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.

MANUAL



AUTOMATIC





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/cm²}	CONNECTION METHOD		
			FLANGED	SOCKET	THREADED
U-PVC	0℃～ 50℃	1.0 {10.2}	○	○	○
C-PVC	0℃～ 90℃	1.0 {10.2}	○	○	○
PP	-20℃～ 80℃	1.0 {10.2}	○	○	○
PVDF	-20℃～100℃	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_2O_2) 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.

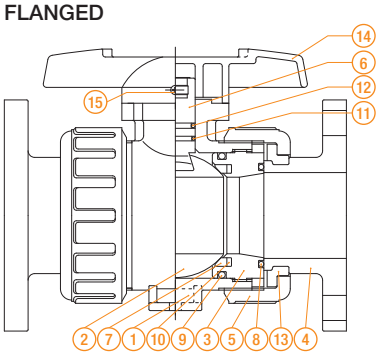


■**Multi Functional Handle**
Removing the handle and placing the raised lugs into the carrier allow for easy disassembly of the valve.
* The handle has other colors. (blue, white, yellow)(Option)



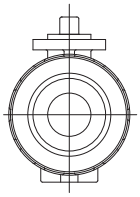
PARTS LIST MANUAL

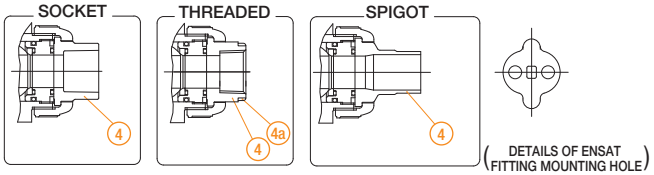
FLANGED



(DETAILS OF STEM)







PART NO. / NAME	QTY	MATERIAL
①BODY	1	U-PVC, C-PVC, PP, PVDF
②BALL	1	U-PVC, C-PVC, PP, PVDF
③UNION	1	U-PVC, C-PVC, PP, PVDF
④END CONNECTOR	2	U-PVC, C-PVC, PP, PVDF
④aRING	2	SUS304 (Made of C-PVC. Used for threaded type of 15 to 25 mm.)
⑤UNION NUT	2	U-PVC, C-PVC, PP, PVDF

PART NO. / NAME	QTY	MATERIAL
⑥STEM	1	U-PVC, C-PVC, PP, PVDF
⑦SEAT	2	PTFE
⑧O-RING (A)	2	EPDM, FKM, etc.
⑨O-RING (B)	1	EPDM, FKM, etc.
⑩O-RING (C)	2	EPDM, FKM, etc.
⑪O-RING (D)	1	EPDM, FKM, etc.

PART NO. / NAME	QTY	MATERIAL
⑫O-RING (E)	1	EPDM, FKM, etc.
⑬STOP RING	2	PVDF (Used for flanged type.)
⑭HANDLE	1	ABS
⑮TAPPING SCREW (A)	1	SUS304

COMPATIBLE ACTUATOR AUTOMATIC

PNEUMATIC TYPE TA — For detailed specifications, see P.124
PNEUMATIC TYPE AA — For detailed specifications, see P.123
ELECTRIC TYPE T — For detailed specifications, see P.139

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		TYPE 21	
65mm – 100mm	TYPE 21			

PRODUCT MODEL CODE LIST — MANUAL

ACTUATION	TYPE	OPERATING SYSTEM	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	HIGH PURITY SERIES
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 — AUTOMATIC

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE	SPACE HEATER	HIGH PURITY SERIES
A	**	*	*	*	*	*	*	***	OC※	1
A AUTO-MATIC 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 0C * 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.

