Diaphragm valve MV 309

Nominal size DN 15–32

Nominal size 1/2“–1 1/4“

Pressure PN 6 bar

PVC-U PP PVDF

Features

- pneumatic diaphragm valve DN 15–32
- compact piston drive for medium pressure up to 6 bar (PTFE diaphragms)
- visual position indicator NC, NO, DA
- NAMUR-compliant air connections
- resistant to contaminated medium
- high kv value
- market standard installation length

Additional options on demand

- silicone free

Accessories

- Limit switch unit
- pilot solenoid valve

Attention

Maximum control pressure 6 bar

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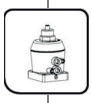
Pictogram Diaphragm valve MV 309

… **Connection:** G 1/4“ Namur

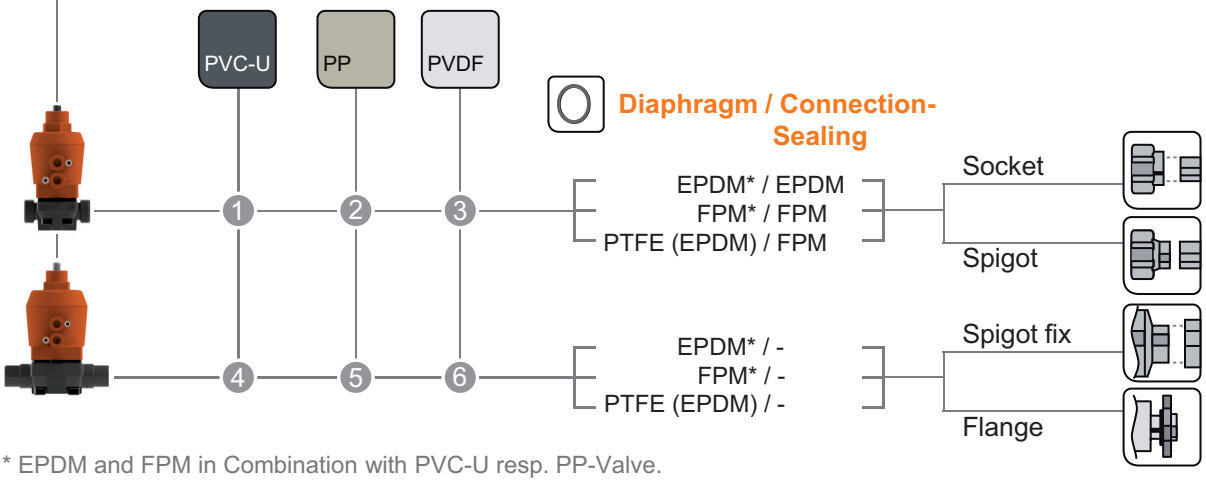
… **Limit Switch Box:** Micro Switch NO
Proximity Switch NAMUR NC
Proximity Switch PNP NO

… **Pilot Valves: VS2 -** 24V I 230V

… NC I NO I DA



pneumatic



* EPDM and FPM in Combination with PVC-U resp. PP-Valve.

● available
○ not available

Basic Nominal Sizes:

DN 8	DN 10	**DN 15**	**DN 20**	**DN 25**	**DN 32**	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350	DN 400

Connection Material (process connection)

1 **PVC-U** socket DIN, ANSI, BS, JIS
female thread Rp
1.4571 female thread Rp
male thread R
PE100 spigot DIN (95mm)

2 **PP** socket DIN
female thread Rp
PP spigot (IR)

3 **PVDF** socket DIN
PVDF spigot (IR)

4 **PVC-U** spigot fix
PP/St. flange DIN, ANSI
GFK flange DIN

5 **PP** spigot fix *
PP/St. flange DIN, ANSI
GFK flange DIN

6 **PVDF** spigot fix *
PP/St. flange DIN, ANSI

* only for socket welding.

