

COMPACT BALL VALVE Type 27

(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>)
- 4 colors available for immediate line identification.
(Red<Standard>, Blue, Yellow, White)



Basic specifications

- Valve Type : Compact Ball Valve Type 27 (Type AR)
- Size : 13 mm — 50 mm (3/8 inch — 2 inch)
- Body Material : U-PVC (Conforming to ASTM D1784 Cell Classification 12454A)
C-PVC (Conforming to ASTM D1784 Cell Classification 23567-A)
- Seal Material / Seat : PTFE
- / O-ring : EPDM, FKM etc.
- Connection / Socket : JIS, DIN, ASTM D2466 SCH40
- Threaded : Rc, Rp, NPT

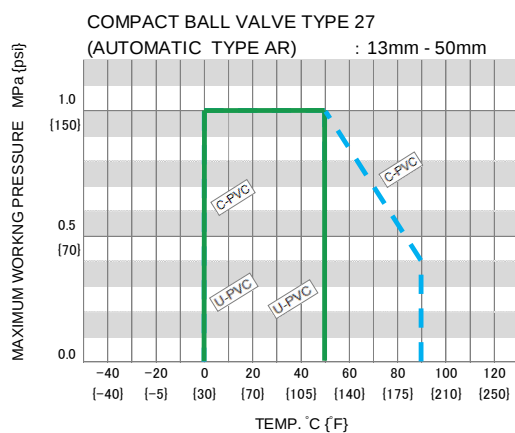
Body Material	Fluid Temperature °C {°F}	Maximum working pressure (Normal temperature) MPa {psi}	Connection method	
			Socket	Threaded
U-PVC	0 ~ 50 { 30~120 }	1.0 { 150 }	○	○
C-PVC	0 ~ 90 { 30~195 }	1.0 { 150 }	○	○

Note:

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

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

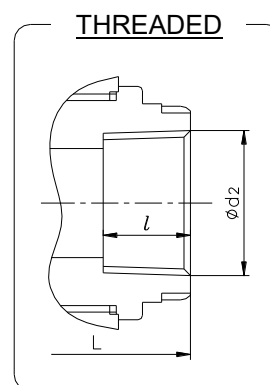
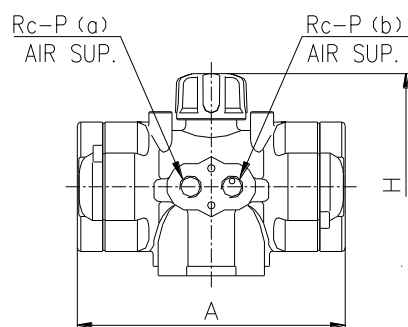
Working pressure vs. Temperature



Product dimension

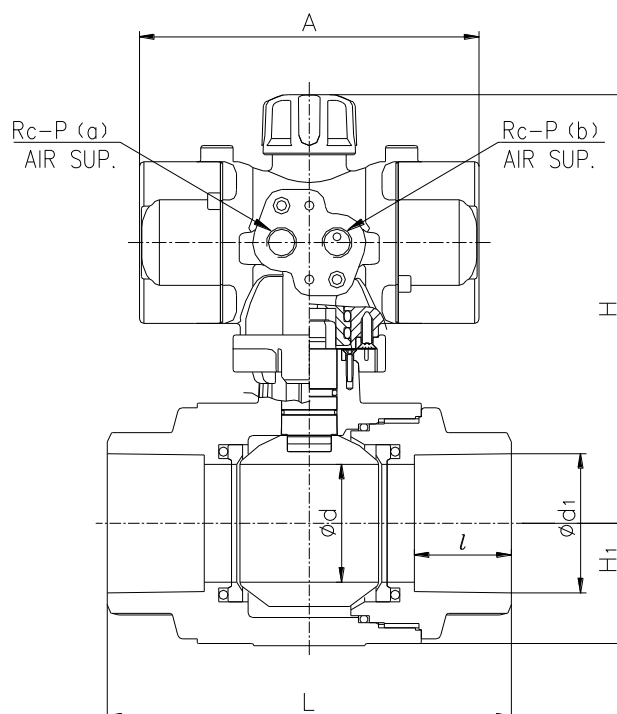
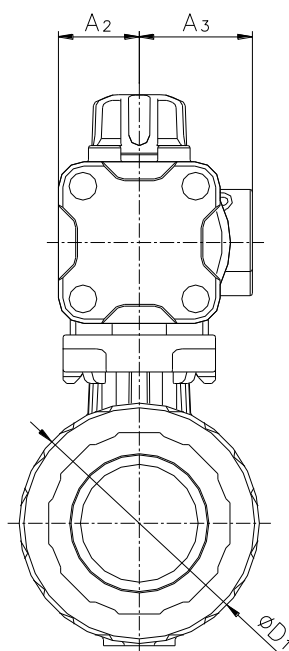
[DOUBLE ACTING]

