

AV-4 SANITARY DIAPHRAGM VALVES



APPLICATION

AV-4 series sanitary diaphragm valve is widely used in food, beverage, dairy, brewing, pharmaceutical industries, etc. Diaphragm valve is excellent for flow control as well as for open/close duties.

MATERIAL

Steel Parts: AISI 316L

Diaphragm: EPDM + PTFE

The seal materials comply with FDA177.2600 standard. The diaphragm has two pieces, EPDM and PTFE, which is fastened by SS bolts. The sealing part that contact with the medium is of PTFE material, it has good cold resistance (-13°F/-25 °C), excellent heat-resistance (482°F/250 °C), tolerance to most chemicals, and excellent abrasion resistance to medium flow.

DESIGN STANDARDS

- DIN, 3A, SMS, ISO/IDF, BS/RJT, ASME/BPE.
- The parts mainly include: handwheel/actuator, valve body and diaphragm, which are assembled together by bolts and nuts. The body can be two ways or three ways.
- End connections: Butt-weld, Sanitary Clamp, T-type tee, U type tee.

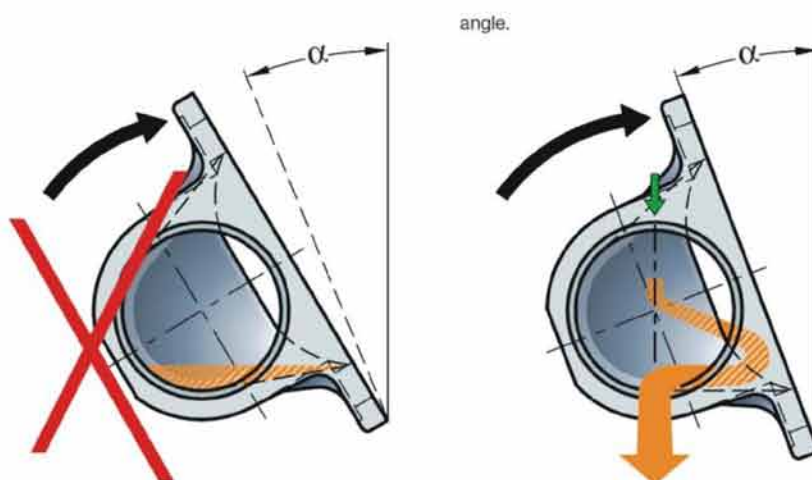


TECHNICAL PARAMETER

Material	Product wetted steel parts Other steel parts	AISI 316L (1.4404) AISI 304	Provided with material test report
Seal Material	Standard Option	EPDM+PTFE VMQ	All seal materials comply with FDA 21CFR117.2600
Pressure	Working Pressure 5~8bar (70-120 PSI)	0~10bar (0-145 PSI) 5~8bar (70-120 PSI)	
Temperature	Working temperature Sterilization temperature	14° F to 248 ° F (-10°C to 120°C) Please contact us if higher configuration needed 302 ° F (150°C, MAX 20 min)	
Surface Treatment	Inside surface treatment Outside surface treatment	Ra 16-32 μ in (0.4-0.8 μm) Ra 32-64 μ in (0.8-1.6 μm)	
Connection	Standards: DIN 11850-2 with 11850-1 / SMS / 3A / ISO Series etc End connections:Butt-weld, Sanitary Clamp, T-type, U-type or others upon request.		
Actuator	- Plastic Actuator - Stainless Steel Actuator - Normally Closed (NC)--Air to open and spring to close; (Single-acting) - Normally Open (NO)--Air to close and spring to open; (Single-acting) - Air to Air (AA)--Air to open, air to close. (Double-acting)		

OPTIMAL INSTALLATION ANGLE

In hygienic clean piping system, application of all diaphragm valves should meet the following standard installation angle for no residue.



When installing the valve on long pipeline, we suggest declining the valve by 2% so as to ensure the completely self-emptying in the system.

