

2/2-Way, DN 15...50 mm



Advantages/Benefits



- **Decentralized Intelligence for On/Off and Continuous control of processes**



- **Customized System Solutions for Easy Link and Easy Networking together with sensors**



- **Up to 80% lower Total Cost of Ownership**

Design/Function

The diaphragm valve system is designed for **On/Off controlled** and **Continuous controlled** process applications with various communication possibilities with sensors and a PLC.

The diaphragm valve system consists of three variable modules, the valve body, the pneumatic actuator and the TopControl.

Function On/Off control version:

On/Off control of a diaphragm valve

- Integrated pilots for single acting or double acting versions
- Integrated mechanical or inductive limit switches
- Position feedback
- Modular electrical interfaces
- ASI Bus communications

Function Continuous control version:

Position control or process control with an integrated PID controller

- Internal or external setpoint
- Autotune function
- Programmable flow curves
- Sensor input signals (4...20 mA, Frequency, PT 100)
- Binary inputs and outputs
- Modular electrical interfaces
- Analogue position output
- Up to 2 limit switches with position feedback
- Profibus DP and DeviceNet communication

Applications

Fluids

- **Plastic:**
Contaminated, aggressive fluids up to 120°C
- **Cold formed stainless steel:**
Polluted, dirty, abrasive, highly viscous liquids up to 140°C
- **Forged stainless steel:**
Ultra-pure, sterile, aggressive, abrasive, highly viscous liquids up to 140°C

Industries

- Water treatment
- Pharmaceutical industry
- Bio-technology
- Cosmetic industry
- Chemical processing
- Food and feed industry
- Textile dyeing and bleaching
- Medical technology
- Paper and pulp industry
- Machine industry



DeviceNet™

bürkert
Easy Fluid Control Systems

An optional variety of modules for your choice

Actuator

Actuator sizes [mm]:

- ø 63.0
- ø 80.0
- ø 100.0
- ø 125.0

Materials:

- PA with
SS thread connections
- PPS with
SS thread connections

Circuit functions:

- Single acting
 - normally closed by spring return
 - normally open by spring return (On/Off control only)
- Double acting



Valve Bodies

Diaphragm materials:

- EPDM
- PTFE and EPDM
- FPM
- CSM

Valve sizes [mm]:

- ø 15.0
- ø 20.0
- ø 25.0
- ø 32.0
- ø 40.0
- ø 50.0

Valve materials and corresponding connections:

- Plastic
 - PVC with true union or solvent spigot
 - PP with fusion spigot
 - PVDF with fusion spigot
- Cold formed stainless steel
 - Threaded ends: G, NPT and Rc
 - Butt weld ends: ISO 4220, DIN 11850 R2, O.D. tubing (BS 4825 Part 1)
 - Flange: DIN 2633, ANSI Class 150, JIS 10K
- Forged stainless steel
 - Butt weld ends: ISO 4200, DIN 11850 series 2, SMS 3008, BS O.D. tubing, JIS sanitary, JIS utility
 - Clamp connection: ISO 2852, BS 4825 (tri-clamp®)
 - Diary union: DIN 11851

Continuous

Power supply

(3-wire technology):

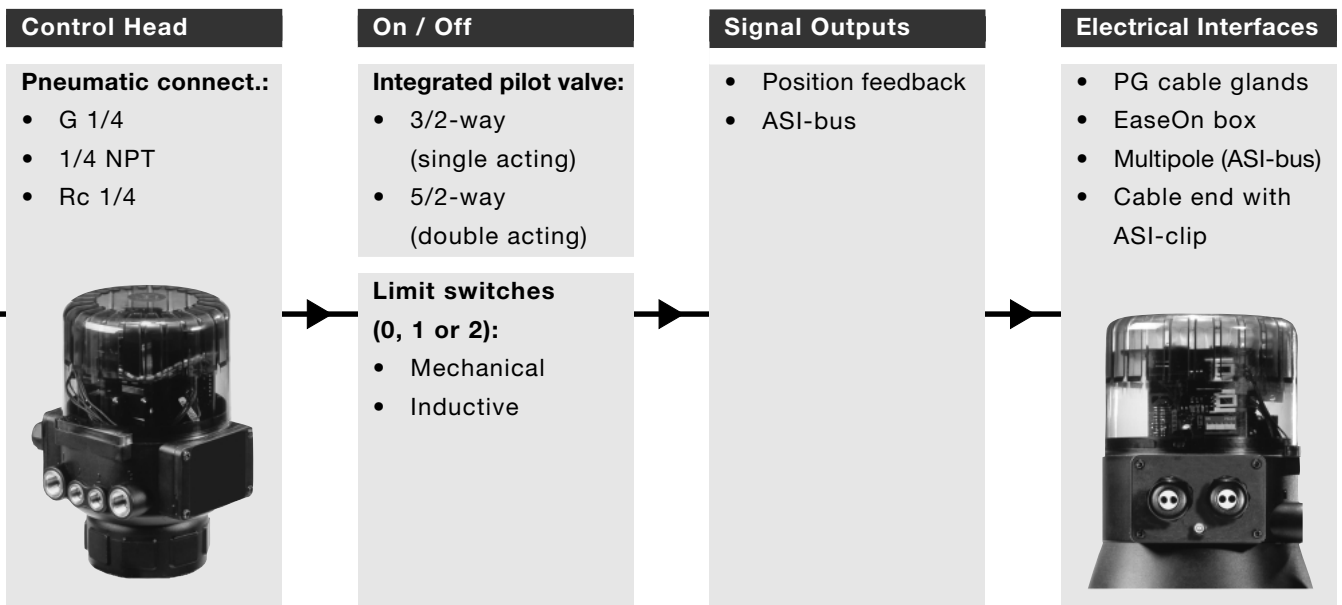
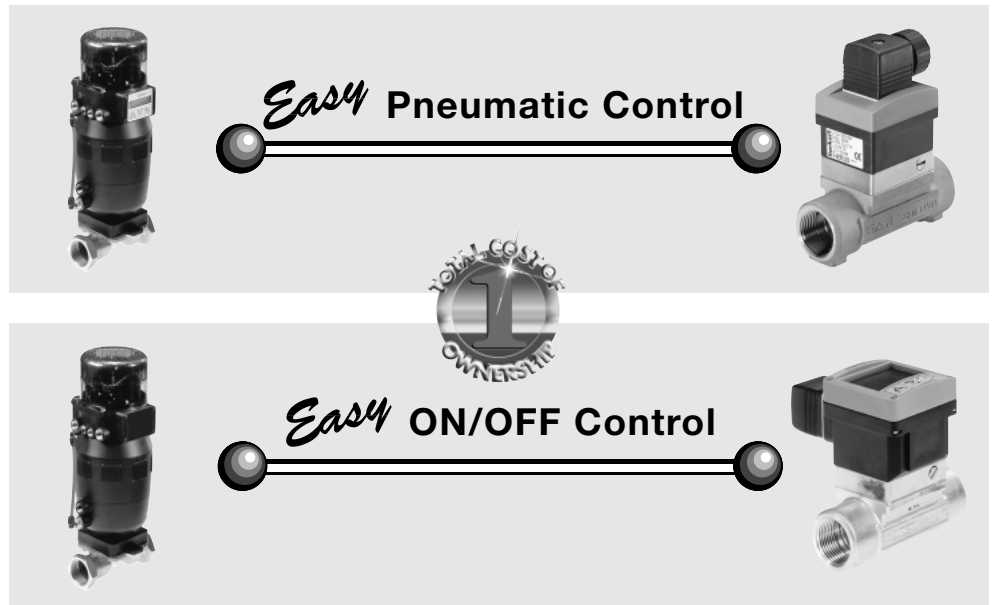
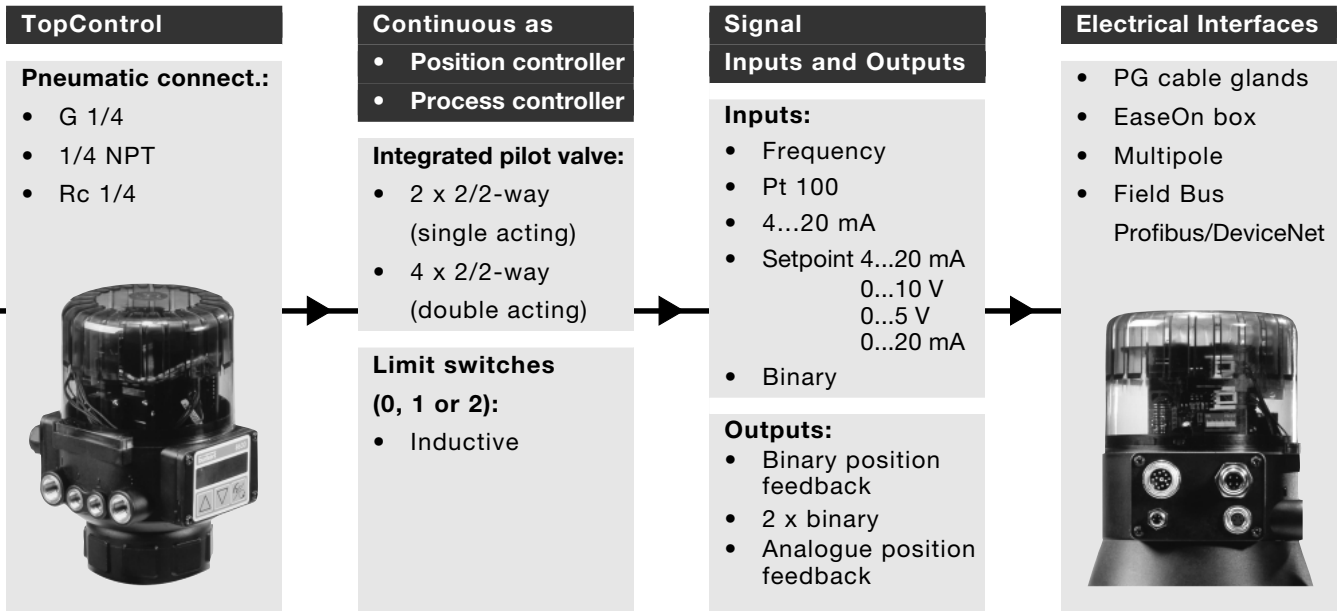
- 24V/DC
- 24 V/2-wire standard signal
- 24 V/2-wire bus

CONTROL

On/Off

Power supply:

- 24 V/DC
- 24 V/2-wire bus
- 110 V/50 Hz
- 230 V/50 Hz



Actuator Configuration

Integrated pilot valve

Functions:①

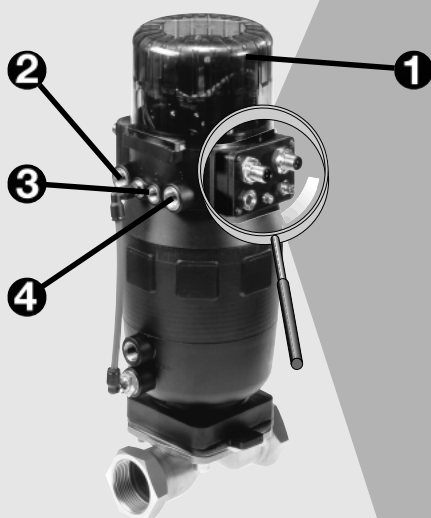
- Single acting (NC or NO by spring return): 3/2 way
- Double acting: 5/2 way

Power consumption:

- < 2 W

Power supply:

- 24 V/DC $\pm 10\%$
(no technical direct voltage)
Residual ripple 10%
- 110 V/50 Hz
- 230 V/50 Hz



Pneumatic connections

Supply port:② Service port:③ Exhaust port:④

- | | | |
|-----------|---------------|-----------|
| • G 1/4 | G 1/8 | • G 1/4 |
| • 1/4 NPT | (pre-mounted) | • 1/4 NPT |
| • Rc 1/4 | | • Rc 1/4 |

Pneumatic data

Medium: Instrument air
(filtered, non-lubricated)

Pressure range: 3...7 bar

Q_{Nn}-value: 100 l/min.

