

# Diaphragm Valve Type AV (Automatic Type)

## Features

- Near-Linear flow characteristics
- A new type of rubber having a high reliability in leakage prevention is used for the diaphragm and cushion.
- The original design achieves high sealing performance with low torque.
- Bayonet structure allowing quick diaphragm replacement
- Equipped with a bottom stand allowing easy and secure replacement.



## Basic specifications

- Valve Type : Diaphragm Valve Type AV
- Size : 65 mm - 100 mm ( 2 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 PP0210B67272)  
PVDF (Conforming to ASTM D3222 Cell Classification Type II)
- Seal Material / Diaphragm : EPDM, PTFE, FKM etc.
- Connection / Flanged : JIS B2220 10K, DIN/EN1092-1 PN10, ANSI B16.5 CLASS150

Body Material	FLUID TEMPERATURE °C {°F}	Max. working pressure (Normal temperature) MPa {psi }	Connection method		
			Flanged	Socket	Threaded
U-PVC	0 ~ 60 { 30~140 }	1.0 { 150 }	○	○	○
C-PVC	0 ~ 90 { 30~195 }	1.0 { 150 }	○	○	○
PP	-20 ~ 90 { -5~195 }	1.0 { 150 }	○	○	○
PVDF	-40 ~ 120 { -40~250 }	1.0 { 150 }	○	○	○

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.

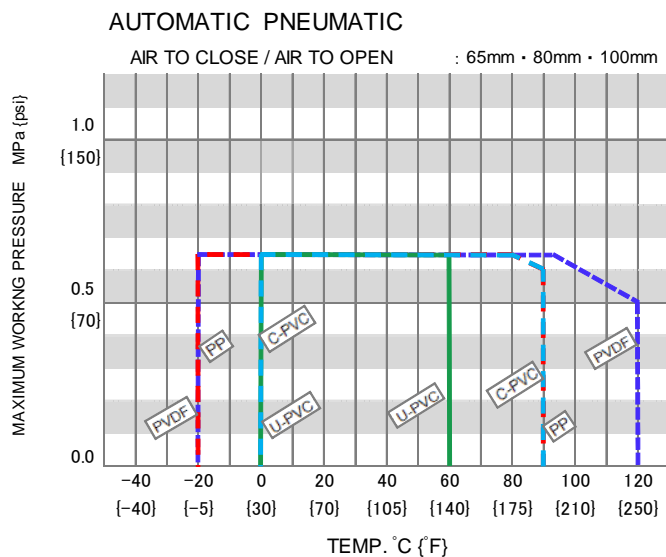
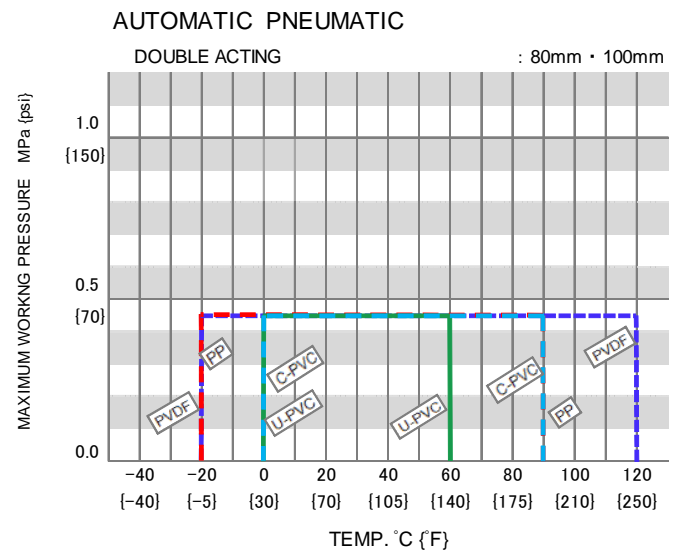
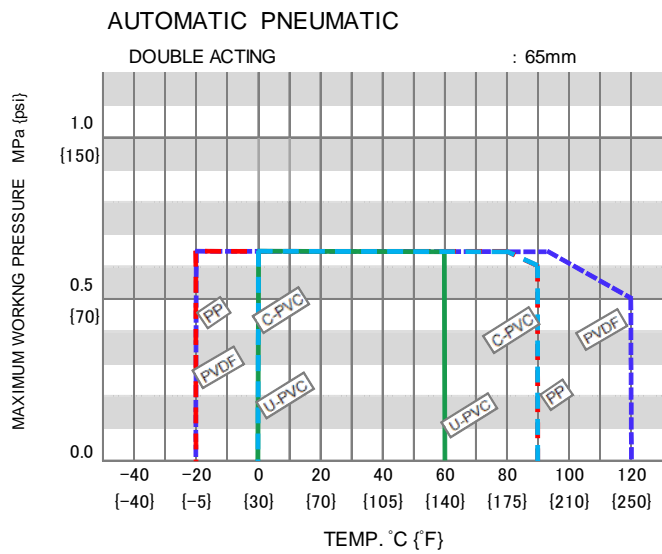
\* Concerning the allowable pressure for each temperature, material and actuator type, see the technical documents at the next page of this sheet.

