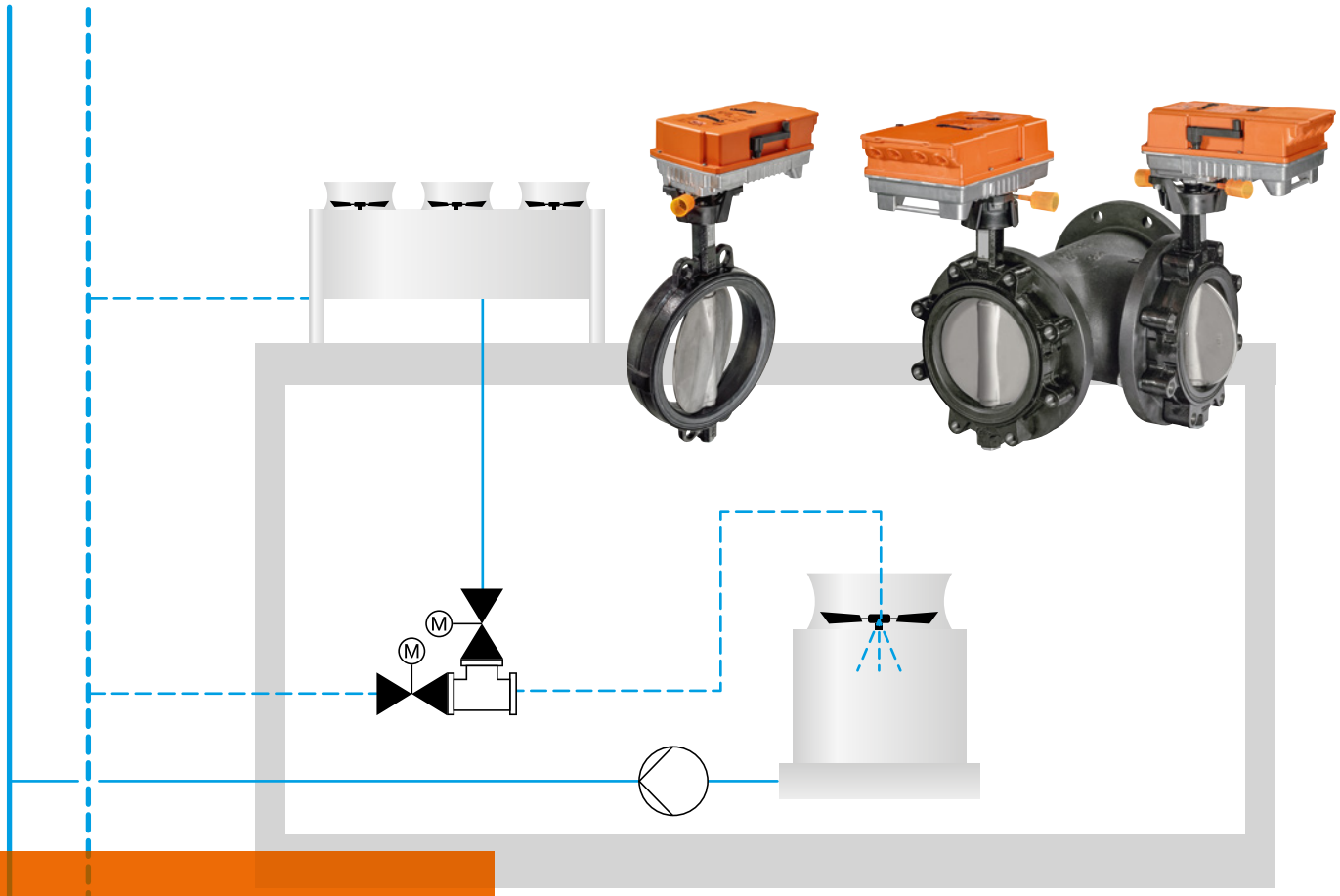


Notes for project planning

Butterfly valves for control, open/close and Changeover applications

Edition 03.2025/C

BELIMO

Table of contents

Table of contents

BELIMO

Introduction

Control applications and configuration

An opening angle of 60% is recommended as standard for control applications, no matter what the configured characteristic curve is. Belimo butterfly valves exhibit an equal-percentage characteristic curve in accordance with VDI 2173 for opening angles between 0% and 60%.
For butterfly valves with JR.. and PR..BAC actuator, the flow characteristic can be configured to equal-percentage or linear via Belimo Assistant 2 by Near Field Communication (NFC). Thanks to the configurable linear characteristic curve, 3-way control butterfly valves have a constant mixing characteristic curve, which is perfect for control applications.

Typical applications

Chiller start-up circuit

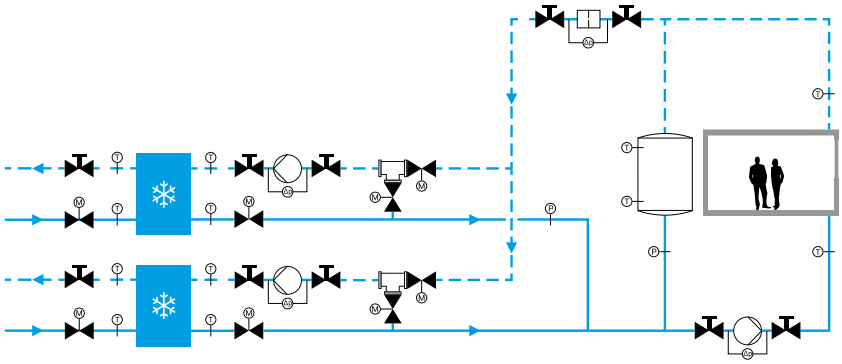


Illustration example
Examples described in detail are listed in the application brochures on heat generation, chillers and cooling towers. Further information: www.belimo.com.

2-way control valve and bypass of the closed cooling tower

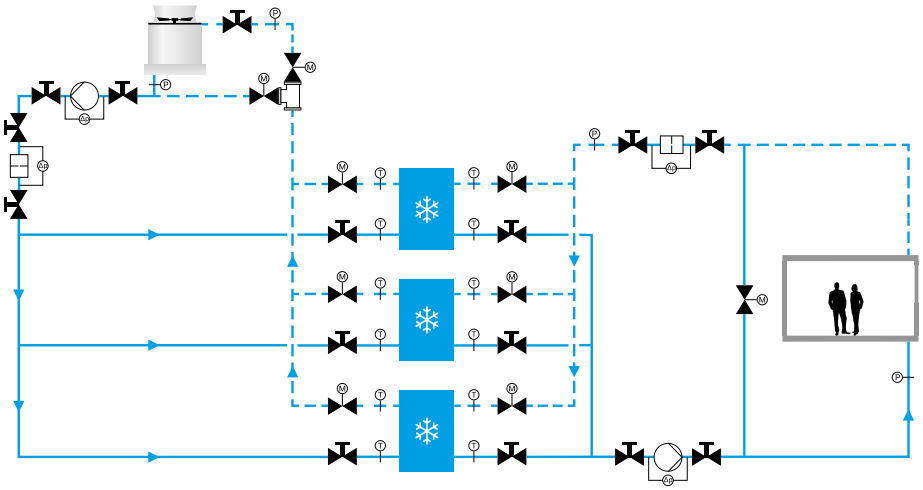


Illustration example
Examples described in detail are listed in the application brochures on heat generation, chillers and cooling towers. Further information: www.belimo.com.

