

# DIAPHRAGM VALVE TYPE AI / TRUE UNION DIAPHRAGM VALVE TYPE AI

- NEAR-LINEAR FLOW CHARACTERISTICS
- MAXIMUM WORKING PRESSURE OF 1.0 MPa. EXCELLENT OPEN/CLOSE DURABILITY TO WITHSTAND MORE THAN 500,000 CYCLES OF OPENING AND CLOSING.
- FOR THE AIR TO OPEN TYPE, TWO SPEC TYPES (1.0 MPa AND 0.7 MPa) ARE AVAILABLE.
- ALL-PLASTIC DESIGN ENSURES EXCELLENT CORROSION RESISTANCE.

## DIAPHRAGM VALVE (TYPE AI) BASIC SPECIFICATIONS

VALVE TYPE — DIAPHRAGM VALVE (TYPE AI)  
 SIZE — 15 mm—50 mm (1/2 inch—2 inch)  
 BODY MATERIAL — U-PVC C-PVC PP PVDF  
 SEAL MATERIAL / DIAPHRAGM — EPDM PTFE FKM etc.  
 CONNECTION / FLANGED — JIS10K, DIN PN10, ANSI CLASS150

## TRUE UNION DIAPHRAGM VALVE (TYPE AI) BASIC SPECIFICATIONS

VALVE TYPE — TRUE UNION DIAPHRAGM VALVE (TYPE AI)  
 SIZE — 15 mm—50 mm (1/2 inch—2 inch)  
 BODY MATERIAL — U-PVC C-PVC PP PVDF  
 SEAL MATERIAL / DIAPHRAGM — EPDM PTFE  
 O-RING — EPDM FKM  
 CONNECTION / SOCKET — JIS, DIN, ANSI  
 THREADED — Rc, Rp, NPT

	FLUID TEMPERATURE	MAXIMUM WORKING PRESSURE (NORMAL TEMPERATURE) (MPa)(kg/cm <sup>2</sup> )	CONNECTION METHOD		
			FLANGED	SOCKET	THREADED
U-PVC	0°C ~ 60°C	1.0 {10.2}	○	○	○
C-PVC	0°C ~ 90°C	1.0 {10.2}	○	○	○
PP	-20°C ~ 90°C	1.0 {10.2}	○	○	○
PVDF	-20°C ~ 120°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.  
 \* Concerning the allowable pressure for each temperature, material and actuator type, see the technical documents at the end of this catalog.  
 \* The diaphragm may become loose due to temperature changes during long storage, operation stop or while in use. Check the conditions and then retighten the bolts and nuts between the bonnet and the body to the "bonnet tightening torque". (Failure to do so may cause fluid leakage.)

**AUTOMATIC**



DIAPHRAGM VALVE (TYPE AI)



TRUE UNION DIAPHRAGM VALVE (TYPE AI)

COMPATIBLE ACTUATOR **AUTOMATIC**

**PNEUMATIC TYPE AI**

For detailed specifications, see P.120

## PRODUCT MODEL CODE LIST — DIAPHRAGM VALVE (TYPE AI)

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	DA	I	*	*	*	F	*	***
A	DA	I	F DOUBLE ACTING (1.0 MPa TYPE) G AIR TO OPEN (0.7 MPa TYPE) H AIR TO OPEN (1.0 MPa TYPE) S AIR TO CLOSE (1.0 MPa TYPE)	U U-PVC C C-PVC P PP F PVDF	E EPDM T PTFE	F FLANGED	1 JIS10K D DIN A ANSI	015 15mm 050 50mm

## PRODUCT MODEL CODE LIST — TRUE UNION DIAPHRAGM VALVE (TYPE AI)

ACTUATION	TYPE	ACTUATOR TYPE	ACTION / POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
A	TA	I	*	*	*	*	*	***
A	TA	I	F DOUBLE ACTING (1.0 MPa TYPE) G AIR TO OPEN (0.7 MPa TYPE) H AIR TO OPEN (1.0 MPa TYPE) S AIR TO CLOSE (1.0 MPa TYPE)	U U-PVC C C-PVC P PP F PVDF	E EPDM 1 PTFE+EPDM 2 PTFE+FKM	S SOCKET N THREADED P SPIGOT	J JIS10K D DIN A ANSI	015 15mm 050 50mm

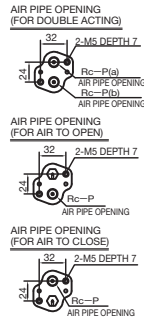
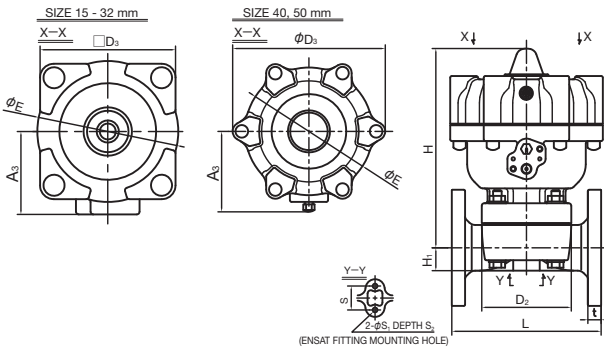
AUTOMATIC PNEUMATIC