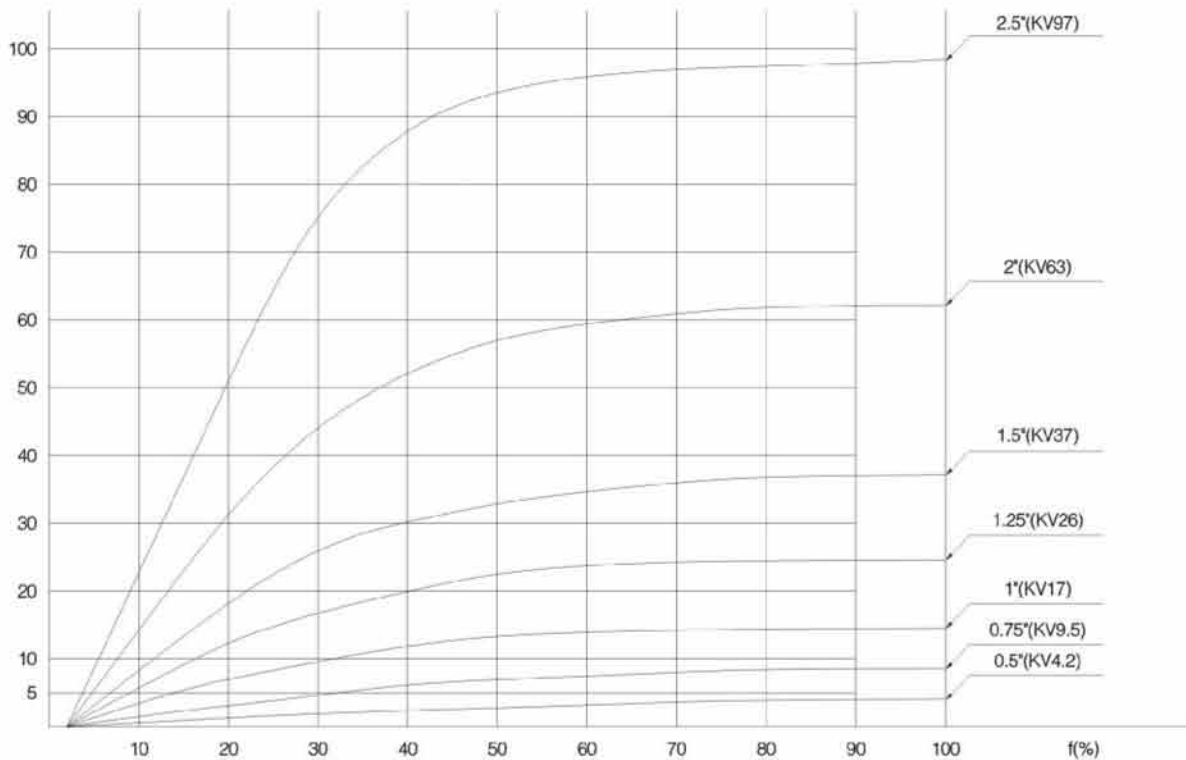
Size		a
1/4"-1/2"	DN6-DN10	22
3/4"	DN15	28
1"	DN25	21
1.5"	DN40	21
2"	DN50	30
2.5"	DN65	30

RELATIONS BETWEEN FLOW RATE AND O.D

- KV is a data of the flow rate. The data describes valve flux when the water of 5°C to 30°C in the pressure difference for 1bar
- KV data under the valve fully open

The diaphragm valve flow/choice (opening f) chart

$$Q(M^3/h) \quad Q=KV \cdot \sqrt{\Delta P}$$



Note: the above chart suitable for, medium: water (20 °C)

Surface Polishing

Ra=roughness

Average roughness Ra data is used as a parameter of measuring valve body surface finish

Average roughness Ra data was obtained from five times measurement of LT5.6mm length/measurement Lc0.8mm roughness

