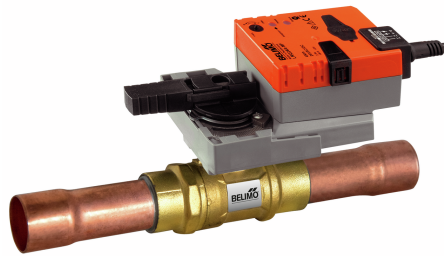


## Characterised control valve

- Suitable for HFC, HFO and R290 refrigerants
- Suitable for safety class A3 refrigerants (ISO 817)
- Air-bubble tight
- For refrigerant flow control



Picture may differ from product

## Type Overview

Type	Kvs [m <sup>3</sup> /h]	ODF	PN
X8035M.4392A	15.5	35-35 mm	50
X8042M.5392A	21	42-42 mm	50
X8054M.6392A	43	54-54 mm	50

## Technical data

<b>Electrical data</b>	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	11 W
	Power consumption in rest position	3 W
	Power consumption for wire sizing	22 VA I <sub>max</sub> 20 A @ 5 ms
	Connection supply / control	Cable 1 m, 4 x 0.75 mm <sup>2</sup>
	Parallel operation	Yes (note the performance data)
<b>Functional data</b>	Operating range Y	2...10 V
	Input impedance	100 kΩ
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	Start point 0.5...8 V End point 2.5...10 V
	Setting fail-safe position	NC/NO or adjustable 0...100% (POP rotary knob)
	Bridging time (PF)	2 s
	Bridging time (PF) variable	0...10 s
	Running time motor	4 s / 90°
	Running time fail-safe	<4 s / 90°
	Sound power level Motor	52 dB(A)
	Sound power level, fail-safe	61 dB(A)
	Fluid	HFC, HFO, R290
	Fluid temperature	-20...70°C [-4...158°F]
	Differential pressure Δp <sub>max</sub>	3500kPa
Flow characteristic	equal percentage (VDI/VDE 2173)	
Flow setting	See installation instruction	

**Technical data**

<b>Functional data</b>	Leakage rate	air-bubble tight, leakage rate A (EN 12266-1)
	Angle of rotation note	Adjustable Operating range 15...90°
	Pipe connection	Internal soldering sleeve ODF
	Installation orientation	upright to horizontal (in relation to the spindle)
	Servicing	maintenance-free
	Adaptation setting range	manual (automatic on first power-up)
	<b>Safety data</b>	Protection class IEC/EN
Degree of protection IEC/EN		IP54
EMC		CE according to 2014/30/EU
Certification IEC/EN		IEC/EN 60730-1 and IEC/EN 60730-2-14
Type of action		Type 1.AA
Rated impulse voltage supply / control		0.8 kV
Pollution degree		3
Ambient humidity		Max. 95% RH, non-condensing
Ambient temperature		-30...50°C [-22...122°F]
Storage temperature		-40...80°C [-40...176°F]
<b>Materials</b>	Valve body	CW617N
	Closing element	Chrome-plated brass
	Spindle	CW617N DW
	Spindle seal	HNBR O-ring
<b>Terms</b>	Abbreviations	POP = Power off position / fail-safe position CPO = Controlled power off / controlled fail-safe PF = Power fail delay time / bridging time

**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.
- Outdoor application: only possible in case that no (sea) water, snow, ice, insolation or aggressive gases interfere directly with the device and that it is ensured that the ambient conditions remain within the thresholds according to the data sheet at any time.
- 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 rotation may only be operated by authorised specialists. The direction of rotation must not in particular be reversed in a frost protection circuit.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- Cables must not be removed from the device.
- 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.
- The valve has been designed for use in stationary electrical heat pumps, air-conditioning systems and dehumidifiers and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- The suitability of these products for applications in which flammable refrigerants are used must be checked by the user for each individual application. Any application is the sole responsibility of the user.
- 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.

**Product features**

- Operating mode** The ball valve is adjusted by a rotary actuator.  
The ball valve is opened in a counterclockwise direction and closed in a clockwise direction.

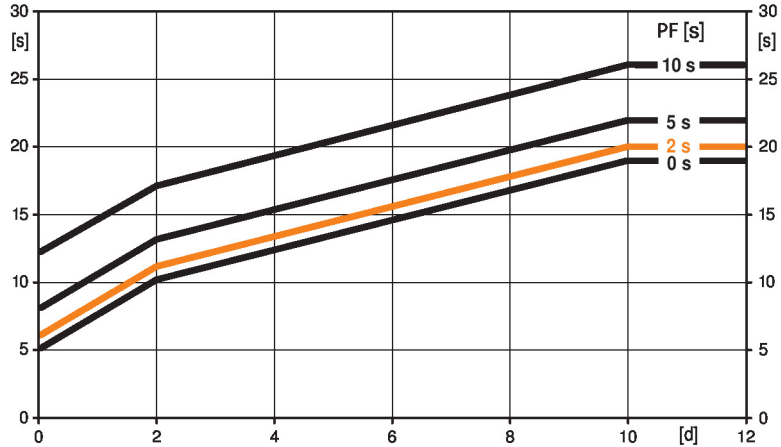
**Pre-charging time (start up)**

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 a power failure, the actuator can move at any time from its current position into the preset fail-safe position.