TYPE AI

DOUBLE ACTING  
AIR TO OPEN  
AIR TO CLOSE

# DIAPHRAGM VALVE (TYPE AI)

TYPE—ADA1  
CONNECTION / FLANGED—JIS, DIN, ANSI



## ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE				
	DOUBLE ACTING	AIR TO OPEN (0.7 MPa TYPE)	AIR TO OPEN (1.0 MPa TYPE)	AIR TO OPEN (1.0 MPa TYPE)	AIR TO CLOSE
		DIAPHRAGM COMMON	PTFE DIAPHRAGM	EPDM DIAPHRAGM	
15mm ( 1/2inch)	AI-1DA	AI-1AO	AI-1AO-P	AI-1AO-E	AI-1AS
20mm ( 3/4inch)	AI-2DA	AI-2AO	AI-2AO-P	AI-2AO-E	AI-2AS
25mm ( 1inch)					
32mm (1 1/4inch)	AI-3DA	AI-3AO	AI-3AO-P	AI-3AO-E	AI-3AS
40mm (1 1/2inch)	AI-4DA	AI-4AO	AI-4AO-P	AI-4AO-E	AI-4AS
50mm ( 2inch)	AI-5DA	AI-5AO	AI-5AO-P	AI-5AO-E	AI-5AS

For detailed specifications, see P.120

JIS, DIN (Unit: mm)

mm	D <sub>2</sub>	D <sub>3</sub>	E	H		A <sub>3</sub>		S	S <sub>1</sub>	S <sub>2</sub>	P	JIS10K					DIN PN10							
				AIR TO OPEN (0.7MPa) AIR TO CLOSE	AIR TO OPEN (1.0MPa)	DOUBLE ACTING	AIR TO OPEN AIR TO CLOSE					D	C	n	h	L	t	D	C	n	h	t	L	
15	54×66	91	94	145	145	19.5	55	67	25	7	13	1/4	95	70	4	15	110	12	95	65	4	14	12	130
20	60×74	91	94	153	153	17.5	55	67	25	7	13	1/4	100	75	4	15	120	13	105	75	4	14	13	150
25	67×80	100	102	161	161	18.5	60	72	25	7	13	1/4	125	90	4	19	130	13	115	85	4	14	13	160
32	67×80	100	102	165	165	22.5	60	72	25	7	13	1/4	135	100	4	19	142	16	140	100	4	18	16	180
40	108×108	184	154	238	238	27.5	85	97	45	9	15	1/4	140	105	4	19	180	16	150	110	4	18	20	200
50	123×123	184	154	254	278	36	85	97	45	9	15	1/4	155	120	4	19	210	20	165	125	4	18	22	230

ANSI (Unit: inch)

inch	mm	D <sub>2</sub>	D <sub>3</sub>	E	H		A <sub>3</sub>		S	S <sub>1</sub>	S <sub>2</sub>	P	ANSI				
					AIR TO OPEN (0.7MPa) AIR TO CLOSE	AIR TO OPEN (1.0MPa)	DOUBLE ACTING	AIR TO OPEN AIR TO CLOSE					GRINNELL STANDARD	AV STANDARD	U-PVC C-PVC	PP PVDF	
1/2	15	2.13×2.60	3.58	3.70	5.71	5.71	0.77	2.17	2.64	0.98	0.28	0.51	1/4	4.25	4.33	0.43	
3/4	20	2.36×2.91	3.58	3.70	6.02	6.02	0.69	2.17	2.64	0.98	0.28	0.51	1/4	5.88	4.72	0.51	
1	25	2.64×3.15	3.94	4.02	6.34	6.34	0.73	2.36	2.83	0.98	0.28	0.51	1/4	5.88	5.12	0.59	
1 1/4	32	2.64×3.15	3.94	4.02	6.50	6.50	0.89	2.36	2.83	0.98	0.28	0.51	1/4	6.38	-	0.63	
1 1/2	40	4.25×4.25	7.24	6.06	9.37	9.37	1.08	3.35	3.82	1.77	0.35	0.59	1/4	6.94	7.09	0.63	
2	50	4.84×4.84	7.24	6.06	10.00	10.94	1.42	3.35	3.82	1.77	0.35	0.59	1/4	7.94	8.27	0.79	

