Orifice Butterfly Valve

Flow control valve to reduce cavitation and noise at high differential pressure

BT-1Q type

Kurimoto, LTD.

Orifice butterfly valve controls flow at high differential pressure

Characteristics

Disc of orifice butterfly valve

1. Anti-cavitation structure

Achieves flow control at high differential pressure by multiple distributed nozzles which divide the flow at all opening degrees.

2. Low noise

Possible to modulate the flows at high flow rate without making noise.

3. Light and compact

More compact than sluice and globe valves by adopting the butterfly valve structure.

4. Water sealing by rubber seat

Has excellent water sealing, same as the JWWA B 138 butterfly valve.

Merit

1. Standard Butterfly valve

As the valve opens, a crescent shape opening gets bigger.

30% 60% 100%

2. Multi-hole variable orifice valve

The breakdown of flow in to multiple small jets reduces noise and makes throttling more effective with less cavitation, even as the valve opens up.

30% 60% 100%

3. Orifice butterfly valve

Cavitation is suppressed by multiple distributed nozzles which divide flow and the valve opens . This can achieve higher performance than multi-hole variable orifice valves.

30% 60% 100%

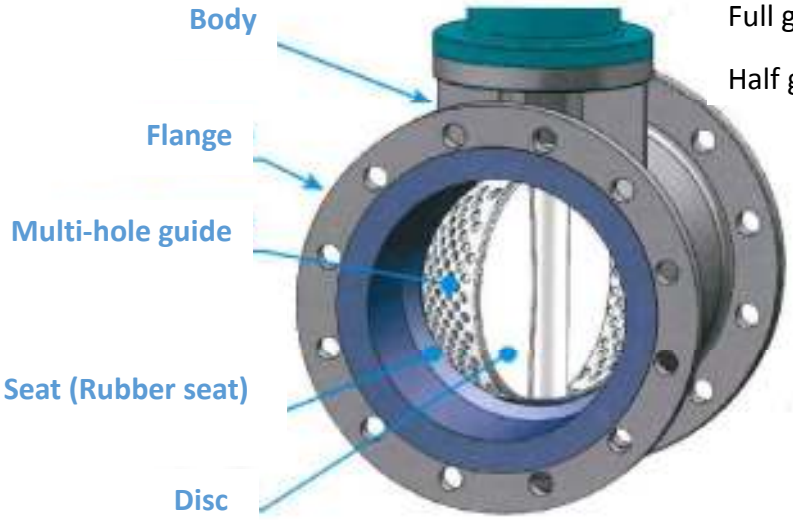
The disc of orifice butterfly valve can rotate 90 degrees.

The breakdown of flow in to small holes contributes to its high performance, same as the multi-hole variable orifice valve.

Kurimoto's Orifice Butterfly Valve reduces noise

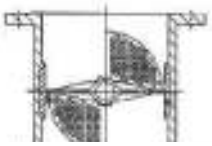
Structure

Hybrid valve combined with the structure of orifice valve and butterfly valve

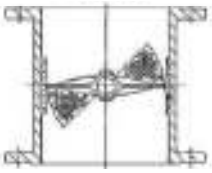


Full guide type: Suitable for flow control at high flow rate

Half guide type: Reduces energy loss at full opening



Full guide



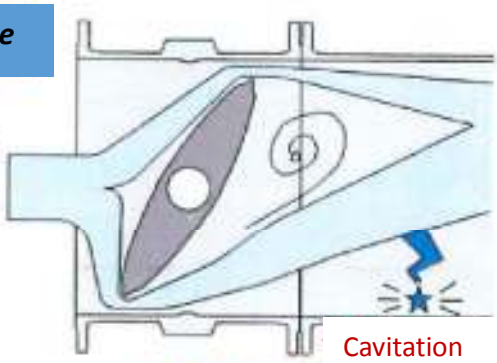
Half guide

Cavitation reducing structure

While a standard butterfly valve causes cavitation because of the turbulence flow at the outlet side, the orifice butterfly valve can achieve less cavitation.

