

SAMSON

SAMSON SED

CATALOG



Actuated Diaphragm Valve DN 15-100

PVC-U / PVC-C / PP-H / PVDF / ABS

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MATERIAL AND BODY END CONNECTIONS

Type	DN	Female ends, BSP threaded, code 1	Female ends, metric series, code 2	Female union ends, metric series, code 30	Female union ends, BS series, code 31	Female union ends, ASTM series, code 32	Female union ends, BSP threaded, code 33	Male ends, metric series, code 39	Fixed flanges, drilled PN10/16, code 81	Fixed flanges, drilled ANSI B16.5 cl. 150 #FF, code 88
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Valve body material: **PVC-U**

186	12	P9	P8							
	15	P9	P8	P9			P10	P8		
382	15-20			P19	P20	P20	P19	P19	P20	P21
482	25-50			P32	P33	P33	P32	P32	P34	P34
	65							P32	P34	P34
285/485	25-50			P46	P49	P48	P47	P45	P50	P51
	65-100							P45	P50	P51

Valve body material: **PP-H**

186	12	P9	P8							
	15	P9	P8	P9			P10	P8		
382	15-20			P19				P19	P20	P21
482	25-50			P32				P32	P34	P34
	65							P32	P34	P34
285/485	25-50			P46				P45	P50	P51
	65-100							P45	P50	P51

Valve body material: **PVDF**

186	12	P9	P8							
	15	P9	P8	P9			P10	P8		
382	15-20			P19				P19	P20	P21
482	25-50			P32				P32	P34	P34
	65							P32	P34	P34
285/485	25-50			P46				P45	P50	P51
	65-100							P45	P50	P51

Valve body material: **PVC-C**

186	15			P9				P8		
382	15-20			P19		P20	P19	P19	P20	P21
482	25-50			P32		P33	P32	P32	P34	P34
	65							P32	P34	P34
285/485	25-50			P46		P48	P47	P45	P50	P51
	65-100							P45	P50	P51

Valve body material: **ABS**

382	15-20			P19						
482	25-50			P32						
	65							P32		
285/485	25-50			P46						
	65-100							P45		

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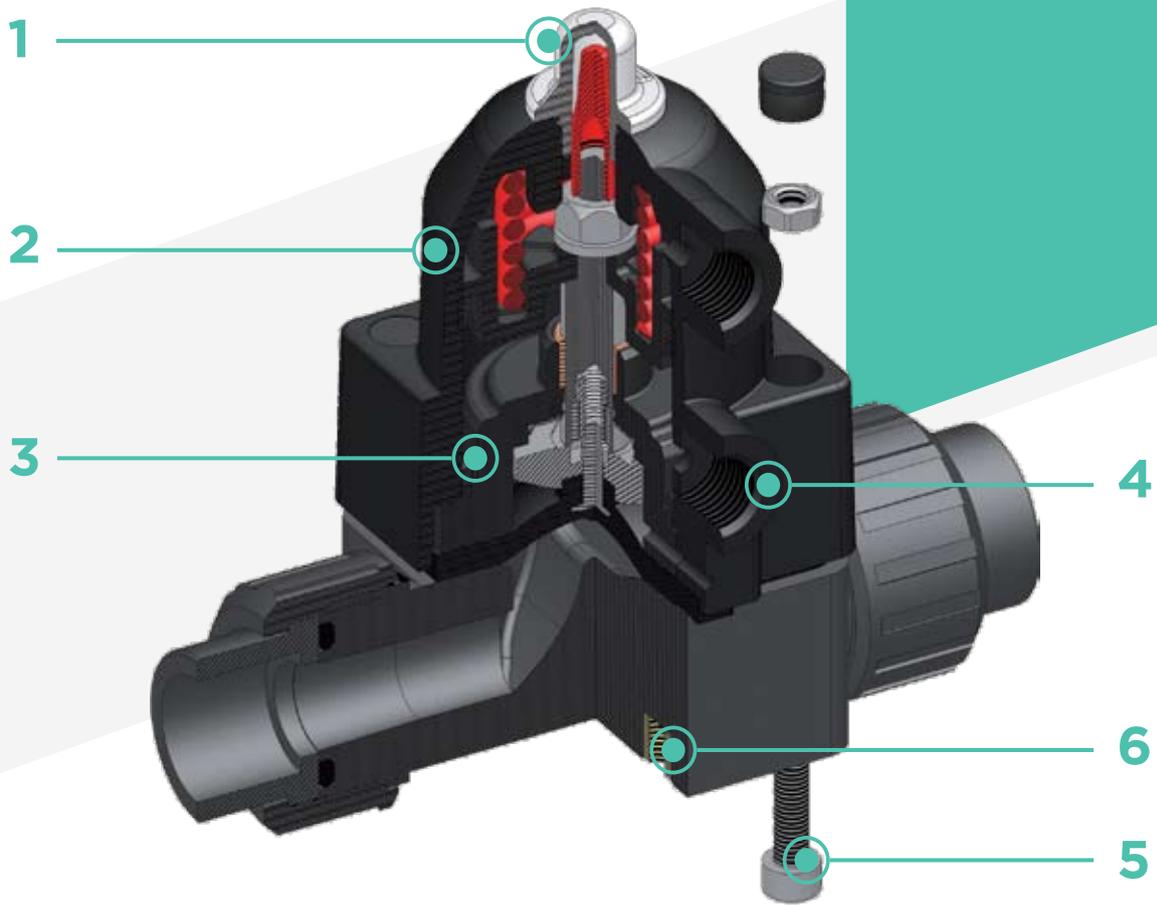
186 DN 12-15

The 186 is a pneumatically operated diaphragm valve of reduced dimensions and particularly compact structure, ideal for use in confined spaces.

COMPACT DIAPHRAGM VALVE

- Connection system for solvent weld and threaded joints
- Extremely compact construction
- **Internal operating components in metal totally isolated from the conveyed fluid**
- Valve stem in STAINLESS steel
- Easy to replace diaphragm seal
- Corrosion-proof internal components
- **CDSA** (Circular Diaphragm Sealing Angle) system offering the following advantages:
 - uniform distribution of shutter pressure on the diaphragm seal
 - reduction in the tightening torque of the screws fixing the actuator to the valve body
 - reduced mechanical stress on all valve components (actuator, body and diaphragm)
 - easy to clean valve interior
 - low risk of the accumulation of deposits, contamination or damage to the diaphragm due to crystallisation
 - operating torque reduction

Technical specifications	
Construction	Compact single wear diaphragm valve
Size range	DN 12-15
Diaphragm size	MA 10
Nominal pressure	PN 6 with water at 20 °C
Temperature range	PVC-U: 0 °C - 60 °C - PVC-C: 0 °C - 100 °C PP-H: 0 °C - 100 °C - PVDF: -20 °C - 120 °C
Coupling standards	Solvent welding / Welding: EN ISO 1452, EN ISO 15493, BS 4346-1, DIN 8063, NF T54-028, ASTM D 2467. Can be coupled to pipes according to EN ISO 1452, EN ISO 15493, DIN 8062, NF T54-016, ASTM D 1785 Thread: ISO 228-1, DIN 2999, ASTM D 2464, Flanging system: ISO 7005-1, EN ISO 1452, EN ISO 15493, EN 558-1, DIN 2501, ANSI B16.5 Cl.150, JIS B2220
Reference standards	Construction criteria: EN ISO 16138, EN ISO 1452, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	Body: PVC-U / PVC-C / PP-H / PVDF
Diaphragm material	EPDM, FPM, PTFE
Control options	Pneumatic actuator; Manual control



1 High visibility optical position indicator protected by a transparent cover with O-Ring

2 Light and compact piston actuator in PP-GR, ideal for heavy-duty applications in chemically aggressive environments with a **diaphragm perimeter containment system** that ensures the perfect compression of the rubber without any lateral expansion

3 Piston in high strength IXEF. The high quality finish of the external surface guarantees perfect slidability over the seal and ensures a long working life without any actuator maintenance

4 Easy to install, even in confined spaces: compressed air inlets with G 1/4" threaded adjustable connections to enable alignment with the piping

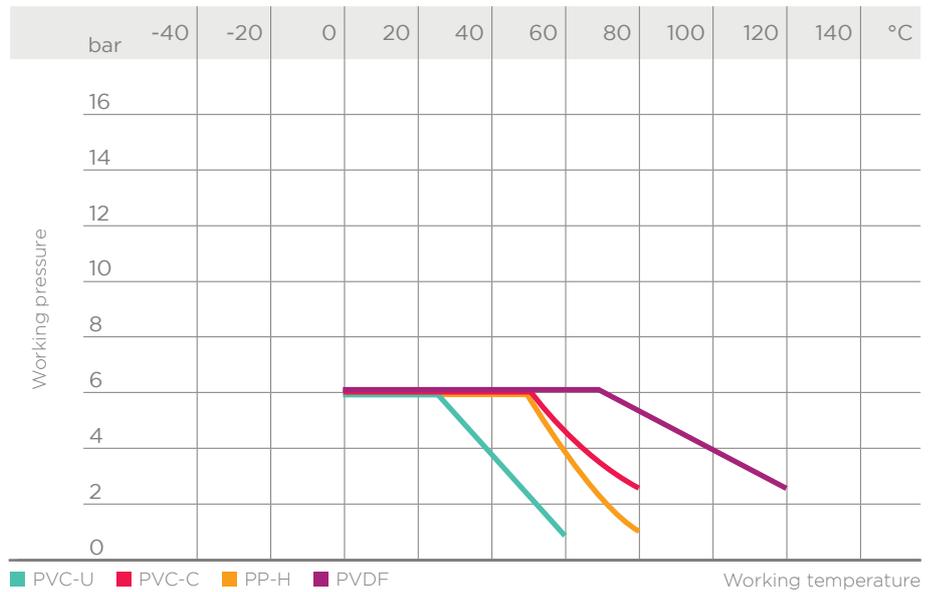
5 STAINLESS steel bolts, can also be inserted from above

6 Threaded metal inserts for anchoring the valve

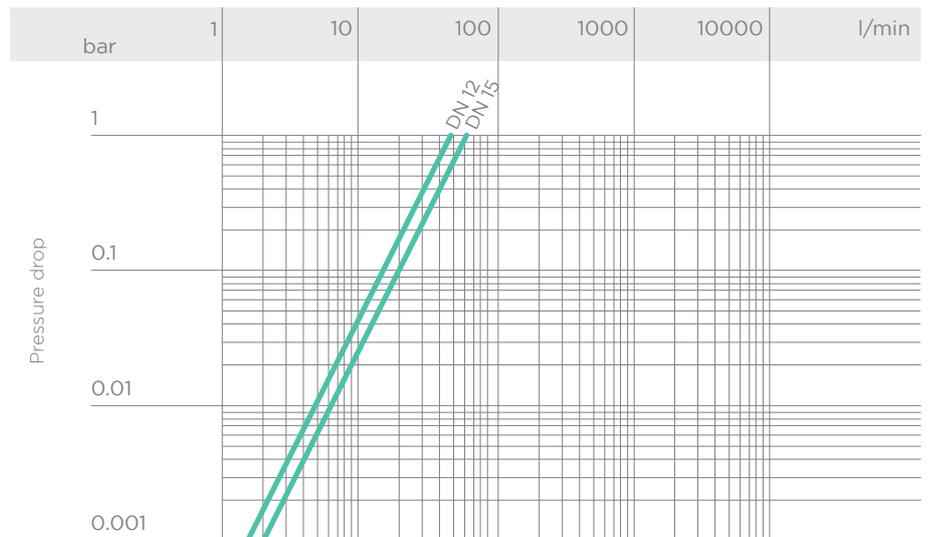
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position.

The K_v100 values shown in the table are calculated with the valve completely open.

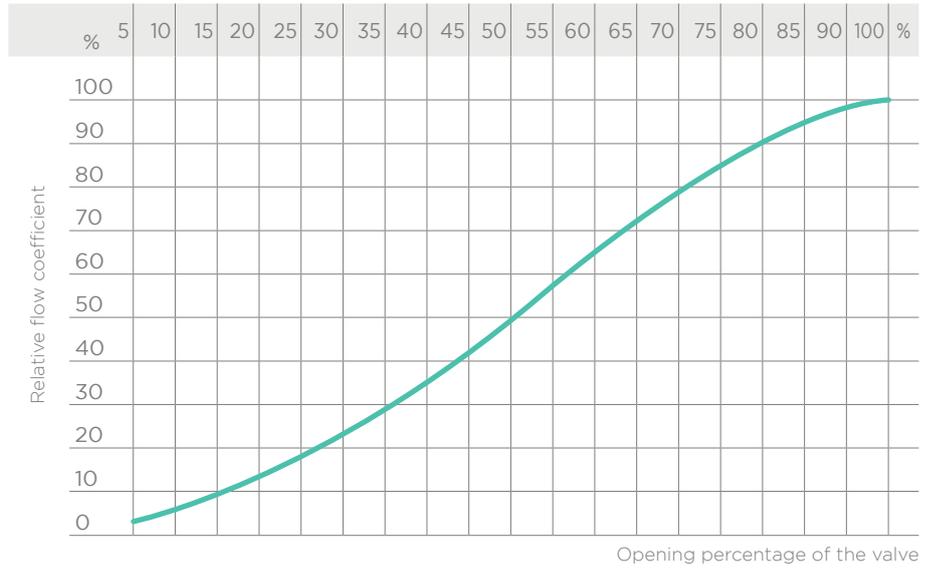
DN	12	15
K _v 100 l/min	47	60

The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. SED reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

TECHNICAL DATA

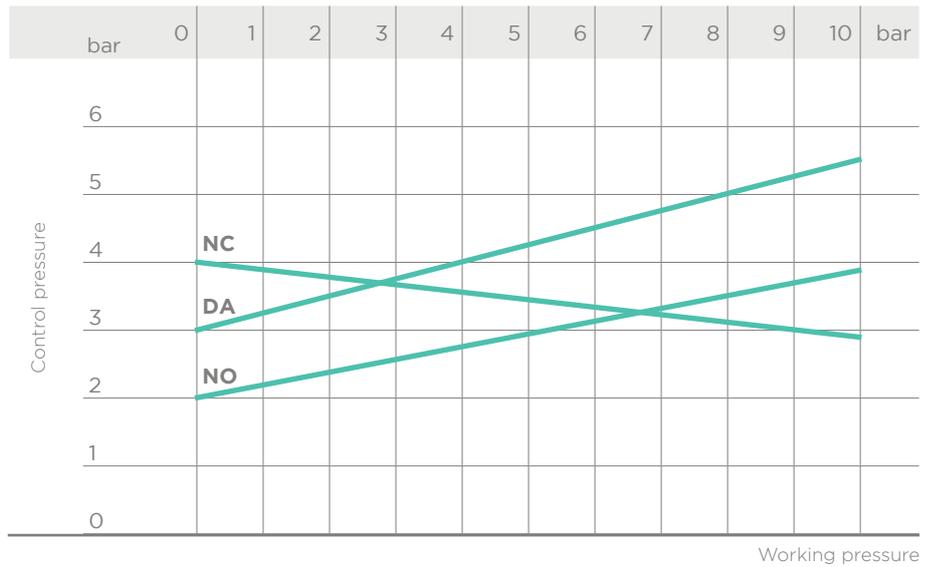
RELATIVE FLOW COEFFICIENT GRAPH

The relative flow coefficient refers to the variation in the flow rate as a function of the valve opening stroke

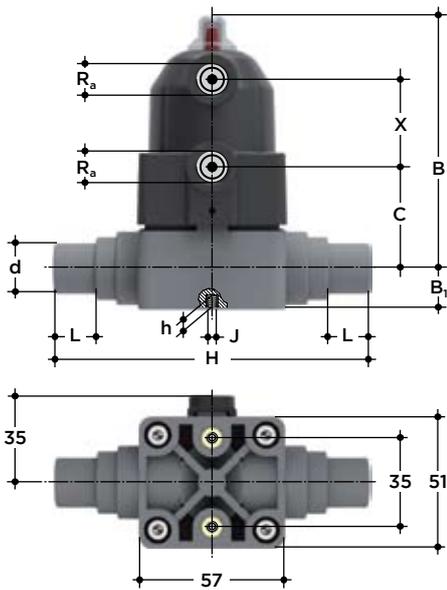


CONTROL PRESSURE ACCORDING TO WORKING PRESSURE

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



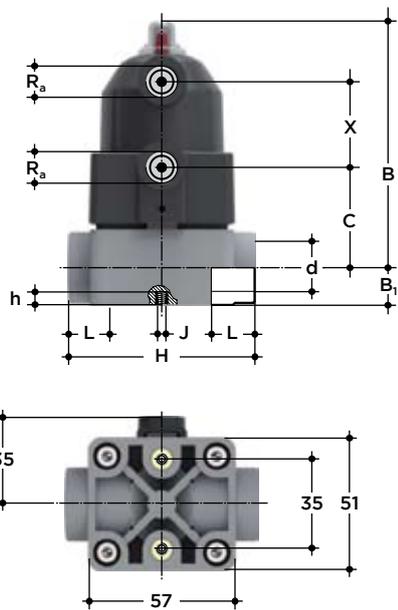
DIMENSIONS - 186



Compact diaphragm valve with **male ends** for solvent respectively socket welding, **metric series**, code 39

DN	MA	PN	B	B ₁	C	X	R _a	d	L	H	h	J	Weight (g)		
													PVC-U PVC-C	PP-H	PVDF
15	10	6	98	15	38	34	1/4"	20	17	124	8	M5	410	360	390

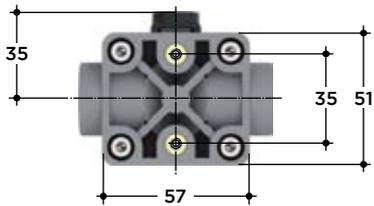
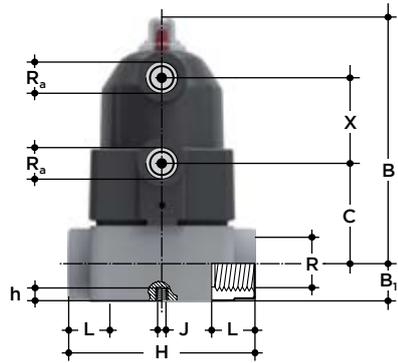
Figures for PVC-U version



Compact diaphragm valve with **female ends** for solvent respectively socket welding, **metric series**, code 2

DN	MA	PN	B	B ₁	C	X	R _a	d	L	H	h	J	Weight (g)		
													PVC-U	PP-H	PVDF
12	10	6	98	15	38	34	1/4"	16	14	124	8	M5	380	350	390
15	10	6	98	15	38	34	1/4"	20	16	124	8	M5	380	350	390