\* 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 nut between the bonnet and the body to the "bonnet tightening torque". (Failure to do so may cause fluid leakage.)

## Certificate / Approval

**PED** "For details of applicable products, please consult us."

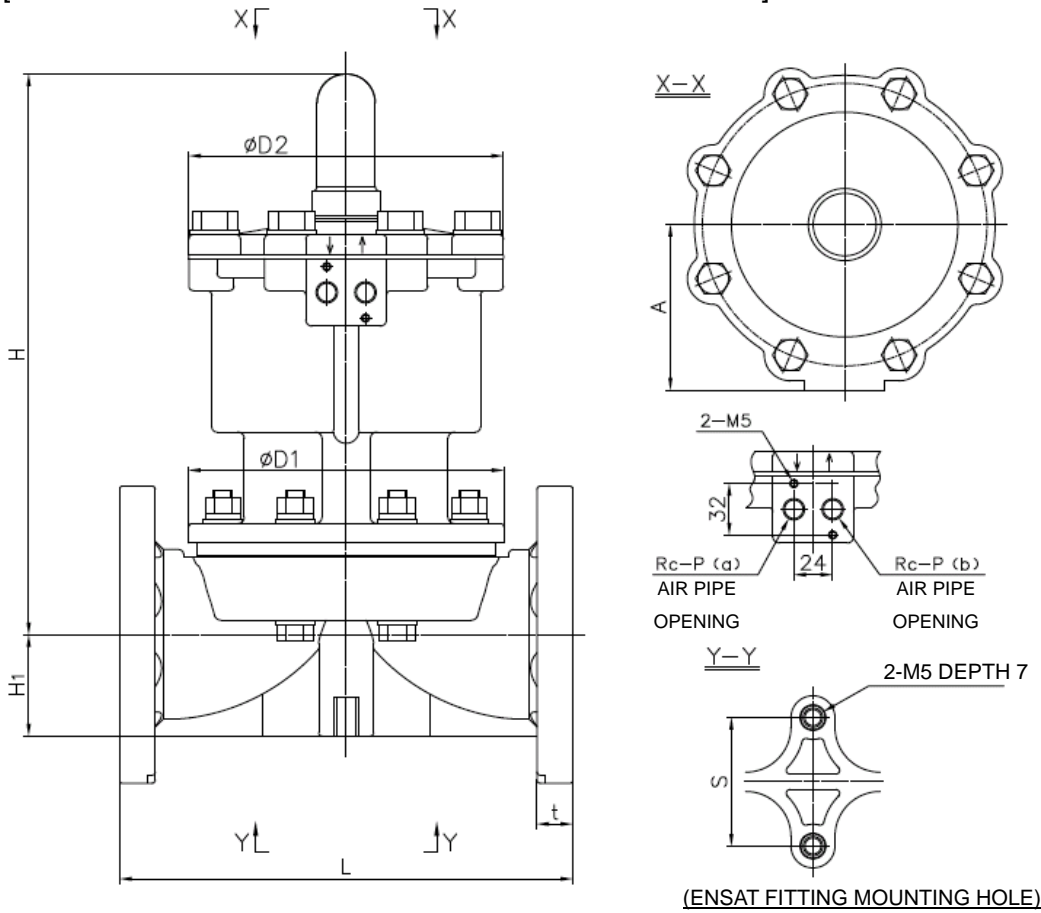
## Working pressure vs. Temperature



Note : Make sure that the temperature and pressure are within the working range during operation.  
(If the tolerance range is exceeded during use, the valve may be damaged.)

Product dimension

[AUTOMATIC PNEUMATIC TYPE AV DOUBLE ACTING]



(ENSAT FITTING MOUNTING HOLE)

■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	D <sub>2</sub>	A	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	P	JIS10K			DIN PN10		
										L	t		L	t	
											U-PVC C-PVC	PP PVDF		U-PVC C-PVC	PP PVDF
65	171	208	103	323	61	85	M8	15	1/4	250	22	23	290	22	22
80	195	208	103	354	63	100	M12	22	1/4	280	22	23	310	24	24
100	235	250	120	417	78	120	M12	22	1/4	340	22	24	350	24	26