According ASME BPE table to classified

Table SF-3 R_a Readings for Product Contact Surfaces

Surface Designation	Mechanically Polished [Note (1)]	
	R_a Max.	
	μ -in.	μ m
SF0	No finish requirement	No finish requirement
SF1	20	0.51
SF2	25	0.64
SF3	30	0.76
	Mechanically Polished [Note (1)] and Electropolished	
	R_a Max.	
	μ in.	μ m
SF4	15	0.38
SF5	20	0.51
SF6	25	0.64

MINI-TYPE PNEUMATIC DIAPHRAGM VALVE



Stainless Steel Head Pneumatic Diaphragm Valve



Plastic Head Pneumatic Diaphragm Valve

- Size: 1/4"-3/4", DN6-DN15
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material) (Stainless Steel Actuator)
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material) (Plastic Steel Actuator)
- Max Pressure: One Way (DELTAP=100%)

Normally Close: EPDM 87 psi (6 Bar), PTFE 65 psi (4.5Bar)

Option:

Normally Close EPDM 116 psi (8 Bar), 87 psi (6 Bar).

Normally Open and Double Action: EPDM 116 psi (8 Bar), PTFE 87 psi (6 Bar).

- Forging Body: 1.4404/316L or Casting Body: 1.4404/316L
- Ends connection: Butt-weld, Tri-clamp, Flange, Thread.

MINI-TYPE MANUAL DIAPHRAGM VALVE



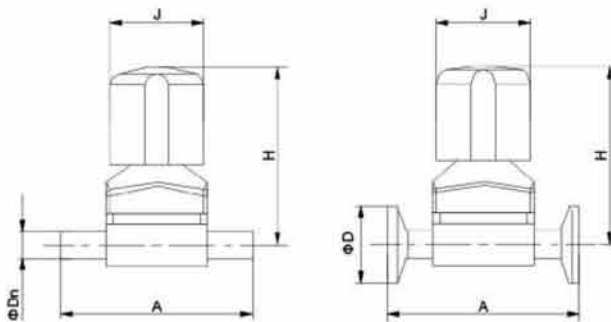
- Size: 1/4"-3/4"
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material)
- Max Temperature: 10 Bar/ 146 Psi



AV-4MI SANITARY MINI-TYPE DIAPHRAGM VALVE

Mini diaphragm valves can be with manual or pneumatic operation, they are mainly used in liquid sampling, biological systems, laboratories and other industries.

Manual Mini Diaphragm Valves



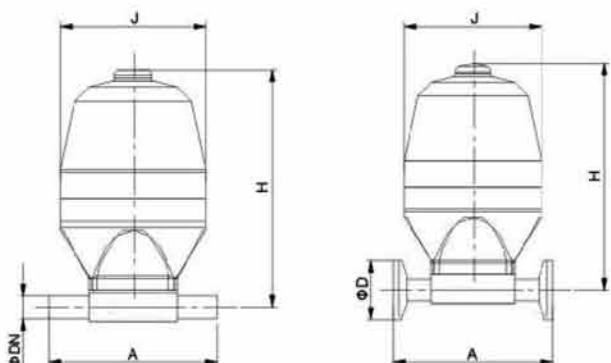
DIN32676/ DI11850-1/2

Size	Dn		D		A		H		J	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
DN6	0.315	8	0.98/1.34	25.4/34	2.701	68.6	2.685	68.2	1.496	38
DN8	0.394	10	0.98/1.34	25.4/34	2.701	68.6	2.685	68.2	1.496	38
DN10	0.472/0.512	12/13	0.98/1.34	25.4/34	2.701	68.6	2.685	68.2	1.496	38
DN15	0.709/0.748	18/19	0.98/1.34	25.4/34	3.346	85	2.925	74.3	1.496	38

ASME BPE/ ASTM 269

Size	Dn		D		A		H		J	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1/4"	0.250	6.35	0.984	25.4	2.701	68.6	2.685	68.2	1.496	38
3/8"	0.375	9.5	0.984	25.4	2.701	68.6	2.685	68.2	1.496	38
1/2"	0.500	12.7	0.984	25.4	2.701	68.6	2.685	68.2	1.496	38
3/4"	0.750	19	0.984	25.4	3.346	85	2.925	74.3	1.496	38

