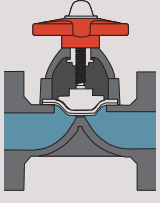
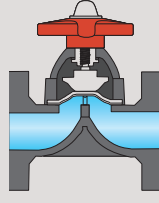

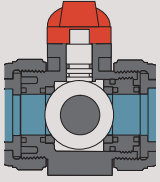
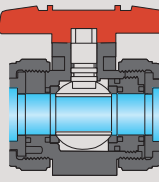

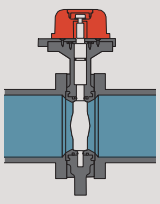
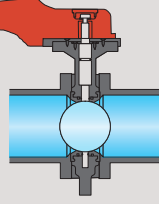

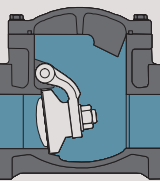
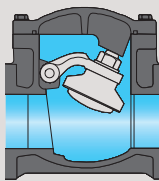
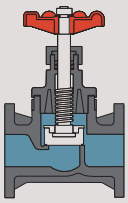
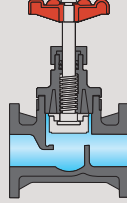

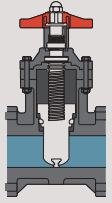
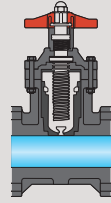


# TYPES AND FEATURES OF MAJOR VALVES

Various other types of valves are also available.

	FULLY CLOSED STATE	FULLY OPEN STATE	INTENDED USE	MANUAL VALVE VALVE TYPE	USE AS AUTOMATIC VALVE
<p><b>DIAPHRAGM VALVE</b></p> <p>OPENS AND CLOSES THE GATE AT THE CENTER OF THE VALVE BY MOVING UP AND DOWN THE DIAPHRAGM.</p> <p>• THE FLOW MAY BE EITHER FROM THE RIGHT OR LEFT.</p>			<ul style="list-style-type: none"> <li>INSULATES THE WETTED PART FROM LOW-CONTAMINATION GREASE AND METAL PARTS</li> <li>FLOW RATE CONTROL</li> <li>SLURRY FLUID</li> </ul>	ROUND HANDLE TYPE	
<p><b>BALL VALVE</b></p> <p>OPENS AND CLOSES THE FLOW PATH BY TURNING THE SPHERICAL VALVE ELEMENT 90°.</p> <p>• IN PRINCIPLE, THE FLOW MAY BE EITHER FROM THE RIGHT OR LEFT.</p> <p>• THE FLOW IS STRAIGHT.</p>			<ul style="list-style-type: none"> <li>LOW PRESSURE LOSS</li> <li>SWITCHING OF FLOW DIRECTION (3 WAY BALL VALVE)</li> <li>ON-OFF</li> </ul>	LEVER TYPE	
<p><b>BUTTERFLY VALVE</b></p> <p>OPENS AND CLOSES THE FLOW PATH BY TURNING THE DISC VALVE ELEMENT 90°.</p> <p>• THE FLOW MAY BE EITHER FROM THE RIGHT OR LEFT.</p> <p>• ALTHOUGH DIVIDED INTO TWO BY THE VALVE ELEMENT, THE FLOW IS ALMOST STRAIGHT.</p>			<ul style="list-style-type: none"> <li>LARGE FLOW RATE</li> <li>SPACE SAVING</li> <li>SLURRY FLUID</li> <li>LOW PRESSURE LOSS</li> <li>FLOW RATE CONTROL</li> </ul>	LEVER TYPE GEAR TYPE	
<p><b>SWING CHECK VALVE</b></p> <p>BACKWARD FLOW OF THE FLUID MAKES THE VALVE ELEMENT PRESSED ONTO THE VALVE SEAT, WHICH PREVENTS BACKFLOW.</p> <p>• THE DIRECTION OF FLOW IS FIXED.</p> <p>• THE FLOW IS ALMOST STRAIGHT.</p>			<ul style="list-style-type: none"> <li>BACK-FLOW PREVENTION</li> </ul>	—	
<p><b>STOP VALVE (GLOBE VALVE)</b></p> <p>THE VALVE ELEMENT SHUTS OFF THE FLUID TO CONTROL OPEN AND CLOSE.</p> <p>• THE DIRECTION OF FLOW IS FIXED.</p> <p>• THE FLOW FORMS AN S SHAPE.</p>			<ul style="list-style-type: none"> <li>HIGH ACCURACY CONTROL</li> </ul>	ROUND HANDLE TYPE	
<p><b>GATE VALVE</b></p> <p>THE VALVE ELEMENT BLOCKS THE FLUID PASSAGE PERPENDICULARLY TO CONTROL OPEN AND CLOSE.</p> <p>• THE FLOW MAY BE EITHER FROM THE RIGHT OR LEFT.</p> <p>• THE FLOW IS STRAIGHT.</p>			<ul style="list-style-type: none"> <li>LOW PRESSURE LOSS</li> <li>ON-OFF</li> </ul>	ROUND HANDLE TYPE CAP TYPE	

# DIFFERENCES BETWEEN PNEUMATIC AND ELECTRIC TYPES OF AUTOMATIC VALVES



	ADVANTAGES	ACTUATOR TYPE				
PNEUMATIC	<ul style="list-style-type: none"> <li>• LOWER PRICE THAN ELECTRIC TYPE.</li> <li>• SIMPLE STRUCTURE ALLOWING GOOD MAINTAINABILITY</li> <li>• QUICK OPENING AND CLOSING</li> <li>• FREELY ADJUSTABLE OPEN/CLOSE SPEED (OPTIONAL)</li> <li>• CONTROL IS ALSO AVAILABLE AT AN INTERMEDIATE OPENING POSITION (OPTIONAL)</li> </ul>	TYPE AN		TYPE AI	TYPE AD	
		TYPE AP		TYPE AV		
ELECTRIC	<ul style="list-style-type: none"> <li>• CAN BE INSTALLED MORE EASILY THAN PNEUMATIC TYPE (REQUIRING RELATIVELY SIMPLE INSTALLATION WORK)</li> <li>• EASY TO ASSEMBLE SEQUENCES</li> <li>• EASY TO OBTAIN HIGH OUTPUT BY CHANGING GEAR REDUCTION RATIO</li> <li>• CAN BE HOUSED IN THE ACTUATOR EVEN WITH OPTIONS.</li> </ul>	TYPE AA		TYPE TA		
		TYPE T		TYPE M		
		TYPE S		TYPE H		

## TYPES OF PLASTIC AND RUBBER MATERIALS AND THE PARTS USING THEM



PLASTIC MATERIALS		WORKING TEMPERATURE RANGE	MAJOR USED PARTS
U-PVC	POLYVINYL CHLORIDE PLASTIC	0 ~ 60°C	BODY, VALVE ELEMENT, PIPE CONNECTION (MAINLY WETTED PARTS)
HI-PVC	HIGH-IMPACT POLYVINYL CHLORIDE PLASTIC	-10 ~ 60°C	
C-PVC (HT)	THERMAL-RESISTANT POLYVINYL CHLORIDE PLASTIC	0 ~ 90°C	
PP	POLYPROPYLENE	-20 ~ 90°C	BONNET
PVDF	VINYLDENE FLUORIDE PLASTIC	-40 ~ 120°C	
PPG	GLASSFIBER REINFORCED POLYPROPYLENE	-20 ~ 120°C	
RUBBER MATERIALS		HEAT-RESISTANT TEMPERATURE	MAJOR USED PARTS
EPDM	ETHYLENE PROPYLENE RUBBER	120°C	SEALING PARTS (DIAPHRAGMS AND O-RINGS)
FKM	FLUORORUBBER	180°C	
PTFE	POLY TETRA FLUORO ETHYLENE	300~350°C	



**NOTE** The working temperature range and heat-resistance temperature show the range in which the materials can be used, and therefore are not applicable to all the valves. The allowable temperature of each valve is determined according to its structure and sealing materials. See the catalogs for details.

## CERTIFICATES



Certificates and copies of certificate may be delivered. Contact our sales representative for request.

Certificates	Copy of certificate	AS OF FEBRUARY 1, 2017
CE marking (PED:Pressure Equipment Directive) Declaration of Conformity	ISO9001 certificate	
Contained chemical substance investigation (RoHS, REACH, MSDSplus, etc.)	ISO14001 certificate	
Material certificate	NK (Nippon Kaiji Kyokai)	
SDS (MSDS)	ABS(American Bureau of Shipping)	
Test report / certificate according to Japanese Food Sanitation Act (Japanese only)	NSF certification (NSF/ANSI61 Drinking water components-health Effects)	
	JIS product certificate (Japanese only)	



PED



NK



ABS



NSF

For details of applicable products and certificates other than the above, contact us.

# SYSTEMATIC CHART



DIAPHRAGM VALVE	MODEL	ACTUATION TYPE		SIZE	
		ACTUATOR	MODEL		
BASIC TYPE	TYPE 14	MANUAL		15mm – 100mm	
		AUTOMATIC	PNEUMATIC	TYPE AN	15mm – 50mm
				TYPE AV	65mm – 100mm
			TYPE AP	65mm – 100mm	
			ELECTRIC	TYPE H	15mm – 100mm
				TYPE M	15mm – 100mm
	TRUE UNION TYPE 14	MANUAL		15mm – 50mm	
		AUTOMATIC	PNEUMATIC	TYPE AN	15mm – 50mm
			ELECTRIC	TYPE H	15mm – 50mm
				TYPE M	15mm – 50mm
	TYPE 15	MANUAL		125mm – 150mm	
		AUTOMATIC	PNEUMATIC	TYPE AV	125mm – 150mm
ELECTRIC			TYPE H	125mm – 150mm	
			TYPE S	125mm – 150mm	
TYPE 72	MANUAL		200mm – 250mm		
	AUTOMATIC	PNEUMATIC	TYPE AV	200mm – 250mm	
		ELECTRIC	TYPE S	200mm – 250mm	
BALANCED TYPE	TYPE AI TRUE UNION TYPE AI	AUTOMATIC	PNEUMATIC	TYPE AI	15mm – 50mm
HIGH DURABILITY	TYPE 16	AUTOMATIC	PNEUMATIC	TYPE AD	15mm – 50mm

BALL VALVE	MODEL	ACTUATION TYPE		SIZE	
		ACTUATOR	MODEL		
FOR CHEMICALS	TYPE 21 $\alpha$	MANUAL		15mm – 50mm	
		AUTOMATIC	PNEUMATIC	TYPE TA	15mm – 50mm
				TYPE AA	15mm – 50mm
			ELECTRIC	TYPE T	15mm – 50mm
	TYPE 21	MANUAL		15mm – 100mm	
		AUTOMATIC	PNEUMATIC	TYPE TA	15mm – 100mm
				TYPE AA	15mm – 50mm
			ELECTRIC	TYPE T	15mm – 100mm
	TYPE 23 (3 WAY VALVE)	MANUAL		15mm – 100mm	
		AUTOMATIC	PNEUMATIC	TYPE TA	15mm – 100mm
	ELECTRIC		TYPE T	15mm – 100mm	
	TYPE 23H	MANUAL		25mm – 40mm	
LAB COCK	MANUAL		13mm – 15mm		
COMPACT BALL TYPE 27	MANUAL		13mm – 50mm		
FOR WATER	WATER BALL VALVE	MANUAL		15mm – 50mm	
		AUTOMATIC	PNEUMATIC	TYPE VC	15mm – 50mm
			ELECTRIC	TYPE V	15mm – 50mm







## BALL VALVE LINEUP

APPLICATION	TYPE	SIZE	MATERIAL			
			U-PVC	C-PVC	PP	PVDF
FOR CHEMICALS	21α	15 — 50mm	●	●		
	21	15 — 50mm			●	●
		65 — 100mm	●	●	●	●
FOR WATER	WATER BALL VALVE	15 — 50mm	●			
3 WAY BALL	23	15 — 100mm	●	●	●	●
	23H	25 — 40mm			●	
LAB COCK	—	1/4 — 3/8inch	●			
COMPACT SIZE	27	13 — 50mm	●	●		

## AVAILABLE OPTIONS **AUTOMATIC** \* Options other than those listed below are also available. Contact us for inquiry.

	PNEUMATIC			ELECTRIC	
	TYPE TA	TYPE AA	TYPE VC	TYPE T	TYPE V
SOLENOID VALVE (NAMUR)	●	●			
SOLENOID VALVE (WITH EXHAUST THROTTLE VALVE WITH SILENCER)			● <sup>*1</sup>		
FILTER REGULATOR	●	●			
SPEED CONTROLLER	●	●	●	● <sup>*3</sup>	
BYPASS VALVE (WITH SPEED CONTROLLER)	●	●			
LIMIT SWITCH BOX	●	●	●		
LIMIT SWITCH	●	●			
OUTPUT CONTACT LIMIT SWITCH				STANDARD	
INTERMEDIATE OUTPUT CONTACT LIMIT SWITCH				● <sup>*3</sup>	
PROXIMITY SWITCH	●				
E/P POSITIONER	●				
P/P POSITIONER	●				
E/E POSITIONER				● <sup>*3</sup>	
MANUAL OPERATION LEVER	●				
MANUAL OVERRIDE	●			●	
FULL OPENING ADJUSTMENT	●				
SPECIAL PAINTING (ACTUATOR ONLY)	●			●	
SPECIAL FITTING (STAINLESS STEEL)	●	●		●	
METAL INSERT PROVIDED (WITH ENSAT)	●	●		●	
SPACE HEATER				● <sup>*2</sup>	STANDARD
POTENTIOMETER				● <sup>*3</sup>	

\*1 Not compatible with the NAMUR standard. \*2 Provided as standard for 65 mm or more.

\*3 When it is mounted on a valve with a size of 50 mm or less, the actuator specifications will change.



SOLENOID VALVE



SPEED CONTROLLER



LIMIT SWITCH BOX



LIMIT SWITCH



POSITIONER

# BALL VALVE TYPE 21, 21α

- EQUIPPED WITH TOP FLANGE, ALLOWING FOR EASY CHANGE TO AUTOMATIC VALVE.
- COMES WITH BOTTOM STAND TO FACILITATE MOUNTING ON RACKS AND PANELS (See the Ensat mounting procedure on page 69).
- DOUBLE O-RING ON THE STEM IMPROVES DURABILITY AND SEALING PROPERTY.

**BASIC SPECIFICATIONS**

**VALVE TYPE** ————— **BALL VALVE TYPE 21, 21α**

**SIZE** ————— **15 mm—100 mm (1/2 inch—4 inch)**

**BODY MATERIAL** ————— **U-PVC C-PVC PP PVDF**

**SEAL MATERIAL / O-RING** ————— **EPDM FKM etc.**

**CONNECTION / FLANGED** ————— **JIS5K, JIS10K, DIN PN10, ANSI CLASS150**

**SOCKET** ————— **JIS, DIN, ANSI**

**THREADED** ————— **Rc, Rp, NPT**

**HIGH PURITY SERIES** ————— **LUBRICANT FREE**

	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) (MPa)(kgf/cm <sup>2</sup> )	CONNECTION METHOD		
			FLANGED	SOCKET	THREADED
U-PVC	0°C ~ 50°C	1.0 {10.2}	○	○	○
C-PVC	0°C ~ 90°C	1.0 {10.2}	○	○	○
PP	-20°C ~ 80°C	1.0 {10.2}	○	○	○
PVDF	-20°C ~ 100°C	1.0 {10.2}	○	○	○

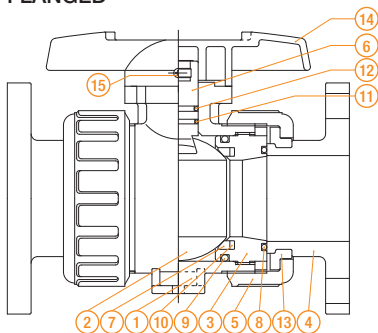
**NOTE** (1) The ball-type valves have dead spaces for structural reasons. Note that volatile liquids, such as hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and sodium hypochlorite (NaClO), vaporize in those dead spaces, which may cause abnormal pressure increase in the valve. (When the internal pressure 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.

\* Concerning the allowable pressure for each temperature and material, see the technical documents at the end of this catalog.

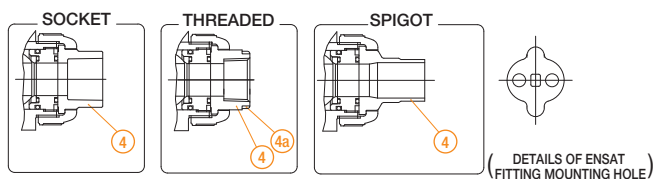
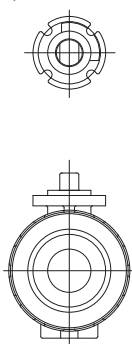


**PARTS LIST** **MANUAL**

**FLANGED**



**(DETAILS OF STEM)**



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	⑫ O-RING (E)	1	EPDM, FKM, etc.
② BALL	1	U-PVC, C-PVC, PP, PVDF	⑦ SEAT	2	PTFE	⑬ STOP RING	2	PVDF (Used for flanged type.)
③ UNION	1	U-PVC, C-PVC, PP, PVDF	⑧ O-RING (A)	2	EPDM, FKM, etc.	⑭ HANDLE	1	ABS
④ END CONNECTOR	2	U-PVC, C-PVC, PP, PVDF	⑨ O-RING (B)	1	EPDM, FKM, etc.	⑮ TAPPING SCREW (A)	1	SUS304
④a RING	2	SUS304 (Made of C-PVC. Used for threaded type of 15 to 25 mm.)	⑩ O-RING (C)	2	EPDM, FKM, etc.			
⑤ UNION NUT	2	U-PVC, C-PVC, PP, PVDF	⑪ O-RING (D)	1	EPDM, FKM, etc.			

**COMPATIBLE ACTUATOR** **AUTOMATIC**

**PNEUMATIC TYPE TA** For detailed specifications, see

**ELECTRIC TYPE T** For detailed specifications, see

**PNEUMATIC TYPE AA** For detailed specifications, see

**TYPE CATEGORY** **MANUAL** **AUTOMATIC**

The types are classified according to the size and material.

SIZE	BODY MATERIAL			
	U-PVC	C-PVC	PP	PVDF
15mm - 50mm	TYPE 21α			
65mm - 100mm	TYPE 21		TYPE 21	

PRODUCT MODEL CODE LIST	ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES
<b>MANUAL</b>	V	**	LV	*	*	*	*	***	1
	V MANUAL VALVE	21 TYPE 21 2A TYPE 21α	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 A ANSI 1 JIS10K 5 5K	015 15mm } 100 100mm	1 LUBRICANT FREE

PRODUCT MODEL CODE LIST	ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	SPACE HEATER	HIGH PURITY SERIES
<b>AUTOMATIC</b>	A	**	*	*	*	*	*	*	***	OC*	1
	A AUTOMATIC VALVE	21 TYPE 21 2A TYPE 21α	PNEUMATIC K TYPE TA A TYPE AA ELECTRIC T TYPE T	PNEUMATIC F DOUBLE ACTING G AIR TO OPEN S AIR TO CLOSE ELECTRIC 1 Single-Phase 100V 2 Single-Phase 200V	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 A ANSI 1 JIS10K 5 JIS5K	015 15mm } 100 100mm	OC OC * Indicate only for electric type only.	1 LUBRICANT FREE

**NOTE** (1) PP and PVDF socket types are weld type. Note, however, that JIS PP 32-mm socket type is not produced.  
(2) PVDF socket type compatible with the JIS standard is not available.  
(3) A handle set with a lock mechanism (for malfunction prevention) is available as an option.

### Compatibility of face-to-face dimensions

Both valve face-to-face dimensions and body face-to-face dimensions are compatible between type 21α and conventional type 21. Also, a change to type 21α is available using the end connector and union nut for the existing piping (type 21).

