

BALL VALVE Type 21,21α

(Pneumatic Type AR)

Features

- Compact & light weight
- All-plastic design ensures excellent corrosion resistance.
- Easy to mount and unmount the actuator (one-touch connection)
- Comes with bottom stand to facilitate mounting on racks and panels
- Handy tab-hole attachment.
- Air supply compatible with NAMUR standard
(By the use of conversion adapter <Actuator type: AR032, AR040>)
- 5 colors available for immediate line identification.
(Red<Standard>, Blue, Yellow, White, Green)



Basic specifications

- Valve Type : Ball Valve Type 21/21α (Type AR)
- Size : 15 mm — 100 mm (1/2 inch — 4 inch)
- Body Material : U-PVC (Conforming to ASTM D1784 Cell Classification 12454A)
C-PVC (Conforming to ASTM D1784 Cell Classification 23567-A)
PP (Conforming to ASTM D4101 Cell Classification PP0110B67272)
PVDF (Conforming to ASTM D3222 Cell Classification Type II)
- Seal Material / O-ring : EPDM, FKM etc.
- Connection / Flanged : JIS B2220 10K, DIN/EN1092-1 PN10, ANSI B16.5 CLASS150
Socket : JIS, DIN, ASTM D2466 SCH40/80
Threaded : Rc, Rp, NPT
Spigot : DIN

Body Material	Fluid Temperature °C {°F}	Maximum working pressure (Normal temperature) MPa {psi}	Connection method			
			Flanged	Socket	Threaded	Spigot
U-PVC	0 ~ 50 { 30~120 }	1.0 { 150 }	○	○	○	○
C-PVC	0 ~ 90 { 30~195 }	1.0 { 150 }	○	○	○	-
PP	-20 ~ 80 { -5~175 }	1.0 { 150 }	○	○	○	○
PVDF	-20 ~ 100 { -5~210 }	1.0 { 150 }	○	○	○	○

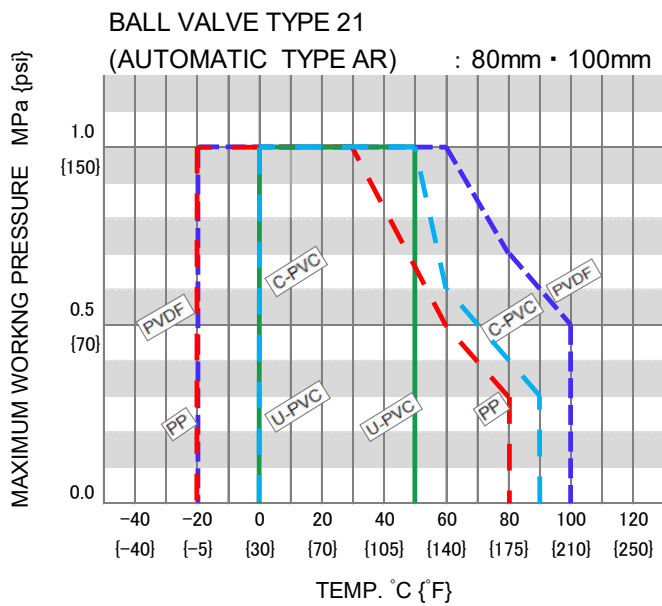
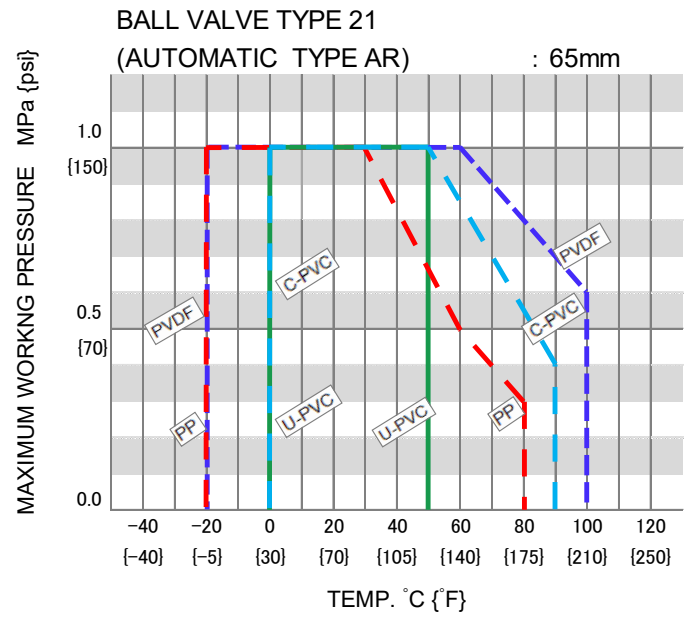
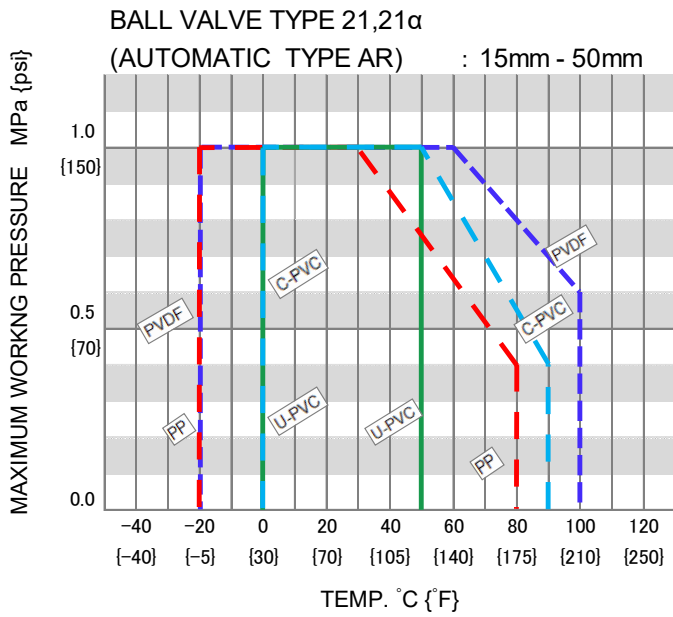
Note::

