

Globe valve, 3-way, External thread

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


Type overview

Type	DN []	G ["]	kvs [m ³ /h]	Stroke [mm]	PN []	Sv min. []
H511B	15	1 1/8	0.63	15	16	50
H512B	15	1 1/8	1	15	16	50
H513B	15	1 1/8	1.6	15	16	50
H514B	15	1 1/8	2.5	15	16	50
H515B	15	1 1/8	4	15	16	50
H520B	20	1 1/4	6.3	15	16	100
H525B	25	1 1/2	10	15	16	100
H532B	32	2	16	15	16	100
H540B	40	2 1/4	25	15	16	100
H550B	50	2 3/4	40	15	16	100

Technical data

Functional data	Media	Cold and warm water, water with glycol up to max. 50% vol.
	Medium temperature	5...120°C
	Medium temperature note	-10°C with stem heating
	Permissible pressure ps	1600 kPa
	Flow characteristic	Control path A – AB: equal percentage (VDI/VDE 2173) n(gl) = 3, optimised in the opening range, Bypass B – AB: linear (VDI/VDE 2173)
	Leakage rate	Control path A - AB: max. 0.05% of the kvs value, Bypass B - AB: max. 1% of the kvs value
	Pipe connectors	External thread according to ISO 228
	Closing point	Top (▲)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	Housing	Red casting brass Rg5
	Closing element	Stainless steel
	Stem	Stainless steel
	Stem seal	EPDM O-ring
	Seat	Red casting brass Rg5 / Niro (Bypass)

Safety notes


- The 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.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve may not be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- When determining the flow rate characteristic of controlled devices, the recognised directives must be observed.

Product features

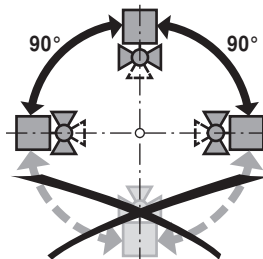
- Mode of operation** The globe valve is adjusted by a globe valve actuator. The actuators are controlled by a commercially available modulating or 3-point control system and move the valve cone, which acts as a mixing device, to the opening position dictated by the positioning signal.
- Flow characteristic** An equal percentage flow characteristic in the flow direction is produced by the profile of the valve cone. The bypass exhibits a linear characteristic curve.

Accessories

	Description	Type
Electrical accessories	Stem heating DN 15-50 (45W)	ZH24-1
	Description	Type
Mechanical accessories	Pipe connector, to globe valve DN 15 Rp 1/2"	ZH4515
	Blanked connection, to globe valve DN 15 with external thread	ZH515
	Pipe connector, to globe valve DN 20 Rp 3/4"	ZH4520
	Blanked connection, to globe valve DN 20 with external thread	ZH520
	Pipe connector, to globe valve DN 25 Rp 1"	ZH4525
	Blanked connection, to globe valve DN 25 with external thread	ZH525
	Pipe connector, to globe valve DN 32 Rp 1 1/4"	ZH4532
	Blanked connection, to globe valve DN 32 with external thread	ZH532
	Pipe connector, to globe valve DN 40 Rp 1 1/2"	ZH4540
	Blanked connection, to globe valve DN 40 with external thread	ZH540
	Pipe connector, to globe valve DN 50 Rp 2"	ZH4550
	Blanked connection, to globe valve DN 50 with external thread	ZH550

Installation notes

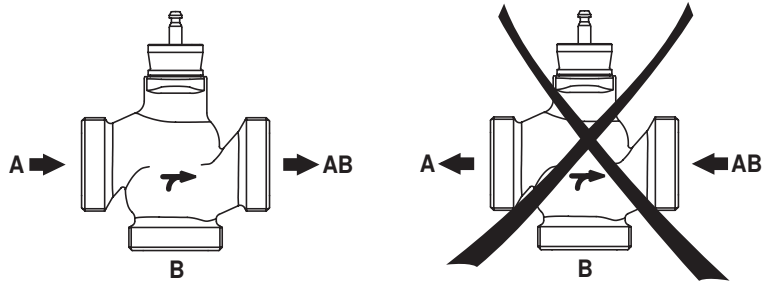
- Recommended installation positions** The globe valve may be mounted upright to horizontal. It is not permissible to mount the globe valves with the spindle pointing downwards.