### Compatibility of parts

Some of the body component parts are not compatible between type 21α and type 21. Be careful when parts are changed on site. For details of parts compatibility, contact our sales office in your area.

### Identification of product

[Difference between products] (See Fig. 1.) The body appearance of type 21α is different from that of type 21 to discriminate between them.

### Related materials

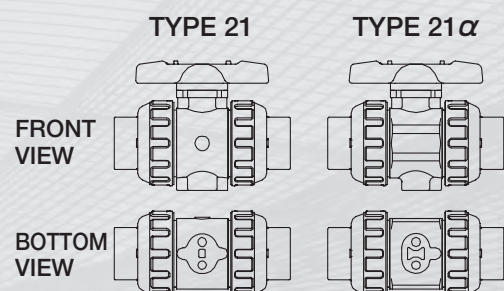
Due to the modification and release of type 21α, some parts of related materials, such as outline drawing, instruction manual, and set parts list, have been revised.

Please obtain the latest version at our sales office in your area.

### Performance and options

There is no change in the performance (relationship between the working pressure and temperature, Cv value, chemical resistance, etc.) and options between type 21 and 21α.

Fig. 1: Difference between products



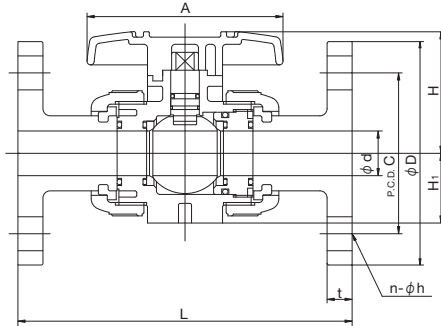
MANUAL

BALL VALVE TYPE 21, 21α

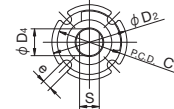
TYPE—V21LV, V2ALV

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN

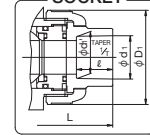
FLANGED



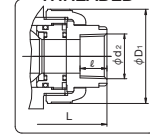
(DETAILS OF STEM)



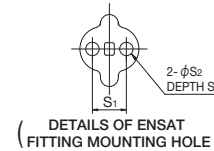
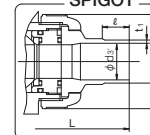
SOCKET



THREADED



SPIGOT



JIS, DIN (Unit: mm)

mm	d	d'	D1	D2	D3	D4	C1	H	H1	H2	H3	H4	H5	A	S	S1	S2	S3	e
10	13	-	46	-	-	-	36	43.5	-	-	-	-	-	80	-	-	-	-	-
15	15	-	48	42	25	13.5	36	51.5	29	30	6	3	8	92	10.5	19	7.3	11	5.5
20	20	-	60	42	25	15	36	59.5	35	36.5	6	3	10	100	11	19	7.3	11	5.5
25	25	-	70	42	25	15	36	68	39	43.5	6	3	10	110	11	19	7.3	11	5.5
32	32	-	82	48	30	19	42	80.5	47	52.5	8	3	10	121	15	30	9	15	5.5
40	40	-	100	57	35	23	50	89	55	61	10	3	12	131	18	30	9	15	6.5
50	51	-	126	57	35	23	50	102.5	66	72.5	10	3	12	159	18	30	9	15	6.5
65	65	58	133	81	55	30	70	126	72	85	13	3	16	200	24	48	9	6	9
80	78	68.5	152	81	55	30	70	140	85	94	13	3	19	240	24	55	11	7	9
100	100	90	210	116	70	40	102	178	110	126	16	3	23	300	34	65	11	8	11

mm	JIS																								
	FLANGED												SOCKET												
	JIS5K				JIS10K				L				U-PVC, C-PVC				PP				THREADED				
	D	C	n	h	D	C	n	h	U-PVC C-PVC	PP	PVDF	t	d1	ℓ	1/T	L	d1	d1'	ℓ	L	d2	ℓ	U-PVC C-PVC	PP	PVDF
15	80	60	4	12	95	70	4	15	143	143	143	12	22.11	20	1/34	109	21.2	20.2	20	108	Rc1/2	15	102	100	100
20	85	65	4	12	100	75	4	15	172	172	172	14	26.13	24	1/34	128	26.2	25.2	23	126	Rc3/4	17	120	119	119
25	95	75	4	12	125	90	4	19	187	187	187	14	32.16	27	1/34	145	33.0	32.0	25	141	Rc1	20	131	130	130
32	115	90	4	15	135	100	4	19	190	190	190	16	38.19	30	1/34	162	-	-	-	-	Rc1 1/4	22	150	146	146
40	120	95	4	15	140	105	4	19	212	212	212	16	48.21	37	1/37	189	47.0	46.0	28	171	Rc1 1/2	25	163	160	160
50	130	105	4	15	155	120	4	19	234	234	234	16	60.25	42	1/37	220	59.0	58.0	28	192	Rc2	28	197	194	194
65	155	130	4	15	175	140	4	19	261	257	256	18	76.60	61	1/48	273	75.0	73.0	35	219	Rc2 1/2	32	215	213	212
80	180	145	4	19	185	150	8	19	306	305	302	18	89.60	64	1/49	316	88.0	86.0	35	257	Rc3	35	265	264	261
100	200	165	8	19	210	175	8	19	374	374	369	18	114.70	84	1/56	419	113.0	111.0	45	341	Rc4	45	362	362	357

mm	DIN																									
	FLANGED DIN PN10/PN16												SOCKET													
	L				U-PVC, C-PVC				PP, PVDF				THREADED				SPIGOT									
	D	C	n	h	U-PVC C-PVC	PP	PVDF	t	d1	ℓ	L	d1	d1'	ℓ	PP	PVDF	d2	ℓ	U-PVC C-PVC	PP	PVDF	d3	ℓ	PP	PVDF	
10	90	60	4	14	120	119	119	12	16	14	99	15.5	15.4	13	96	96	Rp3/8	15	99	98	98	16	13	16	-	-
15	95	65	4	14	130	130	120	12	20	16	102	19.5	19.3	14.5	99	99	Rp1/2	15	102	100	100	20	15	18.5	20	18.5
20	105	75	4	14	150	150	140	12	25	19	119	24.5	24.3	16	113	113	Rp3/4	17	120	119	119	25	20	24	25	22
25	115	85	4	14	160	160	160	14	32	22	131	31.5	31.3	18	123	123	Rp1	20	131	130	130	32	25	24.5	32	22.5
32	140	100	4	18	180	180	180	16	40	26	150	39.45	39.2	20.5	139	139	Rp1 1/4	22	150	146	146	40	31	28	40	26.3
40	150	110	4	18	200	200	200	16	50	31	164	49.45	49.2	23.5	149	149	Rp1 1/2	25	163	160	160	50	40	34	50	32
50	165	125	4	18	230	230	230	16	63	38	197	62.5	62.1	27.5	176	176	Rp2	28	197	194	194	63	51	38	63	36
65	185	145	4	18	290	288	287	18	75	44	233	74.25	73.95	31	205	204	Rp2 1/2	32	215	213	212	75	65	44	75	38
80	200	160	8	18	312	311	308	21	90	51	284	89.2	88.85	35.5	252	249	Rp3	35	265	264	261	90	80	51	90	38
100	220	180	8	18	352	352	347	18	110	61	351	109.05	108.65	41.5	312	307	Rp4	45	340	340	335	110	93.6	46	110	44.5

ANSI (Unit: inch)

inch	mm	d	d'	D1	D2	D3	D4	C1	H	H1	H2	H3	H4	H5	A	S	S1	S2	S3	e
1/2	15	0.59	-	1.89	1.65	0.98	0.53	1.42	2.03	1.14	1.18	0.24	0.12	0.31	3.62	0.41	0.75	0.29	0.43	0.22
3/4	20	0.79	-	2.36	1.65	0.98	0.59	1.42	2.34	1.38	1.44	0.24	0.12	0.39	3.94	0.43	0.75	0.29	0.43	0.22
1	25	0.98	-	2.76	1.65	0.98	0.59	1.42	2.68	1.54	1.71	0.24	0.12	0.39	4.33	0.43	0.75	0.29	0.43	0.22
1 1/4	32	1.26	-	3.23	1.89	1.18	0.75	1.65	3.17	1.85	2.07	0.31	0.12	0.39	4.76	0.59	1.18	0.35	0.59	0.22
1 1/2	40	1.57	-	3.94	2.24	1.38	0.91	1.97	3.50	2.17	2.40	0.39	0.12	0.47	5.16	0.71	1.18	0.35	0.59	0.26
2	50	2.01	-	4.96	2.24	1.38	0.91	1.97	4.04	2.60	2.85	0.39	0.12	0.47	6.26	0.71	1.18	0.35	0.59	0.26
2 1/2	65	2.56	2.28	5.24	3.19	2.17	1.18	2.76	4.96	2.83	3.35	0.51	0.12	0.63	7.87	0.94	1.89	0.35	0.24	0.35
3	80	3.07	2.70	5.98	3.19	2.17	1.18	2.76	5.51	3.35	3.70	0.51	0.12	0.75	9.45	0.94	2.17	0.43	0.28	0.35
4	100	3.94	3.54	8.27	4.57	2.76	1.57	4.02	7.01	4.33	4.96	0.63	0.12	0.91	11.81	1.34	2.56	0.43	0.31	0.43

inch	mm	ANSI																									
		FLANGED												SOCKET													
		ANSI CLASS 150				L				U-PVC, C-PVC				PP, PVDF				THREADED									
	D	C	n	h	U-PVC C-PVC	PP	PVDF	t	H1	d1	d1'	ℓ	L	d1	d1'	ℓ	L	d1	ℓ	U-PVC C-PVC	PP	PVDF	d2	ℓ	U-PVC C-PVC	PP	PVDF
1/2	15	3.50	2.38	4	0.62	5.63	5.63	5.63	0.47	3.70	-	-	-	0.848	0.836	0.875	4.45	0.83	0.870	4.45	4.45	1/2-14 NPT	0.59	4.02	4.02	4.02	
3/4	20	3.88	2.75	4	0.62	6.77	6.77	6.77	0.55	4.50	-	-	-	1.058	1.046	1.000	5.08	1.03	1.000	5.08	5.08	3/4-14 NPT	0.67	4.72	4.72	4.72	
1	25	4.25	3.12	4	0.62	7.36	7.36	7.36	0.55	5.24	-	-	-	1.325	1.310	1.125	5.75	1.30	1.130	5.75	5.75	1-11 1/2 NPT	0.79	5.16	5.16	5.16	
1 1/4	32	4.62	3.50	4	0.62	7.48	7.48	7.48	0.63	6.50	-	-	-	1.670	1.655	1.250	6.46	1.65	1.250	6.46	6.46	1 1/4-11 1/2 NPT	0.87	5.91	5.91	5.91	
1 1/2	40	5.00	3.88	4	0.62	8.35	8.35	8.35	0.63	6.50	-	-	-	1.912	1.894	1.375	7.24	1.89	1.370	7.24							

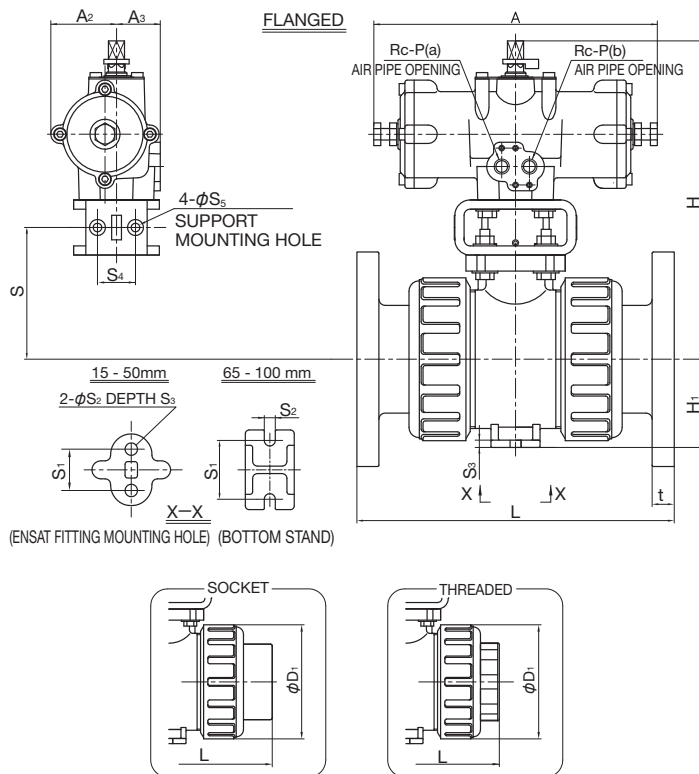


**AUTOMATIC PNEUMATIC TYPE TA**  
**DOUBLE ACTING**  
 AIR TO OPEN  
 AIR TO CLOSE

# BALL VALVE TYPE 21, 21α

TYPE—A21K, A2AK

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN



### ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	TA2A-0402D
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	
40mm (1 1/2inch)	TA2A-050D
50mm ( 2inch)	TA2A-063D
65mm (2 1/2inch)	
80mm ( 3inch)	TA2A-080D
100mm ( 4inch)	

#### ■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	H <sub>1</sub>	A	A <sub>2</sub>	A <sub>3</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	P
15	48	159.5	29	110	25	32	-	19	7.3	11	-	-	1/8
20	60	166	35	110	25	32	-	19	7.3	11	-	-	1/8
25	70	173	39	110	25	32	-	19	7.3	11	-	-	1/8
32	82	182	47	110	25	32	-	30	9	15	-	-	1/8
40	100	224	55	210	46	46	-	30	9	15	-	-	1/4
50	126	235.5	66	210	46	46	-	30	9	15	-	-	1/4
65	133	268	72	250	57	38	107.5	48	9	6	32	7	1/4
80	152	277	85	250	57	38	116.5	55	11	7	32	7	1/4
100	210	348	110	292	71	45	151.5	65	11	8	42	9	1/4

mm	JIS										DIN												
	FLANGED JIS5K, JIS10K				SOCKET			THREADED			FLANGED DIN PN10/PN16				SOCKET			THREADED			SPIGOT		
	U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC	PP	PVDF	
15	143	143	143	12	109	108	102	100	100	130	130	130	12	109	99	99	102	100	100	124	124	124	
20	172	172	172	14	128	126	120	119	119	150	150	150	14	128	113	113	120	119	119	144	144	144	
25	187	187	187	14	145	141	131	130	130	160	160	160	14	145	123	123	131	130	130	154	154	154	
32	190	190	190	16	162	-	150	146	146	180	180	180	16	162	139	139	150	146	146	174	174	174	
40	212	212	212	16	189	171	163	160	160	200	200	200	16	189	149	149	163	160	160	194	194	194	
50	234	234	234	16	220	192	197	194	194	230	230	230	16	220	176	176	197	194	194	224	224	224	
65	261	257	256	18	273	219	215	213	212	290	288	287	18	273	205	204	215	213	212	285	245	244	
80	306	305	302	18	316	257	265	264	261	312	311	308	21	316	252	249	265	264	261	299	296	293	
100	374	374	369	18	419	341	362	362	357	352	352	347	18	419	312	307	340	340	335	358	355	350	

#### ■ ANSI (Unit: inch)

inch	mm	ANSI																						
		FLANGED ANSI CLASS150							SOCKET			THREADED												
		U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF							
1/2	15	1.89	6.28	1.14	4.33	0.98	1.26	-	0.75	0.29	0.43	-	-	1/8	5.63	5.63	5.63	0.47	4.45	4.45	4.45	4.02	4.02	4.02
3/4	20	2.36	6.54	1.38	4.33	0.98	1.26	-	0.75	0.29	0.43	-	-	1/8	6.77	6.77	6.77	0.55	5.08	5.08	5.08	4.72	4.72	4.72
1	25	2.76	6.81	1.54	4.33	0.98	1.26	-	0.75	0.29	0.43	-	-	1/8	7.36	7.36	7.36	0.55	5.75	5.75	5.75	5.16	5.16	5.16
1 1/4	32	3.23	7.17	1.85	4.33	0.98	1.26	-	1.18	0.35	0.59	-	-	1/8	7.48	7.48	7.48	0.63	6.46	6.46	6.46	5.91	5.91	5.91
1 1/2	40	3.94	8.82	2.17	8.27	1.81	1.81	-	1.18	0.35	0.59	-	-	1/4	8.35	8.35	8.35	0.63	7.24	7.24	7.24	6.42	6.42	6.42
2	50	4.96	9.27	2.60	8.27	1.81	1.81	-	1.18	0.35	0.59	-	-	1/4	9.21	9.21	9.21	0.63	8.23	8.23	8.23	7.76	7.76	7.76
2 1/2	65	5.24	10.55	2.83	9.84	2.24	1.50	4.23	1.89	0.35	0.24	1.26	0.28	1/4	10.20	10.12	10.08	0.71	9.45	9.37	9.33	8.46	8.39	8.35
3	80	5.98	10.91	3.35	9.84	2.24	1.50	4.59	2.17	0.43	0.28	1.26	0.28	1/4	12.05	12.01	11.89	0.71	11.14	11.10	10.98	10.43	10.39	10.28
4	100	8.27	13.70	4.33	11.50	2.83	1.77	5.96	2.56	0.43	0.31	1.65	0.35	1/4	14.72	14.72	14.53	0.71	13.86	14.37	14.13	14.25	14.25	14.06



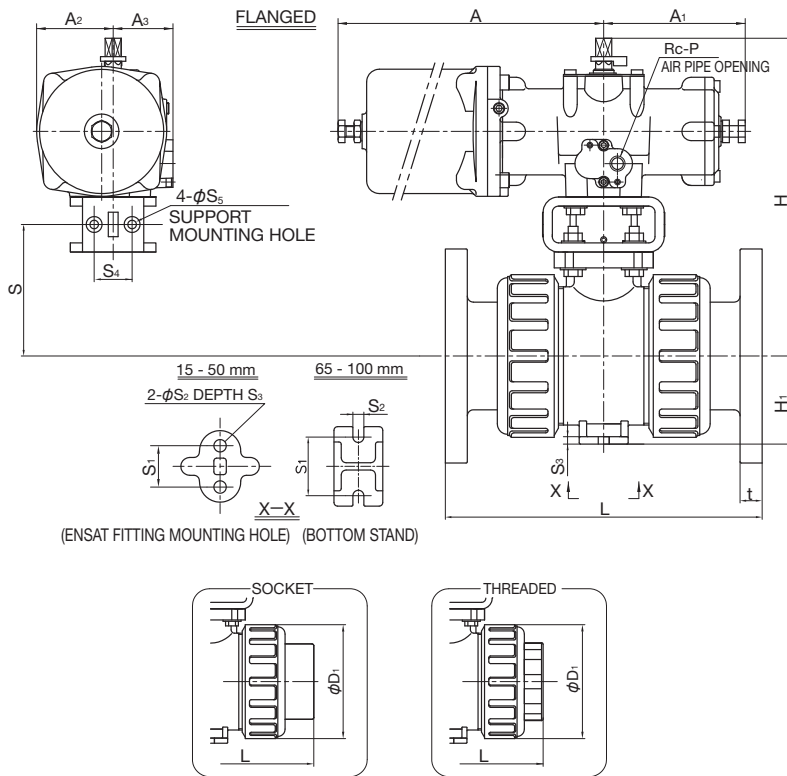
**AUTOMATIC PNEUMATIC TYPE TA**

DOUBLE ACTING  
AIR TO OPEN  
AIR TO CLOSE

# BALL VALVE TYPE 21, 21α

TYPE—A21K, A2AK

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN



**ACTUATOR SELECTION CHART**

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	TA2A-0402R
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	
40mm (1 1/2inch)	TA2A-050R
50mm ( 2inch)	
65mm (2 1/2inch)	TA2A-063R
80mm ( 3inch)	
100mm ( 4inch)	TA2A-080R

