3, yellow)
green: Off; yellow: Illuminated;
Check the supply connections. The phases may have been switched.

Dimensions [mm]

Dimensional drawings



SV24A-RE

Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1500N
- Nominal voltage AC/DC 24V
- Control: Open-close, 3-point
- Nominal stroke 20mm

RETROFIT

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2.5W
	Power consumption in rest position	0.5W
	Power consumption for wire sizing	5VA
	Connection supply / control	Terminals 4mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	35dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.54kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The 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.

V1.0..12.2013 • Subject to modification

Product features

Installation on third-party valves

The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, providing it is permitted by the size of the installed valve.

Installation on Belimo valves

Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override

Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

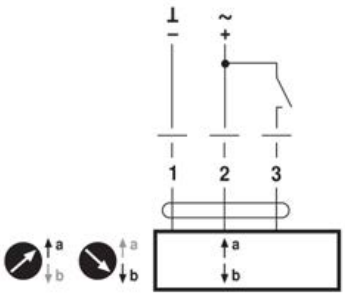
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

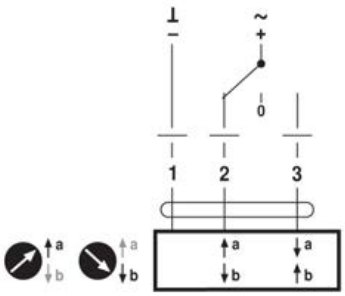
Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

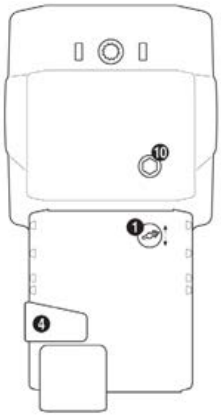
AC/DC 24V, open-close (one-wire)



AC/DC 24V, 3-point



Indicators and operating controls



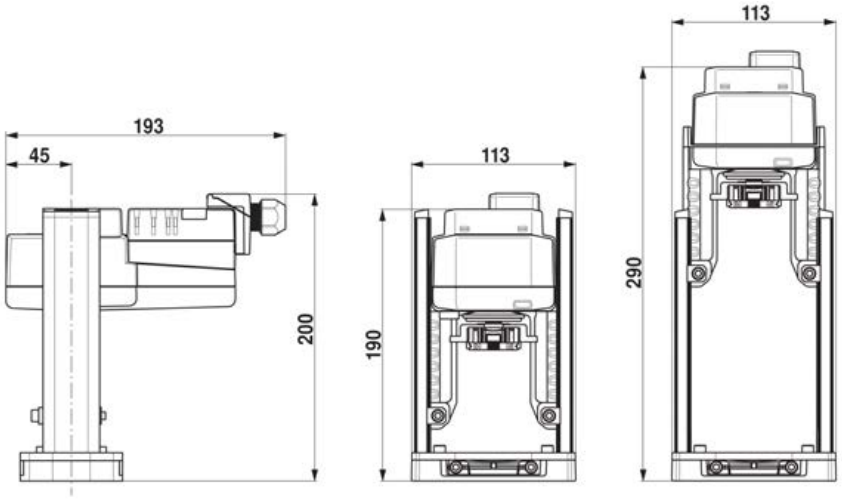
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



Globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1500N
- Nominal voltage AC 230V
- Control: Open-close, 3-point
- Nominal stroke 20mm

RETROFIT

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	2W
	Power consumption in rest position	1W
	Power consumption for wire sizing	4VA
	Connection supply / control	Terminals 4mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Sound power level motor max.	35dB(A)
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	II Protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated current voltage supply	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.6kg

Safety notes

⚠

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Installation on third-party valves

The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, providing it is permitted by the size of the installed valve.

Installation on Belimo valves

Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override

Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

Accessories

Electrical accessories

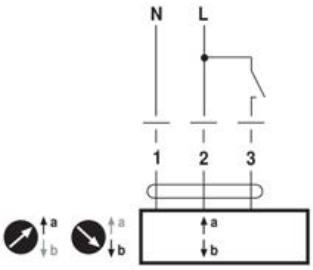
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

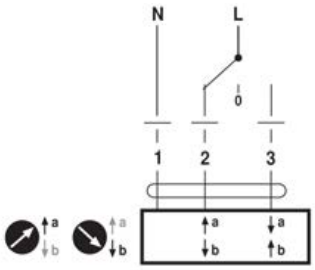
Notes • Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC 230V, open-close (one-wire)

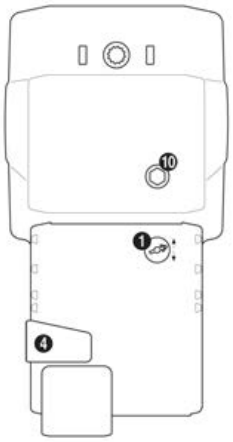


AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white

Indicators and operating controls



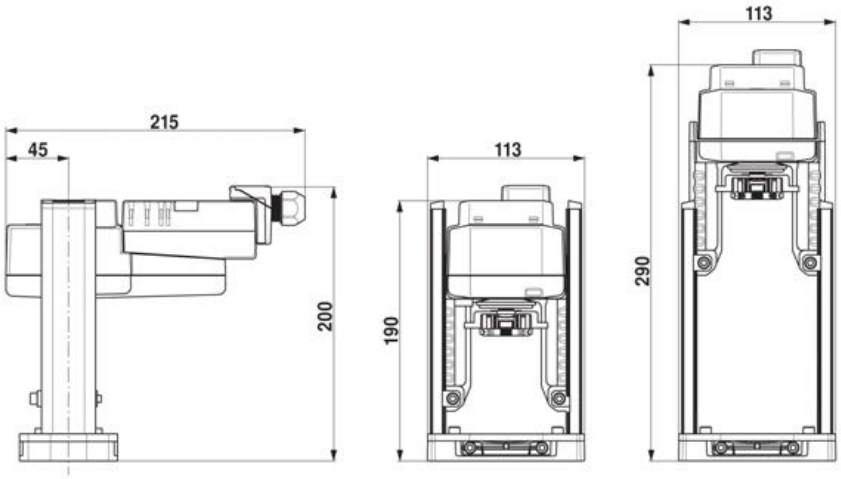
(1) Direction of stroke switch
Switching: Direction of stroke changes

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

Dimensions [mm]

Dimensional drawings



SV24A-MP-RE

Communication-capable globe valve actuator for 2-way and 3-way globe valves

- Actuating force 1500N
- Nominal voltage AC/DC 24V
- Control modulating DC (0)0.5 V...10 V, variable
- Nominal stroke 20mm

MP-BUS RETROFIT

Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption in operation	2W
	Power consumption in rest position	1.5W
	Power consumption for wire sizing	3.5VA
	Connection supply / control	Terminals 4mm²
	Parallel operation	Yes
Functional data	Actuating force	1500N
	Positioning signal Y	DC 0...10V
	Positioning signal Y note	Input impedance 100kΩ
	Operating range Y	DC 0.5...10V
	Operating range Y variable	Start point DC 0.5...30V
		End point DC 2.5...32V
	Position feedback U	DC 0.5...10V
	Position feedback U note	max. 0.5mA
	Position feedback U variable	Start point DC 0.5...8V
		End point DC 2.5...10V
	Position accuracy	5% absolute
	Manual override	Gear disengagement with push-button, can be locked
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Override control MAX (maximum position)	100%
	Override control MIN (minimum position)	0%
	Override control ZS (intermediate position, only AC)	50%
	Override control ZS variable	ZS = MIN...MAX
	Sound power level motor max.	35dB(A)
	Sound power level motor note	45dB(A) @ 90s running time
	Position indication	Mechanical 5...20mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.55kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Principle of operation
The actuator is connected with a standard modulating signal of DC 0...10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0...100% and as slave control signal for other actuators.

Adjustable-parameter actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.

Installation on third-party valves
The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, provided it is permitted by the size of the installed valve.

Installation on Belimo valves
Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override
Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

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

Position indication
The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position
Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch
When actuated, the direction of stroke switch changes the running direction in normal operation.

Adaption of stroke range
The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.
Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.
The actuator then moves into the position defined by the positioning signal.

Accessories

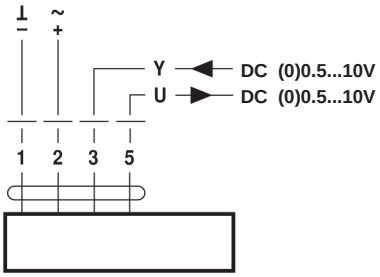
	Description	Type
Electrical accessories	Auxiliary switch add-on, 2 x SPDT	S2A-H
Service tools	Manual parameterising device, for MF/MP/Modbus/LonWorks actuators and VAV-Control	ZTH-GEN
	Belimo PC-Tool, software for adjustments and diagnostics	MFT-P

Electrical installation

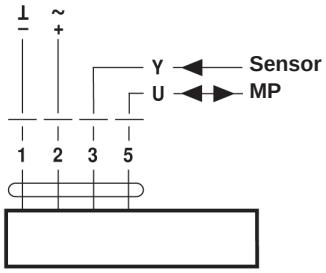
Notes • Connection via safety isolating transformer.
• Parallel connection of other actuators possible.
• Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC/DC 24V, modulating



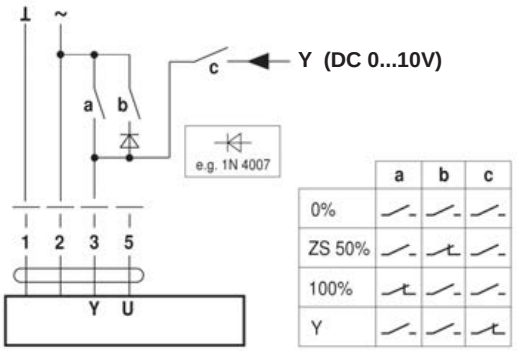
Operation on the MP-Bus



Functions

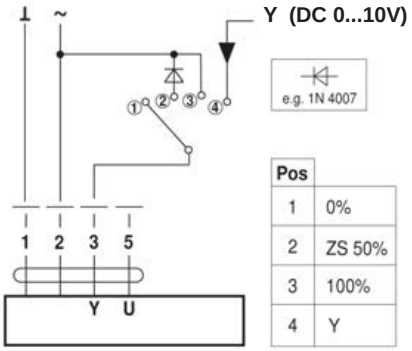
Functions with basic values

Override control with AC 24V with relay contacts



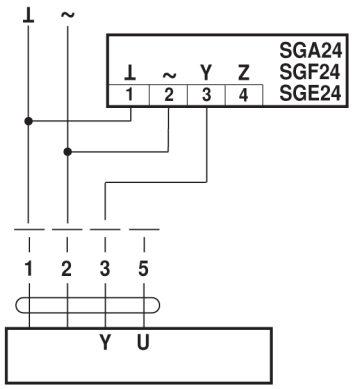
	a	b	c
0%	⌐	⌐	⌐
ZS 50%	⌐	⌙	⌐
100%	⌙	⌐	⌐
Y	⌐	⌐	⌙

Override control with AC 24V with rotary switch

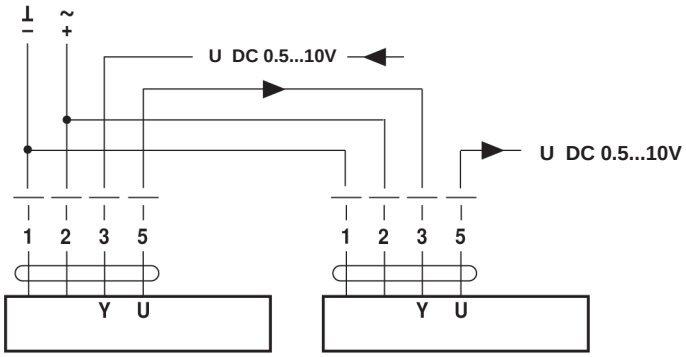


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%



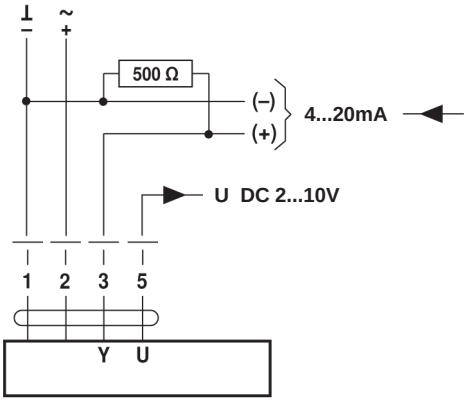
Follow-up control (position-dependent)



