



· SYSTEM: HVAC



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**MOTORIZED WATERTIGHT VALVES**

**REF.: D-MO5462-006**



· SYSTEM: HVAC



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## 1. TECHNICAL AND FUNCTIONAL DESCRIPTION

These valves have been designed for use in heating, ventilation and air conditioning systems. These valves are opened or closed completely by an open-close rotary actuator. Continuous rotary actuators are connected to the body valve and move it to any position desired.

### Ventilation System

Each motorized control valve with the same classification of their associated fan will be operated by means of the system control cabinets, in such way they will be opened when their associated fan receives the start command, and they will be closed when their associated fan receives the stop command.

#### **Notes:**

*-Motorized valves with a different classification of their associated fans and do not have a local operated panel (LOP) associated:*

They will be opened when their associated fan receives the start command, and they will not be closed when their associated fan receives the stop command to avoid excessive overpressure in headquarters condition (but still not NBC, close down condition). “Open / Close” push buttons and “Local / Remote” switch are available in the local control panel (CTP).

*-Motorized valves with a different classification of their associated fans and have a local operated panel (LOP) associated:*

They will be opened when their associated fan receives the start command, and they will not be closed when their associated fan receives the stop command to avoid excessive overpressure in headquarters condition (but still not NBC, close down condition). In the local operated panel (LOP) “open” and “close” push buttons, and a “Local / Remote” switch are available (these operations are not available in the local control panel, CTP, associated).

*- Motorized valves that are not associated to any fan. They have a local operated panel (LOP) associated:*

These valves are not directly associated to any fan and a local operation panel (LOP) will be provided. In this panel “open” and “close” push buttons, and a “Local / Remote” switch are available (these operations are not available in the local control panel, CTP, associated).

### Air Conditioning System

Each motorized valve will be locally controlled by means of the system control cabinets, in such way they will be opened when their associated fan coil/unit cooler receives the start command, and they will be closed when their associated fan coil/unit cooler receives the stop command.

Furthermore, they will be interlocked with their associated fan coils/unit coolers, so if a motorized valve is locally closed its associated fan coil/unit cooler will be stopped, and any other associated valve will be closed too.



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# ANNEX A. DATA SHEET OF VALVES AND ACTUATORS

**Butterfly valve with Wafer types**

- For open and closed cold and warm water systems
- For switching heat generators or cooling machines on and off


**Type overview**

Type	DN [ ]	kvmax [ m <sup>3</sup> /h]	kvs [ m <sup>3</sup> /h]	PN [ ]
<b>D6200W</b>	200	2200	820	6 / 10 / 16
<b>D6250W</b>	250	4200	1300	6 / 10 / 16
<b>D6300W</b>	300	5700	1740	6 / 10 / 16

**Technical data**

<b>Functional data</b>	Media	Cold and warm water, water with glycol up to max. 50% vol.
	Medium temperature	-20...120°C
	Permissible pressure ps	1600 kPa
	Leakage rate	Leakage rate A, tight (EN 12266-1)
	Angle of rotation	90°
	Installation position	Upright to horizontal (in relation to the stem)
	Suitable connection flange	In accordance with ISO 7005-1 and EN 1092-1 In accordance with ISO 7005-2 and EN 1092-2 In accordance with DIN 2641 and DIN 2642
<b>Maintenance</b>	Maintenance-free	
<b>Materials</b>	Body	EN-GJS400-15 (GGG 40), polyester-powder coating
	Closing element	1.4308 (stainless steel)
	Stem	1.4021 (stainless steel)
	Stem seal	O-ring EPDM
	Stem bearing	Bronze, steel, PTFE
	Seat	EPDM

**Safety notes**


- The valve 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.
- 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.
- The damper must be opened and closed slowly in order to avoid hydraulic shocks in the pipe system.
- The valve is not allowed to be operated without actuator or worm gear while flow is in the pipe. Without actuator or worm gear, the valve could close and cause damage (water hammer).

## Product features

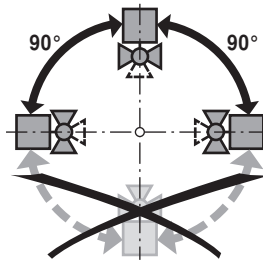
- Mode of operation** The butterfly valve is opened or closed completely by an open-close rotary actuator. Continuous rotary actuators are connected by a commercially available controller and move the valve to any position desired. The valve disk made of stainless steel is pressed into the soft-sealing EPDM seat by a rotary movement and ensures leakage rate A (tight). The pressure losses are slight in the open position and the kv value is at a maximum.
- Manual override** Manual throttling or shut-off can be carried out with a worm gear (see «Accessories»). The worm gear with position indication is steplessly adjustable (self-locking).