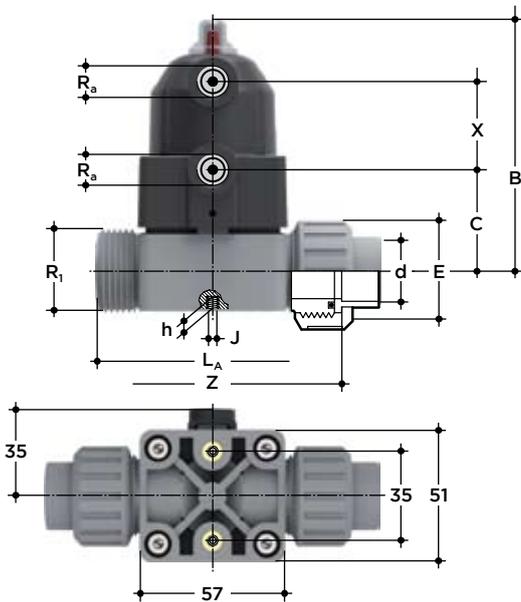
Figures for PVC-U version



Compact diaphragm valve with **BSP threaded female ends**, code 1

DN	MA	PN	B	B ₁	C	X	R _a	R	L	H	h	J	Weight (g)		
													PVC-U	PP-H	PVDF
12	10	6	98	15	38	34	1/4"	3/8"	11.5	75	8	M5	380	350	390
15	10	6	98	15	38	34	1/4"	1/2"	15	75	8	M5	380	350	390

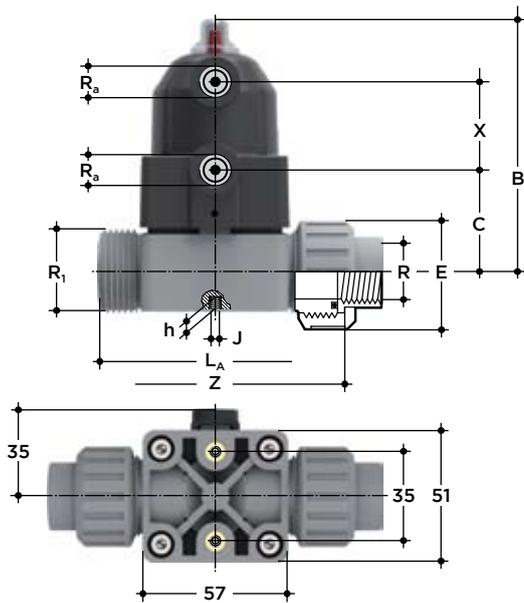
Figures for PVC-U version



Compact diaphragm valve with **female union ends** for solvent respectively socket welding, **metric series**, code 30

DN	MA	PN	B	C	d	E	R ₁	X	R _a	L _A	Z	h	J	Weight (g)		
														PVC-U PVC-C	PP-H	PVDF
15	10	6	98	38	20	41	1"	34	1/4"	90	97.5	8	M5	440	400	470

Figures for PVC-U version



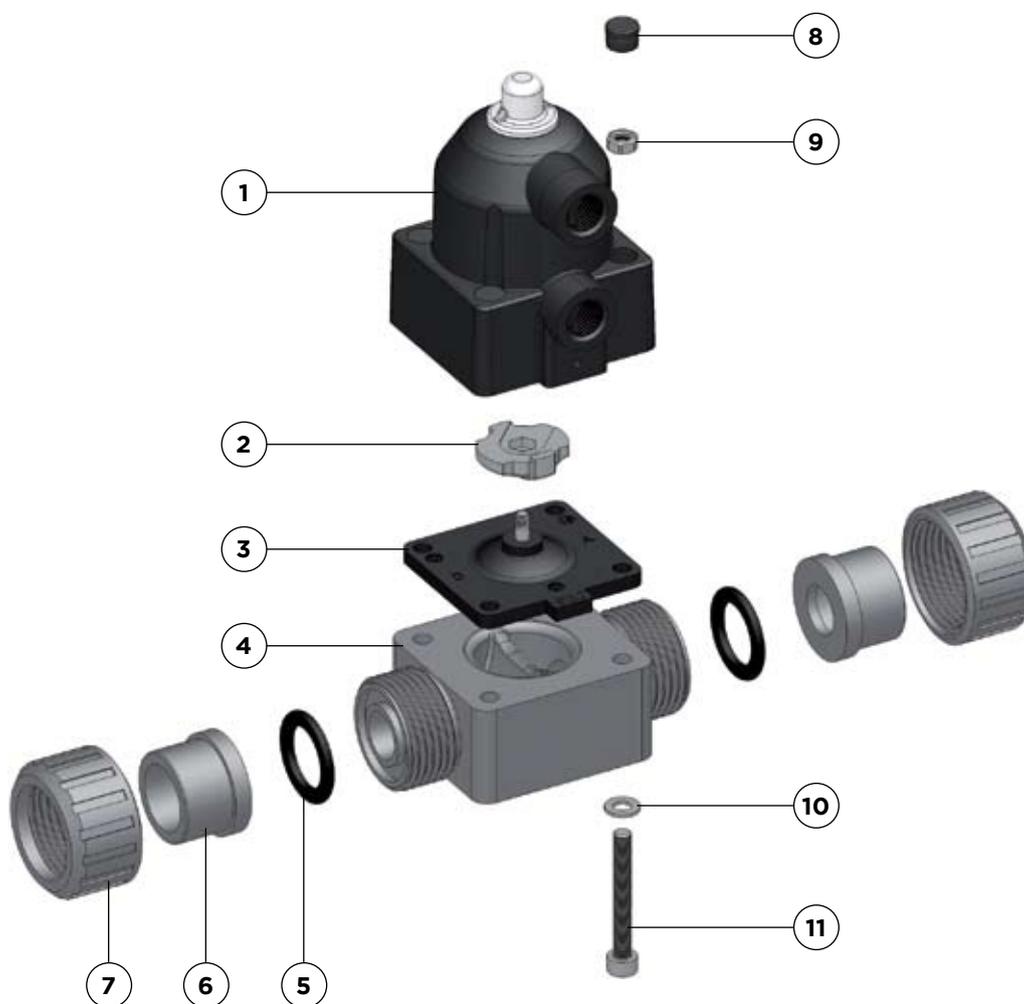
Compact diaphragm valve with **BSP threaded female union ends**, code 33

DN	MA	PN	B	C	R	E	R ₁	X	R _a	L _A	Z	h	J	Weight (g)		
														PVC-U PVC-C	PP-H	PVDF
15	10	6	98	38	1/2"	41	1"	34	1/4"	90	97.5	8	M5	440	400	470

Figures for PVC-U version

COMPONENTS

EXPLODED VIEW



1 · Actuator (PP-GR - 1)

2 · Compressor (IXEF - 1)

3 · Diaphragm seal (EPDM - 1)

4 · Valve body (PVC-U - 1)

5 · Socket seal O-ring (EPDM - 2)

6 · End connector (PVC-U - 2)*

7 · Union nut (PVC-U - 2)*

8 · Protection plug (PE - 4)

9 · Nut (STAINLESS steel - 4)

10 · Washer (Stainless steel - 4)

11 · Bolt (Stainless steel - 4)

The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Open the valve with compressed air (NC-DA) to drain any residual liquid from the valve.
- 3) Disconnect the valve from the pneumatic and electrical connections
- 4) Fully unscrew the union nuts (7) and extract the valve sideways.
- 5) Remove the bolts (11) with their washers (10) (this operation will be made easier if the actuator is pressurised (NC).
- 6) Separate the valve body (4) from the actuator (1).
- 7) Unscrew the diaphragm (3) and remove the compressor (2) (this operation will be made easier if the actuator is not pressurised (NC).

ASSEMBLY

- 1) Insert the compressor (2) on the actuator stem.
- 2) Screw the diaphragm (3) onto the stem, aligning it correctly with its housing on the actuator.
- 3) Mount the actuator (1) on the valve body (4) and screw in the bolts (11) with the relative washers (10) (this operation will be made easier if the actuator is pressurised (NC).
- 4) Tighten the bolts (11) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
- 5) Position the valve between the end connectors (6) and tighten the union nuts (7), making sure that the socket seal O-rings (5) do not exit their seats.
- 6) Reconnect the valve to the pneumatic and electrical connections



Note: All operations on equipment under pressure or containing compressed springs must be carried out under safe conditions for the operator.

INSTALLATION

Before proceeding with installation, please follow these instructions carefully: (these instructions refer to union ends versions). The valve can be installed in any position and in any direction.

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Unscrew the union nuts (7) and insert them on the pipe segments.
- 3) Solvent weld or screw the end connectors (6) onto the pipe ends.
- 4) Position the valve body between the end connectors, making sure that the socket seal O-rings (5) do not exit their seats.
- 5) Fully tighten the union nuts (7).
- 6) If necessary, support the pipework with pipe clips or by means of the carrier built into the valve itself (see paragraph "Fastening and supporting").
- 7) Connect the compressed air as indicated in paragraph "Compressed air connections". For valves with electric accessories, refer to the specific technical manual supplied with the accessory.



Note: before putting the valve into service, check that the bolts on the valve body (4) are tightened correctly at the suggested torque.

382 DN 15-20

The new 382 diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids.

The new internal geometry of the body optimises fluid dynamic efficiency by increasing the flow rate and ensuring an optimum linearity of the flow adjustment curve.

The 382 is extremely compact and very light.

PNEUMATICALLY ACTUATED 2-WAY DIAPHRAGM VALVE

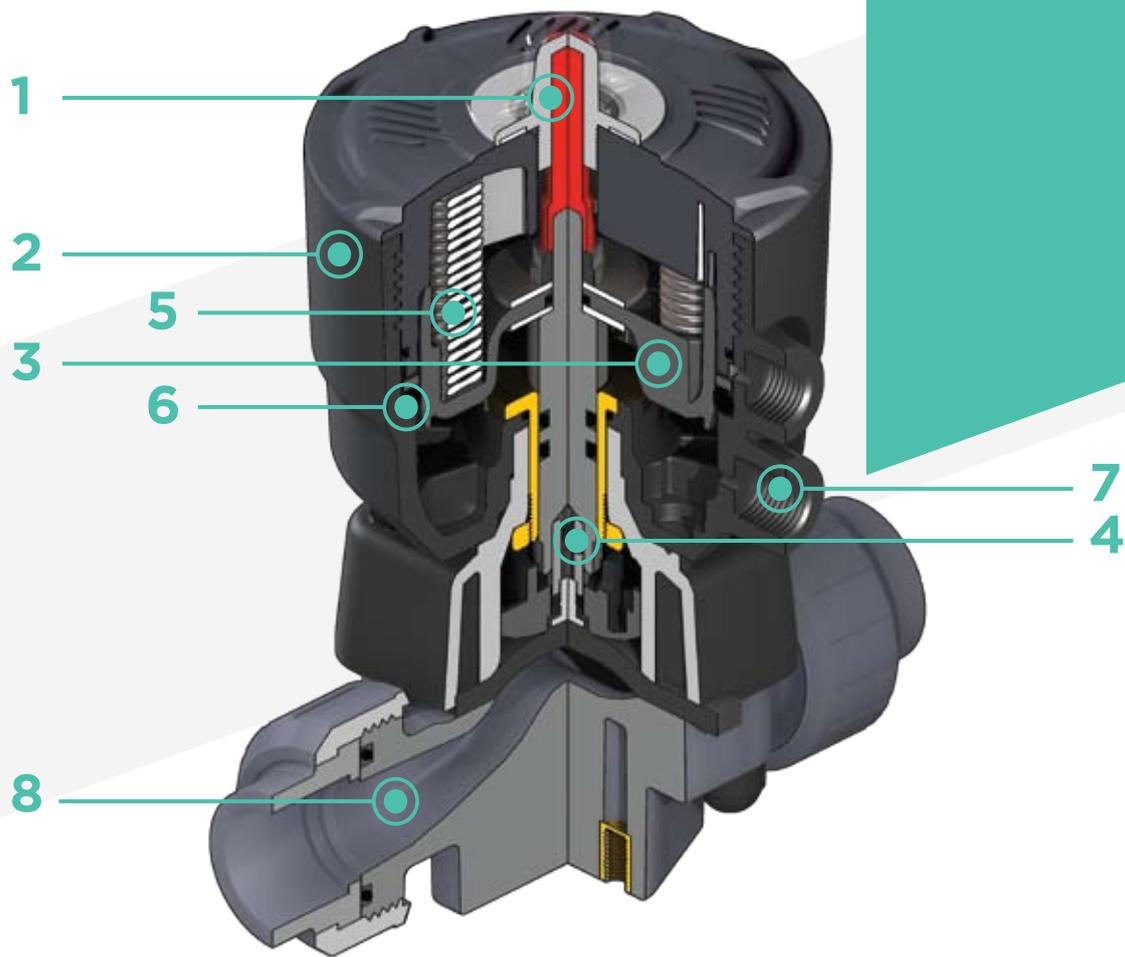
- Connection system for solvent weld, threaded and flanged joints
- **Optimised fluid dynamic design:** maximum output flow rate thanks to the optimised efficiency of the fluid dynamics that characterise the new internal geometry of the body
- **Light and compact piston actuator in PP-GR,** ideal for heavy-duty applications in chemically aggressive environments
- **High performance internal components:** piston in high strength IXEF with high quality surface finish and Stem in stainless steel with double seal O-Ring
- Bonnet fastening screws in AISI 316 steel protected against the external environment by PE plugs. Absence of metal parts exposed to the external environment to prevent any risk of corrosion
- **CDSA** (Circular Diaphragm Sealing Angle) system that, thanks to the uniform distribution of shutter pressure on the diaphragm seal, offers the following advantages:
 - reduction in the tightening torque of the screws fixing the actuator to the valve body
 - reduced mechanical stress on all valve components (actuator, body and diaphragm)
 - easy to clean valve interior
 - low risk of the accumulation of deposits, contamination or damage to the diaphragm due to crystallisation

Technical specifications

Construction	Pneumatically actuated diaphragm valve with body at maximized flow rate
Diaphragm size	DN 15 - 20
Nominal pressure	PN 10 with water at 20 °C
Temperature range	PVC-U: 0 °C - 60 °C - PVC-C: 0 °C - 100 °C PP-H: 0 °C - 100 °C - PVDF: -20 °C - 120 °C ABS: -20 °C - 80 °C
Coupling standards	Solvent welding/Welding EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931, BS 4346-1, DIN 8063, NF T54-028, ASTM D 2467, ASTM F 439. Can be coupled to pipes according to EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931, DIN 8062, NF T54-016, ASTM D 1785, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM D 2464 Flanging system: ISO 7005-1, EN ISO 1452, EN ISO 15493, EN 1092-1, EN ISO 15494, EN ISO 10931, EN 558-1, DIN 2501, ANSI B16.5 Cl.150, JIS B2220
Reference standards	Construction criteria: EN ISO 16138, EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, DVS 2202-1, DVS 2201-1, DVS 2207-11, DVS 2207-15, DVS 2208-1, UNI 11242, UNI 11318
Valve material	PVC-U / PP-H / PVDF / PVC-C / ABS
Diaphragm material	EPDM, FPM, PTFE (on request NBR)
Control options	Pneumatic actuator

The new compact and light piston actuator in PP-GR makes the 382 the ideal choice for applications requiring very frequent valve operation and a long valve lifetime.

Technical specifications - pneumatic actuator	
Construction	Single-acting (NC-NO) and double-acting (DA) pneumatic piston actuator
Actuator Material	Body and bonnet: PP-GR Position indicator cap PC
Control air pressure	Minimum: according to the working pressure and operation of the actuator (see detailed graphs) Maximum: NC: 7 bar - NO: 5 bar - DA: 5 bar
Power supply	Dry or lubricated filtered compressed air. If using other fluids, contact the SED service centre
Control fluid temperature	Max 40 °C
Working temperature	-20 °C - 50 °C
Standard equipment	• Optical position indicator
Accessories	<ul style="list-style-type: none"> • Stroke limiter with position indicator • Stroke limiter with position indicator and emergency manual override • Limit switch boxes • Electro-pneumatic positioner • Pilot solenoid valves 3-5/2 ways for direct or manifold mounting • Distance plate



1 High visibility optical position indicator protected by a transparent cover with O-Ring

2 Light and compact piston actuator in PP-GR, ideal for heavy-duty applications in chemically aggressive environments with a **diaphragm perimeter containment system** that ensures the perfect compression of the rubber without any lateral expansion

3 Piston in high strength IXEF. The high quality finish of the external surface guarantees perfect slidability over the seal and ensures a long working life without any actuator maintenance

4 High strength stainless steel stem with double O-Ring.

Floating pin connection between the actuator stem and diaphragm to prevent concentrated loads, improve the seal and extend its lifetime

5 Actuator equipped with **6 independent cartridge springs** arranged radially to uniformly distribute the load on the piston.

6 Dual function main gasket.
Piston seal: the gasket does not move but sits securely on the actuator cylinder instead of the piston.

External seal: The gasket positioned above the threaded joint between the bonnet and cylinder ensures that the coupling is not stressed by the pressure inside the actuator

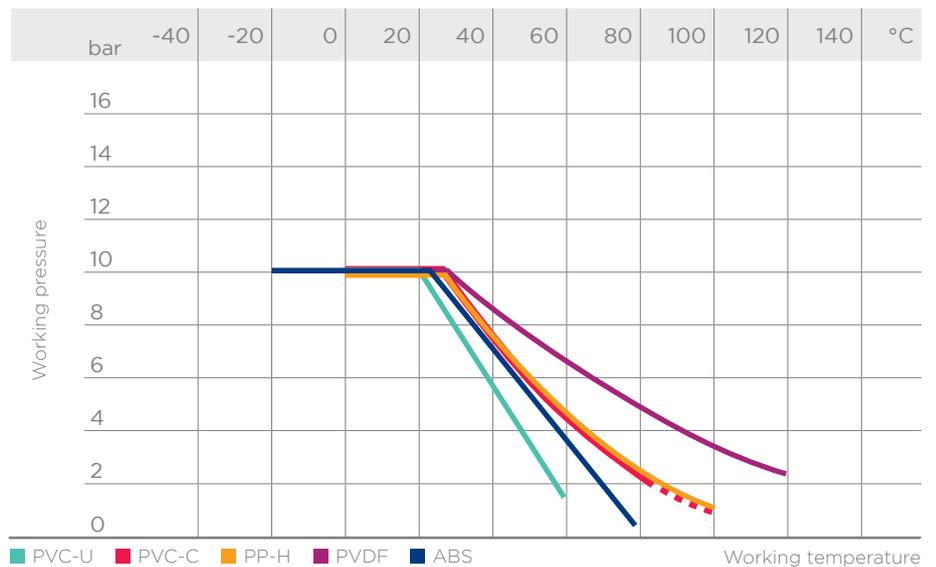
7 Easy to install, even in confined spaces: **compressed air inlets with G 1/4" threaded adjustable connections** to enable alignment with the piping

8 New design of valve body interior.
Substantially increased flow coefficient and reduced pressure drop. The degree of efficiency reached has also enabled **the size and weight** of the valve to be reduced.
Adjustment linearity: the internal profiles of the valve also greatly improve its characteristic curve, resulting in **extremely sensitive and precise adjustment** along the entire stroke of the shutter.

