

## Butterfly valve with Lug types

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



## Type overview

Type	DN	k <sub>v</sub> max [m <sup>3</sup> /h]	k <sub>v</sub> s [m <sup>3</sup> /h]	PN
D625NL	25	50	24	10 / 16
D632NL	32	55	25	10 / 16
D640NL	40	65	27	10 / 16
D650NL	50	100	30	10 / 16
D665NL	65	170	50	10 / 16
D680NL	80	260	75	10 / 16
D6100NL	100	520	150	10 / 16
D6125NL	125	880	260	10 / 16
D6150NL	150	1400	400	10 / 16
D6350NL	350	10300	3010	16
D6400NL	400	14200	4140	16
D6450NL	450	18800	5490	16
D6500NL	500	24100	7060	16
D6600NL	600	37300	10900	16
D6700NL	700	42800	11760	16

## Technical data

Functional data	Fluid	Cold and warm water, water with glycol up to max. 50% vol.
Fluid temperature		-20...120°C
Flow characteristic		0...100% opening angle: S-form; 0...60% opening angle: equal percentage
Flow characteristic note		For butterfly valve actuator combinations with the PR actuator, the flow characteristic can be set to linear using the Belimo Assistant App
Leakage rate		tight, leakage rate A (EN 12266-1)
Angle of rotation		90°
Installation position		upright to horizontal (in relation to the stem)
Suitable connection flange		In accordance with ISO 7005-2 and EN 1092-2
Servicing		maintenance-free
Materials		
Housing		EN-GJS-400-15 (GGG 40)
Body finish		polyester powder coated
Closing element		Stainless steel AISI 304 (1.4301)
Stem		Stainless steel AISI 420 (1.4021)
Stem seal		EPDM O-ring
Stem bearing		RPTFE
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 hydronic shocks in the pipe system.

**Product features**

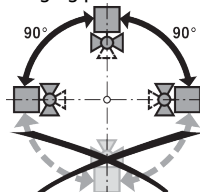
- Mode of operation** The butterfly valve is opened or closed completely by an open/close rotary actuator. Continuous rotary actuators are connected by a commercially available controller and move the valve to any position desired. The valve disk made of stainless steel is pressed into the soft-sealing 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 isolation can be carried out with a lever or a worm gear (see «Accessories»).
- With lever (DN 25...150): Adjustable in 10 ratchet steps with position indication ( 0 = 0° (angle); 9 = 90° (angle) )
  - With worm gear (DN 25...700): steplessly adjustable (self-locking) with position indication.

**Accessories**

Electrical accessories	Description	Type
	Stem heating flange F05 DN25...100 (30 W)	ZR24-F05
Mechanical accessories	Description	Type
	Manual control for butterfly valves DN 25...100	ZD6N-H100
	Manual control for butterfly valves DN 125...150	ZD6N-H150
	Worm gear for butterfly valves DN 25...100	ZD6N-S100
	Worm gear for butterfly valves DN 125...300	ZD6N-S150
	Worm gear for butterfly valves DN 350	ZD6N-S350
	Worm gear for butterfly valves DN 400	ZD6N-S400
	Worm gear for butterfly valves DN 450	ZD6N-S450
	Worm gear for butterfly valves DN 500	ZD6N-S500
	Worm gear for butterfly valves DN 600	ZD6N-S600
	Worm gear for butterfly valves DN 700	ZD6N-S700

**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.
- Stem heating** In cold water applications and warm humid ambient air can cause condensation in the actuators. This can lead to corrosion in the gear box of the actuator and causes a breakdown of it. In such applications, the use of a stem heating is provided.
- The stem heating must be enabled only when the system is in operation, because it does not have temperature control.

**Servicing** 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...60% opening angle.

The following table shows the respective kv values in relation to the opening angle (%).