The duration of the pre-charging time depends mainly on following factors:

- Duration of the power failure
- PF delay time (bridging time)

Typical pre-charging time



[d] = Power failure in days  
 [s] = Pre-charging time in seconds  
 PF[s] = Bridging time  
 Calculation example: Given a power failure of 3 days and a bridging time (PF) set at 5 s, the actuator requires a pre-charging time of 14 s after the power has been reconnected (see graphic).

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]					

**Delivery condition (capacitors)**

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

**Bridging time**

Power failures can be bridged up to a maximum of 10 s.

In the event of a power failure, the actuator will remain stationary in accordance with the set bridging time. If the power failure is greater than the set bridging time, the actuator will move into the selected fail-safe position.

The bridging time set at the factory is 2 s. It can be modified on site in operation by means of the Belimo service tool MFT-P.

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

For retroactive adjustments of the bridging time with the Belimo service tool MFT-P or with the ZTH EU adjustment and diagnostic device only the values need to be entered.

**Setting fail-safe position**

The rotary knob fail-safe position can be used to adjust the desired fail-safe position 0...100% in 10% increments. The rotary knob always refers to the adapted angle of rotation range. In the event of a power failure, the actuator will move into the selected fail-safe position.

Settings: The rotary knob must be set to the «Tool» position for retroactive settings of the fail-safe 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.

**Configurable device**

The factory settings cover the most common applications. Single parameters can be modified with Belimo Assistant 2 or ZTH EU.

Product features

- Manual override** Click out the actuator, taking into account the operating conditions of the refrigerant circuit and its components, and adjust the valve using the Belimo accessory ZCQ-FL.
- Home position** The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaptation, 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 control signal.  
Factory setting: Y2 (counter-clockwise rotation).
- Adaptation and synchronisation** An adaptation can be triggered manually by pressing the "Adaptation" button or with Belimo Assistant 2. Both mechanical end stops are detected during the adaptation (entire setting range).  
Automatic synchronisation after pressing the manual override button is configured. The synchronisation is in the home position (0%).  
The actuator then moves into the position defined by the control signal.  
A range of settings can be made using Belimo Assistant 2.

Electrical installation

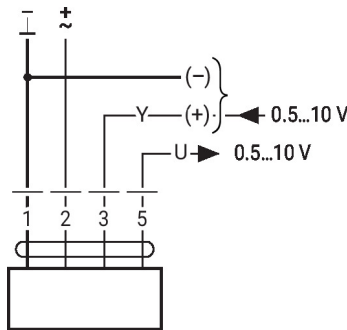


**Supply from isolating transformer.**  
**Parallel connection of other actuators possible. Observe the performance data.**  
**Direction of rotation switch Factory setting: Direction of rotation Y2.**

**Wire colours:**

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

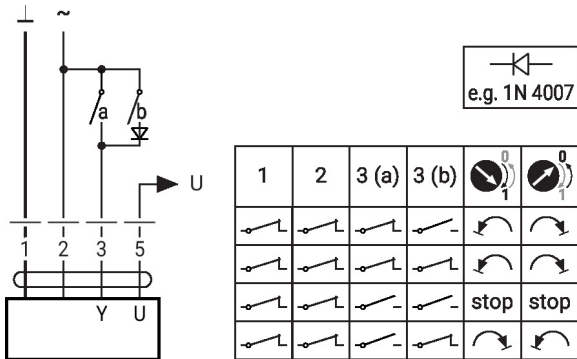
AC/DC 24 V, modulating



**Further electrical installations**

**Functions with specific parameters (configuration necessary)**

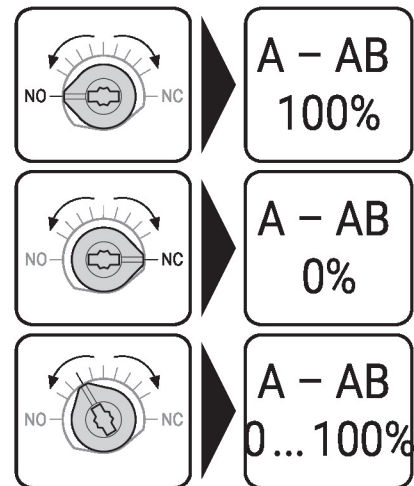
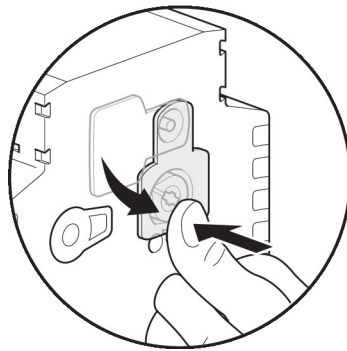
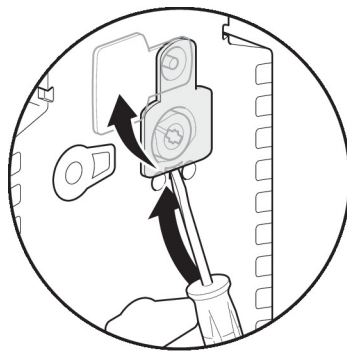
Control 3-point with AC 24 V