ACTUATOR TYPE AR032, AR040



SOCKET

ACTUATOR TYPE AR050



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

■JIS, DIN (Unit: mm)

mm	inch	d	D ₁	H	H ₁	A	A ₂	A ₃	P
13	3/8	15	40	108.5	20.5	94	22.5	32	1/8
15	1/2	15	40	108.5	20.5	94	22.5	32	1/8
20	3/4	20	49	115.5	25.5	94	22.5	32	1/8
25	1	25	58	122.5	30	94	22.5	32	1/8
32	1 1/4	31	68	143	35	116	28	38	1/8
40	1 1/2	40	82.5	174	42	147	35	49	1/4
50	2	51	104	185.5	53	147	35	49	1/4

ACTUATOR SELECTION CHART *

mm	inch	ACTUATOR TYPE
13	3/8	AR032DA10NN
15	1/2	AR032DA10NN
20	3/4	AR032DA11NN
25	1	AR032DA11NN
32	1 1/4	AR040DA20NN
40	1 1/2	AR050DA30NN
50	2	AR050DA30NN

■JIS (Unit: mm)

mm	inch	SOCKET				THREADED		
		d ₁	l	1/T	L	d ₂	l	L
13	3/8	18.20	17	1/30	69	-	-	-
15	1/2	22.11	20	1/34	79	Rc 1/2	15	69
20	3/4	26.13	24	1/34	94	Rc 3/4	17	94
25	1	32.16	27	1/34	108	Rc 1	20	108
32	1 1/4	38.19	30	1/34	121	Rc 1 1/4	22	121
40	1 1/2	48.21	37	1/37	146	Rc 1 1/2	25	146
50	2	60.25	42	1/37	175	Rc 2	28	175

■DIN (Unit: mm)

mm	inch	SOCKET			THREADED		
		d ₁	l	L	d ₂	l	L
13	3/8	16	14	69	Rp 3/8	15	69
15	1/2	20	16	79	Rp 1/2	15	79
20	3/4	25	19	94	Rp 3/4	17	94
25	1	32	22	108	Rp 1	20	108
32	1 1/4	40	26	121	Rp 1 1/4	22	121
40	1 1/2	50	31	146	Rp 1 1/2	25	146
50	2	63	38	175	Rp 2	28	175

■ANSI (Unit: inch)

mm	inch	d	D ₁	H	H ₁	A	A ₂	A ₃	P
3/8	13	0.59	1.57	4.27	0.81	3.70	0.89	1.26	1/8
1/2	15	0.59	1.57	4.27	0.81	3.70	0.89	1.26	1/8
3/4	20	0.79	1.93	4.55	1.00	3.70	0.89	1.26	1/8
1	25	0.98	2.28	4.82	1.18	3.70	0.89	1.26	1/8
1 1/4	32	1.22	2.68	5.63	1.38	4.57	1.10	1.50	1/8
1 1/2	40	1.57	3.25	6.85	1.65	5.79	1.38	1.93	1/4
2	50	2.01	4.09	7.30	2.09	5.79	1.38	1.93	1/4