V1.0 .11.2013 • Subject to modification

Functions

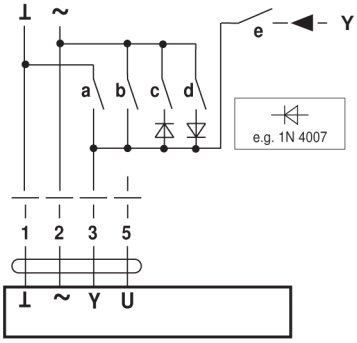
Control with 4...20mA via external resistor



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

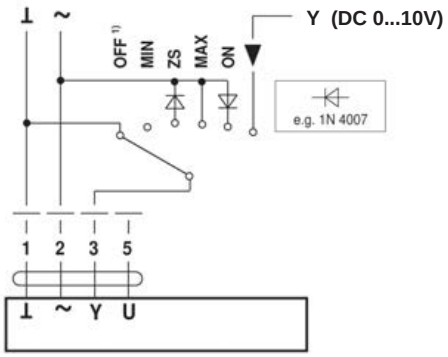
Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



	a	b	c	d	e
OFF [1]	⌐	_	_	_	_
MIN	_	_	_	_	_
ZS	_	_	⌐	_	_
MAX	_	⌐	_	_	_
ON	_	_	_	⌐	_
Y	_	_	_	_	⌐

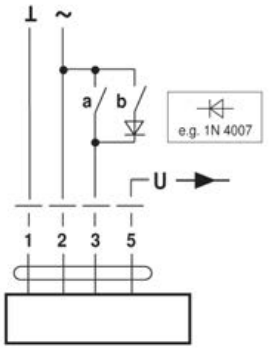
Override control and limiting with AC 24V with rotary switch

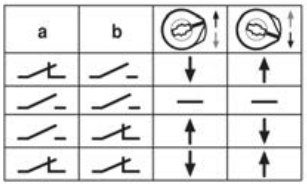


1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

Functions

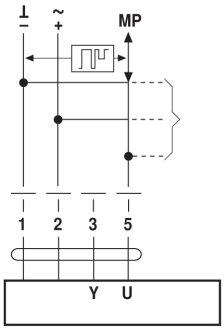
AC 24V, 3-point





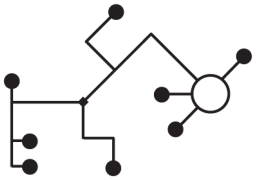
Functions when operated on MP-Bus

Connection on the MP-Bus



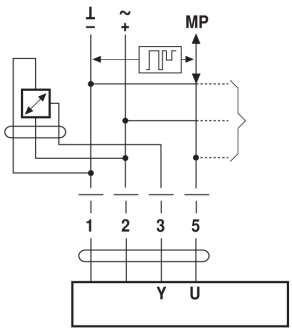
Supply and communication in one and the same 3-wire cable
- no shielding or twisting required
- no terminating resistor required

Power topology



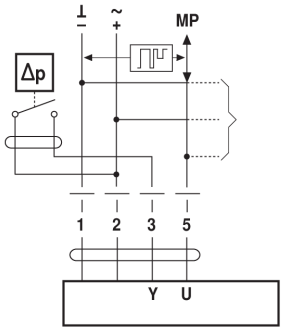
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



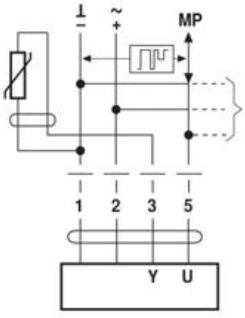
- Supply AC/DC 24A
- Output signal DC 0...10V (max. DC 0...32V)
- Resolution 30mV

Connection of external switching contact



- Switching current 16mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as ≥ 0.6V

Connection of passive sensors

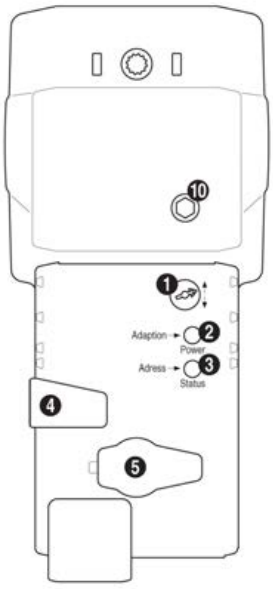


Ni1000	–28 ... +98°C	850 ... 1600 Ω 2)
PT1000	–35 ... +155°C	850 ... 1600 Ω 2)
NTC	–10 ... +160°C 1)	200 Ω ... 50 kΩ 2)

1) Depending on the type
2) Resolution 1 Ohm

V1.0 .11.2013 • Subject to modification

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Push-button and LED display green
Off: No power supply or malfunction
Illuminated in green: In operation
Press button: Triggers stroke adaption, followed by standard mode

(3) Push-button and LED display yellow
Off: Standard mode
Flickering: MP communication active
Illuminated: Adaption procedure active
Blinking: Request for addressing from MP master
Press button: Confirmation of addressing

(4) Gear disengagement button
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

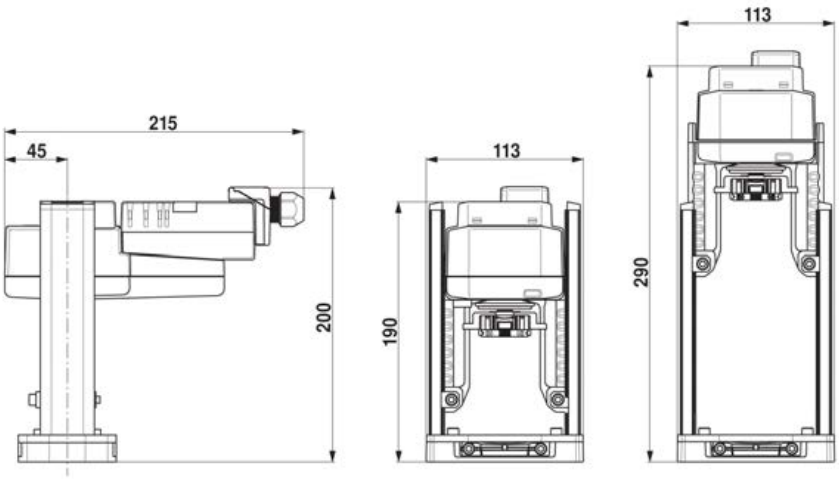
(5) Service plug
For connecting the parameterisation and service tools

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

LED displays (2, green) and (3, yellow)
green: Off; yellow: Illuminated;
Check the supply connections. The phases may have been switched.

Dimensions [mm]

Dimensional drawings



NVK230A-3-RE

Globe valve actuator with emergency control function for 2-way and 3-way globe valves

- Actuating force 1000N
- Nominal voltage AC 230V
- 3-point control
- Nominal stroke 20mm
- Design life SuperCaps 15 years

RETROFIT

Technical data

Electrical data	Nominal voltage	AC 230V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption in operation	2W
	Power consumption in rest position	1W
	Power consumption for wire sizing	4.5VA
	Connection supply / control	Cable 1m, 4 x 0.75mm²
	Parallel operation	Yes
Functional data	Actuating force	1000N
	Adjusting emergency setting position	Actuator spindle retracted / extended, adjustable (POP rotary knob)
	Manual override	Gear disengagement with push-button
	Nominal stroke	20mm
	Actuating time	150s/20mm
	Actuating time emergency control function	35s/20mm
	Sound power level motor max.	56dB(A)
	Sound power level emergency setting position max.	60dB(A)
	Position indication	Mechanical 5…20mm stroke
Safety	Protection class IEC/EN	II protective insulated
	Degree of protection IEC/EN	IP54
	EMC	CE in accordance with 2004/108/EC
	Certification IEC/EN	Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA
	Rated impulse voltage supply / control	4kV
	Control pollution degree	3
	Ambient temperature	0°C...50°C
	Non-operating temperature	-40°C...80°C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
Weight	Weight approx.	2.83kg

Safety notes

- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The 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.

V1.0..12.2013 • Subject to modification

Product features

Mode of operation

The actuator moves the valve to the desired operating position at the same time as the integrated capacitors are loaded.

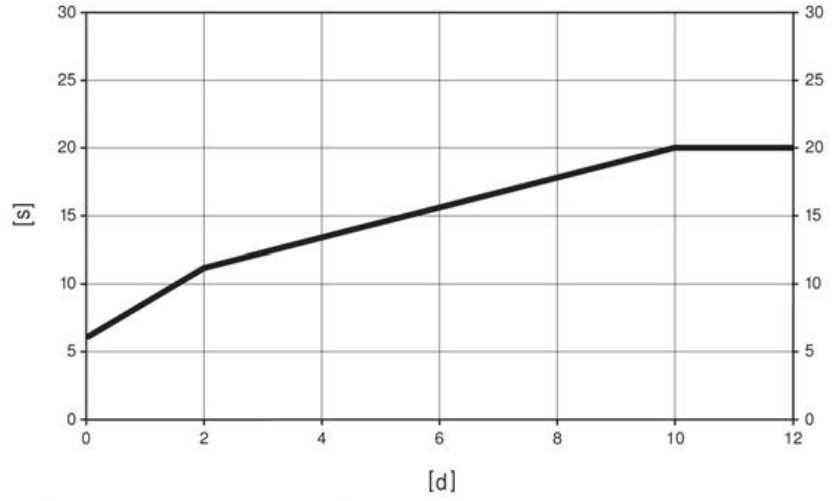
Interrupting the supply voltage causes the valve to be moved to the selected emergency setting position (POP) by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time



[d] = Electricity interruption in days
[s] = Pre-charging time in seconds
PF[s] = Bridging time

	[d]				
	0	1	2	7	≥10
[s]	6	9	11	16	20

Delivery condition (capacitors)

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

Installation on third-party valves

The retrofit actuators for installation on a wide range of valves from various manufacturers are comprised of an actuator, bracket, universal valve neck adapter and universal valve stem adapter. Adapt the valve neck and valve stem to begin with, then attach the retrofit bracket to the valve neck adapter. Now fit the retrofit actuator into the bracket and connect it to the valve. Whilst taking the position of the valve closing point into account, secure the actuator to the bracket and then conduct the commissioning process. The valve neck adapter/actuator can be rotated through 360° on the valve neck, providing it is permitted by the size of the installed valve.

Installation on Belimo valves

Please use standard actuators from Belimo for installation on Belimo globe valves. The installation of retrofit actuators on Belimo globe valves is technically possible.

Manual override

Manual override with push-button possible - temporary. The gear is disengaged and the actuator decoupled for as long as the button is pressed.
The stroke can be adjusted by using a hexagon socket screw key (4mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.

High functional reliability

The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Position indication

The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.

Home position

Setting ex-works: Actuator spindle is retracted.

Direction of stroke switch

When actuated, the direction of stroke switch changes the running direction in normal operation.

The direction of stroke switch has no influence on the emergency setting position (POP) which has been set.

Rotary knob emergency setting position

The “Emergency setting position” rotary knob can be used to adjust the desired emergency setting position (POP). The POP range is in reference to the maximum height of stroke of the actuator.

In the event of an electricity interruption, the actuator will move into the selected emergency setting position, taking into account the bridging time (PF) of 2s which was set ex-works.

Accessories

Electrical accessories

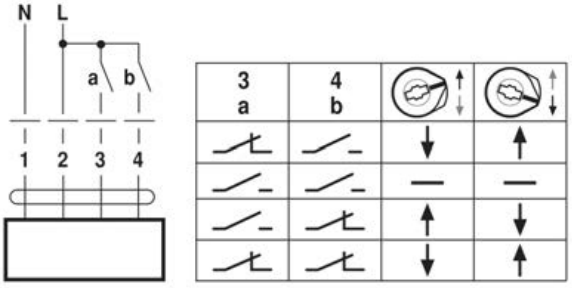
Description	Type
Auxiliary switch add-on, 2 x SPDT	S2A-H

Electrical installation

Notes • Parallel connection of other actuators possible
• Direction of stroke switch factory setting: Actuator spindle retracted.