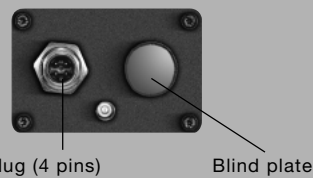
Operation data

Rating: IP65

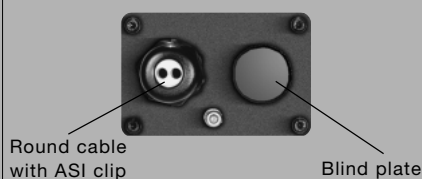
Ambient temp.: 0...50°C

Electrical Interfaces

Multipole

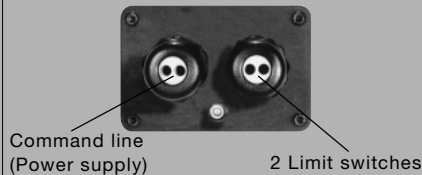


PG Cable gland



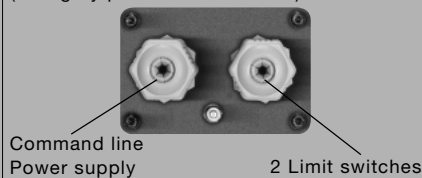
PG cable glands

(wiring on terminal strip)



EaseOn box

(wiring by push-in and turn-off)



Communication Line



Command Line On/Off



Outputs

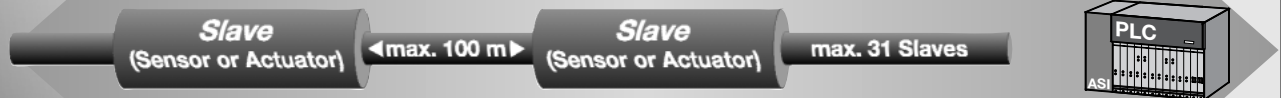


Communication

ASI Bus

Wiring:

- 2-wire ASI-cable for On/Off command, position feedback and power supply 30 V



Topology of network

- Line
- Star
- Tree
- Ring

Easy Link

- Sensor switch or relay output
- Easy* Flow Control (dosing / batching / filling)
- Easy* Analytical Control (dosing)
- Easy* Pressure Control (stabilizing pressure range)
- Easy* Level Control (filling / stabilizing / discharging & overflow protection)
- Easy* Temperature Control (stabilizing temperature range)

Easy Networking

- PLC



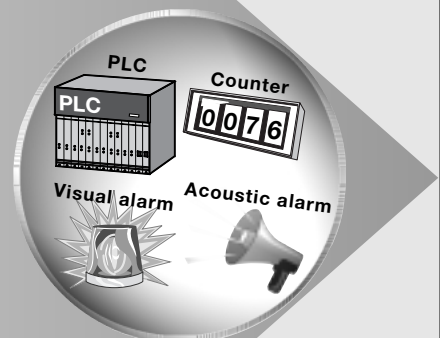
for details, please see corresponding data sheets

Position feedback

0, 1 or 2

Limit switch(es):

- Inductive** (24 V/DC)
 - Upper / Lower (NO), binary output 0/24 V
- Mechanical** (24 V/DC, ≤ 5 A)
 - Upper / Lower (NO), 0/24 V
 - Upper / Lower (NC), 24/0 V (110 and 230 V/50 Hz, ≤ 5 A)
 - Upper / Lower (NO), 0/110 or 230 V
 - Upper / Lower (NC), 110 or 230/0 V
- Upper position and / or
- Lower position



Actuator Configuration

Intelligent actuator

- **Positioner**
- **Process controller - integrated PID**

Integrated pilot valve

Functions: 1

- Single acting (NC by spring return):
2 x 2/2 way + exhaust valve (optional)
- Double acting:
4 x 2/2 way

Power consumption:

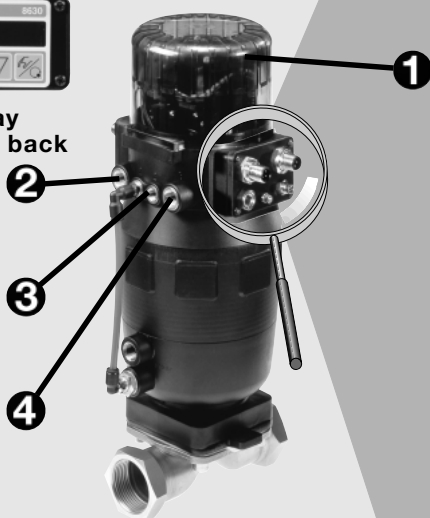
- < 5 W

Power supply:

- 24 V/DC $\pm$ 10%
(no technical direct voltage)
Residual ripple 10%



Display
at the back



Pneumatic connections

Supply port: 2	Service port: 3	Exhaust port: 4
• G 1/4	G 1/8	• G 1/4
• 1/4 NPT	(pre-mounted)	• 1/4 NPT
• Rc 1/4		• Rc 1/4

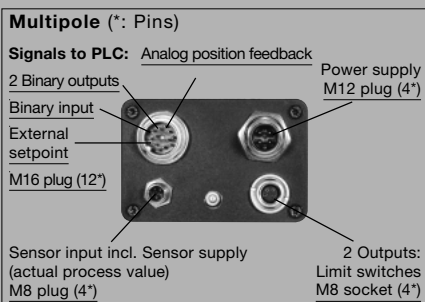
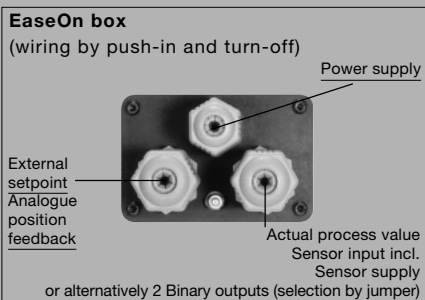
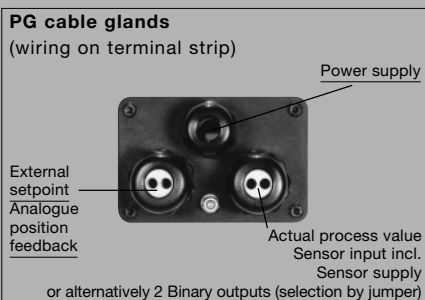
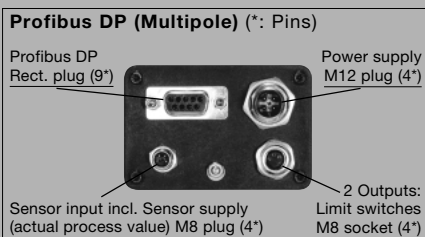
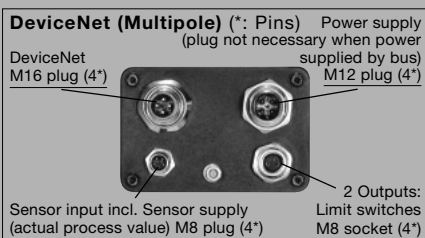
Pneumatic data

Medium:	Instrument air (filtered, non-lubricated)
Pressure range:	3...7 bar
Q _{Nn} -value:	100 l/min.