		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
DN 25	kv (m <sup>3</sup> /h)	0.1	2	6	10	15	24	36	46	48	50
DN 32	kv (m <sup>3</sup> /h)	0.1	2	6	11	15	25	38	49	51	55
DN 40	kv (m <sup>3</sup> /h)	0.1	2	6	11	16	27	41	59	62	65
DN 50	kv (m <sup>3</sup> /h)	0.1	2	6	11	18	30	45	67	90	100
DN 65	kv (m <sup>3</sup> /h)	0.1	4	9	17	30	50	76	110	160	170
DN 80	kv (m <sup>3</sup> /h)	0.2	6	13	26	50	75	120	170	240	260
DN 100	kv (m <sup>3</sup> /h)	0.2	12	26	50	90	150	230	350	480	520
DN 125	kv (m <sup>3</sup> /h)	0.4	20	40	90	160	260	400	590	810	880
DN 150	kv (m <sup>3</sup> /h)	1	30	70	140	250	400	620	910	1260	1400
DN 350	kv (m <sup>3</sup> /h)	5	240	520	1050	1860	3010	4640	6880	9470	10300
DN 400	kv (m <sup>3</sup> /h)	6	320	720	1450	2560	4140	6380	9460	13030	14200
DN 450	kv (m <sup>3</sup> /h)	9	430	950	1920	3400	5490	8460	12530	17250	18800
DN 500	kv (m <sup>3</sup> /h)	11	550	1220	2460	4370	7060	10870	16110	22190	24100
DN 600	kv (m <sup>3</sup> /h)	17	850	1880	3800	6740	10900	16800	24890	34280	37300
DN 700	kv (m <sup>3</sup> /h)	28	1260	2670	4700	7400	11760	17960	27340	37910	42800



**Parametrisation linear characteristic curve**

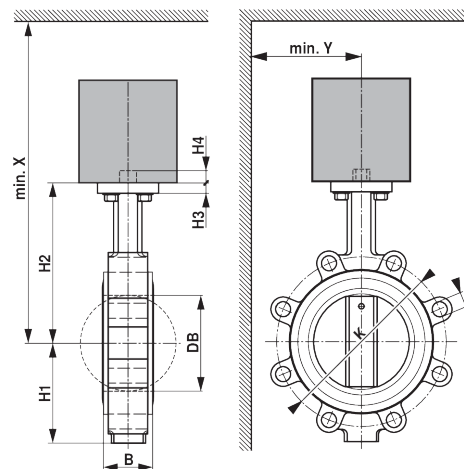
For butterfly valve actuator combinations with the PR actuator, the flow characteristic can be set to linear using the Belimo Assistant App.

The following table shows the respective kv values in relation to the control signal (%).


		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
DN 100	kv (m <sup>3</sup> /h)	52	104	156	208	260	312	364	416	468	520
DN 125	kv (m <sup>3</sup> /h)	88	176	264	352	440	528	616	704	792	880
DN 150	kv (m <sup>3</sup> /h)	140	280	420	560	700	840	980	1120	1260	1400

**Dimensions**

**Dimensional drawings**



Type	DN	B [mm]	DB [mm]	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	d (PN10) K (PN10) [mm]
D625NL	25	32	30	53	90	10	13	4 x M12 85
D632NL	32	33	35	60	100	10	13	4 x M16 100
D640NL	40	33	42	68	119	10	13	4 x M16 110
D650NL	50	43	52	72	133	11	13	4 x M16 125
D665NL	65	46	64	81	147	11	13	4 x M16 145
D680NL	80	46	78	96	158	11	13	8 x M16 160
D6100NL	100	52	103	106	170	11	13	8 x M16 180
D6125NL	125	56	122	122	194	15	19	8 x M16 210
D6150NL	150	56	155	140	202	15	19	8 x M20 240
D6350NL	350	78	333	266	361	15	24	
D6400NL	400	102	391	315	402	20	48	
D6450NL	450	114	442	328	420	20	48	
D6500NL	500	127	493	358	474	22	48	
D6600NL	600	154	594	454	559	22	48	
D6700NL	700	165	695	532	622	33	66	

Type	d (PN16) K (PN16) [mm]	X [mm]	Y [mm]	 kg
D625NL	4 x M12 85	320	150	1.3
D632NL	4 x M16 100	340	150	1.6
D640NL	4 x M16 110	350	160	1.7
D650NL	4 x M16 125	370	160	2.5
D665NL	4 x M16 145	380	170	3.1
D680NL	8 x M16 160	390	180	4.4
D6100NL	8 x M16 180	410	190	5.1
D6125NL	8 x M16 210	530	210	7.7
D6150NL	8 x M20 240	540	220	8.9
D6350NL	16 x M24 470	1200	400	45
D6400NL	16 x M27 525	1300	500	92
D6450NL	20 x M27 585	1300	500	110
D6500NL	20 x M30 650	1700	600	150
D6600NL	20 x M33 770	1800	700	240
D6700NL	24 x M33 840	1800	800	320

**Further documentation**

- The complete product range for water applications
- Data sheets for actuators
- Installation instructions for actuators and/or butterfly valves
- General notes for project planning