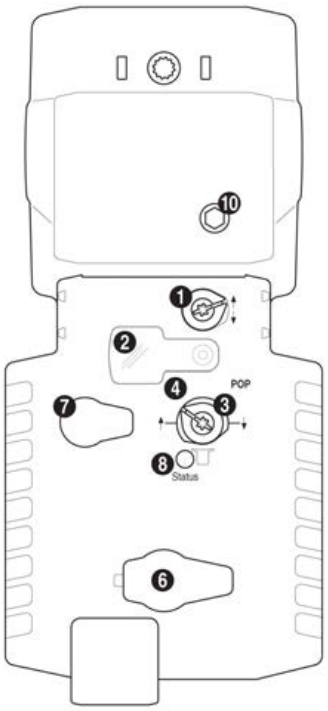
Wiring diagrams

AC 230V, 3-point



Cable colours:
1 = blue
2 = brown
3 = white
4 = white

Indicators and operating controls



(1) Direction of stroke switch
Switching: Direction of stroke changes

(2) Cover, POP button

(3) POP button

(4) Scale for manual adjustment

(6) No function

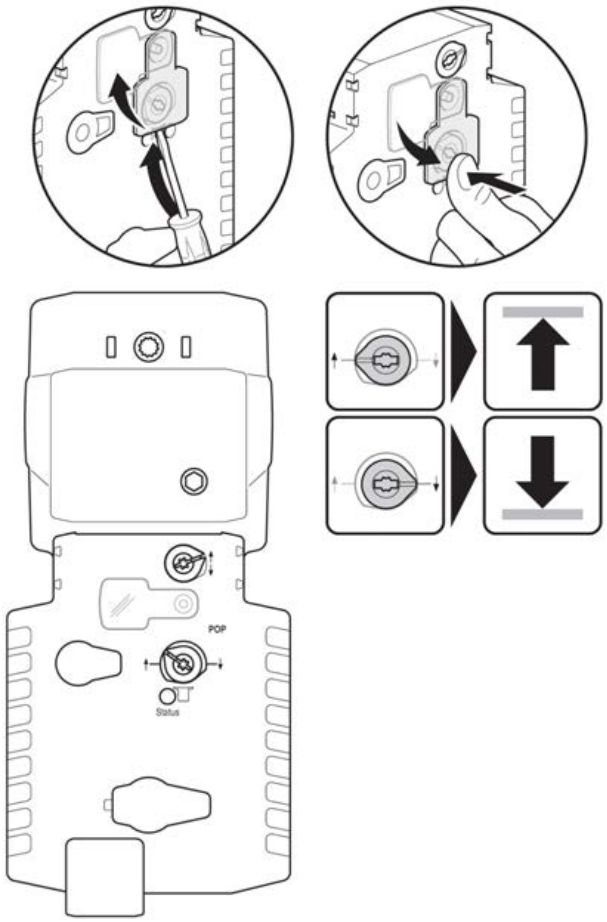
(7) Gear disengagement button, temporary
Press button: Gear disengages, motor stops, manual override possible
Release button: Gear engages, standard mode

(8) LED displays
Green: Off, Not in operation / Pre-charging time SuperCap / Faulty SuperCap
Green: Illuminated, in operation OK
Green: Blinking, POP function active

(10) Manual override
Clockwise: Actuator spindle extends
Counterclockwise: Actuator spindle retracts

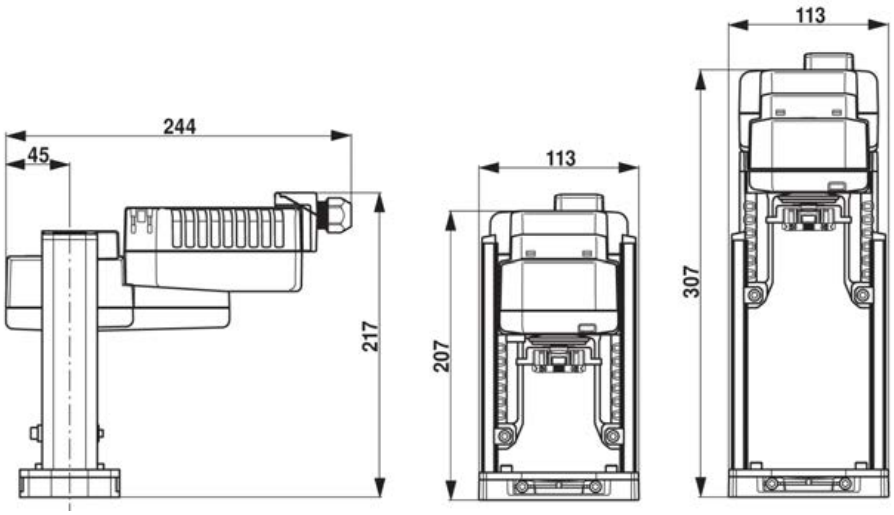
V1.0 .11.2013 • Subject to modification

Indicators and operating controls



Dimensions [mm]

Dimensional drawings



BELIMO

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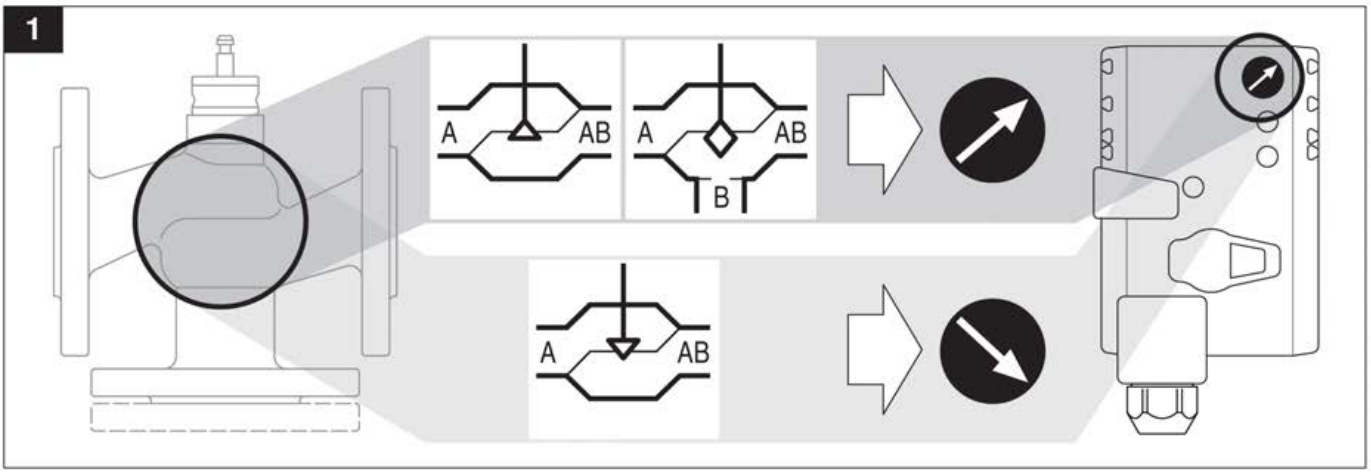

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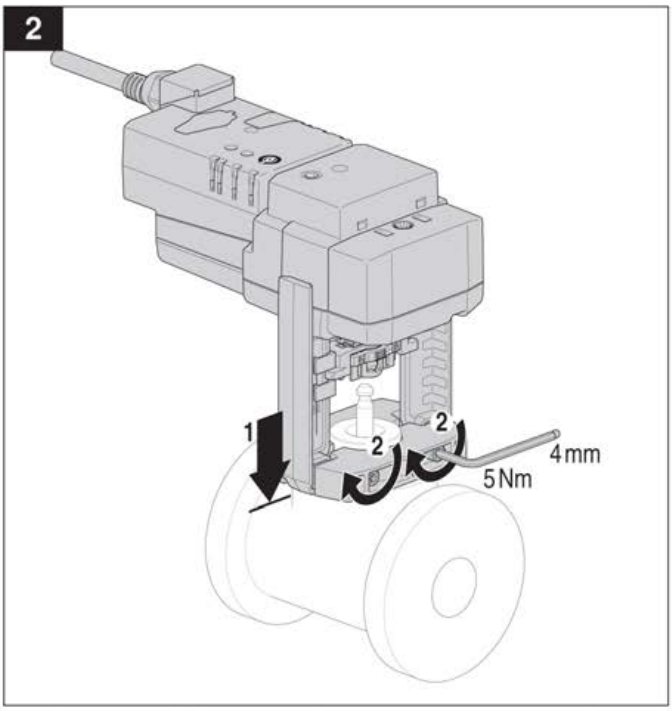

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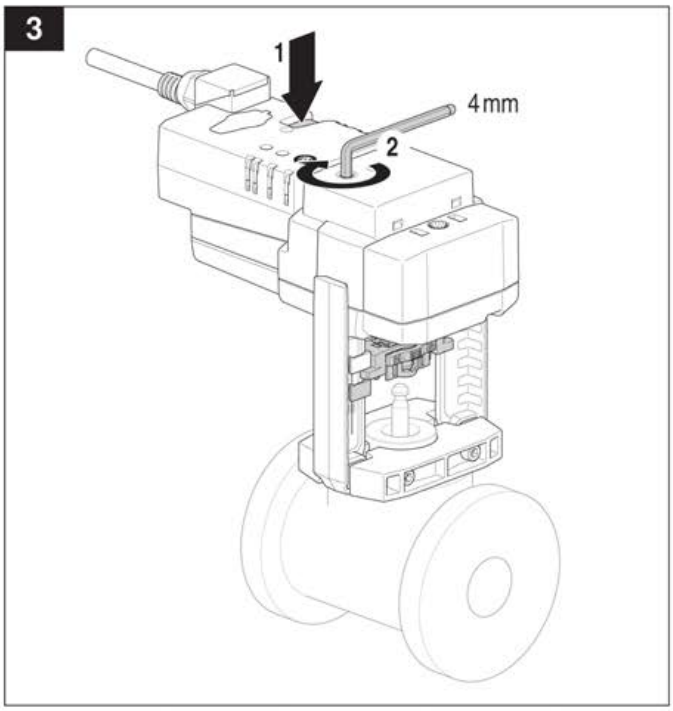

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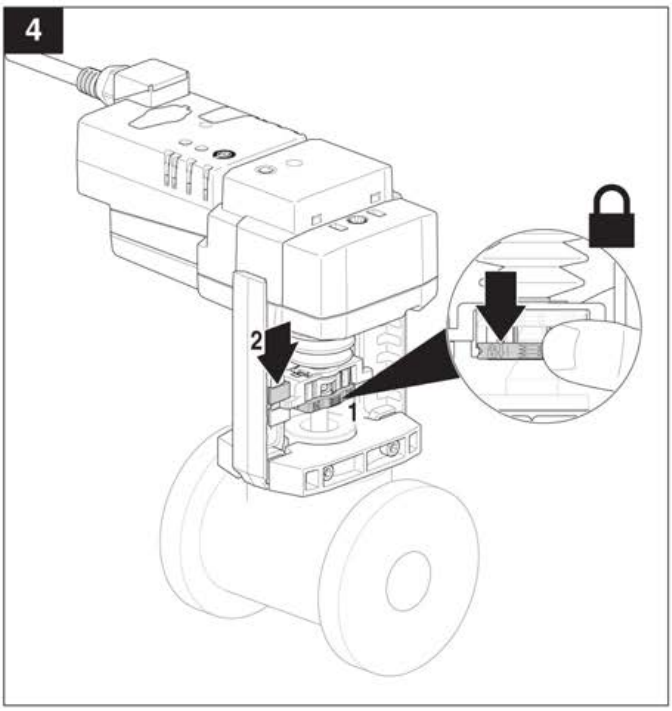