Standard butterfly valve

Flow direction

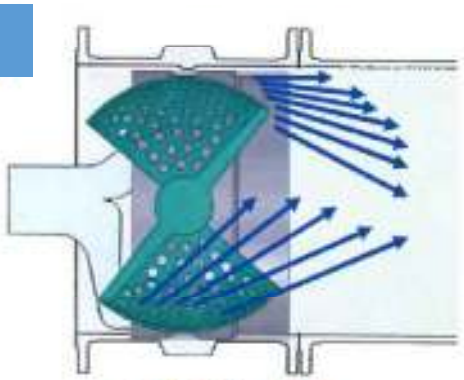


Flow image

Internal inspection photo

Orifice butterfly valve

Flow direction



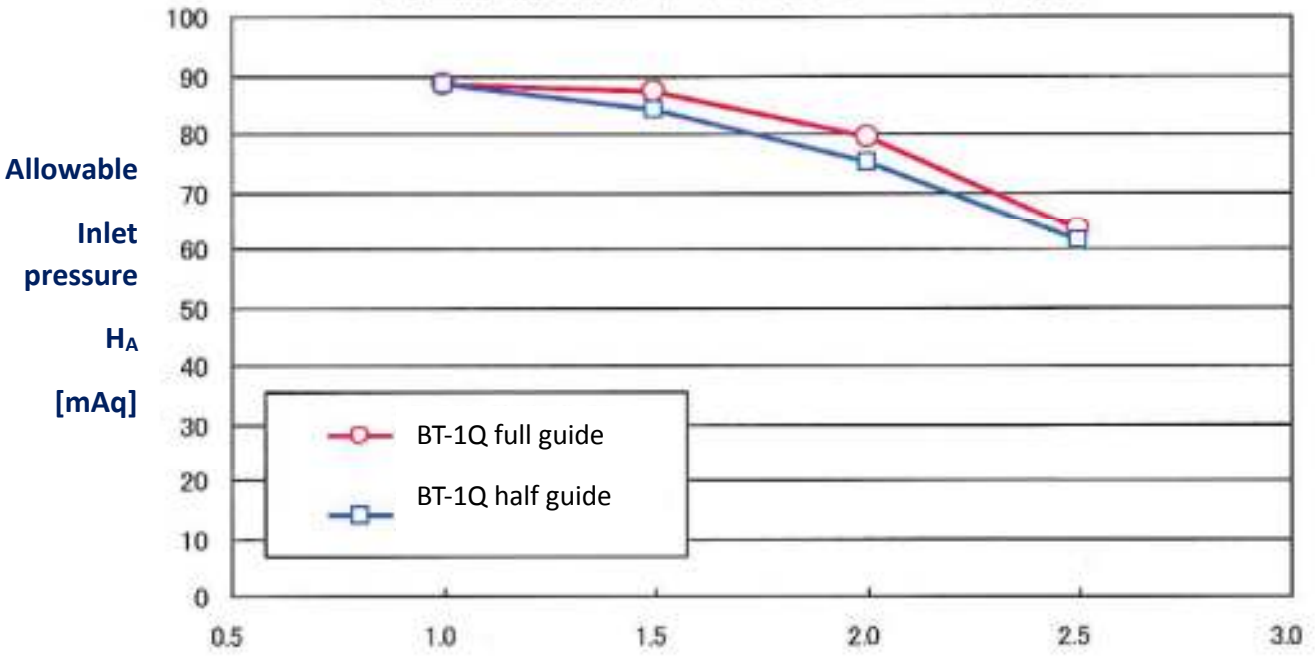
Flow image

Internal inspection photo

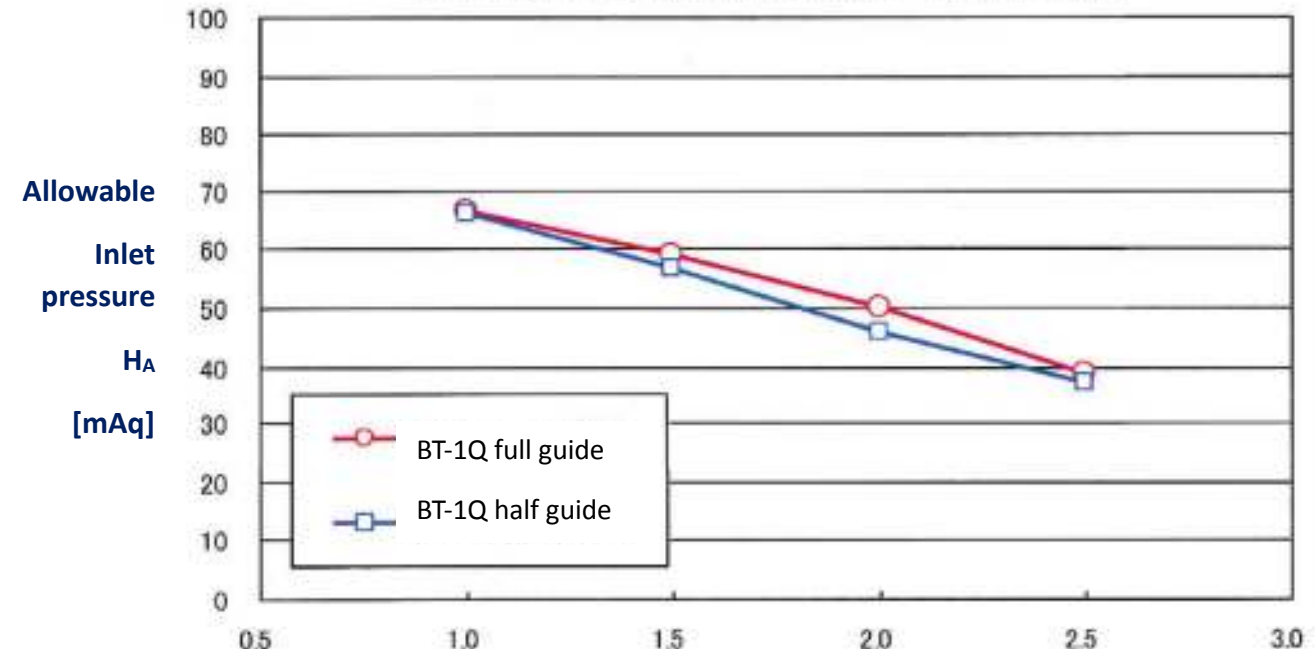
Allowable inlet pressure H_A

H_A is the new measurement standard to select the most suitable valve, not the allowable cavitation coeffiecient. The curve shows the inlet pressure applicable to the velocity against a certain outlet pressure. H_A helps to easily judge if the valve is feasible for the condition.

Comparison table of allowable inlet pressure (Outlet pressure = 10mAq)



