



Simply Unique Diaphragm Valves

Unique Diaphragm Valve Premium UltraPure

Concept

Alfa Laval Unique Diaphragm Valve Premium UltraPure (DV-P) for use in sterile and ultra-hygienic processes.

The new diaphragm valve concept is optimized for double flow with significantly reduced pressure drop. The design secures quick, easy and safe fastening by a single-thread mechanism. The concept is based on Georg Fischer technology.

Working principle

The valve can be operated either pneumatically or manually. For manual operation a simple turn on the handle will operate the valve to either open or closed position and a simple pull-out function on the handle will lock the handle in position. Pneumatic operation can be done by means of compressed air and operate the valve according to actuator function.

Standard Design

The Unique DV-P with its modular design, consisting of: valve body, diaphragm, handle or actuator, and possibly automation and control units



TECHNICAL DATA

Pressure

Min. product pressure: Full vacuum
Max. product pressure: 145 PSI (10 bar)

Pneumatic operated

Actuator function: NC, NO and A/A
Max. pressure (NC): 87 PSI (6 bar)
Max. pressure (NO / A/A): 72.5 PSI (5 bar)
Max. control air temperature: . 122°F
Control air: compressed air (oil-free) Inert,
non-aggressive gases

Air connection:

Actuator size 1-3: G1/8"
Actuator size 4-5: G1/4"
Optical positioner: ✓

Interchangeable control

function: ✓
Adjustable spring pressure: . . . ✓
Autoclavable: ✓ (249.8°F, 60 min)

Manually operated

Optical positioner: ✓
Lockable: ✓
Autoclavable: ✓ (249.8°F, 60 min)

PHYSICAL DATA

Temperature

Temperature range: . . . 23°F to +203°F (302°F continuous steam)

Materials

Valve body: 1.4435 (316L), forged
Delta ferrite < 0.5%
Sulphur content 0.005-0.017%
Clamp ferrule: 1.4404 (316L)
Actuator: PPS GF40
Handle: PP GF30 / PPS GF40
Diaphragm: EPDM or PTFE/EPDM

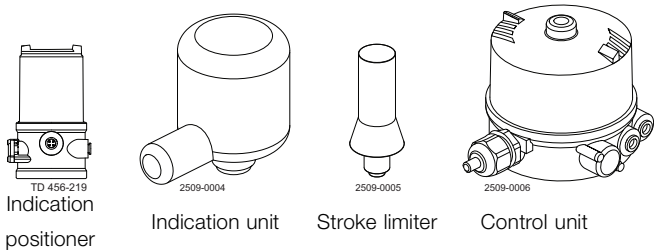
Surface finish

Surface condition acc. to ASME BPE 2012 table SF-1 or SF-4
Internally: Ra ≤ 20 µin (SF1) or Ra ≤ 15 µin
electropolished (SF4)
Externally: Ra ≤ 63 µin

Modular design

With its modular design, almost all configurations are feasible.
The valve comprises:

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



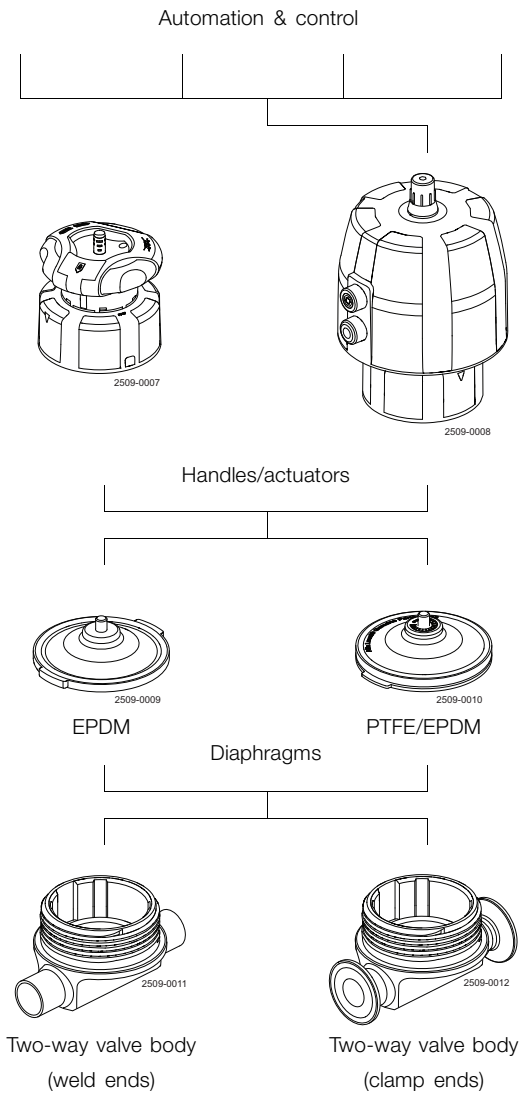
Documentation

All UltraPure valves are delivered with our comprehensive Q-Doc documentation package, which includes:

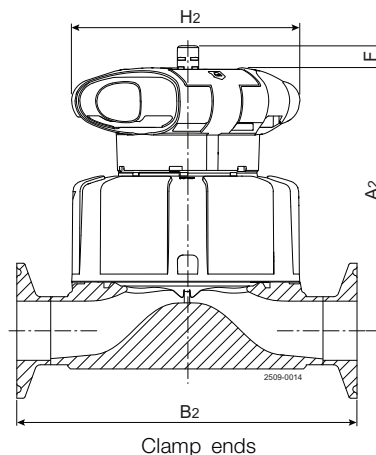
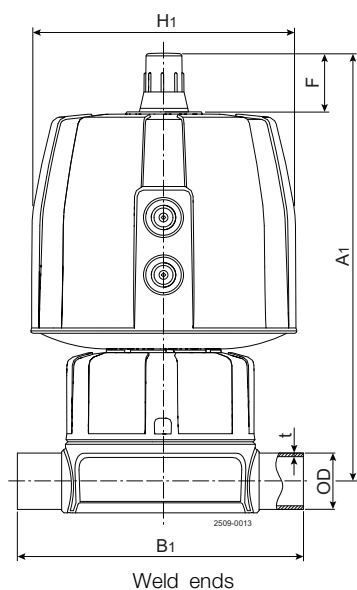
- MTR/3.1 traceability certificate corresponding to EN 10204
- FDA- Declaration of conformity to FDA (CFR 21: 177.2600 or 177.1550)
- USP- Certificate of conformity to USP Class VI (Chapter 88, biological reactivity test)
- TSE/ADI - Declaration (Transmissible Spongiform Encephalopathy/Animal Derived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

The following documentation is available upon request:

- Surface finish certificate (Ra test results)



Dimensions 2-way valve



Actuator (ASME BPE)