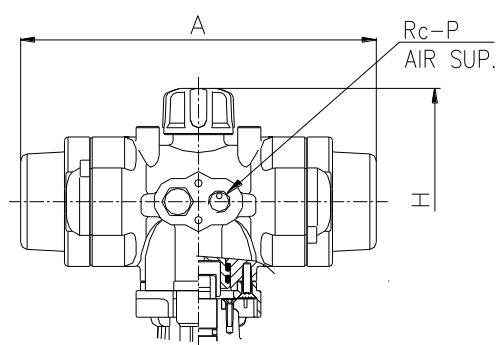
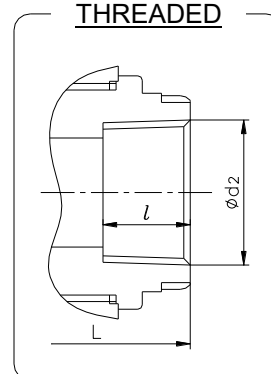
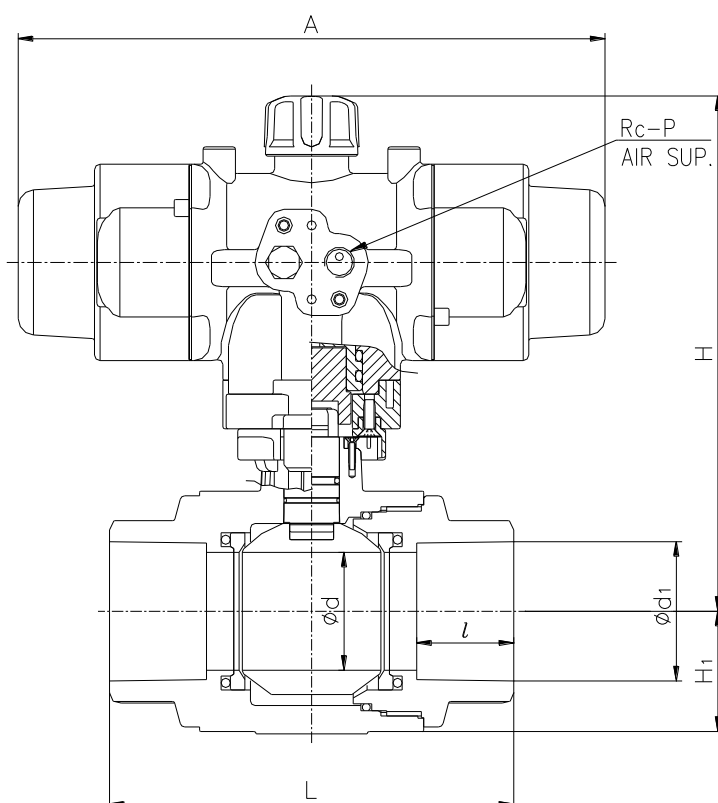
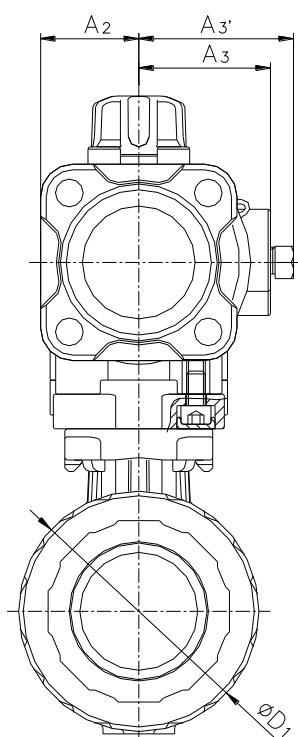
■ANSI (Unit: inch)

mm	inch	SOCKET (IPS)				THREADED		
		ASTM SCH40			L	d ₂	l	L
		d ₁	d ₁ '	l				
3/8	13	0.687	0.671	0.59	2.72	1/2 - 14NPT	0.59	2.72
1/2	15	0.848	0.836	0.69	3.11	1/2 - 14NPT	0.59	3.11
3/4	20	1.058	1.046	0.72	3.70	3/4 - 14NPT	0.67	3.70
1	25	1.325	1.310	0.87	4.25	1 - 11 1/2NPT	0.79	4.25
1 1/4	32	1.670	1.655	0.94	4.76	1 1/4 - 11 1/2NPT	0.87	4.76
1 1/2	40	1.912	1.894	1.09	5.75	1 1/2 - 11 1/2NPT	0.98	5.75
2	50	2.387	2.369	1.16	6.86	2 - 11 1/2NPT	1.10	6.86

* For detailed specifications, see page 7.

DATASHEET

[AIR TO OPEN]
[AIR TO CLOSE]

ACTUATOR TYPE (AR040)THREADEDFLANGEDACTUATOR TYPE (AR050, AR063)

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

DATASHEET

■ JIS, DIN (Unit: mm)

mm	inch	d	D ₁	H	H ₁	A	A ₂	A ₃	A ₃ '	P
13	3/8	15	40	123.5	20.5	154	28	38	46	1/8
15	1/2	15	40	123.5	20.5	154	28	38	46	1/8
20	3/4	20	49	130.5	25.5	154	28	38	46	1/8
25	1	25	58	137.5	30	154	28	38	46	1/8
32	1 1/4	31	68	169	35	194	35	49	59	1/4
40	1 1/2	40	82.5	211.5	42	254	42.5	57	67	1/4
50	2	51	104	223.0	53	254	42.5	57	67	1/4