## Accessories

	Description	Type
Mechanical accessories	Worm gear for butterfly valves DN125...300	ZD6N-S150

## Installation notes

- Recommended installation positions** The butterfly valves may be mounted upright to horizontal. The butterfly valves may not be installed in a hanging position i.e. with the spindle pointing downwards.



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

- Maintenance** Butterfly valves and rotary actuators are maintenance-free. Before any service work on the final controlling device is carried out, it is essential to isolate the rotary actuator from the power supply (by unplugging the electrical cable if necessary). Any pumps in the part of the piping system concerned must also be switched off and the appropriate slide valves closed (allow all components to cool down first if necessary and always reduce the system pressure to ambient pressure level). The system must not be returned to service until the butterfly valve and the rotary actuator have been reassembled correctly in accordance with the instructions and the pipeline has been refilled by professionally trained personnel. To avoid a torque increase during off season shut down, exercise the butterfly valve (full open and close) at least once a month.

- Flow setting** The Belimo butterfly valves have an approximate equal percentage characteristic curve between 0 and 60 percent opening angle.

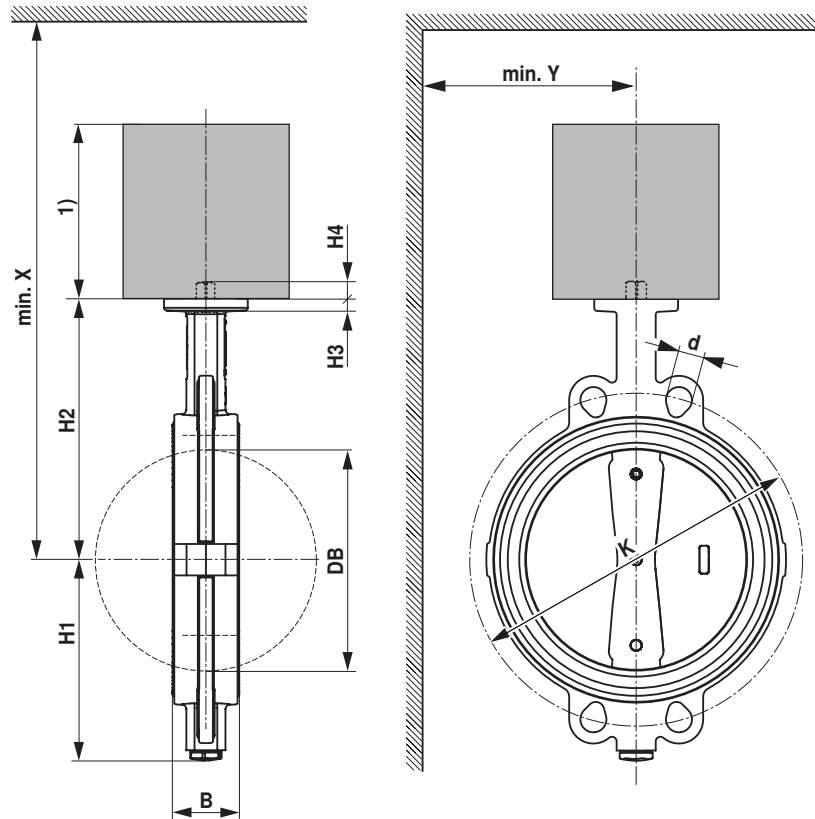
		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
DN 200	kv (m <sup>3</sup> /h)	10	60	170	330	540	820	1200	1640	2000	2200
DN 250	kv (m <sup>3</sup> /h)	10	100	280	530	850	1300	1920	2710	3580	4200
DN 300	kv (m <sup>3</sup> /h)	30	160	400	710	1130	1740	2560	3610	4790	5700



Table: Valve opening / flow

## Dimensions / Weight

Dimensional drawings



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

Type	DN [ ]	B [ mm]	DB [ mm]	H1 [ mm]	H2 [ mm]	H3 [ mm]	H4 [ mm]	d (PN6) [ mm]	K (PN6) [ mm]
D6200W	200	60	202	172	240	15	19	8 x M16	280
D6250W	250	68	250	206	268	15	24	12 x M16	335
D6300W	300	78	301	244	316	15	24	12 x M20	395