■ JIS, DIN (Unit: mm)

mm	D1	H	H1	A	A1	A2	A3	S	S1	S2	S3	S4	S5	P
15	48	159.5	29	194	55	46	46	-	19	7.3	11	-	-	1/4
20	60	166	35	194	55	46	46	-	19	7.3	11	-	-	1/4
25	70	173	39	194	55	46	46	-	19	7.3	11	-	-	1/4
32	82	182	47	194	55	46	46	-	30	9	15	-	-	1/4
40	100	224	55	240	105	53	50	-	30	9	15	-	-	1/4
50	126	235.5	66	240	105	53	50	-	30	9	15	-	-	1/4
65	133	268	72	288	125	67	52	107.5	48	9	6	32	7	1/4
80	152	277	85	288	125	67	52	116.5	55	11	7	32	7	1/4
100	210	348	110	341	146	82.5	59	151.5	65	11	8	42	9	1/4

mm	JIS										DIN																								
	FLANGED JIS5K, JIS10K					SOCKET					THREADED					FLANGED DIN PN10/PN16					SOCKET					THREADED					SPIGOT				
	U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF				
10	-	-	-	-	-	-	-	-	-	-	-	-	-	120	119	119	12	99	96	96	99	98	98	114	114	114	114	114	114	114					
15	143	143	143	12	109	108	102	100	100	130	130	130	12	102	99	99	102	100	100	124	124	124	124	124	124	124	124	124	124	124					
20	172	172	172	14	128	126	120	119	119	150	150	150	14	119	113	113	120	119	119	144	144	144	144	144	144	144	144	144	144	144					
25	187	187	187	14	145	141	131	130	130	160	160	160	14	131	123	123	131	130	130	154	154	154	154	154	154	154	154	154	154	154					
32	190	190	190	16	162	-	150	146	146	180	180	180	16	150	139	139	150	146	146	174	174	174	174	174	174	174	174	174	174	174					
40	212	212	212	16	189	171	163	160	160	200	200	200	16	164	149	149	163	160	160	194	194	194	194	194	194	194	194	194	194	194					
50	234	234	234	16	220	192	197	194	194	230	230	230	16	197	176	176	197	194	194	224	224	224	224	224	224	224	224	224	224	224					
65	261	257	256	18	273	219	215	213	212	290	288	287	18	233	205	204	215	213	212	285	245	244	285	245	244	285	245	244	285	245	244				
80	306	305	302	18	316	257	265	264	261	312	311	308	21	284	252	249	265	264	261	299	296	293	299	296	293	299	296	293	299	296	293				
100	374	374	369	18	419	341	362	362	357	352	352	347	18	351	312	307	340	340	335	358	355	350	358	355	350	358	355	350	358	355	350				

■ ANSI (Unit: inch)

inch	mm	ANSI																													
		FLANGED ANSI CLASS150					SOCKET					THREADED																			
		U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF														
1/2	15	1.89	6.28	1.14	7.64	2.17	1.81	1.81	-	0.75	0.29	0.43	-	-	1/4	5.63	5.63	5.63	0.47	4.45	4.45	4.45	4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02	4.02
3/4	20	2.36	6.54	1.38	7.64	2.17	1.81	1.81	-	0.75	0.29	0.43	-	-	1/4	6.77	6.77	6.77	0.55	5.08	5.08	5.08	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.72
1	25	2.76	6.81	1.54	7.64	2.17	1.81	1.81	-	0.75	0.29	0.43	-	-	1/4	7.36	7.36	7.36	0.55	5.75	5.75	5.75	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16
1 1/4	32	3.23	7.17	1.85	7.64	2.17	1.81	1.81	-	1.18	0.35	0.59	-	-	1/4	7.48	7.48	7.48	0.63	6.46	6.46	6.46	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91	5.91
1 1/2	40	3.94	8.82	2.17	9.45	4.13	2.09	1.97	-	1.18	0.35	0.59	-	-	1/4	8.35	8.35	8.35	0.63	7.24	7.24	7.24	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42
2	50	4.96	9.27	2.60	9.45	4.13	2.09	1.97	-	1.18	0.35	0.59	-	-	1/4	9.21	9.21	9.21	0.63	8.23	8.23	8.23	7.76	7.76	7.76	7.76	7.76	7.76	7.76	7.76	7.76
2 1/2	65	5.24	10.55	2.83	11.34	4.92	2.64	2.05	4.23	1.89	0.35	0.24	1.26	0.28	1/4	10.20	10.12	10.08	0.71	9.45	9.37	9.33	8.46	8.39	8.35	8.46	8.39	8.35	8.46	8.39	8.35
3	80	5.98	10.91	3.35	11.34	4.92	2.64	2.05	4.59	2.17	0.43	0.28	1.26	0.28	1/4	12.05	12.01	11.89	0.71	11.14	11.10	10.98	10.43	10.39	10.28	10.43	10.39	10.28	10.43	10.39	10.28
4	100	8.27	13.70	4.33	13.43	5.75	3.25	2.32	5.96	2.56	0.43	0.31	1.65	0.35	1/4	14.72	14.72	14.53	0.71	13.86	14.37	14.13	14.25	14.25	14.06	14.25	14.25	14.06	14.25	14.25	14.06

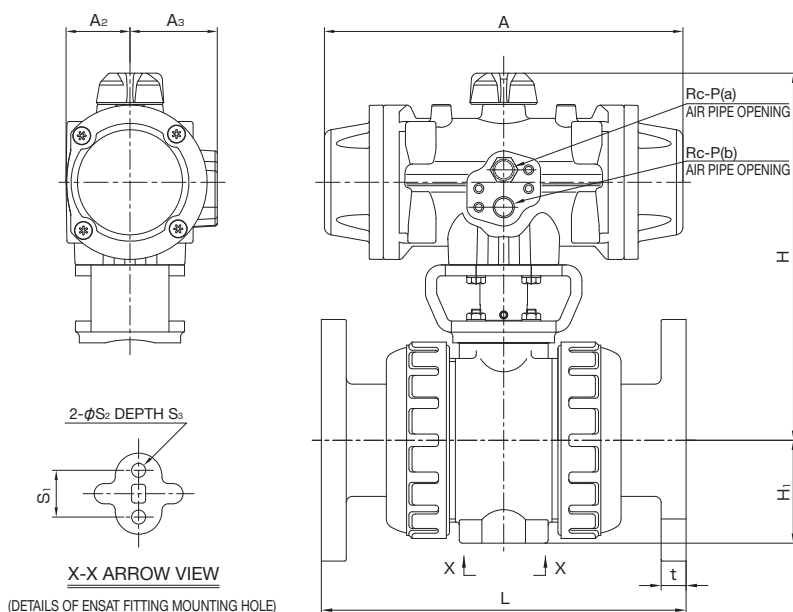
**AUTOMATIC PNEUMATIC TYPE AA**  
**DOUBLE ACTING**  
 AIR TO OPEN  
 AIR TO CLOSE

# BALL VALVE TYPE 21, 21 $\alpha$

TYPE—A21A, A2AA

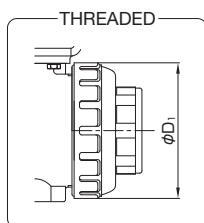
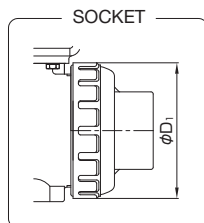
CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN

## FLANGED



### ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	PPW
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	PPOO
40mm (1 1/2inch)	
50mm ( 2inch)	



### ■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	A	A <sub>2</sub>	A <sub>3</sub>	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	P	JIS				DIN								
											FLANGED JISSK, JIS10K		SOCKET		THREADED		FLANGED DIN PN10/PN16		SOCKET		THREADED		SPIGOT
											U-PVC, C-PVC, PP, PVDF	t	U-PVC, C-PVC	PP	U-PVC, C-PVC	PP, PVDF	U-PVC, C-PVC, PP, PVDF	t	U-PVC, C-PVC	PP, PVDF	U-PVC, C-PVC	PP, PVDF	U-PVC, C-PVC, PP, PVDF
15	48	159	144	28	42	29	19	7.3	11	1/4	143	12	109	108	102	100	130	12	102	99	102	100	124
20	60	165.5	144	28	42	35	19	7.3	11	1/4	172	14	128	126	120	119	150	14	119	113	120	119	144
25	70	172.5	144	28	42	39	19	7.3	11	1/4	187	14	145	141	131	130	160	14	131	123	131	130	154
32	82	181.5	144	28	42	47	30	9	15	1/4	190	16	162	-	150	146	180	16	150	139	150	146	174
40	100	203	157	31	48	55	30	9	15	1/4	212	16	189	171	163	160	200	16	164	149	163	160	194
50	126	214.5	157	31	48	66	30	9	15	1/4	234	16	220	192	197	194	230	16	197	176	197	194	224

### ■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	H	A	A <sub>2</sub>	A <sub>3</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	P	ANSI					
												FLANGED ANSI CLASS150		SOCKET		THREADED	
												U-PVC, C-PVC, PP, PVDF	t	U-PVC, C-PVC, PP, PVDF	PP, PVDF	U-PVC, C-PVC, PP, PVDF	U-PVC, C-PVC, PP, PVDF
1/2	15	1.89	6.26	5.67	1.10	1.65	1.14	0.75	0.29	0.43	1/4	5.63	0.47	4.45	4.02		
3/4	20	2.36	6.52	5.67	1.10	1.65	1.38	0.75	0.29	0.43	1/4	6.77	0.55	5.08	4.72		
1	25	2.76	6.79	5.67	1.10	1.65	1.54	0.75	0.29	0.43	1/4	7.36	0.55	5.75	5.16		
1 1/4	32	3.23	7.15	5.67	1.10	1.65	1.85	1.18	0.35	0.59	1/4	7.48	0.63	6.46	5.91		
1 1/2	40	3.94	7.99	6.18	1.22	1.89	2.17	1.18	0.35	0.59	1/4	8.35	0.63	7.24	6.42		
2	50	4.96	8.44	6.18	1.22	1.89	2.60	1.18	0.35	0.59	1/4	9.21	0.63	8.23	7.76		

**AUTOMATIC PNEUMATIC TYPE AA**

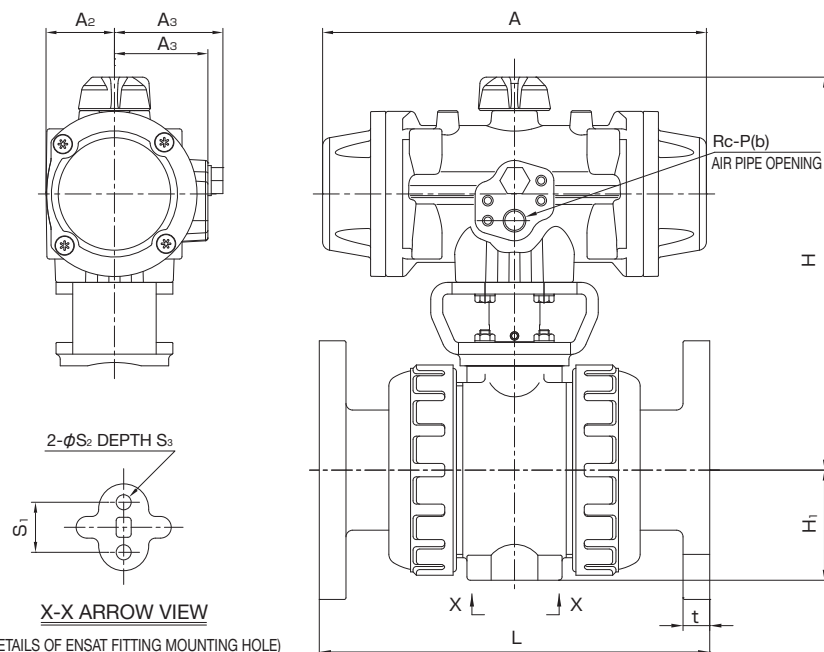
DOUBLE ACTING  
AIR TO OPEN  
AIR TO CLOSE

# BALL VALVE TYPE 21, 21α

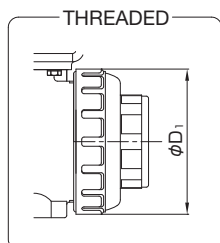
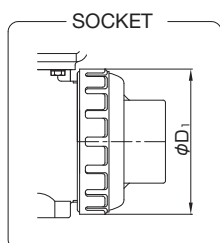
TYPE—A21A, A2AA

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN

### FLANGED



SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	PP00S
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	
40mm (1 1/2inch)	PP10S
50mm ( 2inch)	



■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	A	A <sub>2</sub>	A <sub>3</sub>	A <sub>3</sub> '	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	P	JIS						DIN							
												FLANGED JISSK, JIS10K		SOCKET		THREADED		FLANGED DIN PN10/PN16		SOCKET		THREADED		SPIGOT	
												L	t	L	PP	L	PP	L	t	L	PP	L	PP	L	PP
15	48	172	157	31	48	57	29	19	7.3	11	1/4	143	12	109	108	102	100	130	12	102	99	102	100	124	
20	60	178.5	157	31	48	57	35	19	7.3	11	1/4	172	14	128	126	120	119	150	14	119	113	120	119	144	
25	70	185.5	157	31	48	57	39	19	7.3	11	1/4	187	14	145	141	131	130	160	14	131	123	131	130	154	
32	82	194.5	157	31	48	57	47	30	9	15	1/4	190	16	162	-	150	146	180	16	150	139	150	146	174	
40	100	224	230	41	56	65	55	30	9	15	1/4	212	16	189	171	163	160	200	16	164	149	163	160	194	
50	126	235.5	230	41	56	65	66	30	9	15	1/4	234	16	220	192	197	194	230	16	197	176	197	194	224	

■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	H	A	A <sub>2</sub>	A <sub>3</sub>	A <sub>3</sub> '	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	P	ANSI					
													FLANGED ANSI CLASS150		SOCKET		THREADED	
													L	t	L	PP	L	PP
1/2	15	1.89	6.77	6.18	1.22	1.89	2.24	1.14	0.75	0.29	0.43	1/4	5.63	0.47	4.45	4.02		
3/4	20	2.36	7.03	6.18	1.22	1.89	2.24	1.38	0.75	0.29	0.43	1/4	6.77	0.55	5.08	4.72		
1	25	2.76	7.30	6.18	1.22	1.89	2.24	1.54	0.75	0.29	0.43	1/4	7.36	0.55	5.75	5.16		
1 1/4	32	3.23	7.66	6.18	1.22	1.89	2.24	1.85	1.18	0.35	0.59	1/4	7.48	0.63	6.46	5.91		
1 1/2	40	3.94	8.82	9.06	1.61	2.20	2.56	2.17	1.18	0.35	0.59	1/4	8.35	0.63	7.24	6.42		
2	50	4.96	9.27	9.06	1.61	2.20	2.56	2.60	1.18	0.35	0.59	1/4	9.21	0.63	8.23	7.76		

**AUTOMATIC PNEUMATIC TYPE AA**

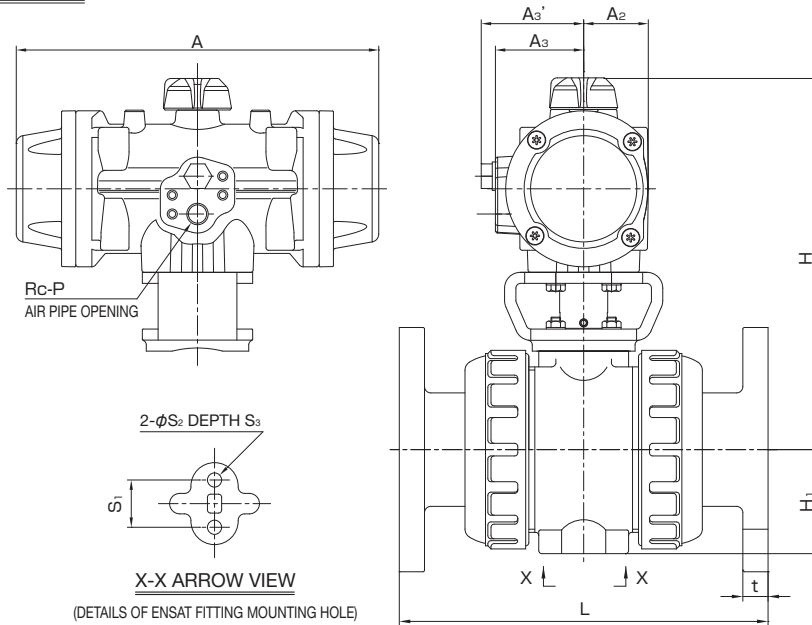
DOUBLE ACTING  
AIR TO OPEN  
AIR TO CLOSE

# BALL VALVE TYPE 21, 21 $\alpha$

TYPE—A21A, A2AA

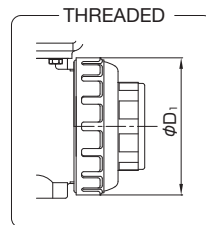
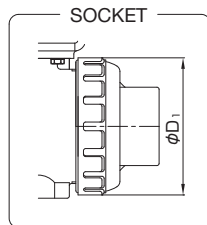
CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN

## FLANGED



## ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	PP00S
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	
40mm (1 1/2inch)	PP10S
50mm ( 2inch)	



### ■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	A	A <sub>2</sub>	A <sub>3</sub>	A <sub>3</sub> '	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	P	JIS						DIN						
												FLANGED JISSK, JIS10K		SOCKET		THREADED		FLANGED DIN PN10/PN16		SOCKET		THREADED		SPIGOT
												L	t	U-PVC C-PVC PP, PVDF	PP	U-PVC C-PVC PP, PVDF	PP	L	t	U-PVC C-PVC PP, PVDF	PP	U-PVC C-PVC PP, PVDF	PP	L
15	48	172	157	31	48	57	29	19	7.3	11	1/4	143	12	109	108	102	100	130	12	102	99	102	100	124
20	60	178.5	157	31	48	57	35	19	7.3	11	1/4	172	14	128	126	120	119	150	14	119	113	120	119	144
25	70	185.5	157	31	48	57	39	19	7.3	11	1/4	187	14	145	141	131	130	160	14	131	123	131	130	154
32	82	194.5	157	31	48	57	47	30	9	15	1/4	190	16	162	-	150	146	180	16	150	139	150	146	174
40	100	224	230	41	56	65	55	30	9	15	1/4	212	16	189	171	163	160	200	16	164	149	163	160	194
50	126	235.5	230	41	56	65	66	30	9	15	1/4	234	16	220	192	197	194	230	16	197	176	197	194	224

### ■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	H	A	A <sub>2</sub>	A <sub>3</sub>	A <sub>3</sub> '	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	P	ANSI			
													FLANGED ANSI CLASS150		SOCKET	THREADED
													L	t	L	L
1/2	15	1.89	6.77	6.18	1.22	1.89	2.24	1.14	0.75	0.29	0.43	1/4	5.63	0.47	4.45	4.02
3/4	20	2.36	7.03	6.18	1.22	1.89	2.24	1.38	0.75	0.29	0.43	1/4	6.77	0.55	5.08	4.72
1	25	2.76	7.30	6.18	1.22	1.89	2.24	1.54	0.75	0.29	0.43	1/4	7.36	0.55	5.75	5.16
1 1/4	32	3.23	7.66	6.18	1.22	1.89	2.24	1.85	1.18	0.35	0.59	1/4	7.48	0.63	6.46	5.91
1 1/2	40	3.94	8.82	9.06	1.61	2.20	2.56	2.17	1.18	0.35	0.59	1/4	8.35	0.63	7.24	6.42
2	50	4.96	9.27	9.06	1.61	2.20	2.56	2.60	1.18	0.35	0.59	1/4	9.21	0.63	8.23	7.76