Operation data

Rating:	IP65
Ambient temp.:	0...50°C

Electrical Interfaces



Communication Line



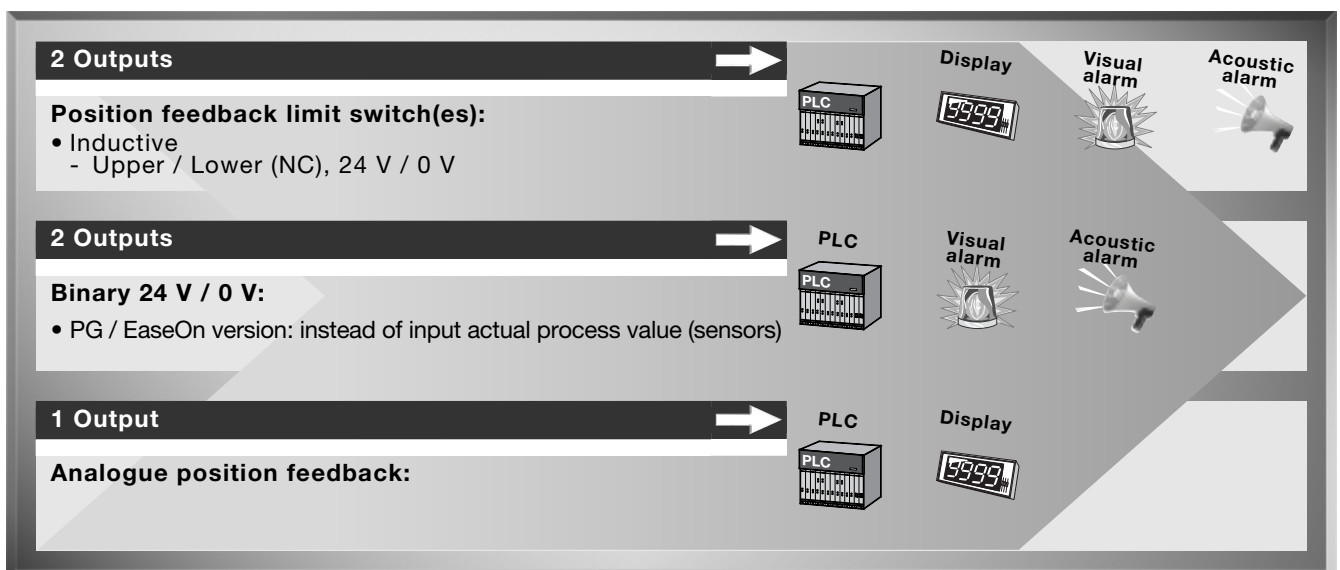
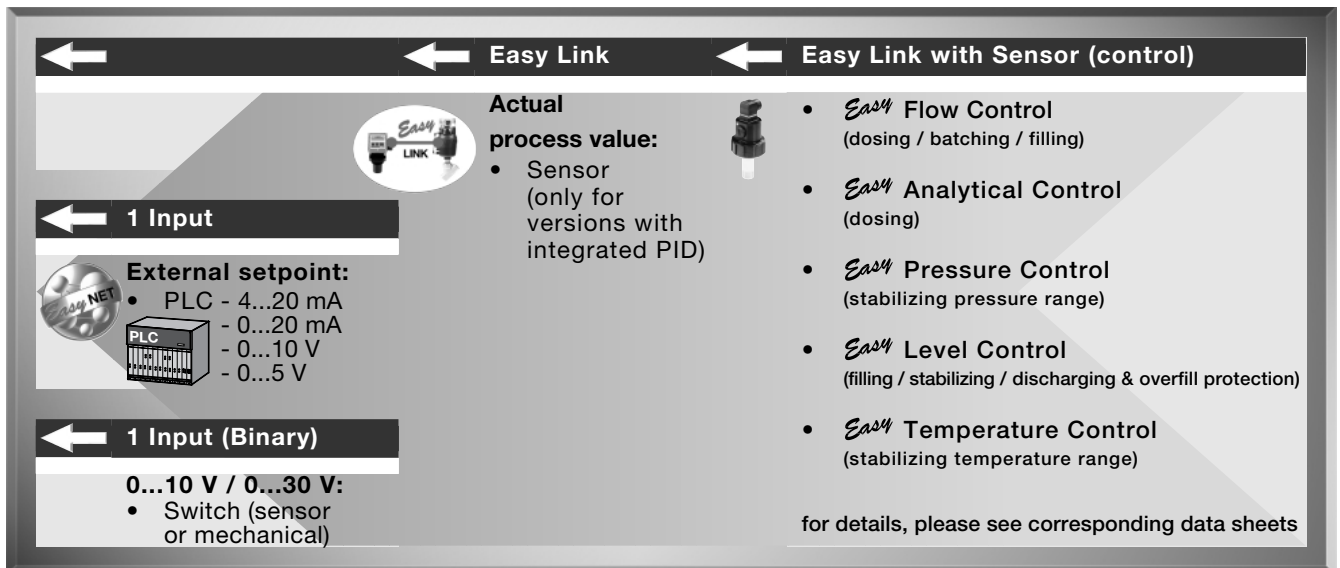
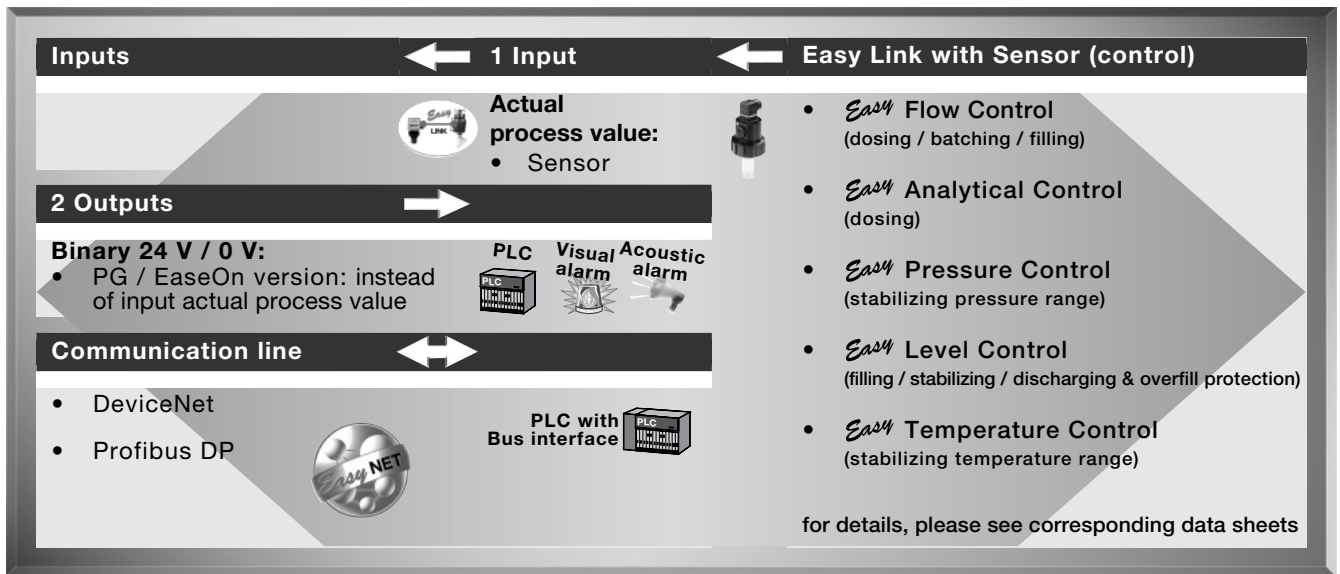
Inputs



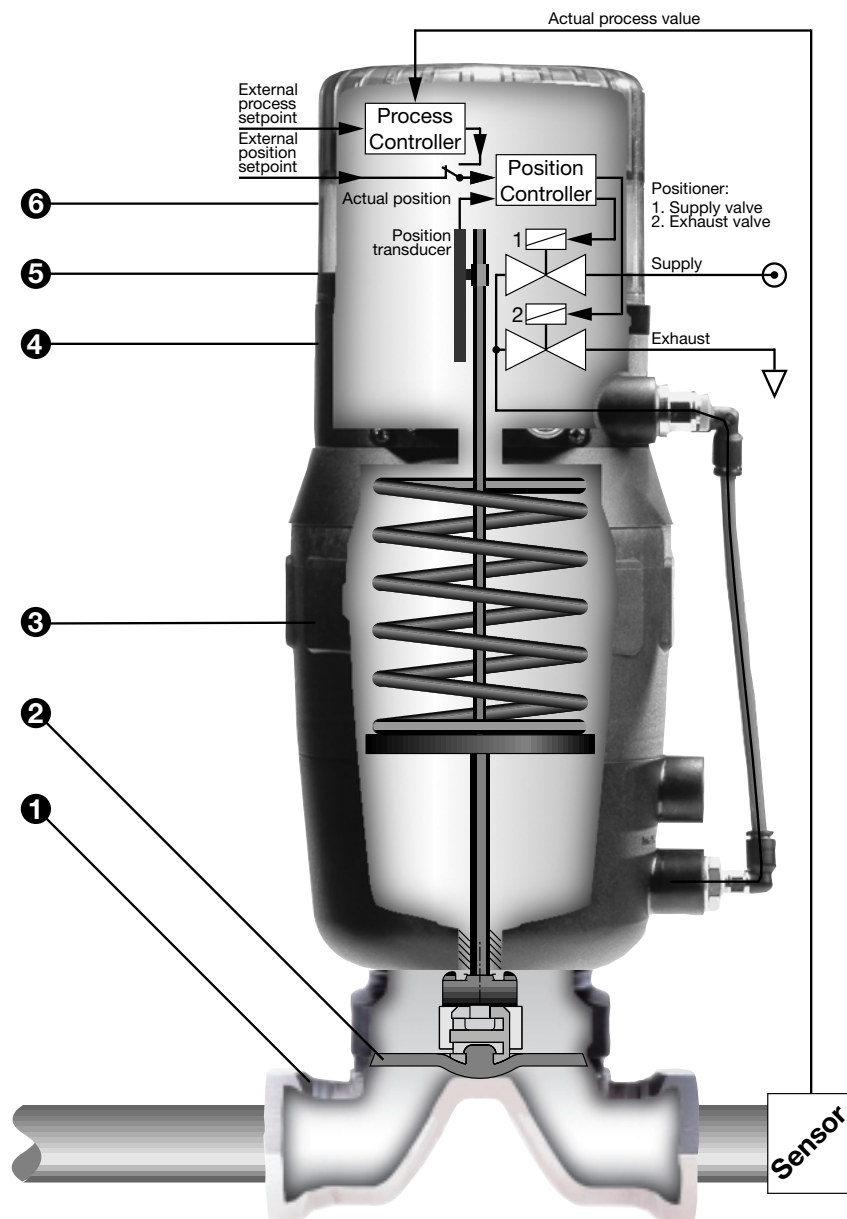
Outputs



Communication



Functional Diagram / Materials



The TopControl as **position controller** has standard signal inputs to preset the external position set points. An integrated micro-processor compares the actual position with the external set point and adjusts the valve to the desired position by activating the internal pilot valves. Position feedback, binary outputs and initiator outputs can be connected to a central PLC.

The TopControl as **process controller** uses an external process signal (i.e. coming from a sensor as frequency, Pt 100 or standard signal) to adjust the position of the valve to the desired process setpoint, preset by an external PLC or fed into the TopControl manually. The process control as a main control circuit dominates with a PID algorithm the position control circuit in a cascade function.