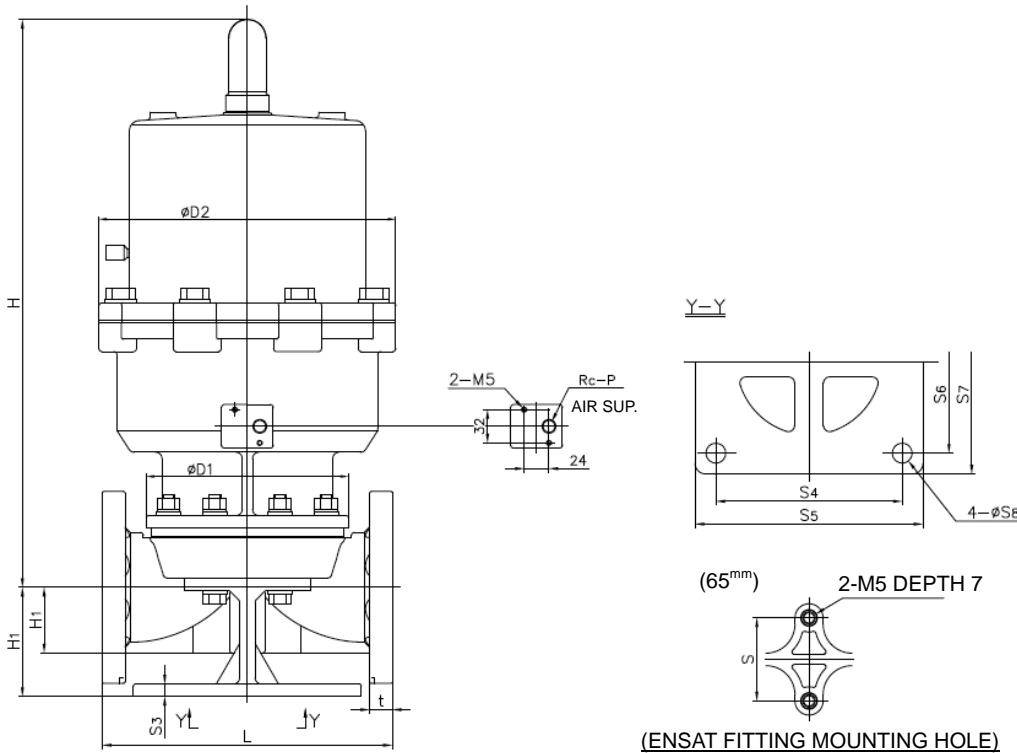
■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	D <sub>2</sub>	A	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	P	ANSI CLASS150			
											L		t	
											GRINNELL STANDARD	AV STANDARD	U-PVC C-PVC	PP PVDF
2 1/2	65	6.73	8.19	4.06	12.72	2.40	3.35	M8	0.59	1/4	-	9.84	0.87	0.91
3	80	7.68	8.19	4.06	13.94	2.48	3.94	M12	0.87	1/4	10.37	11.02	0.87	0.91
4	100	9.25	9.84	4.72	16.42	3.07	4.72	M12	0.87	1/4	12.93	13.39	0.87	0.94

ACTUATOR SELECTION CHART

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

[ AUTOMATIC PNEUMATIC TYPE AV AIR TO OPEN ]



■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	D <sub>2</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	P	JIS10K			DIN PN10		
															L	t		L	t	
																U-PVC C-PVC	PP PVDF		U-PVC C-PVC	PP PVDF
65	171	280	473	61	85	M8	15	-	-	-	-	-	-	1/4	250	22	23	290	22	22
80	195	305	550	109	-	-	-	12	180	220	175	215	19	1/4	280	22	23	310	24	24
100	235	385	601	119	-	-	-	15	230	270	220	260	19	1/4	340	22	24	350	24	26

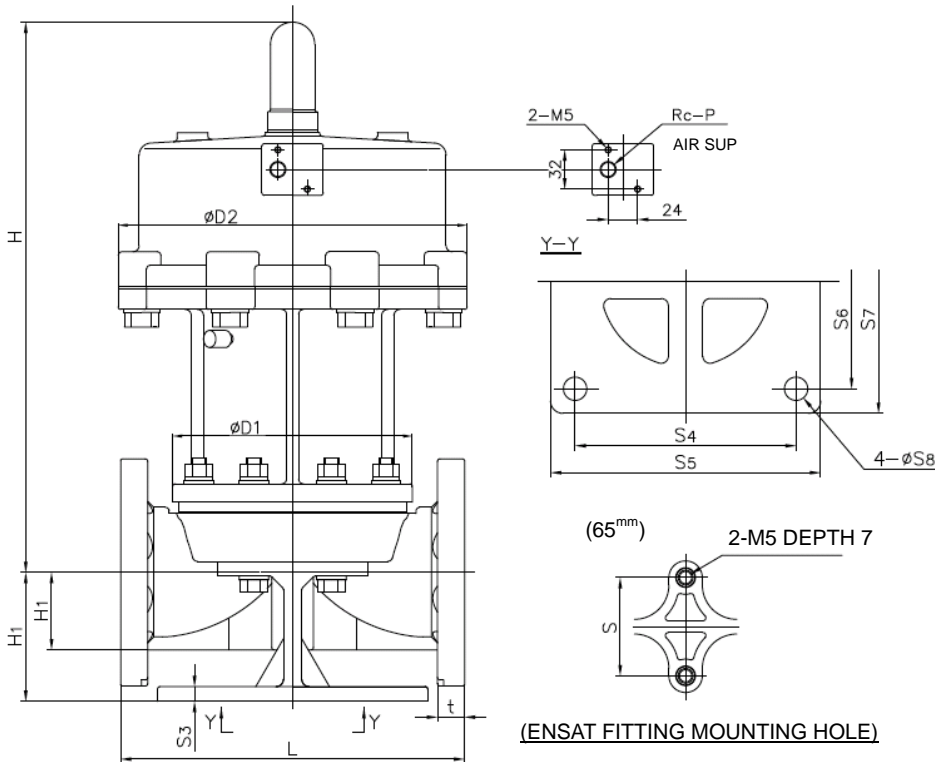
■ ANSI (Unit: inch)

