

3 WAY BALL VALVE Type 23(Manual Type)

Features

- Enables switching between two flow paths and complete closing.
(Only one valve is necessary in a line conventionally requiring two ball valves.)
- The shape of valve element (ball) is selectable from three kinds, allowing for switching of flow direction according to the application.



Basic specifications

-Valve Type	:	3 Way Ball Valve Type 23
- Size	:	15 mm – 100 mm (1/2 inch – 4 inch)
- Body Material	:	U-PVC (Conforming to ASTM D1784 Cell Classification 12454A) C-PVC (Conforming to ASTM D1784 Cell Classification 23567-A) PP (Conforming to ASTM D4101 Cell Classification PP0210B67272) PVDF (Conforming to ASTM D3222 Cell Classification Type II)
- Seal Material	/ O-ring	: EPDM, FKM etc.
- Connection	/ Flanged	: JIS B2220 5K, JIS B2220 10K, DIN/EN1092-1 PN10, ANSI B16.5 CLASS150
	Socket	: JIS, DIN, ASTM D2466 SCH40/SCH80
	Spigot	: DIN
	Threaded	: Rc, Rp, NPT
- Port	/ Double L Port, L Port	: 15mm – 100mm (1/2 inch – 4 inch)
	Cross Port	: 15mm – 50mm (1/2 inch – 2 inch)

Body Material	FLUID TEMPERATURE °C {°F}	Maximum working pressure (Normal temperature) MPa {psi}	Connection method			
			Flanged	Socket	Spigot	Threaded
U-PVC	0 ~ 50 { 30~122 }	1.0 { 150 }	○	○	○	○
C-PVC	0 ~ 90 { 30~195 }	1.0 { 150 }	○	○	-	○
PP	-20 ~ 80 { -5~175 }	1.0 { 150 }	○	○	○	○
PVDF	-40 ~ 100 { -40~210 }	1.0 { 150 }	○	○	○	○

Note:

- (1) The ball-type valves have dead spaces for structural reasons. Note that volatile liquids, such as hydrogen peroxide (H₂O₂) and sodium hypochlorite (NaClO), vaporize in those dead spaces, which may cause abnormal pressure increase in the valve. (When the internal pressure abnormally increases due to vaporization, the gas will be compressive fluid. If the valve breaks in this state, it will be very dangerous, causing explosion and scattering of fragments.)
- (2) The maximum working pressure is the value including the water hammer pressure. Be careful that the maximum working pressure is not exceeded during use.

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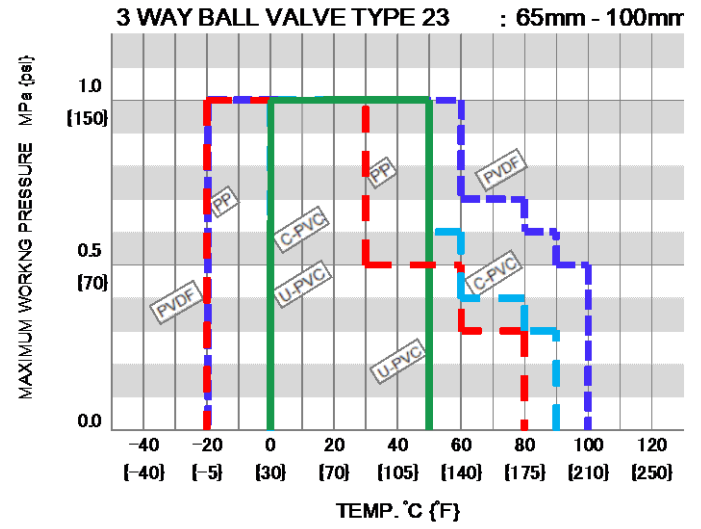
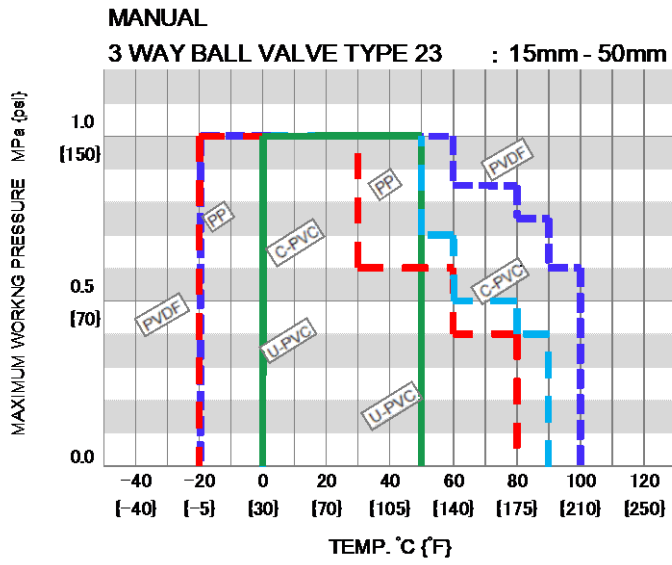
Concerning the allowable pressure for each temperature and material, see the technical documents at the next page of this sheet.