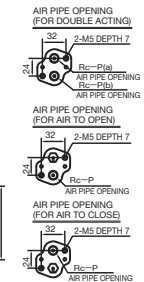
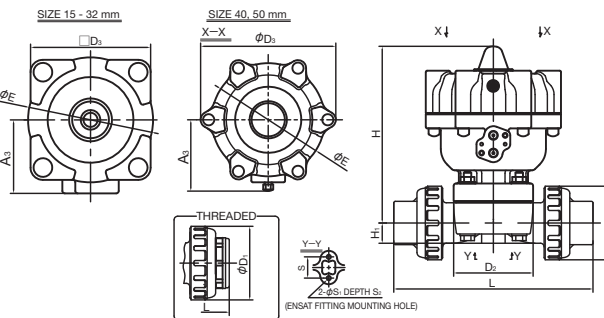
AUTOMATIC PNEUMATIC

TYPE AI

DOUBLE ACTING  
AIR TO OPEN  
AIR TO CLOSE

# TRUE UNION DIAPHRAGM VALVE (TYPE AI)

TYPE—ATAI  
CONNECTION / SOCKET—JIS, DIN, ANSI THREADED—Rc, Rp, NPT



## ACTUATOR SELECTION CHART

SIZE	ACTUATOR TYPE				
	DOUBLE ACTING	AIR TO OPEN (0.7 MPa TYPE)	AIR TO OPEN (1.0 MPa TYPE)	AIR TO OPEN (1.0 MPa TYPE)	AIR TO CLOSE
		DIAPHRAGM COMMON	PTFE DIAPHRAGM	EPDM DIAPHRAGM	
15mm ( 1/2inch)	AI-1DA	AI-1AO	AI-1AO-P	AI-1AO-E	AI-1AS
20mm ( 3/4inch)	AI-2DA	AI-2AO	AI-2AO-P	AI-2AO-E	AI-2AS
25mm ( 1inch)					
32mm (1 1/4inch)	AI-3DA	AI-3AO	AI-3AO-P	AI-3AO-E	AI-3AS
40mm (1 1/2inch)	AI-4DA	AI-4AO	AI-4AO-P	AI-4AO-E	AI-4AS
50mm ( 2inch)	AI-5DA	AI-5AO	AI-5AO-P	AI-5AO-E	AI-5AS

For detailed specifications, see P.120

JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	E	H		A <sub>3</sub>		S	S <sub>1</sub>	S <sub>2</sub>	P	JIS		DIN												
					AIR TO OPEN (0.7MPa) AIR TO CLOSE	AIR TO OPEN (1.0MPa)	DOUBLE ACTING	AIR TO OPEN AIR TO CLOSE					SOCKET	THREADED	SOCKET	THREADED	SPIGOT	SOCKET	THREADED	SOCKET	THREADED	SOCKET	THREADED				
15	48	54×66	91	94	145	145	19.5	55	67	25	7	13	1/4	134	128	128	128	125	128	148	148	148	148	172	172	2.5	1.9
20	60	60×74	91	94	153	153	17.5	55	67	25	7	13	1/4	156	148	148	148	141	148	147	141	148	148	172	172	2.7	1.9
25	70	67×80	100	102	161	161	18.5	60	72	25	7	13	1/4	186	172	172	172	164	172	172	164	172	172	195	195	3.0	2.4
32	82	67×80	100	102	165	165	22.5	60	72	25	7	13	1/4	200	188	188	188	177	188	188	177	188	188	212	212	3.7	2.4
40	100	108×108	184	154	238	238	27.5	85	97	45	9	15	1/4	271	245	245	246	231	245	246	231	245	245	276	276	4.6	3.0
50	106	123×123	184	154	254	278	36	85	97	45	9	15	1/4	303	281	278	294	274	281	278	274	281	278	308	307	5.8	3.0

ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	E	H		A <sub>3</sub>		S	S <sub>1</sub>	S <sub>2</sub>	P	ANSI			
						AIR TO OPEN (0.7MPa) AIR TO CLOSE	AIR TO OPEN (1.0MPa)	DOUBLE ACTING	AIR TO OPEN AIR TO CLOSE					SOCKET	THREADED	SOCKET	THREADED
1/2	15	1.89	2.13×2.60	3.58	3.70	5.71	0.77	2.17	2.64	0.98	0.28	0.51	1/4	5.47	5.43	5.04	5.04
3/4	20	2.36	2.36×2.91	3.58	3.70	6.02	0.69	2.17	2.64	0.98	0.28	0.51	1/4	6.18	6.09	5.83	5.83
1	25	2.76	2.64×3.15	3.94	4.02	6.34	0.73	2.36	2.83	0.98	0.28	0.51	1/4	7.32	7.24	6.77	6.77
1 1/4	32	3.23	2.64×3.15	3.94	4.02	6.50	0.89	2.36	2.83	0.98	0.28	0.51	1/4	7.95	7.80	7.40	7.40
1 1/2	40	3.94	4.25×4.25	7.24	6.06	9.37	1.08	3.35	3.82	1.77	0.35	0.59	1/4	10.47	10.28	9.65	9.65
2	50	4.17	4.84×4.84	7.24	6.06	10.00	1.42	3.35	3.82	1.77	0.35	0.59	1/4	11.54	11.54	11.06	10.95