inch	mm	D <sub>1</sub>	D <sub>2</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	P	ANSI CLASS150			
																L		t	
																GRINNELL STANDARD	AV STANDARD	U-PVC C-PVC	PP PVDF
2 1/2	65	6.73	11.02	18.62	2.40	3.35	M8	0.59	-	-	-	-	-	-	1/4	-	9.84	0.87	0.91
3	80	7.68	12.01	21.65	4.29	-	-	-	0.47	7.09	8.66	6.89	8.46	0.75	1/4	10.37	11.02	0.87	0.91
4	100	9.25	15.16	23.66	4.69	-	-	-	0.59	9.06	10.63	8.66	10.24	0.75	1/4	12.93	13.39	0.87	0.94

ACTUATOR SELECTION CHART

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

[ AUTOMATIC PNEUMATIC TYPE AV AIR TO CLOSE ]



■ JIS, DIN (Unit: mm)

mm	D <sub>1</sub>	D <sub>2</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	P	L	JIS10K		DIN PN10		
																t		L	t	
																U-PVC C-PVC	PP PVDF		U-PVC C-PVC	PP PVDF
65	171	280	423	61	85	M8	15	-	-	-	-	-	-	1/4	250	22	23	290	22	22
80	195	305	455	109	-	-	-	12	180	220	175	215	19	1/4	280	22	23	310	24	24
100	235	385	582	119	-	-	-	15	230	270	220	260	19	1/4	340	22	24	350	24	26

■ ANSI (Unit: inch)

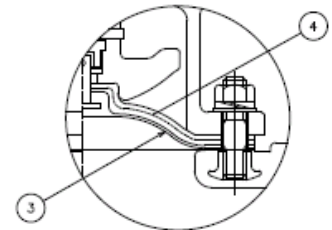
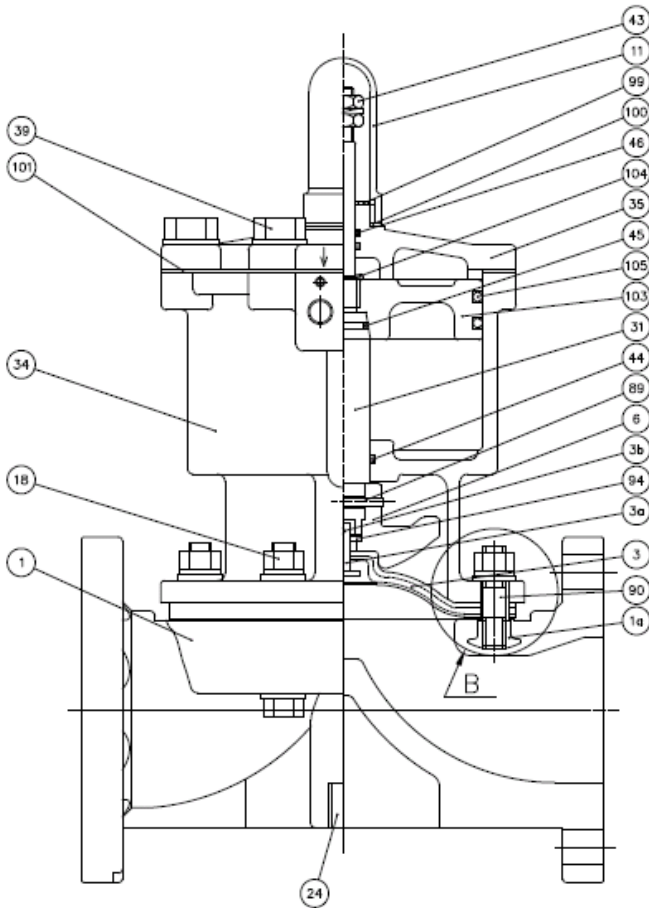
inch	mm	D <sub>1</sub>	D <sub>2</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	P	ANSI CLASS150			
																L		t	
																GRINNELL STANDARD	AV STANDARD	U-PVC C-PVC	PP PVDF
2 1/2	65	6.73	11.02	16.65	2.40	3.35	M8	0.59	-	-	-	-	-	-	1/4	-	9.84	0.87	0.91
3	80	7.68	12.01	17.91	4.29	-	-	-	0.47	7.09	8.66	6.89	8.46	0.75	1/4	10.37	11.02	0.87	0.91
4	100	9.25	15.16	22.91	4.69	-	-	-	0.59	9.06	10.63	8.66	10.24	0.75	1/4	12.93	13.39	0.87	0.94

ACTUATOR SELECTION CHART

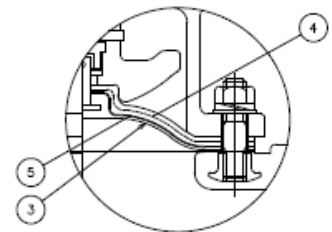
SIZE	ACTUATOR TYPE
65mm( 2 1/2inch)	AV-1AS
80mm( 3inch)	AV-2AS
100mm( 4inch)	AV-3AS

Parts list

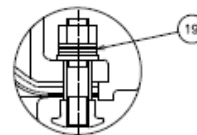
[ AUTOMATIC PNEUMATIC TYPE AV DOUBLE ACTING ]



In case material of Diaphragm is PTFE



In case material of diaphragm is PTFE with cushion cover.