- Water quality requirements** The water quality requirements specified in VDI 2035 must be adhered to. Belimo valves are regulating devices. For the valves to function correctly in the long term, they must be kept free from particle debris (e.g. welding beads during installation work).
The installation of suitable strainer is recommended.
- Maintenance** Globe valves and globe valve actuators are maintenance-free.
Before any kind of service work is carried out on the actuator, it is essential to isolate the globe valve actuator from the power supply (by disconnecting the electrical cables if necessary). Any pumps in the part of the piping system concerned must also be switched off and the appropriate shut-off valves closed (allow everything to cool down first if necessary and reduce the system pressure to ambient pressure level).
The system must not be returned to service until the globe valve and the globe valve actuator have been mounted properly in accordance with the instructions and the pipes have been refilled in the proper manner.

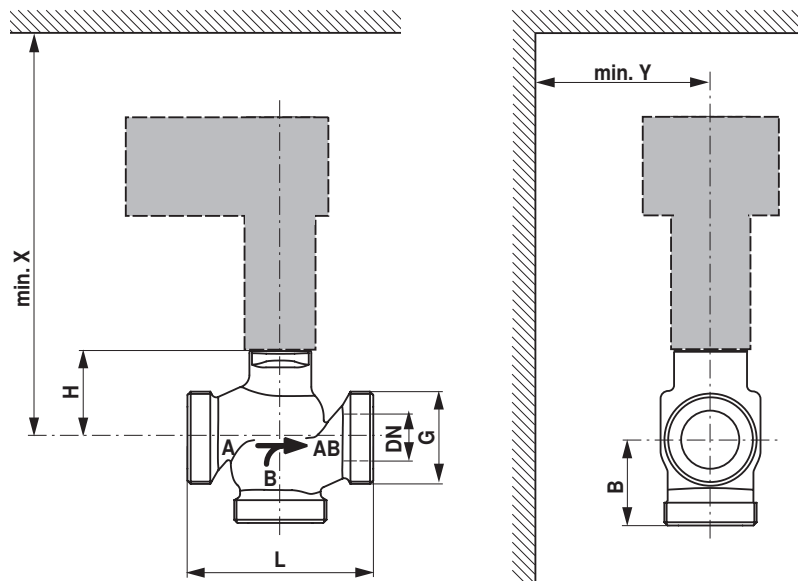
Installation notes

Flow direction The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the valve could become damaged.



Dimensions / Weight

Dimensional drawings



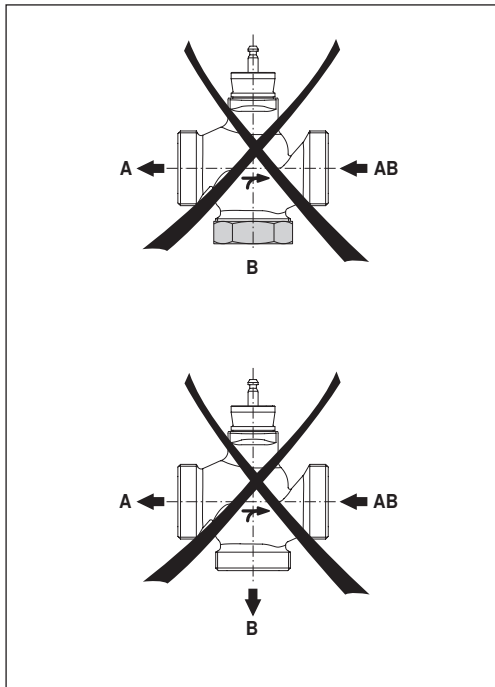
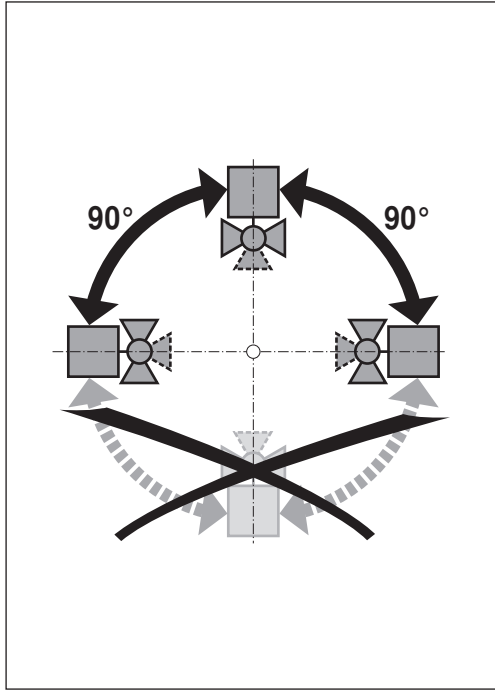
X/Y: Minimum distance with respect to the valve centre.
The actuator dimensions can be found on the respective actuator data sheet.

