Gillain & Co
HYGIENIC EQUIPMENT FOR FOOD & LIFE SCIENCES

Simply Unique Diaphragm Valves

Unique DV-ST UltraPure



Application
Alfa Laval Unique diaphragm valves offer a complete range covering every need, for use in sterile and ultra-hygienic processes. The Unique diaphragm valves consist of a wide variety of valve bodies, diaphragms, actuators, handles, automation and control units.

Standard Design
With a modular design nearly all possible configurations are feasible. The valve is composed of:

- Valve body
- Diaphragm
- Handle or actuator
- Automation and control units

Documentation
All UltraPure valves are delivered with our comprehensive Q-Doc documentation package including:

- 3.1/ MTR traceability certificate corresponding to EN 10204
- FDA - Declaration of conformity to FDA (CFR 21: 177.2600 or 177.1550)
- USP - Certificate of conformity to USP Class VI (Chapter 88, biological reactivity test)
- TSE/ADI - Declaration (Transmissible Spongiform Encephalopathy/Animal Derived Ingredients)
- Surface finish conformity declaration

The following documentation is available upon request:
- Surface finish certificate (Ra test results)
- ATEX certificate

Valve Body Design
The valve bodies are available in a wide variety of valve types and configuration options (dimension standards, connections, surface finish and material).

- 2-way valves
- T-valves
- Tank outlet valves
- Tandem valves
- Multiport valves

Material and surface finish:
2-way valves are available in forged or cast material. T-valves, tank outlet valves and tandem valves are available in forged or block material. Multiport valves are made from block material.

Valve types	Cast CF3M (316L)	Forged 1.4435 (316L)	Block 1.4435 (316L)
2-way valve	✓	✓	
T-valve		✓	✓
Tank outlet valve		✓	✓
Tandem valve		✓	✓
Multi port valve			✓

Type	Cast	Forged and block
Material	CF3M (316L)	1.4435 (316L)
Delta ferrite	< 1,0%	< 0,5%
Sulphur content	< 0,04%	0,005-0,017%
Internal surface finish [1]	Ra < 0,6µm (25µ-In.)	Ra < 0,5µm (20µ-In.) Ra < 0,4µm (15µ-In.) EP [2]
External surface finish	Blasted	Blasted

[1] Other surface finishes are available on request.

[2] Electro Polished

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Modular design

With a modular design nearly all possible configurations are feasible.
The valve is composed of:

- Valve body
- Diaphragm
- Handle or actuator
- Automation and control units



Automation & control



Handles

Actuators



Diaphragms



Two-way valve body

T- valve body

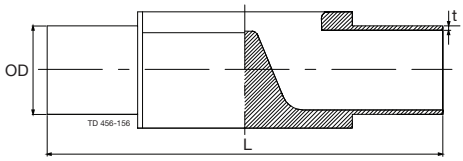
Multi-port valve body

Tandem valve body

Tank outlet valve body

Dimensions 2-way valve bodies:

Outline dimensions 2-way valve bodies

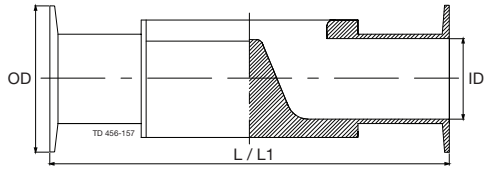


Weld ends: (mm)