Type	d (PN10) [ mm]	K (PN10) [ mm]	d (PN16) [ mm]	K (PN16) [ mm]	X [ mm]	Y [ mm]	Weight [ kg]
D6200W	8 x M20	295	12 x M20	295	500	300	13
D6250W	12 x M20	350	12 x M24	355	530	300	21
D6300W	12 x M20	400	12 x M24	410	580	300	32

## Further documentation

- Overview Valve-actuator combinations
- Data sheets for actuators
- Installation instructions for actuators and/or butterfly valves
- General notes for project planning

# EU DECLARATION OF CONFORMITY



Document ID

1. Type D6250W D6250WL  
D6300W D6300WL

2. Manufacturer **BELIMO Automation Ltd**  
Brunnenbachstrasse 1  
8340 Hinwil  
Switzerland

3. Responsibility declare under the sole responsibility that the product

4. Product Butterfly Valve

to which this declaration relates is in conformity with the following directives

5. Directives 2014/68/EU PED 2011/65/EU RoHS

Harmonised standard(s)  
EN 593:2009 + A1:2011  
EN 19:2016  
EN 1092-1:2007+A1:2013  
EN 12266-1:2012  
EN 12516-1:2014  
EN 12516-2:2014  
EN 12516-4:2014

6. Standards Non-Harmonized standard(s)  
Not applicable

7.1 EU-type examination  
7.2 Certified module Notifying body which carried out the inspection  
CSI S.p.A. (Notified Body Number 0497)  
Cascina Traversagna, 21  
20030 Senago (Mi)  
Module A2

8. Necessary accessories and components Not applicable

9. Additional information CE mark and notified body numbers are on valve because it is covered by PED Table 7, Category II

Signed for and on behalf of **BELIMO Automation Ltd**

Curdin Stäheli  
Head of Division Development

Place and date of issue Hinwil, 14<sup>th</sup> July 2017

*Colors and details may differ from sample.*



SuperCap rotary actuator with emergency control function and extended functionalities for butterfly valves

- Nominal torque <90 Nm
- Nominal voltage AC/DC 24 V
- Control Open-close
- Design life SuperCaps: 15 years


**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	2 W
	Power consumption for wire sizing	20 VA
	Power consumption for wire sizing note	I <sub>max</sub> 20 A @ 5 ms
	Connection supply / control	Cable 1 m, 3 x 0.75 mm <sup>2</sup>
	Parallel operation	No
<b>Functional data</b>	Torque motor	Max. <90 Nm (not constant)
	Setting emergency setting position (POP)	NC / NO, adjustable (POP rotary button)
	Manual override	Gear disengagement with push-button
	Running time motor	150 s / 90°
	Running time emergency control position	35 s / 90°
	Running time emergency setting position note	<35 s @ 0...50° C
	Sound power level motor	52 dB(A)
	Sound power level emergency control position	61 dB(A)
	Position indication	Mechanically (integrated)
<b>Safety</b>	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 2004/108/EC
	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.AA
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
<b>Mechanical data</b>	Ambient temperature	-30...50° C
	Non-operating temperature	-40...80° C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
<b>Weight</b>	Connection flange	F05
	Weight approx.	4.1 kg
<b>Terms</b>	Abbreviations	POP = Power off position / emergency setting position CPO = Controlled power off / controlled emergency control function PF = Power fail delay time / bridging time

## Safety notes



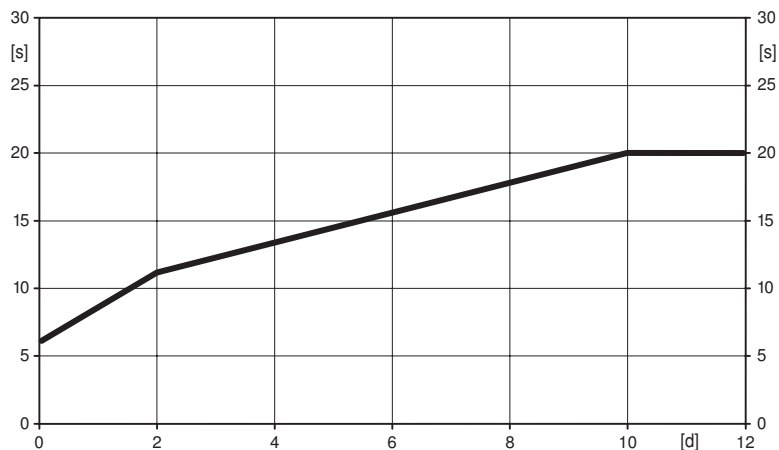
- This device has been designed for use in stationary heating, ventilation and air conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- 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.