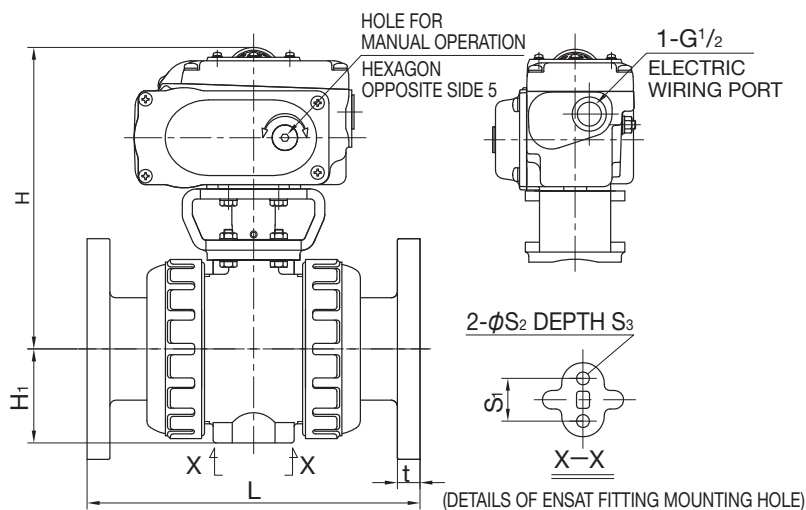
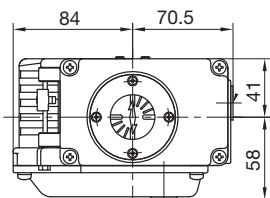
**AUTOMATIC** **ELECTRIC** **TYPE T** Single-Phase 100V  
Single-Phase 200V

# BALL VALVE TYPE 21, 21α

TYPE—A21T, A2AT

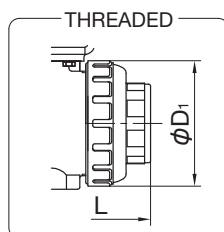
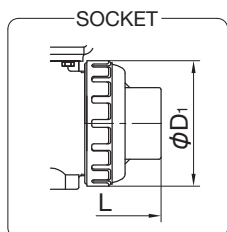
CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN

FLANGED



**ACTUATOR SELECTION CHART**

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	T-00
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	
40mm (1 1/2inch)	
50mm ( 2inch)	



■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	JIS						DIN						
							FLANGED JIS/K, JIS10K		SOCKET		THREADED		FLANGED DIN PN10/PN16		SOCKET		THREADED		SPIGOT
							L	t	L	L	L	L	t	L	L	L	L	L	
15	48	169.5	29	19	7.3	11	143	12	109	108	102	100	130	12	102	99	102	100	124
20	60	176	35	19	7.3	11	172	14	128	126	120	119	150	14	119	113	120	119	144
25	70	183	39	19	7.3	11	187	14	145	141	131	130	160	14	131	123	131	130	154
32	82	192	47	30	9	15	190	16	162	-	150	146	180	16	150	139	150	146	174
40	100	200.5	55	30	9	15	212	16	189	171	163	160	200	16	164	149	163	160	194
50	126	212	66	30	9	15	234	16	220	192	197	194	230	16	197	176	197	194	224

■ ANSI (Unit: inch)

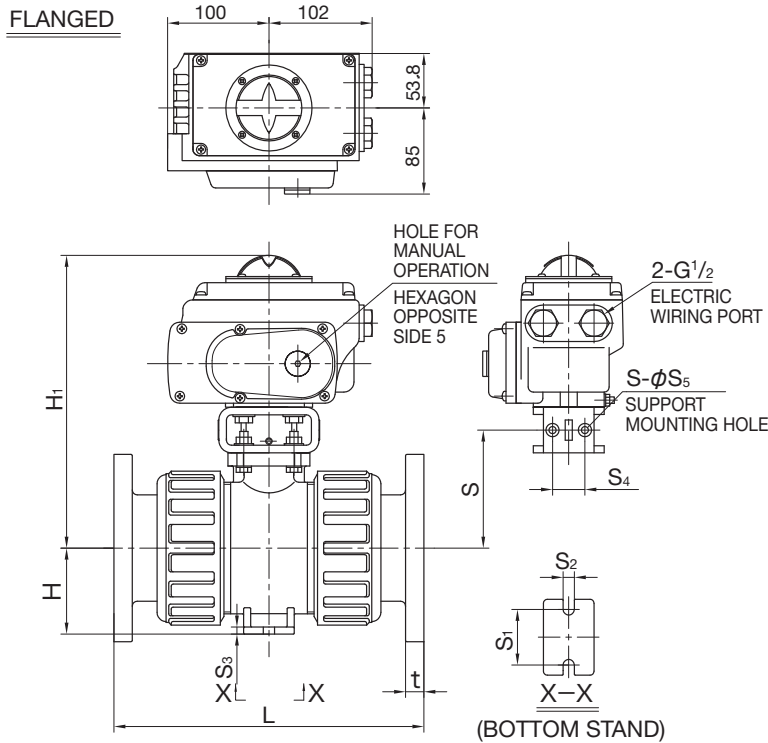
inch	mm	D <sub>1</sub>	H	H <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	ANSI					
								FLANGED ANSI CLASS150		SOCKET		THREADED	
								L	t	L	L	L	L
1/2	15	1.96	6.67	1.14	0.75	0.29	0.43	5.63	0.47	4.45	4.02		
3/4	20	2.45	6.93	1.38	0.75	0.29	0.43	6.77	0.55	5.08	4.72		
1	25	2.86	7.20	1.54	0.75	0.29	0.43	7.36	0.55	5.75	5.16		
1 1/4	32	4.08	7.56	1.85	1.18	0.35	0.59	7.48	0.63	6.46	5.91		
1 1/2	40	4.08	7.89	2.17	1.18	0.35	0.59	8.35	0.63	7.24	6.42		
2	50	5.14	8.35	2.60	1.18	0.35	0.59	9.21	0.63	8.23	7.76		

**AUTOMATIC ELECTRIC TYPE T**  
 Single-Phase 100V  
 Single-Phase 200V

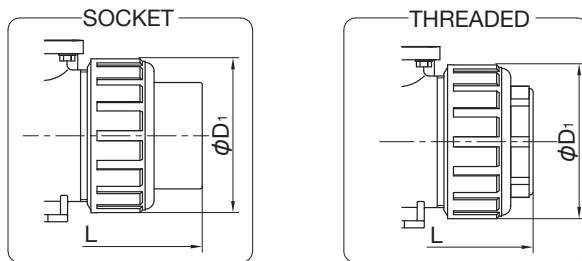
# BALL VALVE TYPE 21, 21 $\alpha$

TYPE—A21T

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN



SIZE	ACTUATOR TYPE
65mm (2 1/2inch)	T-O
80mm ( 3inch)	
100mm ( 4inch)	



■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	JIS						DIN															
								FLANGED JIS5K, JIS10K			SOCKET		THREADED			FLANGED DIN PN10/PN16			SOCKET			THREADED			SPIGOT				
								U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF	U-PVC	PP	PVDF
65	133	280	72	107.5	48	9	6	261	257	256	18	273	219	215	213	212	290	288	287	18	233	205	204	215	213	212	285	245	244
80	152	289	85	116.5	55	11	7	306	305	302	18	316	257	265	264	261	312	311	308	21	284	252	249	265	264	261	299	296	293
100	210	327	110	151.5	65	11	8	374	374	369	18	419	341	362	362	357	352	352	347	18	351	312	307	340	340	335	358	355	350

■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	ANSI									
									FLANGED ANSI CLASS150				SOCKET			THREADED		
									U-PVC C-PVC	PP	PVDF	t	U-PVC C-PVC	PP	PVDF	U-PVC C-PVC	PP	PVDF
2 1/2	65	5.43	11.02	2.83	4.23	1.89	0.35	0.24	10.20	10.12	10.08	0.71	9.45	9.37	9.33	8.46	8.39	8.35
3	80	6.20	11.38	3.35	4.59	2.17	0.43	0.28	12.05	12.01	11.89	0.71	11.14	11.10	10.98	10.43	10.39	10.28
4	100	8.57	12.87	4.33	5.96	2.56	0.43	0.31	14.72	14.72	14.53	0.71	13.86	14.37	14.13	14.25	14.25	14.06



# WATER BALL VALVE (WATER ONLY)

- EQUIPPED WITH TOP FLANGE, ENABLING EASY CHANGE TO AUTOMATIC VALVE.  
(Change to an automatic valve requires an actuator set.)
- TYPE 21 FOR CHEMICAL SOLUTION LINES AND WATER BALL VALVE FOR WATER/SEA WATER LINES CAN BE SELECTIVELY USED, WHICH CONTRIBUTES TO TOTAL COST REDUCTION.

## BASIC SPECIFICATIONS

**VALVE TYPE** ————— **WATER BALL VALVE**  
**SIZE** ————— **15 mm—50 mm (1/2 inch—2 inch)**  
**BODY MATERIAL** ————— **U-PVC**  
**SEAL MATERIAL / O-RING** ————— **EPDM**  
**CONNECTION / SOCKET** ————— **JIS**  
**THREADED** ————— **Rc**  
**HIGH PURITY SERIES** ————— **WETTED PARTS LUBRICANT FREE**

	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) MPa(kgf/cm <sup>2</sup> )	CONNECTION METHOD	
			SOCKET	THREADED
<b>U-PVC</b>	0°C ~ 50°C	1.0 {10.2}	○	○

**NOTE** (1) The water ball valves are dedicated for water/sea water lines. They cannot be used for chemical solution lines. (2) For chemical solution lines, use the ball valve type 21 or compact ball valve. (3) The face-to-face dimensions and parts are not compatible between the water ball valve and the ball valve type 21α. (4) Parts for the water ball valve are not sold separately. (5) For switching from a manual valve to an automatic valve, order an actuator set.  
 \* Concerning the allowable pressure for each temperature and material, see the technical documents at the end of this catalog.

MANUAL

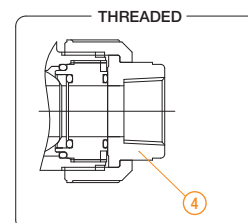
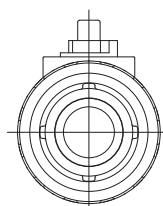
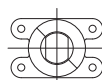
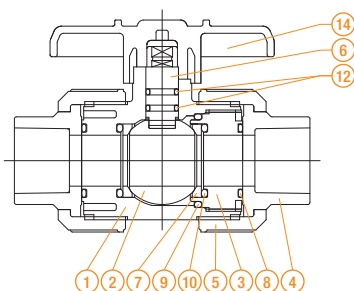


AUTOMATIC



## PARTS LIST **MANUAL**

SOCKET



PART NO. / NAME	QTY	MATERIAL
① BODY	1	U-PVC
② BALL	1	U-PVC
③ UNION	1	U-PVC
④ END CONNECTOR	2	U-PVC
⑤ UNION NUT	2	U-PVC
⑥ STEM	1	U-PVC

PART NO. / NAME	QTY	MATERIAL
⑦ SEAT	2	PTFE
⑧ O-RING (A)	2	EPDM
⑨ O-RING (B)	1	EPDM
⑩ O-RING (C)	2	EPDM
⑫ O-RING (E)	2	EPDM
⑭ HANDLE	1	ABS

## COMPATIBLE ACTUATOR **AUTOMATIC**

**PNEUMATIC TYPE VC**

For detailed specifications, see

**ELECTRIC TYPE V**

For detailed specifications, see

PRODUCT MODEL CODE LIST  
**MANUAL**

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES													
V	WB	LV	U	E	*	J	***	2													
V	MANUAL VALVE	WB	WATER BALL VALVE	LV	LEVER TYPE	U	U-PVC	E	EPDM	S	SOCKET	N	THREADED	J	JIS	015	15mm	050	50mm	2	WETTED PARTS LUBRICANT FREE

PRODUCT MODEL CODE LIST  
**AUTOMATIC**

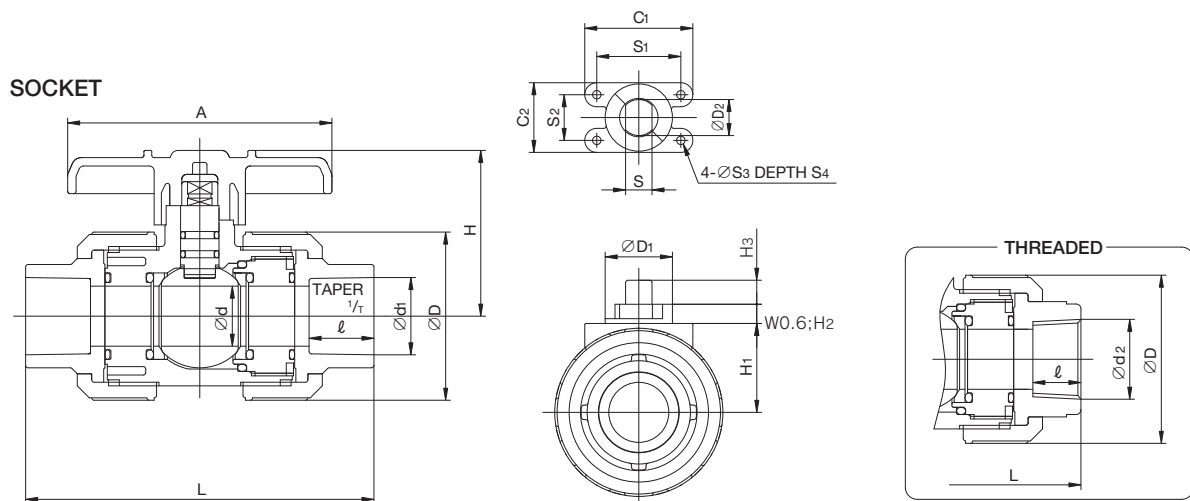
ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES																	
A	WB	*	*	U	E	*	*	***	2																	
A	AUTOMATIC VALVE	WB	WATER BALL VALVE	PNEUMATIC	C TYPE VC	ELECTRIC	V TYPE V	F DOUBLE ACTING	G AIR TO OPEN	S AIR TO CLOSE	U	U-PVC	E	EPDM	S	SOCKET	N	THREADED	J	JIS	015	15mm	050	50mm	2	WETTED PARTS LUBRICANT FREE
				ELECTRIC		1 Single-Phase 100V		2 Single-Phase 200V		D DC24V																

**MANUAL**

**WATER BALL VALVE (WATER ONLY)**

TYPE — VWBLV

CONNECTION / SOCKET, THREADED — JIS



■ JIS (Unit: mm)

mm	d	D	D <sub>1</sub>	D <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	A	S	C <sub>1</sub>	C <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	JIS											
																	SOCKET			Threaded End								
																	d <sub>1</sub>	ℓ	1/T	L	d <sub>1</sub>	ℓ	L					
15	15	48	24	13.5	54	25	6	7.5	92	10.5	40	25	31.5	15	3.5	12	22.11	20	1/34	104	Rc 1/2	15	98					
20	20	60	27	15	62	31	8	10	100	11	45	29	35	19	3.5	12	26.13	24	1/34	128	Rc 3/4	17	119					
25	25	70	28	15	69	38	8	10	100	11	45	29	35	19	3.5	12	32.16	27	1/34	145	Rc 1	20	135					
32	30	80	34	19	79	43	10	10	121	15	58.5	38	45.5	25	4.5	15	38.19	30	1/34	162	Rc 1 1/4	22	150					
40	40	96	38	23	88	50	10	12	131	18	58.5	38	45.5	25	4.5	15	48.21	37	1/37	189	Rc 1 1/2	25	170					
50	51	120	40	23	102	56	12	12	159	18	60	40	47	27	4.5	15	60.25	42	1/37	220	Rc 2	28	198					

AUTOMATIC

PNEUMATIC

TYPE VC

DOUBLE ACTING

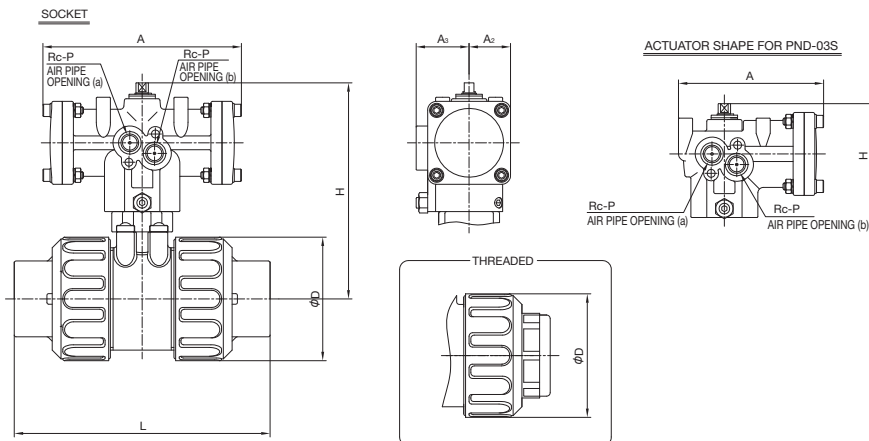
AIR TO OPEN

AIR TO CLOSE

# WATER BALL VALVE

TYPE—AWBC

CONNECTION / SOCKET, THREADED—JIS



ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	PND-03S
20mm ( 3/4inch)	
25mm ( 1inch)	PND-03D
32mm (1 1/4inch)	
40mm (1 1/2inch)	PND-04D
50mm ( 2inch)	

■ JIS (Unit: mm)

mm	D	H	A	A <sub>2</sub>	A <sub>3</sub>	P	JIS	
							SOCKET	THREADED
15	48	96.5	83	24	30	1/8	104	98
20	60	107	83	24	30	1/8	128	119
25	70	122.5	113	24	30	1/8	145	135
32	80	145.5	113	24	30	1/8	162	150
40	96	169	132	31	36	1/8	189	170
50	120	177	132	31	36	1/8	220	198

AUTOMATIC

PNEUMATIC

TYPE VC

DOUBLE ACTING

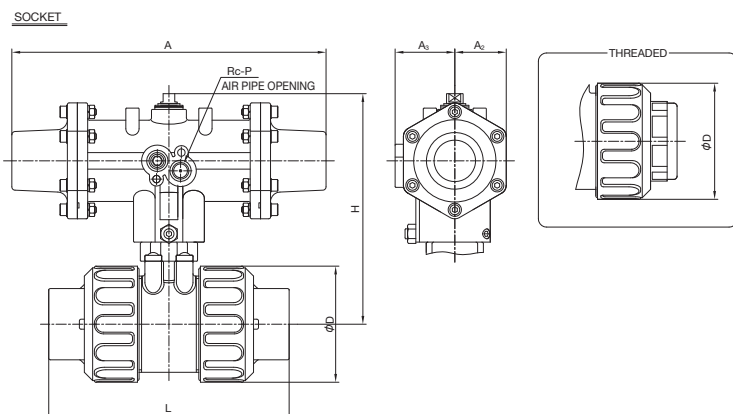
AIR TO OPEN

AIR TO CLOSE

# WATER BALL VALVE

TYPE—AWBC

CONNECTION / SOCKET, THREADED—JIS



ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE	
	AIR TO OPEN	AIR TO CLOSE
15mm ( 1/2inch)	PSO-03D	PSC-03D
20mm ( 3/4inch)	PSO-04D	PSC-04D
25mm ( 1inch)	PSO-04W	PSC-04W
32mm (1 1/4inch)		
40mm (1 1/2inch)		
50mm ( 2inch)		