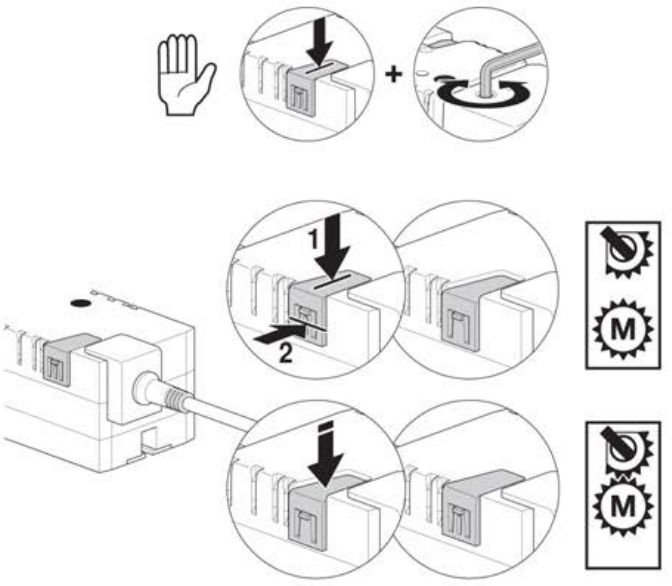

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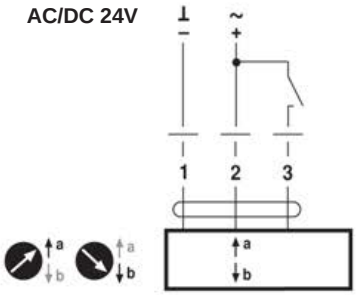
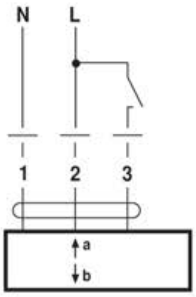
AC/DC 24V

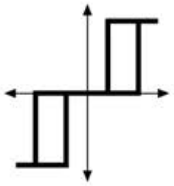


AC 230V ⚠



NV24A-TPC
SV24A-TPC

NV230A-TPC
SV230A-TPC



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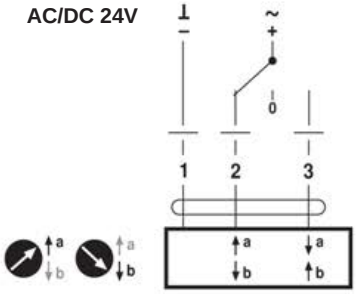

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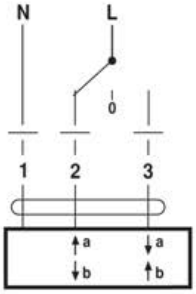

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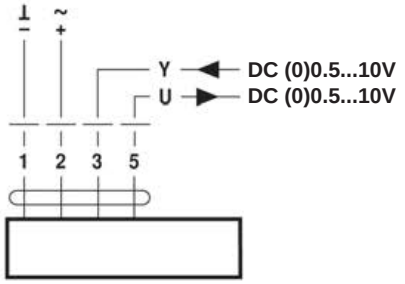
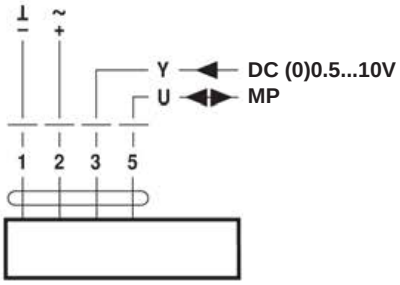
SV24A-TPC

NV230A-TPC
SV230A-TPC

AC/DC 24V





NV24A-SZ-TPC
SV24A-SZ-TPC

NV24A-MP-TPC
SV24A-MP-TPC

BELIMO

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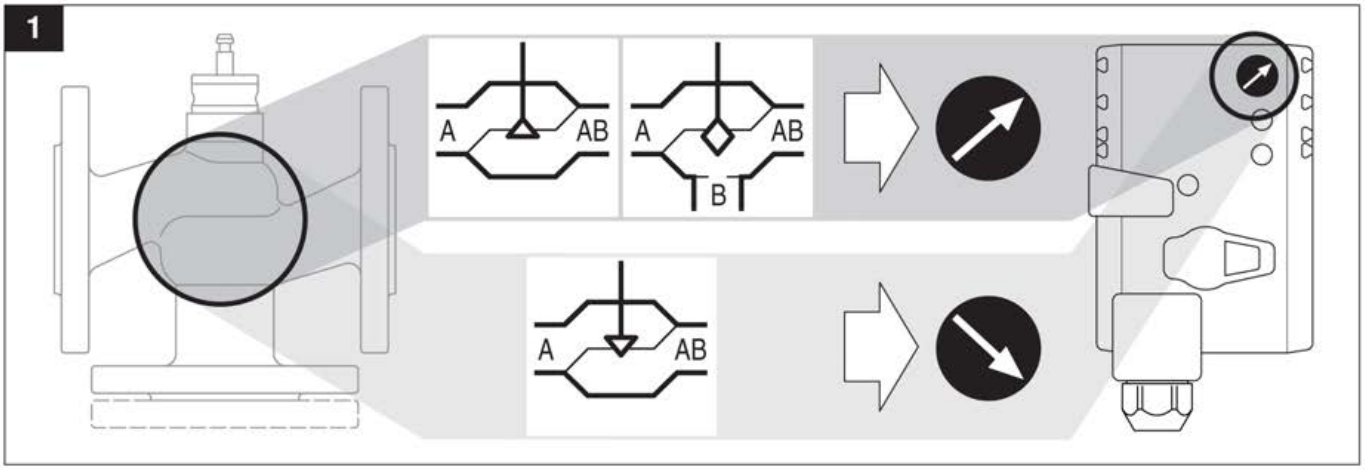

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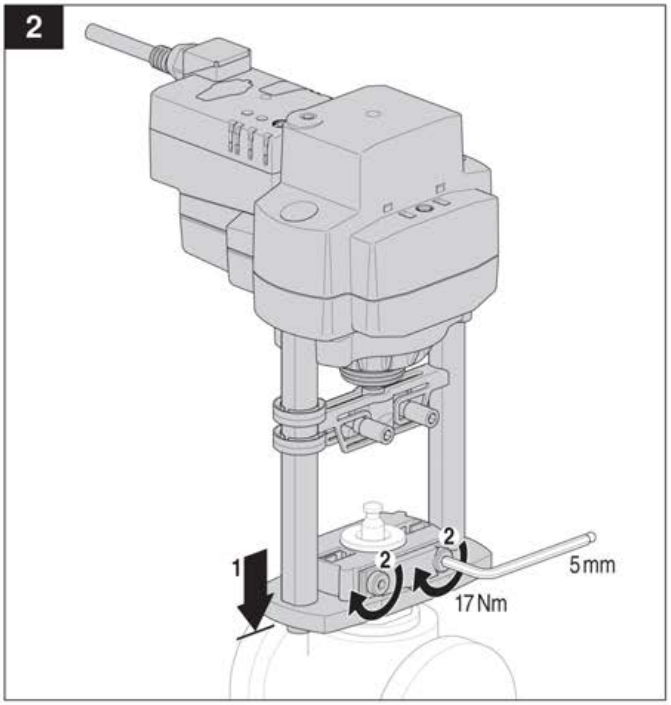

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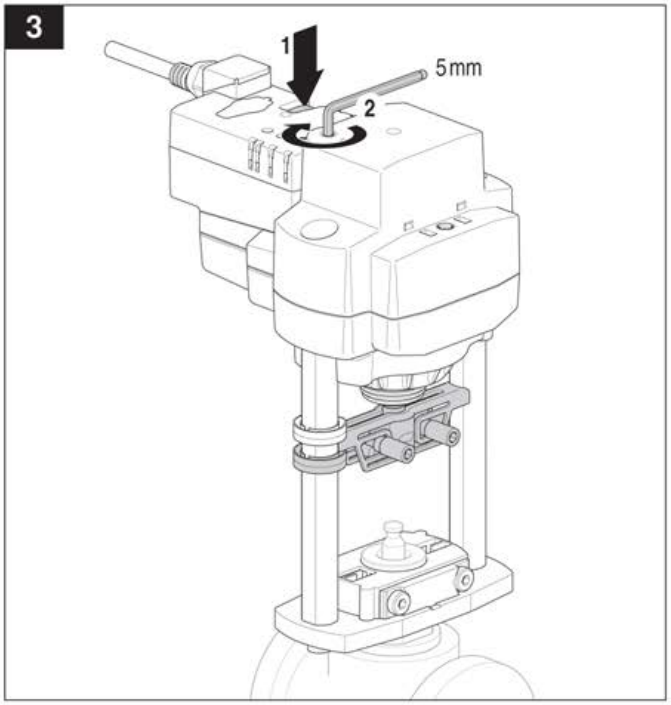

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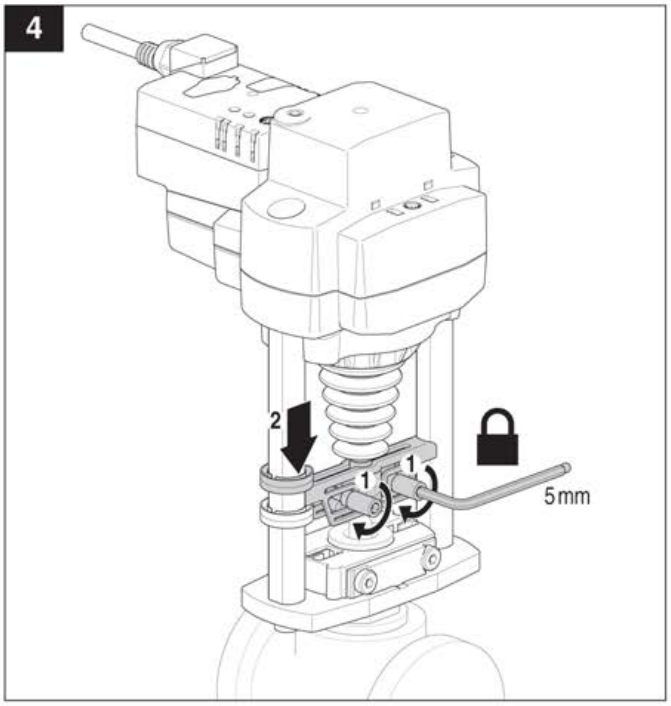

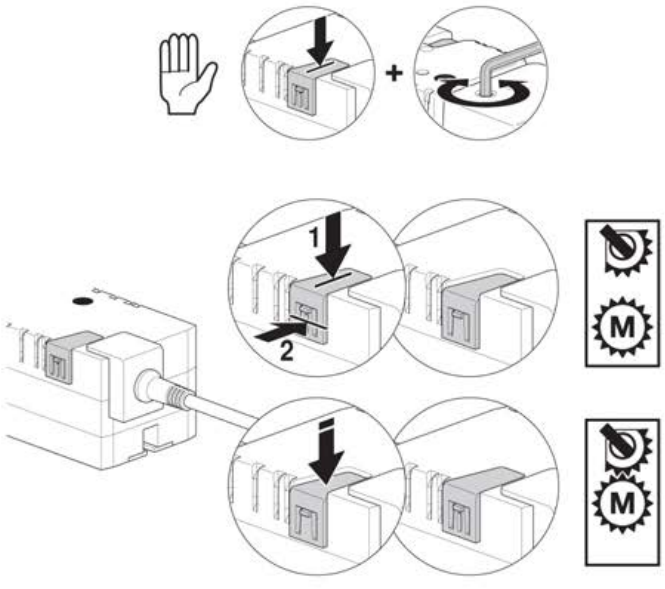

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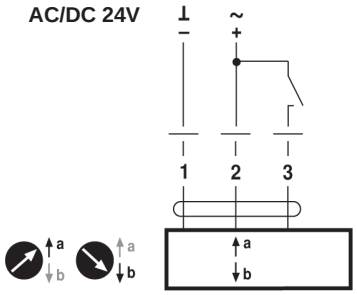
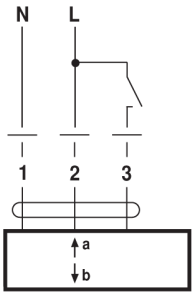
AC/DC 24V



EV24A-TPC

AC 230V



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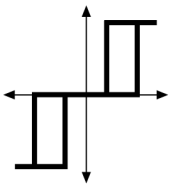

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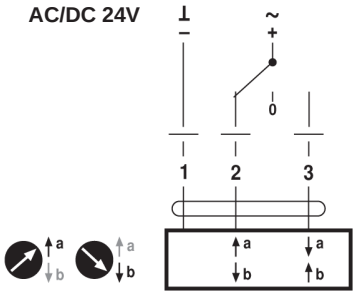

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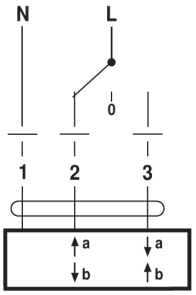
AC 230V



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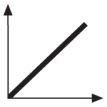