(1) The ball-type valves have dead spaces for structural reasons. Note that volatile liquids, such as hydrogen peroxide (H₂O₂) and sodium hypochlorite (NaClO), vaporize in those dead spaces, which may cause abnormal pressure increase in the valve. (When the internal pressure abnormally increases due to vaporization, the gas will be compressive fluid. If the valve breaks in this state, it can 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, material and actuator type, see the technical documents at the next page of this sheet.

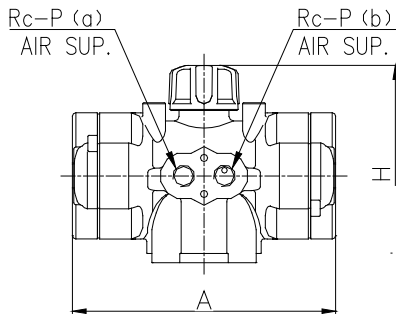
Working pressure vs. Temperature



Product dimension

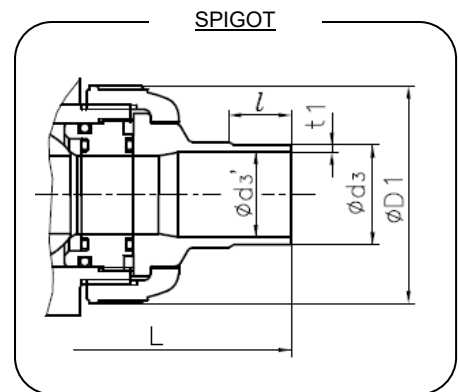
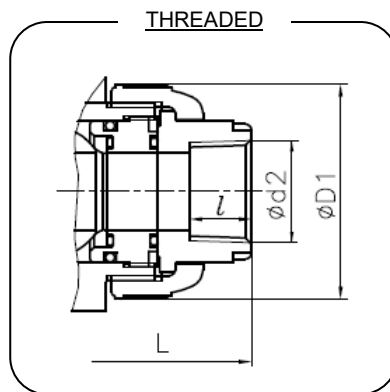
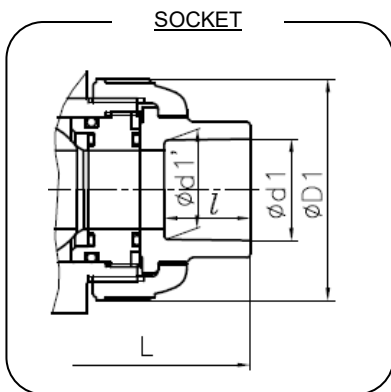
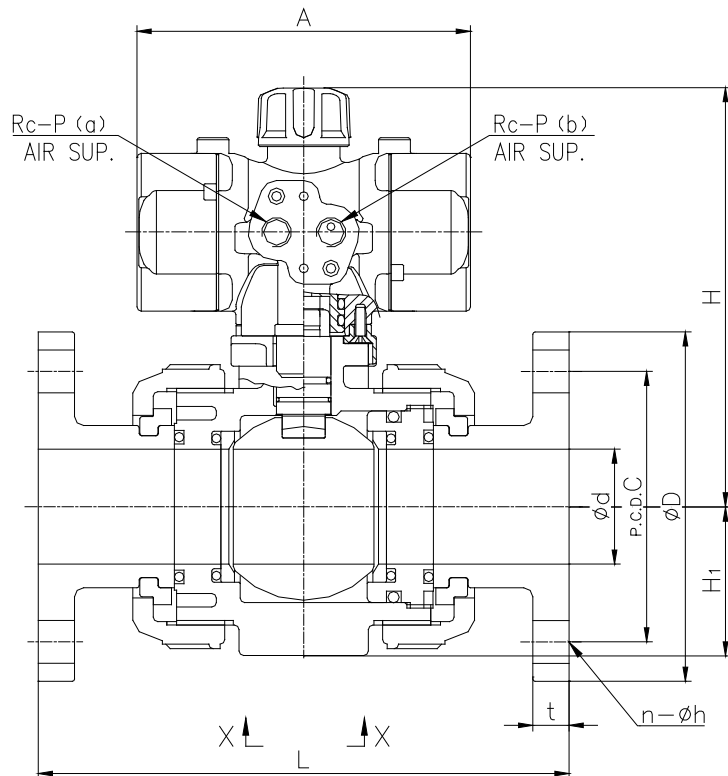
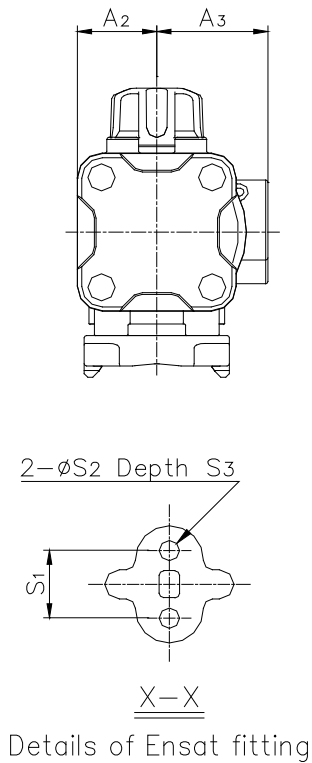
[DOUBLE ACTING]

ACTUATOR TYPE AR032, AR040



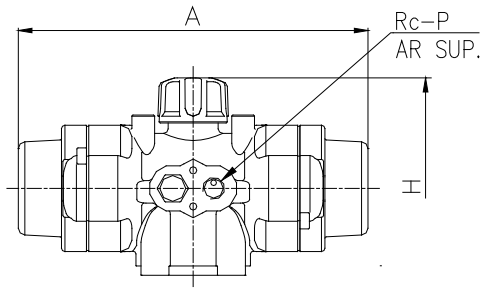
FLANGED

ACTUATOR TYPE AR050



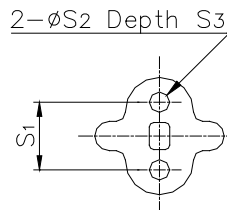
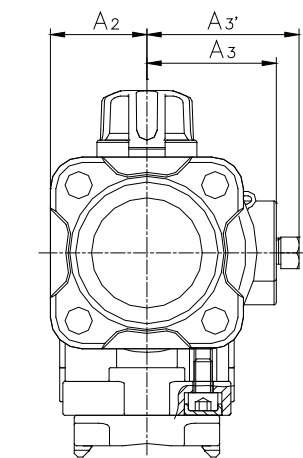
The shape and appearance of assembly differ slightly with nominal size and material compared to this drawing.