## Product features

**Mode of operation** The actuator moves the valve to the operating position at the same time as tensioning the return spring. The ball valve is turned back to the selected emergency setting position (POP) by spring force when the supply voltage is interrupted.

**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

**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.

**Simple direct mounting** Simple direct mounting on the butterfly valve. The mounting orientation in relation to the butterfly valve can be selected in 90° (angle) increments.

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

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

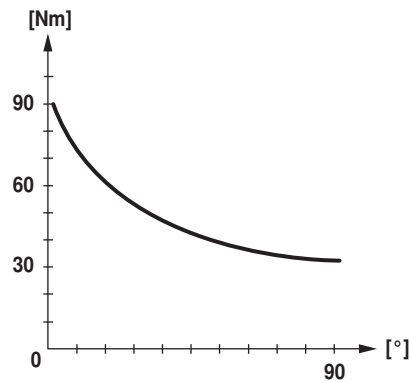
**Combination valve/actuator** For valves with the following mechanical specifications in accordance with ISO 5211 F05:

- Square stem head SW = 14 mm for form-fit coupling of the rotary actuator.
- Hole circle d = 50 mm

**Emergency setting position (POP) rotary knob** The rotary knob «Emergency setting position» can be used to adjust the desired emergency setting position (POP). In the event of an electricity interruption, the actuator drives into the selected emergency setting position (POP), taking into account the bridging time (PF) of 2 s which was set ex-works.

## Product features

**Torque not constant** Due to the non linear torque characteristic the actuator can only be used for butterfly valves and not for other armatures.



## Accessories

	Description	Type
<b>Electrical accessories</b>	Auxiliary switch, add-on, 1 x SPDT	S1A
	Auxiliary switch, add-on, 2 x SPDT	S2A
	Feedback potentiometer 140 Ohm, add-on	P140A
	Feedback potentiometer 200 Ohm, add-on	P200A
	Feedback potentiometer 500 Ohm, add-on	P500A
	Feedback potentiometer 1 kOhm, add-on	P1000A
	Feedback potentiometer 2.8 kOhm, add-on	P2800A
	Feedback potentiometer 5 kOhm, add-on	P5000A
	Feedback potentiometer 10 kOhm, add-on	P10000A

## Electrical installation

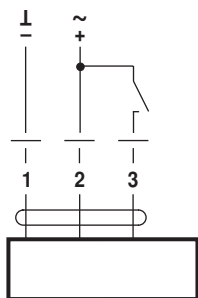


### Notes

- Connection via safety isolating transformer.