Certificate / Approval / Directive

PED, NSF/ANSI61

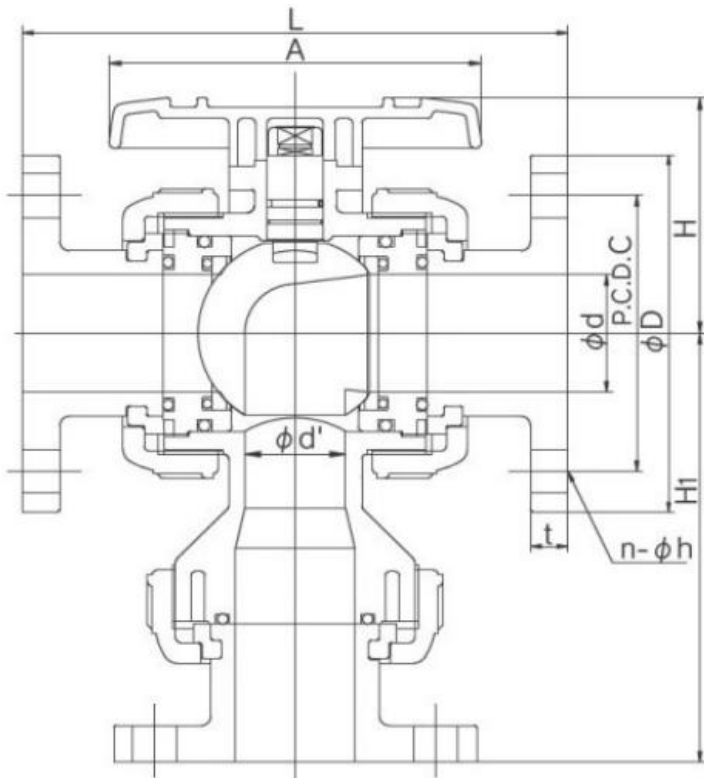
“For details of applicable products, please consult us.”