[AIR TO OPEN]
[AIR TO CLOSE]

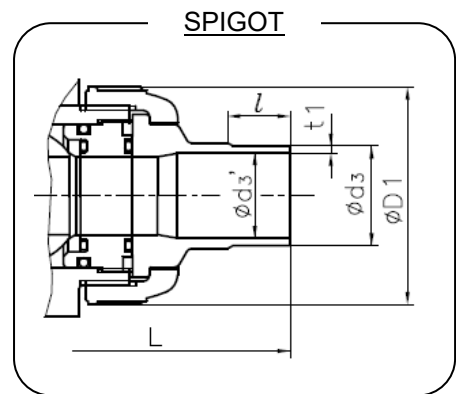
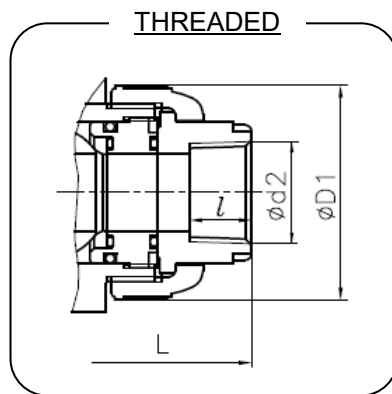
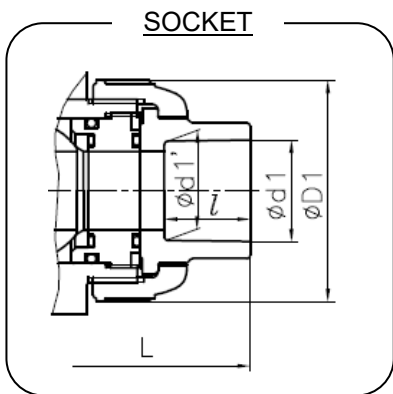
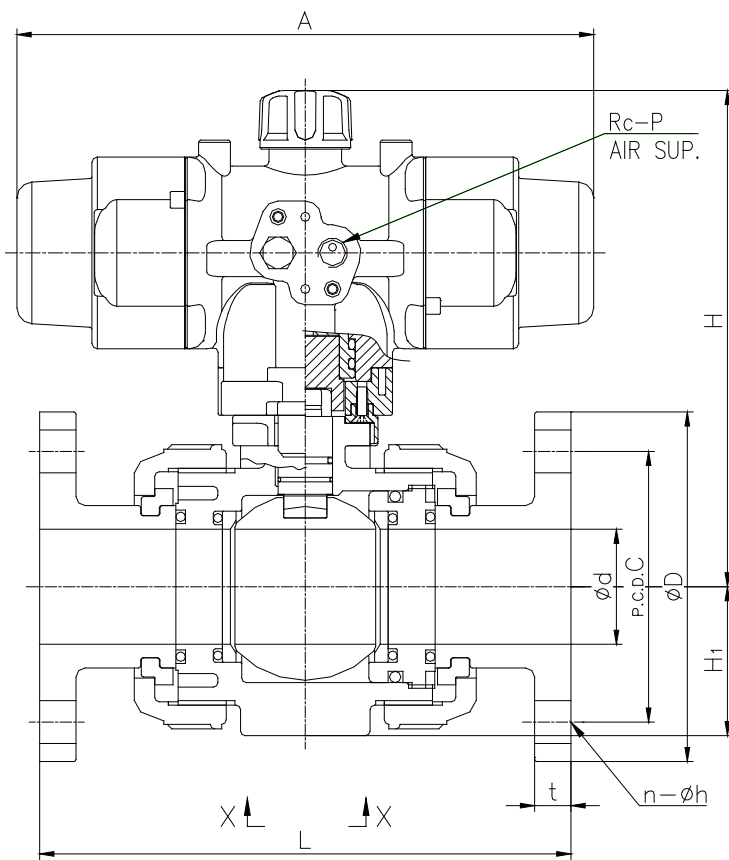


ACTUATOR TYPE (AR040)

FLANGED ACTUATOR TYPE (AR050, AR063)



X-X
Details of Ensat fitting

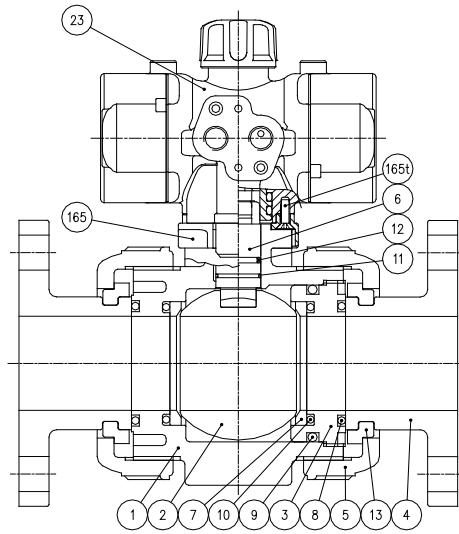
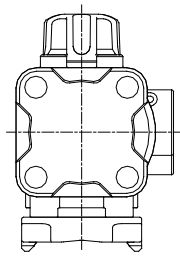