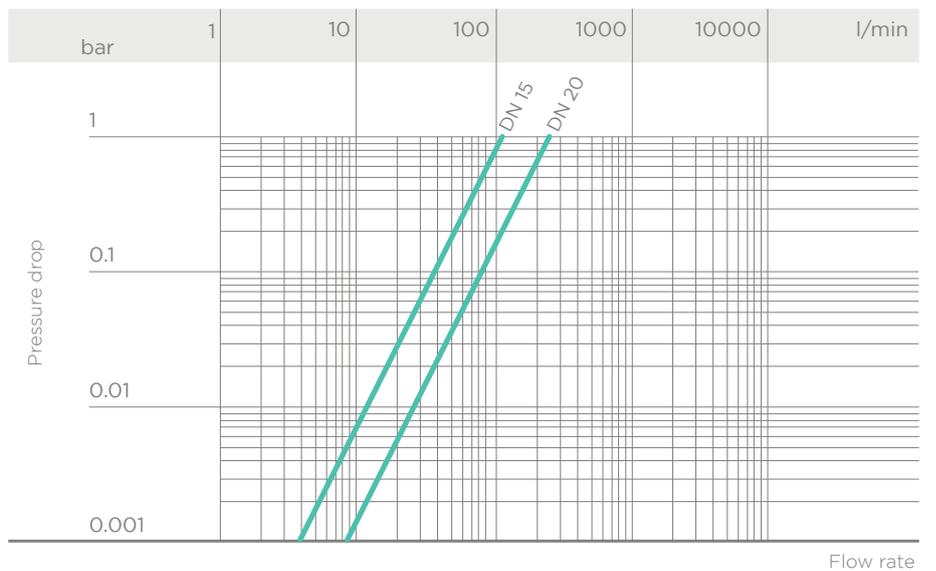
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and harmless fluids to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

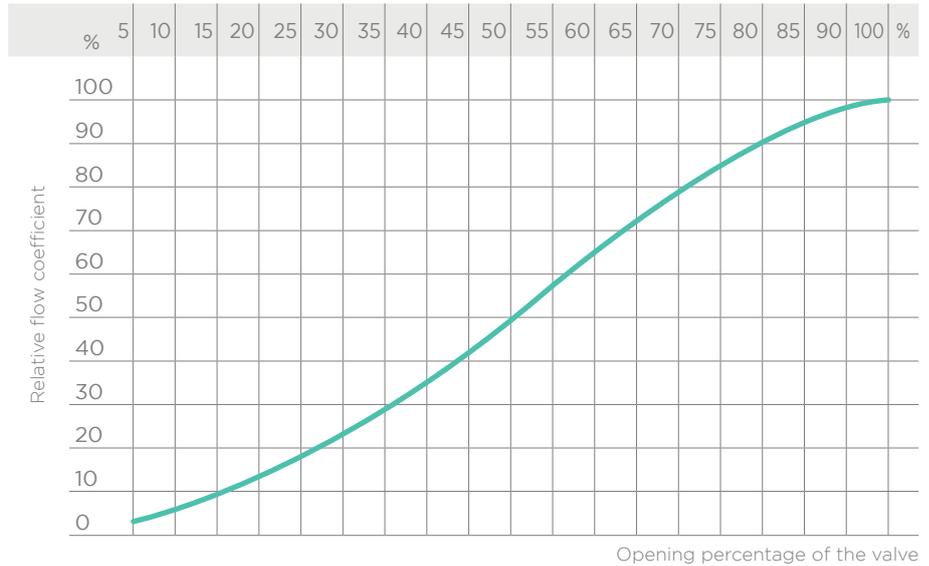
The K_v100 values shown in the table are calculated with the valve completely open.

DN	15	20
K _v 100 l/min	112	261

TECHNICAL DATA

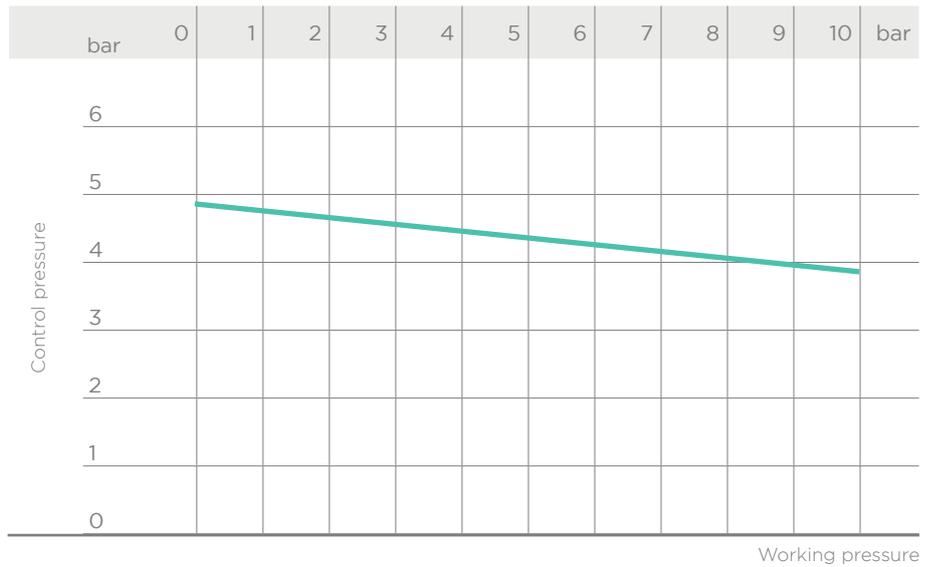
RELATIVE FLOW COEFFICIENT GRAPH

The relative flow coefficient refers to the variation in the flow rate as a function of the valve opening stroke



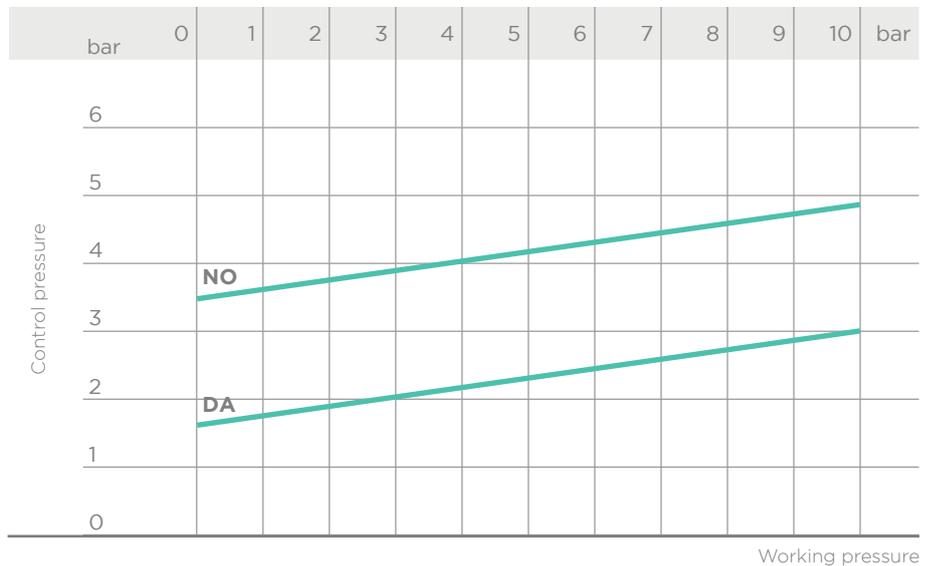
CONTROL PRESSURE ACCORDING TO WORKING PRESSURE 382 NC

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



CONTROL PRESSURE ACCORDING TO WORKING PRESSURE 382 NO-DA

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



FUNCTIONAL CHARACTERISTICS

	Double-acting (DA)	normally closed (NC)	Single-acting (SA)
Function type	double-acting	normally closed (NC)	normally open (NO)
Valve opening	air	air	spring
Valve closing	air	spring	air

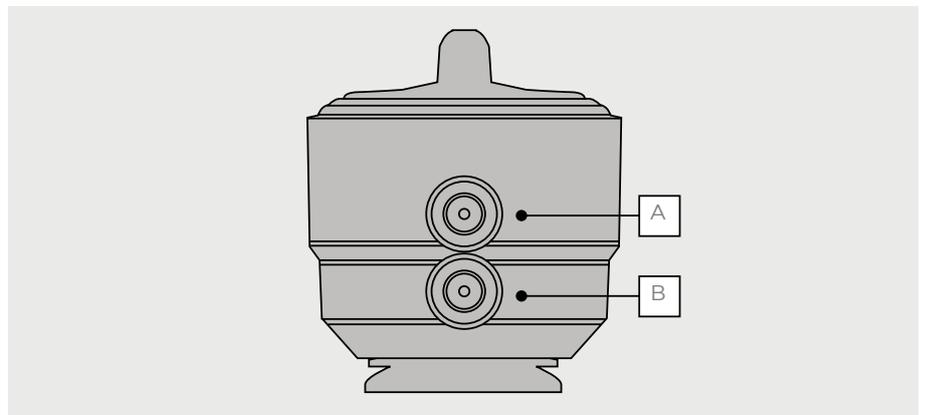
ACTUATOR CAPACITY

NI: Normal-liter
Volume at atmospheric pressure

DN	15	20
NC	0.12 NI	0.12 NI
NO	0.16 NI	0.16 NI
DA	0.23 NI	0.23 NI

COMPRESSED AIR CONNECTIONS

Function type	Double-acting (DA)	Normally closed (NC)	Normally open (NO)
Valve opening	Inlet B	Inlet B	-
Valve closing	Inlet A	-	Inlet A



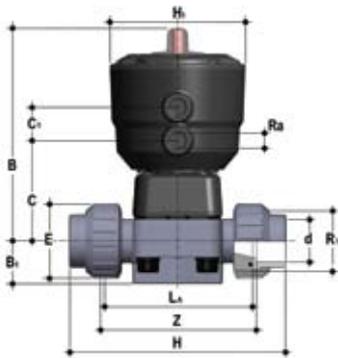
DIMENSIONS - 382



Pneumatically actuated diaphragm valve with **male ends** for solvent respectively socket welding, **metric series**, code 39, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	C ₁	H	H ₁	L	Ra	Weight (g)		
											NC	NO	DA
15	20	10	148	25	66	24	124	97	16	1/4"	695	695	575
20	20	10	151	29.5	69	24	144	97	19	1/4"	717	717	597

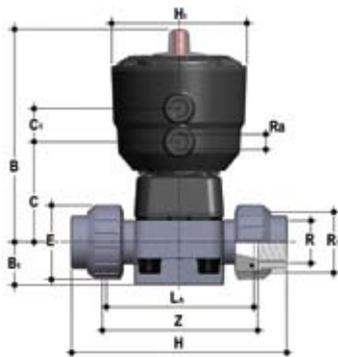
Figures for PVC-U version



Pneumatically actuated diaphragm valve with **female ends** for solvent respectively socket welding, **metric series**, code 30, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	C ₁	E	H	H ₁	La	R ₁	Ra	Z	Weight (g)		
														NC	NO	DA
15	20	10	148	25	66	24	41	129	97	90	1"	1/4"	100	735	735	615
20	20	10	151	29.5	69	24	50	154	97	108	1 1/4"	1/4"	116	797	797	677

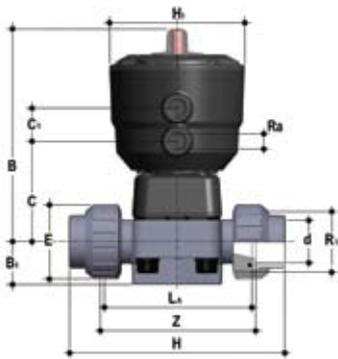
Figures for PVC-U version



Pneumatically actuated diaphragm valve with **BSP threaded female union ends**, code 33, PVC-U, PVC-C

DN	MA	PN	B	B ₁	C	C ₁	E	H	H ₁	La	R	R ₁	Ra	Z	Weight (g)		
															NC	NO	DA
15	20	10	148	25	66	24	41	131	97	90	1/2"	1"	1/4"	97	735	735	615
20	20	10	151	29.5	69	24	50	151	97	108	3/4"	1 1/4"	1/4"	118	797	797	677

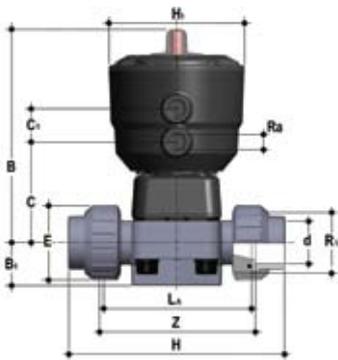
Figures for PVC-U version



Pneumatically actuated diaphragm valve with **female union ends** for solvent welding, **ASTM series**, code 32, PVC-U, PVC-C

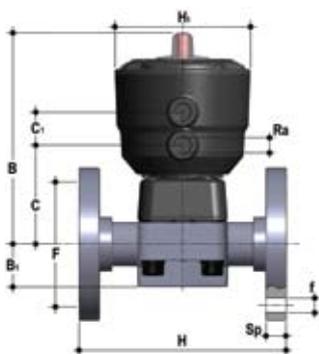
DN	MA	PN	B	B ₁	C	C ₁	E	H	H ₁	La	R ₁	Ra	Z	Weight (g)		
														NC	NO	DA
15	20	10	148	25	66	24	41	143	97	90	1"	1/4"	98	735	735	615
20	20	10	151	29.5	69	24	50	167	97	108	1" 1/4	1/4"	115	797	797	677

Figures for PVC-U version



Pneumatically actuated diaphragm valve with **female union ends** for solvent welding, **BS series**, code 31, PVC-U

DN	MA	PN	B	B ₁	C	C ₁	E	H	H ₁	La	R ₁	Ra	Z	Weight (g)		
														NC	NO	DA
15	20	10	148	25	66	24	41	131	97	90	1"	1/4"	97	735	735	615
20	20	10	151	29.5	69	24	50	154	97	108	1" 1/4	1/4"	116	797	797	677



Pneumatically actuated diaphragm valve with **fixed flanges drilled PN10/16**. Face to face according to EN 558-1, code 81, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	C ₁	F	Øf	H	H ₁	Ra	U	Sp	Weight (g)		
														NC	NO	DA
15	20	10	148	25	66	24	65	14	135	97	1/4"	4	13.5	925	925	805
20	20	10	151	29.5	69	24	75	14	150	97	1/4"	4	13.5	917	917	797

Figures for PVC-U version

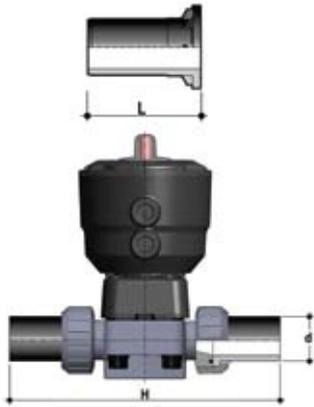


Pneumatically actuated diaphragm valve with **fixed flanges, drilled ANSI B16.5 cl. 150**
#FF. Face to face according to EN 558-1, code 88, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	C ₁	F	Øf	H	H ₁	Ra	U	Sp	Weight (g)		
														NC	NO	DA
15	20	10	148	25	66	24	60	14	115	97	1/4"	4	13.5	902	925	805
20	20	10	151	29.5	69	24	69.9	15.9	150	97	1/4"	4	13.5	917	917	797

Figures for PVC-U version

ACCESSORIES



Long spigot PE100 end connectors for electrofusion or butt welding, code 36

DN	L	H	SDR
15	95	280	11
20	95	298	11

Long spigot PP-H end connectors for butt welding, code 35

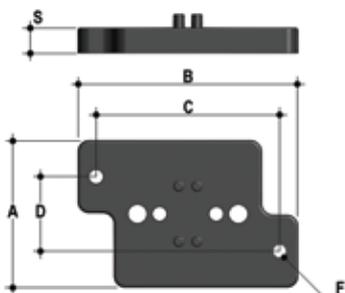
DN	L	H	SDR
15	95	280	11
20	95	298	11

Short spigot PP-H end connectors for butt welding

DN	L	H	SDR
15	55	200	11
20	55	218	11

Long spigot PVDF end connectors for butt welding, code 30-S1209

DN	L	H	SDR
15	95	280	21
20	95	298	21



Wall mounting plate PVC-U

DN	A	B	C	D	F	S
15	65	97	81	33	5.5	11
20	65	97	81	33	5.5	11

FASTENING AND SUPPORTING

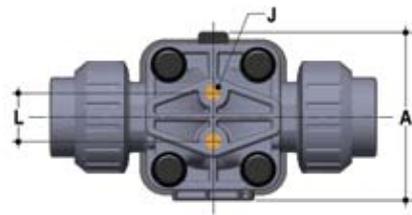


All valves, whether manual or actuated, must be adequately supported in many applications.

The new valve series is therefore provided with an integrated bracket that permits direct anchoring of the valve body without the need of other components.

For wall installation, dedicated wall mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

The wall mounting plate also allows the valve to be aligned with pipe clips.



d	DN	A	L	J
20	15	74	25	M6 x 10
25	20	74	25	M6 x 10

CUSTOMIZATION

The 382 DN 15-20 valve can be customized using a customization plate in white PVC.

The customization plate (B), housed in the transparent protection cap (A), can be removed and, once overturned, used for indicating identification serial numbers or service indications on the valves such as, for example, the valve function in the system, the conveyed fluid, but also specific information for customer service, such as the customer name or installation date or location on the valves. The waterproof transparent protection cap with seal O-Ring protect the customization plate against deterioration.

To access the customization plate, proceed as follows:

- 1) Disconnect the valve from the pneumatic connections
- 2) Unscrew the transparent protection cap (fig. 1)
- 3) Remove the plate and proceed with the customization (fig. 2).
- 4) Re-assemble everything making sure that the transparent protection cap O-Ring remains in its seating.