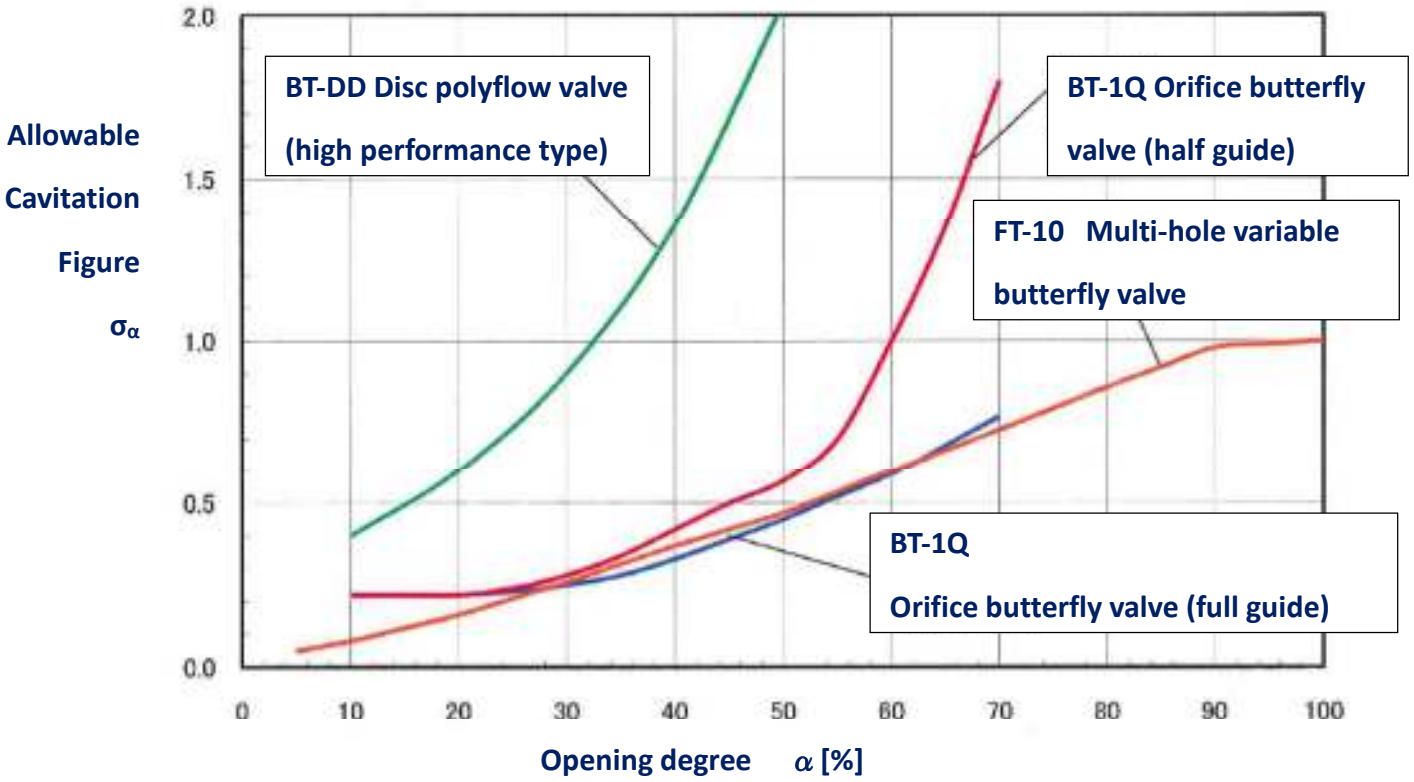
Comparison table of allowable inlet pressure (Outlet pressure = 5mAq)



The above figures are limited to the internal inspection which may vary depend on actual operating conditions.

Allowable cavitation figure

The orifice butterfly valve (both sides types) has good performance, same as the multi-hole valve.