Open/close and changeover applications

Energy savings and the reduction of leakages will become even more important in the future. The power outputs of boilers or chilling systems are divided up into different performance level categories. Depending on the load, the boilers or chillers will then be switched on or off. They will be shut off in order to minimise performance loss. The leakage rate shall be kept as low as possible. The pressure drop should be minor when the valve is completely open. These are prerequisites for minimising the electrical power of the pumps and thus for lowering operating costs.

Typical applications

Boiler sequential control

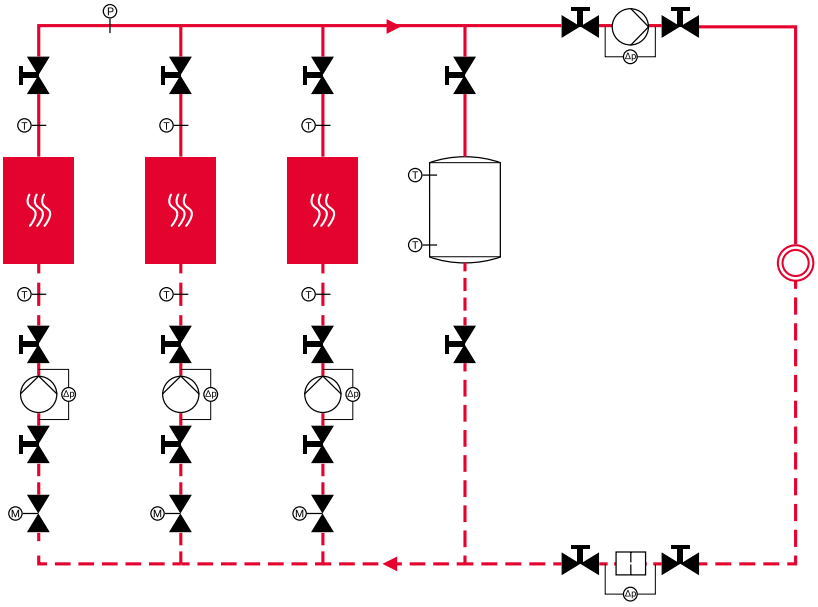


Illustration example
Examples described in detail are listed in the application brochures on heat generation, chillers and cooling towers. Further information: www.belimo.com.

Chiller shut-off and bypass of the closed cooling tower

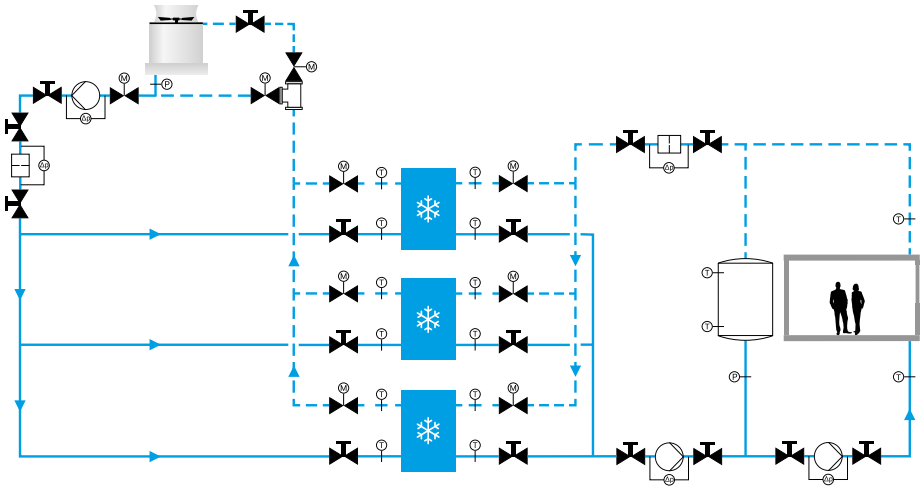


Illustration example
Examples described in detail are listed in the application brochures on heat generation, chillers and cooling towers. Further information: www.belimo.com.

Butterfly valve and actuator product range

24 V and 230 V rotary actuators with different functionalities, auxiliary switches, and with or without fail-safe in a variety of torque classes ranging from 20 to 3500 Nm are available for the motorisation of the Belimo wafer-type and lug-type butterfly valves (DN 25...700) for indoor and outdoor applications: SR..A-5, SRF..A-5, SR..P-5, GR..A-5, JR.., PR.. and SY..
The butterfly valves can also be manually operated with a lever or worm gear, although worm gears are recommended only for indoor applications.

Wafer-type butterfly valve with lever

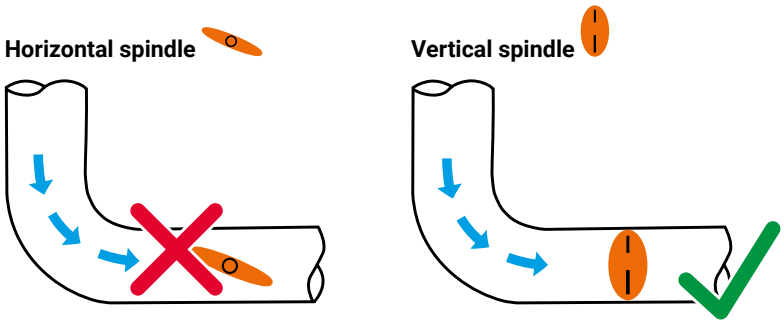
Lug-type butterfly valve with worm gear

Wafer-type butterfly valve with SR..A-5 actuator

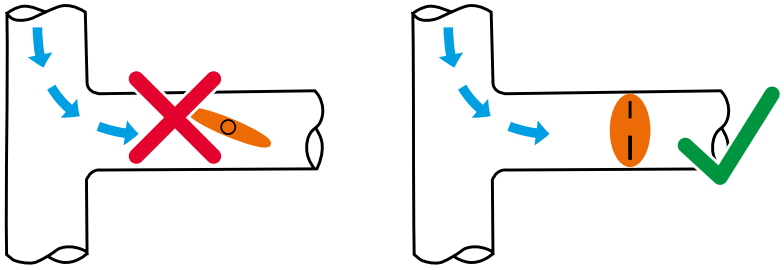
Wafer-type butterfly valve with PR.. actuator