**Operating controls and indicators**

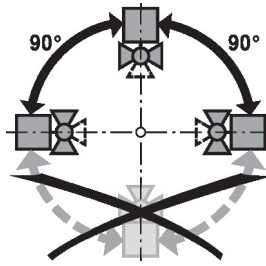
**Setting fail-safe position**

Setting fail-safe position (POP)



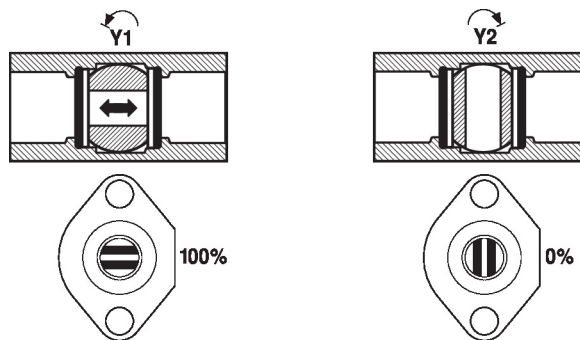
## Installation notes

**Permissible installation orientation** The ball valve can be installed upright to horizontal. The ball valve may not be installed in a hanging position, i.e. with the spindle pointing downwards.

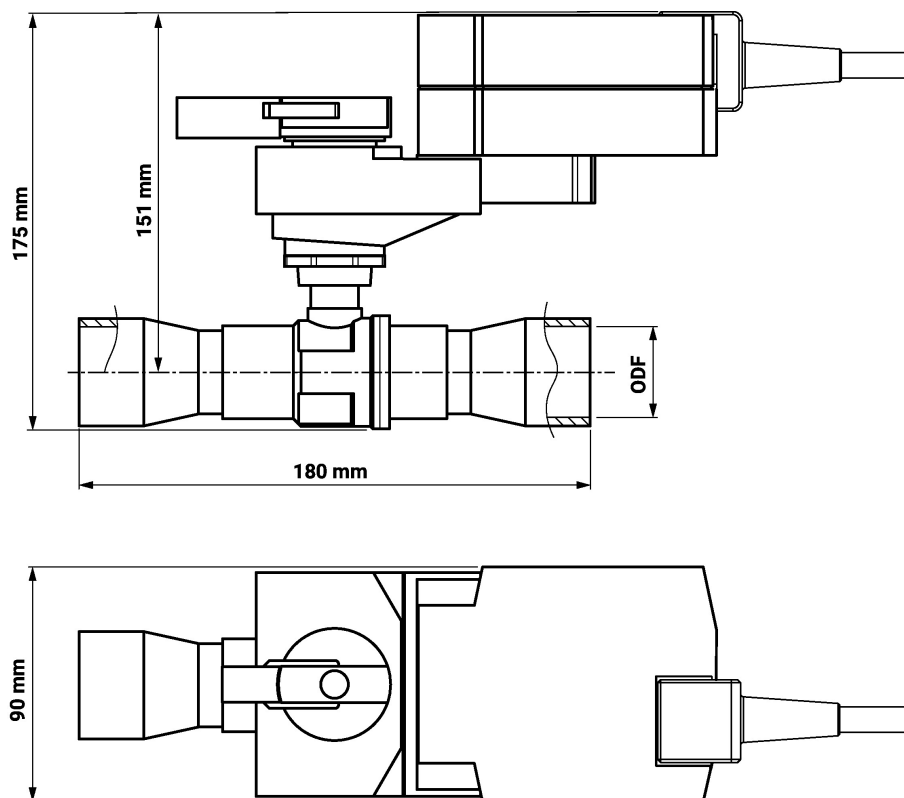


**Servicing** Ball valves and rotary actuators are maintenance-free.  
 Before any service work on the control element is carried out, it is essential to isolate the rotary actuator from the power supply (by unplugging the electrical cable if necessary). The operating conditions of the refrigerant circuit and its components must be observed.

**Flow direction** Direction of flow in both directions possible.



## Dimensions



Type	ODF	Weight
X8035M.4392A	35-35 mm	0.23 kg
X8042M.5392A	42-42 mm	0.23 kg
X8054M.6392A	54-54 mm	0.23 kg