Port size		Length	ASME BPE	ISO 2037 [2]	Series A/ DIN11866	Series B/ ISO 1127	BS 4825 [2]
DN	Inch	L	OD x t	OD x t	OD x t	OD x t	OD x t
8	¼"	89	6.35 x 0.89 [2]	12.00 x 1.00	13.00 x 1.50 [2]	13.50 x 1.60 [2]	
10	⅜"	89	9.53 x 0.89	12.70 x 1.00	13.00 x 1.50	17.20 x 1.60	
15	½"	110	12.70 x 1.65	17.20 x 1.00	19.00 x 1.50	21.30 x 1.60	12.70 x 1.20
20	¾"	119	19.05 x 1.65	21.30 x 1.00	23.00 x 1.50	26.90 x 1.60	19.05 x 1.20
25	1"	129	25.40 x 1.65	25.00 x 1.20	29.00 x 1.50	33.70 x 2.00	25.40 x 1.60
40	1 ½"	161	38.10 x 1.65	38.00 x 1.20	41.00 x 1.50	48.30 x 2.00	38.10 x 1.60
50	2"	192	50.80 x 1.65	51.00 x 1.20	53.00 x 1.50	60.30 x 2.00	50.80 x 1.60
65	2 ½"	218	63.50 x 1.65 [2]	63.50 x 1.60	70.00 x 2.00	76.10 x 2.30	63.50 x 1.60
80	3"	256	76.20 x 1.65 [2]	76.10 x 1.60	85.00 x 2.00	88.90 x 2.30	76.20 x 1.60
100[1]	4" [1]	350				114.30 x 2.30	

[1] Cast only

[2] Forged only



Clamp ends:

Port size		Length	Length	Clamp ASME BPE for tube ASME BPE		Clamp ISO 2852 for tube ISO 2037 [2]		Clamp DIN 32676 for tube DIN 11866 [2]		Clamp ISO 2852 for tube ISO 1127 [2]		Clamp for tube BS 4825 [2]	
DN	Inch	L	L1[3]	OD	ID	OD	ID	OD	ID	OD	ID	OD	ID
8	¼"	65	65	25.00	4.57 [2]	34.00	10.00	34.00	10.00	34.00	10.00		
10	⅜"	65	65	25.00	7.75			34.00	10.00	25.00	14.00		
15	½"	108	89	25.00	9.40	50.50	15.20	34.00	16.00	50.50	15.20	25.00	9.50
20	¾"	118	102	25.00	15.75	50.50	19.30	34.00	20.00	50.50	19.30	25.00	15.90
25	1"	127	114	50.50	22.10	50.50	22.60	50.50	26.00	50.50	29.70	50.50	22.20
40	1½"	159	140	50.50	34.80	50.50	35.60	50.50	38.00	64.00	44.30	50.50	34.90
50	2"	191	159	64.00	47.50	64.00	48.60	64.00	50.00	77.50	56.30	64.00	47.60
65	2½"	216	194	77.50	60.20 [2]	77.50	60.30	91.00	66.00	91.00	72.10	77.50	60.30
80	3"	254	222	91.00	72.90 [2]	91.00	72.90	106.00	81.00	106.00	84.30	91.00	73.00

[1] Cast only

[2] Forged only

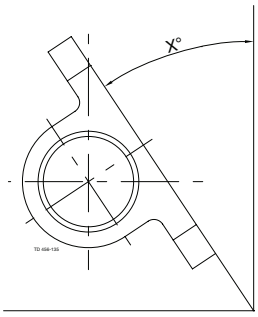
[3] ASME BPE size

Other sizes and connections available on request.

For other options please contact Alfa Laval

Drain angle x :

Port size		ASME	ISO 2037	Series A/	Series B/	BS 4825
DN	Inch	BPE		DIN11866	ISO 1127	
8	¼"	37°	27°	27°	22°	37°
10	⅜"	33°	28°	28°	31°	35°
15	½"	32°	23°	23°	18°	33°
20	¾"	26°	23°	23°	15°	27°
25	1"	21°	25°	21°	20°	25°
40	1 ½"	24°	24°	22°	18°	24°
50	2"	24°	24°	23°	20°	24°
65	2 ½"	20°	22°	19°	15°	22°
80	3"	21°	25°	22°	15°	25°



Other body combinations

T-valve body:
Alfa Laval also offers T-valve bodies where the weir of the T-valve is as close as possible to the internal contour of the main tube and thereby minimized dead leg.