Installation and operation

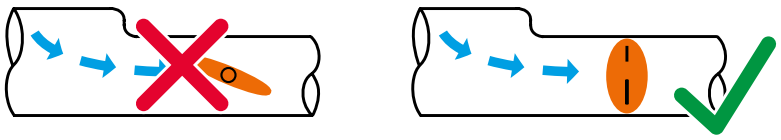
Butterfly valve after a bend



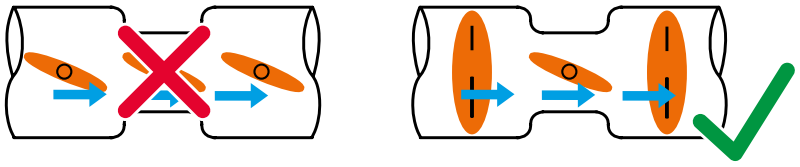
Butterfly valve after a T-piece



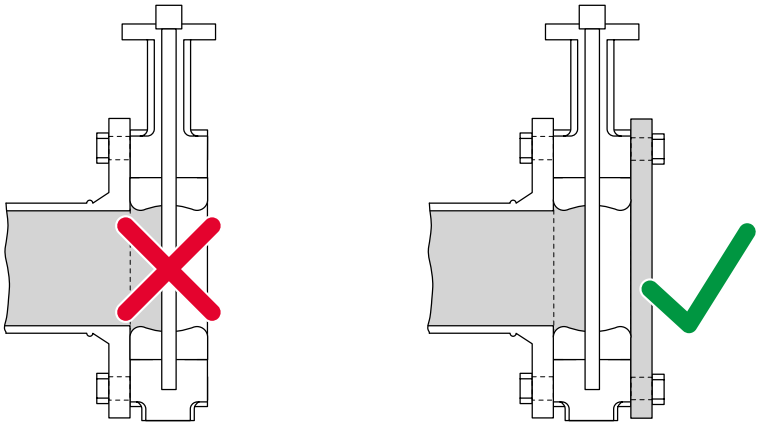
Butterfly valve after a pipe reduction



Multiple butterfly valves for control application



Butterfly valve as end-of-line service



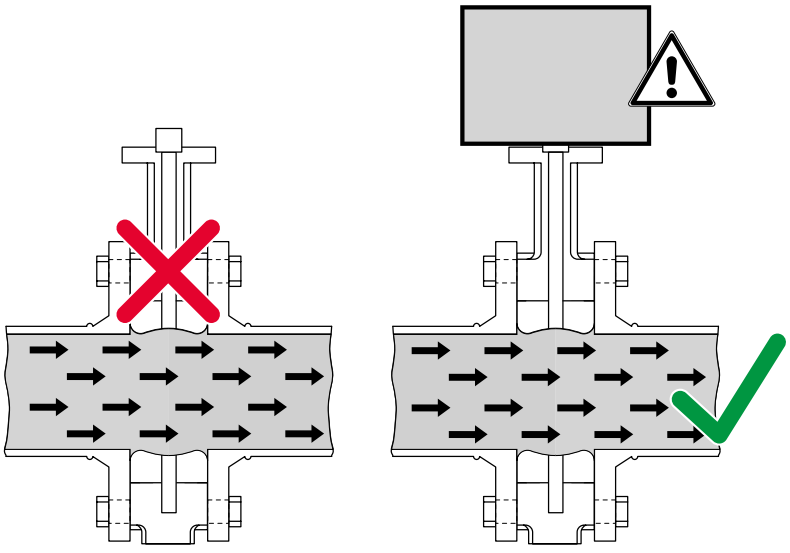
To ensure that the leakage rate of D6..N(L) and D6..W(L) butterfly valves used as end-of-line service is maintained, a contact pressure on the sealing sleeve by a flange is required on both sides. Installation as end-of-line service without a flange providing contact pressure on both sides is not permissible and leads to a defect in the butterfly valve. Furthermore, a closed flange (blanking flange) must be used with D6..W(L).

Regular actuation

Generally speaking, butterfly valves must run through a full cycle at least once per month in order to reduce the breakaway torque and avoid having the closing element become stuck in the sealing!

Important in case of butterfly valves - D6..W(L)

The butterfly valves D6..W and D6..WL shall not be operated without an actuator or worm gear. In the absence of an actuator or worm gear, the butterfly valve might close and cause damage (water hammer).



Project planning

Design

The data, information and limit values on the data sheets and installation instructions must be observed and complied with.

Pipeline clearances

The minimum clearances between the pipelines and the walls and ceilings required for project planning depend not only on the valve dimensions but also on the selected actuator and can be found in the data sheets of the valves and actuators.

2-way control butterfly valves

General information

Butterfly valves can be used in control applications when the following values are complied with:

- To ensure a valve attains good control characteristics thus a long service life for the control element, it needs to be correctly designed with the correct valve authority
- The maximum flow velocity of 4 m/s may not be exceeded in the control butterfly valve
- The maximum differential pressure during flow through the control butterfly valve is 300 kPa (3 bar)
- The butterfly valve ensures a rangeability of at least Sv = 30 (with reference to K_{VS} at 60% opening angle)

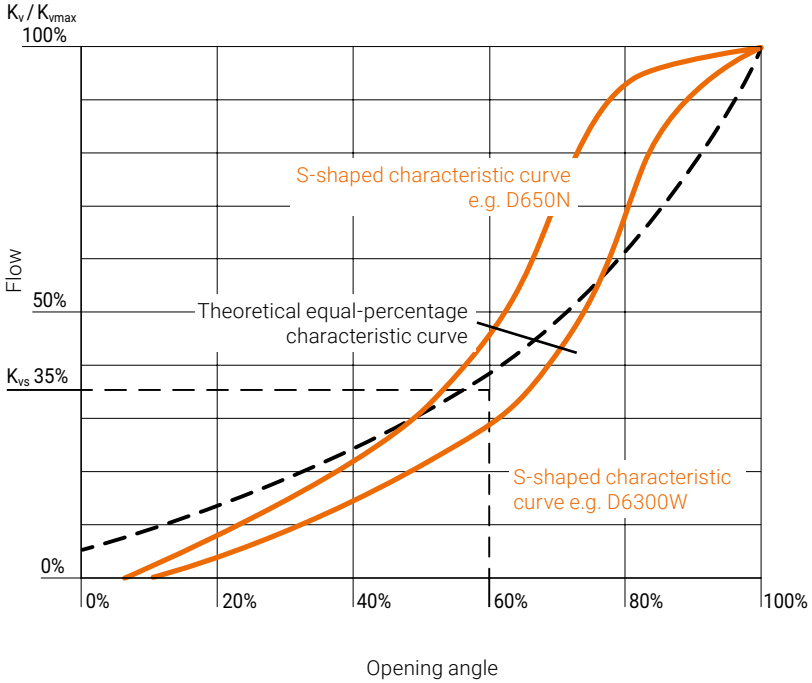
Technical data for control mode

Differential pressure Δp_{V0}:	≤300 kPa at valve cone opening (may not be exceeded)
Differential pressure Δp_{V60}:	The values listed in the differential pressure table must be complied with
Rangeability:	>30 (at 60% opening angle)