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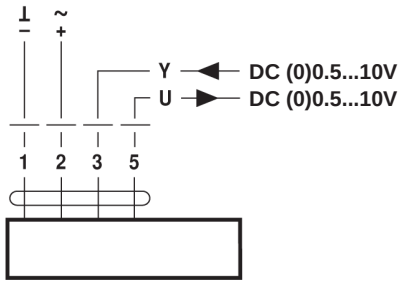
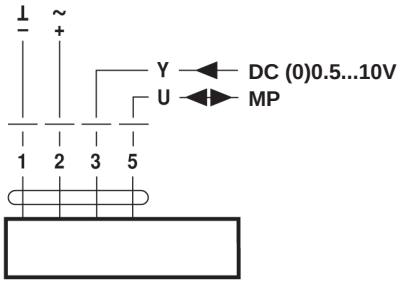


EV24A-SZ-TPC
RV24A-SZ
RV24A-MF



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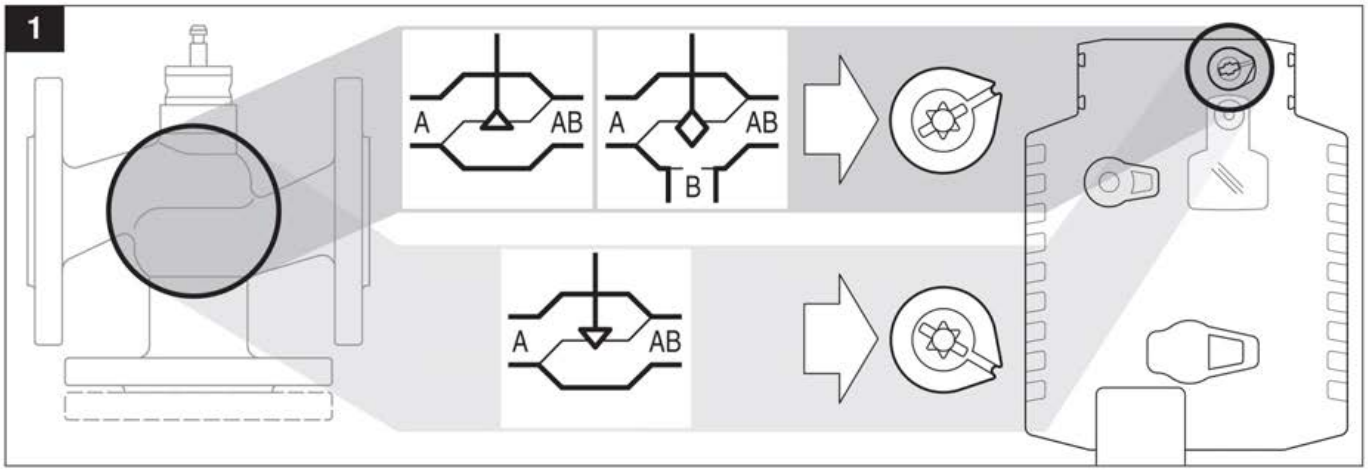

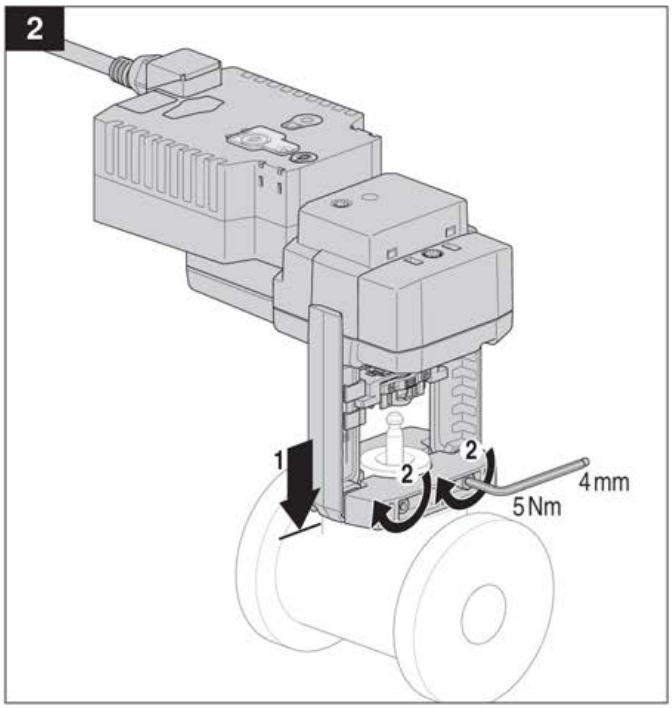

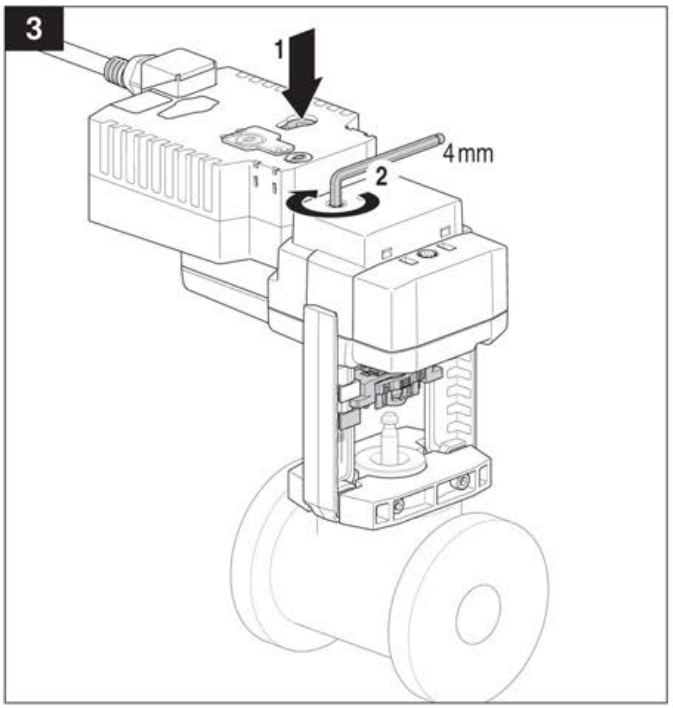

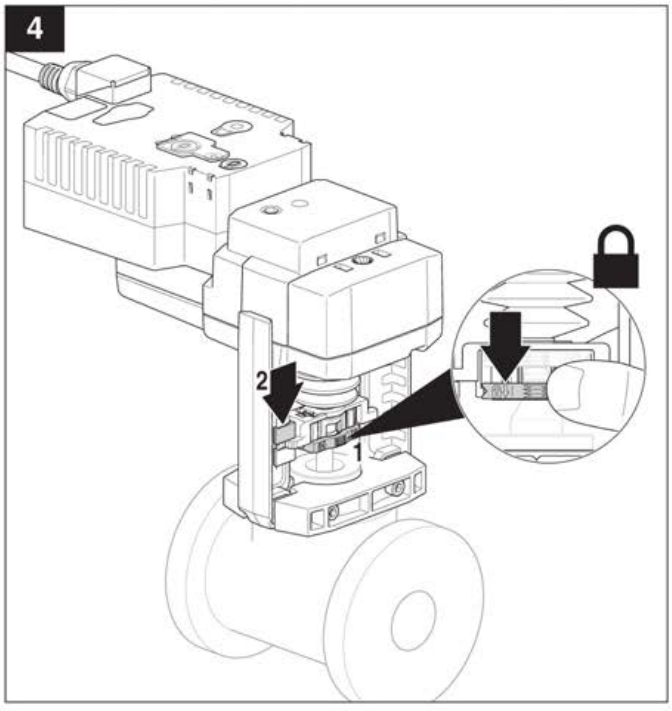

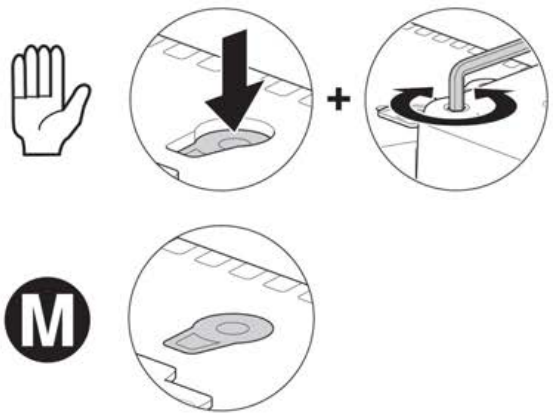

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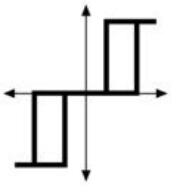
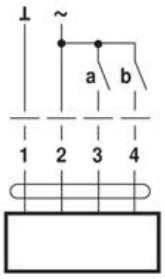
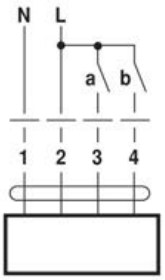