Fig. 1

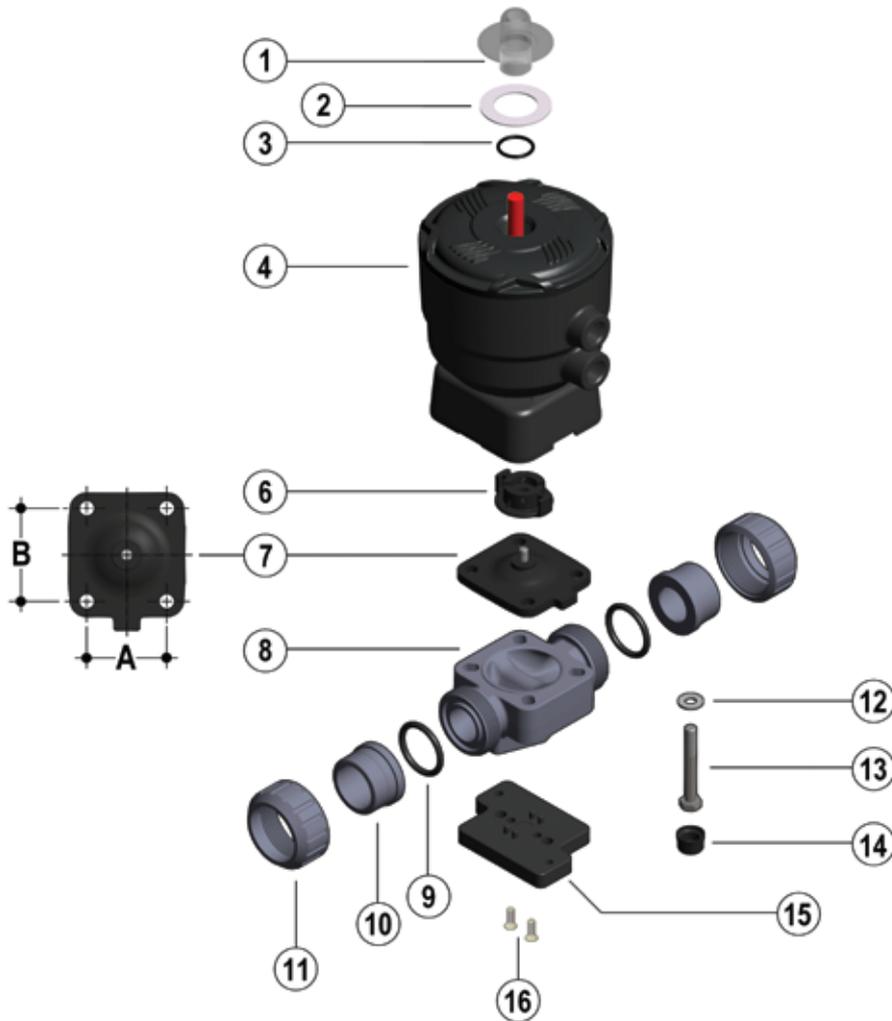


Fig. 2



COMPONENTS

EXPLODED VIEW DN 15-20



DN	15	20
A	40	40
B	44	44

- 1 · Transparent cap (PC- 1)*
- 2 · Customization plate (PVC - 1)
- 3 · O-Ring (EPDM - 1)
- 4 · Actuator (PP-GR - 1)*
- 6 · Compressor (IXEF - 1)
- 7 · Diaphragm seal (EPDM, FPM, PTFE - 1)*

- 8 · Valve body (PVC-U, PVCC, PPH, PVDF - 1)*
- 9 · Socket seal O-ring (EPDM-FPM - 2)*
- 10 · End connector (PVC-U, PVCC, PPH, PVDF - 2)*
- 11 · Union nut (PVC-U, PVCC, PPH, PVDF - 2)*

- 12 · Washer (Stainless steel- 4)
- 13 · Bolt (Stainless steel - 4)
- 14 · Protection plug (PE - 4)
- 15 · Distance plate (PP-GR - 1)**
- 16 · Screw (Stainless steel - 2)**

* Spare parts

** Accessories

The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Open the valve with compressed air (NC-DA) to drain any residual liquid from the valve.
- 3) Disconnect the valve from the pneumatic and electrical connections
- 4) Fully unscrew the union nuts (11) and extract the valve sideways.
- 5) Remove the protection plugs (14) and bolts (13) with their washers (12) (this operation will be made easier if the actuator is pressurised (NC)).
- 6) Separate the valve body (8) from the actuator (4).
- 7) Unscrew the diaphragm (7) and remove the compressor (6) (this operation will be made easier if the actuator is not pressurised (NC)).

ASSEMBLY

- 1) Insert the compressor (6) on the actuator stem (4) aligning it correctly in its housing (fig. 3).
- 2) Screw the diaphragm (7) onto the stem, aligning it correctly with its housing on the actuator.
- 3) Mount the actuator (4) on the valve body (8) and screw in the bolts (13) with the relative washers (12) (this operation will be made easier if the actuator is pressurised (NC)).
- 4) Tighten the bolts (13) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
- 5) Replace the protection plugs (14)
- 6) Position the valve between the end connectors (10) and tighten the union nuts (11), making sure that the socket seal O-rings (9) do not exit their seats.
- 7) Reconnect the valve to the pneumatic and electrical connections



Note: All operations on equipment under pressure or containing compressed springs must be carried out under safe conditions for the operator.

INSTALLATION

Before proceeding with installation, please follow these instructions carefully: (these instructions refer to union ends versions). The valve can be installed in any position and in any direction.

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Unscrew the union nuts (11) and insert them on the pipe segments.
- 3) Solvent weld or screw the end connectors (10) onto the pipe ends.
- 4) Position the valve body between the end connectors, making sure that the socket seal O-rings (9) do not exit their seats.
- 5) Fully tighten the union nuts (11).
- 6) If necessary, support the pipework with pipe clips or by means of the carrier built into the valve itself (see paragraph "Fastening and supporting").
- 7) Connect the compressed air as indicated in paragraph "Compressed air connections". For valves with electric accessories, refer to the specific technical manual supplied with the accessory.

When installing in confined spaces, the connections can be oriented in line with the piping (fig. 4).



Note: before putting the valve into service, check that the bolts on the valve body (8) are tightened correctly at the suggested torque.

Fig. 3

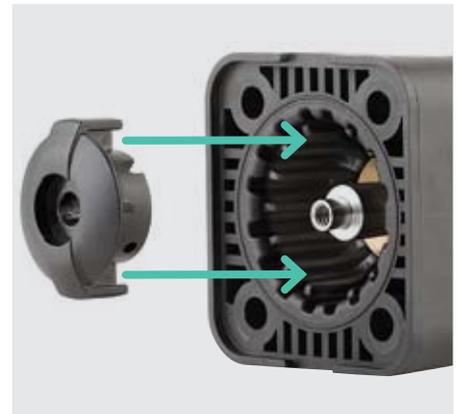


Fig. 4



482 DN 25-65

The 482 diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids. The new internal geometry of the body optimises fluid dynamic efficiency by increasing the flow rate and ensuring an optimum linearity of the flow adjustment curve. The 482 is extremely compact and very light.

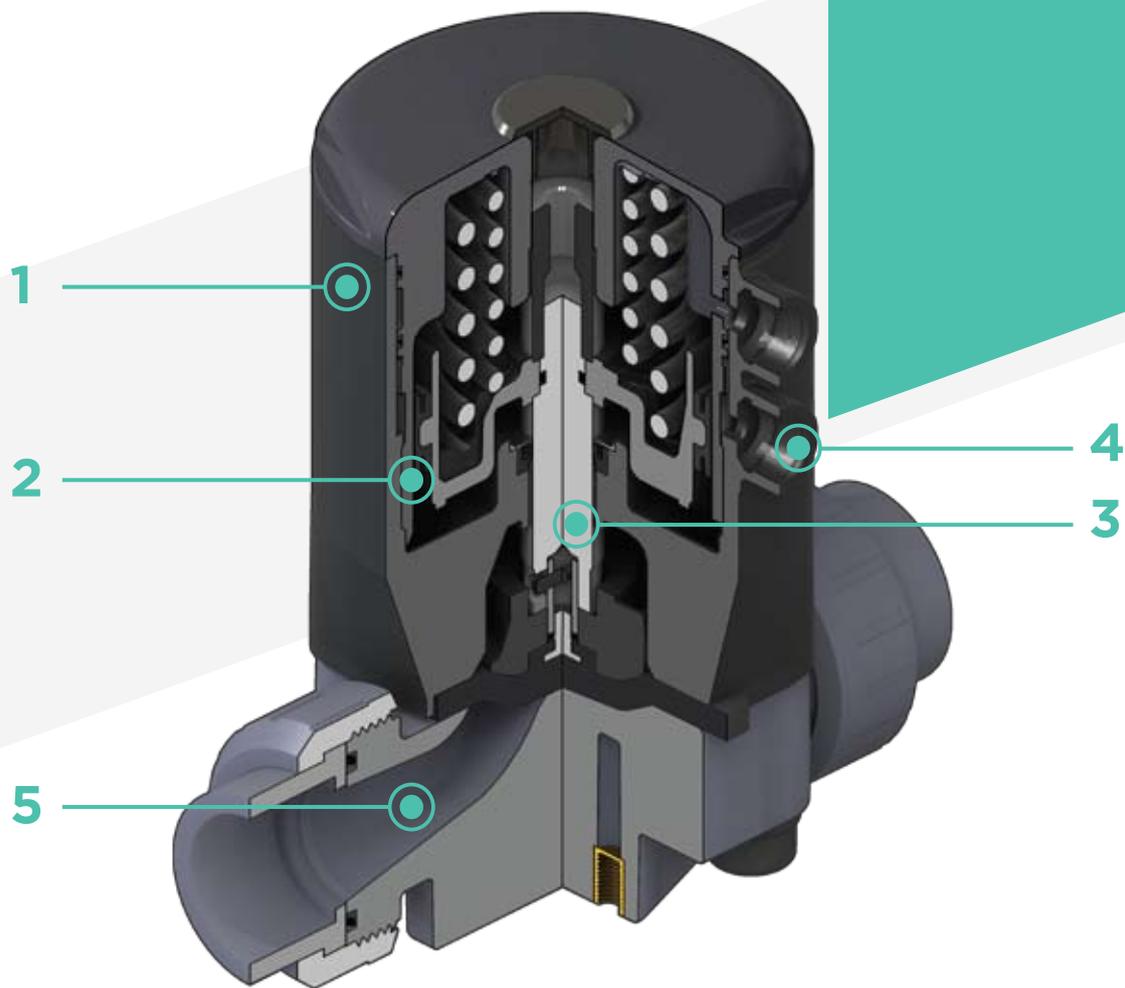
PNEUMATICALLY ACTUATED 2-WAY DIAPHRAGM VALVE

- Connection system for solvent weld, threaded and flanged joints
- **Optimised fluid dynamic design:** maximum output flow rate thanks to the optimised efficiency of the fluid dynamics that characterise the new internal geometry of the body
- **Light and compact actuator piston in IXEF®** ideal for use in harsh environmental Conditions
- **High performance internal components:** piston in high mechanical strength IXEF® with main gasket and lubrication system
- **Modularity of the range:** only 3 actuators and diaphragms for 5 different valve sizes
- Bonnet fastening screws in stainless steel protected against the external environment by PE plugs. Absence of metal parts exposed to the external environment to prevent any risk of corrosion
- **CDSA** (Circular Diaphragm Sealing Angle) system that, thanks to the uniform distribution of shutter pressure on the diaphragm seal, offers the following advantages:
 - reduction in the tightening torque of the screws fixing the actuator to the valve body
 - reduced mechanical stress on all valve components (actuator, body and diaphragm)
 - easy to clean valve interior
 - low risk of the accumulation of deposits, contamination or damage to the diaphragm due to crystallisation

Technical specifications	
Construction	Pneumatically actuated diaphragm valve at optimized flow rate
Size range	DN 25 - 65
Nominal pressure	PN 10 with water at 20 °C
Temperature range	PVC-U: 0 °C - 60 °C - PVC-C: 0 °C - 100 °C PP-H: 0 °C - 100 °C - PVDF: -20 °C - 120 °C ABS: -20 °C - 80 °C
Coupling standards	Solvent welding: EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931, BS 4346-1, DIN 8063, NF T54-028, ASTM D 2467, ASTM F 439. Can be coupled to pipes according to EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931, DIN 8062, NF T54-016, ASTM D 1785, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM D 2464 Flanging system: ISO 7005-1, EN ISO 1452, EN ISO 15493, EN 1092-1, EN ISO 15494, EN ISO 10931, EN 558-1, DIN 2501, ANSI B16.5 Cl.150, JIS B2220
Reference standards	Construction criteria: EN ISO 16138, EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, DVS 2202-1, DVS 2201-1, DVS 2207-11, DVS 2207-15, DVS 2208-1, UNI 11242, UNI 11318
Valve material	PVC-U / PP-H (PVDF and PVC-C available on request) ABS
Diaphragm material	EPDM, FPM, PTFE (on request NBR)
Control options	Pneumatic actuator

The compact and light piston actuator in IXEF® makes the 482 the ideal choice for applications requiring very frequent valve operation and a long valve lifetime.

Technical specifications - pneumatic actuator	
Construction	Single-acting (NC-NO) and double-acting (DA) pneumatic piston actuator
Actuator Material	Body and bonnet: IXEF® (PA-GR)
Control air pressure	Minimum: according to the working pressure and operation of the actuator (see detailed graphs) Maximum: NC: 6 bar - NO: 5 bar - DA: 5 bar
Power supply	Dry or lubricated filtered compressed air. If using other fluids, contact the FIP service centre
Control fluid temperature	Max 40 °C
Working temperature	-20 °C - 50 °C
Accessories	<ul style="list-style-type: none"> • Optical position indicator • Stroke limiter with position indicator • Stroke limiter with position indicator and emergency manual override • Limit switch boxes • Electro-pneumatic positioner • Pilot solenoid valves 3-5/2 ways for direct or manifold mounting • Distance plate



- 1** Light and compact actuator piston in IXEF® with a diaphragm perimeter containment system that ensures the perfect compression of the rubber without any lateral expansion
- 2** Piston in high strength IXEF® equipped with main gasket with lubrication system that allows up to 1 million valve operations to be performed without showing any signs of wear

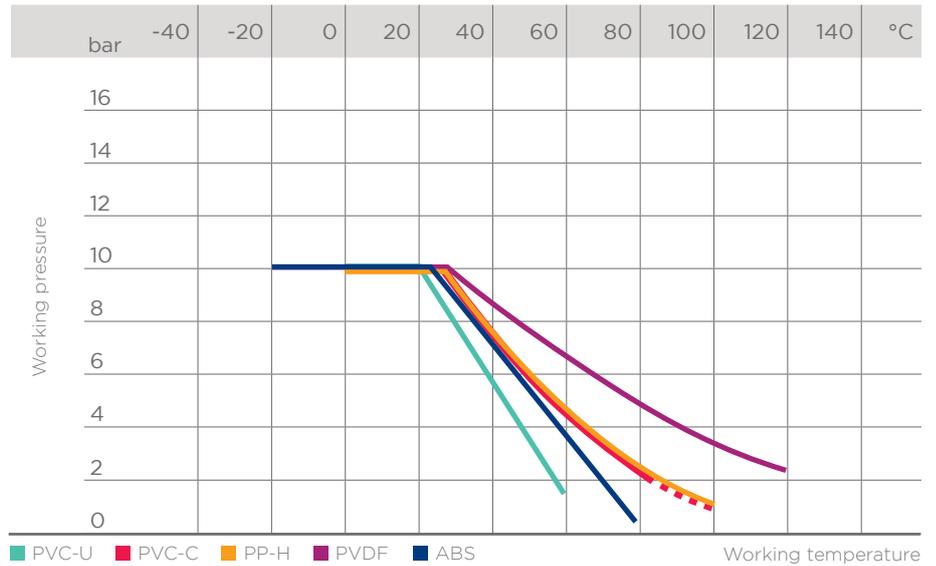
- 3** High strength stainless steel stem with floating pin connection between the actuator stem and diaphragm to prevent concentrated loads, improve the seal and extend its lifetime
- 4** Easy to install, even in confined spaces: compressed air inlets with G 1/4" threaded metal connections, can be supplied in line with the piping

- 5** New design of valve body interior. Substantially increased flow coefficient and reduced pressure drop. The degree of efficiency reached has also enabled the size and weight of the valve to be reduced. Adjustment linearity: the internal profiles of the valve also greatly improve its characteristic curve, resulting in extremely sensitive and precise adjustment along the entire stroke of the shutter.

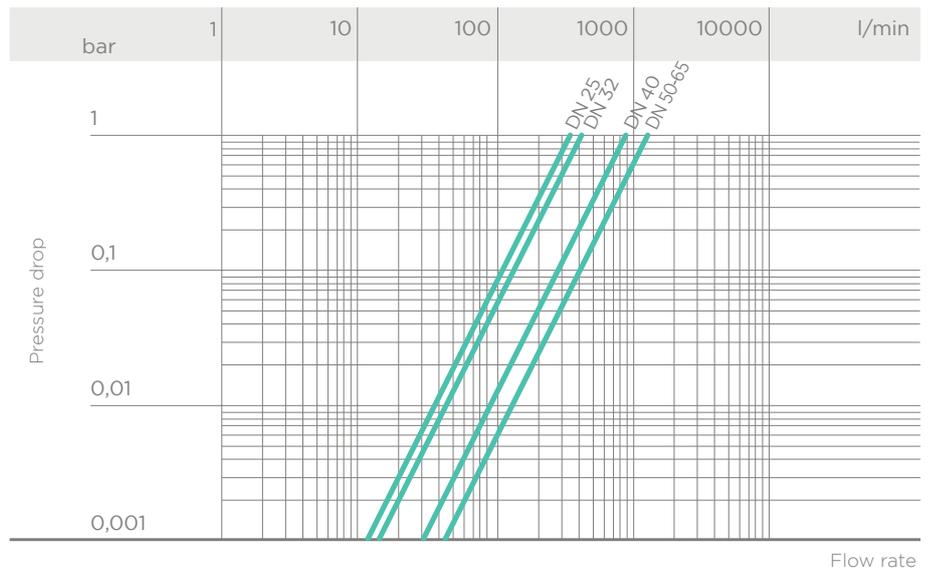
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and harmless fluids to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

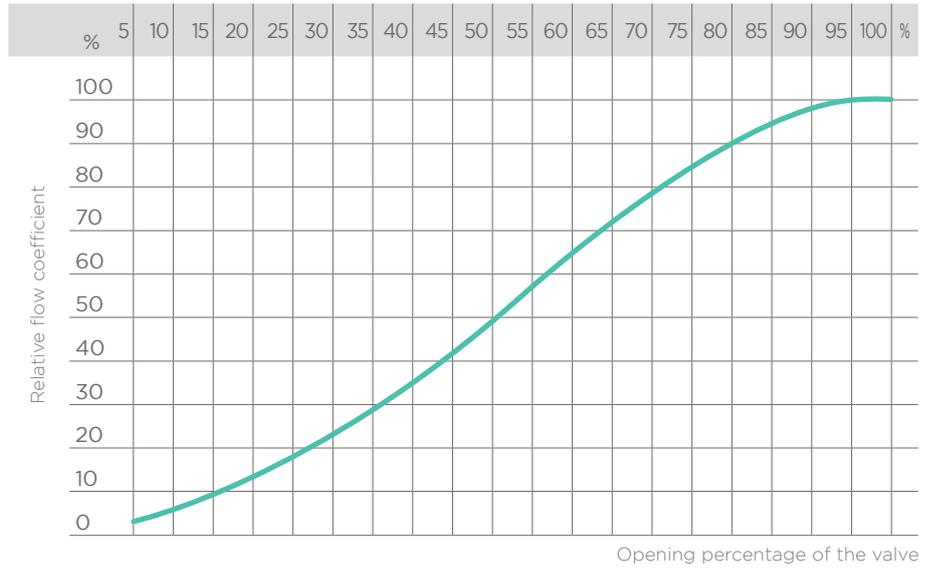
The K_v100 values shown in the table are calculated with the valve completely open.