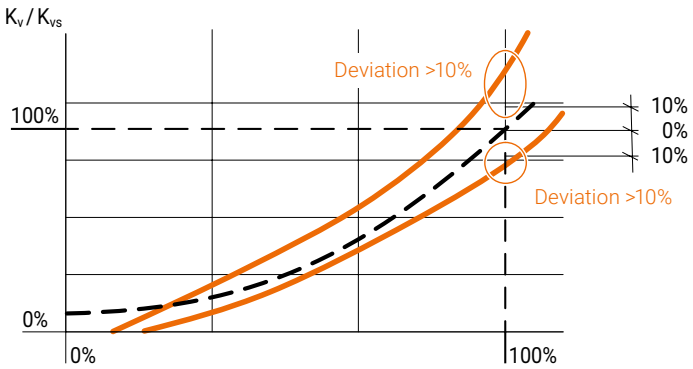
Opening angle limitation

The S-shaped characteristic curve of the butterfly valve (BFV) does not correspond to the equal-percentage characteristic curve pursuant to VDI 2173. It is only in the angle of rotation range between 0% and 60% that one can speak of an equal-percentage characteristic curve. At an opening angle of 60%, the K_{VS} corresponds to approx. 35% of K_{Vmax} value at 100% opening angle.

S-shaped characteristic curve



Scaled characteristic curve range



Definition K_{vmax} and K_{vs}

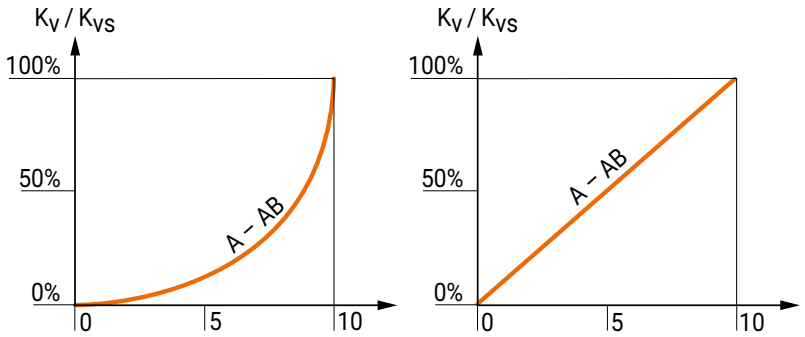
The term K_v value is used to designate the flow factor or flow coefficient (catalogue value). The K_v value corresponds to the flow of water through a valve (in m^3/h or l/min) at a differential pressure of 100 kPa (1 bar), a water temperature of 5...40°C and a defined opening angle.
Accordingly, the K_{vmax} is the K_v value of the butterfly valve at 100% opening angle (completely open) and K_{vs} is the K_v value at 60% opening angle.

Opening angle configuration

An opening angle of 60% is recommended as standard for control applications, no matter what the configured characteristic curve is. Depending on the desired K_v value, the opening angle for motorising with the JR.. and PR..BAC actuator can be set with a smartphone by Belimo Assistant 2 via NFC. In case of motorising with the SR or GR actuators, the desired angle of rotation range for MF and MP types can be set via PC-Tool MFT-P, as from Version 3.3 (does not apply to SY actuators).

Configuration of the flow characteristic

For butterfly valves with JR.. and PR..BAC actuator, the flow characteristic can be configured to equal percentage or linear via Belimo Assistant 2 (NFC).



Close-off and max. differential pressure

2-way control butterfly valves DN 25...300	DN [mm]	Actuators SR.. Δps [kPa]	SR.. Δpmax [kPa]	GR.. Δps [kPa]	GR.. Δpmax [kPa]	JR.. Δps [kPa]	JR.. Δpmax [kPa]	PR.. Δps [kPa]	PR.. Δpmax [kPa]
D625N(L)	25	1200	300	1200	300				
D632N(L)	32	1200	300	1200	300				
D640N(L)	40	1200	300	1200	300				
D650N(L)	50	1200	300	1200	300	1200 [1]	300		
D665N(L)	65	1200	300	1200	300	1200 [1]	300		
D680N(L)	80			1200	300	1200 [1]	300		
D6100W(L)	100					1400 [1]	300		
D6125W(L)	125					1400 [2]	300		
D6150W(L)	150					1400 [2]	300		
D6200W(L)	200							1400 [3]	300
D6250W(L)	250							1400 [3]	300
D6300W(L)	300							1400 [3]	300

[1] ZJR03 linkage
[2] ZJR01 linkage
[3] ZPR01 linkage

2-way control butterfly valves DN 350...700	DN [mm]	Actuators SY6 Δps [kPa]	SY6 Δpmax [kPa]	SY7 Δps [kPa]	SY7 Δpmax [kPa]	SY8 Δps [kPa]	SY8 Δpmax [kPa]	SY9 Δps [kPa]	SY9 Δpmax [kPa]	SY10 Δps [kPa]	SY10 Δpmax [kPa]	SY12 Δps [kPa]	SY12 Δpmax [kPa]
D6350N(L)	350	600	300	1200 [1]	300								
D6400N(L)	400	600 [2]	300	1200 [3]	300								
D6450N(L)	450			600 [4]	300	1200 [4]	300						
D6500N(L)	500					600 [4]	300	1200 [5]	300				
D6600N(L)	600									600 [6]	300	1000 [6]	300
D6700N(L)	700											200 [7]	200

[1] ZSY-703 linkage
[2] ZSY-401 linkage
[3] ZSY-701 linkage
[4] ZSY-702 linkage
[5] ZSY-901 linkage
[6] ZSY-902 linkage
[7] ZSY-903 linkage

Flow rate at differential pressure 5...40 kPa

			Differential pressure Δp_{v60}				
			5 [kPa]	10 [kPa]	20 [kPa]	30 [kPa]	40 [kPa]
2-way control butterfly valves DN 25...700	DN [mm]	K_{vs} [m^3/h]	Flow rate V'_{60} [m^3/h]				
D625N(L)	**25**	24	5.4	7.6			
D632N(L)	**32**	25	5.6	7.9	11.2		
D640N(L)	**40**	27	6.0	8.5	12.1	14.8	17.1
D650N(L)	**50**	30	6.7	9.5	13.4	16.4	19
D665N(L)	**65**	50	11.2	15.8	22	27	32
D680N(L)	**80**	75	16.8	24	34	41	47
D6100W(L)	**100**	220	49	70	98		
D6125W(L)	**125**	310	69	98	139	169	
D6150W(L)	**150**	550	123	174	246		
D6200W(L)	**200**	820	183	259	367	449	
D6250W(L)	**250**	1300	291	411	581	712	
D6300W(L)	**300**	1740	389	550	778	953	
D6350N(L)	**350**	3010	673	952	1346		
D6400N(L)	**400**	4140	926	1309	1851		
D6450N(L)	**450**	5490	1228	1736			
D6500N(L)	**500**	7060	1579	2233			
D6600N(L)	**600**	10900	2437	3447			
D6700N(L)	**700**	11760	2630	3719			