Materials:

1 Valve Body

- Plastic
 - PVC with true union or solvent spigot
 - PVDF with fusion spigot
- Cold formed stainless steel
 - G, NPT and Rc threaded
 - Butt weld ends
 - ISO 4220, DIN 11850 R2, O.D. tubing (BS 4825 Part 1)
 - Flange
 - DIN 2633, ANSI Class 150, JIS 10K
- Forged stainless steel
 - Butt weld ends
 - ISO 4200, DIN 11850 series 2, SMS 3008, BS O.D. tubing, JIS sanitary, JIS utility
 - Clamp connection
 - ISO 2852, BS 4825 (tri-clamp®)
 - Dairy union acc. to DIN 11851

2 Diaphragm

- EPDM
- PTFE and EPDM
- FPM
- CSM

3 Actuator

PA or PPS

4 TopControl (lower cap - black)

POM

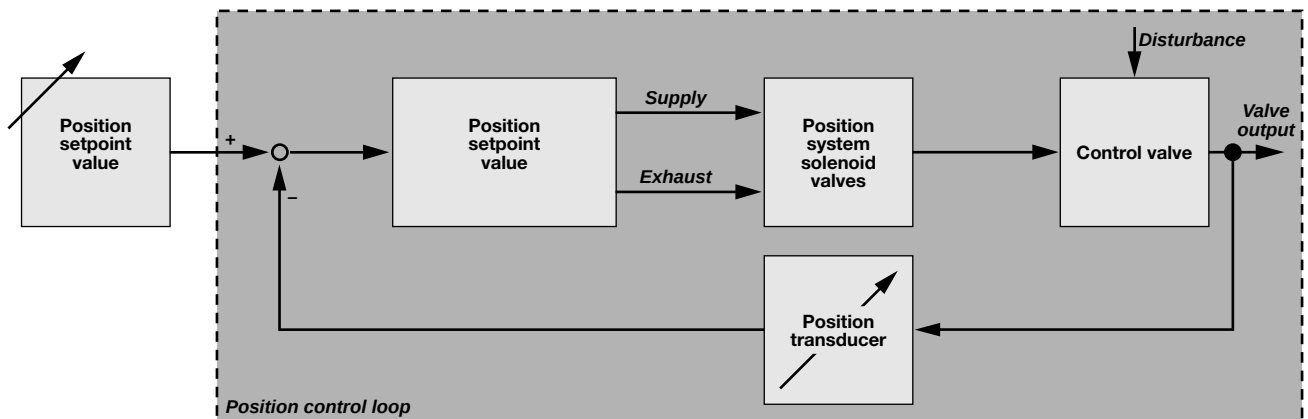
5 TopControl (sealing)

NBR

6 TopControl (upper cap - transparent)

PSU (Ultrason S)

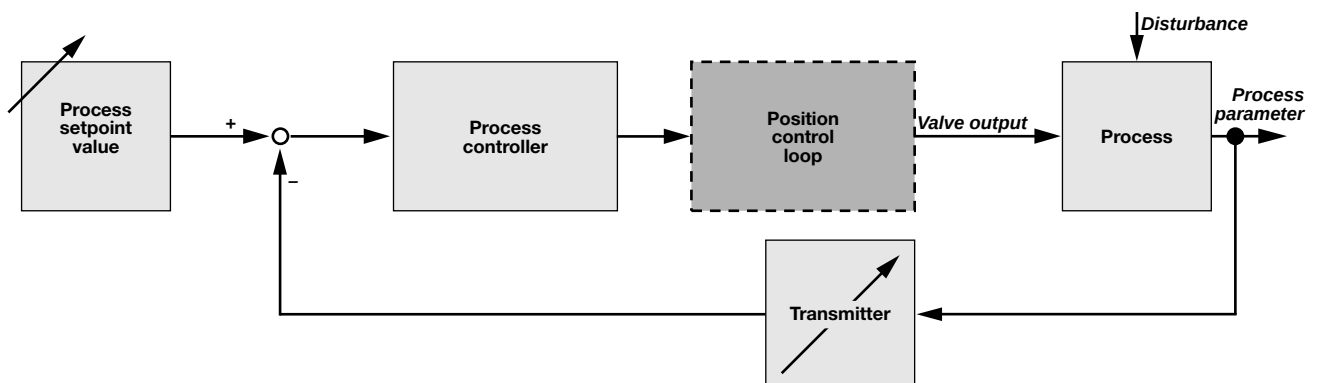
TopControl as Position Controller



The actual position of the pneumatic actuator is acquired by a position transducer.

The position controller compares this actual value with an internal or external setpoint value. In case of a control difference, a pulse width modulated voltage signal transmits the new position value to the position system.

TopControl as Process Controller



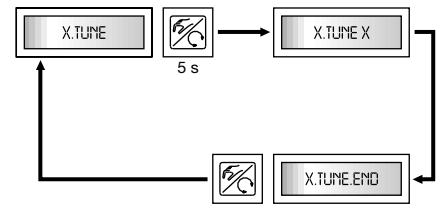
In case of the TopControl as process control, the position control loop works as a secondary service control loop. The process controller in the main control loop has a PID algorithmic function. The process setpoint value will be compared with the actual value of the process parameter to be controlled. This actual value is a sensor signal.

Software characteristics

Specific functions of the positioner:

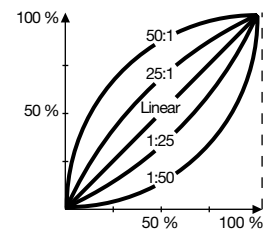
★ Autotune function

Automatic adjustment to the connected valve (self calibration).



★ Characteristic curves for process valve adjustment (correction characteristics)

- linear curve
- equal percentage curve; rangeability 1:25
- equal percentage curve; rangeability 1:33
- equal percentage curve; rangeability 1:50
- inverse equal percentage curve; rangeability 25: 1
- inverse equal percentage curve; rangeability 33: 1
- inverse equal percentage curve; rangeability 50: 1
- freely programmable curve; user defined (21 points)



• Different inputs

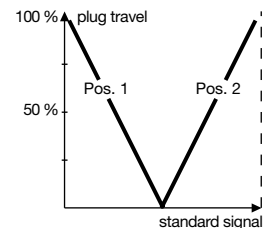
4...20 mA, 0...20 mA, 0...10 V or 0...5 V

• Split range of the set value signal range

The signal is split in two or more positions.

This allows to split the standard signal into two or more ranges (with or without overlap), which are transferred to two or more positioners.

This again enables you to use two or more valves partially either simultaneously or in sequence as a final controlling element.



• Dead band

The positioner acts only if a specified control difference is measured.

• Inversion of the effective direction of actual value and external setpoint

• Closed tight function

The valve is tightly closed over the tightness process range.

• Stroke limitation

• Speed limitation

to open or close the valve with a defined maximum speed.

• Safety position / code lock

The valve moves to a specified safety position.

Additional specific functions of the positioner with integrated PID:

★ Control type: PID

★ Autotune function

Self adaptation of the process controller to the actual process conditions.

★ Teach In (for Flow Control Systems)

• Calibration of parameters

Proportional coefficient, reset time, action rate and operating point.

• Input signals to be scaled

Analogue input 4...20 mA, frequency or PT100

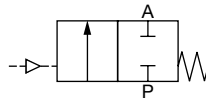
• Internal (via display keys) or external setpoint

Technical data

Circuit functions

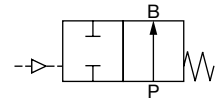
A 2/2 way valve

normally closed by spring return



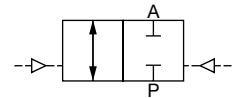
B 2/2 way valve

normally open by spring return



I 2/2 way valve

with double-acting actuator



Specifications

Valve size (orifice) DN	Kv-value water		Control pressure for circuit function → A ¹⁾	Max. operating pressure for circuit function (A, B and I)	Actuator size ø	Seal (Diaphragm)	Weight	
	On/Off control	Continuous control					• PVC, true union • PVC, solvent spigot • PVDF, fusion spigot	
[mm]	[m³/h]	[m³/h]	[bar]	[bar]	[mm]		On/Off [kg]	Continuous [kg]
15.0	3.5	please see separate chart below	4.7 – 6.0	10.0	63	EPDM	2.80	3.00
15.0	3.5		4.7 – 6.0	10.0	63	PTFE/EPDM	2.80	3.00
20.0	7.0		4.5 – 6.0	10.0	80	EPDM	3.60	3.80
20.0	7.0		4.5 – 6.0	10.0	80	PTFE/EPDM	3.60	3.80
25.0	12.5		4.5 – 6.0	10.0	80	EPDM	3.70	3.90
25.0	12.5		4.5 – 6.0	8.6	80	PTFE/EPDM	3.70	3.90
32.0	19.0		4.0 – 6.0	10.0	100	EPDM	5.20	5.40
32.0	19.0		4.0 – 6.0	8.0	100	PTFE/EPDM	5.20	5.40
40.0	28.0		4.6 – 6.0	10.0	125	EPDM	7.20	7.40
40.0	28.0		4.6 – 6.0	10.0	125	PTFE/EPDM	7.20	7.40
50.0	40.0		4.5 – 6.0	7.7	125	EPDM	8.40	8.60
50.0	40.0		4.5 – 6.0	7.0	125	PTFE/EPDM	8.40	8.60

All pressures quoted are gauge pressures with respect to the prevailing atmospheric pressure.

1) Control pressures circuit functions B and I, please see control pressure charts on next page

Flow capacity

Plug travel [%]	Kv-value (water) [m³/h]					
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.07	0.13	0.40	1.00	1.90	3.00
20	0.15	0.32	1.10	2.60	5.60	9.00
30	0.28	0.80	2.10	5.10	10.10	16.00
40	0.44	1.60	3.60	8.60	17.20	26.00
50	0.66	2.60	6.10	13.80	24.10	35.00
60	1.02	3.70	9.30	19.00	29.20	42.00
70	1.54	4.80	11.90	21.00	33.50	49.00
80	2.17	5.80	13.50	22.00	35.50	55.00
90	3.01	7.00	14.20	23.00	36.80	58.00
100	3.80	7.30	14.50	23.50	37.00	60.00

Operating data

Connections

PVC, true union
PVC, solvent spigot
PVDF, fusion spigo

Circuit function

A, B and I

Nominal pressure

PN10

Min. control pressure

2.0 bar

Max. control pressure

7.5 bar

Max. viscosity

600 mm²/s

Ambient temperature

min. 0 °C
max. + 50 °C

Fluid temperature

with PVC

min. + 0 °C
max. + 60 °C

with PVDF

min. + 0 °C
max. +120 °C

with PP

min. - 10 °C
max. +120 °C

Body material

PVC, PVDF or PP

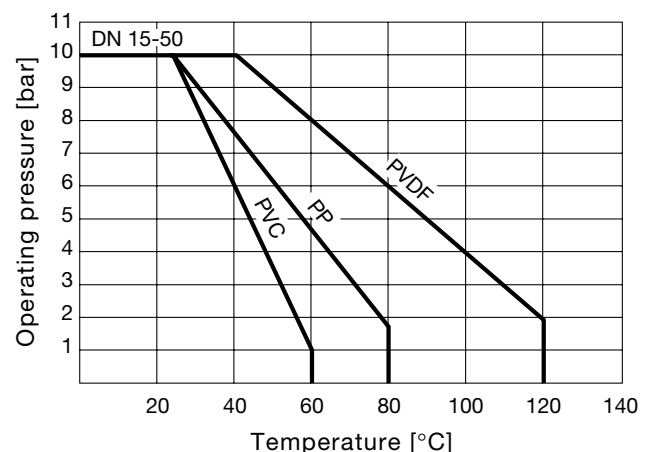
Seal material

EPDM or EPDM/PTFE

Fluids

Contaminated / Aggressive

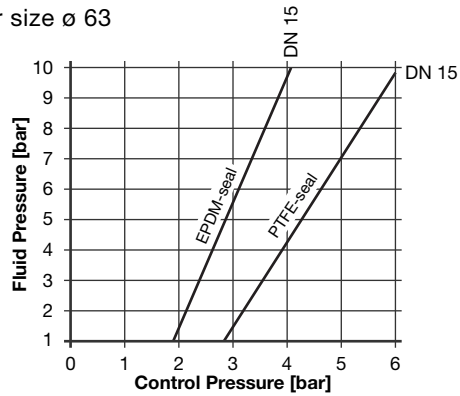
Operating pressure depending on fluid temperature