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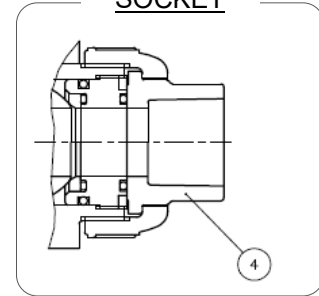
Parts list

[DOUBLE ACTING]

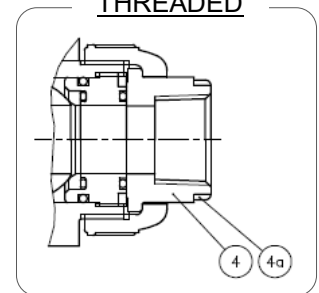
FLANGED



SOCKET

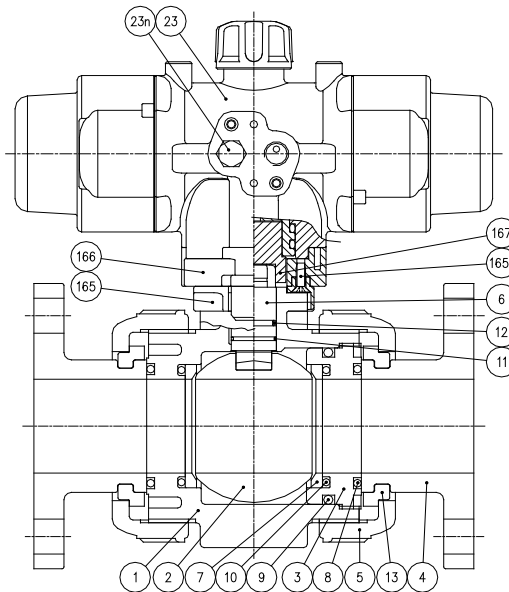
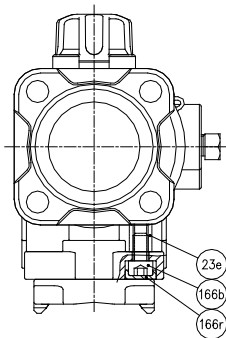


THREADED

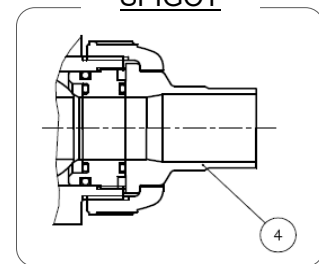


[AIR TO OPEN]
[AIR TO CLOSE]

FLANGED



SPIGOT



PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL
1 BODY	1	PVC, C-PVC, PP, PVDF	10 O-RING (C)	2	EPDM, FKM ,others	165 BASE PLATE	1	PPG
2 BALL	1	PVC, C-PVC, PP, PVDF	11 O-RING (D)	1	EPDM, FKM ,others	165t TAPPING (No.165)	2	STAINLESS STEEL
3 CARRIER	1	PVC, C-PVC, PP, PVDF	12 O-RING (E)	1	EPDM, FKM ,others	166 CONNECTOR PLATE	1	PPG
4 END CONNECTOR	2	PVC, C-PVC, PP, PVDF	13 STOP RING	2	PVDF	166b BOLT (No.166)	4	STAINLESS STEEL
5 UNION NUT	2	PVC, C-PVC, PP, PVDF			Used for Flanged Type.	166r CAP(No.166)	4	EPDM
6 STEM	1	PVC, C-PVC, PP, PVDF	23 ACTUATOR	1	PPG, etc.	167 SHAFT ADAPTER	1	COPPER ALLOY
7 SEAT	2	PTFE	23e ENZAT(No.23)	4	COPPER ALLOY	4a RING	2	STAINLESS STEEL
8 O-RING (A)	2	EPDM, FKM ,others	23n NIPPLE	1	PPG			Used for C-PVC Body. Threaded Type:15-25mm(1/2"-1")
9 O-RING (B)	1	EPDM, FKM ,others						

Technical Data of Actuator

Options are easily removable/ replaceable and can be mounted later (except POSITIONER and STROKE LIMITER).
Air piping is compatible with NAMUR standard. (AR032 and AR040 use NAMUR conversion plate.)