Working pressure vs. Temperature

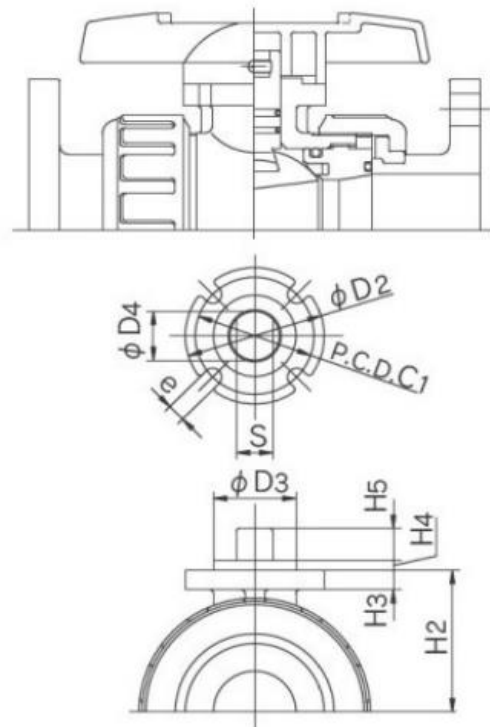


Product dimension

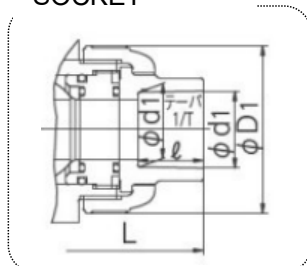
FLANGED



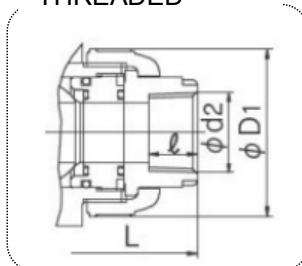
65 mm - 100 mm



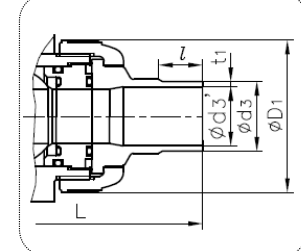
SOCKET



THREADED



SPIGOT



DATASHEET

■ JIS, DIN (Unit: mm)

mm	d	d'	D ₁	D ₂	D ₃	D ₄	C ₁	H	H ₂	H ₃	H ₄	H ₅	A	S	e
15	15	15	48	42	25	13.5	36	51.5	30.0	6	3	8	92	10.5	5.5
20	20	20	60	42	25	15	36	59.5	36.5	6	3	10	100	11	5.5
25	25	25	70	42	25	15	36	68.0	43.5	6	3	10	110	11	5.5
32	40	32	100	57	35	23	50	89.0	61.0	10	3	12	131	18	6.5
40	40	32	100	57	35	23	50	89.0	61.0	10	3	12	131	18	6.5
50	51	43	126	57	35	23	50	102.5	72.5	10	3	12	159	18	6.5
65	78	58	152	81	55	30	70	140.0	94.0	13	3	19	240	24	9
80	78	58	152	81	55	30	70	140.0	94.0	13	3	19	240	24	9
100	100	78	210	116	70	40	102	178.0	126.0	16	3	23	300	34	11

mm	FLANGED												SOCKET										THREADED			
	JIS 5K				JIS 10K				L	t	H ₁	U-PVC, C-PVC					PP					d ₂	ℓ	L	H ₁	
	D	C	n	h	D	C	n	h				d ₁	ℓ	1/T	L	H ₁	d ₁	d ₁ '	ℓ	L	H ₁					
15	80	60	4	12	95	70	4	15	143	12	94	22.11	20	1/34	108	77	21.2	20.2	20	108	77	Rc1/2	15	102	74	
20	85	65	4	12	100	75	4	15	172	14	115	26.13	24	1/34	128	93	26.2	25.2	23	126	92	Rc3/4	17	120	89	
25	95	75	4	12	125	90	4	19	187	14	133	32.16	27	1/34	145	112	33.0	32.0	25	141	110	Rc 1	20	131	105	
32	115	90	4	15	135	100	4	19	212	16	165	38.19	30	1/34	174	146.5	-	-	-	-	-	Rc1 1/4	22	163	141	
40	120	95	4	15	140	105	4	19	212	16	165	48.21	37	1/37	189	154	47.0	46.0	28	171	145	Rc1 1/2	25	163	141	
50	130	105	4	15	155	120	4	19	234	16	187	60.25	42	1/37	220	180	59.0	58.0	28	192	166	Rc 2	28	197	168	
65	155	130	4	15	175	140	4	19	304	18	256	76.60	61	1/48	316	261	75.00	73.00	35	264	235	Rc2 1/2	32	264	235	
80	180	145	4	19	185	150	8	19	304	18	256	89.60	64	1/49	316	261	88.00	35.00	35	258	232	Rc 3	35	264	235	
100	200	165	8	19	210	175	8	19	372	18	305	114.70	84	1/56	418	328	113.00	45.00	45	340	289	Rc 4	45	360	299	