ACTUATOR SELECTION CHART *

mm	inch	ACTUATOR TYPE	
		AIR TO OPEN	AIR TO CLOSE
13	3/8	AR040NC20NN	AR040NO20NN
15	1/2	AR040NC20NN	AR040NO20NN
20	3/4	AR040NC20NN	AR040NO20NN
25	1	AR040NC20NN	AR040NO20NN
32	1 1/4	AR050NC30NN	AR050NO30NN
40	1 1/2	AR063NC40CN	AR063NO40CN
50	2	AR063NC40CN	AR063NO40CN

■ JIS (Unit: mm)

mm	inch	SOCKET				THREADED		
		d ₁	l	1/T	L	d ₂	l	L
13	3/8	18.20	17	1/30	69	-	-	-
15	1/2	22.11	20	1/34	79	Rc 1/2	15	69
20	3/4	26.13	24	1/34	94	Rc 3/4	17	94
25	1	32.16	27	1/34	108	Rc 1	20	108
32	1 1/4	38.19	30	1/34	121	Rc 1 1/4	22	121
40	1 1/2	48.21	37	1/37	146	Rc 1 1/2	25	146
50	2	60.25	42	1/37	175	Rc 2	28	175

■ DIN (Unit: mm)

mm	inch	SOCKET			THREADED		
		d ₁	l	L	d ₂	l	L
13	3/8	16	14	69	Rp 3/8	15	69
15	1/2	20	16	79	Rp 1/2	15	79
20	3/4	25	19	94	Rp 3/4	17	94
25	1	32	22	108	Rp 1	20	108
32	1 1/4	40	26	121	Rp 1 1/4	22	121
40	1 1/2	50	31	146	Rp 1 1/2	25	146
50	2	63	38	175	Rp 2	28	175

■ ANSI (Unit: inch)

mm	inch	d	D ₁	H	H ₁	A	A ₂	A ₃	A ₃ '	P
3/8	13	0.59	1.57	4.86	0.81	6.06	1.10	1.50	1.81	1/8
1/2	15	0.59	1.57	4.86	0.81	6.06	1.10	1.50	1.81	1/8
3/4	20	0.79	1.93	5.14	1.00	6.06	1.10	1.50	1.81	1/8
1	25	0.98	2.28	5.41	1.18	6.06	1.10	1.50	1.81	1/8
1 1/4	32	1.22	2.68	6.65	1.38	7.64	1.38	1.93	2.32	1/4
1 1/2	40	1.57	3.25	8.33	1.65	10.00	1.67	2.24	2.64	1/4
2	50	2.01	4.09	8.78	2.09	10.00	1.67	2.24	2.64	1/4

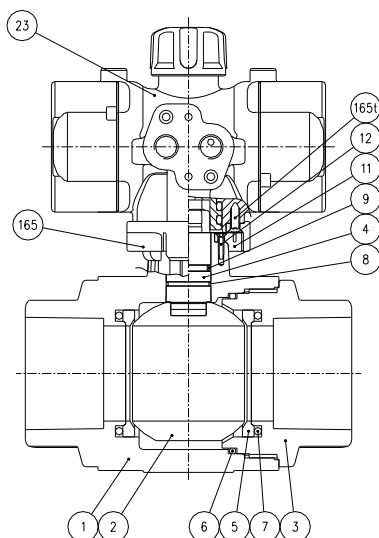
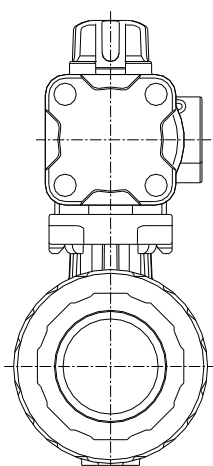
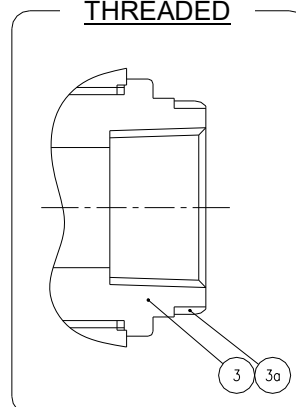
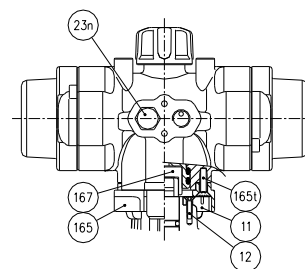
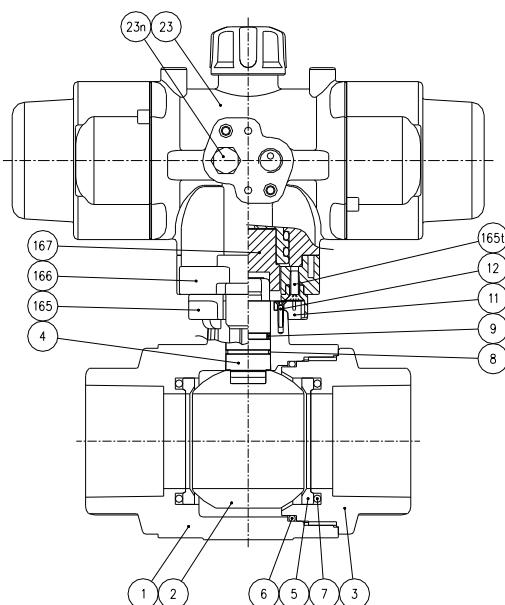
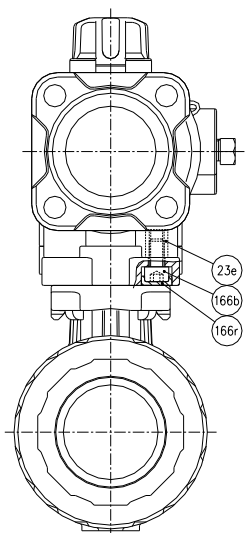
■ ANSI (Unit: inch)