Formula Δp_{v60}

$$\Delta p_{v60} = \left(\frac{V'_{60}}{K_{vs}} \right)^2 \cdot 100$$

Δp_{v60} : [kPa]
V'_{60} : [m^3/h]
K_{vs} : [m^3/h]

Flow rate at differential pressure 50...90 kPa

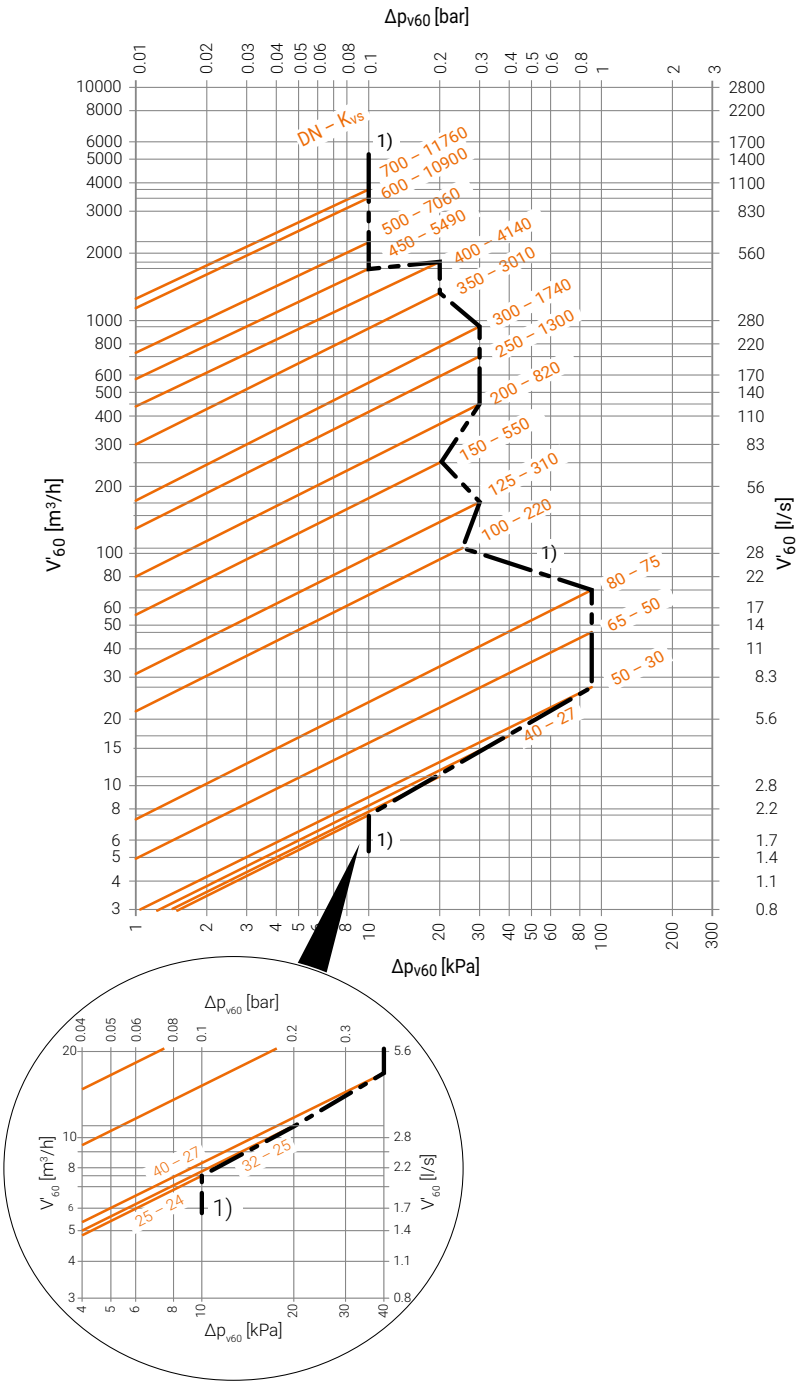
			Differential pressure Δp_{v60}				
			50 [kPa]	60 [kPa]	70 [kPa]	80 [kPa]	90 [kPa]
2-way control butterfly valves DN 25...700	DN [mm]	K_{vs} [m^3/h]	Flow rate V'_{60} [m^3/h]				
D625N(L)	25	24					
D632N(L)	32	25					
D640N(L)	40	27					
D650N(L)	50	30	21	23	25	27	28
D665N(L)	65	50	35	39	42	45	47
D680N(L)	80	75	53	58	63	67	71
D6100W(L)	100	220					
D6125W(L)	125	310					
D6150W(L)	150	550					
D6200W(L)	200	820					
D6250W(L)	250	1300					
D6300W(L)	300	1740					
D6350N(L)	350	3010					
D6400N(L)	400	4140					
D6450N(L)	450	5490					
D6500N(L)	500	7060					
D6600N(L)	600	10900					
D6700N(L)	700	11760					

Formula Δp_{v60}

$$\Delta p_{v60} = \left(\frac{V'_{60}}{K_{vs}}\right)^2 \cdot 100$$

Δp_{v60} : [kPa]
V'_{60} : [m^3/h]
K_{vs} : [m^3/h]

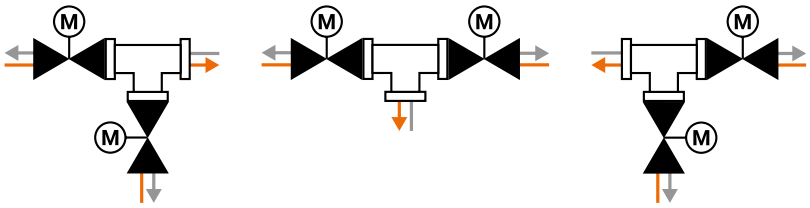
Pressure drop Δp_{v60} at 60% opening angle



[1] The maximum flow velocity in the butterfly valves is 4 m/s.