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Diaphragm valve MV 309

Use
- Chemical plant manufacture
- Industrial plants
- Water treatment
- Environmental technology

Application
- for shutting off pipelines and, to a limited extent, for control purposes in technical processing plants

Flow medium
- neutral and aggressive fluid or gaseous medium types, also with abrasive constituents, provided that the valve components coming into contact with the medium are resistant at the operating temperature in accordance with the ASV Stübbe resistance guide.
- For medium types with a high diffusion tendency, e.g. nitric or sulphuric acid, please contact us and indicate the exact operating conditions

Flow direction
- Always in the direction of the arrow

ASV Stübbe resistance guide
- www.asv-stuebbe.de/pdf_resistance/300051.pdf

Testing
- Requirements and testing according to DIN EN ISO 16138 and ISO 9393.
- Leakage rate A tested according to DIN EN 12266

Nominal pressure (H_2O, 20 °C)
- PN 6 bar

Medium temperature
- See graphics „Pressure/temperature diagram“

Operating pressure
- See graphics „Pressure/temperature diagram“

Material with medium contact

Valve body:
- PVC-U, PP, PVDF

Diaphragm:
- EPDM, FPM, PTFE (EPDM diaphragm, PTFE coating on the medium side)

Sealing element:
- FPM, EPDM

Material without medium contact

Bonnet:
- PP glass fiber reinforced

Screws:
- stainless steel (1.4301)

Size
- DN 15–32

Housing
- PVC-U, PP, PVDF

Actuation
- with pneumatic lift actuator

Device connection
- see pictograph „Diaphragm valve MV309“

Control function
- NC (normally closed)
- NO (normally open)
- DA (double acting)

Control pressure
- NC, NO: max. 6 bar
- DA: max. 4 bar

Mounting position
- as required, preferably bonnet at the top

Fastening
- via threaded inserts (metal inserts) in the valve body

Color
- Bonnet: orange, RAL 2004
- Valve body: PVC-U, gray, RAL 7011
- Valve body: PP, gray, RAL 7032
- Valve body: PVDF, opaque, yellowish-white

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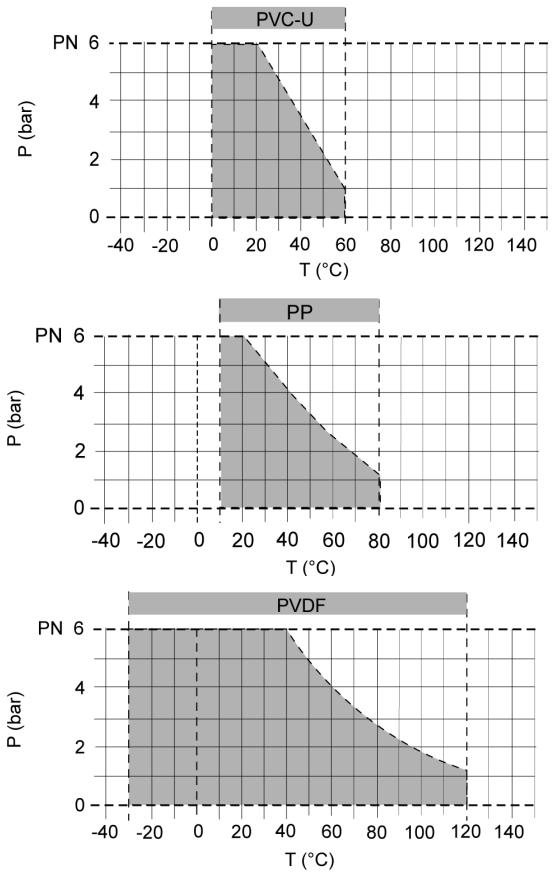
Diaphragm valve MV 309

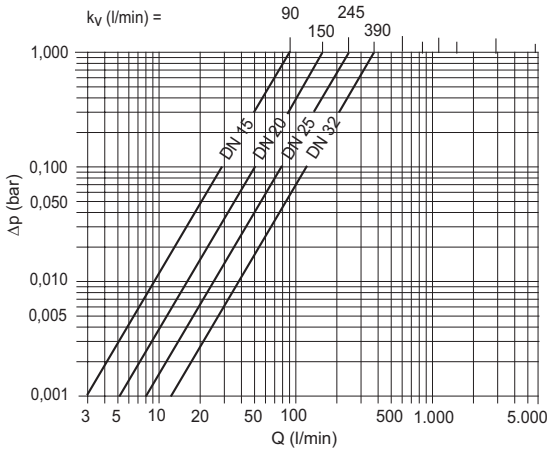
Pressure/temperature diagram



	Description
P	Operating pressure
T	Temperature

The pressure/temperature limits of the materials are valid for the stated nominal pressures and a service life of 25 years.
These values are guide values for flow medium types which do not negatively impact the physical and chemical characteristics of the valve material. It may be necessary to take diminution factors into consideration.
The operating life of the wear parts depends on the conditions of use.
Please note that, while PTFE has almost universal chemical resistance, the service life of PTFE-coated diaphragms may be reduced by concentrated medium types with a permeation tendency
(e.g.: hydrofluoric acid, nitric acid, hydrochloric acid).