Pneumatic Mini Diaphragm Valves



DIN32676/ DI11850-1/2

Size	Dn		D		A		H		J	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
DN6	0.315	8	0.98/1.34	25.4/34	2.701	68.6	4.350	110.5	2.362	60
DN8	0.394	10	0.98/1.34	25.4/34	2.701	68.6	4.350	110.5	2.362	60
DN10	0.472/0.512	12/13	0.98/1.34	25.4/34	2.701	68.6	4.350	110.5	2.362	60
DN15	0.709/0.748	18/19	0.98/1.34	25.4/34	3.346	85	4.350	110.5	2.362	60

ASME BPE/ ASTM 269

Size	Dn		D		A		H		J	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1/4"	0.250	6.35	0.984	25.4	2.701	68.6	4.350	110.5	2.362	60
3/8"	0.375	9.5	0.984	25.4	2.701	68.6	4.350	110.5	2.362	60
1/2"	0.500	12.7	0.984	25.4	2.701	68.6	4.350	110.5	2.362	60
3/4"	0.750	19	0.984	25.4	3.346	85	4.350	110.5	2.362	60

AV-4P SANITARY PNEUMATIC DIAPHRAGM VALVE



No.	Description
01	Bolt Caps
02	Bolt
03	Pneumatic Actuator Cap
04	Spring
05	Spring
06	Spring
07	Pneumatic Actuator Components
08	Pneumatic Actuator Seat
09	Gasket
10	Bolt
11	Nut
12	Valve Seat
13	Valve Core
14	Diaphragm
15	Valve Body
16	Bolt

AV-4M SANITARY MANUAL DIAPHRAGM VALVE



No.	Description
01	Cap
02	Hand Wheel
03	Bolt
04	Valve Stem
05	Valve Cap
06	Valve Core
07	Diaphragm
08	Valve Body
09	Nut

AV-4M MANUAL DIAPHRAGM VALVE



Stainless Steel Handwheel



Plastic Handwheel

- Size: 1"-3", DN20-DN65
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material)(Stainless Steel Actuator)
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material)(Plastic Steel Actuator)
- Max Pressure: 145psi (10 Bar)
- Forging Body: 1.4404/316L
- Casting Body: 1.4404/316L
- Connection: Butt-weld, Tri-clamp, Flange, Thread.

AV-4P PNEUMATIC DIAPHRAGM VALVE



- Size: 1"-3", DN20-DN65
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material) (Stainless Steel Actuator)
- Max Temperature: -22°F to 302°F/-30 to 150°C (Depending on Seal Material) (Plastic Steel Actuator)
- Max Pressure: One Way (DELTAP=100%)
Normally Close EPDM 87 psi (6 Bar), PTFE 65 psi (4.5Bar)
Option: Normally Close EPDM 116 psi (8 Bar), 87 psi (6 Bar).
Normally Open and Double Action EPDM 116 psi (8 Bar), PTFE 87 psi (6 Bar).
- Assemble Different Actuators Can Meet the Higher Pressure Rating
- Forging Body: 1.4404/316L
- Casting Body: 1.4404/316L
- Connection: Butt-weld, Tri-clamp, Flange, Thread.
- Pneumatic Actuator Suitable for Body: Straight, tee, multichannel body, welding combination valve, tank bottom valve

FEMALE DIAPHRAGM VALVE



- Size: 1/2"-3", DN10-DN65
- Thread Standard: BSP/BSPT/NPT
- Manual type or Pneumatic type.

TEE DIAPHRAGM VALVE



- Size: 1/2"-2", DN10-DN50
- Manual type or Pneumatic type.
- Connection: Sanitary Clamp, Butt-weld and others upon request

U TYPE PNEUMATIC DIAPHRAGM VALVE



- Size: 1/2"-3", DN10-DN65
- Manual type or Pneumatic type.
- Connection: Sanitary Clamp, Butt-weld.