■ JIS (Unit: mm)

mm	D	H	A	A <sub>2</sub>	A <sub>3</sub>	P	JIS	
							SOCKET	THREADED
15	48	105	165	24	30	1/8	104	98
20	60	115.5	165	24	30	1/8	128	119
25	70	139	190	31	36	1/8	145	135
32	80	162	279	31	36	1/8	162	150
40	96	169	279	31	36	1/8	189	170
50	120	177	279	31	36	1/8	220	198

**AUTOMATIC**

**ELECTRIC**

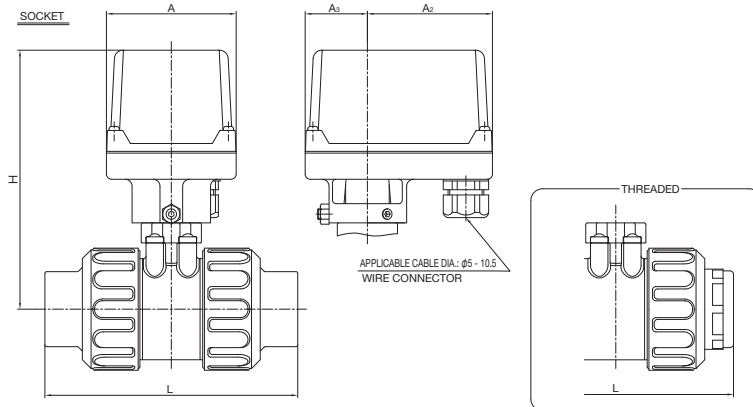
**TYPE V**

Single-Phase 100V  
Single-Phase 200V  
DC24V

# WATER BALL VALVE

TYPE—AWBV

CONNECTION / SOCKET, THREADED—JIS



**ACTUATOR SELECTION CHART**

SIZE	ACTUATOR TYPE	
	AC100V AC200V	DC24V
15mm ( 1/2inch)	AM1-030	DM2-030
20mm ( 3/4inch)	AM1-070	DM2-070
25mm ( 1inch)	AM1-180	DM2-180
32mm (1 1/4inch)		
40mm (1 1/2inch)		
50mm ( 2inch)		

■ JIS (Unit: mm)

mm	H	A	A <sub>2</sub>	A <sub>3</sub>	JIS	
					SOCKET	THREADED
					L	
15	131	74	71	36	104	98
20	141.5	74	71	36	128	119
25	148.5	74	71	36	145	135
32	213.5	74	54	53	162	150
40	220.5	74	54	53	189	170
50	228.5	74	54	53	220	198

# 3 WAY BALL VALVE TYPE 23

- 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 C-PVC PP PVDF**  
**SEAL MATERIAL / O-RING** ————— **EPDM FKM etc.**  
**CONNECTION / FLANGED** ————— **JIS5K, JIS10K, DIN PN10, ANSI CLASS150**  
**SOCKET** ————— **JIS, DIN, ANSI**  
**THREADED** ————— **Rc, Rp, NPT**  
**PORT** ————— **DOUBLE L PORT, CROSS PORT, L PORT**  
**HIGH PURITY SERIES** ————— **LUBRICANT FREE**

	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) (MPa)(kgf/cm <sup>2</sup> )	CONNECTION METHOD		
			FLANGED	SOCKET	THREADED
U-PVC	0°C ~ 50°C	1.0 {10.2}	○	○	○
C-PVC	0°C ~ 90°C	1.0 {10.2}	○	○	○
PP	-20°C ~ 80°C	1.0 {10.2}	○	○	○
PVDF	-20°C ~ 100°C	1.0 {10.2}	○	○	○

**NOTE** (1) The ball-type valves have dead spaces for structural reasons. Note that volatile liquids, such as hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) 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.

\* Concerning the allowable pressure for each temperature and material, see the technical documents at the end of this catalog.

MANUAL

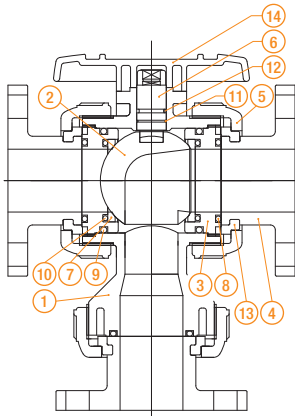


AUTOMATIC

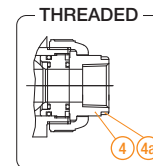
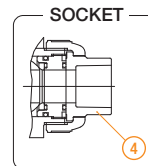
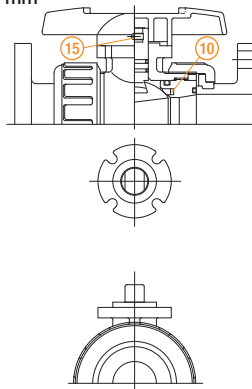


## PARTS LIST MANUAL

FLANGED



65 mm - 100 mm



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 (Used for flanged type)
④ END CONNECTOR	3	U-PVC, C-PVC, PP, PVDF	⑨ O-RING (B)	2	EPDM, FKM, etc.	⑭ HANDLE	1	ABS
④a RING	3	SUS304 (Used for C-PVC 15-, 20-, or 25-mm threaded type)	⑩ O-RING (C)	2	EPDM, FKM, etc. (Used for 15 to 50 mm)	⑮ TAPPING SCREW (A)	1	SUS304 (Used for 65 to 100 mm)
⑤ UNION NUT	3	U-PVC, C-PVC, PP, PVDF	⑩ CUSHION	2	EPDM, FKM, etc. (Used for 65 - 100 mm)			

## COMPATIBLE ACTUATOR AUTOMATIC

**PNEUMATIC TYPE TA**

For detailed specifications, see

**ELECTRIC TYPE T**

For detailed specifications, see

## FLOW DIRECTION DIAGRAM FOR EACH HANDLE ROTATION ANGLE MANUAL AUTOMATIC

For details of flow direction diagram, see

PRODUCT MODEL CODE LIST	ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES
<b>MANUAL</b>	V	23	LV	*	*	*	*	***	1
	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 JIS10K 5 JIS5K A ANSI	015 15mm 100 100mm	1 LUBRICANT FREE

PRODUCT MODEL CODE LIST	ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	SPACE HEATER	HIGH PURITY SERIES
<b>AUTOMATIC</b>	A	23	*	*	*	*	*	*	***	OC*	1
	A AUTOMATIC VALVE	23 TYPE 23	PNEUMATIC K TYPE TA ELECTRIC T TYPE T	PNEUMATIC F DOUBLE ACTING G AIR TO OPEN S AIR TO CLOSE ELECTRIC 1 Single-Phase 100V 2 Single-Phase 200V	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 JIS10K 5 JIS5K A ANSI	015 15mm 100 100mm	OC OC * Indicate only for electric type only.	1 LUBRICANT FREE

**FLOW DIRECTION DIAGRAM** **MANUAL** **AUTOMATIC**

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°	
<b>L PORT</b> (90° or 180°)	MANUAL ..... ○ ELECTRIC ..... △						
<b>DOUBLE L PORT</b> (90°)	MANUAL ..... △ PNEUMATIC ..... ○ ELECTRIC ..... ○						
<b>CROSS PORT</b> (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 ⊙ side. Left opens during air supply on ⊙ side.]

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

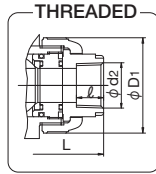
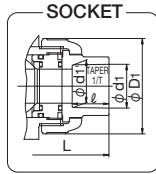


MANUAL

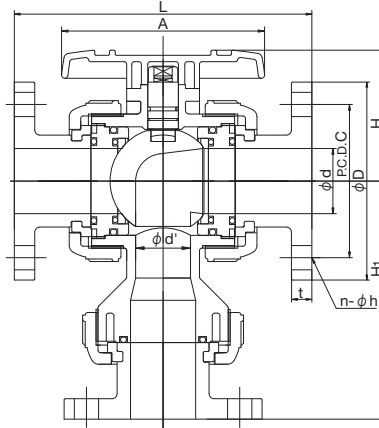
### 3 WAY BALL VALVE TYPE 23

TYPE—V23LV

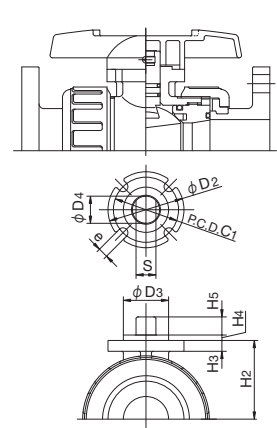
CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN



FLANGED



65 mm - 100 mm



■ JIS, DIN (Unit: mm)

mm	d	d'	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	C <sub>1</sub>	H	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	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	9.0
80	78	58	152	81	55	30	70	140.0	94.0	13	3	19	240	24	9.0
100	100	78	210	116	70	40	102	178.0	126.0	16	3	23	300	34	11.0

mm	JIS																									
	FLANGED						SOCKET												THREADED							
	JIS5K			JIS10K			U-PVC, C-PVC						PP						Rc 1/2			Rc 3/4			Rc 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	Rc 1/2	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	Rc 3/4	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	-	-	-	-	-	Rc 1 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	Rc 1 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	74.25	73.96	31	264	235	Rc 2 1/2	32	264	235	
80	180	145	4	19	185	150	8	19	304	18	256	89.60	64	1/49	316	261	89.2	88.85	35.5	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	109.05	108.65	41.5	340	289	Rc 4	45	360	299	

mm	DIN																													
	FLANGED						SOCKET												THREADED						SPIGOT					
	DIN PN10			U-PVC, C-PVC			PP, PVDF(DIN)						U-PVC						PP, PVDF											
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	15	18.5	83	20	18.5	2.5	1.9	124	83
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	20	24	99	25	22	2.7	1.9	144	99
25	115	85	4	14	160	14	120	32	22	131	104	31.50	31.30	18	123	100	Rp1	20	131	105	32	25	24.5	115	32	22.5	3.0	2.4	154	115
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	40	34	153	50	32	4.6	3.0	194	153
50	165	125	4	18	230	16	185	63	38	197	170	62.50	62.10	27.5	176	154	Rp2	28	197	168	63	51	38	178	63	36	5.8	3.0	224	178
65	185	145	4	18	304	18	256	75	44	282	245	74.25	73.95	31	256	227	Rp2 1/2	32	264	235	-	-	-	-	-	-	-	-	-	
80	200	160	8	18	310	21	259	90	51	282	245	89.20	88.85	35.5	251	224	Rp3	35	264	235	90	80	51	252	90	38	8.2	4.3	295	246
100	220	180	8	18	350	18	305	110	61	349	305	109.05	108.65	41.5	310	279	Rp4	45	338	299	110	93.6	61	308	110	44.5	10.0	5.3	353	301

■ ANSI (Unit: inch)

inch	mm	d	d'	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	C <sub>1</sub>	H	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	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

inch	mm	ANSI																							
		FLANGED						SOCKET												THREADED					
		ANSI CLASS 150						U-PVC, C-PVC						PP, PVDF											
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	0.67	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	1-11 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	11.0	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	

AUTOMATIC

PNEUMATIC

TYPE TA

DOUBLE ACTING

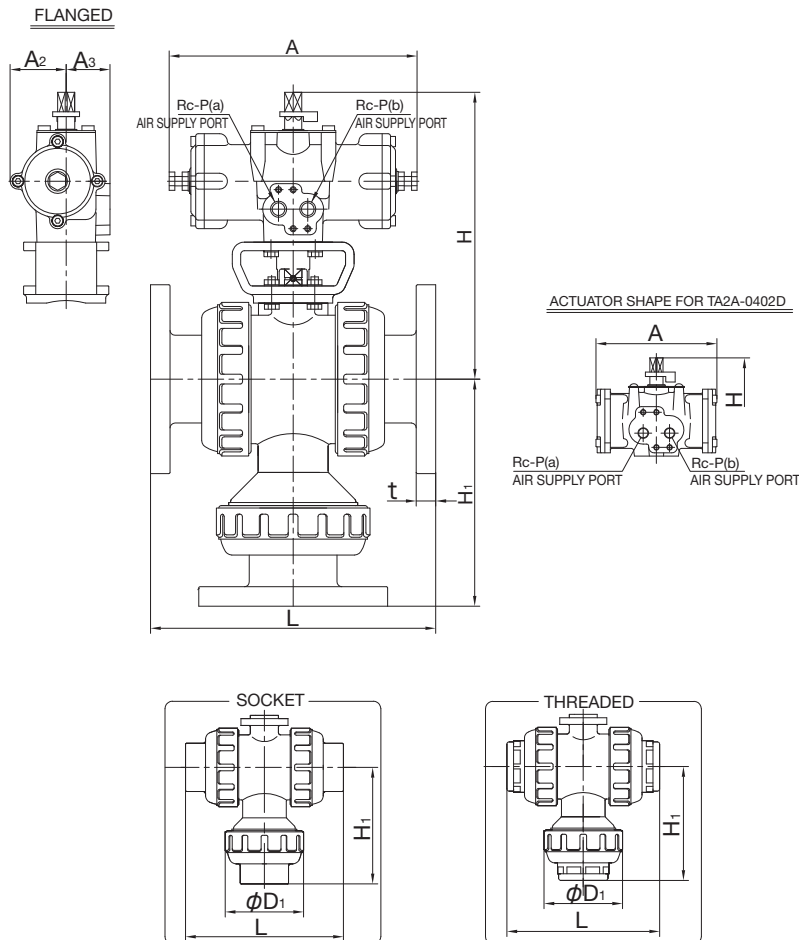
AIR TO OPEN

AIR TO CLOSE

# 3 WAY BALL VALVE TYPE 23

TYPE—A23K

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI



### ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	TA2A-0402D
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	TA2A-050D
40mm (1 1/2inch)	
50mm ( 2inch)	TA2A-063D
65mm (2 1/2inch)	
80mm ( 3inch)	
100mm ( 4inch)	TA2A-080D

■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	H <sub>1</sub>	A	A <sub>2</sub>	A <sub>3</sub>	P	JIS									DIN								
								FLANGED JIS10K			SOCKET			THREADED			FLANGED DIN PN10			SOCKET			THREADED		
								L	t	H <sub>1</sub>	U-PVC, C-PVC	PP	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>	L	t	H <sub>1</sub>	U-PVC, C-PVC	PP	H <sub>1</sub>	L	H <sub>1</sub>
15	48	159.5	29	110	25	32	1/8	143	12	94	108	77	108	77	102	74	130	12	88	102	72	99	71	102	74
20	60	166	35	110	25	32	1/8	172	14	115	128	93	126	92	120	89	150	14	104	120	85	114	83	120	89
25	70	173	39	110	25	32	1/8	187	14	133	145	112	141	110	131	105	160	14	120	131	104	123	100	131	105
32	100	224	55	210	46	36	1/4	212	16	165	174	154	-	-	163	141	212	16	165	173	147	148	131	163	141
40	100	224	55	210	46	36	1/4	212	16	165	189	154	171	145	163	141	200	16	159	163	142	148	131	163	141
50	126	235.5	66	210	46	36	1/4	234	16	187	220	180	192	166	197	168	230	16	185	197	170	176	154	197	168
65	152	277	85	250	57	38	1/4	304	18	256	316	261	264	235	264	235	304	18	256	282	245	256	227	264	235
80	152	277	85	250	57	38	1/4	304	18	256	316	261	258	232	264	235	310	21	259	282	245	251	224	264	235
100	210	348	110	292	71	45	1/4	372	18	305	418	328	340	289	360	299	350	18	305	349	305	310	279	338	299

■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	H	H <sub>1</sub>	A	A <sub>2</sub>	A <sub>3</sub>	P	ANSI														
									FLANGED ANSI CLASS150			SOCKET			THREADED			U-PVC, C-PVC			PP, PVDF		
									L	t	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>
1/2	15	1.89	6.28	1.14	4.33	0.98	1.26	1/8	5.63	0.47	3.70	4.45	3.08	4.45	3.09	4.02	2.89						
3/4	20	2.36	6.54	1.38	4.33	0.98	1.26	1/8	6.77	0.55	4.50	5.08	3.56	5.08	3.61	4.72	3.48						
1	25	2.76	6.81	1.54	4.33	0.98	1.26	1/8	7.36	0.55	5.24	5.75	4.32	5.75	4.37	5.16	4.13						
1 1/4	32	3.94	8.82	2.17	8.27	1.81	1.42	1/4	8.35	0.63	6.50	6.85	5.51	7.04	5.75	6.42	5.53						
1 1/2	40	3.94	8.82	2.17	8.27	1.81	1.42	1/4	8.35	0.63	6.50	7.24	5.71	7.24	5.85	6.42	5.53						
2	50	4.96	9.27	2.60	8.27	1.81	1.42	1/4	9.21	0.63	7.34	8.23	6.66	8.23	6.76	7.76	6.61						
2 1/2	65	5.98	10.91	3.35	9.84	2.24	1.50	1/4	11.97	0.71	10.06	11.21	9.65	11.21	9.65	10.39	9.25						
3	80	5.98	10.91	3.35	9.84	2.24	1.50	1/4	11.97	0.71	10.06	11.10	9.59	11.10	11.10	10.39	9.25						
4	100	8.27	13.70	4.33	11.50	2.80	1.77	1/4	14.66	0.71	12.01	13.90	11.58	14.37	14.37	14.17	11.77						



**AUTOMATIC**

**ELECTRIC**

**TYPE T**

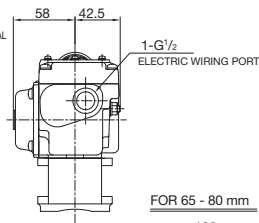
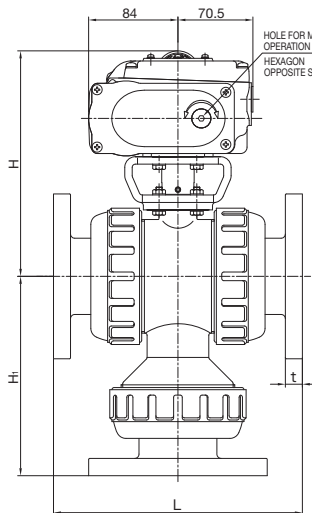
Single-Phase 100V  
Single-Phase 200V

# 3 WAY BALL VALVE TYPE 23

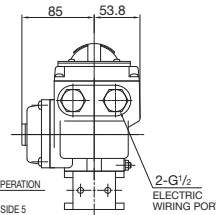
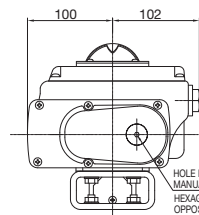
TYPE—A23T

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI

FLANGED FOR 15 - 50 mm

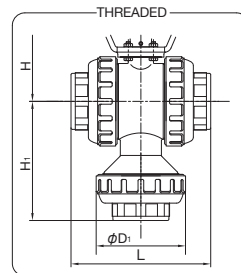
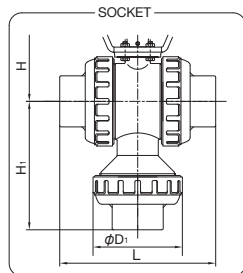


FOR 65 - 80 mm



### ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE
15mm ( 1/2inch)	T-00
20mm ( 3/4inch)	
25mm ( 1inch)	
32mm (1 1/4inch)	
40mm (1 1/2inch)	
50mm ( 2inch)	T-0
65mm (2 1/2inch)	
80mm ( 3inch)	
100mm ( 4inch)	



■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	H	JIS									DIN								
			FLANGED JIS10K			SOCKET			THREADED			FLANGED DIN PN10			SOCKET			THREADED		
			L	t	H <sub>1</sub>	U-PVC, C-PVC	PP	H <sub>1</sub>	L	H <sub>1</sub>	L	H <sub>1</sub>	L	t	H <sub>1</sub>	U-PVC, C-PVC	PP	H <sub>1</sub>	L	H <sub>1</sub>
15	48	169.5	143	12	94	108	77	108	77	102	74	130	12	88	102	72	99	71	102	74
20	60	176	172	14	115	128	93	126	92	120	89	150	14	104	120	85	114	83	120	89
25	70	183	187	14	133	145	112	141	110	131	105	160	14	120	131	104	123	100	131	105
32	100	200.5	212	16	165	174	154	171	145	163	141	212	16	165	173	147	148	131	163	141
40	100	200.5	212	16	165	189	154	171	145	163	141	200	16	159	163	142	148	131	163	141
50	126	212	234	16	187	220	180	192	166	197	168	230	16	185	197	170	176	154	197	168
65	152	289	304	18	256	316	261	264	235	264	235	304	18	256	282	245	256	227	264	235
80	152	289	304	18	256	316	261	258	232	264	235	310	21	259	282	245	251	224	264	235
100	210	327	372	18	305	418	328	340	289	360	299	350	18	305	349	305	310	279	338	299

■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	H	ANSI											
				FLANGED ANSI CLASS150			SOCKET						THREADED		
				L	t	H <sub>1</sub>	U-PVC, C-PVC		PP, PVDF				L	H <sub>1</sub>	
1/2	15	1.89	6.67	5.63	0.47	3.70	4.45	3.08	4.45	3.09	4.02	2.89			
3/4	20	2.36	6.93	6.77	0.55	4.50	5.08	3.56	5.08	3.61	4.72	3.48			
1	25	2.76	7.20	7.36	0.55	5.24	5.75	4.32	5.75	4.37	5.16	4.13			
1 1/4	32	3.94	7.89	8.35	0.63	6.50	6.85	5.51	7.04	5.75	6.42	5.53			
1 1/2	40	3.94	7.89	8.35	0.63	6.50	7.24	5.71	7.24	5.85	6.42	5.53			
2	50	4.96	8.35	9.21	0.63	7.34	8.23	6.66	8.23	6.76	7.76	6.61			
2 1/2	65	5.98	11.38	11.97	0.71	10.06	11.21	9.65	11.21	9.65	10.39	9.25			
3	80	5.98	11.38	11.97	0.71	10.06	11.10	9.59	11.10	11.10	10.39	9.25			
4	100	8.27	12.87	14.66	0.71	12.01	13.90	11.58	14.37	14.37	14.17	11.77			

# 3 WAY BALL VALVE TYPE 23 H

- HORIZONTAL 3 WAY BALL VALVE
- T-SHAPED FLOW PATH ALLOWS FOR EASY SWITCHING OF FLOW CHANNEL.
- END CONNECTOR AND UNION NUT ARE COMPATIBLE WITH 3 WAY BALL VALVE TYPE 23.