■ DIN (Unit: mm)

mm	FLANGED							SOCKET										THREADED			
	DIN PN10				L	t	H ₁	U-PVC, C-PVC					PP, PVDF					d ₂	ℓ	L	H ₁
	D	C	n	h				d ₁	ℓ	L	H ₁	d ₁	d ₁ '	ℓ	L	H ₁					
15	95	65	4	14	130	12	88	20	16	102	72	19.50	19.30	14.5	99	71	Rp1/2	15	102	74	
20	105	75	4	14	150	14	104	25	19	120	85	24.50	24.30	16	114	83	Rp3/4	17	120	89	
25	115	85	4	14	160	14	120	32	22	131	104	31.50	31.30	18	123	100	Rp 1	20	131	105	
32	140	100	4	18	212	16	165	40	26	173	147	39.45	39.2	20.5	148	131	Rp1 1/4	22	163	141	
40	150	110	4	18	200	16	159	50	31	163	142	49.45	49.20	23.5	148	131	Rp1 1/2	25	163	141	
50	165	125	4	18	230	16	185	63	38	197	170	62.50	62.1	27.5	176	154	Rp 2	28	197	168	
65	185	145	4	18	304	18	256	75	44	282	245	74.25	73.95	31	256	227	Rp2 1/2	32	265	235	
80	200	160	8	18	310	21	259	90	51	282	245	89.20	88.85	35.5	251	224	Rp 3	35	265	235	
100	220	180	8	18	350	18	305	110	61	349	305	109.05	108.65	41.5	310	279	Rp 4	45	338	299	

mm	SPIGOT									
	U-PVC				PP, PVDF					
	d ₃	d ₃ '	ℓ	H ₁	d ₃	ℓ	t	PP	PVDF	L
15	20	15	18.5	83	20	18.5	2.5	2	124	83
20	25	20	24	99	25	22	2.7	1.9	144	99
25	32	25	24.5	115.0	32	22.5	3.0	2.4	154	115
32	-	-	-	-	-	-	-	-	-	-
40	50	40	34	153	50	32	4.6	3.0	194	153
50	63	51	38	178	63	36	5.8	3.0	224	178
65	-	-	-	-	-	-	-	-	-	-
80	90	80	51	252	90	38	8.2	4.3	295	246
100	110	93.6	61	308	110	44.5	10.0	5.3	353	301

■ ANSI (Unit: inch)

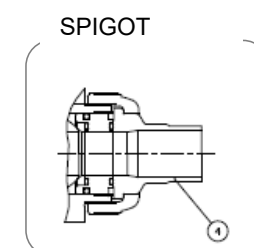
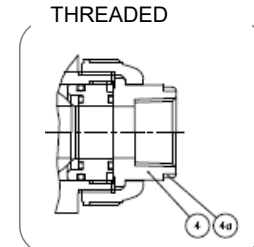
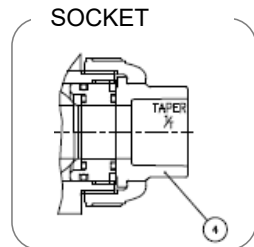
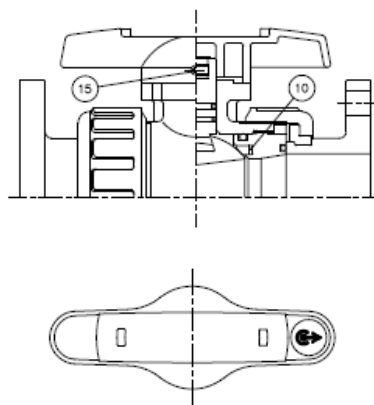
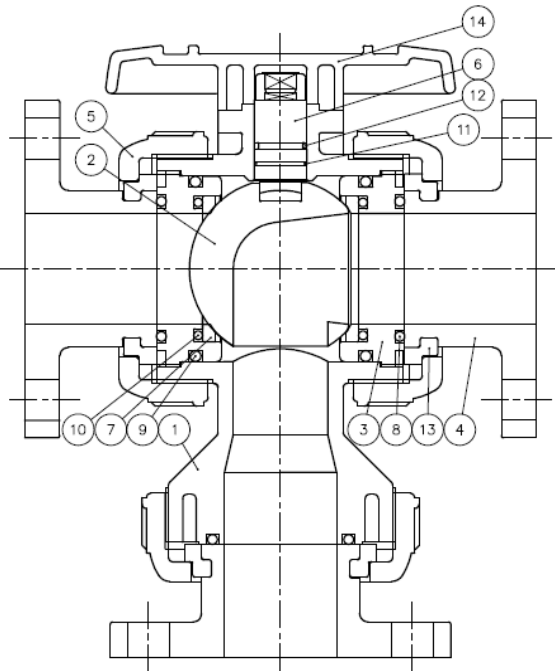
inch	mm	d	d'	D ₁	D ₂	D ₃	D ₄	C ₁	H	H ₂	H ₃	H ₄	H ₅	A	S	e
1/2	15	0.59	0.59	1.89	1.65	0.98	0.53	1.42	2.03	1.18	0.24	0.12	0.31	3.62	0.41	0.22
3/4	20	0.79	0.79	2.36	1.65	0.98	0.59	1.42	2.34	1.44	0.24	0.12	0.39	3.94	0.43	0.22
1	25	0.98	0.98	2.76	1.65	0.98	0.59	1.42	2.68	1.71	0.24	0.12	0.39	4.33	0.43	0.22
1 1/4	32	1.57	1.26	3.94	2.24	1.38	0.91	1.97	3.50	2.40	0.39	0.12	0.47	5.16	0.71	0.26
1 1/2	40	1.57	1.26	3.94	2.24	1.38	0.91	1.97	3.50	2.40	0.39	0.12	0.47	5.16	0.71	0.26
2	50	2.01	1.69	4.96	2.24	1.38	0.91	1.97	4.04	2.85	0.39	0.12	0.47	6.26	0.71	0.26
2 1/2	65	3.07	2.28	5.98	3.19	2.17	1.18	2.76	5.51	3.70	0.51	0.12	0.75	9.45	0.94	0.35
3	80	3.07	2.28	5.98	3.19	2.17	1.18	2.76	5.51	3.70	0.51	0.12	0.75	9.45	0.94	0.35
4	100	3.94	3.07	8.27	4.57	2.76	1.57	4.02	7.01	4.96	0.63	0.12	0.91	11.81	1.34	0.43