DN	25	32	40	50	65
K _v 100 l/min	333	396	869	1359	1320

TECHNICAL DATA

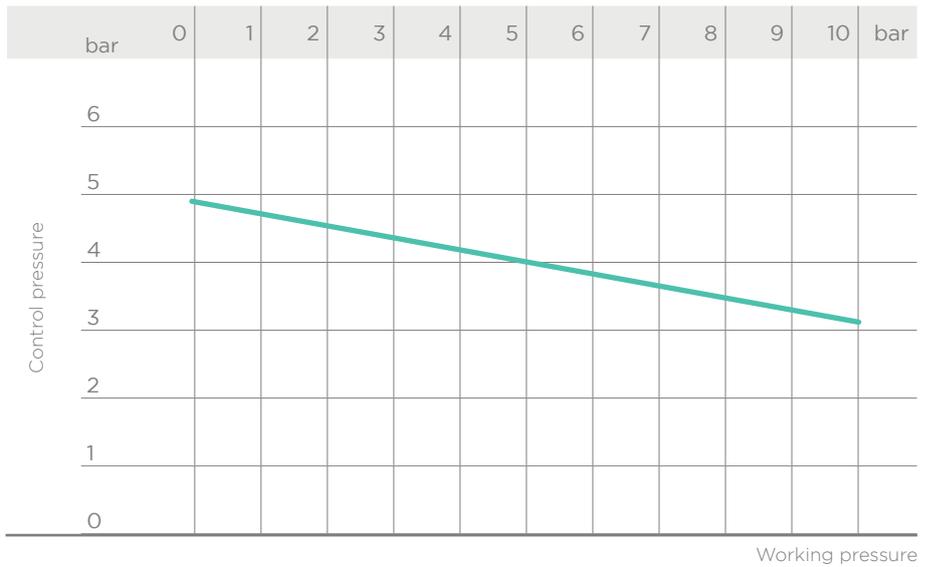
RELATIVE FLOW COEFFICIENT GRAPH

The relative flow coefficient refers to the variation in the flow rate as a function of the valve opening stroke.



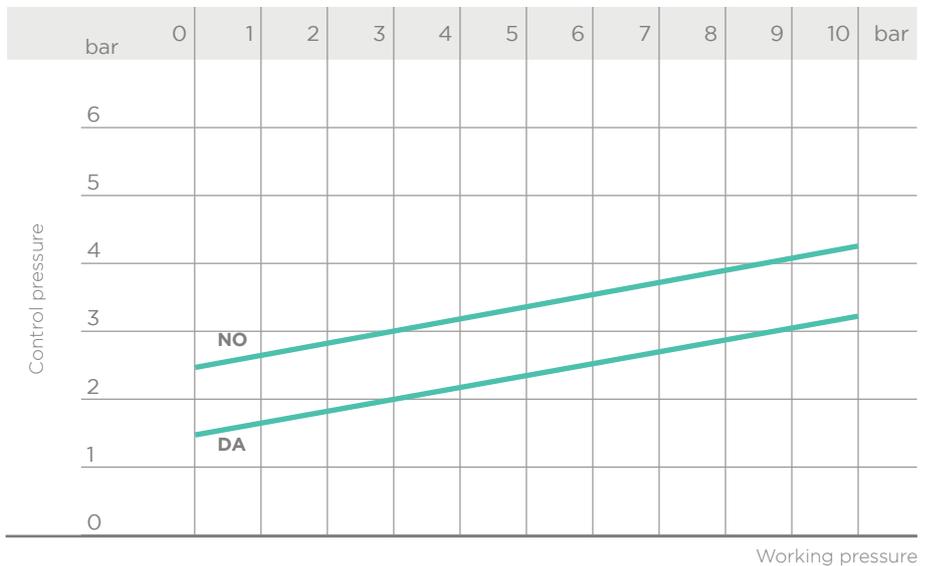
CONTROL PRESSURE ACCORDING TO WORKING PRESSURE 482 NC

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



CONTROL PRESSURE ACCORDING TO WORKING PRESSURE 482 NO-DA

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



FUNCTIONAL CHARACTERISTICS

	Double-acting (DA)	normally closed (NC)	normally open (NO)
Function type	double-acting	normally closed (NC)	normally open (NO)
Valve opening	air	air	spring
Valve closing	air	spring	air

ACTUATOR CAPACITY

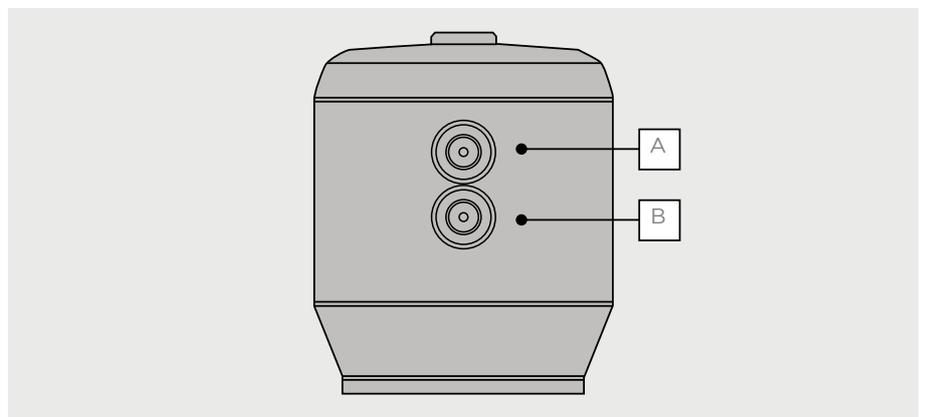
NI: Normal-liter

Volume at atmospheric pressure

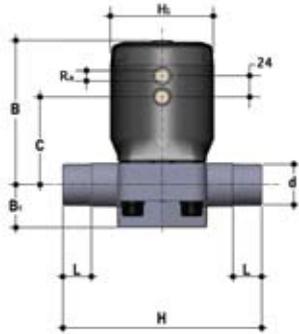
DN	25	32	40	50	65
NC	0.17 NI	0.17 NI	0.31 NI	0.68 NI	0.68 NI
NO	0.19 NI	0.19 NI	0.33 NI	0.79 NI	0.79 NI
DA	0.20 NI	0.20 NI	0.34 NI	0.80 NI	0.80 NI

COMPRESSED AIR CONNECTIONS

Function type	Normally closed (NC)	Normally open (NO)	Double-acting (DA)
Valve opening	Inlet B	-	Inlet B
Valve closing	-	Inlet A	Inlet A



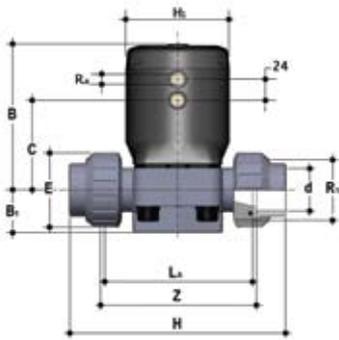
DIMENSIONS - 482



Pneumatically actuated diaphragm valve with **male ends, metric series**, code 39, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	H	H ₁	L	Ra	Weight (g)		
										NC	NO	DA
25	25	10	140	33	90	154	95	22	1/4"	1344	1208	1098
32	32	10	142	30	92	174	95	26	1/4"	1388	1252	1142
40	40	10	169	35	101	194	114	31	1/4"	2444	1809	1699
50	50	10	211	46	140	224	144	38	1/4"	4354	3265	3068
65	65	10	211	46	140	284	144	44	1/4"	4484	3395	3198

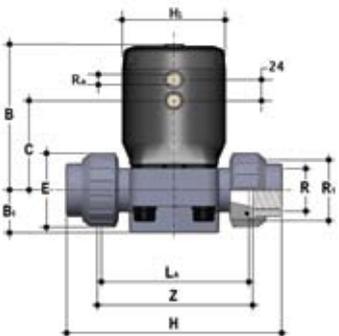
Figures for PVC-U version



Pneumatically actuated diaphragm valve with **female union ends** for solvent respectively socket welding, **metric series**, code 30, PVC-U, PP-H, PVDF, PVC-C

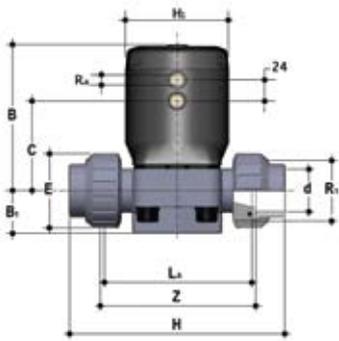
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	Z	Weight (g)		
												NC	NO	DA
25	25	10	140	33	90	58	168	95	116	1" 1/2	124	1452	1316	1206
32	32	10	142	30	92	72	192	95	134	2"	140	1578	1442	1332
40	40	10	169	35	101	79	222	114	154	2" 1/4	160	2656	2021	1911
50	50	10	211	46	140	98	266	144	184	2" 3/4	190	4750	3661	3464

Figures for PVC-U version



Pneumatically actuated diaphragm valve with **BSP threaded female union ends**, code 33, PVC-U, PVC-C

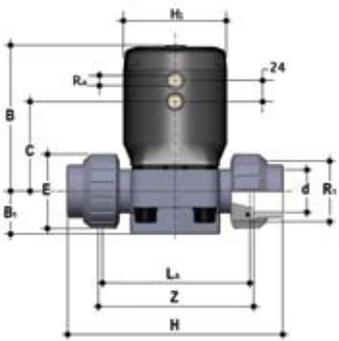
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	Ra	Z	Weight (g)		
													NC	NO	DA
25	25	10	140	33	90	58	165	95	116	1" 1/2	1/4"	127	1452	1316	1206
32	32	10	142	30	92	72	188	95	134	2"	1/4"	145	1578	1442	1332
40	40	10	169	35	101	79	208	114	154	2" 1/4	1/4"	165	2656	2021	1911
50	50	10	211	46	140	98	246	144	184	2" 3/4	1/4"	195	4750	3661	3464



Pneumatically actuated diaphragm valve with **female union ends** for solvent respectively socket welding, **ASTM series**, code 32, PVC-U, PVC-C

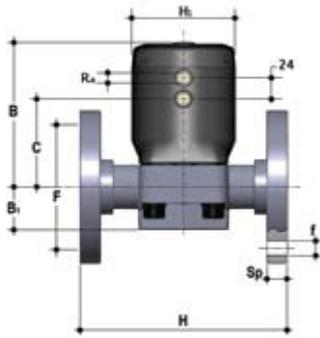
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	Ra	Z	Weight (g)		
													NC	NO	DA
25	25	10	140	33	90	58	180	95	116	1" 1/2	1/4"	122	1452	1316	1206
32	32	10	142	30	92	72	208	95	134	2"	1/4"	144	1578	1442	1332
40	40	10	169	35	101	79	234	114	154	2" 1/4	1/4"	164	2656	2021	1911
50	50	10	211	46	140	98	272	144	184	2" 3/4	1/4"	195	4750	3661	3464

Figures for PVC-U version



Pneumatically actuated diaphragm valve with **female union ends** for solvent welding, **BS series**, code 31, PVC-U

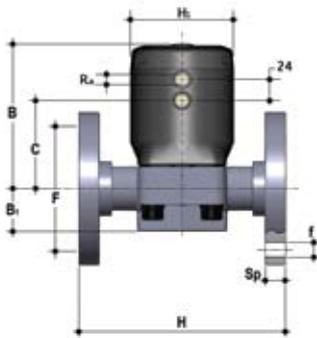
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	Ra	Z	Weight (g)		
													NC	NO	DA
25	25	10	140	33	90	58	166	95	116	1" 1/2	1/4"	121	1452	1316	1206
32	32	10	142	30	92	72	194	95	134	2"	1/4"	142	1578	1442	1332
40	40	10	169	35	101	79	222	114	154	2" 1/4	1/4"	162	2656	2021	1911
50	50	10	211	46	140	98	266	144	184	2" 3/4	1/4"	194	4750	3661	3464



Pneumatically actuated diaphragm valve with **fixed flanges drilled PN10/16**. Face to face according to EN 558-1, code 81, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	F	Øf	H	H ₁	Ra	U	Sp	Weight (g)		
													NC	NO	DA
25	25	10	140	33	90	85	14	160	95	1/4"	4	14	1634	1498	1388
32	32	10	142	30	92	100	18	180	95	1/4"	4	14	1848	1712	1602
40	40	10	169	35	101	110	18	200	114	1/4"	4	16	3019	2384	2274
50	50	10	211	46	140	125	18	230	144	1/4"	4	16	5124	4035	3838
65	65	10	211	46	140	145	18	290	144	1/4"	4	21	5584	4495	4298

Figures for PVC-U version

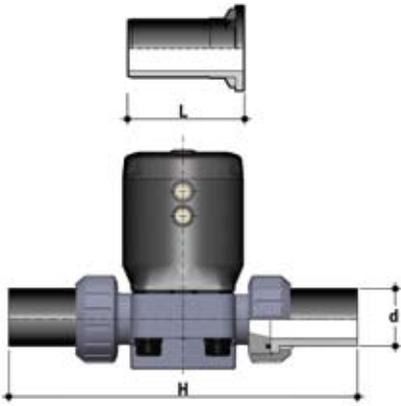


Pneumatically actuated diaphragm valve with **fixed flanges, drilled ANSI B16.5 cl. 150 #FF**. Face to face according to EN 558-1, code 88, PVC-U, PP-H, PVDF, PVC-C

DN	MA	PN	B	B ₁	C	F	Øf	H	H ₁	Ra	U	Sp	Weight (g)		
													NC	NO	DA
25	25	10	140	33	90	79,4	15,9	160	95	1/4"	4	14	1634	1498	1388
32	32	10	142	30	92	88,9	15,9	180	95	1/4"	4	14	1848	1712	1602
40	40	10	169	35	101	98,4	15,9	200	114	1/4"	4	16	3019	2384	2274
50	50	10	211	46	140	120,7	19,1	230	144	1/4"	4	16	5124	4035	3838
65	65	10	211	46	140	139,7	19,1	290	144	1/4"	4	21	5584	4495	4298

Figures for PVC-U version

ACCESSORIES



Long spigot PE100 end connectors for electrofusion or butt welding, code 36

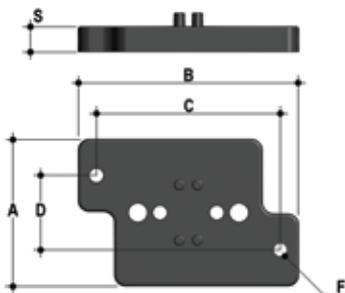
d	DN	L	H	SDR
32	25	95	306	11
40	32	95	324	11
50	40	95	344	11
63	50	95	374	11

Long spigot PP-H end connectors for butt welding, code 35

d	DN	L	H	SDR
32	25	95	306	11
40	32	95	324	11
50	40	95	344	11
63	50	95	374	11

Short spigot PP-H end connectors for butt welding

d	DN	L	H	SDR
32	25	55	226	11
40	32	55	244	11
50	40	55	264	11
63	50	55	294	11



Wall mounting plate

d	DN	A	B	C	D	F	S
32	25	65	97	81	33	5.5	11
40	32	65	97	81	33	5.5	11
50	40	65	144	130	33	6.5	11
63	50	65	144	130	33	6.5	11
75	65	65	144	130	33	6.5	11

FASTENING AND SUPPORTING

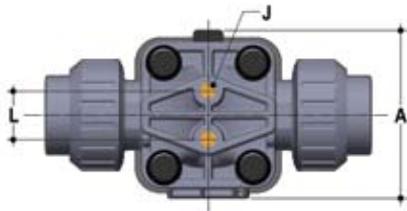


All valves, whether manual or actuated, must be adequately supported in many applications.

The valve series is therefore provided with an integrated bracket that permits direct anchoring of the valve body without the need of other components.

For wall installation, dedicated wall mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

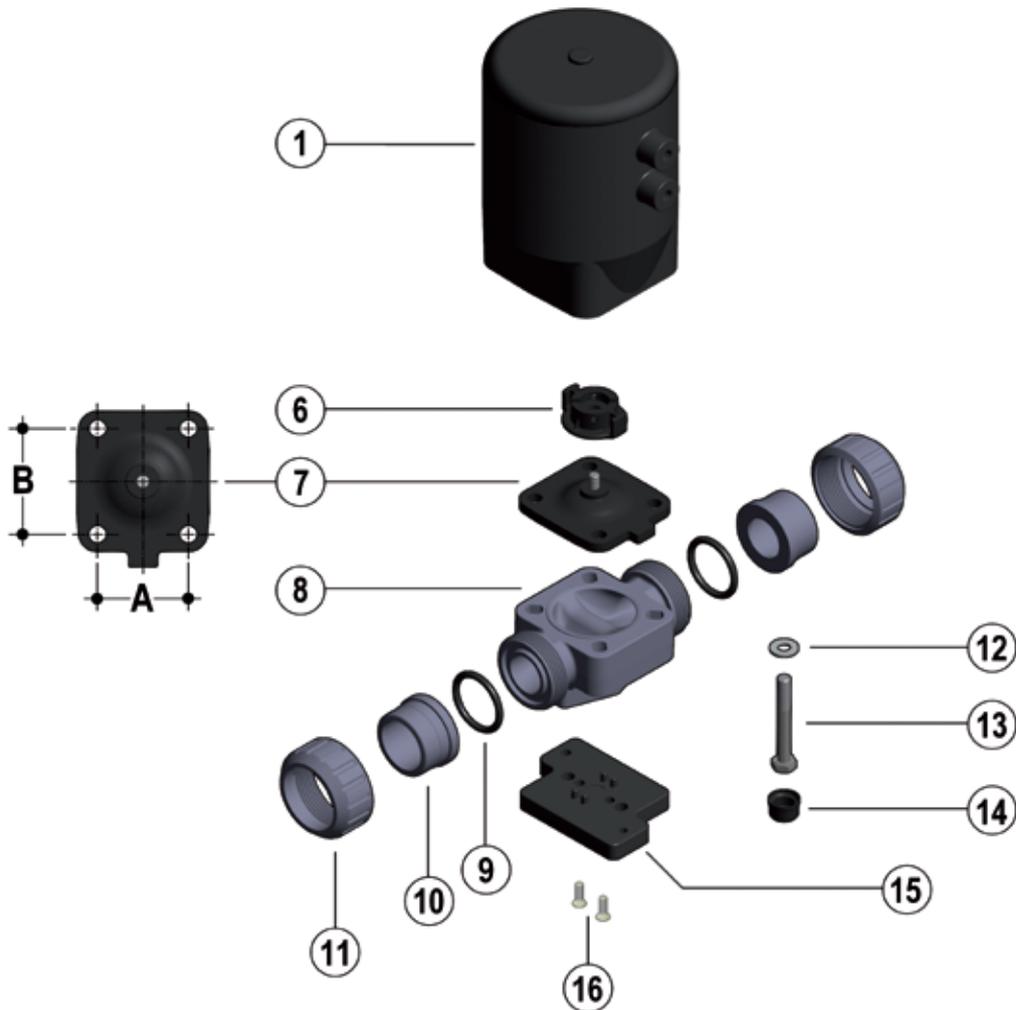
The wall plate also allows the valve to be aligned with pipe clips.



d	DN	h	l	j
32	25	10	25	M6
40	32	10	25	M6
50	40	13	44,5	M8
63	50	13	44,5	M8
75	65	13	44,5	M8

COMPONENTS

EXPLODED VIEW DN 25-65



DN	25	32	40	50	65
A	46	46	65	78	78
B	54	54	70	82	82

1. Actuator (IXEF® - 1)*

6. Compressor (IXEF® - 1)

7. Diaphragm seal (EPDM, FPM, PTFE - 1)*

8. Valve body (PVC-U, PVCC, PPH, PVDF - 1)*

9. Socket seal O-ring (EPDM-FPM - 2)*

10. End connector (PVC-U, PVCC, PPH, PVDF - 2)*

11. Union nut (PVC-U, PVCC, PPH, PVDF - 2)*

12. Washer (Stainless steel - 4)

13. Bolt (Stainless steel - 4)

14. Protection plug (PE - 4)

15. Distance plate (PP-GR - 1)**

16. Screw (Stainless steel - 2)**

* Spare parts

** Accessories

The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Open the valve with compressed air (NC-DA) to drain any residual liquid from the valve.
- 3) Disconnect the valve from the pneumatic and electrical connections.
- 4) Fully unscrew the union nuts (11) and extract the valve sideways.
- 5) Remove the protection plugs (14) and bolts (13) with the relative washers (12). This operation will be made easier if the actuator is pressurised (NC).
- 6) Separate the valve body (8) from the actuator (1).
- 7) Unscrew the diaphragm (7) and remove the compressor (6). This operation will be made easier if the actuator is not pressurised (NC).