Δp_{v60}	Differential pressure at 60% opening angle
Δp_{v60}	▬ · ▬
V'_{60}	Nominal flow rate at Δp_{v60}
K_{vs}	K_V value of the butterfly valve at 60% opening angle

3-way control butterfly valves

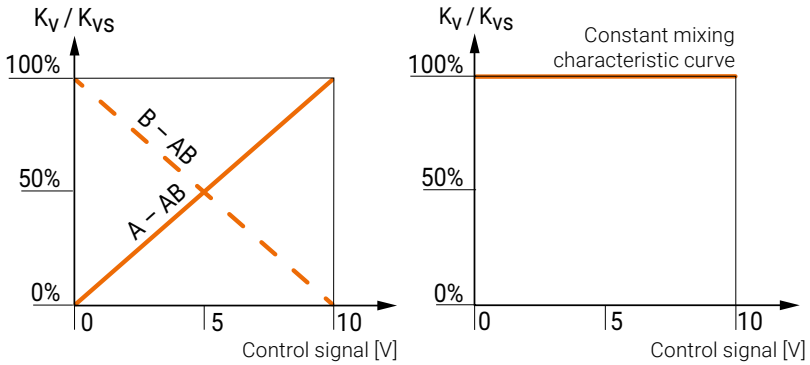


Opening angle configuration

An opening angle of 60% is recommended as standard for control applications, no matter what the configured characteristic curve is. Depending on the desired K_v value, the opening angle for motorising with the JR.. and PR..BAC actuator can be set with a smartphone by Belimo Assistant 2 via NFC.

Constant mixing characteristic curve

For butterfly valves with JR.. and PR..BAC actuator, the flow characteristic can be configured to linear via Belimo Assistant 2 (NFC). Thanks to the configurable linear characteristic curve, 3-way control butterfly valves have a constant mixing characteristic curve, which is perfect for control applications.



Flow rate at differential pressure 5...40 kPa

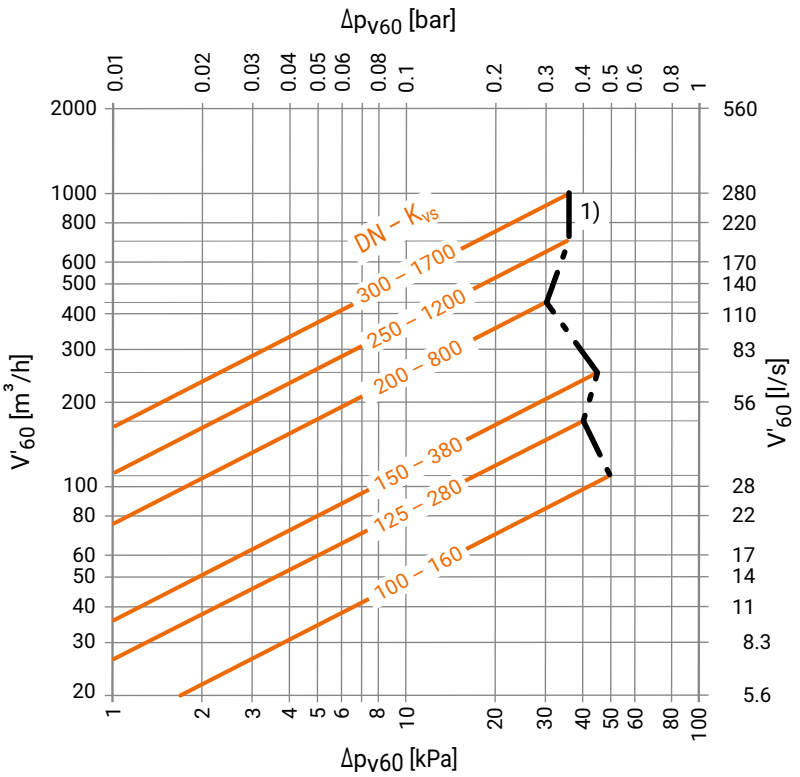
			Differential pressure Δp_{v60}							
			5 [kPa]	10 [kPa]	15 [kPa]	20 [kPa]	25 [kPa]	30 [kPa]	35 [kPa]	40 [kPa]
3-way control butterfly valves DN 100...300	DN [mm]	K_{vs} [m³/h]	Flow rate V'_{60} [m³/h]							
D7100WL/BAC	100	160	35	50	60	70	80	90	95	100
D7125WL/BAC	125	280	65	90	110	125	140	155	165	
D7150WL/BAC	150	380	85	120	145	170	190	210	225	240
D7200WL/BAC	200	800	180	250	300	360	400	440		
D7250WL/BAC	250	1200	260	370	460	530	600	650	700	
D7300WL/BAC	300	1700	380	530	660	760	850	925	1000	

Formula Δp_{v60}

$$\Delta p_{v60} = \left(\frac{V'_{60}}{K_{vs}}\right)^2 \cdot 100$$

Δp_{v60} : [kPa]
V'_{60} : [m³/h]
K_{vs} : [m³/h]

Pressure drop Δp_{v60} at 60% opening angle



[1] The maximum flow velocity in the butterfly valves is 4 m/s.

Δp_{v60}	Differential pressure at 60% opening angle
Δp_{v60}	▬ · ▬
V'_{60}	Nominal flow rate at Δp_{v100}
K_{vs}	K_V value of the butterfly valve at 60% opening angle

Open/close butterfly valves

General information

The open/close and changeover butterfly valves can be used when the following values are complied with:

- The maximum flow velocity of 4 m/s may not be exceeded in the valve
- The butterfly valve is to be selected according to the principle "Nominal pipe diameter = Nominal valve diameter" to keep the pressure drop as low as possible

Open/close butterfly valves in manual operation

Open/close butterfly valves DN 25...700	DN [mm]	ζ zeta value	Manual operation	
			Lever	Worm gear [1]
D625N(L)	25	0.25	ZD6N-H100	ZD6N-S100
D632N(L)	32	0.55	ZD6N-H100	ZD6N-S100
D640N(L)	40	0.97	ZD6N-H100	ZD6N-S100
D650N(L)	50	1.00	ZD6N-H100	ZD6N-S100
D665N(L)	65	0.99	ZD6N-H100	ZD6N-S100
D680N(L)	80	0.97	ZD6N-H100	ZD6N-S100
D6100W(L)	100	0.34		ZD6N-S100
D6125W(L)	125	0.40		ZD6N-S150
D6150W(L)	150	0.26		ZD6N-S150
D6200W(L)	200	0.53		ZD6N-S150
D6250W(L)	250	0.35		ZD6N-S150
D6300W(L)	300	0.40		ZD6N-S150
D6350N(L)	350	0.23		ZD6N-S350
D6400N(L)	400	0.20		ZD6N-S400
D6450N(L)	450	0.19		ZD6N-S450
D6500N(L)	500	0.17		ZD6N-S500
D6600N(L)	600	0.15		ZD6N-S600
D6700N(L)	700	0.21		ZD6N-S700

[1] Worm gears are not suitable for outdoor applications.