## Wiring diagrams

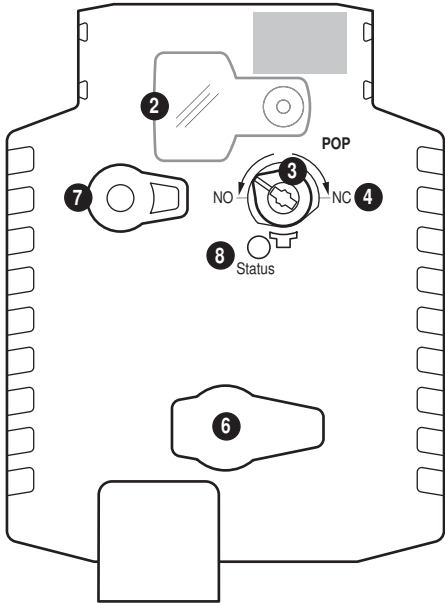
AC/DC 24 V, open-close



### Cable colours:

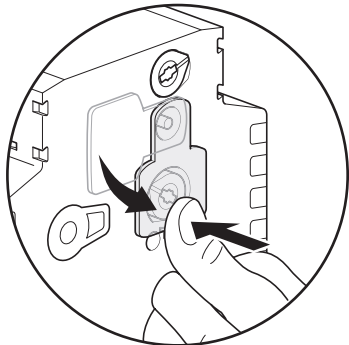
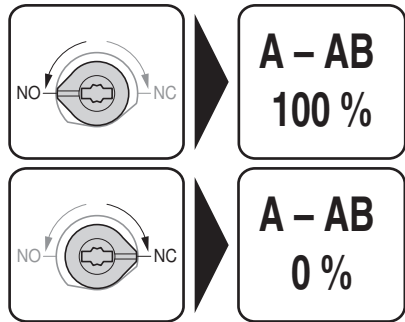
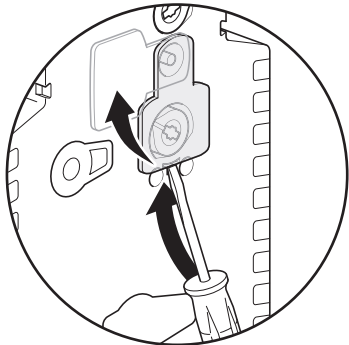
- 1 = black
- 2 = red
- 3 = white

Operating controls and indicators



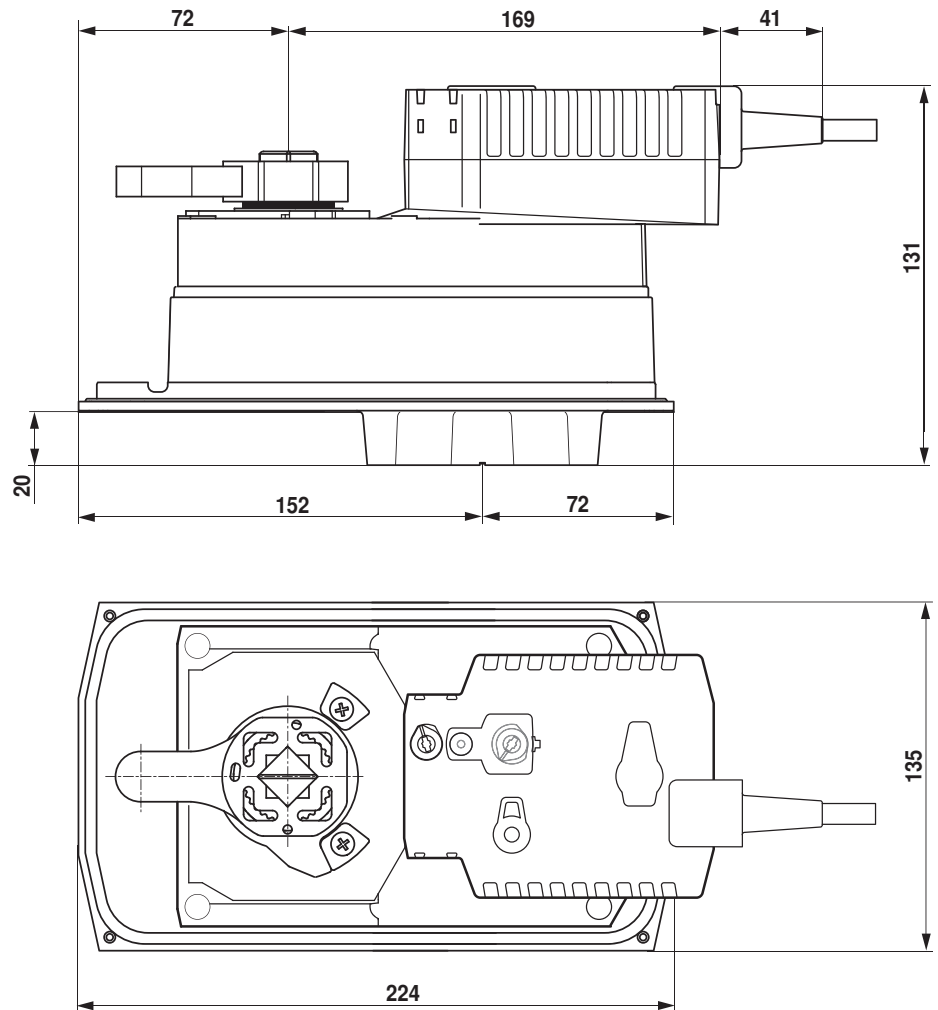
- 2 Cover, POP button
- 3 POP button
- 4 Scale for manual adjustment
- 6 (no function)
- 7 Disengagement button

LED display	Meaning / function
8 green	
On	Operation OK / without fault
Flashing	POP function active
Off	- Not in operation - Pre-charging time SuperCap - Fault SuperCap



## Dimensions [mm]

## Dimensional drawings



## Further documentation

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- Data sheets for butterfly valves
- Installation instructions for actuators and/or butterfly valves
- General notes for project planning