ASSEMBLY

- 1) Insert the compressor (6) on the actuator stem (1) aligning it correctly in its housing (fig. 1).
- 2) Screw the diaphragm (7) onto the stem, aligning it correctly with its housing on the actuator.
- 3) Fit the actuator (1) on the valve body (8) and tighten the bolts (13) with the relative washers (12). This operation will be made easier if the actuator is pressurised (NC).
- 4) Tighten the bolts (13) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
- 5) Replace the protection plugs (14)
- 6) Position the valve between the end connectors (10) and tighten the union nuts (11), making sure that the socket seal O-rings (9) do not exit their seats.
- 7) Reconnect the valve to the pneumatic and electrical connections



Note: All operations on equipment under pressure or containing compressed springs must be carried out under safe conditions for the operator.

Fig. 1

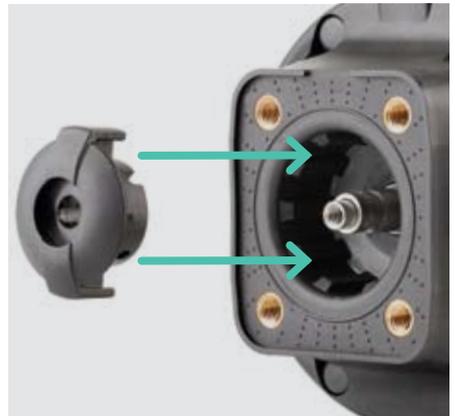


Fig. 2



INSTALLATION

Before proceeding with installation, please follow these instructions carefully: (these instructions refer to union ends versions). The valve can be installed in any position and in any direction.

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Unscrew the union nuts (11) and insert them on the pipe segments.
- 3) Solvent weld or screw the end connectors (10) onto the pipe ends.
- 4) Position the valve body between the end connectors, making sure that the socket seal O-rings (9) do not exit their seats.
- 5) Fully tighten the union nuts (11).
- 6) If necessary, support the pipework with pipe clips or by means of the carrier built into the valve itself (see paragraph "Fastening and supporting").
- 7) Connect the compressed air as indicated in paragraph "Compressed air connections". For valves with electric accessories, refer to the specific technical manual supplied with the accessory.

When installing in confined spaces, a version is available with the connections oriented in line with the piping (fig. 2).



Note: before putting the valve into service, check that the bolts on the valve body (8) are tightened correctly at the suggested torque.

485 - NC 285 - NO/DA DN 25-100

The 485/285 diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids.

The new internal geometry of the body optimises fluid dynamic efficiency by increasing the flow rate and ensuring an optimum linearity of the flow adjustment curve. The 485/285 is extremely compact and very light.

PNEUMATICALLY ACTUATED 2-WAY DIAPHRAGM VALVE

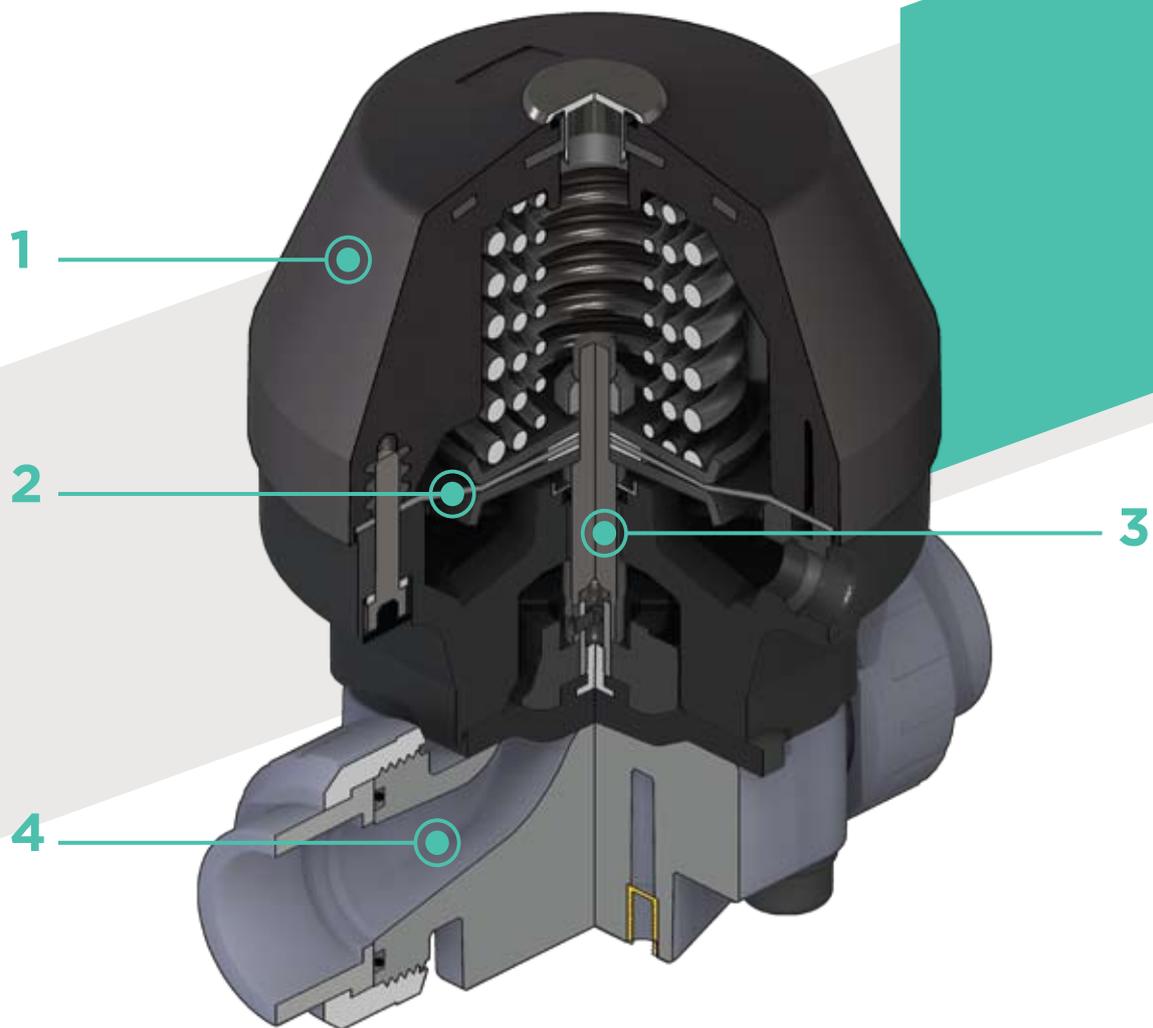
- Connection system for solvent weld, threaded and flanged joints
- **Optimised fluid dynamic design:** maximum output flow rate thanks to the optimised efficiency of the fluid dynamics that characterise the new internal geometry of the body
- Robust and reliable diaphragm actuator in PP-GR **ideal for heavy-duty applications in chemically aggressive environments**
- **Modularity of the range: only 3 actuators and diaphragms for 5 different valve sizes**
- Bonnet fastening screws in AISI 316 steel protected against the external environment by PE plugs.
- **CDSA (Circular Diaphragm Sealing Angle) system that, thanks to the uniform distribution of shutter pressure on the diaphragm seal, offers the following advantages:**
 - reduction in the tightening torque of the screws fixing the actuator to the valve body
 - reduced mechanical stress on all valve components (actuator, body and diaphragm)
 - easy to clean valve interior
 - low risk of the accumulation of deposits, contamination or damage to the diaphragm due to crystallisation

Technical specifications

Construction	Pneumatically actuated diaphragm valve with body at maximized flow rate
Size range	DN 25 - 100
Nominal pressure	PN 10 with water at 20 °C, DN 15 - 65 PN 6 with water at 20 °C, DN 80 - 100
Temperature range	PVC-U: 0 °C - 60 °C - PVC-C: 0 °C - 100 °C PP-H: 0 °C - 100 °C - PVDF: -20 °C - 120 °C ABS: -20 °C - 80 °C
Coupling standards	Solvent welding/Welding EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931, BS 4346-1, DIN 8063, NF T54-028, ASTM D 2467, ASTM F 439. Can be coupled to pipes according to EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931, DIN 8062, NF T54-016, ASTM D 1785, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM D 2464 Flanging system: ISO 7005-1, EN ISO 1452, EN ISO 15493, EN 1092-1, EN ISO 15494, EN ISO 10931, EN 558-1, DIN 2501, ANSI B16.5 Cl.150, JIS B2220
Reference standards	Construction criteria: EN ISO 16138, EN ISO 1452, EN ISO 15493, EN ISO 15494, EN ISO 10931 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, DVS 2202-1, DVS 2201-1, DVS 2207-11, DVS 2207-15, DVS 2208-1, UNI 11242, UNI 11318
Valve material	PVC-U / PVC-C / PP-H / PVDF / ABS
Diaphragm material	EPDM, FPM, PTFE (on request NBR)
Control options	Pneumatic actuator

The diaphragm actuator in PP-GR is characterized by its robust construction, making 485/285 the ideal choice for demanding and chemically aggressive applications.

Technical specifications - pneumatic actuator	
Construction	Single-acting (NC-NO) and double-acting (DA) pneumatic piston actuator
Actuator Material	Body and bonnet: PP-GR
Control air pressure	Minimum: according to the working pressure and operation of the actuator (see detailed graphs) Maximum: NC: 6 bar - NO: 5 bar - DA: 5 bar
Power supply	Dry or lubricated filtered compressed air. If using other fluids, contact the FIP service centre
Control fluid temperature	Max 40 °C
Working temperature	-20 °C - 50 °C
Accessories	<ul style="list-style-type: none"> • Optical position indicator • Stroke limiter with position indicator • Stroke limiter with position indicator and emergency manual override • Limit switch boxes • Electro-pneumatic positioner • Pilot solenoid valves 3/2 ways for direct or manifold mounting • Distance plate



1 Diaphragm actuator in PP-GR characterized by its robust construction. In the configuration Normally Closed, the upper part is equipped with steel reinforcement. Absence of metal parts exposed to the external environment prevents any risk of corrosion.

2 The special **control diaphragm** reinforced with fibres can reach up to 10 million drives without showing signs of wear.

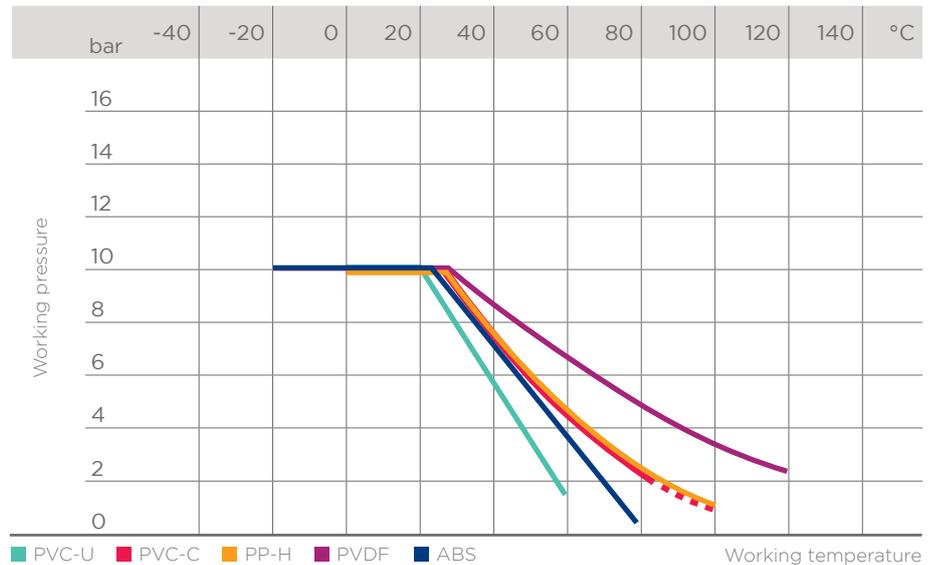
3 High strength stainless steel stem with floating pin connection between the actuator stem and diaphragm to prevent concentrated loads, improve the seal and extend its lifetime.

4 New design of valve body interior.
Substantially increased flow coefficient and reduced pressure drop. The degree of efficiency reached has also enabled the size and weight of the valve to be reduced.
Adjustment linearity: the internal profiles of the valve also greatly improve its characteristic curve, resulting in extremely sensitive and precise adjustment along the entire stroke of the shutter.

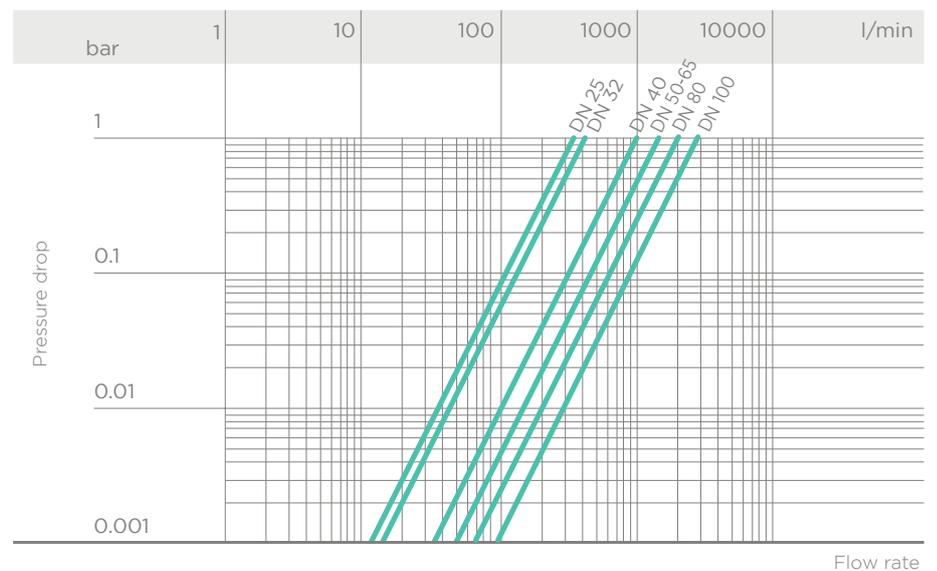
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20 °C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position.

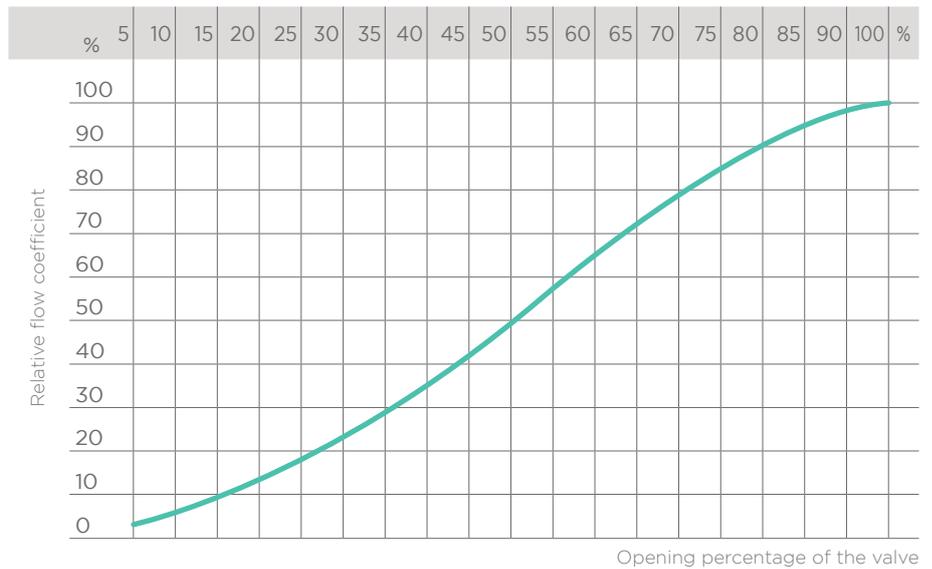
The K_v100 values shown in the table are calculated with the valve completely open.

DN	25	32	40	50	65	80	100
K _v 100 l/min	445	550	1087	1648	1600	2000	2700

TECHNICAL DATA

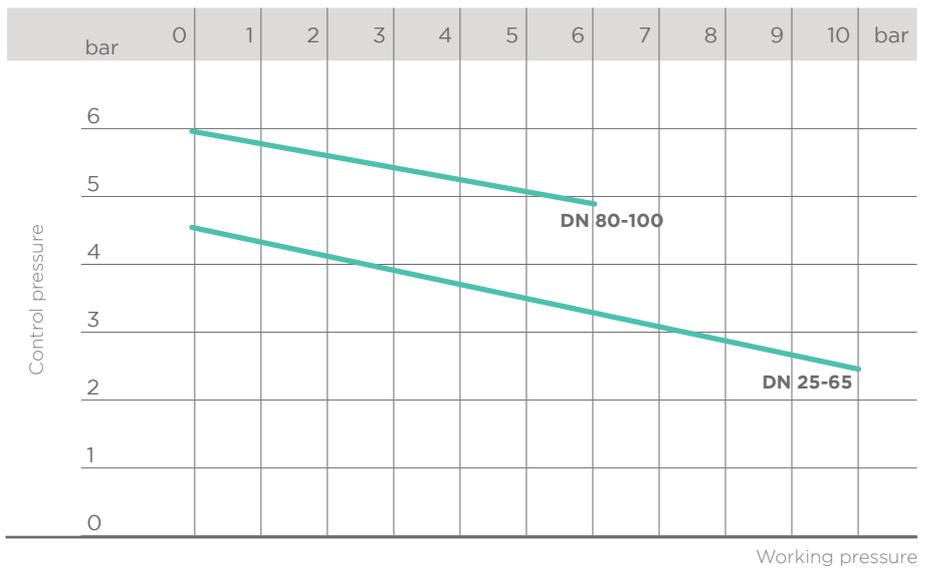
RELATIVE FLOW COEFFICIENT GRAPH

The relative flow coefficient refers to the variation in the flow rate as a function of the valve opening stroke.