DOUBLE ACTING	ACTUATOR TYPE					UNIT
	AR032DA	AR040DA	AR050DA	AR063DA	AR070DA	
ANGLE ADJUSTMENT	No angle adjustment is available.					
OPERATING PRESSURE	0.4-0.7					MPa
AIR CONSUMPTION	0.3	0.6	1.3	1.8	5.1	NL/OPEN & CLOSE (0.4 MPa)
AIR SUPPLY BORE	Rc1/8		Rc1/4			

AIR TO OPEN AIR TO CLOSE	ACTUATOR TYPE						UNIT
	—	AR040NC AR040NO	AR050NC AR050NO	AR063NC AR063NO	AR070NC AR070NO	AR100NC AR100NO	
ANGLE ADJUSTMENT	No angle adjustment is available.						
OPERATING PRESSURE	0.4-0.7						MPa
AIR CONSUMPTION		0.2	0.4	0.8	2.5	5.9	NL/OPEN & CLOSE (0.4 MPa)
AIR SUPPLY BORE		Rc1/8	Rc1/4				

OPTION COMBINATION

COMBINATION NO.	1	2	3	4	5	6	7	8	9	10	11	12	13
SOLENOID VALVE *1	○	—	—	—	—	—	○	○	○	—	—	—	—
FILTER REGULATOR	—	—	—	—	—	—	○	—	○	—	—	○	—
SPEED CONTROLLER *2	◎	○	◎	—	—	—	◎	◎	◎	◎	○	—	—
BYPASS VALVE *2	◎	—	○	—	—	—	◎	◎	◎	○	—	—	—
LIMIT SWITCH BOX *3	—	—	—	○	—	—	—	○	○	○	○	—	—
POSITIONER (E/P, P/P) *4	—	—	—	—	○	—	—	—	—	—	—	○	—
STROKE LIMITER	—	—	—	—	—	○	—	—	—	—	—	—	—
PNEUMATIC COUNTER	—	—	—	—	—	—	—	—	—	—	—	—	○

*1 Equipped with a built-in speed controller and bypass valve.

*2 ◎ indicates solenoid valve-dedicated type.

*3 When using the limit switch at 1 to 100 mA or 5 to 30V, contact our sales office in your area.

*4 When using the positioner, the actuator is fixed with a mount same as type TA.

OPTION LIST	MANUFACTURER	BASIC SPECIFICATIONS
SOLENOID VALVE NAMUR	KONAN	<ul style="list-style-type: none"> • WATER PROOF, EXPLOSION PROOF • POWER SOURCE AC100V, AC110V, AC200V, AC220V, DC24V
FILTER REGULATOR	KONAN	
SPEED CONTROLLER	SMC	<ul style="list-style-type: none"> • Since a solenoid valve has a built-in exhaust valve, when a solenoid valve is mounted, no speed controller is necessary.
BYPASS VALVE (SPEED CONTROLLER)	KONAN	
LIMIT SWITCH BOX	PRISMA	<ul style="list-style-type: none"> • WATER PROOF
POSITIONER	YTC	<ul style="list-style-type: none"> • E/P: INPUT SIGNAL CURRENT DC 4-20 mA • P/P: INPUT SIGNAL AIR PRESSURE 0.02 - 0.1 MPa
STROKE LIMITER (OPENING DEGREE ADJUSTING BOLT)	ASAHI YUKIZAI	
PNEUMATIC COUNTER	ASAHI YUKIZAI	
DISMOUNT LEVER	ASAHI YUKIZAI	

ENSAT (METAL INSERT) MOUNTING PROCEDURE

BALL VALVE TYPE 21, 21α

15mm - 50mm



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 ENSAT.