Pressure loss curve (standard values for H_2O, 20°C)



	Description
Δp	Pressure loss
Q	Flow

Pressure loss and k_v value

The diagram shows the pressure loss Δp in relation to the flow Q.

Conversion formulas

$c_v = k_v \times 0.07$

$f_v = k_v \times 0.0585$

Units

k_v [l/min]
c_v [gal/min] US
f_v [gal/min] GB

Intervals for diaphragm inspections, guide values:

Diaphragm material	max. number of actuations
EPDM	200.000
FPM	200.000
PTFE (EPDM)	200.000

These recommendations are based on extensive laboratory tests and long-term experience in the industry. They apply to use at a temperature of 20°C, with water and at nominal pressure. We recommend shorter inspection intervals for different operating conditions, in particular for higher temperatures, the use of chemicals or medium types containing solid particles and / or abrasive medium types.

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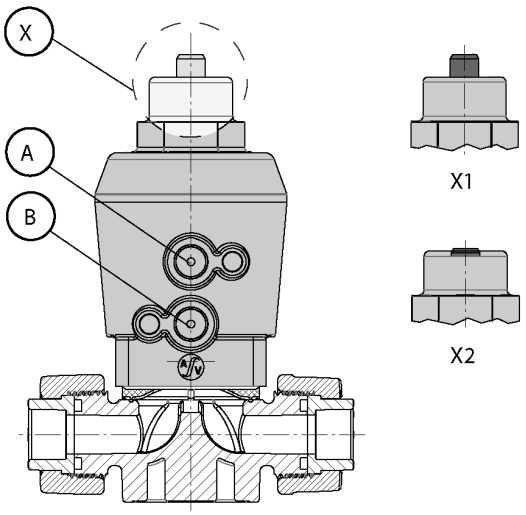
Diaphragm valve MV 309

Control pressure connection

NAMUR-compliant connection diagram



Function	Control pressure open	
	Connection A	Connection B
Normally closed (NC)		»OPEN«
Normally open (NO)	»CLOSED«	
Double-acting (DA)	»CLOSED«	»OPEN«

Control

- 3/2-way solenoid valves for NC/NO actuators
- 5/2-way solenoid valves for DA actuators

Visual position indicator

- X1 valve is open
- X2 valve is closed

Maintenance note

Screw torque (Nm)

d (mm)	20	25	32	40
Md (Nm)	5	5	8	8

Check the tightening torque of the housing screws at certain intervals in case of setting of the diaphragms and/or temperature fluctuations.

Control pressure volume (standard liters)

d (mm)	20	25	32	40
NC	0.049	0.049	0.072	0.072
NO	0.087	0.087	0.176	0.176
DA (opening)	0.049	0.049	0.072	0.072
DA (closing)	0.087	0.087	0.176	0.176

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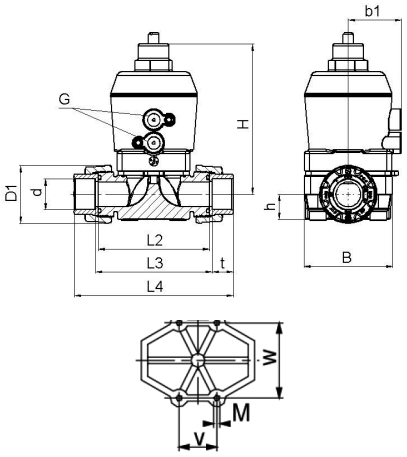
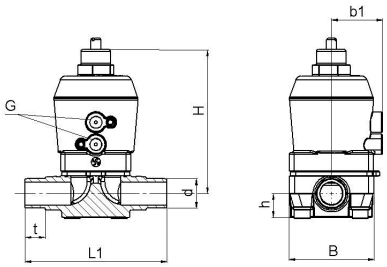
Diaphragm valve MV 309