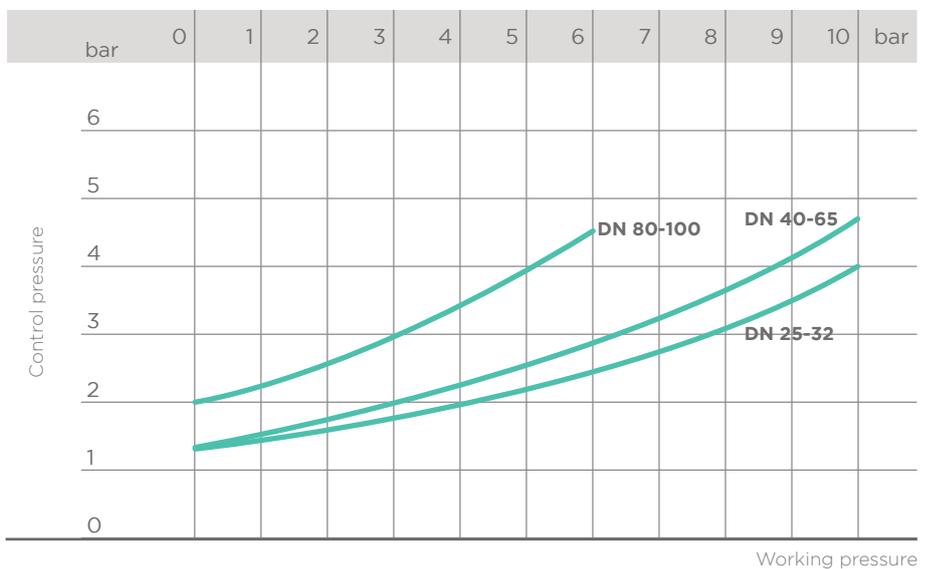
CONTROL PRESSURE ACCORDING TO WORKING PRESSURE 485 NC

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



CONTROL PRESSURE ACCORDING TO WORKING PRESSURE 285 NO-DA

Minimum control pressure according to working pressure with EPDM/FPM diaphragm



FUNCTIONAL CHARACTERISTICS

	Double-acting (DA)	normally closed (NC)	normally open (NO)
Function type	double-acting	normally closed (NC)	normally open (NO)
Valve opening	air	air	spring
Valve closing	air	spring	air

ACTUATOR CAPACITY

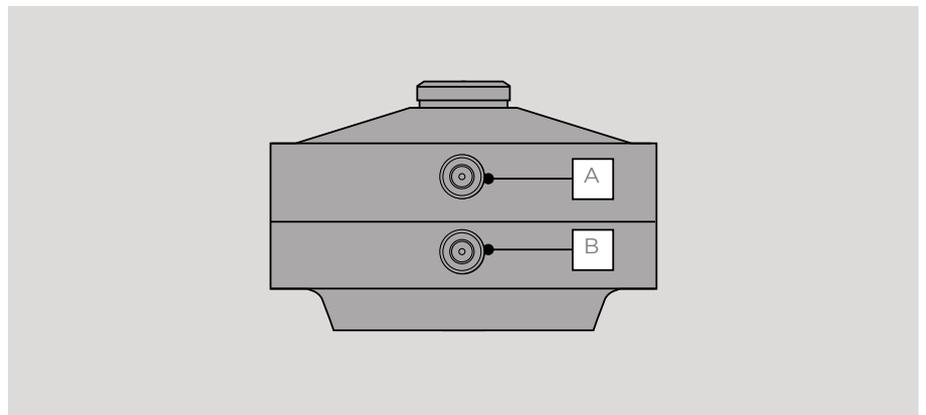
NI: Normal-liter

Volume at atmospheric pressure

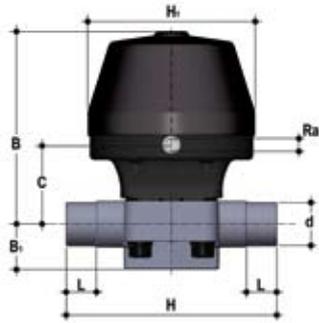
DN	25	32	40	50	65
NC	0.16 NI	0.16 NI	0.36 NI	1.15 NI	1.15 NI
NO	0.13 NI	0.13 NI	0.28 NI	0.50 NI	0.50 NI
DA	0.13 NI	0.13 NI	0.28 NI	0.50 NI	0.50 NI

COMPRESSED AIR CONNECTIONS

Function type	Normally open (NO)	Double-acting (DA)
Valve opening	-	Inlet B
Valve closing	Inlet A	Inlet A



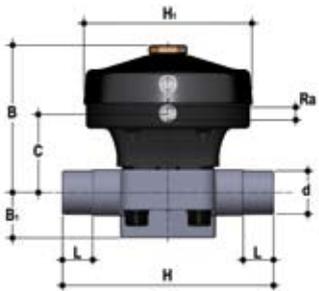
DIMENSIONS - 485/285



Pneumatically actuated diaphragm valve, Normally Closed, with **male ends** for solvent respectively socket welding, **metric series**, code 39, PVC-U, PVC-C, PP-H, PVDF

DN	MA	PN	B	B ₁	C	H	H ₁	L	Ra	Weight (g) NC
25	25	10	150	33	65	154	126	22	1/4"	1942
32	32	10	152	30	69	174	126	26	1/4"	1986
40	40	10	246	35	106	194	155	31	1/4"	3900
50	50	10	254	46	113	224	210	38	1/4"	7724
65	50	10	254	46	113	284	210	44	1/4"	7854
80	80	6	325	55	187	300	258	51	1/4"	15000
100	100	6	355	69	268	340	258	61	1/4"	20000

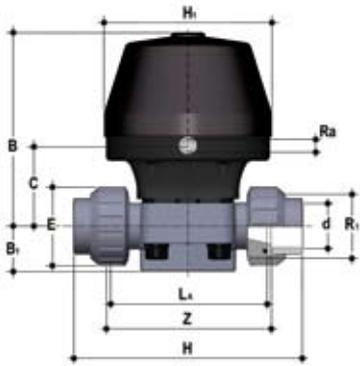
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with **male ends** for solvent respectively socket welding, **metric series**, code 39, PVC-U, PVC-C, PP-H, PVDF

DN	MA	PN	B	B ₁	C	H	H ₁	L	Ra	Weight (g) NO-DA
25	25	10	119	33	60	154	126	22	1/4"	1472
32	32	10	123	30	64	174	126	26	1/4"	1516
40	40	10	160	35	94	194	155	31	1/4"	3320
50	50	10	200	46	123	224	218	38	1/4"	5624
65	50	10	200	46	123	284	218	44	1/4"	5754
80	80	6	305	55	252	300	258	51	1/4"	12000
100	100	6	330	69	268	340	258	61	1/4"	17000

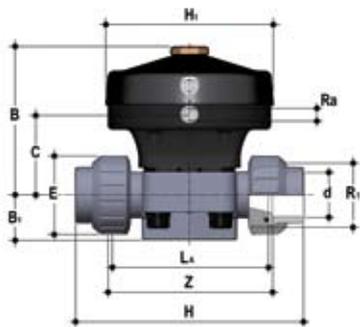
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Closed, with **female union ends** for solvent respectively socket welding, **metric series**, code 30, PVC-U, PVC-C, PP-H, PVDF, ABS

DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NC
25	25	10	150	33	65	58	168	126	116	1" 1/2	1/4"	124	2050
32	32	10	152	30	69	72	192	126	134	2"	1/4"	140	2176
40	40	10	246	35	106	79	222	155	154	2" 1/4	1/4"	160	4112
50	50	10	254	46	113	98	266	210	184	2" 3/4	1/4"	190	8120

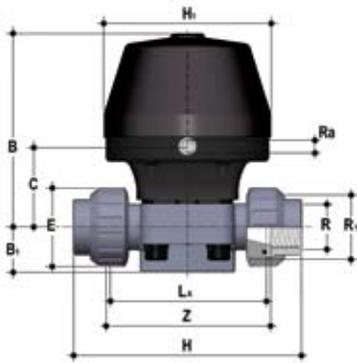
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with **female union ends** for solvent respectively socket welding, **metric series**, code 30, PVC-U, PVC-C, PP-H, PVDF, ABS

DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NO-DA
25	25	10	119	33	60	58	168	126	116	1" 1/2	1/4"	124	1580
32	32	10	123	30	64	72	192	126	134	2"	1/4"	140	1706
40	40	10	160	35	94	79	222	155	154	2" 1/4	1/4"	160	3532
50	50	10	200	46	123	98	266	218	184	2" 3/4	1/4"	190	6020

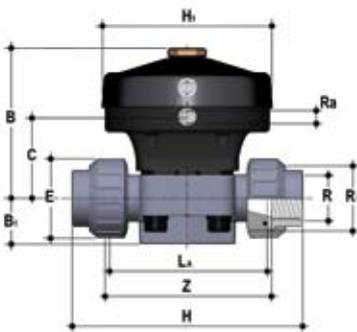
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Closed, with **BSP threaded female union ends**, code 33, PVC-U, PVC-C

DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NC
25	25	10	150	33	65	58	165	126	116	1" 1/2	1/4"	127	2050
32	32	10	152	30	69	72	188	126	134	2"	1/4"	145	2176
40	40	10	246	35	106	79	208	155	154	2" 1/4	1/4"	165	4112
50	50	10	254	46	113	98	246	210	184	2" 3/4	1/4"	195	8120

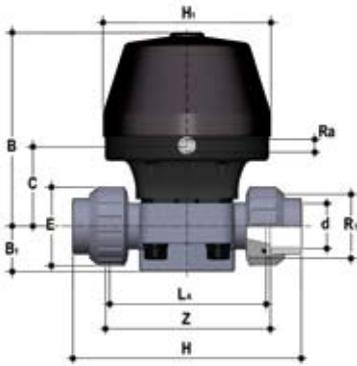
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with **BSP threaded female union ends**, code 33, PVC-U, PVC-C

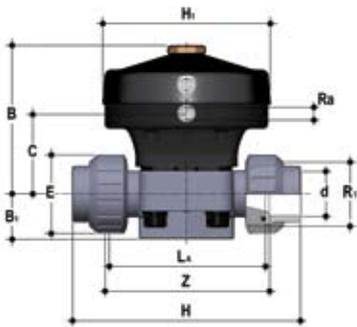
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NO-DA
25	25	10	119	33	60	58	165	126	116	1" 1/2	1/4"	127	1580
32	32	10	123	30	64	72	188	126	134	2"	1/4"	145	1706
40	40	10	160	35	94	79	208	155	154	2" 1/4	1/4"	165	3532
50	50	10	200	46	123	98	246	218	184	2" 3/4	1/4"	195	6020

Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Closed, with **female union ends** for solvent welding, **ASTM series**, code 32, PVC-U, PVC-C

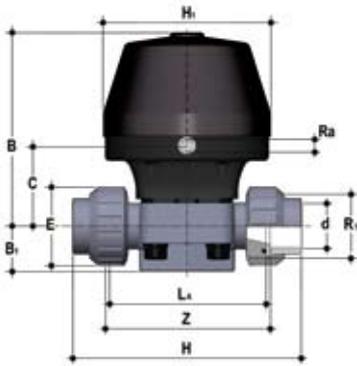
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NC
25	25	10	150	33	65	58	180	126	116	1" 1/2	1/4"	122	2050
32	32	10	152	30	69	72	208	126	134	2"	1/4"	144	2176
40	40	10	246	35	106	79	234	155	154	2" 1/4	1/4"	164	4112
50	50	10	254	46	113	98	272	210	184	2" 3/4	1/4"	195	8120



Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with **female union ends** for solvent welding, **ASTM series**, code 32, PVC-U, PVC-C

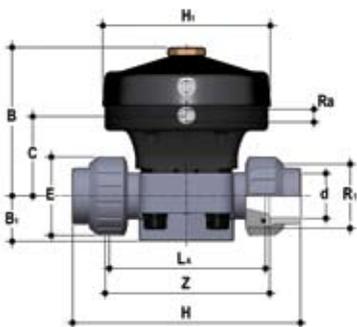
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NO-DA
25	25	10	119	33	60	58	180	126	116	1" 1/2	1/4"	122	1580
32	32	10	123	30	64	72	208	126	134	2"	1/4"	144	1706
40	40	10	160	35	94	79	234	155	154	2" 1/4	1/4"	164	3532
50	50	10	200	46	123	98	272	218	184	2" 3/4	1/4"	195	6020

Figures for PVC-U version



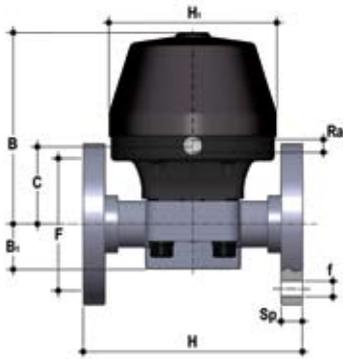
Pneumatically actuated diaphragm valve, Normally Closed, with **female union ends** for solvent welding, **BS series**, code 31, PVC-U

DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NC
25	25	10	150	33	65	58	166	126	116	1" 1/2	1/4"	121	2050
32	32	10	152	30	69	72	194	126	134	2"	1/4"	142	2176
40	40	10	246	35	106	79	222	155	154	2" 1/4	1/4"	162	4112
50	50	10	254	46	113	98	266	210	184	2" 3/4	1/4"	194	8120



Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with **female union ends** for solvent welding, **BS series**, code 31, PVC-U

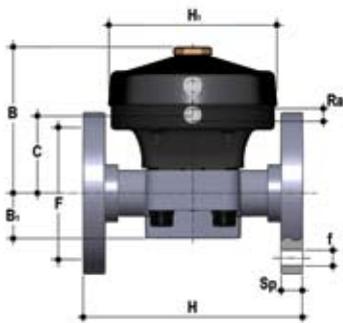
DN	MA	PN	B	B ₁	C	E	H	H ₁	La	R ₁	R _a	Z	Weight (g) NO-DA
25	25	10	119	33	60	58	166	126	116	1" 1/2	1/4"	166	1580
32	32	10	123	30	64	72	194	126	134	2"	1/4"	194	1706
40	40	10	160	35	94	79	222	155	154	2" 1/4	1/4"	222	3532
50	50	10	200	46	123	98	266	218	184	2" 3/4	1/4"	266	6020



Pneumatically actuated diaphragm valve, Normally Closed, with **fixed flanges drilled PN10/16**. Face to face according to EN 558-1, code 81, PVC-U, PVC-C, PP-H, PVDF

DN	MA	PN	B	B ₁	C	F	Øf	H	H ₁	Ra	U	Sp	Weight (g) NC
25	25	10	150	33	65	85	14	160	126	1/4"	4	14	2232
32	32	10	152	30	69	100	18	180	126	1/4"	4	14	2446
40	40	10	246	35	106	110	18	200	155	1/4"	4	16	4475
50	50	10	254	46	113	125	18	230	210	1/4"	4	16	8494
65	50	10	254	46	113	145	18	290	210	1/4"	4	21	8954
80	80	6	325	55	187	160	18	310	258	1/4"	8	21.5	17000
100	100	6	355	69	268	180	18	350	258	1/4"	8	22.5	22000

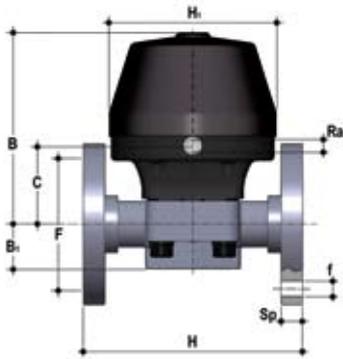
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with **fixed flanges, drilled PN10/16**. Face to face according to EN 558-1, code 81, PVC-U, PVC-C, PP-H, PVDF

DN	MA	PN	B	B ₁	C	F	Øf	H	H ₁	Ra	U	Sp	Weight (g) NO-DA
25	25	10	119	33	60	85	14	160	126	1/4"	4	14	1762
32	32	10	123	30	64	100	18	180	126	1/4"	4	14	1976
40	40	10	160	35	94	110	18	200	155	1/4"	4	16	3895
50	50	10	200	46	123	125	18	230	218	1/4"	4	16	6394
65	50	10	200	46	123	145	18	290	218	1/4"	4	21	6854
80	80	6	305	55	252	160	18	310	258	1/4"	8	21.5	13000
100	100	6	330	69	268	180	18	350	258	1/4"	8	22.5	19000

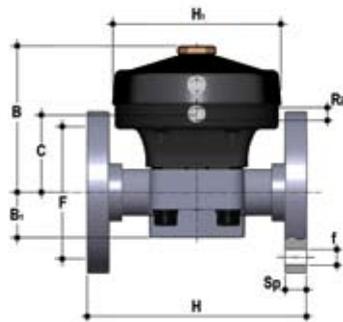
Figures for PVC-U version



Pneumatically actuated diaphragm valve, Normally Closed, with **fixed flanges, drilled ANSI B16.5 cl. 150 #FF**. Face to face according to EN 558-1, code 88, PVC-U, PVC-C, PP-H, PVDF

DN	MA	PN	B	B ₁	C	F	Øf	H	H ₁	Ra	U	Sp	Weight (g) NC
25	25	10	150	33	65	79.4	15.9	160	126	1/4"	4	14	2232
32	32	10	152	30	69	88.9	15.9	180	126	1/4"	4	14	2446
40	40	10	246	35	106	98.4	15.9	200	155	1/4"	4	16	4475
50	50	10	254	46	113	120.7	19.1	230	210	1/4"	4	16	8494
65	50	10	254	46	113	139.7	19.1	290	210	1/4"	4	21	8954
80	80	6	325	55	187	152.4	19.1	310	258	1/4"	4	21.5	17000
100	100	6	355	64	268	190.5	19.1	350	258	1/4"	8	22.5	22000

Figures for PVC-U version

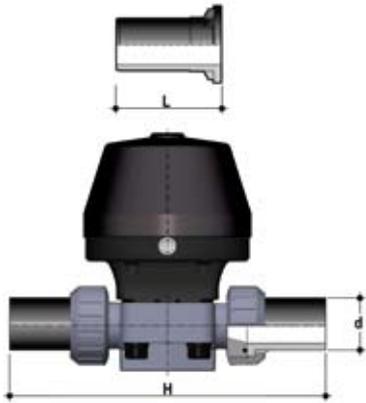


Pneumatically actuated diaphragm valve, Normally Open - Double-Acting, with fixed flanges, drilled ANSI B16.5 cl. 150 #FF. Face to face according to EN 558-1, code 88, PVC-U, PVC-C, PP-H, PVDF

DN	MA	PN	B	B ₁	C	F	Øf	H	H ₁	Ra	U	Sp	Weight (g) NO-DA
25	25	10	119	33	60	79.4	15.9	160	126	1/4"	4	14	1762
32	32	10	123	30	64	88.9	15.9	180	126	1/4"	4	14	1976
40	40	10	160	35	94	98.4	15.9	200	155	1/4"	4	16	3895
50	50	10	200	46	123	120.7	19.1	230	218	1/4"	4	16	6394
65	50	10	200	46	123	139.7	19.1	290	218	1/4"	4	21	6854
80	80	6	305	55	252	152.4	19.1	310	258	1/4"	4	21.5	13000
100	100	6	330	69	268	190.5	19.1	350	258	1/4"	8	22.5	19000

Figures for PVC-U version

ACCESSORIES



Long spigot PE100 end connectors for electrofusion or butt welding, code 36

d	DN	L	H	SDR
32	25	95	306	11
40	32	95	324	11
50	40	95	344	11
63	50	95	374	11

Long spigot PP-H end connectors for butt welding, code 35

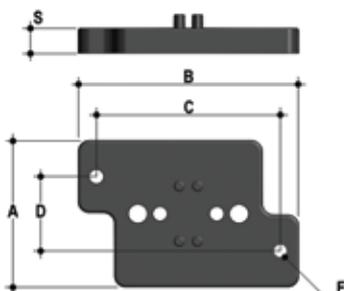
d	DN	L	H	SDR
32	25	95	306	11
40	32	95	324	11
50	40	95	344	11
63	50	95	374	11

Short spigot PP-H end connectors for butt welding

d	DN	L	H	SDR
32	25	55	226	11
40	32	55	244	11
50	40	55	264	11
63	50	55	294	11

Long spigot PVDF end connectors for butt welding, code 30 - S1209

d	DN	L	H	SDR
32	25	95	306	21
40	32	95	324	21
50	40	95	344	21
63	50	95	374	21



Wall mounting plate PVC-U

d	DN	A	B	C	D	F	S
32	25	65	97	81	33	5.5	11
40	32	65	97	81	33	5.5	11
50	40	65	144	130	33	6.5	11
63	50	65	144	130	33	6.5	11
75	65	65	144	130	33	6.5	11

FASTENING AND SUPPORTING

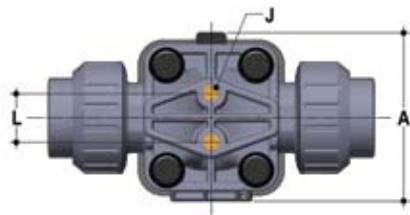


All valves, whether manual or actuated, must be adequately supported in many applications.