NPT (Inch only)		SOCKET (IPS)				THREADED		
mm	inch	ASTM SCH40			L	d ₂	l	L
		d ₁	d ₁ '	l				
3/8	13	0.687	0.671	0.59	2.72	1/2 - 14NPT	0.59	2.72
1/2	15	0.848	0.836	0.69	3.11	1/2 - 14NPT	0.59	3.11
3/4	20	1.058	1.046	0.72	3.70	3/4 - 14NPT	0.67	3.70
1	25	1.325	1.310	0.87	4.25	1 - 11 1/2NPT	0.79	4.25
1 1/4	32	1.670	1.655	0.94	4.76	1 1/4 - 11 1/2NPT	0.87	4.76
1 1/2	40	1.912	1.894	1.09	5.75	1 1/2 - 11 1/2NPT	0.98	5.75
2	50	2.387	2.369	1.16	6.86	2 - 11 1/2NPT	1.10	6.86

* For detailed specifications, see page 7.

Parts list

[DOUBLE ACTING]

SOCKETTHREADED[AIR TO OPEN]
[AIR TO CLOSE]SOCKET

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

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	
ANGLE ADJUSTMENT	No angle adjustment is available.				
OPERATING PRESSURE	0.4-0.7				MPa
AIR CONSUMPTION	0.3	0.6	1.3	2.4	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	
ANGLE ADJUSTMENT		No angle adjustment is available.			
OPERATING PRESSURE		0.4-0.7			MPa
AIR CONSUMPTION		0.2	0.4	0.8	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	• WATER PROOF, EXPLOSION PROOF • POWER SOURCE AC100V, AC110V, AC200V, AC220V, DC24V
FILTER REGULATOR	KONAN	
SPEED CONTROLLER	SMC	• 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	• WATER PROOF
POSITIONER	YTC	• 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	

Product weight

TYPE 27 Type AR (Standard)

UNIT : kg

mm	inch	DOUBLE ACTING				AIR TO OPEN / AIR TO CLOSE			
		SOCKET		THREADED		SOCKET		THREADED	
		U-PVC	C-PVC	U-PVC	C-PVC	U-PVC	C-PVC	U-PVC	C-PVC
13	3/8	0.4	0.4	-	-	0.7	0.7	-	-
15	1/2	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.7
20	3/4	0.5	0.5	0.5	0.5	0.8	0.8	0.8	0.8
25	1	0.5	0.6	0.6	0.6	0.8	0.9	0.9	0.9
32	1 1/4	0.9	0.9	0.9	0.9	1.5	1.6	1.5	1.6
40	1 1/2	1.6	1.6	1.6	1.6	2.8	2.8	2.8	2.9
50	2	2.0	2.1	2.1	2.2	3.2	3.3	3.3	3.4

Product model code list

ACTUATION	TYPE	ACTUATOR TYPE	ACTION	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	**	L	*	*	*	*	***	***
:	:	:	:	:	:	:	:	:
A AUTOMATIC VALVE	7B TYPE 27	L TYPE AR	F DOUBLE ACTING	U U-PVC	E EPDM	S SOCKET	J JIS	013 13mm
			G AIR TO OPEN	C C-PVC	V FKM	N THREADED	D DIN	5 5mm
			S AIR TO CLOSE				A ANSI	050 50mm

Installation, Operation and Maintenance Manual

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