The T-valves are available as machined from block or from forged material (shown in picture).



For dimensions and further details, please contact Alfa Laval.

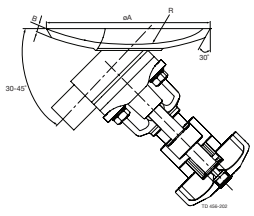
Tank outlet valve body:
Alfa Laval also offers compact tank outlet valves with minimized dead leg and complete drainability. The tank outlet valves are available as machined from block or from forged material (shown in picture) and is available both as tank bottom valve and tank wall valve.



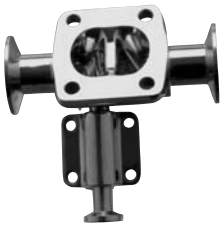
Forged as standard, Machined from block on request.

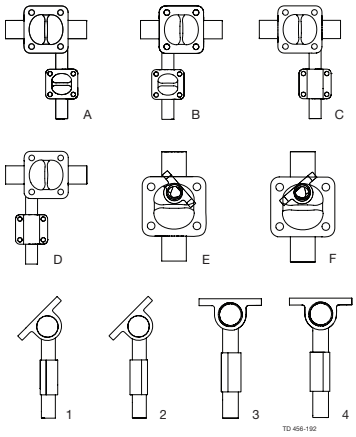
DN	øA	B	R
	(mm)	(mm)	(mm)
15 (½")	90	6	500
20 (¾")	100	6	600
25 (1")	120	6	750
40 (1½")	150	6	900
50 (2")	180	6	1000

Other dimensions on request



Tandem valve body:
The tandem valves are available in a wide variety of angles and positions. Tandem valves are available as machined from block or from forged material (shown in picture).





For dimensions and further details, please contact Alfa Laval.

Multi port valve body:
Multi port valves is a space and time saving alternative to valve clusters. Alfa Laval offers customized solutions for both simple and complex processes.



For more details, please contact Alfa Laval.

Diaphragm Design:

The diaphragms are available in soft elastomers (EPDM, FPM and Silicone) as well as hard elastomers (PTFE and TFM).

The hard elastomers are supported by a soft elastomer (EPDM or FPM). The 2-piece design allows the two elastomers to work independently from each other and thereby reducing tensions caused by different thermic properties.

Diaphragms are available with 3 different kinds of connections: threaded pin, bayonet and button connection.

- Threaded connections are used on all soft elastomers ≥ DN 25 (1")
- Bayonet connections are used on all hard elastomer ≥ DN 15 (1/2")
- Button connections are used on all small sizes.

Material selection:

Each application has different working conditions and therefore different demands on the diaphragm. In order to select the most suitable diaphragm for your application, following factors should be considered:

- Working pressure
- Application temperatures
- Process fluids (product, cleaning liquid, sterilization, passivation, etc.)

Soft elastomers (EPDM, FPM and Silicon) are suitable for most applications also for high working temperatures. A typical feature of soft elastomer diaphragms is the suitability for mechanical polluted media. EPDM is in addition suitable for continuous steam application, while FPM is not recommended for use in steam applications.

Hard elastomers offer the highest possible degree of chemical resistance. Our TFM (PFTE grade) elastomer is a more flexible material and have some of the soft elastomer features including for example low creep.

For more information please see next page or contact Alfa Laval for further guidance.

Diaphragm properties:

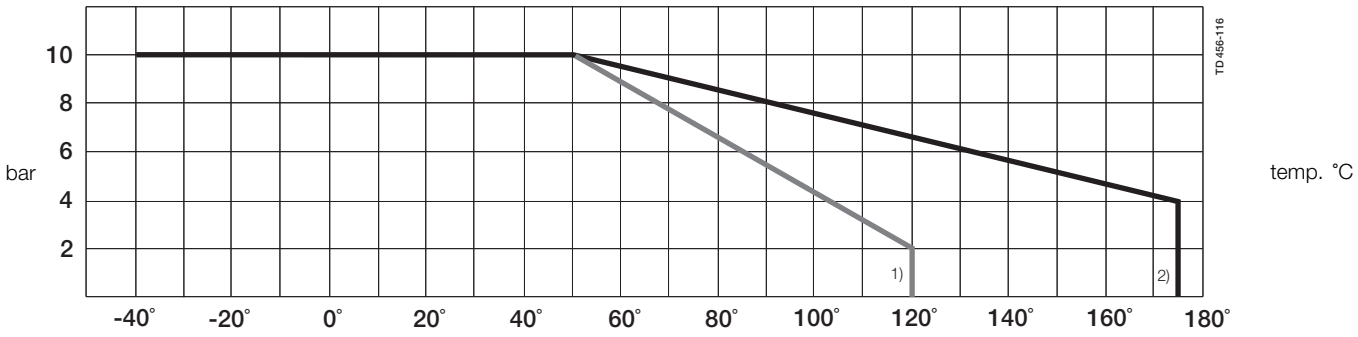
Code	Description	Temperature recommendations °C			Documentation			Available sizes	Available Diaphragm connections:		
		Min.	Max. Liquid	Max. Steam	FDA	USP	TSE		Button	Thread	Bayonet
S2	EPDM	-40°C	150°C	150°C [1]	✓	✓	✓	DN 8 - 100	DN 8 - 20	DN 25 - 100	
70	FPM	-5°C	150°C	Not recom.	✓			DN 8 - 100	DN 8 - 20	DN 25 - 100	
80	Silicon	-40°C	175°C	175°C [2]	✓			DN 8 - 100	DN 8 - 20	DN 25 - 100	
93/70	PTFE/FPM	-5°C	175°C	150°C [2]	✓	✓	✓	DN 8 - 100	DN 8 - 10		DN 15 - 100
93/S2	PTFE/EPDM	-5°C	175°C	150°C [2]	✓	✓	✓	DN 15 - 100			DN 15 - 100
LC/S2	TFM/EPDM	-5°C	175°C	150°C [2]	✓	✓	✓	DN 8 - 100	DN 8 - 10		DN 15 - 100

[1] Continuous temperature

[2] 40 min. steam sterilisation

FDA - Declaration of conformity to FDA (CFR 21: 177.2600 or 177.1550)
USP - Certificate of conformity to USP Class VI (chapter 88, biological reactivity test)
TSE/ADI Declaration (Transmissible Spongiform Encephalopathy /Animal Derived Ingredients)

Pressure - Temperature recommendations:



[1] Actuator DN65/80 only

[2] All other actuators and handles except C/C handle

Handle and actuator options:

The diaphragm valves can be operated by a handle or a pneumatic actuator. Alfa Laval offers 4 different kinds of a manual handles and 3 different kinds of pneumatic actuators. The special design of the actuators allows quick conversion of control function (NC to Air/Air to NO) and permits adjustment of spring pressure to optimize the sealing life time.
The handles and actuators are available in different materials: Stainless Steel (SS), Composite (C) and Epoxy and with various features and options.

Actuators

			
Model	SS/SS	C/SS	C/C
Sizes	DN 8 - 50 1/4" - 2"	DN 8 - 80 1/4" - 3"	DN 15 - 50 & 100 1/2" - 2" & 4"
Housing	Stainless steel	PPS / PP-GF [1]	PPS / PP-GF [1]
Intermediate part	Stainless steel	Stainless steel	PPS / PP-GF [1]
Compressor, stem	Stainless steel	Stainless steel	Stainless steel [2]
Max. working pressure	10 bar	10 bar	10 bar
Max. temperature control media	80°C	50°C	50°C
Max. pressure control media	6 bar	6 bar	6 bar
ATEX, Ex II 2GDc	✓	✓	
Optical positioner	✓	✓	✓
Interchangable control function	✓	✓	✓
Adjustable spring pressure	✓	✓	✓
Autoclavable	✓ [3]	✓ [3]	✓ [3]

[1] PPS (Polyphenylene sulphide) for sizes up to 2" and PP (Polypropylene) with glassfibre or sizes from 2 ½" and up

[2] Compressor for 4" (DN100) is made from Aluminium

[3] 121°C, 60 min.