Close-off and max. differential pressure

Open/close butterfly valves DN 25...300	DN [mm]	Actuators							
		SR..		GR..		JR..		PR..	
		Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
D625N(L)	25	1200	300	1200	300				
D632N(L)	32	1200	300	1200	300				
D640N(L)	40	1200	300	1200	300				
D650N(L)	50	1200	300	1200	300	1200 [1]	300		
D665N(L)	65	1200	300	1200	300	1200 [1]	300		
D680N(L)	80			1200	300	1200 [1]	300		
D6100W(L)	100					1400 [1]	300		
D6125W(L)	125					1400 [2]	300		
D6150W(L)	150					1400 [2]	300		
D6200W(L)	200							1400 [3]	300
D6250W(L)	250							1400 [3]	300
D6300W(L)	300							1400 [3]	300

[1] ZJR03 linkage
[2] ZJR01 linkage
[3] ZPR01 linkage

Open/close butterfly valves DN 350...700	DN [mm]	Actuators											
		SY6		SY7		SY8		SY9		SY10		SY12	
		Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
D6350N(L)	350	600	300	1200 [1]	300								
D6400N(L)	400	600 [2]	300	1200 [3]	300								
D6450N(L)	450			600 [4]	300	1200 [4]	300						
D6500N(L)	500					600 [4]	300	1200 [5]	300				
D6600N(L)	600									600 [6]	300	1000 [6]	300
D6700N(L)	700											200 [7]	200

[1] ZSY-703 linkage
[2] ZSY-401 linkage
[3] ZSY-701 linkage
[4] ZSY-702 linkage
[5] ZSY-901 linkage
[6] ZSY-902 linkage
[7] ZSY-903 linkage

Flow rate at differential pressure 0.01...3 kPa

			Differential pressure Δp_{v100}				
			0.01 [kPa]	0.1 [kPa]	1 [kPa]	2 [kPa]	3 [kPa]
Open/close butterfly valves DN 25...700	DN [mm]	K_{vmax} [m^3/h]	Flow rate V'_{100} [m^3/h]				
D625N(L)	25	50	0.5	1.6	5	7	
D632N(L)	32	55	0.6	1.7	5.5	7.8	9.5
D640N(L)	40	65	0.7	2.0	6.5	9.2	11.3
D650N(L)	50	100	1.0	3.2	10	14.1	17.3
D665N(L)	65	170	1.7	5.4	17	24	29
D680N(L)	80	260	2.6	8.2	26	37	45
D6100W(L)	100	690	6.9	22	69	98	
D6125W(L)	125	990	9.9	31	99	140	172
D6150W(L)	150	1400	14	44	140	198	
D6200W(L)	200	2200	22	70	220	311	381
D6250W(L)	250	4200	42	133	420	594	727
D6300W(L)	300	5700	57	180	570	806	987
D6350N(L)	350	10300	103	326	1030	1457	
D6400N(L)	400	14200	142	449	1420	2008	
D6450N(L)	450	18800	188	595	1880		
D6500N(L)	500	24100	241	762	2410		
D6600N(L)	600	37300	373	1180	3730		
D6700N(L)	700	42800	428	1353	4280		

Formula Δp_{v100}

$$\Delta p_{v100} = \left(\frac{V'_{100}}{K_{vmax}}\right)^2 \cdot 100$$

Δp_{v100} : [kPa]
V'_{100} : [m^3/h]
K_{vmax} : [m^3/h]

Flow rate at differential pressure 4...8 kPa

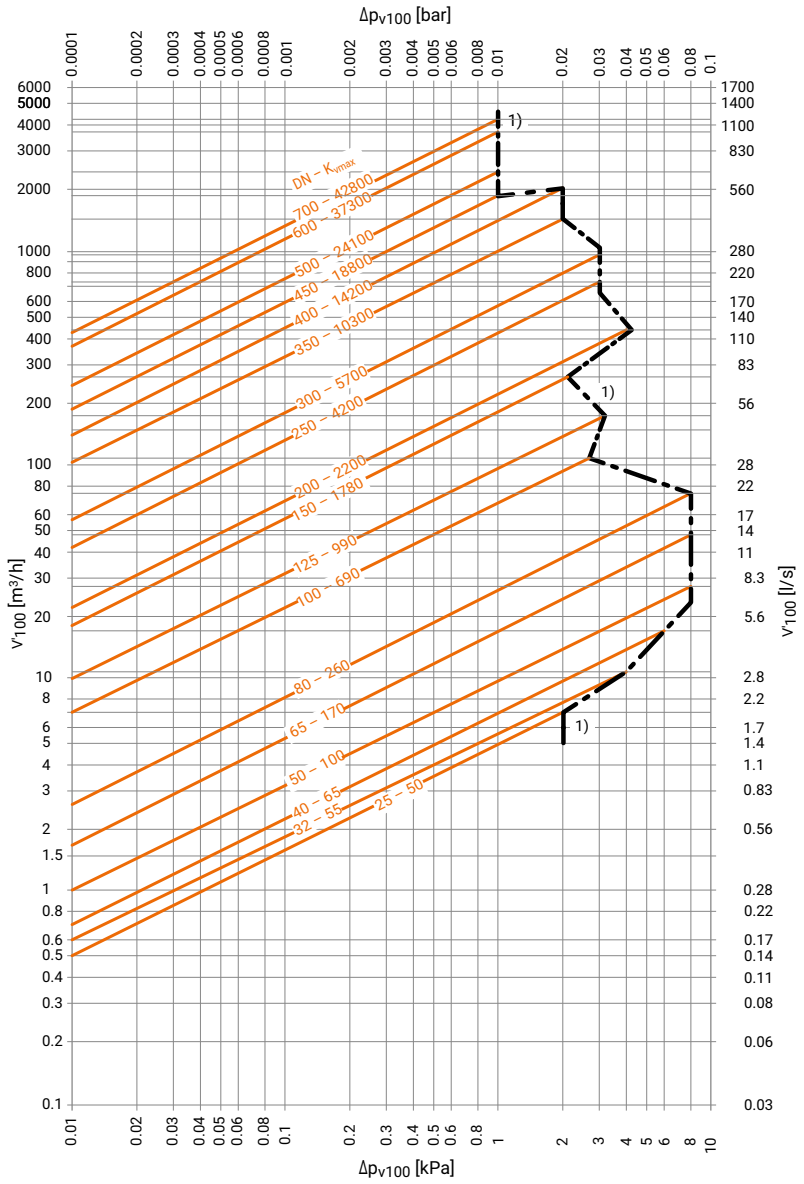
			Differential pressure Δp_{v100}				
			4 [kPa]	5 [kPa]	6 [kPa]	7 [kPa]	8 [kPa]
Open/close butterfly valves DN 25...700	DN [mm]	K_{vmax} [m^3/h]	Flow rate V'_{100} [m^3/h]				
D625N(L)	25	50					
D632N(L)	32	55	11				
D640N(L)	40	65	13	14.5	16	17.2	
D650N(L)	50	100	20	22	24	26	28
D665N(L)	65	170	34	38	42	45	48
D680N(L)	80	260	52	58	64	69	74
D6100W(L)	100	690					
D6125W(L)	125	990					
D6150W(L)	150	1780					
D6200W(L)	200	2200	440				
D6250W(L)	250	4200					
D6300W(L)	300	5700					
D6350N(L)	350	10300					
D6400N(L)	400	14200					
D6450N(L)	450	18800					
D6500N(L)	500	24100					
D6600N(L)	600	37300					
D6700N(L)	700	42800					