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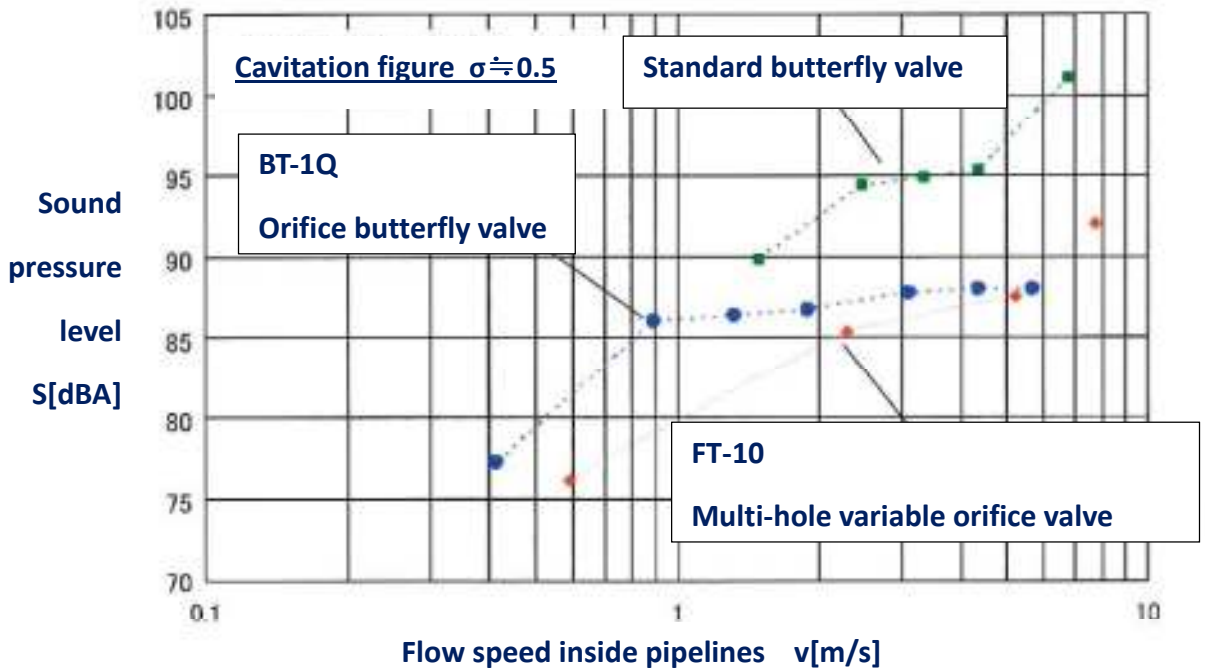
Noise reducing structure