Control pressures

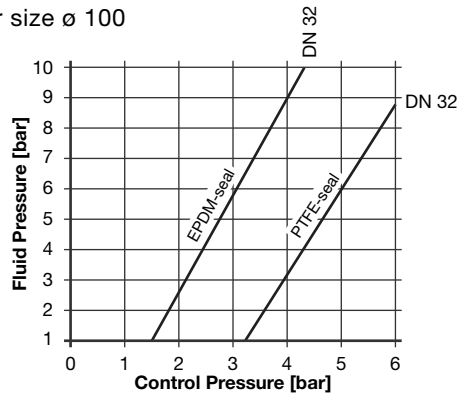
Circuit Function B and I

Actuator size $\varnothing 63$



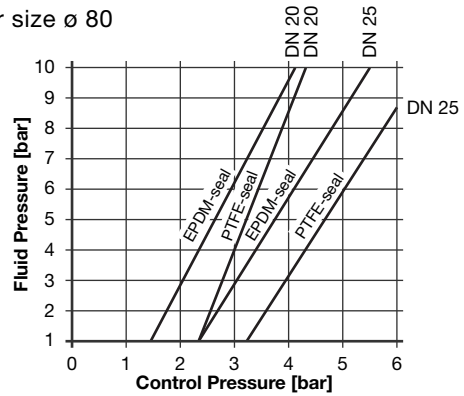
Circuit Function B and I

Actuator size $\varnothing 100$



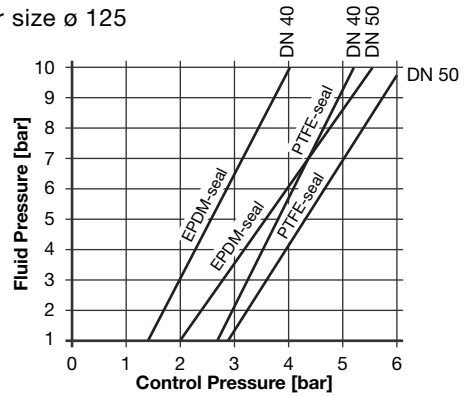
Circuit Function B and I

Actuator size $\varnothing 80$



Circuit Function B and I

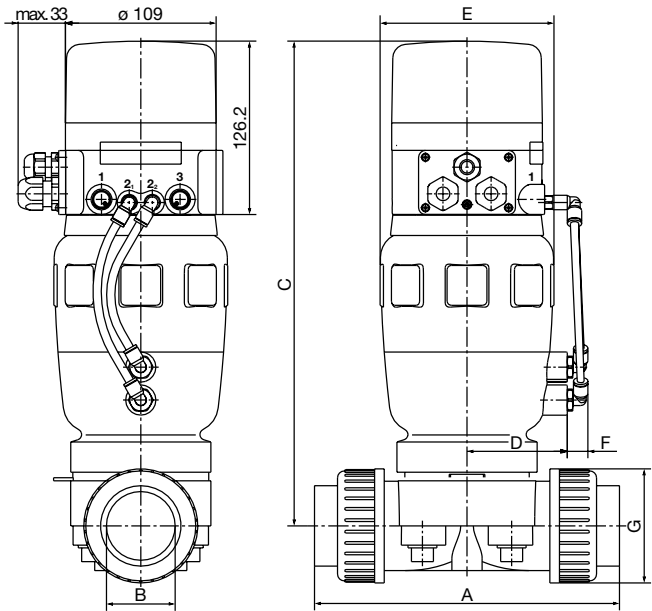
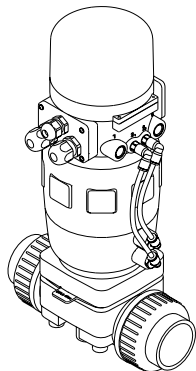
Actuator size $\varnothing 125$



Dimensions [mm]

- PVC with true union

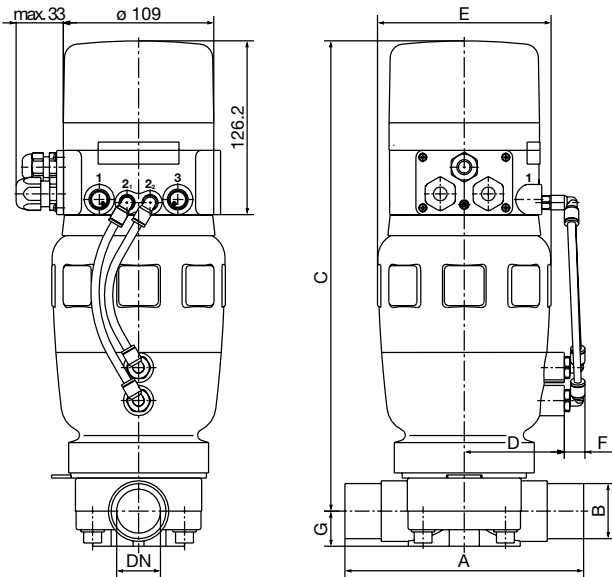
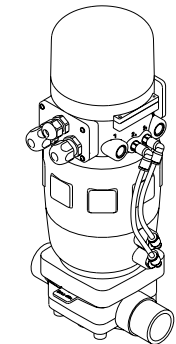
Orifice DN [mm]	Actuator size ø [mm]	Measurements						
		A	B	C	D	E	F	G
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15.0	63.0	128.0	20.0	254.0	52.0	79.6	27.0	43.0
20.0	80.0	152.0	25.0	288.0	60.0	100.6	15.0	53.0
25.0	80.0	166.0	32.0	291.0	60.0	100.6	15.0	60.0
32.0	100.0	192.0	40.0	346.0	73.0	126.6	15.0	74.0
40.0	125.0	222.0	50.0	392.0	86.0	157.6	15.0	83.0
50.0	125.0	266.0	63.0	399.0	86.0	157.6	15.0	103.0



Dimensions [mm]

- PVC with solvent spigot
- PP with fusion spigot
- PVDF with fusion spigot

Orifice DN [mm]	Actuator size ø [mm]	Measurements						
		A	B	C	D	E	F	G
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15.0	63.0	124.0	20.0	253.0	52.0	79.6	27.0	14.0
20.0	80.0	144.0	25.0	288.0	60.0	100.6	15.0	18.0
25.0	80.0	154.0	32.0	291.0	60.0	100.6	15.0	21.0
32.0	100.0	174.0	40.0	345.0	73.0	126.6	15.0	26.0
40.0	125.0	194.0	50.0	391.0	86.0	157.6	15.0	33.0
50.0	125.0	224.0	63.0	408.0	86.0	157.6	15.0	39.0

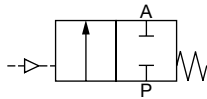


Technical data

Circuit functions

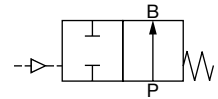
A 2/2 way valve

normally closed by spring return



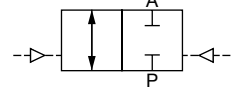
B 2/2 way valve

normally open by spring return



I 2/2 way valve

with double-acting actuator



Specifications for threaded ends, butt weld* ends (*only ISO 4200) and flange

Valve size (orifice) DN	Kv-value water		Control pressure (A, B and I)	Max. operating pressure for circuit function (A, B and I)	Actuator size ø	Seal (Diaphragm)	Weight			
	On/Off control	Continuous control					• Threaded ends • Butt weld ends ISO 4220		• Flange	
[mm]	[m³/h]	[m³/h]	[bar]	[bar]	[mm]		On/Off [kg]	Continuous [kg]	On/Off [kg]	Continuous [kg]
15.0	5.4	please see separate chart on next page	4.7 – 7.0	10.0	63	EPDM	1.70	1.90	2.98	3.18
15.0	5.4		4.7 – 7.0	10.0	63	PTFE/EPDM	1.70	1.90	2.98	3.18
20.0	13.5		4.5 – 7.0	10.0	80	EPDM	2.30	2.50	4.18	4.38
20.0	13.5		4.5 – 7.0	10.0	80	PTFE/EPDM	2.30	2.50	4.18	4.38
25.0	22.0		4.5 – 7.0	10.0	80	EPDM	2.80	3.00	4.80	5.00
25.0	22.0		4.5 – 7.0	8.0	80	PTFE/EPDM	2.80	3.00	4.80	5.00
32.0	33.0		4.0 – 7.0	10.0	100	EPDM	4.40	4.60	7.40	7.60
32.0	33.0		4.0 – 7.0	8.0	100	PTFE/EPDM	4.40	4.60	7.40	7.60
40.0	43.0		4.6 – 7.0	10.0	125	EPDM	7.20	7.40	10.40	10.60
40.0	43.0		4.6 – 7.0	10.0	125	PTFE/EPDM	7.20	7.40	10.40	10.60
50.0	74.0		4.5 – 7.0	8.0	125	EPDM	7.70	7.90	12.30	12.50
50.0	74.0		4.5 – 7.0	7.0	125	PTFE/EPDM	7.70	7.90	12.30	12.50

Specifications for butt weld* ends (*only DIN 11850 R2)