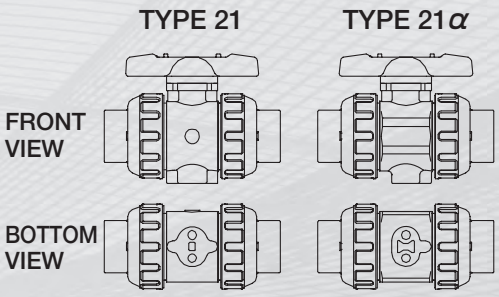
Related materials

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

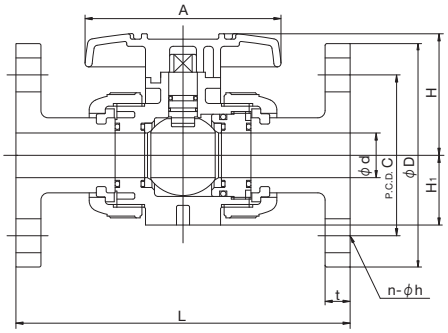


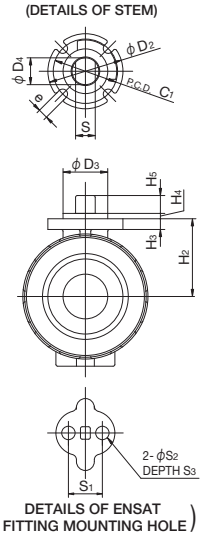
MANUAL

BALL VALVE TYPE 21, 21α

TYPE——V21LV, V2ALV
CONNECTION / FLANGED, SOCKET, THREADED——JIS, DIN, ANSI SPIGOT——DIN

FLANGED





■ 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	-	-	-	-	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

JIS

mm	FLANGED JIS5K D	C	n	h	JIS10K D	C	n	h	L U-PVC C-PVC	L PP	L PVDF	t	SOCKET U-PVC, C-PVC d1	ℓ	1/T	L	PP d1	d1'	ℓ	L	THREADED d2	ℓ	L U-PVC C-PVC	L PP	L 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	-	-	-	-	Rc11/4	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	Rc11/2	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	Rc21/2	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

DIN

mm	FLANGED DIN PN10/PN16 D	C	n	h	L U-PVC C-PVC	L PP	L PVDF	t	SOCKET U-PVC, C-PVC d1	ℓ	L	PP, PVDF d1	d1'	ℓ	L PP	L PVDF	THREADED d2	ℓ	L U-PVC C-PVC	L PP	L PVDF	SPIGOT U-PVC d3	d3'	ℓ	PP, PVDF d3	ℓ	t PP	t PVDF	L PP	L 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	-	-	-	-	114	114
15	95	65	4	14	130	130	130	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	2.5	1.9	124	124
20	105	75	4	14	150	150	150	14	25	19	119	24.5	24.3	16	113	113	Rp3/4	17	120	119	119	25	20	24	25	22	2.7	1.9	144	144
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	3.0	2.4	154	154
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	3.7	2.4	174	174
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	4.6	3.0	194	194
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	5.8	3.0	224	224
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	6.9	3.6	245	244
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	8.2	4.3	296	293
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	10.0	5.3	355	350

■ 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

ANSI

inch	mm	FLANGED ANSI CLASS 150 D	C	n	h	L U-PVC C-PVC	L PP	L PVDF	t	H1	SOCKET U-PVC, C-PVC ASTM SCH40 d1	d1'	ℓ	L	ASTM SCH80 d1	d1'	ℓ	L	PP, PVDF d1	ℓ	L PP	L PVDF	d2	ℓ	L U-PVC C-PVC	L PP	L 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	1-111/2 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	11/4-111/2 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	7.24	11/2-111/2 NPT	0.98	6.42	6.42	6.42
2	50	6.00	4.75	4	0.75	9.21	9.21	9.21	0.63	7.34	-	-	-	-	2.387	2.369	1.500	8.23	2.36	1.500	8.23	8.23	2-111/2 NPT	1.10	7.76	7.76	7.76
2 1/2	65	7.00	5.50	4	0.75	10.20	10.12	10.08	0.71	10.06	-	-	-	-	2.889	2.868	1.750	9.45	2.88	1.752	9.37	9.33	21/2-8 NPT	1.26	8.46	8.39	8.35
3	80	7.50	6.00	4	0.75	12.05	12.01	11.89	0.71	10.06	-	-	-	-	3.516	3.492	1.875	11.14	3.48	1.874	11.10	10.98	3-8 NPT	1.38	10.43	10.39	10.28
4	100	9.00	7.50	8	0.75	14.72	14.72	14.53	0.71	12.01	4.518	4.491	2.000	13.86	-	-	-	-	4.48	2.252	14.37	14.13	4-8 NPT	1.77	14.25	14.25	14.06