AC 24V

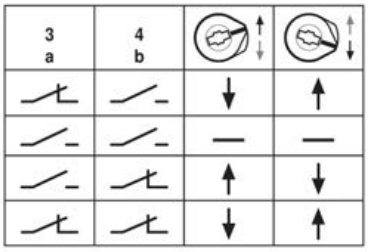


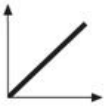
NVK24A-3-TPC

AC 230V ⚠

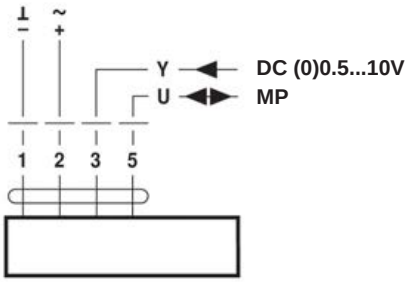


NVK230A-3



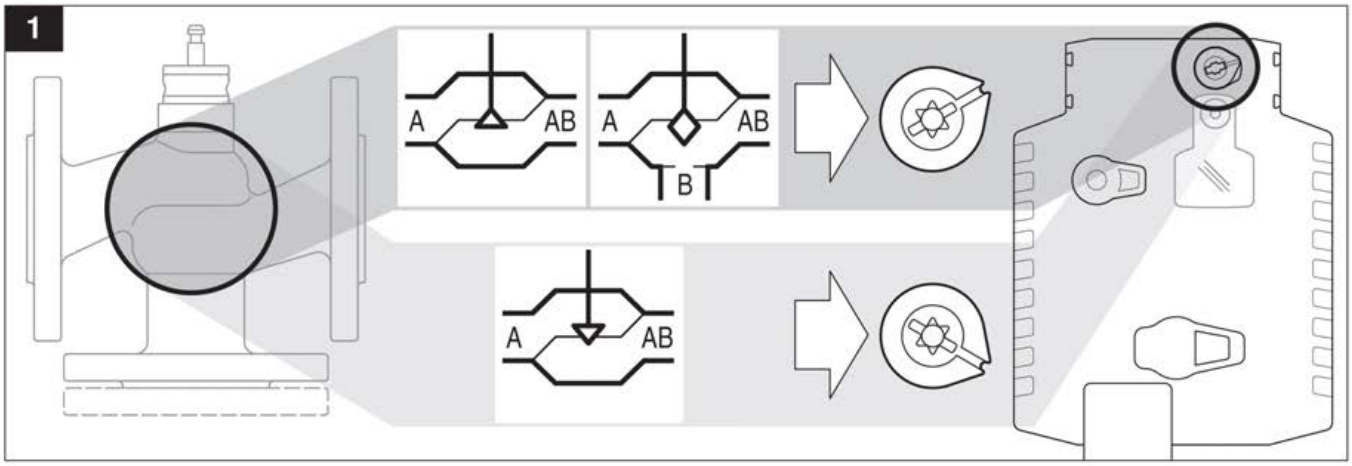


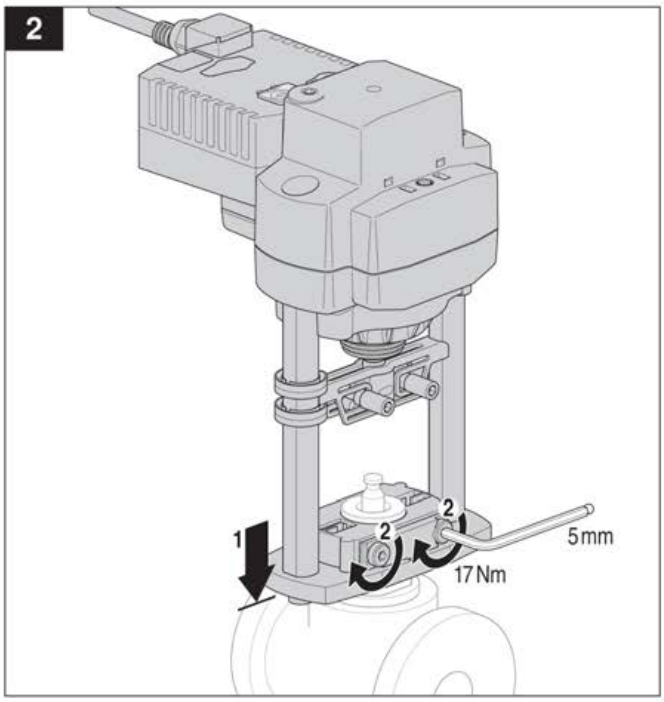
AC/DC 24V

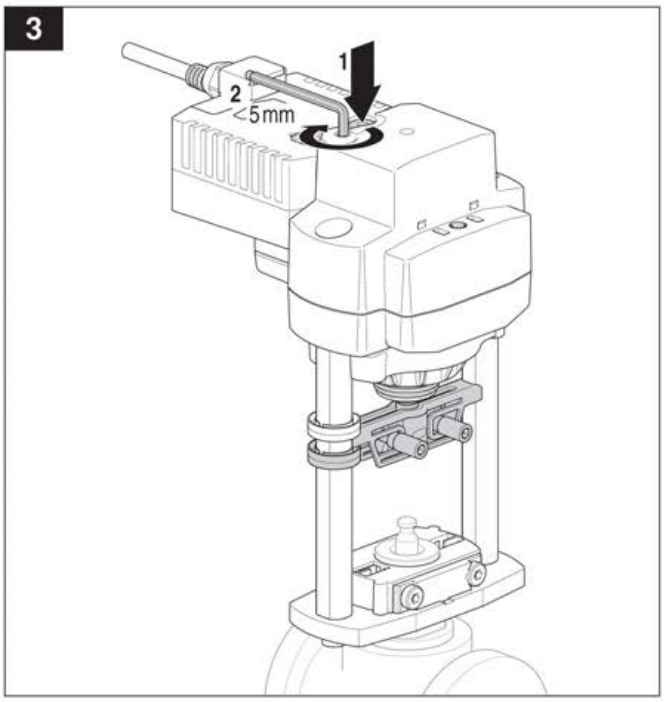


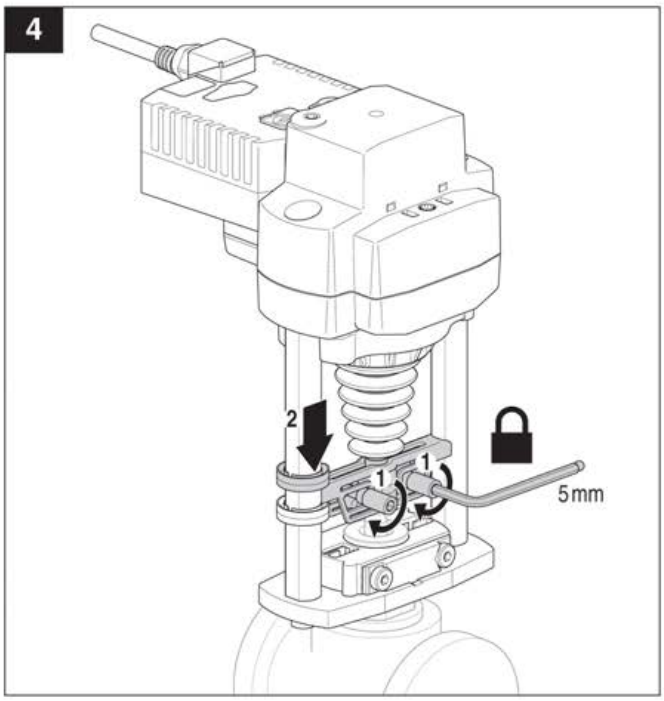
NVK24A-MP-TPC

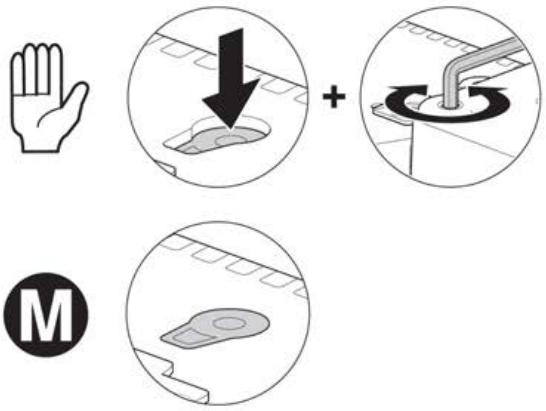
BELIMO











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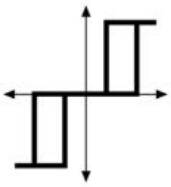

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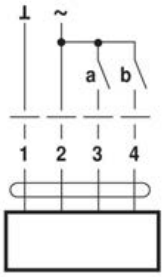
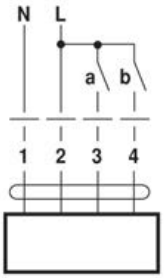


AVK24A-3-TPC

AC 230V ⚠



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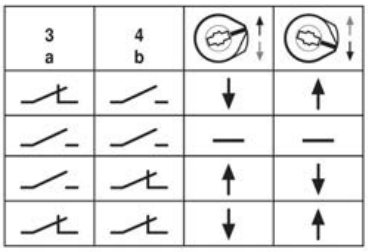

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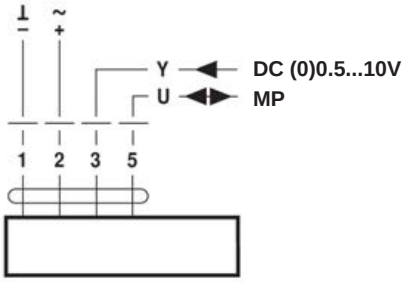

AVK24A-MP-TPC

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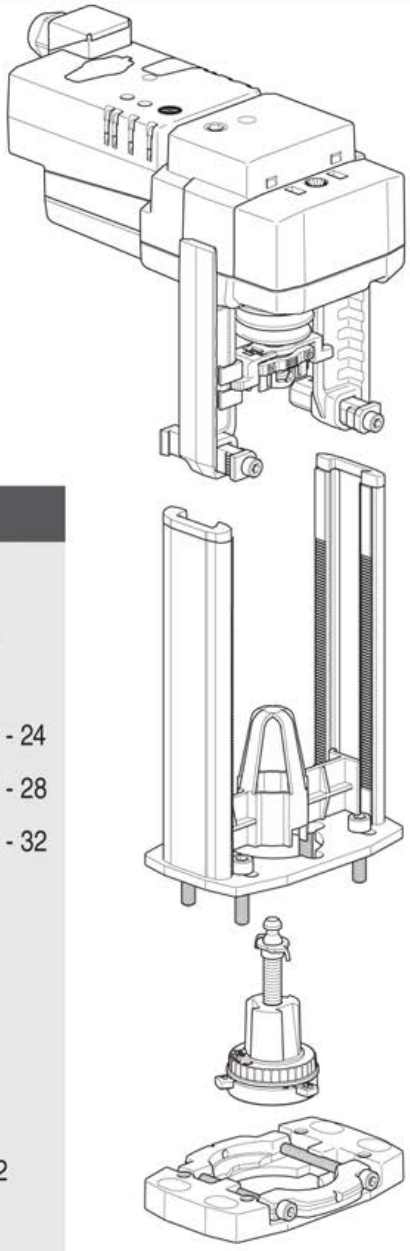
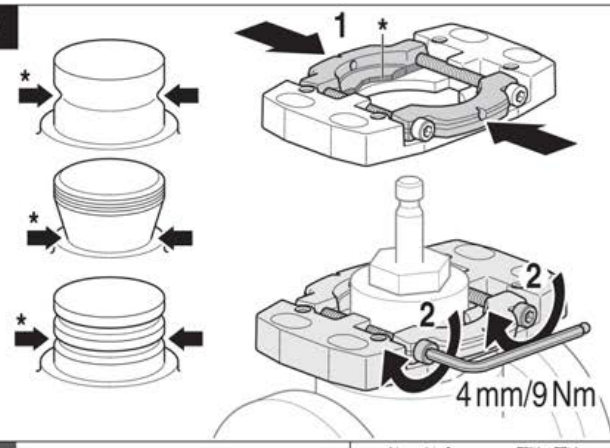


optional

- 1 x 4-6 mm
- 1 x 8-10 mm
- 1 x UNF 3/8" - 24
- 1 x UNF 1/4" - 28
- 1 x UNF 1/4" - 32
- 1 x M10
- 1 x M8
- 1 x M6
- 2 x
- 2 x M8 x 12
- 2 x M8

2



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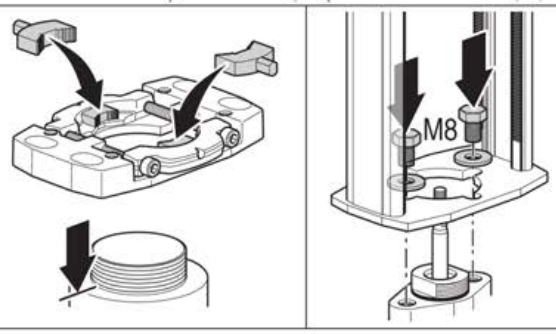

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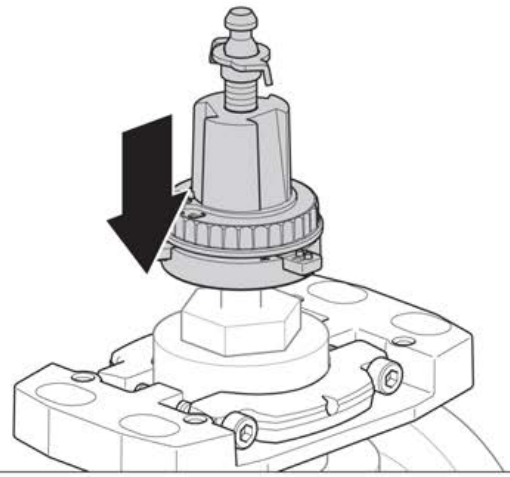

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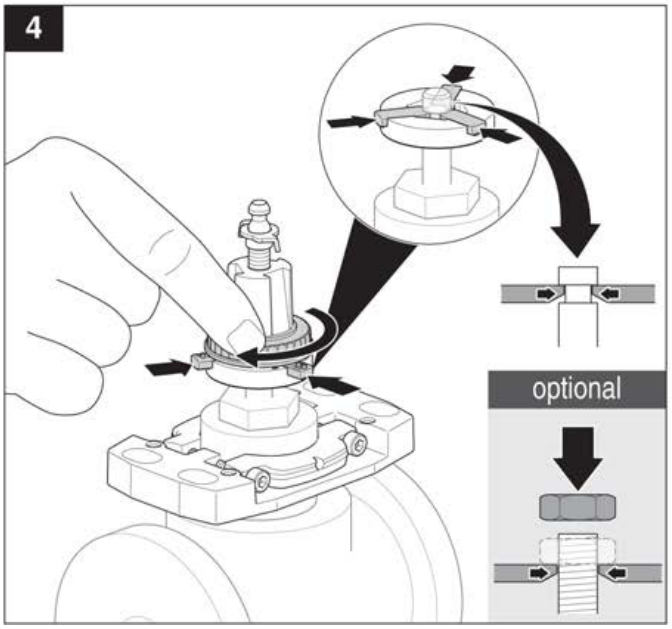

optional

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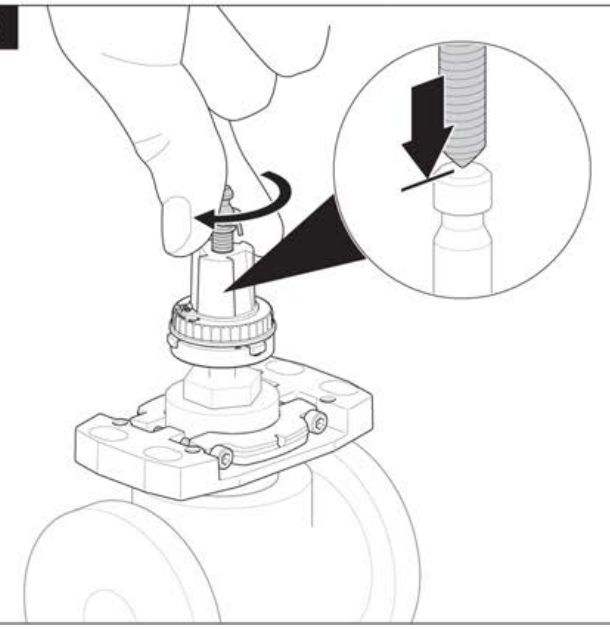