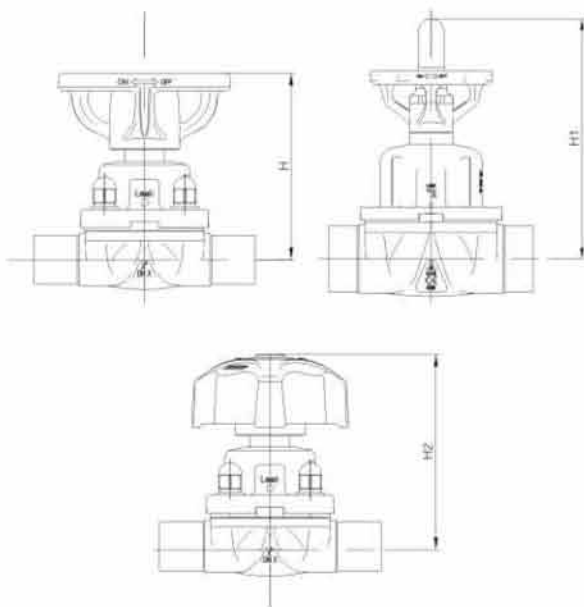
DIAPHRAGM TANK BOTTOM VALVE



- Size: 1/2"-2", DN10-DN50
- Manual type or Pneumatic type.
- Connection: Sanitary Clamp, Butt-weld and others upon request

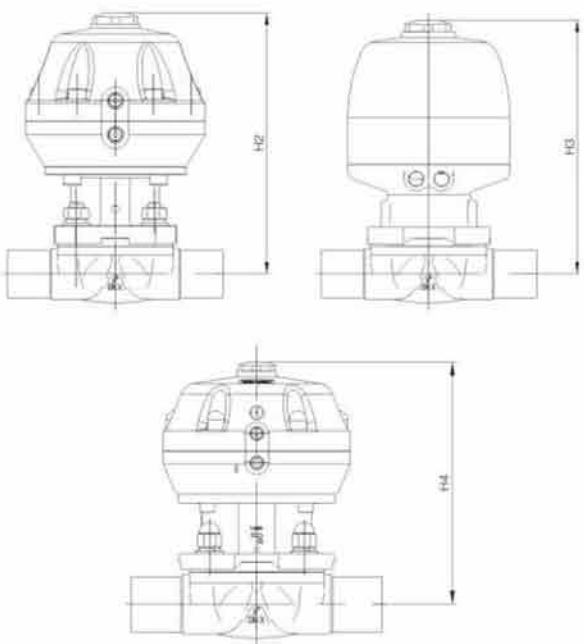
DIMENSION OF DIAPHRAGM VALVES

Manual Sanitary Diaphragm Valves



Size		H		H1		H2	
		Inch	mm	Inch	mm	Inch	mm
-	DN20	4.646	118	-	-	4.646	118
1"	DN25	4.724	120	-	-	4.724	120
1 1/4"	DN32	5.236	133	-	-	5.236	133
1 1/2"	DN40	5.354	136	-	-	5.354	136
2"	DN50	6.417	163	-	-	6.417	163
2 1/2"	DN65	-	-	10.000	254	-	-
3"	DN80	-	-	10.118	257	-	-
4"	DN100	-	-	13.780	350	-	-

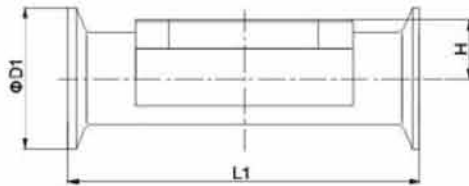
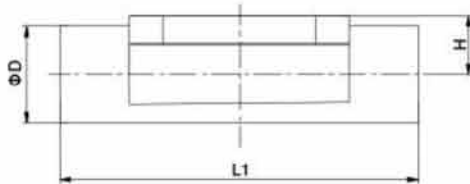
Pneumatic Sanitary Diaphragm Valves