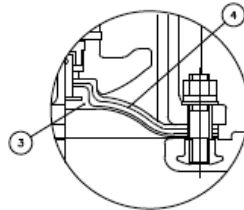
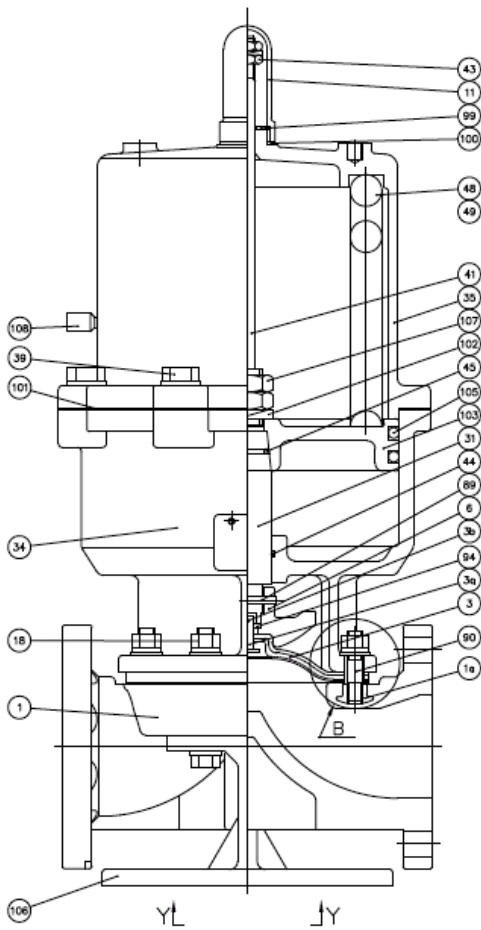
"B" Part

In Case of PVDF Body

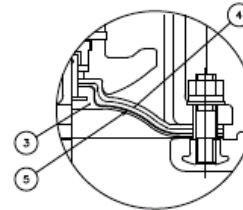
PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL
1 BODY	1	PVC, C-PVC, PP, PVDF	18 BOLT-NUT ( A )	-	STAINLESS STEEL	44 O-RING ( D )	1	NBR
1a INSERTED NUT	4	COPPER ALLOY Used for PVC, C-PVC, PP Body	19 CONICAL SPRING WASHER (A)	-	STAINLESS STEEL	45 O-RING ( E )	1	NBR
3 DIAPHRAGM	1	EPDM, PTFE, Others	24 ENSAT FOR BODY	2	COPPER ALLOY	46 O-RING ( F )	1	NBR
3a INSERTED METAL OF DIAPHRAGM	1	STAINLESS STEEL	31 STEM ( A )	1	STAINLESS STEEL	89 COMPRESSOR PIN	1	STAINLESS STEEL
3b DIAPHRAGM PIN	1	STAINLESS STEEL	34 CYLINDER BODY	1	CAST ALUMINIUM ALLOY Epoxy Coat	90 STUD BOLT-NUT	4Sets	STAINLESS STEEL
4 CUSHION	1	EPDM Used for PTFE Diaphragm	35 CYLINDER BONNET	1	CAST ALUMINIUM ALLOY Epoxy Coat	94 METAL OF COMPRESSOR	1	STAINLESS STEEL
5 CUSHION COVER	1	Nothing, PVDF Used for PTFE Diaphragm	39 BOLT ( A )	-	STAINLESS STEEL	99 VALVE SHEET	1	STAINLESS STEEL
6 COMPRESSOR	1	PVDF	43 STOPPER	1	STAINLESS STEEL	100 SHEET GASKET ( A )	1	EPDM
11 GAUGE COVER	1	PC				101 SHEET GASKET ( B )	1	NBR
						103 PISTON	1	CAST ALUMINIUM ALLOY
						104 STEM PIN	1	SPRING STEEL
						105 O-RING ( H )	2	NBR

Diaphragms except EPDM and PTFE are available in FKM, VIFLON®C (FKM-C), VIFLON®F (FKM-F), CPE, CSM, NBR and IIR when required.  
The shape and appearance of assembly differ a little with nominal size compared to this drawing.

[AUTOMATIC PNEUMATIC TYPE AV AIR TO OPEN]

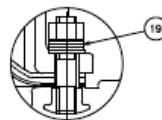
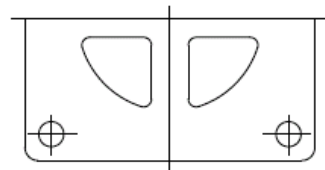


In case material of Diaphragm is PTFE



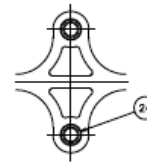
In case material of diaphragm is PTFE with cushion cover.