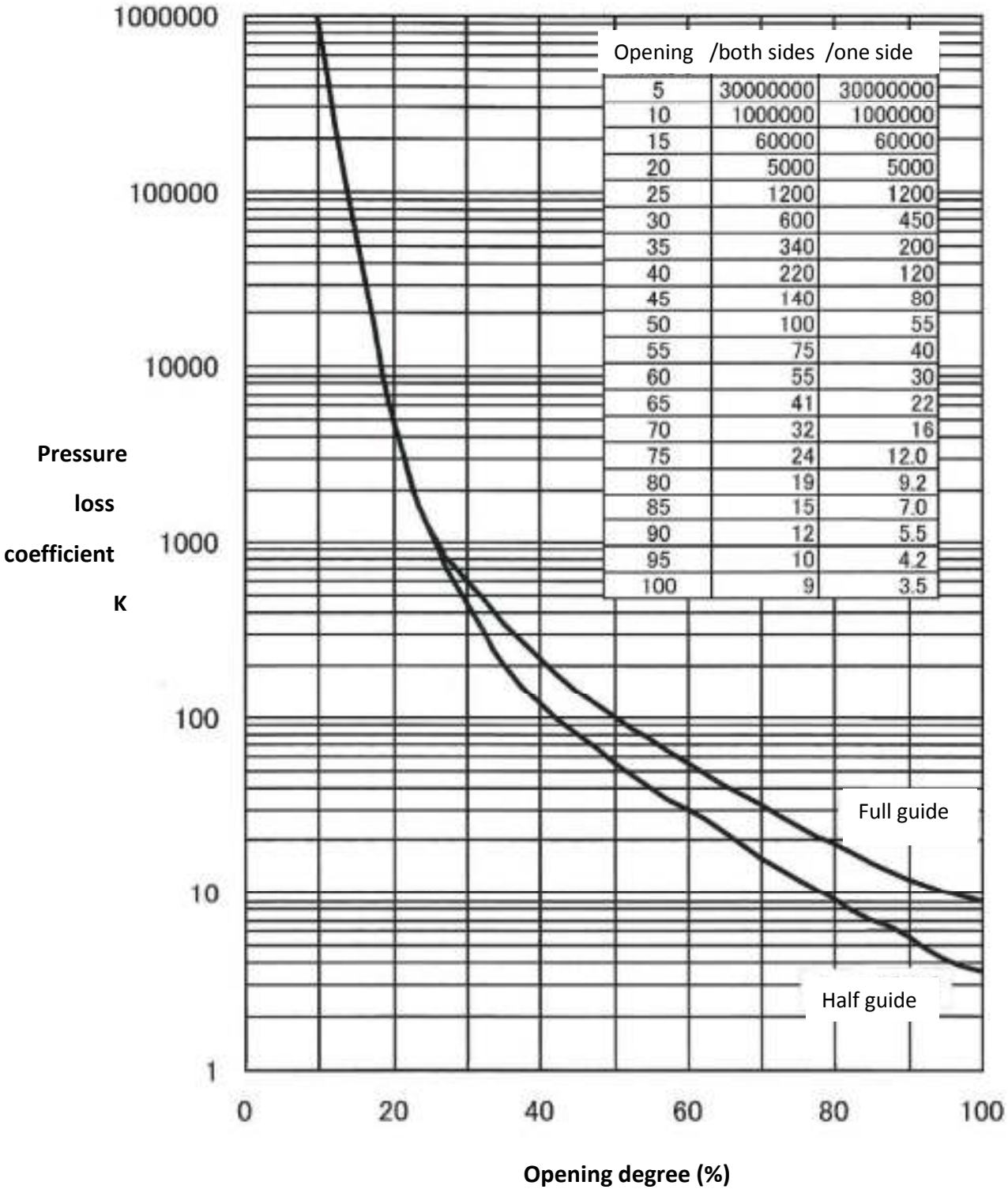
BT-1Q reduces noise more effectively than standard butterfly valves.