Actuation	Gasket	Size	Actuator size	A1	H1	B1	B2 ¹⁾	F	OD	t	Weight (lb)
NC	EPDM	DN15 / ½"	1	4.69	2.68	4.33	4.25	0.63	0.50	0.06	1.98
NO	EPDM+PTFE/EPDM	DN15 / ½"	1	4.69	2.68	4.33	4.25	0.63	0.50	0.06	1.98
AA	EPDM+PTFE/EPDM	DN15 / ½"	1	4.69	2.68	4.33	4.25	0.63	0.50	0.06	1.98
NC	PTFE/EPDM	DN15 / ½"	2	5.63	3.78	4.33	4.25	0.63	0.50	0.06	3.09
NC	EPDM	DN20 / ¾"	2	5.83	3.78	4.69	4.69	0.63	0.75	0.06	3.75
NO	EPDM+PTFE/EPDM	DN20 / ¾"	2	5.83	3.78	4.69	4.69	0.63	0.75	0.06	3.75
AA	EPDM+PTFE/EPDM	DN20 / ¾"	2	5.83	3.78	4.69	4.69	0.63	0.75	0.06	3.75
NC	EPDM+PTFE/EPDM	DN20 / ¾"	2	5.83	3.78	4.69	4.69	0.63	0.75	0.06	3.75
NC	EPDM	DN25 / 1"	2	6.26	3.78	5.08	5.00	0.63	1.00	0.06	4.85
NO	EPDM+PTFE/EPDM	DN25 / 1"	2	6.26	3.78	5.08	5.00	0.63	1.00	0.06	4.85
AA	EPDM+PTFE/EPDM	DN25 / 1"	2	6.26	3.78	5.08	5.00	0.63	1.00	0.06	4.85
NC	PTFE/EPDM	DN25 / 1"	3	7.60	4.72	5.08	5.00	1.02	1.00	0.06	4.85
NC	EPDM	DN40 / 1½"	4	9.41	5.91	6.34	6.26	1.02	1.50	0.06	13.00
NO	EPDM+PTFE/EPDM	DN40 / 1½"	4	9.41	5.91	6.34	6.26	1.02	1.50	0.06	13.00
AA	EPDM+PTFE/EPDM	DN40 / 1½"	4	9.41	5.91	6.34	6.26	1.02	1.50	0.06	13.00
NC	PTFE/EPDM	DN40 / 1½"	5	10.39	7.09	6.34	6.26	1.02	1.50	0.06	13.89
NC	EPDM	DN50 / 2"	4	9.88	5.91	7.56	7.52	1.02	2.00	0.06	17.64
NO	EPDM+PTFE/EPDM	DN50 / 2"	4	9.88	5.91	7.56	7.52	1.02	2.00	0.06	17.64
AA	EPDM+PTFE/EPDM	DN50 / 2"	4	9.88	5.91	7.56	7.52	1.02	2.00	0.06	17.64
NC	PTFE/EPDM	DN50 / 2"	5	10.91	7.09	7.56	7.52	1.02	2.00	0.06	18.74

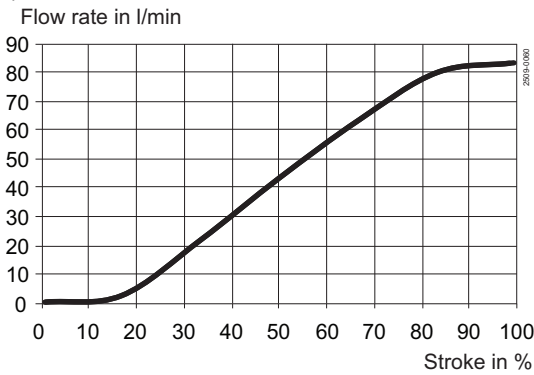
1) Build-in length acc. EN 558-1, Series 7

Handle (ASME BPE)

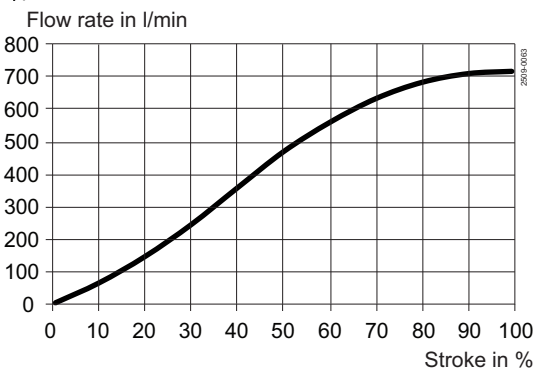
Gasket	Size	A2	H2	B1	B2	F	OD	t	Weight (lb)
EPDM+PTFE/EPDM	DN 15 / ½"	2.68	2.56	4.33	4.25	0.28	0.50	0.06	1.23
EPDM+PTFE/EPDM	DN 20 / ¾"	2.87	2.56	4.69	4.69	0.39	0.75	0.06	1.94
EPDM+PTFE/EPDM	DN 25 / 1"	3.86	3.43	5.08	5.00	0.51	1.00	0.06	3.04
EPDM+PTFE/EPDM	DN 40 / 1½"	5.28	5.31	6.34	6.26	0.75	1.50	0.06	6.88
EPDM+PTFE/EPDM	DN 50 / 2"	5.75	5.31	7.56	7.52	0.98	2.00	0.06	11.44