Y-Y



In Case of PVDF Body

(65<sup>mm</sup>)

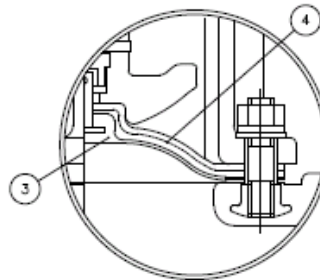
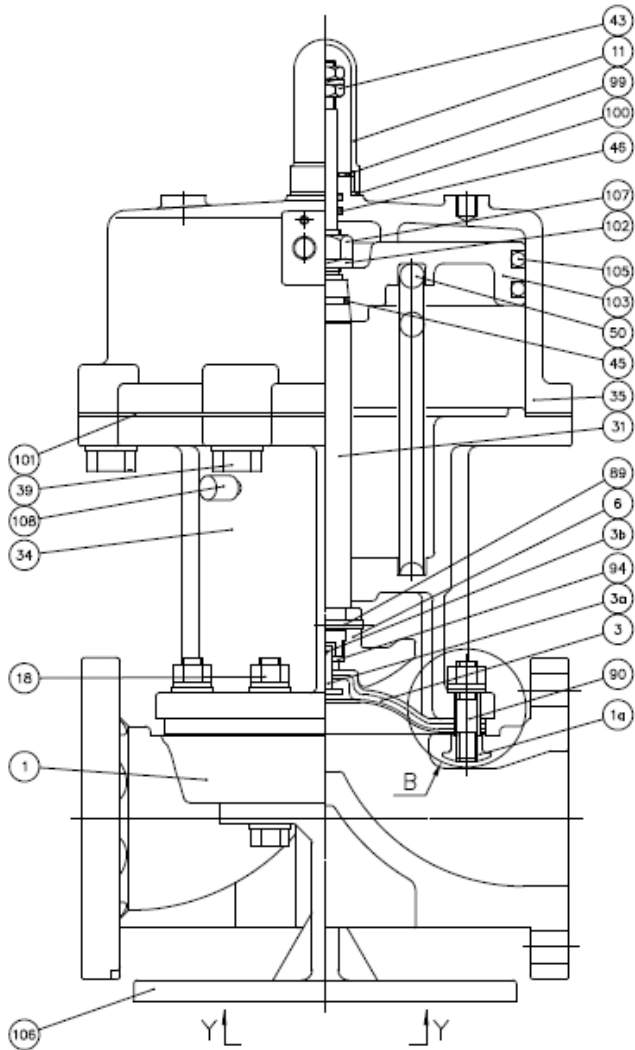


"B" Part

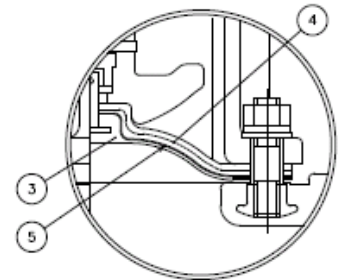
PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL
1 BODY	1	PVC, C-PVC, PP, PVDF	24 ENSAT FOR BODY	2	COPPER ALLOY Used for Size 65mm	89 COMPRESSOR PIN	1	STAINLESS STEEL
1a INSERTED NUT	4	COPPER ALLOY Used for PVC,C-PVC,PP Body STAINLESS STEEL Used for PVDF Body	31 SETM (A)	1	COPPER ALLOY	90 STUD BOLT·NUT	4sets	STAINLESS STEEL
3 DIAPHRAGM	1	EPDM, PTFE, Others	34 CYLINDER BODY	1	CAST ALUMINIUM ALLOY Epoxy Coat	94 METAL OF COMPRESSOR	1	STAINLESS STEEL
3a INSERTED METAL OF DIAPHRAGM	1	STAINLESS STEEL	35 CYLINDER BONNET	1	CAST ALUMINIUM ALLOY Epoxy Coat	99 VALVE SHEET	1	STAINLESS STEEL
3b DIAPHRAGM PIN	1	STAINLESS STEEL	39 BOLT (A)	-	STAINLESS STEEL	100 SHEET GASKET (A)	1	EPDM
4 CUSHION	1	EPDM	41 INDICATING LOD	1	STAINLESS STEEL	101 SHEET GASKET (B)	1	NBR
5 CUSHION COVER	1	Nothing, PVDF Used for PTFE Diaphragm	43 STOPPER (B)	1	STAINLESS STEEL	102 SPRING WASHER (A)	1	SPRING STEEL
6 COMPRESSOR	1	PVDF	44 O-RING (D)	1	NBR	103 PISTON	1	CAST ALUMINIUM ALLOY
11 GAUGE COVER	1	PC	45 O-RING (E)	1	NBR	105 O-RING (H)	2	NBR
18 BOLT·NUT (A)	4sets	STAINLESS STEEL	48 SPRING (A)	1	SPRING STEEL	106 STAND	1	CAST ALUMINIUM ALLOY Epoxy Coat Used for Size 80,100mm
19 CONICAL SPRING WASHER (A)	8sets	STAINLESS STEEL Used for PVDF Body	49 SPRING (B)	1	SPRING STEEL Used for Size 100mm	107 LOCK NUT	2	Chromized STEEL
						108 CHECK VALVE FOR EXHAUST	1	COPPER ALLOY

Diaphragms except EPDM and PTFE are available in FKM, VIFLON®C (FKM-C), VIFLON®F (FKM-F), CPE, CSM, NBR and IIR when required. The shape and appearance of assembly differ a little with nominal size compared to this drawing.