Size		H2		H3		H4	
		Inch	mm	Inch	mm	Inch	mm
-	DN20	6.929	176	6.417	163	6.299	160
1"	DN25	7.008	178	6.496	165	6.378	162
1 1/4"	DN32	8.976	228	8.189	208	7.756	197
1 1/2"	DN40	9.094	231	8.307	211	7.874	200
2"	DN50	9.646	245	8.858	225	8.386	213
2 1/2"	DN65	10.157	258	8.858	225	10.157	258
3"	DN80	10.236	260	8.976	228	10.236	260
4"	DN100	11.732	298	12.402	315	11.732	298

DIMENSION OF DIAPHRAGM VALVES

Diaphragm Valves - Forged Body



DIN32676/ DI11850-1/2 / DIN11866-A

Size	D		D1		L1		H	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
DN20	0.866/0.906	22/23	1.339	34	4.606	117	0.677	17.2
DN25	1.102/1.142	28/29	1.988	50.5	5.000	127	0.677	17.2
DN32	1.339/1.378	34/35	1.988	50.5	5.748	146	0.835	21.2
DN40	1.575/1.614	40/41	1.988	50.5	6.260	159	0.953	24.2
DN50	2.047/2.087	52/53	2.520	64	7.480	190	1.240	31.5
DN65	2.756	70	3.583	91	8.504	216	1.575	40
DN80	3.346	85	4.173	106	10.000	254	1.969	50
DN100	4.094	104	4.685	119	12.008	305	2.283	58

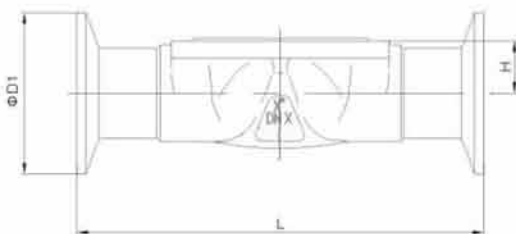
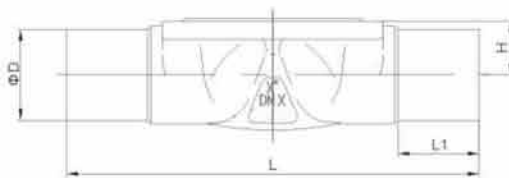
ASME BPE/ ASTM 269 / DIN11866-C

Size	D		D1		L1		H	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1"	1.000	25.4	1.988	50.5	5.000	127	0.677	17.2
1.25"	1.252	31.8	1.988	50.5	5.748	146	0.835	21.2
1.5"	1.500	38.1	1.988	50.5	6.260	159	0.953	24.2
2"	2.000	50.8	2.520	64	7.480	190	1.240	31.5
2.5"	2.500	63.5	3.051	77.5	8.504	216	1.575	40
3"	3.000	76.2	3.583	91	10.000	254	1.693	43
4"	4.000	101.6	4.685	119	12.008	305	2.283	58

ISO1127 / DIN11866-B

Size	D		D1		L1		H	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm
3/4"	1.059	26.9	1.988	50.5	5.000	127	0.677	17.2
1"	1.327	33.7	1.988	50.5	5.748	146	0.835	21.2
1 1/4"	1.669	42.4	1.988	50.5	6.260	159	0.953	24.2
1.5"	1.902	48.3	2.520	64	7.480	190	1.240	31.5
2"	2.374	60.3	3.051	77.5	8.504	216	1.575	40
2.5"	3.000	76.2	3.583	91	10.000	254	1.693	43

Diaphragm Valves - Cast Body



DIN32676/ DI11850-1/2 / DIN11866-A

Size	D		D1		L		H		H1	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
DN20	0.866	22	1.339	34	4.606	117	0.677	17.2	0.866	22
DN25	1.102	28	1.988	50.5	5.000	127	0.677	17.2	0.984	25
DN32	1.339	34	1.988	50.5	5.748	146	0.835	21.2	0.984	25
DN40	1.575	40	1.988	50.5	6.260	159	0.953	24.2	0.984	25
DN50	2.047	52	2.520	64	7.480	190	1.240	31.5	1.181	30
DN65	2.756	70	3.583	91	8.504	216	1.575	40	1.181	30
DN80	3.346	85	4.173	106	10.000	254	1.969	50	-	-
DN100	4.094	104	4.685	119	12.008	305	2.283	58	-	-