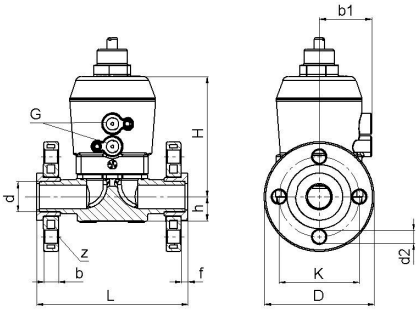
Connection socket



Connection spigot



Connection flange



d			20	25	32	40
DN (mm)			15	20	25	32
DN (inch)			1/2	3/4	1	1 1/4
	Housing material	Insert variant				
b	PP / PVC-U	GFK flange DIN	12	14	15	17
	PP / PVC-U / PVDF	PP/st. flange ANSI	12	12	16	16
	PVDF	PP/st. flange DIN	13	14.5	15.5	17.5
B			72	72	92	92
b1			47.5	47.5	55.5	55.5
d2	PP / PVC-U	GFK flange DIN	14	14	14	18
	PP / PVC-U / PVDF	PP/st. flange ANSI	16	16	16	16
	PVDF	PP/st. flange DIN	14	14	14	18
D	PP / PVC-U	GFK flange DIN	96.5	106	115	142
	PP / PVC-U / PVDF	PP/st. flange ANSI	95	105	113	130
	PVDF	PP/st. flange DIN	96	106	116	141
D1	PP		46	56	66	79
	PVC-U		41	50	58	72
	PVDF		47	57	64	78
f	PP / PVDF		7	9	10	11
	PVC-U		6	7	7	8
G*			1/4	1/4	1/4	1/4
h			26	26	26	40
H			137	139	157	173
K	PP / PVC-U	GFK flange DIN	65	75	85	100
	PP / PVC-U / PVDF	PP/st. flange ANSI	60	70	80	89
	PVDF	PP/st. flange DIN	65	75	85	100
L			130	150	160	180
L1			124	144	154	174
L2			90	108	116	134
L3			96	114	122	140
L4	PP		125	146	158	181
	PVC-U		128	152	166	192
	PVDF		128	150	162	184
M			M6	M6	M6	M8
t	PP / PVDF		16	19	21	23
	PVC-U		16	16	22	26
w			26	26	26	45
z			4	4	4	4

all dimensions in mm / * dimensions in inch

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Additional options Diaphragm valve MV 309

Limit switch

Limit switch

Nominal size DN 10–50

Attention

- for diaphragm valves MV 308, MV 309 and MV 310

Features

- high-quality materials
- reliable and low-maintenance

Application

- Limit switches for signaling »Open/Closed«

Diaphragm valve	Nominal size
MV 308	DN 12–15
MV 309	DN 15–32
MV 310	DN 15–50

Housing

- PVC-U

Bonnet

- PVC-U-transparent

Sealing element

- EPDM

Screws

- stainless steel (1.4301)

Electrical connection

- Cable connection PG 16

Protection class

- IP 65

Options

Limit switches:

- Micro switch VCSP
- Inductive proximity switch NJ2-V3-N (NAMUR)
- Inductive proximity switch NBB2-V3-E2 (PNP)

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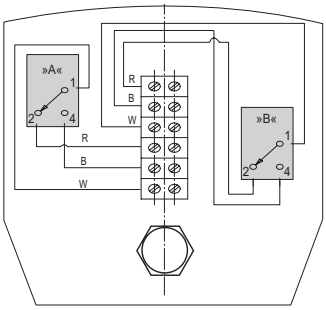
Additional options Diaphragm valve MV 309

Limit switch

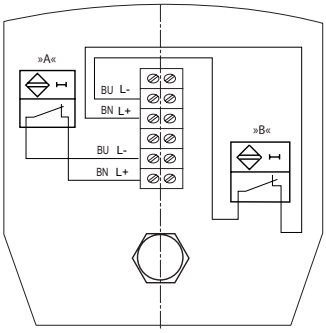
Technical data

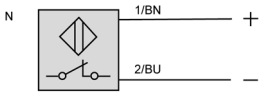
Circuit diagram – Micro switch VCSP



Switch type	VCSP
Type	–
Operating voltage	125–250 V AC
Maximum current	10 A (250 V AC); 3 A (24 V DC)
Type of protection	IP 44
Temperature	-20–60 °C