At high flow speed, it has the same performance as multi-hole variable orifice valves.



The above figures are limited to the internal inspection which may vary depend on actual operating conditions.

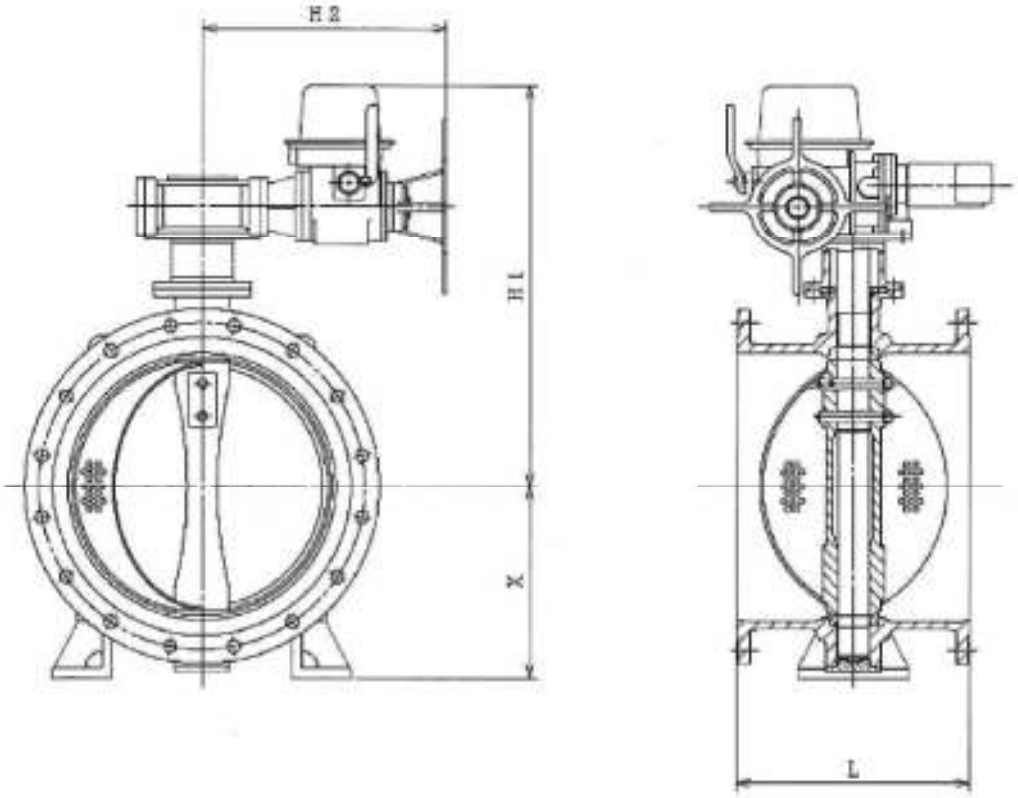
Pressure loss coefficient



Opening	/both sides	/one side
5	30000000	30000000
10	1000000	1000000
15	60000	60000
20	5000	5000
25	1200	1200
30	600	450
35	340	200
40	220	120
45	140	80
50	100	55
55	75	40
60	55	30
65	41	22
70	32	16
75	24	12.0
80	19	9.2
85	15	7.0
90	12	5.5
95	10	4.2
100	9	3.5

The above figures are limited to the internal inspection which may vary depend on actual operating conditions.

Measurements



Unit : mm

Diameter	Dimension	Height		Width
D	L	H1	X	H2
200	300	640	–	515
250	380	670	–	515
300	400	700	–	515
350	430	730	–	515
400	470	830	–	515
450	500	990	–	550
500	530	1030	–	550
600	560	990	450	550
700	610	1140	500	580
800	690	960	550	510
900	740	1050	600	510
1000	770	1100	650	540

These measurements are for the electrically-operated type. Please contact us if you need measurements for other types. We can manufacture larger BT-1Q at your request.

Standard Specification

Type of valve	BT-1Q
Structure	Multi-hole spherical disc (both sides type, one side type)
Diameter	200～1000　Please contact us for larger diameter
Pressure	4.5K, 7.5K, 10K
Material	Body:FCD450-10　Disc:SCS13,SUS304 Stem:SUS403,SUS420J2　Rubber seat:CR
Operation	Manual, Manual cap type, Electrical
Flange	JWWA B 138
Fluid	Tap water, Industrial water, Agricultural water

Checklist for selecting flow control valve

Diameter : ＿＿＿＿＿＿ mm

Quantity : ＿＿＿＿＿＿

Fluid : ＿＿＿＿＿＿

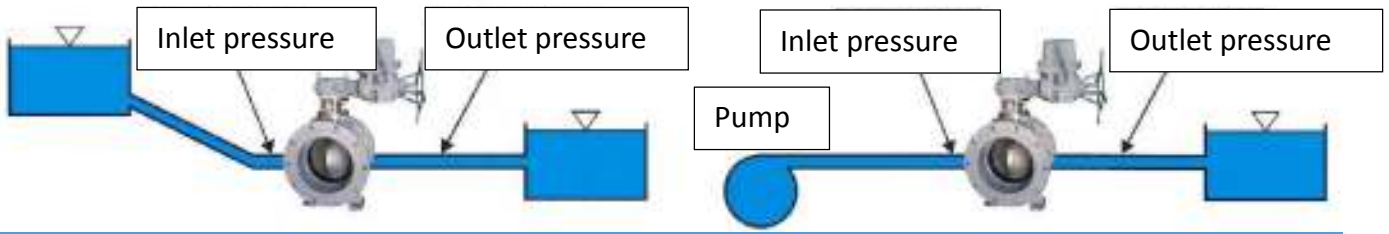
Operation : Manual/Electric/other

Flange : ＿＿＿＿＿＿

Purpose : Flow rate/Pressure/Water level

Hydraulic condition

	Case1	Case2	Case3
Inlet pressure	**m**	**m**	**m**
Outlet pressure	**m**	**m**	**m**
Flow rate	**m^3/s**	**m^3/s**	**m^3/s**



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