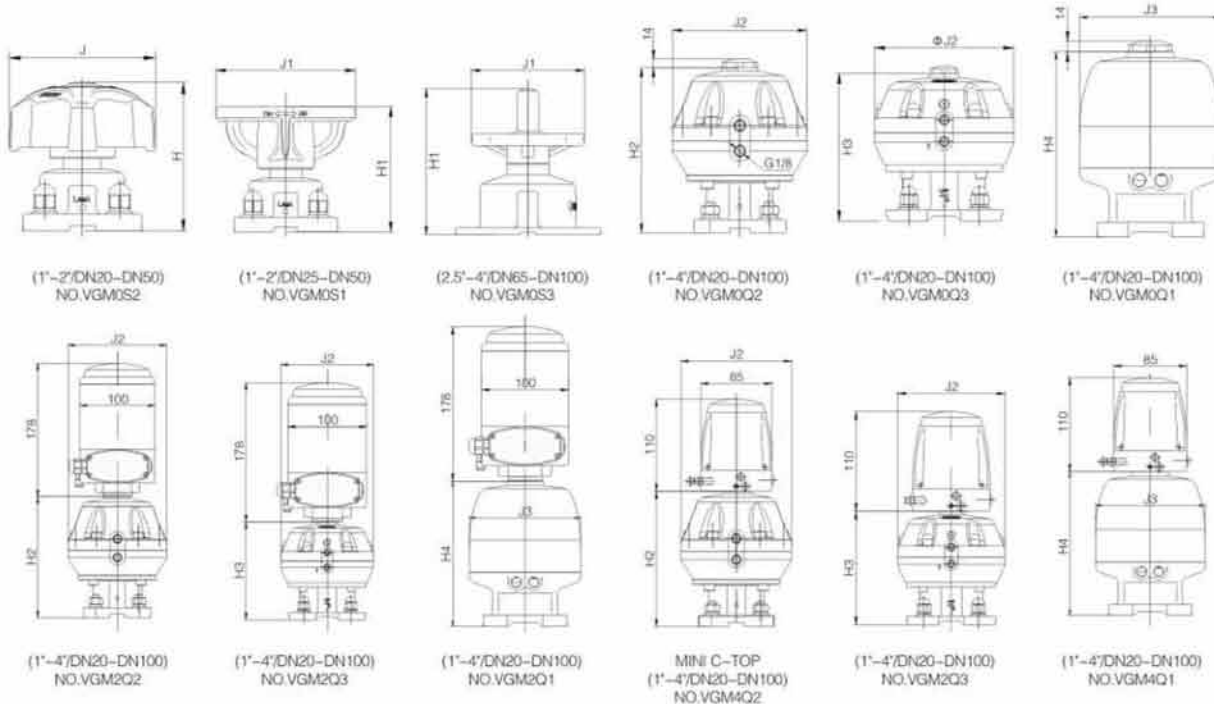
ASME BPE/ ASTM 269 / DIN11866-C

Size	D		D1		L1		H		H1	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1"	1.000	25.4	1.988	50.5	5.000	127	0.677	17.2	0.787	20
1.25"	1.252	31.8	1.988	50.5	5.748	146	0.835	21.2	0.787	20
1.5"	1.500	38.1	1.988	50.5	6.260	159	0.953	24.2	0.787	20
2"	2.000	50.8	2.520	64	7.480	190	1.240	31.5	1.181	30
2.5"	2.500	63.5	3.051	77.5	8.504	216	1.575	40	1.181	30
3"	3.000	76.2	3.583	91	10.000	254	1.693	43	1.181	30
3.5"	3.504	89	4.173	106	10.000	254	1.969	50	-	-
4"	4.000	101.6	4.685	119	12.008	305	2.283	58	-	-