■ANSI (Unit: inch)

inch	mm	FLANGED							SOCKET												THREADED				
		ANSI CLASS 150							U-PVC, C-PVC						PP, PVDF						d ₂	ℓ	L	H ₁	
		D	C	n	h	L	t	H ₁	ASTM SCH40			ASTM SCH80			d ₁	ℓ	L	H ₁							
									d ₁	d ₁ '	ℓ	L	d ₁	d ₁ '					ℓ	L					H ₁
1/2	15	3.50	2.38	4	0.62	5.63	0.47	3.70	-	-	-	-	0.848	0.836	0.875	4.45	3.08	0.83	0.870	4.45	3.09	1/2-14 NPT	0.59	4.02	2.89
3/4	20	3.88	2.75	4	0.62	6.77	0.55	4.50	-	-	-	-	1.058	1.046	1.000	5.08	3.56	1.03	1.000	5.08	3.61	3/4-14 NPT	0.57	4.72	3.48
1	25	4.25	3.12	4	0.62	7.36	0.55	5.24	-	-	-	-	1.325	1.310	1.125	5.75	4.32	1.30	1.130	5.75	4.37	1-1 1/2 NPT	0.79	5.16	4.13
1 1/4	32	4.62	3.50	4	0.62	8.35	0.63	6.50	-	-	-	-	1.670	1.655	1.250	6.85	5.51	1.65	1.250	7.04	5.75	1 1/4-11 1/2 NPT	0.87	6.42	5.53
1 1/2	40	5.00	3.88	4	0.62	8.35	0.63	6.50	-	-	-	-	1.912	1.894	1.375	7.24	5.71	1.89	1.370	7.24	5.85	1 1/2-11 1/2 NPT	0.98	6.42	5.53
2	50	6.00	4.75	4	0.75	9.21	0.63	7.34	-	-	-	-	2.387	2.369	1.500	8.23	6.66	2.36	1.500	8.23	6.76	2-11 1/2 NPT	1.10	7.76	6.61
2 1/2	65	7.00	5.50	4	0.75	11.97	0.71	10.06	-	-	-	-	2.889	2.868	1.750	11.21	9.65	2.88	1.752	11.21	9.65	2 1/2-8 NPT	1.26	10.39	9.25
3	80	7.50	6.00	4	0.75	11.97	0.71	10.06	-	-	-	-	3.516	3.492	1.875	11.10	9.59	3.48	1.874	11.10	11.10	3-8 NPT	1.38	10.39	9.25
4	100	9.00	7.50	8	0.75	14.66	0.71	12.01	4.518	4.491	2.000	13.90	-	-	-	-	11.58	4.48	2.252	14.37	14.37	4-8 NPT	1.77	14.17	11.77