Valve size (orifice) DN	Kv-value water		Control pressure (A, B and I)	Max. operating pressure for circuit function (A, B and I)	Actuator size ø	Seal (Diaphragm)	Weight • Butt weld ends DIN 11850 R2	
	On/Off control	Continuous control					On/Off [kg]	Continuous [kg]
[mm]	[m³/h]	[m³/h]	[bar]	[bar]	[mm]			
15.0	4.5	please see separate chart on next page	4.7 – 7.0	10.0	63	EPDM	1.60	1.80
15.0	4.5		4.7 – 7.0	10.0	63	PTFE/EPDM	1.60	1.80
20.0	4.5		4.5 – 7.0	10.0	63	EPDM	1.60	1.80
20.0	4.5		4.5 – 7.0	10.0	63	PTFE/EPDM	1.60	1.80
25.0	13.5		4.5 – 7.0	10.0	80	EPDM	2.40	2.60
25.0	13.5		4.5 – 7.0	10.0	80	PTFE/EPDM	2.40	2.60
32.0	18.0		4.0 – 7.0	10.0	80	EPDM	2.80	3.00
32.0	18.0		4.0 – 7.0	8.0	80	PTFE/EPDM	2.80	3.00
40.0	24.5		4.6 – 7.0	10.0	100	EPDM	4.40	4.60
40.0	24.5		4.6 – 7.0	8.0	100	PTFE/EPDM	4.40	4.60
50.0	37.0		4.5 – 7.0	10.0	125	EPDM	7.30	7.50
50.0	37.0		4.5 – 7.0	10.0	125	PTFE/EPDM	7.30	7.50

Specifications for butt weld* ends (*only O.D. tubing BS 4825 Part 1)

Valve size (orifice) DN	Kv-value water		Control pressure (A, B and I)	Max. operating pressure for circuit function (A, B and I)	Actuator size ø	Seal (Diaphragm)	Weight • Butt weld ends O.D. tubing (BS 4825 Part 1)	
	On/Off control	Continuous control					On/Off [kg]	Continuous [kg]
[mm]	[m³/h]	[m³/h]	[bar]	[bar]	[mm]			
20.0	4.5	please see separate chart on next page	4.5 – 7.0	10.0	63	EPDM	1.70	1.90
20.0	4.5		4.5 – 7.0	10.0	63	PTFE/EPDM	1.70	1.90
25.0	12.0		4.5 – 7.0	10.0	80	EPDM	2.30	2.50
25.0	12.0		4.5 – 7.0	10.0	80	PTFE/EPDM	2.30	2.50
40.0	27.0		4.6 – 7.0	10.0	100	EPDM	4.30	4.50
40.0	27.0		4.6 – 7.0	8.0	100	PTFE/EPDM	4.30	4.50
50.0	42.0		4.5 – 7.0	10.0	125	EPDM	7.20	7.40
50.0	42.0		4.5 – 7.0	10.0	125	PTFE/EPDM	7.20	7.40

All pressures quoted are gauge pressures with respect to the prevailing atmospheric pressure.

Fluid Control System with Diaphragm Valve for polluted, dirty, aggressive and ultra pure fluids

TopControl System 2031 Cold formed stainless steel

Technical data

Flow capacity

for threaded ends, butt weld* ends
(*only ISO 4200) and flange

Plug travel [%]	Kv-value (water) [m³/h]					
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.05	0.08	0.28	0.40	0.60	1.50
20	0.20	0.70	1.20	1.60	3.10	5.30
30	0.50	2.10	2.50	4.20	7.10	8.40
40	1.10	4.30	5.40	8.80	13.60	18.30
50	1.80	6.10	8.60	13.20	18.30	30.10
60	2.80	8.10	12.60	17.70	26.10	42.70
70	3.80	10.10	15.70	22.40	35.10	58.30
80	4.70	12.10	18.80	28.20	40.80	67.60
90	5.20	13.40	21.70	32.00	42.70	72.80
100	5.40	13.50	22.00	33.00	43.00	74.00

Flow capacity

for butt weld* ends
(*only DIN 11850 R2)

Plug travel [%]	Kv-value (water) [m³/h]					
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
0	0.00	0.00	0.00	0.00	0.00	0.00
10	0.04	0.04	0.08	0.11	0.30	0.52
20	0.17	0.17	0.70	0.93	1.19	2.67
30	0.42	0.42	2.10	2.80	3.12	6.11
40	0.92	0.92	4.30	5.73	6.53	11.70
50	1.50	1.50	6.10	8.13	9.80	15.75
60	2.33	2.33	8.10	10.80	13.14	22.46
70	3.17	3.17	10.10	13.47	16.63	30.20
80	3.92	3.92	12.10	16.13	20.94	35.11
90	4.33	4.33	13.40	17.87	23.76	36.74
100	4.50	4.50	13.50	18.00	24.50	37.00

Flow capacity

for butt weld* ends
(*only O.D. tubing BS 4825 Part 1)

Plug travel [%]	Kv-value (water) [m³/h]			
	DN 20	DN 25	DN 40	DN 50
0	0.00	0.00	0.00	0.00
10	0.04	0.07	0.34	0.59
20	0.17	0.62	1.47	3.03
30	0.42	1.87	3.07	6.93
40	0.92	3.82	6.63	13.28
50	1.50	5.42	10.55	17.87
60	2.33	7.20	15.46	25.49
70	3.17	8.98	19.27	34.28
80	3.92	10.76	23.07	39.85
90	4.33	11.91	26.63	41.71
100	4.50	12.00	27.00	42.00

Operating data

Connections

Threaded ends
Butt weld ends

G, NPT and Rc
ISO 4200
DIN 11850 R2
O.D. tubing (BS 4825 Part 1)
DIN 2633
ANSI Class 150
JIS 10K

Nominal pressure

Min. control pressure
Max. control pressure
Max. viscosity
Ambient temperature

PN10

2.0 bar
7.0 bar
600 mm²/s
min. 0 °C
max. + 50 °C
min. - 10 °C
max. +140 °C

Flange

Circuit function

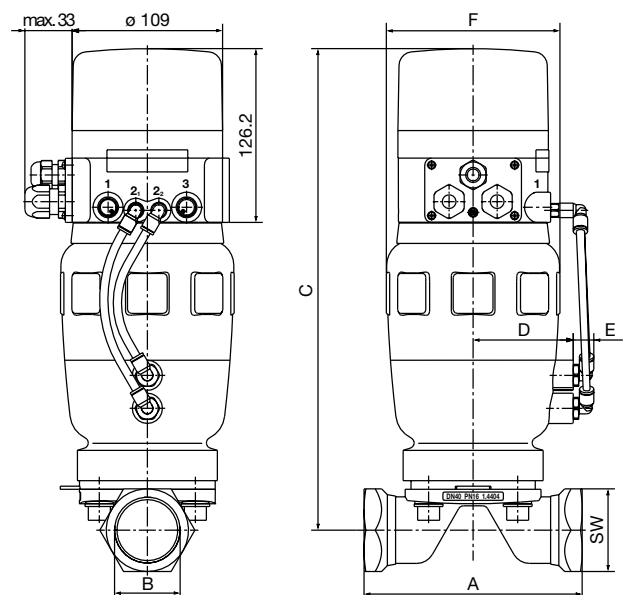
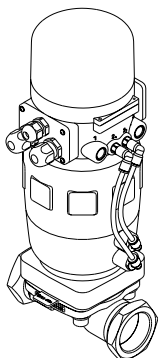
Body material
Seal material
Fluids

A, B and I
Cold formed stainless steel
EPDM or EPDM/PTFE
Polluted, dirty, abrasive or
high viscous liquids

Dimensions [mm]

- Stainless steel - G
- NPT
- Rc

Orifice DN [mm]	Actuator size ø [mm]	Measurements						
		A [mm]	B [inch]	C [mm]	D [mm]	E [mm]	F [mm]	SW [mm]
15.0	63.0	102.0	1/2	254.0	52.0	27.0	79.6	27.0
20.0	80.0	118.0	3/4	289.0	60.0	15.0	100.6	32.0
25.0	80.0	127.0	1	292.0	60.0	15.0	100.6	41.0
32.0	100.0	146.0	1 1/4	345.0	73.0	15.0	126.6	50.0
40.0	125.0	159.0	1 1/2	389.0	86.0	15.0	157.6	60.0
50.0	125.0	191.0	2	393.0	86.0	15.0	157.6	70.0



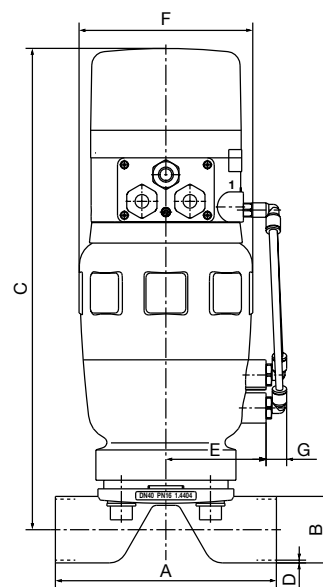
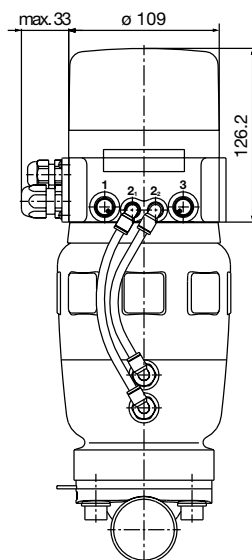
Dimensions [mm]

- **Stainless steel** - Butt weld ends acc. ISO 4200
- Butt weld ends acc. DIN 11850 R2
- Butt weld ends O.D. tubing (BS 4825 Part 1)

Orifice DN [mm]	Actuator size ø [mm]	Measurements acc. ISO 4220						
		A	B	C	D	E	F	G
15.0	63.0	110.0	21.3	254.0	1.60	52.0	79.6	27.0
20.0	80.0	119.0	26.9	289.0	1.60	60.0	100.6	15.0
25.0	80.0	129.0	33.7	292.0	2.00	60.0	100.6	15.0
32.0	100.0	148.0	42.4	345.0	2.00	73.0	126.6	15.0
40.0	125.0	161.0	48.3	389.0	2.00	86.0	157.6	15.0
50.0	125.0	192.0	60.3	393.0	2.00	86.0	157.6	15.0

Measurements acc. DIN 11850 R2								
		A	B	C	D	E	F	G
15.0	63.0	110.0	19.0	254.0	1.50	52.0	79.6	27.0
20.0	63.0	119.0	23.0	256.0	1.50	52.0	79.6	27.0
25.0	80.0	129.0	29.0	292.0	1.50	60.0	100.6	15.0
32.0	80.0	148.0	35.0	295.0	1.50	60.0	100.6	15.0
40.0	100.0	161.0	41.0	348.0	1.50	73.0	126.6	15.0
50.0	125.0	192.0	53.0	393.0	1.50	86.0	157.6	15.0