ISO1127 / DIN11866-B

Size	D		D1		L1		H		H1	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
3/4"	1.059	26.9	1.988	50.5	5.000	127	0.677	17.2	-	-
1"	1.327	33.7	1.988	50.5	5.748	146	0.835	21.2	-	-
1 1/4"	1.669	42.4	1.988	50.5	6.260	159	0.953	24.2	-	-
1.5"	1.902	48.3	2.520	64	7.480	190	1.240	31.5	-	-
2"	2.374	60.3	3.051	77.5	8.504	216	1.575	40	-	-
2.5"	3.000	76.2	3.583	91	10.000	254	1.693	43	-	-

All Sanitary Diaphragm Valves - Dimensional Drawings



DIN32676/ DI11850-1/2 / DIN11866-A

Size	J		J1		J2		J3		H		H1		H2		H3		H4	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
DN20	3.543	90	3.937	100	5.197	132	4.055	103	3.976	101	3.976	101	6.299	160	5.630	143	5.787	147
DN25	3.543	90	3.937	100	5.197	132	4.055	103	3.976	101	3.976	101	6.299	160	5.630	143	5.787	147
DN32	4.488	114	4.882	124	6.378	162	5.079	129	4.331	110	4.331	110	8.031	204	6.811	173	7.244	184
DN40	4.488	114	4.882	124	6.378	162	5.079	129	4.331	110	4.331	110	8.031	204	6.811	173	7.244	184
DN50	4.488	114	4.882	124	6.378	162	5.079	129	5.157	131	5.157	131	8.307	211	7.087	180	7.520	191
DN65	-	-	5.118	130	9.252	235	6.969	177	-	-	8.386	213	8.504	216	8.504	216	7.205	183
DN80	-	-	5.118	130	9.252	235	6.969	177	-	-	8.386	213	8.504	216	8.504	216	7.205	183
DN100	-	-	7.480	190	9.252	235	8.819	224	-	-	11.181	284	8.504	216	8.504	216	9.803	249

ASME BPE/ ASTM 269 / DIN11866-C

Size	J		J1		J2		J3		H		H1		H2		H3		H4	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1"	3.543	90	3.937	100	5.197	132	4.055	103	3.976	101	3.976	101	6.299	160	5.630	143	5.787	147
1.25"	4.488	114	4.882	124	6.378	162	5.079	129	4.331	110	4.331	110	8.031	204	6.811	173	7.244	184
1.5"	4.488	114	4.882	124	6.378	162	5.079	129	4.331	110	4.331	110	8.031	204	6.811	173	7.244	184
2"	4.488	114	4.882	124	6.378	162	5.079	129	5.157	131	5.157	131	8.307	211	7.087	180	7.520	191
2.5"	-	-	5.118	130	9.252	235	6.969	177	-	-	8.386	213	8.504	216	8.504	216	7.205	183
3"	-	-	5.118	130	9.252	235	6.969	177	-	-	8.386	213	8.504	216	8.504	216	7.205	183
4"	-	-	7.480	190	9.252	235	8.819	224	-	-	11.181	284	8.504	216	8.504	216	9.803	249

ISO1127 / DIN11866-B

Size	J		J1		J2		J3		H		H1		H2		H3		H4	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
3/4"	3.543	90	3.937	100	5.197	132	4.055	103	3.976	101	3.976	101	6.299	160	5.630	143	5.787	147
1"	4.488	114	4.882	124	6.378	162	5.079	129	4.331	110	4.331	110	8.031	204	6.811	173	7.244	184
1 1/4"	4.488	114	4.882	124	6.378	162	5.079	129	5.157	131	5.157	131	8.307	211	6.811	173	7.520	191
1.5"	4.488	114	4.882	124	6.378	162	5.079	129	5.157	131	5.157	131	8.307	211	7.087	180	7.520	191
2"	-	-	5.118	130	9.252	235	6.969	177	-	-	8.386	213	8.504	216	8.504	216	7.205	183
2.5"	-	-	5.118	130	9.252	235	6.969	177	-	-	8.386	213	8.504	216	8.504	216	7.205	183