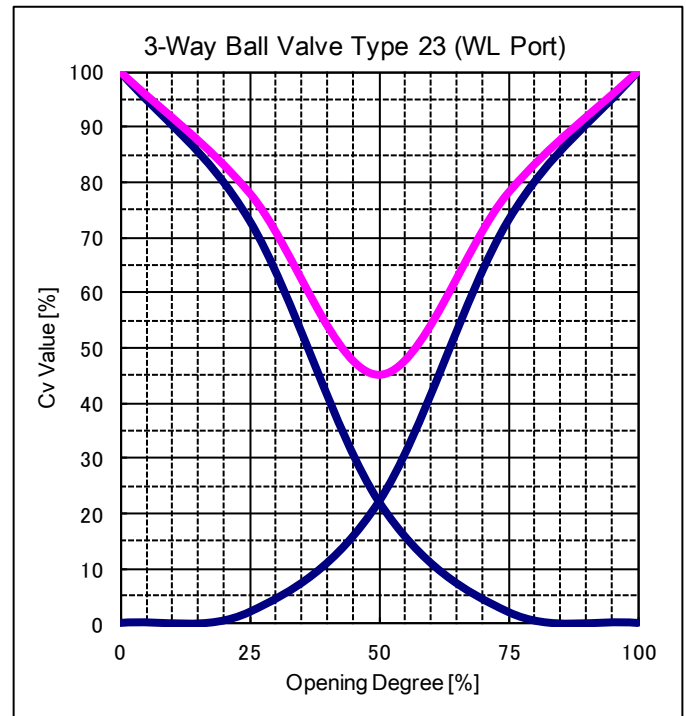
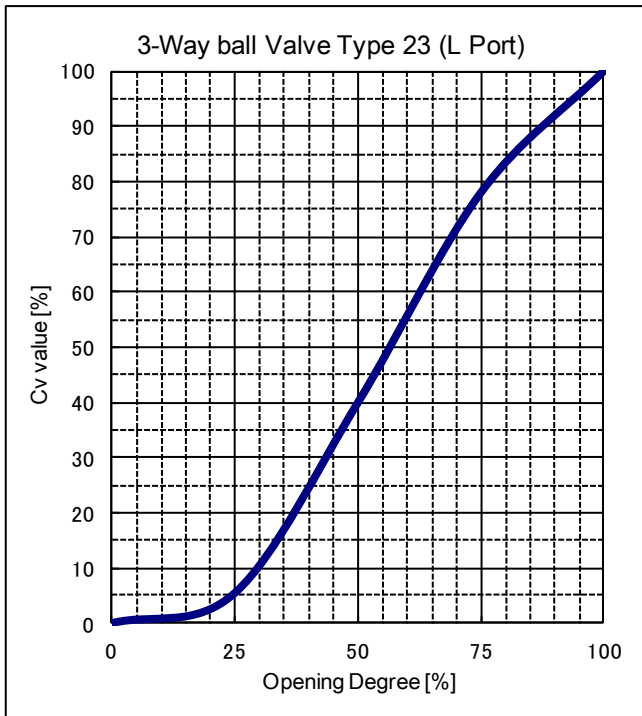
Parts list

[FLANGED]



PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL
1 BODY	1	U-PVC, C-PVC, PP, PVDF	6 STEM	1	U-PVC, C-PVC, PP, PVDF	11 O-RING (D)	1	EPDM, FKM, etc.
2 BALL	1	U-PVC, C-PVC, PP, PVDF	7 SEAT	2	PTFE	12 O-RING (E)	1	EPDM, FKM, etc.
3 UNION	2	U-PVC, C-PVC, PP, PVDF	8 O-RING (A)	3	EPDM, FKM, etc.	13 STOP RING	3	PVDF
4 END CONNECTOR	3	U-PVC, C-PVC, PP, PVDF	9 O-RING (B)	2	EPDM, FKM, etc.			Used for Flanged Type
4a RING	3	STAINLESS STEEL Used for C-PVC 15,20, or 25mm Threaded Type	10 O-RING (C)	2	EPDM, FKM, etc. Used for 15 to 50mm	14 HANDLE	1	ABS
5 UNION NUT	3	U-PVC, C-PVC, PP, PVDF	CUSHION	2	EPDM, FKM, etc. Used for 65 to 100mm	15 TAPPING SCREW (A)	1	STAINLESS STEEL Used for 65 to 100mm