Measurements acc. O.D. tubing								
		A	B	C	D	E	F	G
20.0	63.0	102.0	19.0	253.0	1.50	52.0	79.6	27.0
25.0	80.0	114.0	25.4	288.0	1.65	60.0	100.6	15.0
40.0	100.0	140.0	38.1	343.0	1.65	73.0	126.6	15.0
50.0	125.0	161.0	50.8	390.0	1.65	86.0	157.6	15.0



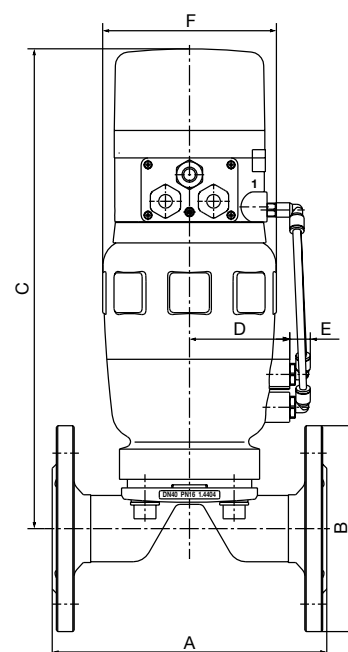
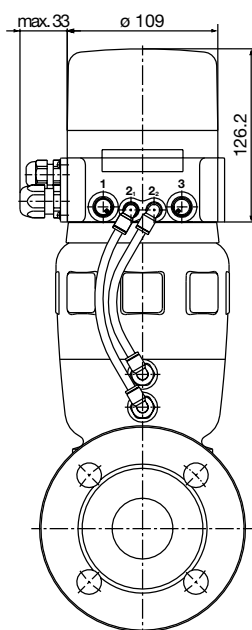
Dimensions [mm]

- **Stainless steel** - Flange acc. DIN 2633
- Flange acc. ANSI Class 150
- Flange acc. JIS 10K

Orifice DN [mm]	Actuator size ø [mm]	Measurements acc. DIN 2633					
		A	B	C	D	E	F
15.0	63.0	130.0	95.0	254.0	52.0	27.0	79.6
20.0	80.0	150.0	105.0	289.0	60.0	15.0	100.6
25.0	80.0	160.0	115.0	292.0	60.0	15.0	100.6
32.0	100.0	180.0	140.0	345.0	73.0	15.0	126.6
40.0	125.0	200.0	150.0	389.0	86.0	15.0	157.6
50.0	125.0	230.0	165.0	393.0	86.0	15.0	157.6

Measurements acc. ANSI Class 150							
		A	B	C	D	E	F
15.0	63.0	118.0	98.6	254.0	52.0	27.0	79.6
20.0	80.0	127.0	108.0	289.0	60.0	15.0	100.6
25.0	80.0	146.0	117.3	292.0	60.0	15.0	100.6
32.0	100.0	159.0	127.0	345.0	73.0	15.0	126.6
40.0	125.0	191.0	152.4	389.0	86.0	15.0	157.6

Measurements acc. JIS 10K							
		A	B	C	D	E	F
15.0	63.0	118.0	100.0	254.0	52.0	27.0	79.6
20.0	80.0	127.0	125.0	289.0	60.0	15.0	100.6
32.0	100.0	159.0	140.0	345.0	73.0	15.0	126.6
40.0	125.0	191.0	155.0	389.0	86.0	15.0	157.6

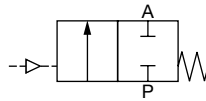


Technical data

Circuit functions

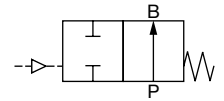
A 2/2 way valve

normally closed by spring return



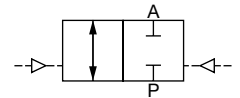
B 2/2 way valve

normally open by spring return



I 2/2 way valve

with double-acting actuator



Specifications

Valve size (orifice) DN	Kv-value water		Control pressure for circuit function (A, B and I)	Max. operating pressure for circuit function (A, B and I)	Actuator size ø	Seal (Diaphragm)	Weight	
	On/Off control	Continuous control					On/Off	Continuous
[mm]	[m³/h]	[m³/h]	[bar]	[bar]	[mm]		[kg]	[kg]
15.0	5.0	please see separate chart below	4.7 – 7.0	10.0	63	Elastomere ¹⁾	1.80	2.00
15.0	5.0		4.7 – 7.0	10.0	63	PTFE	1.80	2.00
20.0	7.0		4.5 – 7.0	10.0	80	Elastomere ¹⁾	2.80	3.00
20.0	7.0		4.5 – 7.0	10.0	80	PTFE	2.80	3.00
25.0	13.0		4.5 – 7.0	10.0	80	Elastomere ¹⁾	2.97	3.17
25.0	13.0		4.5 – 7.0	8.0	80	PTFE	2.97	3.17
40.0	34.8		4.6 – 7.0	10.0	125	Elastomere ¹⁾	6.60	6.80
40.0	34.8		4.6 – 7.0	10.0	125	PTFE	6.60	6.80
50.0	52.0		4.5 – 7.0	8.5	125	Elastomere ¹⁾	8.40	8.60
50.0	52.0		4.5 – 7.0	7.0	125	PTFE	8.40	8.60

All pressures quoted are gauge pressures with respect to the prevailing atmospheric pressure.

1) Elastomere: EPDM, FPM, CSM

Flow capacity

Plug travel [%]	Kv-value (water) [m³/h]				
	DN 15	DN 20	DN 25	DN 40	DN 50
0	0.00	0.00	0.00	0.00	0.00
10	0.05	0.10	0.28	0.60	2.80
20	0.20	0.40	1.20	3.10	5.30
30	0.50	1.20	2.50	7.10	9.50
40	1.10	2.30	5.40	14.20	18.30
50	1.80	3.20	8.60	20.10	30.10
60	2.80	4.60	10.60	26.80	38.60
70	3.80	5.90	11.90	32.10	44.50
80	4.60	6.70	12.70	34.50	48.60
90	4.90	6.90	12.90	34.70	51.80
100	5.00	7.00	13.00	34.80	52.00

Operating data

Connections

Butt weld ends

ISO 4220
DIN 11850 R2
SMS 3008
O.D. tubing (BS 4825 Part 1)
JIS sanitary

Clamp connections

JIS utility
ISO 2852
BS 4825 (tri-camp®)

Diary union

DIN 11851

Circuit function

A, B and I

Nominal pressure

PN10

Control pressure

Min. 2.0 bar / Max. 7.0 bar

Max. viscosity

600 mm²/s

Ambient temperature

0 up to + 50 °C

Fluid temperature

- 10 up to + 130 °C

(Short time temp.)

max. + 150 °C (CIP)

Body material

SS 1.4435 (316L)

Seal material

EPDM, FPM, CSM or PTFE

Fluids

Ultra-pure, sterile,
aggressive, abrasive or
high viscose fluids

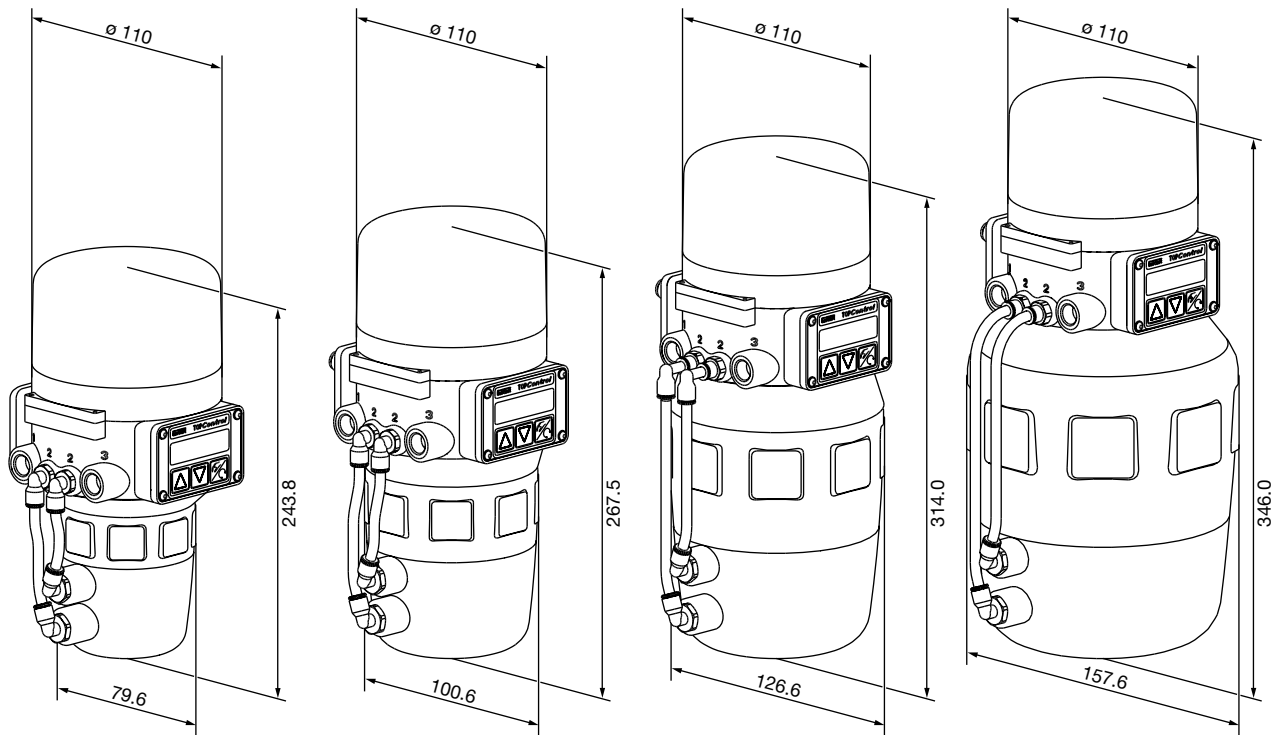
Operating pressure depending on fluid temperature

Please see diaphragm selection

Fluid Control System with Diaphragm Valve
for polluted, dirty, aggressive and ultra pure fluids

TopControl System 2031
Forged stainless steel

Sizes of assembled TopControl and actuator unit [mm]



Valve body material



Burkert forged bodies

The key to hygiene, Burkert high quality valve bodies are forged of 1.4435 (316L) stainless steel, with Fe < 0.5%, C ≤ 0.03 %.

Defect free surface

- High quality surface of finished product - free from pinholes, crevices, impurities and subsurface porosity after grinding and polishing.
- The size of cavities, well accepted in many industrial applications, could present enormous problems as bacteria traps in cell culture or other critical systems.

Low ferrite content

- Relatively ferrite-free alloy eliminates concern regarding ferrite contamination which may result from the use of cast piping components.
- Process lines can be contaminated by leaching out of free ferrite and subsequent migration of the resulting oxides throughout the system.