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

<When using the special tool>

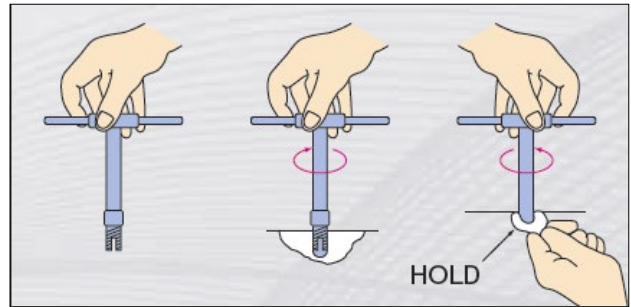
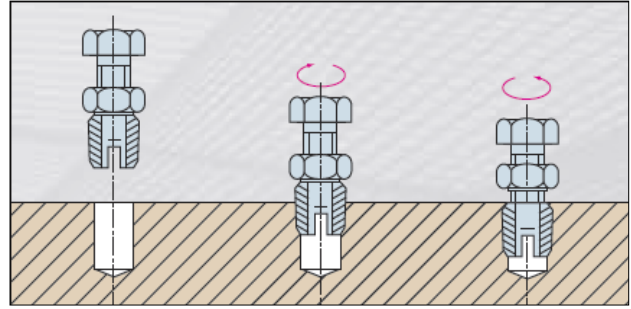
Attach the ENSAT at the end of special tool with the splitting groove facing downward.

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

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



When the ENSAT is manually screwed in, the center alignment between the ENSAT and the prepared hole is particularly important. Check that the ENSAT 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 ENSAT in its correct position. Note that, when nearly half of the ENSAT is once inserted, its position can no longer be corrected.

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

Product weight

TYPE 21, TYPE 21α Type AR (Standard)

UNIT : kg

mm	inch	DOUBLE ACTING											
		FLANGED				THREADED				SOCKET, SPIGOT			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF
15	1/2	0.6	0.6	0.5	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
20	3/4	0.8	0.9	0.7	0.9	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.5
25	1	1.0	1.1	0.9	1.2	0.7	0.7	0.6	0.7	0.6	0.7	0.6	0.7
32	1 1/4	1.6	1.7	1.3	1.9	1.1	1.1	1.0	1.2	1.0	1.1	-	1.1
40	1 1/2	2.5	2.6	2.0	2.8	1.9	1.9	1.5	2.1	1.8	1.8	1.6	2.0
50	2	3.3	3.5	2.6	4.5	2.7	2.8	2.0	3.0	2.5	2.6	2.0	2.8
65	2 1/2	4.9	5.1	4.0	5.6	4.0	4.2	3.3	4.4	4.0	4.2	3.3	4.4
80	3	6.2	6.6	5.0	7.3	5.4	5.7	3.5	6.0	5.4	5.7	4.0	6.0
100	4	13.6	14.4	10.8	15.9	13.0	13.7	9.8	14.6	13.0	13.7	9.8	14.6

UNIT : kg

mm	inch	AIR TO OPEN / AIR TO CLOSE											
		FLANGED				THREADED				SOCKET, SPIGOT			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF
15	1/2	1.0	1.0	0.9	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
20	3/4	1.2	1.3	1.1	1.3	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.9
25	1	1.4	1.5	1.3	1.6	1.0	1.0	1.0	1.1	1.0	1.1	1.0	1.1
32	1 1/4	2.3	2.4	2.0	2.6	1.8	1.8	1.7	1.9	1.7	1.8	-	1.8
40	1 1/2	3.7	3.8	3.2	4.0	3.1	3.1	2.7	3.3	3.0	3.0	2.8	3.2
50	2	4.5	4.7	3.8	5.7	3.9	4.0	3.2	4.2	3.7	3.8	3.2	4.0
65	2 1/2	7.5	7.7	6.6	8.2	6.6	6.8	5.9	7.0	6.6	6.8	5.9	7.0
80	3	8.8	9.2	7.6	9.9	8.0	8.3	6.1	8.6	8.0	8.3	6.6	8.6
100	4	21.1	21.9	18.3	23.4	20.5	21.2	17.3	22.1	20.5	21.2	17.3	22.1

Product model code list

ACTUATION	TYPE	ACTUATOR TYPE	ACTION	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	**	L	*	*	*	*	***	***
A AUTOMATIC VALVE	21 TYPE 21 2A TYPE 21A	L TYPE AR	F DOUBLE ACTING G AIR TO OPEN S AIR TO CLOSE	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 JIS 10K 5 JIS 5K	015 15mm { 100 100mm

Installation, Operation and Maintenance Manual

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