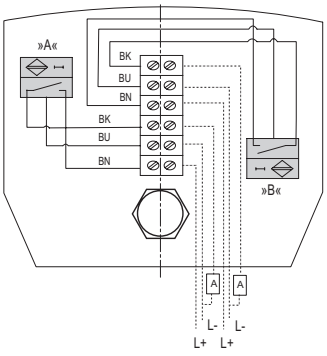
Circuit diagram – Inductive proximity switch NJ2-V3-N (2-wire, NAMUR)

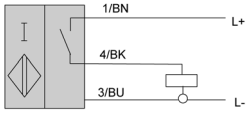




Switch type	NJ2-V3-N
Type	024.86
Switching function	NAMUR
Nominal voltage	8.2 V
Current consumption	1–3 mA
Switching frequency	0–1000 Hz
Protection class	IP 65
Temperature	-20–60 °C
ATEX marking, switch	II 1G Ex ia IIC T6...T1 Ga

Circuit diagram – Inductive proximity switch NBB2-V3-E2 (3-wire, PNP)





Switch type	NBB2-V3-E2
Type	024.87
Switching function	PNP
Operating voltage	24V DC (10–30V)
Output current max.	100 mA
Switching frequency	0–1000 Hz
Idle current	‹ 15 mA
Display	yellow LED
Protection class	IP 65
Temperature	-20–60 °C

	Description
A	Connection »OPEN«
B	Connection »CLOSED«

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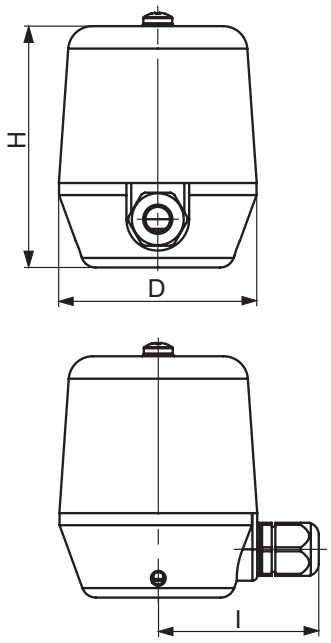
Additional options Diaphragm valve MV 309

Limit switch

Limit switch



Type	VCSP	NJ2-V3-N	NBB2-V3-E2
D	82.0	82.0	82.0
H	100.0	100.0	100.0
I	64.0	64.0	64.0

all dimensions in mm / * dimensions in inch

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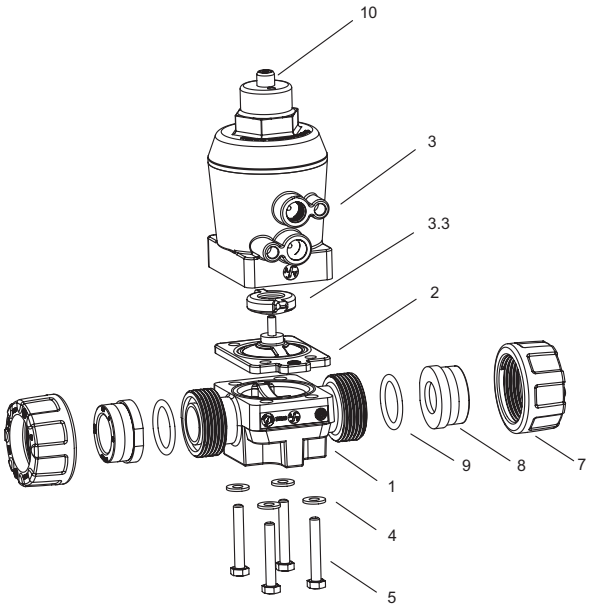
Diaphragm valve MV 309

Components



Item	Quantity	Designation
1	1	valve body
2	1	Diaphragm
3	1	Lift drive
3.3	1	Pressure piece
4	4	Washer
5	4	Hexagon screw (housing screw)
7	2	Union nut
8	2	Union end
9	2	O-ring
10	1	Indicator pin

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