## BASIC SPECIFICATIONS

**VALVE TYPE** ————— **3 WAY BALL VALVE TYPE 23H**

**SIZE** ————— **25 mm—40 mm (1 inch—1 1/2 inch)**

**BODY MATERIAL** ————— **PP**

**SEAL MATERIAL / SEAT** ————— **PTFE**

**O-RING** ————— **EPDM FKM etc.**

**CONNECTION / FLANGED** ————— **JIS10K, DIN PN10, ANSI CLASS150**

**SOCKET** ————— **JIS, DIN, ANSI**

**THREADED** ————— **Rc, Rp, NPT**

	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) MPa(kgf/cm <sup>2</sup> )	CONNECTION METHOD		
			FLANGED	SOCKET	THREADED
PP	-20°C ~ 80°C	1.0 {10.2}	○	○	○

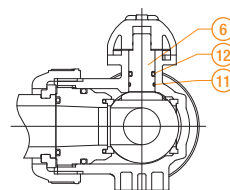
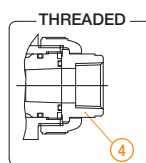
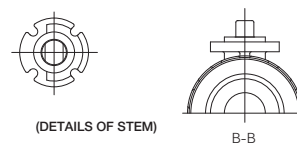
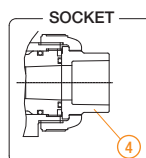
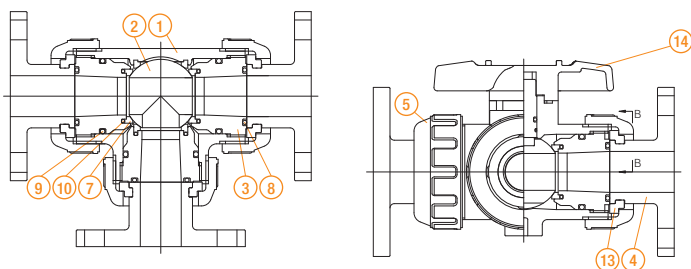
**NOTE** The maximum working pressure is the value including the water hammer pressure. Be careful that the maximum working pressure is not exceeded during use. Cannot completely stop the flow in three directions.  
 \* Concerning the allowable pressure for each temperature and material, see the technical documents at the end of this catalog.

[MANUAL](#)



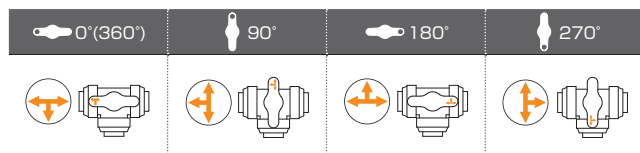
## PARTS LIST [MANUAL](#)

### FLANGED



PART NO. / NAME	QTY	MATERIAL	PART NO. / NAME	QTY	MATERIAL	PART NO. / NAME	QTY	MATERIAL
① BODY	1	PP	⑦ SEAT	4	PTFE	⑬ STOP RING	3	PVDF (Used for flanged type.)
② BALL	1	PP	⑧ O-RING (A)	3	EPDM, FKM, etc.	⑭ HANDLE	1	ABS
③ UNION	3	PP	⑨ O-RING (B)	3	EPDM, FKM, etc.			
④ END CONNECTOR	3	PP	⑩ O-RING (C)	3	EPDM, FKM, etc.			
⑤ UNION NUT	3	PPG	⑪ O-RING (D)	1	EPDM, FKM, etc.			
⑥ STEM	1	PP	⑫ O-RING (E)	1	EPDM, FKM, etc.			

## FLOW DIRECTION DIAGRAM [MANUAL](#)



**PRODUCT MODEL CODE LIST**

**MANUAL**

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
V	3H	LV	P	*	*	*	***
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
V MANUAL VALVE	3H 23H	LV LEVER TYPE	PP PP	E EPDM V FKM	S SOCKET N THREADED P SPIGOT F FLANGED	J JIS D DIN A ANSI 1 JIS10K	025 25mm 032 32mm 040 40mm

**NOTE** (1) The available ball shape is T port only. (2) The socket and spigot types are weld type.  
 (3) Not compatible with 32-mm spigot type and JIS socket type. (4) Parts compliant with connection standards other than JIS (such as ANSI and DIN) are also available.

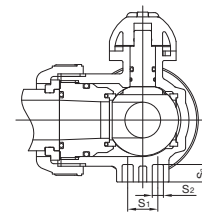
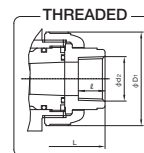
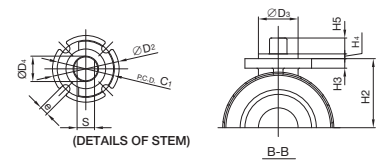
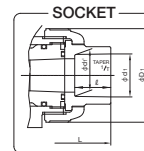
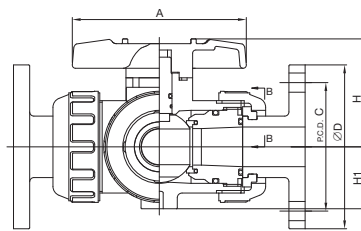
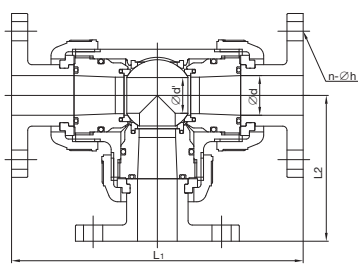
**MANUAL**

## 3 WAY BALL VALVE TYPE 23 H

TYPE—V3HLV

CONNECTION / FLANGED, SOCKET, THREADED—JIS, DIN, ANSI SPIGOT—DIN

**FLANGED**



■ JIS, DIN (Unit: mm)

mm	JIS																																		
	FLANGED											SOCKET				THREADED																			
	D	C	n	h	t	L <sub>1</sub>	L <sub>2</sub>	d <sub>1</sub>	d <sub>1</sub> '	ℓ	L <sub>1</sub>	L <sub>2</sub>	d <sub>2</sub>	ℓ	L <sub>1</sub>	L <sub>2</sub>																			
25	25	22	70	42	25	15	36	68	39	44	6	3	10	110	11	19	7.3	11	5.5	125	90	4	19	14	216	108	33	32	25	170	85	Rc1	20	159	80
32	40	34	100	57	35	23	50	89	55	61	10	3	12	131	18	30	9	15	6.5	135	100	4	19	16	260	130	-	-	-	-	Rc1 1/4	22	208	104	
40	40	34	100	57	35	23	50	89	55	61	10	3	12	131	18	30	9	15	6.5	140	100	4	19	16	260	130	47	46	28	219	109.5	Rc1 1/2	25	208	104

mm	DIN																					
	FLANGED				SOCKET				THREADED				SPIGOT									
	DIN PN10				t	L <sub>1</sub>	L <sub>2</sub>	d <sub>1</sub>	d <sub>1</sub> '	ℓ	L <sub>1</sub>	L <sub>2</sub>	d <sub>2</sub>	ℓ	L <sub>1</sub>	L <sub>2</sub>						
25	D	C	n	h													14	14	189	94.5	31.5	31.3
32	140	100	4	16	16	260	130	39.45	39.2	20.5	197	98.5	Rp 1 1/4	22	208	104	-	-	-	-	-	
40	150	110	4	16	16	248	124	49.45	49.2	23.5	197	98.5	Rp 1 1/2	25	208	104	50	32	4.6	242	121	

■ ANSI (Unit: inch)

inch	mm	d	d'	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	C <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	A	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	e
1	25	0.98	0.87	2.76	1.65	0.98	0.59	1.42	2.68	1.54	1.71	0.24	0.12	0.39	4.33	0.43	0.75	0.29	0.43	0.22
1 1/4	32	1.57	1.34	3.94	2.24	1.38	0.91	1.97	3.50	2.17	2.40	0.39	0.12	0.47	5.16	0.71	1.18	0.35	0.59	0.26
1 1/2	40	1.57	1.34	3.94	2.24	1.38	0.91	1.97	3.50	2.17	2.40	0.39	0.12	0.47	5.16	0.71	1.18	0.35	0.59	0.26

inch	mm	ANSI															
		FLANGED				SOCKET				THREADED							
		ANSI CLASS150				t	L <sub>1</sub>	L <sub>2</sub>	d <sub>1</sub>	ℓ	L <sub>1</sub>	L <sub>2</sub>	d <sub>2</sub>	ℓ	L <sub>1</sub>	L <sub>2</sub>	
1	25	D	C	n	h												0.62
1 1/4	32	4.62	3.50	4	0.62	0.63	10.24	5.12	1.65	1.25	8.74	4.37	1 1/4-11 1/2NPT	0.87	8.19	4.09	
1 1/2	40	5.00	3.88	4	0.62	0.63	10.24	5.12	1.89	1.37	8.94	4.47	1 1/2-11 1/2NPT	0.98	8.19	4.09	



# LAB COCK

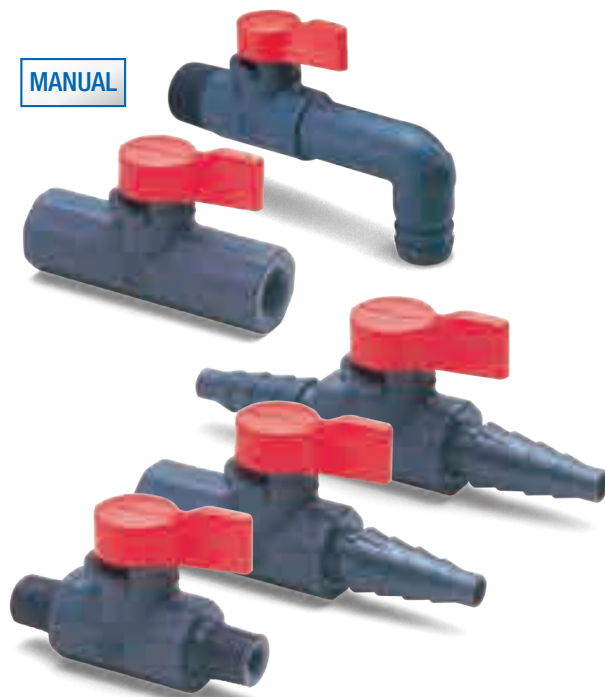
- LIGHT-WEIGHT AND COMPACT PLASTIC VALVE WITH EXCELLENT CORROSION RESISTANCE, FLOW CHARACTERISTICS, DURABILITY AND FUNCTIONALITY
- WIDE SELECTION FROM A PRODUCT LINE OF 16 TYPES
- OCTAGON BODY ALLOWING FOR EASY PIPING WITH SPANNER
- FLOW CONTROL IS AVAILABLE.

## BASIC SPECIFICATIONS

VALVE TYPE — LAB COCK  
 BODY MATERIAL — U-PVC  
 SEAL MATERIAL / SEAT — PTFE EPDM etc.  
 O-RING — EPDM FKM etc.  
 HIGH PURITY SERIES — LUBRICANT FREE

	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) MPa(kgf/cm <sup>2</sup> )	CONNECTION METHOD
U-PVC	0°C ~ 50°C	1.0 {10.2}	Hose type, Male thread type, Female thread type (Any combination is available.)

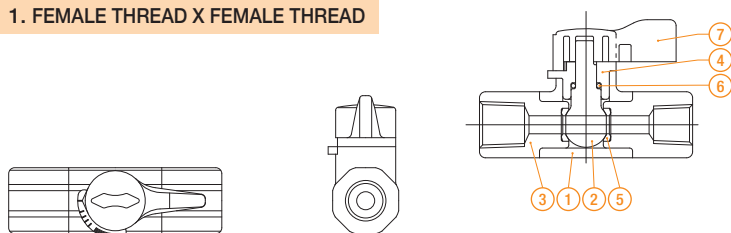
**NOTE** (1) Degreased type is also available by made-to-order. (2) The maximum working pressure is the value including the water hammer pressure. Be careful that the maximum working pressure is not exceeded during use.  
 \* Concerning the allowable pressure for each temperature and material, see the technical documents at the end of this catalog.



MANUAL

## PARTS LIST MANUAL

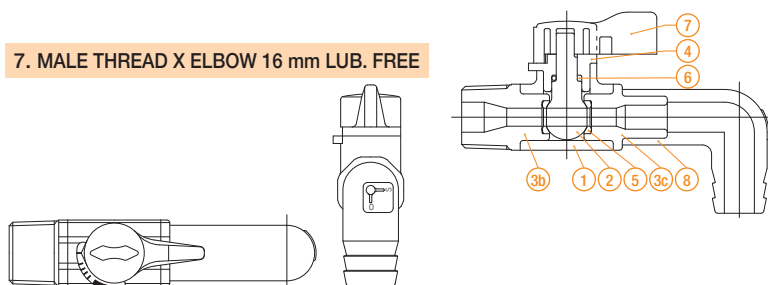
### 1. FEMALE THREAD X FEMALE THREAD



PART NO. / NAME	QTY	MATERIAL
① BODY	1	U-PVC
② BALL STEM	1	U-PVC
③ END CONNECTOR	2	U-PVC
④ STEM HOLDER	1	U-PVC
⑤ SEAT*	2	EPDM, PTFE, etc.
⑥ O-RING	1	EPDM, etc.
⑦ HANDLE	1	ABS

\* For degreased type, PTFE only.

### 7. MALE THREAD X ELBOW 16 mm LUB. FREE



PART NO. / NAME	QTY	MATERIAL
① BODY	1	U-PVC
② BALL STEM	1	U-PVC
③b END CONNECTOR	1	U-PVC
③c END CONNECTOR	1	U-PVC
④ STEM HOLDER	1	U-PVC
⑤ SEAT	2	PTFE
⑥ O-RING	1	EPDM, etc.
⑦ HANDLE	1	ABS
⑧ ELBOW	1	U-PVC

\* Standard products are degreased.

PRODUCT MODEL CODE LIST MANUAL	ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	STANDARD	CONNECTION	HIGH PURITY SERIES
	V	LC	LV	U	*	*	****	1
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	
	V MANUAL VALVE	LC LAB COCK	LV LEVER TYPE	U U-PVC	E EPDM V FKM I PTFE/EPDM	J JIS D DIN A ANSI	SEE CONNECTION P.66.	1 LUBRICANT FREE



# COMPACT BALL VALVE TYPE 27

- WITH A SMALL NUMBER OF COMPONENTS AND LIGHT WEIGHT, COMPACT DESIGN, SUITABLE FOR INSTALLATION IN A NARROW SPACE AND IDEAL FOR FACILITY PIPING IN PLANTS.
- THE SPHERICAL VALVE ELEMENT ALLOWS FOR A STRAIGHT FLOW PATH AND EXTREMELY SMALL FLUID RESISTANCE. (EXCELLENT WATER CHARACTERISTICS)
- NO RISK OF DIFFICULT HANDLE OPERATION DUE TO THERMAL EXPANSION OR CONTRACTION.
- USING PTFE, THE SEAT IS HIGHLY RESISTANT TO CORROSION, CHEMICALS AND ABRASION.

## BASIC SPECIFICATIONS

**VALVE TYPE** ————— **COMPACT BALL VALVE**  
**SIZE** ————— **13 mm—50 mm (3/8 inch—2 inch)**  
**BODY MATERIAL** ————— **U-PVC C-PVC**  
**SEAL MATERIAL / SEAT** ————— **PTFE**  
**O-RING** ————— **EPDM etc.**  
**CONNECTION / SOCKET** ————— **JIS, DIN, ANSI**  
**THREADED** ————— **Rc, Rp, NPT**

**MANUAL**

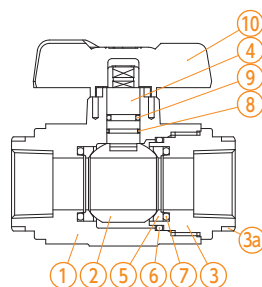
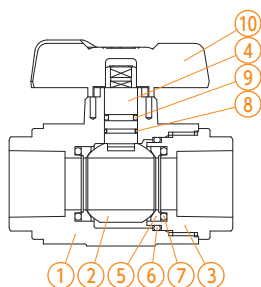


	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) (MPa)(kgf/cm <sup>2</sup> )	CONNECTION METHOD	
			SOCKET	THREADED
U-PVC	0°C ~ 50°C	1.0 {10.2}	○	○
C-PVC	0°C ~ 90°C	1.0 {10.2}	○	○

**NOTE** (1) The maximum working pressure is the value including the water hammer pressure. Be careful that the maximum working pressure is not exceeded during use. (2) The ball-type valves have dead spaces for structural reasons. Note that volatile liquids, such as hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) 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.)

\* Concerning the allowable pressure for each temperature and material, see the technical documents at the end of this catalog.