Handles

				
Model	SS/SS	C/SS	C/C	Epoxy
Size	DN 8 - 80 1/4" - 3"	DN 8 - 80 1/4" - 3"	DN 15 - 50 1/2" - 2"	DN 15 - 100 1/2" - 4"
Hand wheel	Stainless steel	POM [2]	PP	Cast iron / epoxy coated
Bonnet	Stainless steel	Stainless steel	PP	Cast iron / epoxy coated
Spindle + compressor	Stainless steel	Stainless steel	Brass	Stainless steel [1]
Max. working pressure	10 bar	10 bar	10 bar	10 bar
Over closure protection	✓	✓		✓
Optical positioner	✓	✓	✓	✓
Lockable (if ordered)	✓	✓	✓	✓
Autoclavable	✓ [3]	✓ [3]	[4]	✓ [3]

[1] For DN 65 and up the compressor is nickel plated cast iron

[2] POM (Polyoxymethylene)

[3] 121°C, 60 min.

[4] Max. working temperature 80°C

Automation and control units:

A wide range of automation and control units are available for actuators consisting of:

- Controls unit
- Indication units
- Electrical ATEX units
- Stroke limiters

Accessories	ER 55-1	ER 52-1 ER 53-1	ER 52-2 *) ER 53-2 *)	ER 52-3 *) ER 53-3 *)	ER 52-4 ER 53-4	ER 52-5 ER 53-5	1062	VR 1001 VR 2001	BV 1000 BV 2000	VP 1001 VP 2001	381-385 318
Sensing & Control Diaphragm valves											
Valve											
Size	DN15-100	DN8-50 DN65-100					DN8-80	DN15-50 DN65-100			Group 1-5 DN65-100
Automation											
Control unit								✓	✓	✓	
Indication unit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Electrical ATEX unit						✓	✓			✓	
Supply Voltage											
8 VDC						✓	✓				
24 VDC			✓	✓	✓		✓	✓		✓	
24 VAC							✓				
250 VAC	✓	✓					✓				
Number of Solenoid valve											
One (1) 3/2-way								✓	✓		
Two (2) 3/2-way										✓	
Feedback signal											
Optical Indication							✓	✓	✓	✓	✓
Designated signals										✓	
Open/close	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Open							✓				
Close							✓				
Sensor & Interface											
Reed-Contact	✓										
Micro-switch		✓					✓				
Micro-switch **)			✓				✓				
Inductive sensor				✓	✓	✓	✓	✓	✓		
NAMUR sensor EEx ia						✓	✓				
PNP					✓		✓	✓			
NPN				✓							
AS-Interface v 3.0 ***)									✓		
Positioner 4-20mA										✓	
Mechanical ****)											✓
Cable connection											
PG gland	✓	✓	✓	✓	✓	✓	✓				
M12 Plug, 4 pin									✓		
M12 Plug, 8 pin								✓		✓	
Protection											
Class IP65	✓	✓	✓	✓	✓	✓	✓				
Class IP67								✓	✓	✓	

*) Accessories on request

**) Gold-plated contact

***) Max. 62 node on a single master/gateway

****) Stroke limiter

Ordering

The valves are sold as complete valves and the item numbers for the standard program are included in the ordering leaflets.
For other configurations please specify:

- Port size
- Body configuration
- Tube standard
- Connection
- Surface finish
- Stainless steel quality
- Diaphragm Type
- Handle or actuator Type
- Additional including hash marks, leakage detection etc.

Alfa Laval reserves the right to change specifications without prior notification. ALFA LAVAL is a trademark registered and owned by Alfa Laval Corporate AB.

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