Formula Δp_{v100}

$$\Delta p_{v100} = \left(\frac{V'_{100}}{K_{vmax}}\right)^2 \cdot 100$$

Δp_{v100} : [kPa]
V'_{100} : [m^3/h]
K_{vmax} : [m^3/h]

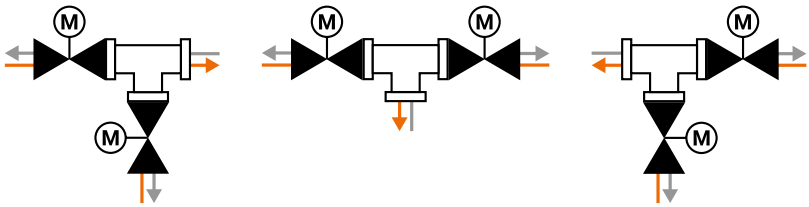
Pressure drop Δp_{v100} at 100% opening angle



[1] The maximum flow velocity in the butterfly valves is 4 m/s.

Δp_{v100}	Differential pressure at 100% opening angle
Δp_{v100}	▬ · ▬
V'_{100}	Nominal flow rate at Δp_{v100}
K_{vmax}	K_v value of the butterfly valve at 100% opening angle

Changeover butterfly valves



Flow rate at differential pressure 1...6 kPa

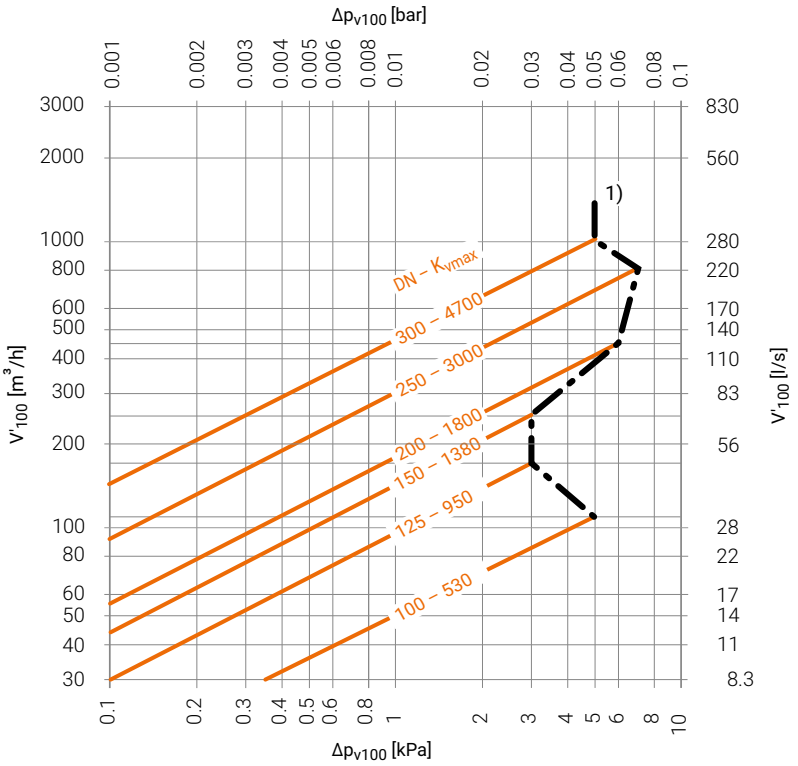
			Differential pressure Δp_{v100}					
			1 [kPa]	2 [kPa]	3 [kPa]	4 [kPa]	5 [kPa]	6 [kPa]
Changeover butterfly valves DN 100...300	DN [mm]	K_{vmax} [m^3/h]	Flow rate V'_{100} [m^3/h]					
D7100WL/BAC	100	530	55	75	90	105		
D7125WL/BAC	125	950	95	135	165			
D7150WL/BAC	150	1380	140	195	240			
D7200WL/BAC	200	1800	180	255	300	340	380	440
D7250WL/BAC	250	3000	300	424	500	600	650	700
D7300WL/BAC	300	4700	470	665	760	890	1000	

Formula Δp_{v100}

$$\Delta p_{v100} = \left(\frac{V'_{100}}{K_{vmax}}\right)^2 \cdot 100$$

Δp_{v100} : [kPa]
V'_{100} : [m^3/h]
K_{vmax} : [m^3/h]

Pressure drop Δp_{v100} at 100% opening angle



[1] The maximum flow velocity in the butterfly valves is 4 m/s.

Δp_{v100}	Differential pressure at 100% opening angle
Δp_{v100}	▬ · ▬
V'_{100}	Nominal flow rate at Δp_{v100}
K_{vmax}	K_v value of the butterfly valve at 100% opening angle

Definitions

Formula symbols

K_v	Flow rate factor or flow coefficient (catalogue value). The K_v value corresponds to the flow of water through a valve (in m^3/h or l/min) at a differential pressure of 100 kPa (1 bar), a water temperature of 5...40°C and a defined opening angle
K_{vmax}	K_v value of the butterfly valve at 100% opening angle
K_{vs}	K_v value of the butterfly valve at 60% opening angle
Δp_s	Close-off pressure at which the actuator can still seal the butterfly valve tightly allowing for the appropriate leakage rate
Δp_{v100}	Maximum permissible differential pressure in compliance with the flow velocity of 4 m/s with butterfly valve completely open (100%)
Δp_{v60}	Maximum permissible differential pressure in compliance with the flow velocity of 4 m/s at 60% opening angle of the butterfly valve
Δp_{v0}	Differential pressure at closing element opening
V'_{100}	Nominal flow rate at Δp_{v100}
V'_{60}	Nominal flow rate at Δp_{v60}
ζ value	Zeta ζ is the coefficient for the pressure drop through the fully opened butterfly valve (100%)

Further documentation

- Data sheets butterfly valves and actuators
- Installation instructions butterfly valves and actuators
- General notes for project planning
- Application brochure for chillers and cooling towers
- Application brochure for heat generation

All inclusive.

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air-conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

EN – 03.2025/C – Subject to technical modifications

BELIMO Automation AG
Brunnenbachstrasse 1, 8340 Hinwil, Switzerland
+41 43 843 61 11, info@belimo.ch, www.belimo.com

BELIMO