## PARTS LIST **MANUAL**



PART NO. / NAME	QTY	MATERIAL
① BODY	1	U-PVC, C-PVC
② BALL	1	U-PVC, C-PVC
③ END CONNECTOR	1	U-PVC, C-PVC
③a RING	2	SUS304 (Used for C-PVC 13 - 25 mm threaded type.)
④ STEM	1	U-PVC, C-PVC
⑤ SEAT	2	PTFE

PART NO. / NAME	QTY	MATERIAL
⑥ O-RING (B)	1	EPDM,etc.
⑦ O-RING (C)	2	EPDM,etc.
⑧ O-RING (D)	1	EPDM,etc.
⑨ O-RING (E)	1	EPDM,etc.
⑩ HANDLE	1	ABS

PRODUCT MODEL  
CODE LIST  
**MANUAL**

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES
V	7B	LV	*	*	*	*	***	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
V MANUAL VALVE	7B TYPE 27	LV LEVER TYPE	U U-PVC C C-PVC	E EPDM V FKM	S SOCKET N THREADED	J JIS D DIN A ANSI	013 13mm ? 050 50mm	1 LUBRICANT FREE

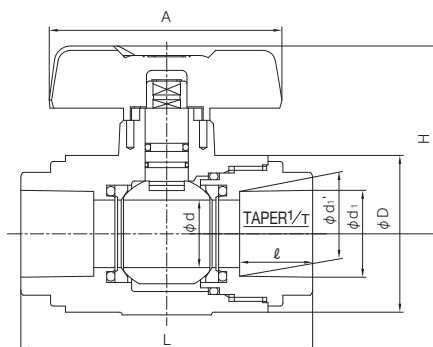
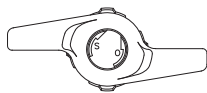
**MANUAL**

## COMPACT BALL VALVE TYPE 27

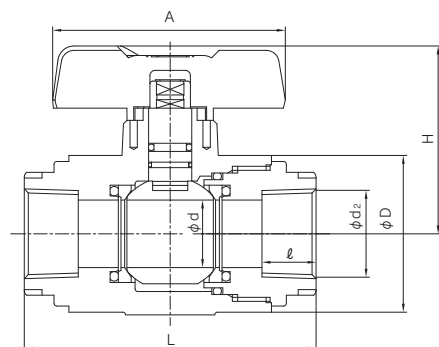
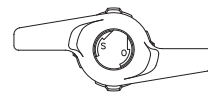
TYPE—V7BLV

CONNECTION / SOCKET, THREADED—JIS, DIN, ANSI

SOCKET



THREADED



■ JIS, DIN (Unit: mm)

mm	inch	d	A	D	H	JIS			DIN									
						SOCKET			THREADED			SOCKET			THREADED			
						d <sub>1</sub>	ℓ	1/T	L	d <sub>2</sub>	ℓ	L	d <sub>1</sub>	ℓ	L	d <sub>2</sub>	ℓ	L
13	3/8	15	75	40	52.5	18.20	17	1/30	69	-	-	-	16	14	69	Rp3/8	15	69
15	1/2	15	75	40	52.5	22.11	20	1/34	79	Rc1/2	15	69	20	16	79	Rp1/2	15	79
20	3/4	20	87	49	62.5	26.13	24	1/34	94	Rc3/4	17	94	25	19	94	Rp3/4	17	94
25	1	25	87	58	69.5	32.16	27	1/34	108	Rc1	20	108	32	22	108	Rp1	20	108
32	1 1/4	31	105	68	81.5	38.19	30	1/34	121	Rc1 1/4	22	121	40	26	121	Rp1 1/4	22	121
40	1 1/2	40	135	82.5	96.0	48.21	37	1/37	146	Rc1 1/2	25	146	50	31	146	Rp1 1/2	25	146
50	2	51	135	104	107.5	60.25	42	1/37	175	Rc2	28	175	63	38	175	Rp2	28	175

■ ANSI (Unit: inch)

inch	mm	d	A	D	H	ANSI			ANSI											
						SOCKET ASTM SCH40			THREADED			SOCKET			THREADED					
						d <sub>1</sub>	d <sub>1</sub> '	ℓ	L	d <sub>2</sub>	ℓ	L	d <sub>1</sub>	ℓ	L	d <sub>2</sub>	ℓ	L		
3/8	13	0.59	2.95	1.57	2.07	0.687	0.671	0.59	2.72	3/8-18NPT	0.59	2.72	2.72	3/8-18NPT	0.59	2.72	2.72	3/8-18NPT	0.59	2.72
1/2	15	0.59	2.95	1.57	2.07	0.848	0.836	0.69	3.11	1/2-14NPT	0.59	3.11	3.11	1/2-14NPT	0.59	3.11	3.11	1/2-14NPT	0.59	3.11
3/4	20	0.79	3.43	1.93	2.46	1.058	1.046	0.72	3.70	3/4-14NPT	0.67	3.70	3.70	3/4-14NPT	0.67	3.70	3.70	3/4-14NPT	0.67	3.70
1	25	0.98	3.43	2.28	2.74	1.325	1.310	0.87	4.25	1-11 1/2NPT	0.79	4.25	4.25	1-11 1/2NPT	0.79	4.25	4.25	1-11 1/2NPT	0.79	4.25
1 1/4	32	1.22	4.13	2.68	3.21	1.670	1.655	0.94	4.76	1 1/4-11 1/2NPT	0.87	4.76	4.76	1 1/4-11 1/2NPT	0.87	4.76	4.76	1 1/4-11 1/2NPT	0.87	4.76
1 1/2	40	1.57	5.31	3.25	3.78	1.912	1.894	1.09	5.75	1 1/2-11 1/2NPT	0.98	5.75	5.75	1 1/2-11 1/2NPT	0.98	5.75	5.75	1 1/2-11 1/2NPT	0.98	5.75
2	50	2.01	5.31	4.09	4.23	2.387	2.369	1.16	6.86	2-11 1/2NPT	1.10	6.86	6.86	2-11 1/2NPT	1.10	6.86	6.86	2-11 1/2NPT	1.10	6.86

# ENSAT (METAL INSERT) MOUNTING PROCEDURE

DIAPHRAGM VALVE TYPE 14 15mm - 100mm  
 TRUE UNION DIAPHRAGM VALVE TYPE 14 15mm - 50mm

BALL VALVE TYPE 21, 21α 15mm - 50mm  
 BALL VALVE TYPE 21 65mm - 100mm



At the bottom of the valve body, a "holed bottom stand" is provided which can be easily secured to a rack or panel only by inserting an Ensats.

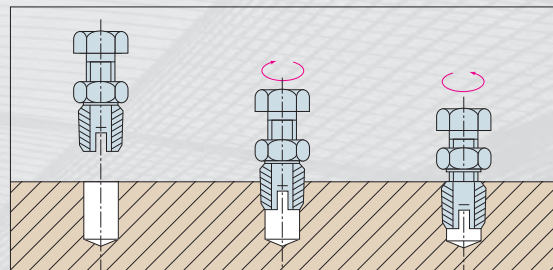
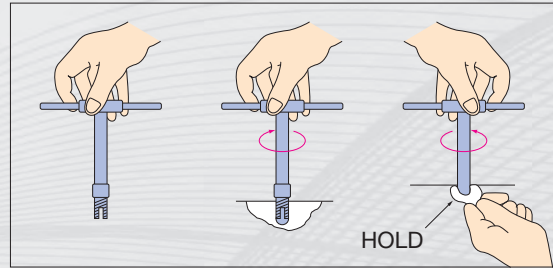
★ Install the metal insert (Ensats) in the procedure below.

## <When using the special tool>

Attach the Ensats at the end of special tool with the splitting groove facing downward.

While ensuring that the center is aligned with the prepared hole from the front, back, right and left, screw the Ensats in to the predetermined depth.

After the Ensats is screwed in completely, hold the nut with a spanner while turning the upper portion of the tool in the reverse direction. The tool will be freely movable and come out.



## <When using a bolt and nut>

Screw the Ensats in in a double nut fashion. After the Ensats is screwed in, hold the bolt and loosen the nut. The bolt will be freely movable and can be removed.

When the Ensats is manually screwed in, the center alignment between the Ensats and the prepared hole is particularly important. Check that the Ensats is inserted perpendicular to the prepared hole while screwing it in. If it is tilted, do not turn the tool backward, but just put the Ensats in its correct position. Note that, when nearly half of the Ensats is once inserted, its position can no longer be corrected.

**NOTE** For details of how to handle the Ensats mounting special tool, see the instruction manual provided by the Ensats manufacturer. (K.K.V.CORPORATION)

## APPLICABLE ENSAT (REFERENCE)

SPEC.	SCREW SIZE	LENGTH (mm)
①	M5	10
②	M6	14
③	M8	15
④	M12	22

SIZE (mm)	15	20	25
14DV	①	①	①
21BV	①	①	①

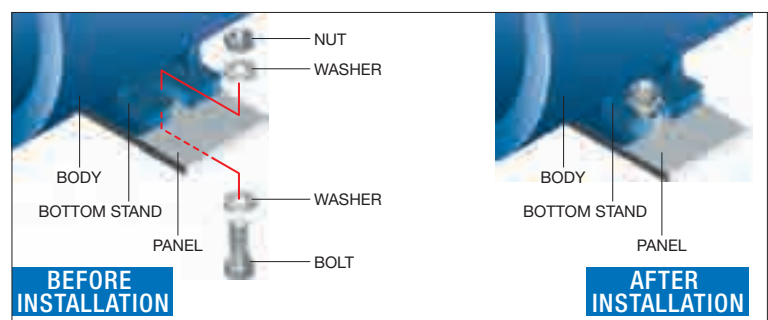
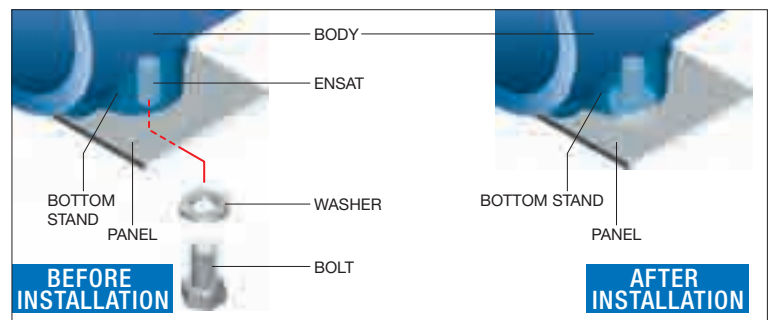
  

SIZE (mm)	32	40	50
14DV	①	②	②
21BV	②	②	②

SIZE (mm)	65	80	100
14DV	③	④	④

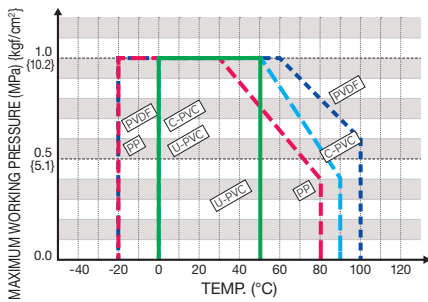
## BOTTOM STAND MOUNTING PROCEDURE



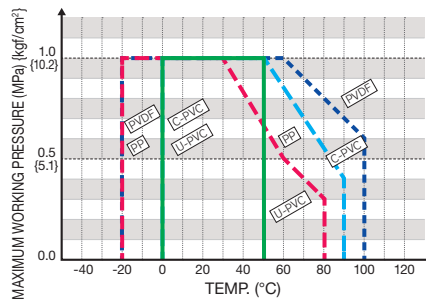


## BALL VALVE TYPE 21, 21α

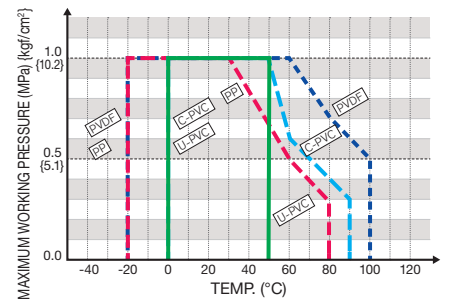
**MANUAL** **AUTOMATIC** 15 mm – 50 mm



**MANUAL** **AUTOMATIC** 65 mm

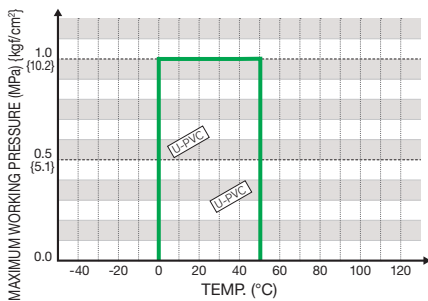


**MANUAL** **AUTOMATIC** 80 mm · 100 mm



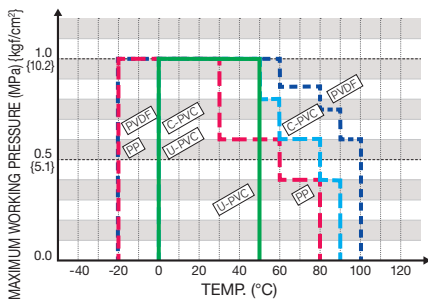
## WATER BALL VALVE

**MANUAL** **AUTOMATIC** 15 mm – 50 mm

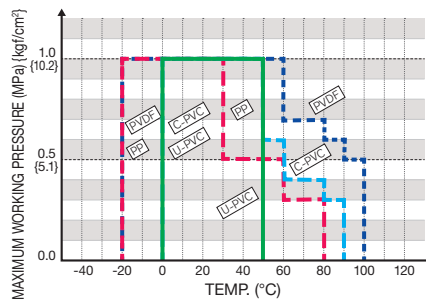


## 3 WAY BALL VALVE TYPE 23

**MANUAL** **AUTOMATIC** 15 mm – 50 mm

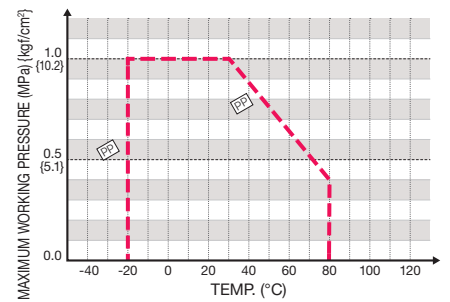


**MANUAL** **AUTOMATIC** 65 mm – 100 mm



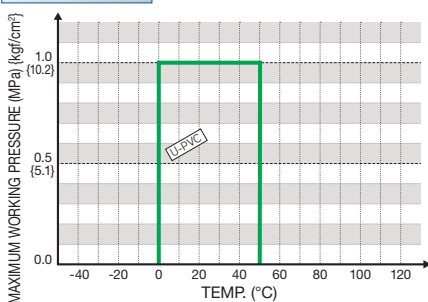
## 3 WAY BALL VALVE TYPE 23 H

**MANUAL** 25 mm – 40 mm



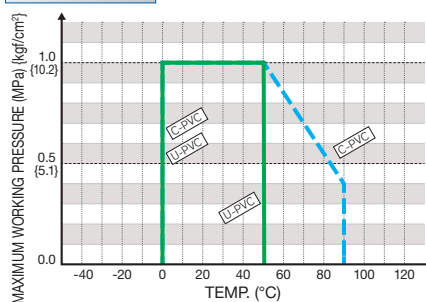
## LAB COCK

**MANUAL**



## COMPACT BALL VALVE TYPE 27

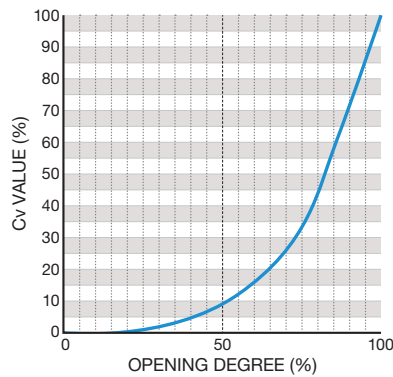
**MANUAL** 13 mm – 50 mm





## BALL VALVE TYPE 21, TYPE 21 $\alpha$ / WATER BALL VALVE

TYPE 21, TYPE 21 $\alpha$ : 15 mm – 100 mm  
 WATER BALL VALVE: 15 mm – 50 mm

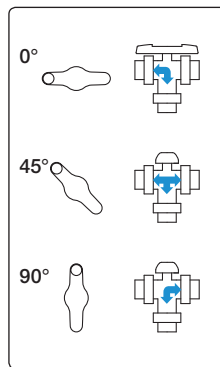
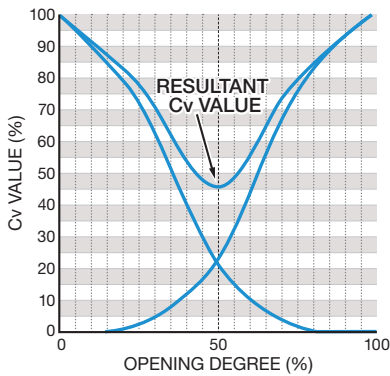


### FULL-OPEN Cv VALUE

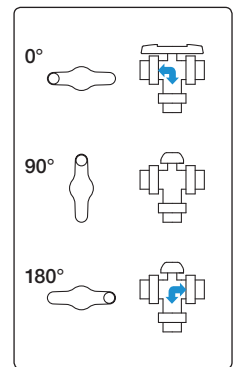
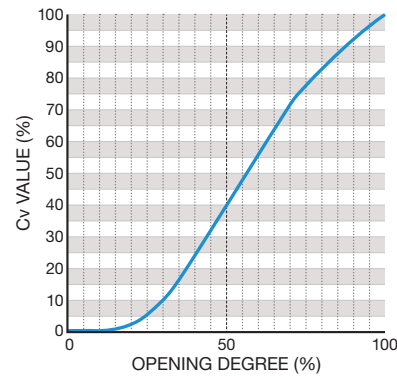
mm	15	20	25	32	40	50	65	80	100
inch	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
FULL-OPEN Cv VALUE	14	29	47	72	155	190	365	410	680

## 3 WAY BALL VALVE TYPE 23

### DOUBLE L PORT (STANDARD)

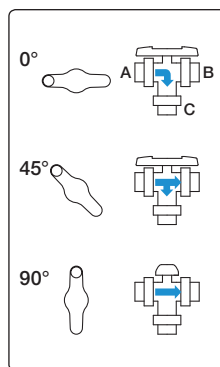
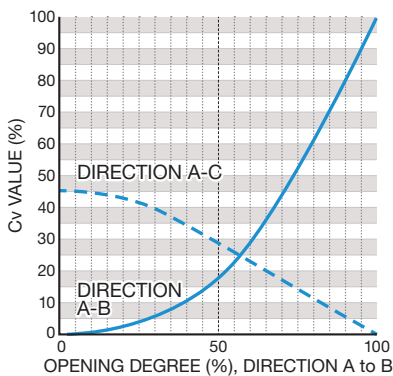


### L PORT (OPTION)



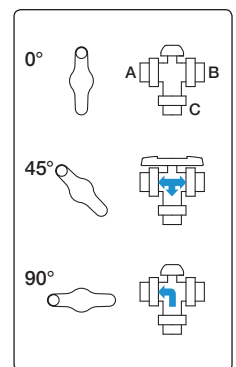
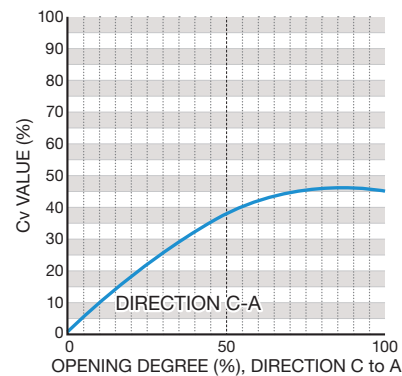
### CROSS PORT (OPTION)