Type	DN []	G ["]	L [mm]	B [mm]	H [mm]	X [mm]	Y [mm]	Weight approx. [kg]
H511B	15	1 1/8	80	55	46	290	100	1.2
H512B	15	1 1/8	80	55	46	290	100	1.2
H513B	15	1 1/8	80	55	46	290	100	1.2
H514B	15	1 1/8	80	55	46	290	100	1.2
H515B	15	1 1/8	80	55	46	290	100	1.3
H520B	20	1 1/4	90	55	46	290	100	1.3
H525B	25	1 1/2	110	55	52	300	100	1.5
H532B	32	2	120	55	56	300	100	2.0
H540B	40	2 1/4	130	60	65	310	100	2.5
H550B	50	2 3/4	150	65	65	310	100	3.4

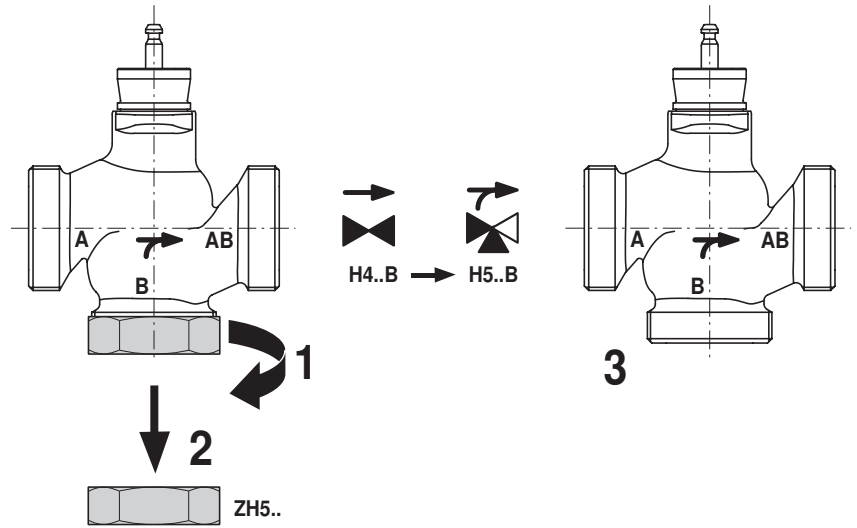
Further documentation

- Overview Valve-actuator combinations
- Data sheets for globe valve actuators
- Installation instructions for valves and/or globe valve actuators
- Notes for project planning 2-way and 3-way globe valves