The valve series is therefore provided with an integrated bracket that permits direct anchoring of the valve body without the need of other components.

For wall installation, dedicated wall mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

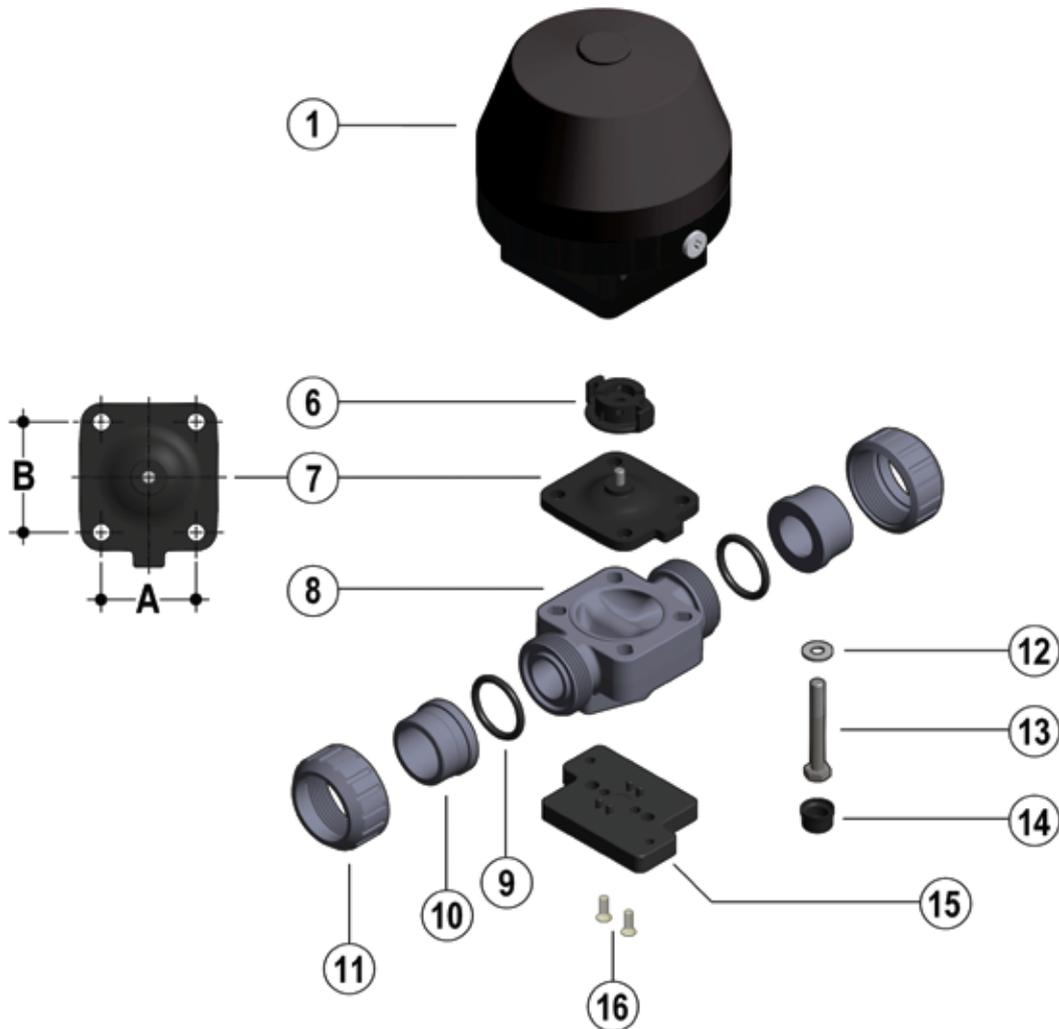
The wall plate also allows the valve to be aligned with pipe clips.



d	DN	A	L	J
32	25	87	25	M6 x 10
40	32	87	25	M6 x 10
50	40	114	44.5	M8 x 14
63	50	136	44.5	M8 x 14
75	65	136	44.5	M8 x 14

COMPONENTS

EXPLODED VIEW 485 NC DN 25-65



DN	25	32	40	50	65
A	46	46	65	78	78
B	54	54	70	82	82

1. Actuator (PP-GR - 1)*

6. Compressor (IXEF - 1)

7. Diaphragm seal (EPDM, FPM, PTFE - 1)*

8. Valve body (PVC-U, PVCC, PPH, PVDF - 1)*

9. Socket seal O-ring (EPDM-FPM - 2)*

10. End connector (PVC-U, PVCC, PPH, PVDF - 2)*

11. Union nut (PVC-U, PVCC, PPH, PVDF - 2)*

12. Washer (Stainless steel - 4)

13. Bolt (Stainless steel - 4)

14. Protection plug (PE - 4)

15. Distance plate (PP-GR - 1)**

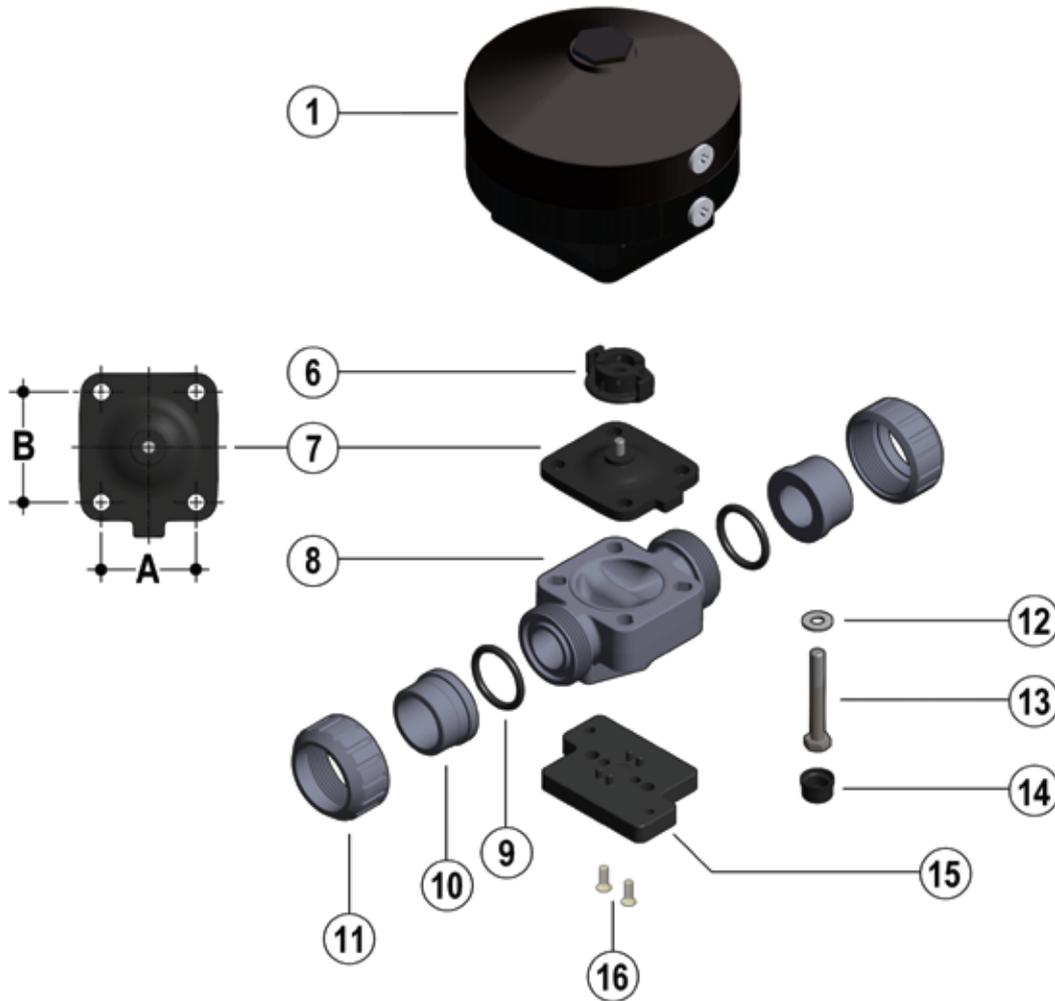
16. Screw (Stainless steel - 2)**

* Spare parts

** Accessories

The material of the component and the quantity supplied are indicated between brackets

EXPLODED VIEW 285 NO-DA DN 25-65



DN	25	32	40	50	65
A	46	46	65	78	78
B	54	54	70	82	82

1 · Actuator (PP-GR - 1)*

6 · Compressor (IXEF - 1)

7 · Diaphragm seal (EPDM, FPM, PTFE - 1)*

8 · Valve body (PVC-U, PVCC, PPH, PVDF - 1)*

9 · Socket seal O-ring (EPDM-FPM - 2)*

10 · End connector (PVC-U, PVCC, PPH, PVDF - 2)*

11 · Union nut (PVC-U, PVCC, PPH, PVDF - 2)*

12 · Washer (Stainless steel - 4)

13 · Bolt (Stainless steel - 4)

14 · Protection plug (PE - 4)

15 · Distance plate (PP-GR - 1)**

16 · Screw (Stainless steel - 2)**

* Spare parts

** Accessories

The material of the component and the quantity supplied are indicated between brackets

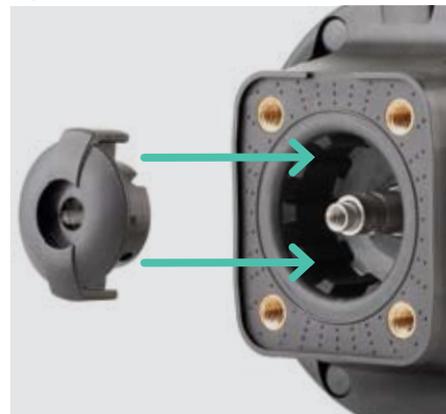
DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Open the valve with compressed air (NC-DA) to drain any residual liquid from the valve.
- 3) Disconnect the valve from the pneumatic and electrical connections.
- 4) Fully unscrew the union nuts (11) and extract the valve sideways.
- 5) Remove the protection plugs (14) and bolts (13) with the relative washers (12). This operation will be made easier if the actuator is pressurised (NC).
- 6) Separate the valve body (8) from the actuator (1).
- 7) Unscrew the diaphragm (7) and remove the compressor (6). This operation will be made easier if the actuator is not pressurised (NC).

ASSEMBLY

- 1) Insert the compressor (6) on the actuator stem (1) aligning it correctly in its housing (fig. 1).
- 2) Screw the diaphragm (7) onto the stem, aligning it correctly with its housing on the actuator.
- 3) Fit the actuator (1) on the valve body (8) and tighten the bolts (13) with the relative washers (12). This operation will be made easier if the actuator is pressurised (NC).
- 4) Tighten the bolts (13) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
- 5) Replace the protection plugs (14)
- 6) Position the valve between the end connectors (10) and tighten the union nuts (11), making sure that the socket seal O-rings (9) do not exit their seats.
- 7) Reconnect the valve to the pneumatic and electrical connections

Fig. 1



Note: All operations on equipment under pressure or containing compressed springs must be carried out under safe conditions for the operator.

INSTALLATION

Before proceeding with installation, please follow these instructions carefully: (these instructions refer to union end versions). The valve can be installed in any position and in any direction.

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Unscrew the union nuts (11) and insert them on the pipe segments.
- 3) Solvent weld or screw the end connectors (10) onto the pipe ends.
- 4) Position the valve body between the end connectors, making sure that the socket seal O-rings (9) do not exit their seats.
- 5) Fully tighten the union nuts (11).
- 6) If necessary, support the pipework with pipe clips or by means of the carrier built into the valve itself (see paragraph “Fastening and supporting”).
- 7) Connect the compressed air as indicated in paragraph “Compressed air connections”. For valves with electric accessories, refer to the specific technical manual supplied with the accessory.



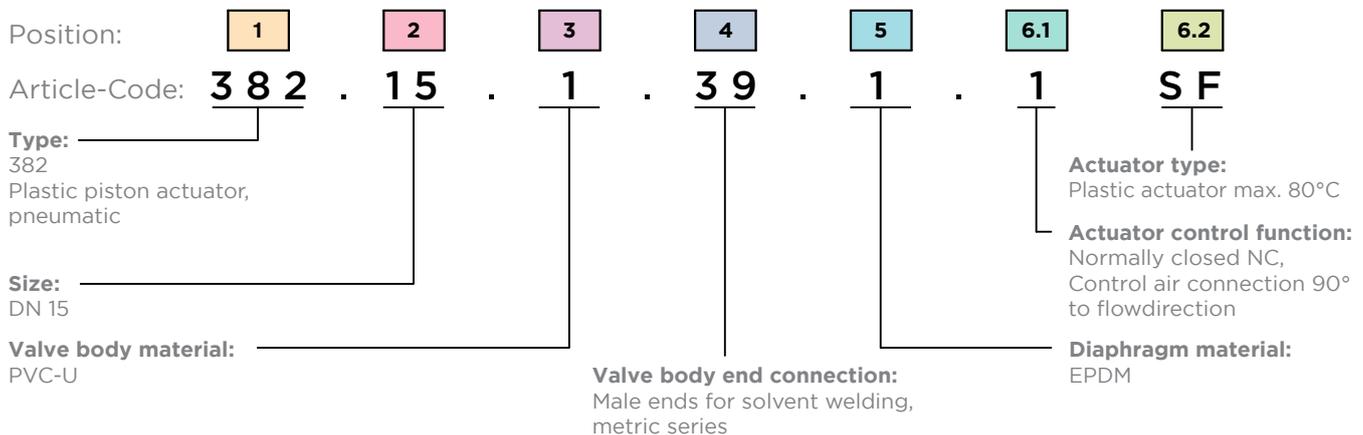
Note: before putting the valve into service, check that the bolts on the valve body (8) are tightened correctly at the suggested torque.

ORDERING KEY

1	2	3	4	5	6.1	6.2
Type	Size	Valve body material	Valve body end connection	Diaphragm material	Actuator control function	Actuator type

Pos.	Description	Code	Specification
1	Type:	186	Plastic piston actuator, pneumatic, MA10
		285	Plastic diaphragm actuator, pneumatic, MA25-100
		382	Plastic piston actuator, pneumatic, MA20
		482	Plastic piston actuator, pneumatic, MA25-50
		485	Plastic diaphragm actuator, pneumatic, MA25-100
2	Size:	15 - 100	DN 15, 20, 25, 32, 40, 50, 65, 80, 100
3	Valve body material:	1	PVC-U
		2	PP-H
		3	PVDF
		4	PVC-C
		5	ABS
4	Valve body end connections:	1	Threaded socket DIN ISO 228
		2	Cementing spigots DIN
		30	Female union ends for solvent / socket welding, metric series
		31	Female union ends for solvent / socket welding, BS series
		32	Female union ends for solvent / socket welding, ASTM series
		33	Union with BSP threaded female union ends
		35	Union with long spigot PP-H end connectors for butt welding
		36	Unione with long spigot PE100 end connectors for electrofusion or butt welding
		39	Male ends for solvent / socket welding, metric series
		81	Fixed flanges, drilled PN10/16. Face to face according to EN 558-1
88	Fixed flanges, drilled ANSI B16.5 cl. 150 #FF		
5	Diaphragm material:	1	EPDM
		2	FPM (Viton)
		4	NBR (Perbunan)
		29	PTFE(TFM) / EPDM one-piece
6.1	Actuator control function:	1	Normally closed NC, Control air connection 90° to flowdirection
		2	Normally open NO, Control air connection 90° to flowdirection
		3	Double acting DA, Control air connection 90° to flowdirection
		4	Normally closed NC, Control air connection in flowdirection
		5	Normally open NO, Control air connection in flowdirection
		6	Double acting DA, Control air connection in flowdirection
6.2	Actuator type:	S	Plastic actuator max. 80°C, DN 12 - 15 (MA10) / DN 80 + 100 (MA80 + 100)
		SF	Plastic actuator max. 80°C, DN 15 (MA20) - DN 65 (MA50)
7	S-Number:	S...	To specify customized design

Visit our website and check out our product selection program (Configurator) to specify the right product for your application. Manually operated valves see separate leaflet TD160114.



OVERVIEW PRODUCT RANGE

DIAPHRAGM VALVE



Aseptic Diaphragm Valve



Industrial Metal Diaphragm Valve



Plastic Diaphragm Valve

ANGLE SEAT VALVE



Two-Way Metal Angle Seat Valve

ASEPTIC PROCESS SOLUTION



Sterile sampling unit

SYSTEM COMPONENTS



Contact - Free Limit Switch



Control Head



Digital Electropneumatic Positioner

FLOW MEASUREMENT



Variable Area Flowmeter



Measuring Sensor

SAMSON

SAMSON SED

CATALOG



Actuated
Diaphragm
Valve

SED Flow Control GmbH
Am Schafbaum 2 · 74906 Bad Rappenau
Telefon: +49 7264 921 0 · Telefax: +49 7264 921 21
E-Mail: info@sed-flowcontrol.com · Internet: www.sed-flowcontrol.com

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