DIRECTION A to B, DIRECTION A to C, OPENING DEGREE (%) DIRECTION A to C



### CROSS PORT (OPTION)

DIRECTION C to A

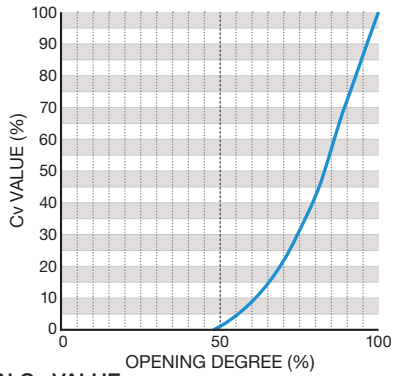


### FULL-OPEN Cv VALUE

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	—	—	—

## Cv VALUE FOR EACH OPENING DEGREE

### LAB COCK

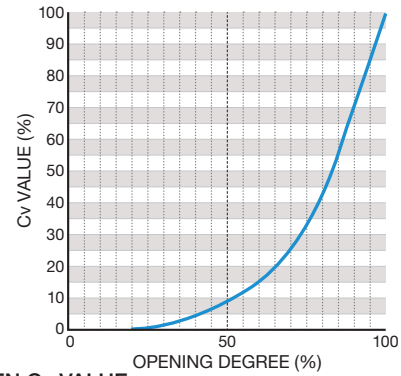


#### FULL-OPEN Cv VALUE

mm	—	15	—
inch	1/4	1/2	3/8
FULL-OPEN Cv VALUE	1.6		

### COMPACT BALL VALVE TYPE 27

#### 13 mm – 50 mm



#### FULL-OPEN Cv VALUE

mm	13	15	20	25	32
inch	3/8	1/2	3/4	1	1 1/4
FULL-OPEN Cv VALUE	7.7	14	29	47	72
mm	40	50			
inch	1 1/2	2			
FULL-OPEN Cv VALUE	155	190			

## BALL VALVE

## CHECK VALVE

## OTHER VALVES

- BALL VALVE ■ 3 WAY BALL VALVE TYPE 23, TYPE 23H ■ SWING CHECK VALVE ■ WAFER CHECK VALVE  
■ BALL CHECK VALVE ■ BALL FOOT VALVE ■ STOP VALVE (GLOBE VALVE), CONSTANT FLOW VALVE  
■ GAUGE VALVE ■ SEDIMENT STRAINER (TYPE Y)

FLANGED (JIS10K)

UNIT: mm

SIZE		13	15	20	25	32	40	50	65	75	100	125	150	200	250	300	350
SCREW SIZE		M12	M12	M12	M16	M16	M16	M16	M16	M16	M16	M20	M20	M20	M22	M22	M22
NO. OF FLANGE HOLES		4	4	4	4	4	4	4	4	8	8	8	8	12	12	16	16
FLANGE THICKNESS		14	14	15	15	16	16	20	22	22	22	24	26	28	30	30	34
NOMINAL LENGTH	TS FLANGE	55	55	60	60	65	65	70	75	75	75	85	90	100	100	100	110
	BALL VALVE TYPE 21, 21 $\alpha$	—	55	55	60	65	65	65	70	70	70	—	—	—	—	—	—
	3 WAY BALL VALVE TYPE 23, 23H	—	55	55	60	65	65	65	70	70	70	—	—	—	—	—	—
	SWING CHECK VALVE	—	55	55	60	65	65	70	75	75	75	85	85	100	—	—	—
	GAUGE VALVE	—	—	55	60	—	—	—	—	—	—	—	—	—	—	—	—
	BALL CHECK VALVE	—	60	60	65	—	65	75	—	80	80	—	—	—	—	—	—
	BALL FOOT VALVE	—	60	60	65	—	65	75	—	80	80	—	—	—	—	—	—
	STOP VALVE (GLOBE VALVE)	—	55	55	60	65	65	65	70	70	70	—	—	—	—	—	—
	CONSTANT FLOW VALVE	—	55	55	60	—	—	70	—	75	75	—	—	—	—	—	—
	SEDIMENT STRAINER (TYPE Y)	—	55	60	65	65	65	70	75	75	75	—	—	—	—	—	—
	WAFER CHECK VALVE	—	—	—	—	—	—	—	—	—	150	160	175	185	210	230	230

**NOTES** (1) The above values indicate the bolt dimensions when an AV TS flange and AV packing are used.

(2) The numbers in a circle indicate the number of bolts required to connect one side of flange. When there is no indication, refer to the number of flange holes.

## BALL VALVE

### TYPE 21, TYPE 21α [MANUAL](#)

UNIT: kg

mm	inch	FLANGED (JIS10K)				THREADED (JIS)				SOCKET, SPIGOT			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF
15	1/2	0.4	0.4	0.3	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
20	3/4	0.6	0.7	0.5	0.7	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3
25	1	0.8	0.9	0.7	1.0	0.4	0.5	0.4	0.5	0.4	0.5	0.4	0.5
32	1 1/4	1.2	1.3	0.9	1.5	0.7	0.7	0.6	0.8	0.6	0.7	0.5	0.7
40	1 1/2	1.7	1.8	1.2	2.0	1.1	1.2	0.7	1.3	1.0	1.0	0.8	1.2
50	2	2.5	2.7	1.8	3.7	1.8	2.0	1.2	2.2	1.7	1.8	1.2	2.0
65	2 1/2	3.3	3.5	2.4	4.0	2.3	2.5	1.7	2.8	2.4	2.6	1.7	2.8
80	3	4.9	5.5	3.4	5.7	3.7	4.0	2.5	4.5	3.8	4.1	2.4	4.4
100	4	10.5	10.6	7.0	12.1	8.8	9.9	6.0	11.3	9.2	9.9	6.0	10.8

Spigot: U-PVC, PP, PVDF only.

### WATER BALL VALVE [MANUAL](#)

UNIT: kg

mm	inch	SOCKET	THREADED (JIS)
		U-PVC	
15	1/2	0.2	0.2
20	3/4	0.3	0.3
25	1	0.5	0.5
32	1 1/4	0.7	0.6
40	1 1/2	1.0	0.8
50	2	1.7	1.5

### 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	14.0	15.0	9.0	16.5	13.5	14.0	8.5	15.5	13.0	14.0	8.5	15.5

### 3 WAY BALL VALVE TYPE 23 H [MANUAL](#)

UNIT: kg

mm	inch	FLANGED (JIS10K)	SOCKET, THREADED, SPIGOT
		PP	PP
25	1	0.9	0.4
32	1 1/4	1.7	1.1
40	1 1/2	1.7	1.1

### COMPACT BALL VALVE TYPE 27 [MANUAL](#)

UNIT: kg

mm	inch	Socket End (JIS)		Threaded End (JIS)	
		U-PVC	C-PVC	U-PVC	C-PVC
13	3/8	0.1	0.1	-	-
15	1/2	0.1	0.1	0.1	0.1
20	3/4	0.2	0.2	0.2	0.2
25	1	0.3	0.3	0.3	0.3
32	1 1/4	0.4	0.5	0.4	0.5
40	1 1/2	0.7	0.7	0.7	0.8
50	2	1.2	1.2	1.2	1.3

### LAB COCK [MANUAL](#)

UNIT: g

CONNECTION	U-PVC
1/4 MALE × 1/4 MALE	25
1/2 MALE × 1/2 MALE	30
1/4 FEMALE × 1/4 FEMALE	30
3/8 FEMALE × 3/8 FEMALE	30
1/4 HOSE × 1/4 HOSE	25
1/2 MALE × ELBOW 16 mm	55

## PRODUCT WEIGHT LIST (REFERENCE)

► BALL VALVE

**TYPE 21, TYPE 21α** AUTOMATIC PNEUMATIC TYPE TA

UNIT: kg

mm	inch	DOUBLE ACTING										
		FLANGED				THREADED				SOCKET		
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP
15	1/2	2.0	2.0	1.5	2.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5
20	3/4	2.0	2.0	2.0	2.0	1.5	1.5	1.5	2.0	2.0	1.5	1.5
25	1	2.5	2.5	2.0	2.5	2.0	2.0	1.5	2.0	2.0	2.0	1.5
32	1 1/4	2.5	3.0	2.0	3.0	2.0	2.0	2.0	2.5	2.0	2.0	—
40	1 1/2	3.5	3.5	3.0	3.5	3.0	3.0	2.5	3.0	3.0	3.0	2.5
50	2	4.5	4.5	3.5	4.5	3.5	3.5	3.0	4.0	3.5	3.5	3.0
65	2 1/2	6.5	6.5	5.5	7.0	5.5	5.5	5.0	6.0	5.5	5.5	5.0
80	3	9.5	10.0	8.0	10.5	8.5	9.0	7.0	9.5	8.5	9.0	7.5
100	4	15.0	16.0	12.0	17.0	14.5	15.0	12.0	16.0	14.5	15.0	12.0

mm	inch	AIR TO OPEN / AIR TO CLOSE										
		FLANGED				THREADED				SOCKET		
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP
15	1/2	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
20	3/4	4.0	4.0	3.5	4.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5
25	1	4.0	4.0	4.0	4.0	3.5	3.5	3.5	3.5	3.5	4.0	3.5
32	1 1/4	4.5	4.5	4.0	4.5	4.0	4.0	3.5	4.0	4.0	4.0	—
40	1 1/2	5.0	5.5	4.5	5.5	4.5	4.5	4.0	5.0	4.5	4.5	4.0
50	2	6.0	6.0	5.0	6.0	5.5	5.5	4.5	5.5	5.0	5.0	4.5
65	2 1/2	9.5	9.5	8.5	10.0	8.5	8.5	8.0	9.0	8.5	8.5	8.0
80	3	14.5	15.0	13.0	15.5	13.5	14.0	12.0	14.5	14.0	14.0	12.5
100	4	20.0	21.0	17.0	22.0	19.5	20.0	16.5	21.0	20.0	20.0	16.5

**TYPE 21, TYPE 21α** AUTOMATIC PNEUMATIC TYPE AA

UNIT: kg

mm	inch	DOUBLE ACTING											AIR TO OPEN / AIR TO CLOSE										
		FLANGED				THREADED				SOCKET			FLANGED				THREADED				SOCKET		
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP
15	1/2	1.0	1.0	0.9	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.7	1.6	1.6	1.5	1.7	1.4	1.4	1.3	1.4	1.4	1.4	1.3
20	3/4	1.2	1.2	1.0	1.4	0.9	0.9	0.9	1.0	0.9	0.9	0.8	1.8	1.8	1.6	1.9	1.5	1.5	1.5	1.6	1.7	1.5	1.4
25	1	1.5	1.5	1.2	1.7	1.0	1.1	0.9	1.1	1.0	1.2	0.9	2.1	2.2	1.8	2.3	1.6	1.7	1.5	1.7	1.7	1.6	1.5
32	1 1/4	1.9	2.0	1.5	2.1	1.3	1.3	1.1	1.5	1.3	1.3	1.1	2.5	2.6	2.0	2.7	1.9	1.9	1.6	2.1	1.9	1.9	—
40	1 1/2	2.7	2.8	2.1	3.0	2.0	2.1	1.7	2.3	2.0	2.1	1.7	4.0	4.1	3.4	4.2	3.3	3.4	3.0	3.6	3.3	3.3	2.9
50	2	3.5	3.7	2.8	4.2	2.8	2.9	2.2	3.2	2.8	2.9	2.1	4.8	5.0	4.0	5.4	4.1	4.2	3.4	4.5	4.0	4.1	3.3

**TYPE 21, TYPE 21α** AUTOMATIC ELECTRIC TYPE T

UNIT: kg

mm	inch	FLANGED				THREADED				SOCKET		
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP
15	1/2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20	3/4	3.0	3.0	2.5	3.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
25	1	3.0	3.0	3.0	3.0	2.5	2.5	2.5	3.0	2.5	2.5	2.5
32	1 1/4	3.0	3.5	3.0	3.5	3.0	3.0	2.5	3.0	3.0	3.0	—
40	1 1/2	3.5	3.5	3.0	4.0	3.0	3.5	3.0	3.5	3.0	3.5	3.0
50	2	4.0	4.5	3.5	4.5	4.0	4.0	3.5	4.0	4.0	4.0	3.5
65	2 1/2	7.0	7.0	6.0	7.5	6.0	6.5	6.0	6.5	6.0	6.5	6.0
80	3	8.0	8.0	6.5	8.5	7.0	7.5	6.0	7.5	7.0	7.5	6.5
100	4	11.5	12.0	9.0	12.5	11.0	11.0	8.5	12.0	11.0	11.0	8.5

► BALL VALVE

**WATER BALL VALVE** AUTOMATIC PNEUMATIC TYPE VC

UNIT: kg

mm	inch	DOUBLE ACTING		AIR TO OPEN / AIR TO CLOSE	
		THREADED	SOCKET	THREADED	SOCKET
		U-PVC	U-PVC	U-PVC	U-PVC
15	1/2	0.4	0.4	0.6	0.6
20	3/4	0.5	0.5	0.7	0.7
25	1	0.8	0.8	1.1	1.1
32	1 1/4	1.0	1.0	1.9	1.8
40	1 1/2	1.5	1.5	2.2	2.1
50	2	2.2	2.2	2.9	2.9

**WATER BALL VALVE** AUTOMATIC ELECTRIC TYPE V

UNIT: kg

mm	inch	THREADED, SOCKET	
		U-PVC	
15	1/2	1.1	
20	3/4	1.2	
25	1	1.4	
32	1 1/4	2.0	
40	1 1/2	2.3	
50	2	3.0	

**TYPE 23 (3 WAY VALVE)** AUTOMATIC PNEUMATIC TYPE TA

UNIT: kg

mm	inch	DOUBLE ACTING											
		FLANGED				THREADED				SOCKET			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	
15	1/2	2.0	2.0	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9
20	3/4	2.5	2.5	2.3	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0	1.9
25	1	3.0	3.0	2.5	3.0	3.0	2.0	2.0	2.5	2.0	2.0	2.0	1.9
32	1 1/4	4.0	4.5	3.2	5.0	3.5	3.5	3.0	3.5	3.5	3.5	3.5	—
40	1 1/2	4.0	4.5	3.2	5.0	4.0	3.5	3.0	3.5	3.5	3.5	3.5	3.0
50	2	5.0	5.5	3.7	5.5	5.0	4.0	3.1	4.5	4.0	4.5	4.5	3.1
65	2 1/2	12.0	12.5	9.4	13.5	10.8	11.0	8.5	12.0	10.8	10.8	10.8	8.4
80	3	12.0	12.5	9.4	13.5	10.5	11.0	8.5	12.0	11.0	11.0	11.0	8.5
100	4	20.0	21.0	15.0	23.0	19.0	19.5	14.0	21.5	19.0	19.5	19.5	14.0

mm	inch	AIR TO OPEN / AIR TO CLOSE											
		FLANGED				THREADED				SOCKET			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	
15	1/2	4.0	4.0	3.8	4.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4
20	3/4	4.0	4.5	3.8	4.5	4.0	4.0	3.8	4.0	4.0	4.0	4.0	3.8
25	1	4.5	5.0	4.0	5.0	4.0	4.0	3.8	4.0	4.0	4.0	4.0	3.8
32	1 1/4	6.0	6.0	5.2	6.5	5.0	5.0	4.5	5.5	5.0	5.0	5.0	—
40	1 1/2	6.0	6.0	5.2	6.5	5.0	5.0	4.5	5.5	5.0	5.0	5.0	4.5
50	2	6.5	7.0	5.7	7.5	5.5	6.0	4.6	6.0	5.5	6.0	6.0	4.6
65	2 1/2	17.0	17.0	14.4	18.5	15.3	16.0	13.5	17.0	15.8	15.8	15.8	13.5
80	3	17.0	17.5	14.4	18.5	15.3	16.0	13.5	17.0	16.0	16.0	16.0	13.6
100	4	25.0	26.0	20.0	28.0	24.0	24.5	19.5	26.5	24.0	24.5	24.5	19.6

**TYPE 23 (3 WAY VALVE)** AUTOMATIC ELECTRIC TYPE T

UNIT: kg

mm	inch	FLANGED				THREADED				SOCKET		
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP
15	1/2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
20	3/4	3.0	3.0	2.5	3.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5
25	1	3.0	3.0	3.0	3.0	2.5	2.5	2.5	3.0	2.5	2.5	2.5
32	1 1/4	3.0	3.5	3.0	3.5	3.0	3.0	2.5	3.0	3.0	3.0	—
40	1 1/2	3.5	3.5	3.0	4.0	3.0	3.5	3.0	3.5	3.0	3.5	3.0
50	2	4.0	4.5	3.5	4.5	4.0	4.0	3.5	4.0	4.0	4.0	3.5
65	2 1/2	7.0	7.0	6.0	7.5	6.0	6.5	6.0	6.5	6.0	6.5	6.0
80	3	8.0	8.0	6.5	8.5	7.0	7.5	6.0	7.5	7.0	7.5	6.5
100	4	11.5	12.0	9.0	12.5	11.0	11.0	8.5	12.0	11.0	11.0	8.5



## PRODUCT CERTIFICATION TARGET LIST

ITEM	NSF/ANSI61		ABS (American Bureau of Shipping)		NK (Nippon Kaiji Kyokai)
	MATERIAL	SIZE	MATERIAL	SIZE or STANDARD	PRODUCT GROUP
3 WAY BALL VALVE TYPE 23	PVC/EPDM	15 — 100mm			
	PVC/FKM	15 — 100mm			
BALL VALVE TYPE 21 $\alpha$	PVC/EPDM	15 — 50mm	PVC/EPDM	15 — 50mm	
	PVC/FKM	15 — 50mm	PVC/FKM	15 — 50mm	
			C-PVC/EPDM	15 — 50mm	
			C-PVC/FKM	15 — 50mm	
BALL VALVE TYPE 21	PVC/EPDM	65 — 100mm	PVC/EPDM	65 — 100mm	
	PVC/FKM	65 — 100mm	PVC/FKM	65 — 100mm	
			C-PVC/EPDM	65 — 100mm	
			C-PVC/FKM	65 — 100mm	
COMPACT BALL VALVE TYPE 27	PVC/EPDM	13 — 50mm			
LAB COCK	PVC/EPDM	—			
GATE VALVE TYPE P	PVC/PP/EPDM	40 — 350mm			
SEDIMENT STRAINER (TYPE Y)	PVC/EPDM	15 — 100mm			
	PVC/FKM	15 — 100mm			
BALL CHECK VALVE	PVC/EPDM	80 — 100mm			
	PVC/FKM	80 — 100mm			
TRUE UNION BALL CHECK VALVE	PVC/EPDM	15 — 50mm			
	PVC/FKM	15 — 50mm			
BUTTERFLY VALVE TYPE 57	BODY: PVC	40 — 350mm	BODY: PVC, PP	50 — 300mm	
	DISC: PP		DISC: PVC, PP, PVDF		
	SHEET: EPDM		SHEET: EPDM, FKM		
PIPE			U-PVC	JIS K 6741	
			U-PVC	JIS K 6742	
			C-PVC	JIS K 6776	
FITTING			U-PVC	JIS K 6743	
			C-PVC	JIS K 6777	
TS FLANGE			U-PVC	JIS 10K 13 — 150mm	
			U-PVC	JIS 5K 13 — 150mm	
			C-PVC	JIS 10K 13 — 50mm	
			C-PVC	JIS 5K 13 — 50mm	

AV Vinyl pipes  
AV HI Vinyl Pipes  
AV Super Pipes(HT)  
AV Vinyl Fittings  
AV HI Vinyl Fittings  
AV Super Fittings(HT)  
AV Vinyl Valves AV  
AV HI Vinyl Valves  
AV Super Valves  
AV TS Flanges  
AV HI TS Flanges  
AV Super TS Flanges(HT)

\* Above products are comply with NK approval, and are adequate for their service conditions may be used for following (1).

(1) Drinking water pipes, domestic waterpipes (including hot water pipes) and sanitary pipes located within accommodation spaces and engine rooms as well as deck scuppers located within spaces.

For details of applicable products and intended use as well as certificates other than the above, please contact us.



**KASKO DEMİRÇELİK MAKİNE VE İNŞAAT SANAYİ TİCARET LİMİTED ŞİRKETİ**

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