Cv value for each opening degree



FULL-OPEN Cv VALUE

mm		15	20	25	32	40	50	65	80	100
inch		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
FULL-OPEN Cv VALUE	L PORT	7.4	10	23	33	43	59	111	130	260
	DOUBLE L PORT	6.3	8.5	20	27	36	45	84	99	200
	CROSS PORT	7.8	13	23	49	65	98	-	-	-

The values shown are reference values, not guaranteed values.

Operating torque

OPEN TO CLOSE (L PORT)

Unit: N·m [lb·inch]

mm	15	20	25	32	40	50	65	80	100
inch	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
STANDARD	2.2	3.2	4.0	8.0	8.0	10	40	40	80
	{20}	{30}	{36}	{73}	{73}	{90}	{360}	{360}	{720}

FLOW DIRECTION DIAGRAM

The direction of flow is selectable according to the application.

Three types of valve element (BALL) are available: "L PORT", "DOUBLE L PORT" and "CROSS PORT".

The direction of flow can be switched according to the application.

	COMPATIBLE ACTUATION METHOD	ROTATION ANGLE					BALL SHAPE
		0°	45°	90°	135°	180°	
L PORT (90° or 180°)	MANUAL — ○ ELECTRIC — △						
DOUBLE L PORT (90°)	MANUAL — △ PNEUMATIC — ○ ELECTRIC — ○						
CROSS PORT (90° or 180°) *For 15 - 50 mm only.	MANUAL — △ PNEUMATIC — △ ELECTRIC — △						

○ indicates standard products. □ indicates optional products.

* Our products are vertical type. The double L port and cross port cannot completely stop the flow in three directions.

* For automatic valves, the direction of flow is determined as follows according to the operation system:

Air to open: Right opens during air supply.

Air to close: Left opens during air supply.

Double acting: Right opens during air supply on (O) side.

Left opens during air supply on (S) side.

* Also for the solenoid valve, the right side opens when energized and the left side opens when de-energized.

Product weight

3 WAY BALL VALVE TYPE 23 [MANUAL]

UNIT : kg

mm	inch	FLANGED (JIS10K)				SOCKET				THREADED(JIS)			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF
15	1/2	0.5	0.5	0.3	0.6	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.4
20	3/4	0.8	0.9	0.5	0.9	0.4	0.4	0.2	0.4	0.4	0.4	0.2	0.4
25	1	1.3	1.4	0.8	1.5	0.6	0.6	0.4	0.7	0.6	0.6	0.4	0.7
32	1 1/4	2.2	2.4	1.4	2.6	1.3	1.4	0.8	1.5	1.4	1.5	0.9	1.7
40	1 1/2	2.2	2.4	1.4	2.6	1.3	1.4	0.8	1.5	1.4	1.5	0.9	1.7
50	2	3.5	3.7	2.2	4.0	2.5	2.7	1.6	2.9	2.6	2.8	1.7	3.1
65	2 1/2	7.0	7.5	4.4	8.5	5.8	5.8	3.5	6.8	5.5	6.0	3.5	6.5
80	3	7.0	7.5	4.4	8.5	6.0	6.0	3.6	7.0	5.5	6.0	3.5	6.5
100	4	1.4	15.0	9.0	16.5	13.5	14.0	8.5	15.5	13.0	14.0	8.5	15.5

Product model code list

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
V	23	LV	*	*	*	***	***
:	:	:	:	:	:	:	:
V MANUAL VALVE	23 TYPE 23	LV LEVER TYPE	U U-PVC C C-PVC P PP F PVDF	E EPDM V FKM	S SOCKET N THREADED P SPIGOT F FLANGED	J JIS D DIN 1 10K 5 5K A ANSI	015 15mm S 100 100mm

Installation, Operation and Maintenance Manual

"For details of Installation, Operation and Maintenance, please contact our nearest distribution agent or sales office.