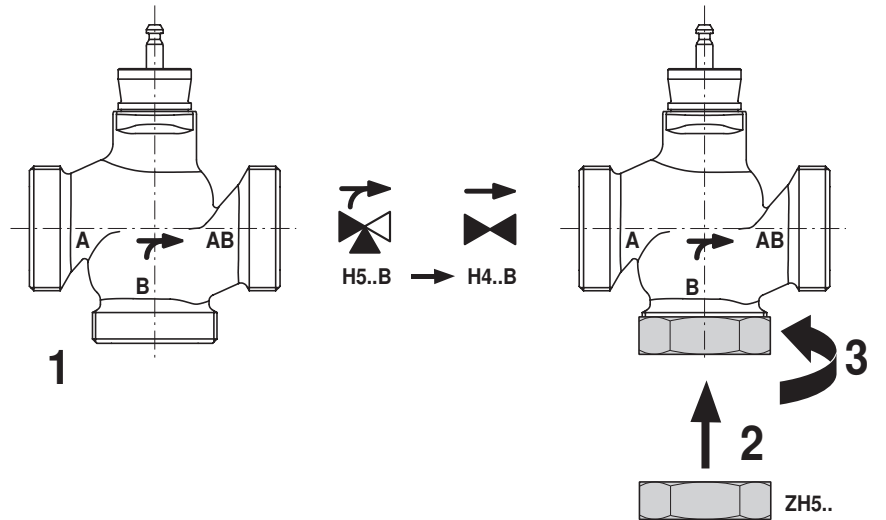
BELIMO



H4..B → H5..B



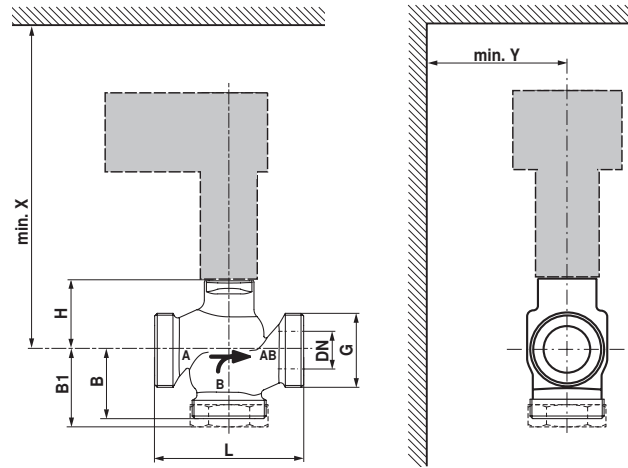
H5..B → H4..B



71554-00001.A



H4..B / H5..B



ps <1600 kPa (PN16) t= +5... +120°C		H4..B		H5..B		LV..A.. 500N		NV..A.. 1000N		SV..A.. 1500N						
DN	Hub / Stroke [mm]		B1 [mm]		B [mm]	Δps [kPa]	$\Delta pmax$ [kPa]	Δps [kPa]	$\Delta pmax$ [kPa]	Δps [kPa]	$\Delta pmax$ [kPa]	L [mm]	H [mm]	G [mm]	X [mm]	Y [mm]
15	15	H411B ... 15B	65	H511B ... 15B	55	1300	400	1600	400	1600	400	80	46	1 1/8	290	100
20	15	H420B	65	H520B	55	900	400	1600	400	1600	400	90	46	1 1/4	290	100
25	15	H425B	66	H525B	55	500	400	1300	400	1600	400	110	52	1 1/2	300	100
32	15	H432B	67	H532B	55	350	350	1000	400	1600	400	120	56	2	300	100
40	15	H440B	72	H540B	60	150	150	500	400	900	400	130	65	2 1/4	310	100
50	15	H450B	75	H550B	65	70	70	300	300	550	400	150	65	2 3/4	310	100

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

- Actuating force 1000 N
- Nominal voltage AC/DC 24 V
- Control modulating DC (0)2...10 V
- Nominal stroke 20 mm


Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	1.5 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	3 VA
	Connection supply / control	Terminals with cable 1 m, 4 x 0.75 mm ² (Terminal 4 mm ²)
	Parallel operation	Yes (note the performance data)
Functional data	Actuating force motor	1000 N
	Positioning signal Y	DC 0...10 V
	Positioning signal Y note	Input impedance 100 kΩ
	Operating range Y	DC 2...10 V
	Position feedback U	DC 2...10 V
	Position feedback U note	Max. 0.5 mA
	Position accuracy	5% absolute
	Manual override	With push-button, can be locked
	Nominal stroke	20 mm
	Actuating time motor	150 s / 20 mm
	Adaption setting range	manual (automatic on first power-up)
	Sound power level motor	45 dB(A)
	Position indication	Mechanically, 5...20 mm stroke
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
Weight	Ambient temperature range	0...50 °C
	Non-operating temperature	-40...80 °C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
	Weight	1.4 kg

Safety notes


- This device has been designed for use in stationary heating, ventilation and air conditioning systems and must not 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 during installation.

Safety notes

- The switch for changing the direction of motion and so the closing point may be adjusted only by authorised specialists. The direction of motion 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 must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Mode of operation	The actuator is connected with a standard modulating signal of DC 0...10V and drives 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.
Simple direct mounting	Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated by 360° on the valve neck.
Manual override	Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked). The stroke can be adjusted by using a hexagon socket screw key (4 mm), 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	Factory setting: 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. The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaption, which is when the operating range and position feedback adjust themselves to the mechanical setting range. The actuator then moves into the position defined by the positioning signal.
Direction of stroke switch	When actuated, the direction of stroke switch changes the running direction in normal operation.
Adaption and synchronisation	An adaption can be triggered manually by pressing the “Adaption” button. Both mechanical end stops are detected during the adaption (entire setting range). The actuator then moves into the position defined by the positioning signal.