Flow characteristics - ASME

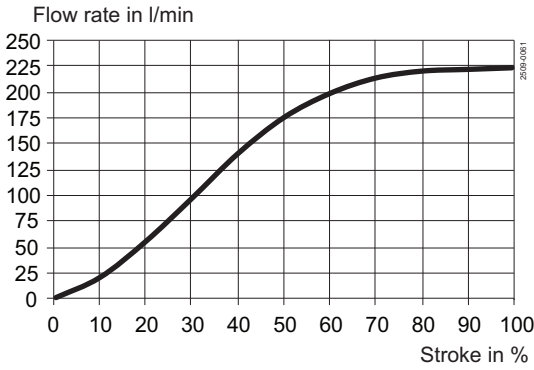
DN15 - 1/2"



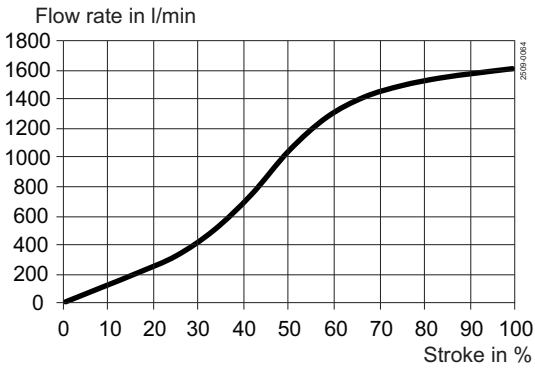
DN40 - 1 1/2"



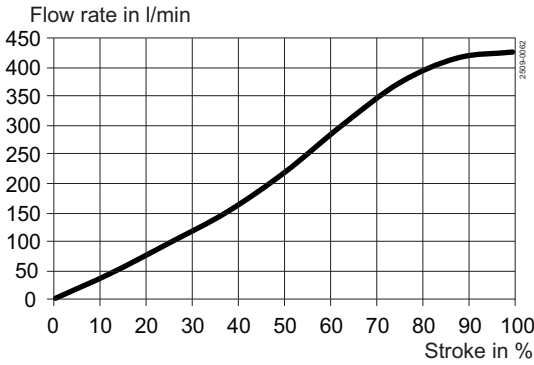
DN20 - 3/4"



DN50 - 2"



DN25 - 1"



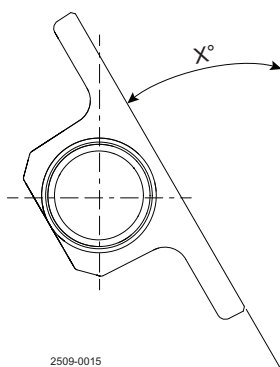
Test conditions: Water +68°F

X = stroke in %
Y = Flow rate in l/min

Kv 100 values

DN	Inch	Kv [l/min] Δp = 1 bar
15	1/2"	83
20	3/4"	223
25	1"	427
40	1 1/2"	717
50	2"	1617

$C_v = 1.16 \times K_v$



Diaphragm design

The diaphragms are available in soft elastomers (EPDM) as well as hard elastomers (PTFE/EPDM).

The hard elastomers are supported by a soft elastomer (EPDM). The 2-piece design allows the two elastomers to work independently of each other, thereby reducing tension caused by different thermal properties.

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, the following factors should be considered

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

Soft elastomers (EPDM) are suitable for most applications and for high working temperatures. A typical feature of soft elastomer diaphragms is their suitability for mechanical polluted media. EPDM is suitable for continuous steam application.

Hard elastomers offer the highest possible degree of chemical resistance. Our PTFE elastomer is a more flexible material and has some of the features of soft elastomer including for example low creep.

For further information, please see the following page or contact Alfa Laval for further guidance

Drain angle x

ASME BPE		
DN	Inch	Drain angle x
15	1/2"	37°
20	3/4"	22°
25	1"	30°
40	1 1/2"	24°
50	2"	20°

Diaphragm properties

Description	Temperature °F			Documentation		
	Min.	Max. liquid	Max. steam	FDA	USP	TSE
EPDM	-40 °F	302 °F	302 °F	✓	✓	✓
PTFE/EPDM	26 °F	347 °F	302 °F	✓	✓	✓

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)

Automation and control units

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

- Controls units
- Indication units
- Stroke limiters
- Positioners

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
- Tube standard
- Connection
- Surface finish
- Diaphragm type
- Handle or actuator type

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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How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.us to access the information direct.