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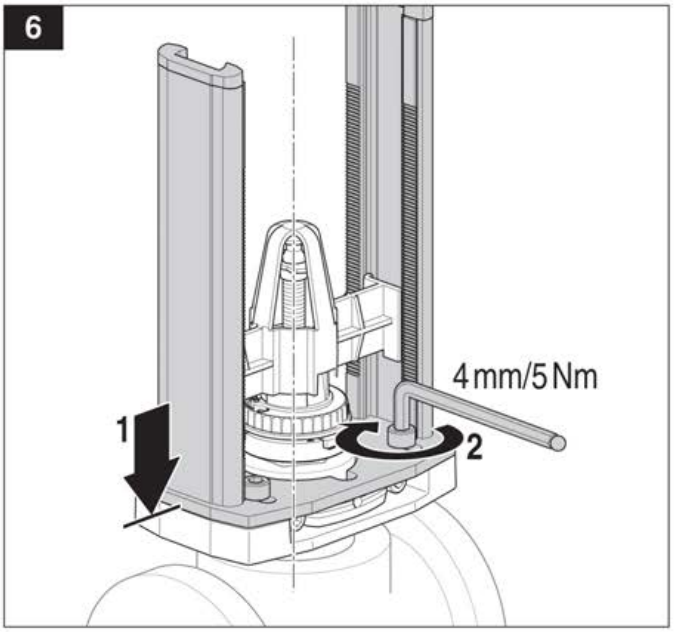
6



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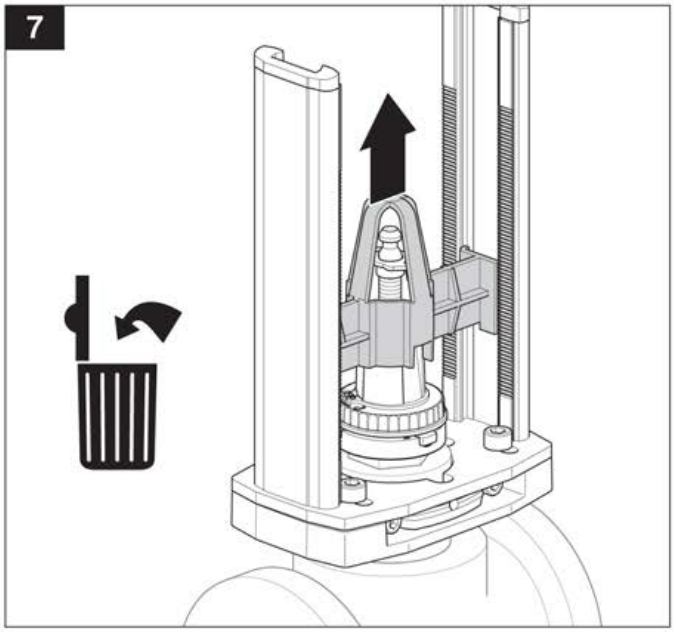

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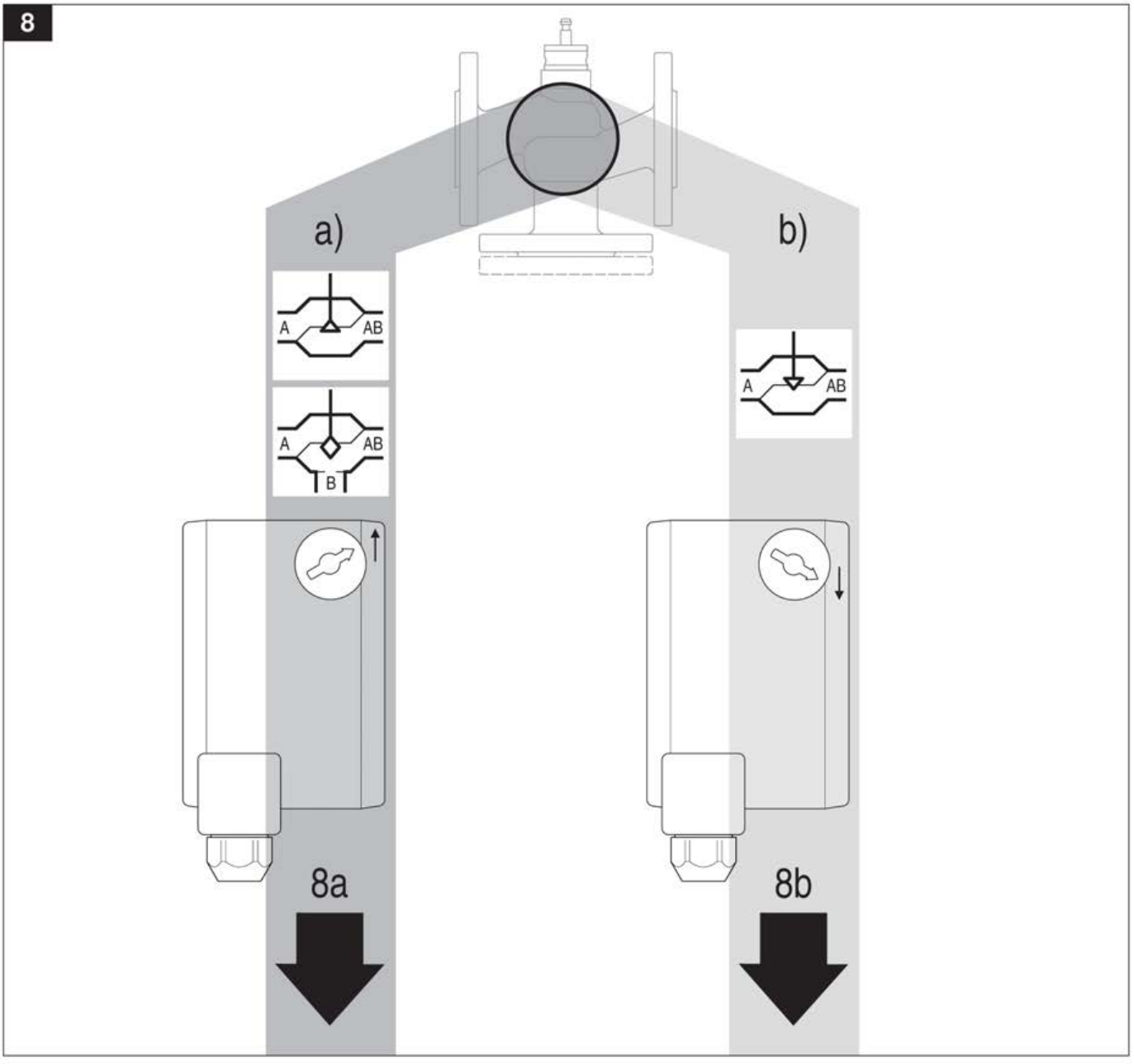