Accessories

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

Electrical installation

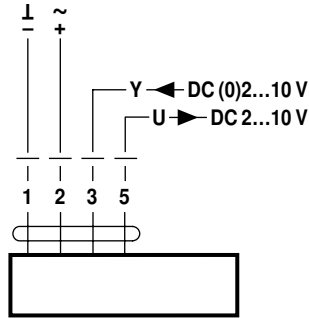


Notes

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

Wiring diagrams

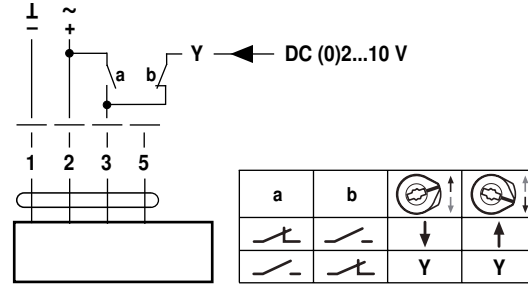
AC/DC 24 V, modulating



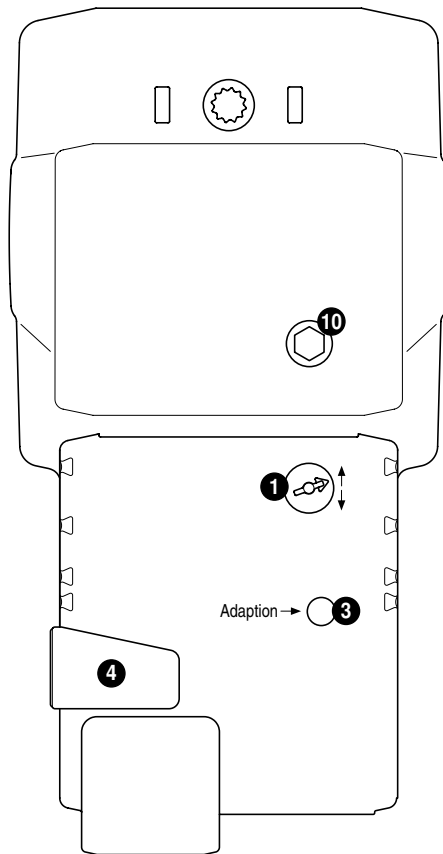
Cable colours:

- 1 = black
- 2 = red
- 3 = white
- 5 = orange

Override control (frost protection circuit)



Operating controls and indicators



1 Direction of stroke switch

Switch over: Direction of stroke changes

3 Push-button and LED display yellow

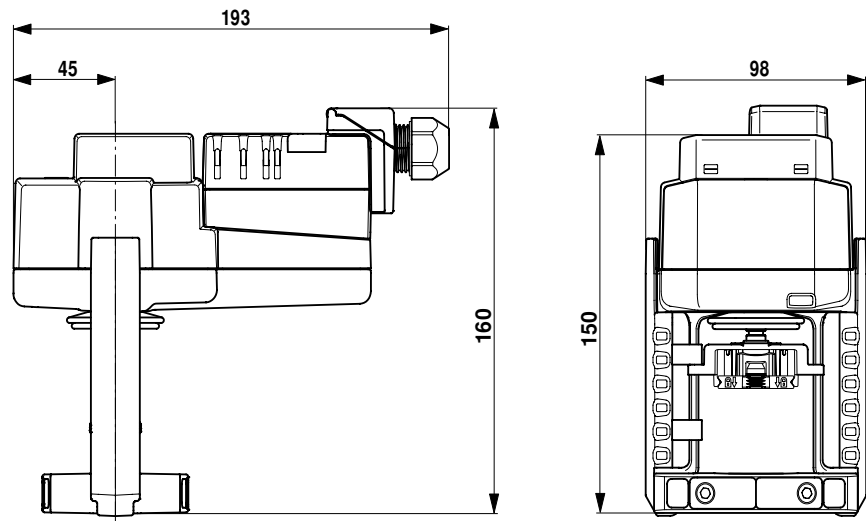
Off: Standard mode
 On: Adaptation process active
 Press button: Triggers stroke adaptation, followed by standard mode

4 Gear disengagement button

Press button: Gear disengages, motor stops, manual override possible
 Release button: Gear engages, synchronisation starts, followed by standard mode

10 Manual override

Clockwise: Actuator spindle extends
 Counterclockwise: Actuator spindle retracts

Dimensions [mm]**Dimensional drawings****Further documentation**

- Overview Valve-actuator combinations
- Data sheets for globe valves
- Installation instructions for actuators and/or globe valves
- Notes for project planning 2-way and 3-way globe valves
- General notes for project planning