[AUTOMATIC PNEUMATIC TYPE AV AIR TO CLOSE]

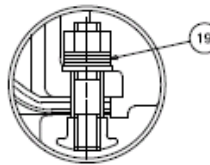


In case material of Diaphragm is PTFE Y-Y

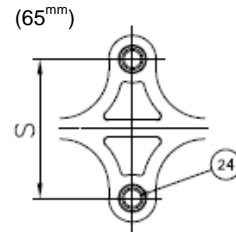
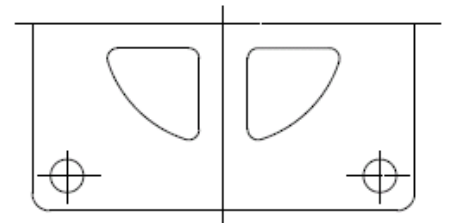


In case material of diaphragm is PTFE with cushion cover.

In Case of PVDF Body



"B" Part



PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL	PART NO./NAME	QTY	MATERIAL
1 BODY	1	PVC, C-PVC, PP, PVDF	19 CONICAL SPRING WASHER (A)	8Sets	STAINLESS STEEL Used for PVDF Body	89 COMPRESSOR PIN	1	STAINLESS STEEL
1a INSERTED NUT	4	COPPER ALLOY Used for PVC,C-PVC,PP Body STAINLESS STEEL Used for PVDF Body	24 ENSAT FOR BODY	2	COPPER ALLOY Used for Size 65mm	90 STUD BOLT·NUT	4Sets	STAINLESS STEEL
3 DIAPHRAGM	1	EPDM, PTFE, Others	31 SETM (A)	1	STAINLESS STEEL	94 METAL OF COMPRESSOR	1	STAINLESS STEEL
3a INSERTED METAL OF DIAPHRAGM	1	STAINLESS STEEL	34 CYLINDER BODY	1	CAST ALUMINIUM ALLOY Epoxy Coat	99 VALVE SHEET	1	STAINLESS STEEL
3b DIAPHRAGM PIN	1	STAINLESS STEEL	35 CYLINDER BONNET	1	CAST ALUMINIUM ALLOY Epoxy Coat	100 SHEET GASKET (A)	1	EPDM
4 CUSHION	1	EPDM	39 BOLT (A)	-	STAINLESS STEEL	101 SHEET GASKET (B)	1	NBR
5 CUSHION COVER	1	Nothing, PVDF Used for PTFE Diaphragm	43 STOPPER (B)	1	STAINLESS STEEL	102 SPRING WASHER (A)	1	SPRING STEEL
6 COMPRESSOR	1	PVDF	45 O-RING (E)	1	NBR	103 PISTON	1	CAST ALUMINIUM ALLOY
11 GAUGE COVER	1	PC	46 O-RING (F)	2	NBR	105 O-RING (H)	2	NBR
18 BOLT·NUT (A)	4Sets	STAINLESS STEEL	50 SPRING (C)	1	SPRING STEEL	106 STAND	1	CAST ALUMINIUM ALLOY Epoxy Coat Used for Size 80,100mm
						107 LOCK NUT	2	Chromized STEEL
						108 CHECK VALVE FOR EXHAUST	1	COPPER ALLOY

Diaphragms except EPDM and PTFE are available in FKM, VIFLON®C (FKM-C), VIFLON®F (FKM-F), CPE, CSM, NBR and IIR when required. The shape and appearance of assembly differ a little with nominal size compared to this drawing.



## Compatible Actuator

Our original special plug shape reduces effects of fluid viscosity and allows for highly accurate flow control.



DOUBLE ACTING	ACTUATOR TYPE							UNIT
	AV-1DA	AV-2DA	AV-3DA	AV-4DA	AV-5DA	AV-6DA	AV-7DA	
OPERATING PRESSURE	0.4-0.6							MPa
AIR CONSUMPTION	10.3	11.9	20.7	36.6	67.3	87.3	214	N/OOPEN & CLOSE (0.4MPa)
AIR SUPPLY BORE	Rc1/4				Rc3/8			

AIR TO OPEN	ACTUATOR TYPE					UNIT
	AV-1AO	AV-2AO	AV-3AO	AV-4AO	AV-5AO	
OPERATING PRESSURE	0.4-0.6					MPa
AIR CONSUMPTION	10.6	15.9	34.3	55.6	84.2	N/OOPEN & CLOSE (0.4MPa)
AIR SUPPLY BORE	Rc1/4					

AIR TO CLOSE	ACTUATOR TYPE					UNIT
	AV-1AS	AV-2AS	AV-3AS	AV-4AS	AV-5AS	
OPERATING PRESSURE	0.4-0.6					MPa
AIR CONSUMPTION	9.4	11.7	26.5	38.4	60.5	N/OOPEN & CLOSE (0.4MPa)
AIR SUPPLY BORE	Rc1/4					