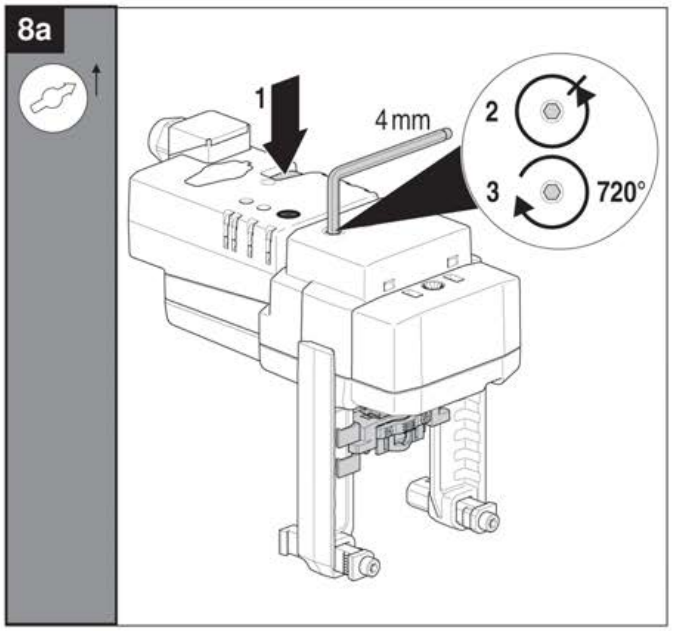

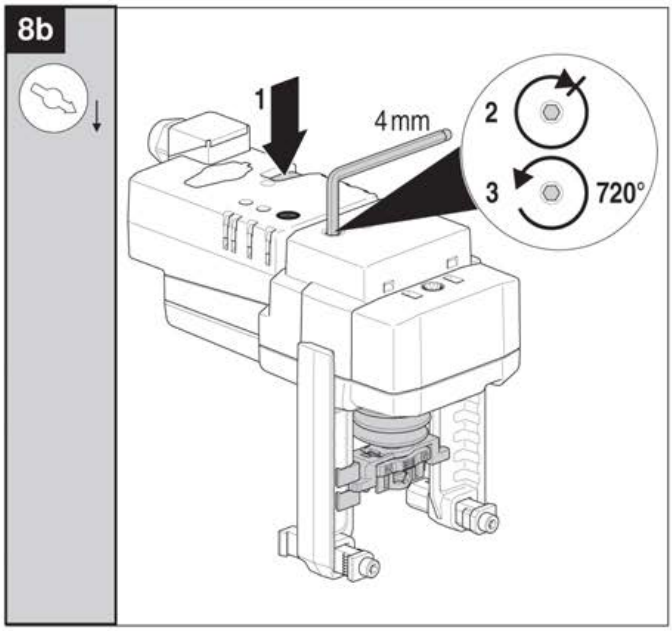

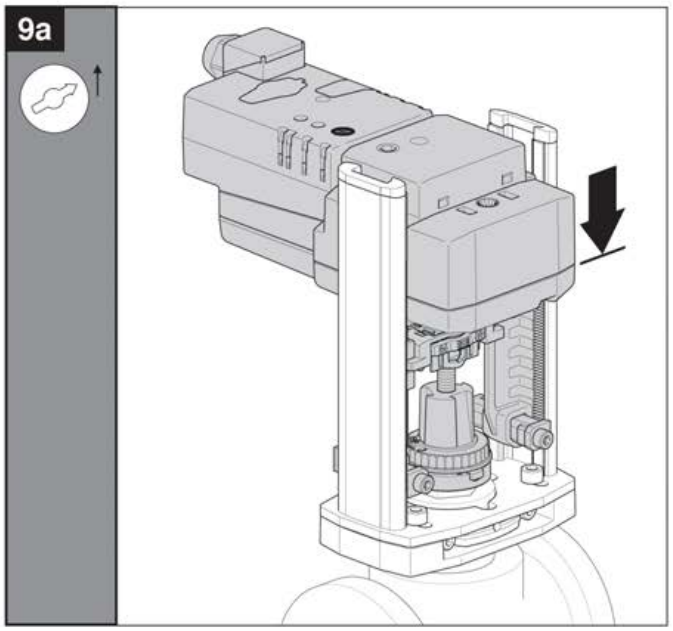

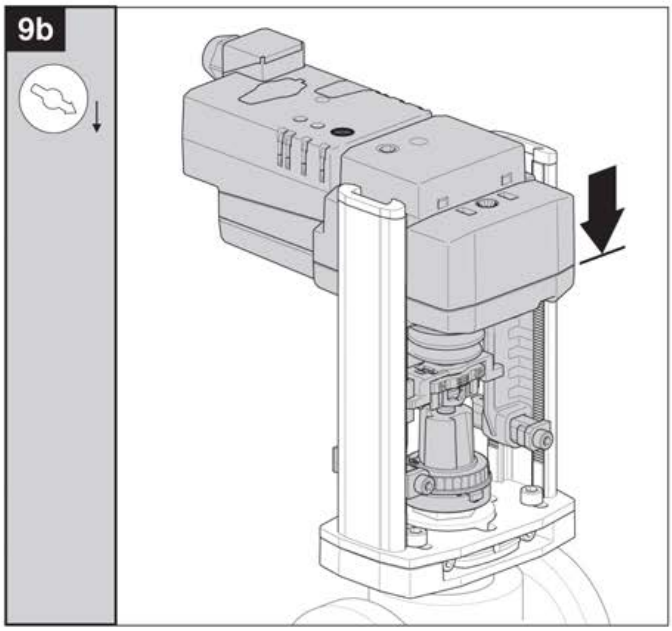

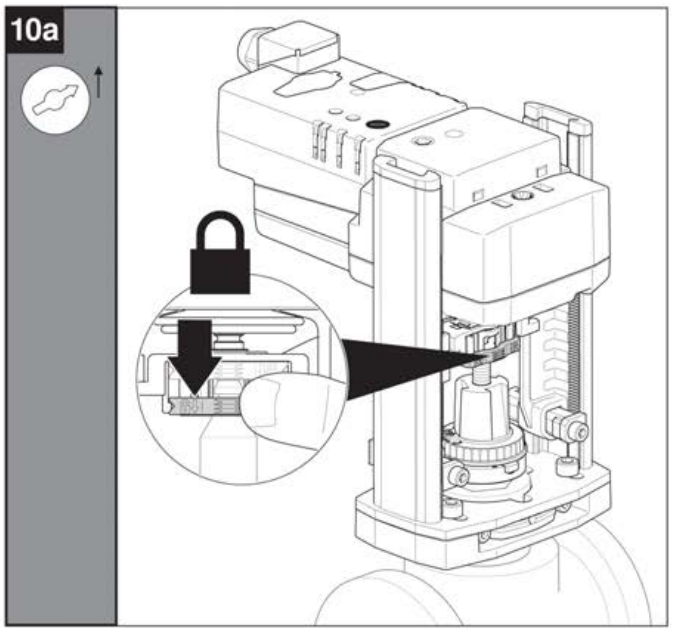

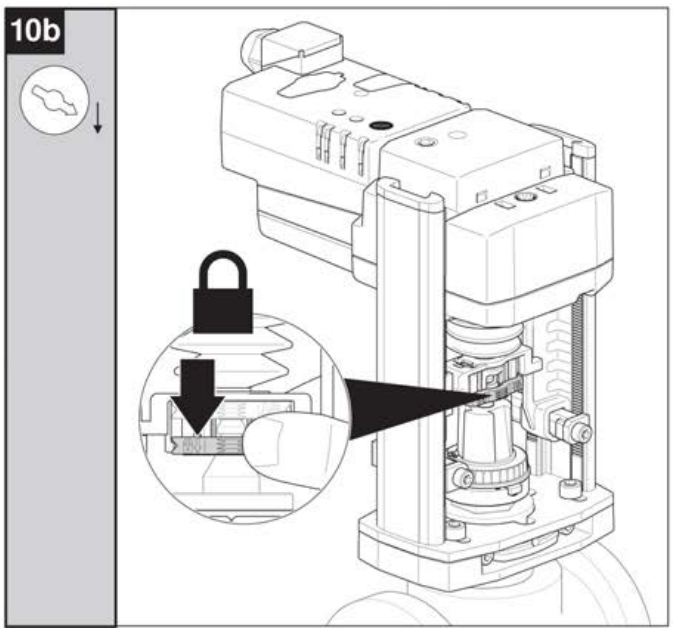

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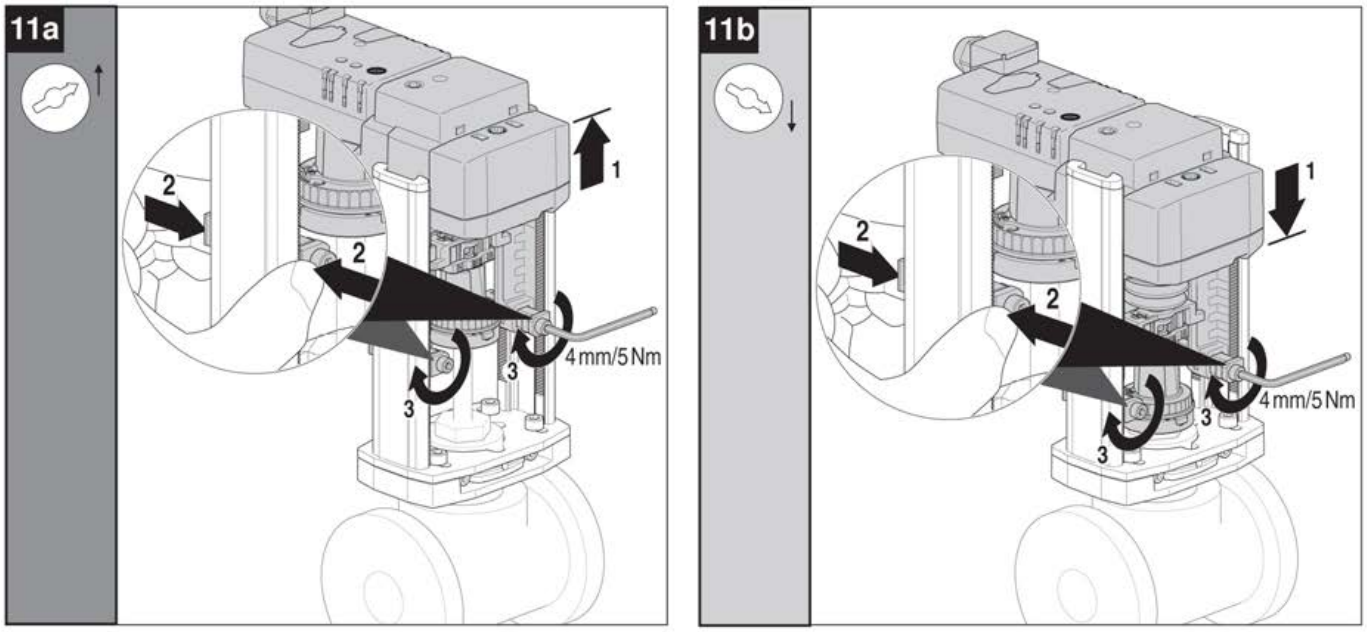
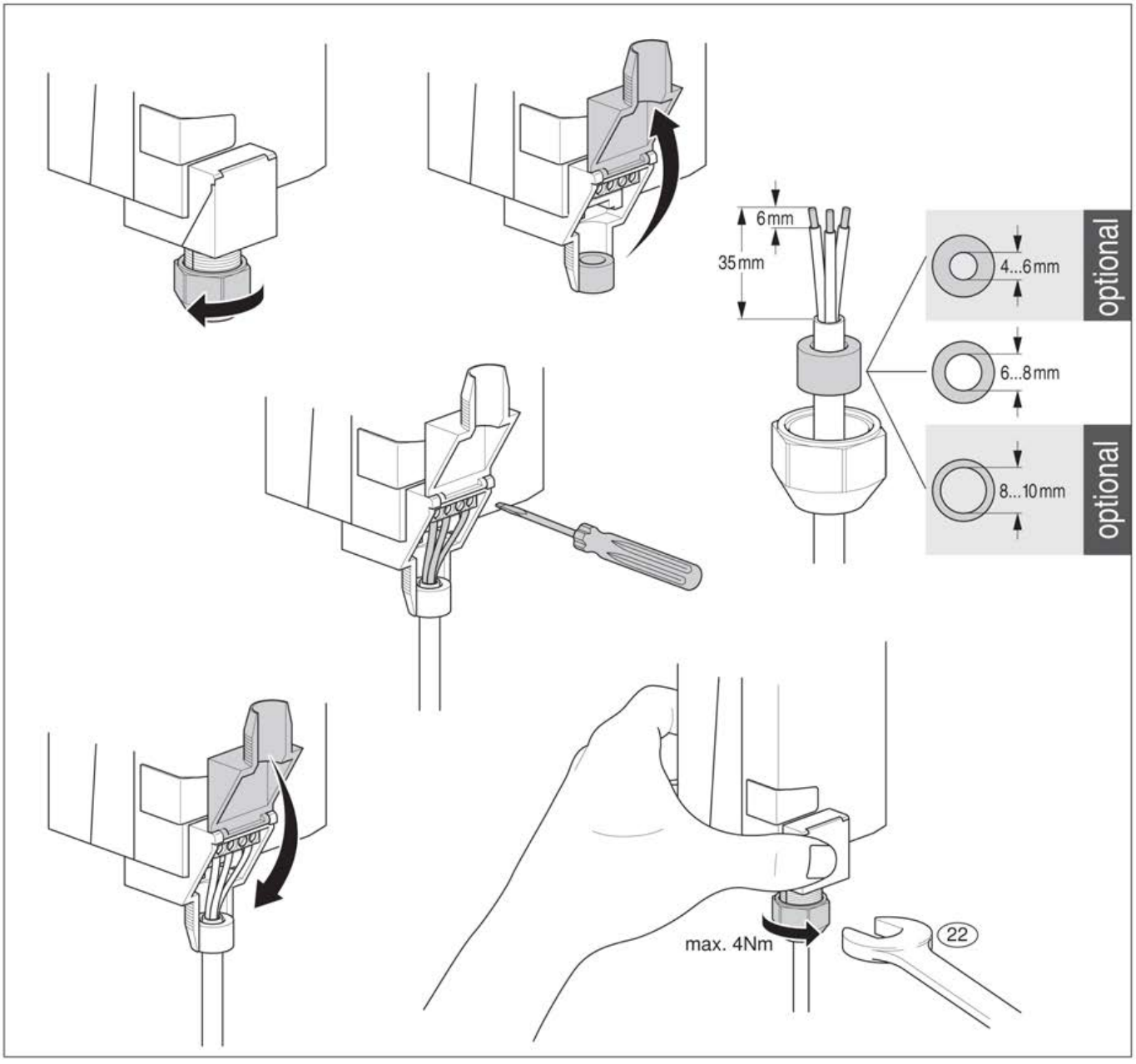
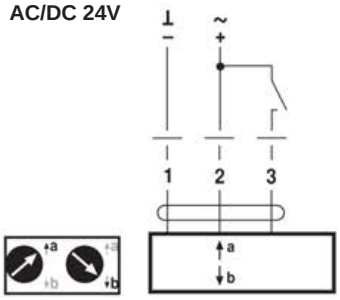

11a
1
2
2
3
3
4 mm/5 Nm
11b
1
2
2
3
3
4 mm/5 Nm


6 mm
35 mm
4...6 mm
optional
6...8 mm
8...10 mm
optional
max. 4Nm
22

AC/DC 24V



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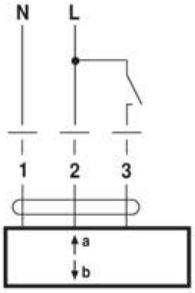
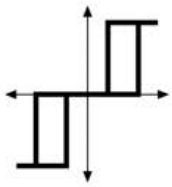


NV24A-RE
SV24A-RE

NV230A-RE
SV230A-RE



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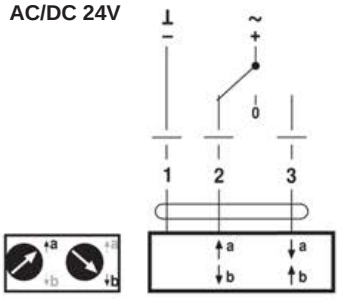

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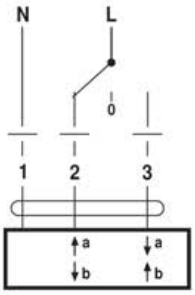
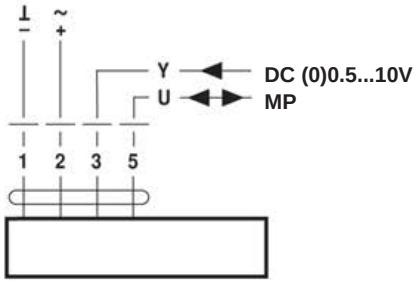


NV24A-RE
SV24A-RE

NV230A-RE
SV230A-RE

AC/DC 24V



NV24A-MP-RE
SV24A-MP-RE

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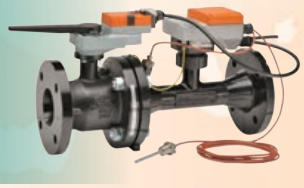

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