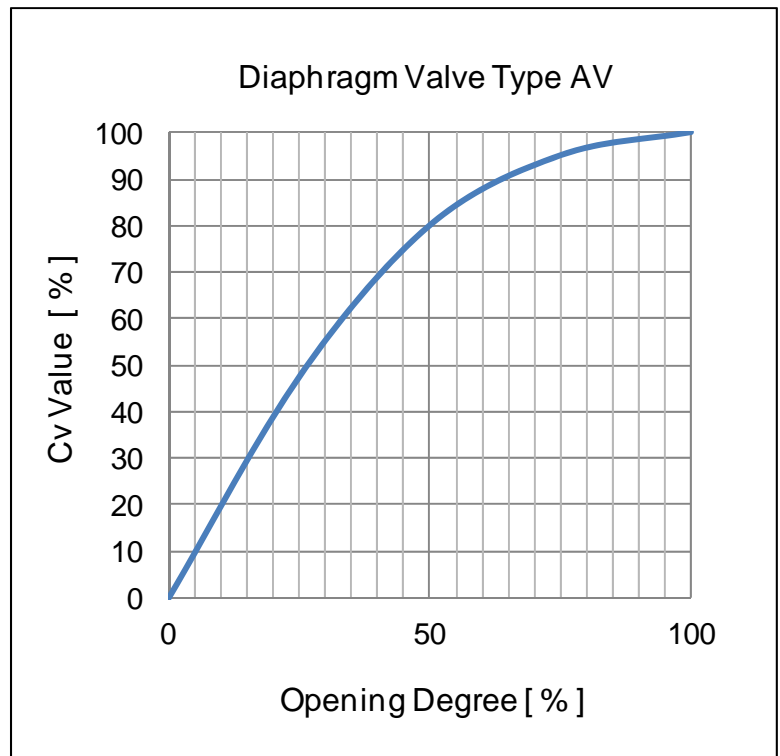
## OPTION COMBINATION

COMBINATION NO.	1	2
POSITIONER (E/P)	●	—
POSITIONER (P/P)	—	●
FILTER REGULATOR	○	○

● indicates that the feature is provided as standard.

OPTION LIST	MANUFACTURER	BASIC SPECIFICATIONS
FILTER REGULATOR	KONAN	
POSITIONER	YTC	<ul style="list-style-type: none"> <li>• E/P: INPUT SIGNAL CURRENT DC 4-20 mA</li> <li>• P/P: INPUT SIGNAL AIR PRESSURE 0.02 - 0.1 MPa</li> </ul>
SPECIAL PAINTING (ACTUATOR ONLY)	ASAHI YUKIZAI	<ul style="list-style-type: none"> <li>• POLYURETHANE PAINT</li> </ul>

## Cv value for each opening degree



### FULL-OPEN Cv VALUE

mm	65	80	100
inch	2 1/2	3	4
FULL-OPEN Cv VALUE	85	115	185

## Product weight

### TYPE 14 [AUTOMATIC PNEUMATIC TYPE AV]

Unit : kg

mm	inch	DOUBLE ACTING				AIR TO OPEN				AIR TO CLOSE			
		U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF	U-PVC	C-PVC	PP	PVDF
65	2 1/2	10.0	10.0	9.0	10.5	22.5	22.5	21.5	23.0	17.0	17.0	16.0	17.5
80	3	12.0	12.0	10.5	12.5	34.5	34.5	33.0	35.0	24.5	24.5	23.0	25.0
100	4	19.0	19.0	16.5	19.5	61.0	61.0	58.5	61.5	45.5	45.5	43.0	46.0

### Product model code list

ACTUATION	TYPE	ACTUATOR TYPE	ACTION /POWER SOURCE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
<b>A</b>	<b>14</b>	<b>*</b>	<b>*</b>	<b>*</b>	<b>*</b>	<b>F</b>	<b>*</b>	<b>***</b>
<b>A</b> AUTOMATIC VALVE	<b>14</b> TYPE 14	<b>PNEUMATIC</b> <b>N</b> TYPE AN <b>V</b> TYPE AV	<b>PNEUMATIC</b> <b>F</b> DOUBLE ACTING <b>G</b> AIR TO OPEN <b>S</b> AIR TO CLOSE	<b>U</b> U-PVC <b>C</b> C-PVC <b>P</b> PP <b>F</b> PVDF	<b>E</b> EPDM <b>T</b> PTFE	<b>F</b> FLANGED	<b>1</b> JIS10K <b>D</b> DIN <b>A</b> ANSI	<b>065</b> 65mm <b>?</b> <b>100</b> 100mm

### Installation, Operation and Maintenance Manual

For details of Installation, Operation and Maintenance, please refer IOM at below link.

[http://www.asahi-yukizai.co.jp/en/product/mt\\_pdf/a\\_automatic\\_valve\\_1\\_03.pdf](http://www.asahi-yukizai.co.jp/en/product/mt_pdf/a_automatic_valve_1_03.pdf)