Surface finishes

High surface quality and consistency especially for pharmaceutical and bio-processing industries.

Benefits

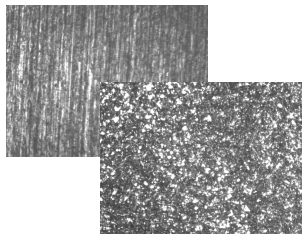
Superior surfaces for increasingly stringent specifications on cleanness of the relevant processing industry:

- Surface finish can be described by using the roughness average (Ra) parameter.
- The Ra value is defined as the average value of departures from its centre line through a prescribed sampling length.

Electropolishing - additional inherent benefits subsequent to mechanical polishing (not possible on mirror polished surfaces):

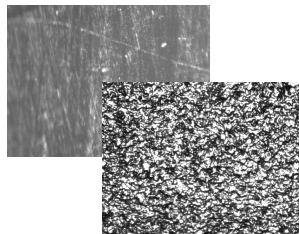
- Surface leveling reduces the total surface height by 50% and relieves much of the surface tension inherent in mechanical polishing.
- Provides a continuous, tenacious, chromium rich oxide layer on the surface resulting in an excellent passive film enhancing corrosion resistance.
- Offers optimization of cleanability and sterilization.
- Provides quality control mechanism exposing surface pits and defective welding.
- Removal of inclusions and entrapped contaminants such as lubricants and grit particles.
- High lustre reflective and aesthetical appearance.

Burkerts forged bodies may be specified with any combination of these finishes. Standard combinations of internal and external surface finishes are:



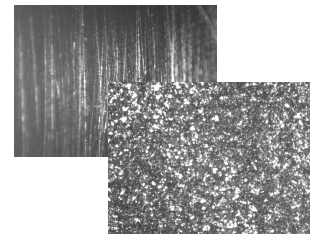
Internal Ra ~ 0.6 µm
Satin Finish

External Ra ~ 1.6 µm
Glass Beaded



Internal Ra ~ 0.3 µm
Electro-polish

External Ra ~ 0.8 µm
Electro-polish



Internal Ra ~ 0.1 µm
Mirror Finish

External Ra ~ 1.6 µm
Glass Beaded

Diaphragms

Specially developed to handle the unique challenges of hygienic and sterile applications, Burkert manufactures diaphragms with exacting material formulation and physical tolerances.

Burkert diaphragms are available in a range of materials which have been proven in the food, biotechnology, pharmaceutical and cosmetic industries.

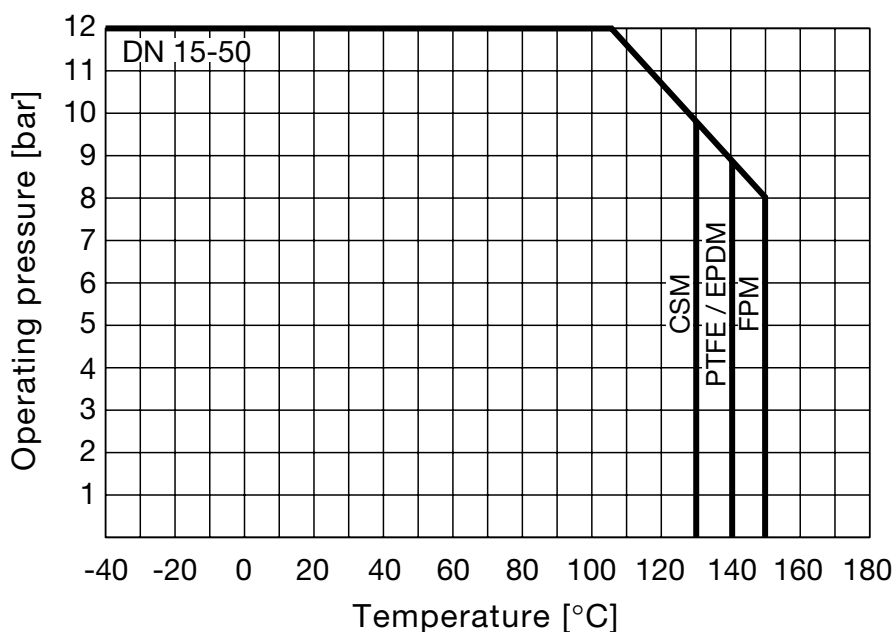
Diaphragms are tested during development and manufacture to ensure reliability in pharmaceutical, biochemical and food processing environments.



Diaphragm materials

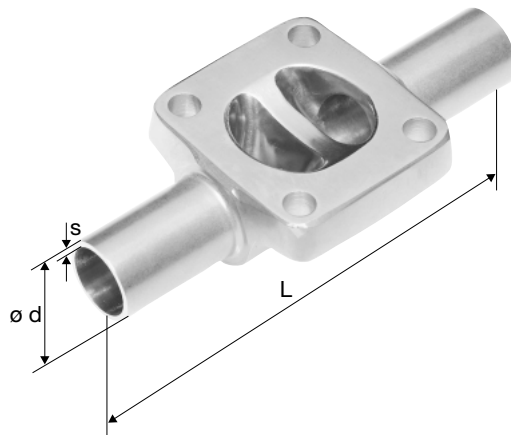
Material	Colour	Temperature Range [°C]	Approval
EPDM (Ethylene-Propylene-Dien Rubber)	black	-40 °C up to +140 °C	FDA, 3-A
PTFE (Teflon) & EPDM	white/black	-10 °C up to +130 °C	FDA, 3-A
FPM (Viton)	black	-5 °C up to +150 °C	FDA, 3-A
CSM (Hypalon)	black	-40 °C up to +130 °C	FDA, 3-A

Pressure - Temperature chart (diaphragms)

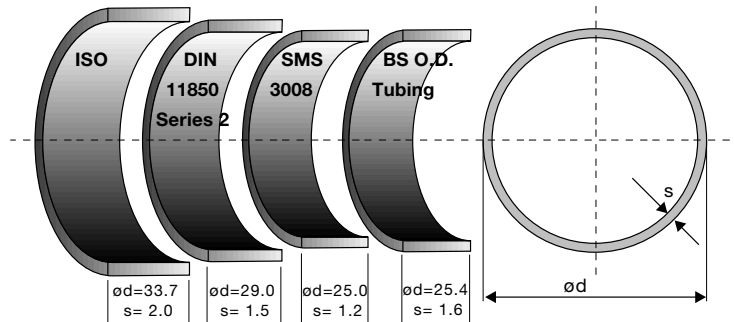


End types

Butt weld spigots



Example DN25

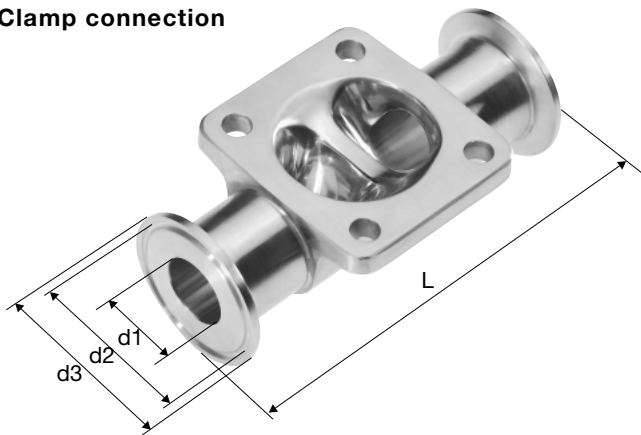


Dimensions [mm]

DN	L	ISO 4200		DIN 11850 Series 2 ¹⁾		SMS 3008		BS O.D. Tubing		JIS Sanitary		JIS Utility	
		ød	s	ød	s	ød	s	ød	s	ød	s	ød	s
8.0	90.0	13.5	1.6	---	---	---	---	6.35	1.65	13.8	1.65	---	---
10.0	---	---	---	---	---	---	---	---	---	17.3	1.65	---	---
15.0	110.0	21.3	1.6	19.0	1.5	---	---	12.70	1.65	21.7	2.10	---	---
20.0	119.0	26.9	1.6	23.0	1.5	---	---	19.05	1.65	---	---	27.2	2.1
25.0	129.0	33.7	2.0	29.0	1.5	25.0	1.2	25.40	1.65	25.4	1.20	34.0	2.0
40.0	161.0	48.3	2.0	41.0	1.5	38.0	1.2	38.10	1.65	38.1	1.20	48.6	2.0
50.0	192.0	60.3	2.0	53.0	1.5	51.0	1.2	50.80	1.65	50.8	1.50	50.8	2.0

¹⁾Further on request > DIN 11850 Series 1 and 3

Clamp connection

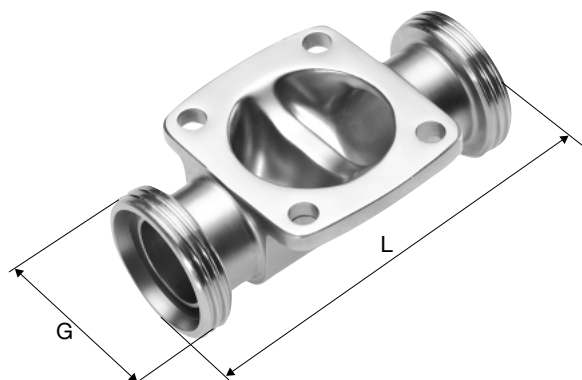


Dimensions [mm]

DN	L	ISO 2852 SMS 3017			BS 4825 Tri-Clamp			
		d1	d2	d3	L	d1	d2	d3
15.0	110.0	9.5	19.7	25.0	89.0	9.5	19.7	25.0
20.0	119.0	15.9	19.7	25.0	102.0	15.9	19.7	25.0
25.0	129.0	22.2	43.5	50.5	114.0	22.2	43.5	50.5
40.0	161.0	34.9	43.5	50.5	140.0	34.9	43.5	50.5
50.0	192.0	47.6	56.5	64.0	159.0	47.6	56.5	64.0

Further on request > Clamp DIN 32676

Sterile threaded spigots



Dimensions [mm]

DN	L	DIN 11851	
		port size	G
15.0	110.0	18.10	Rd 34 x 1/8"
20.0	119.0	23.70	Rd 44 x 1/6"
25.0	129.0	29.70	Rd 52 x 1/6"
40.0	161.0	44.30	Rd 65 x 1/6"
50.0	192.0	56.30	Rd 78 x 1/6"

Further on request > all commonly used dairy unions acc. to RJT, IDF, etc.

All valve bodies from Burkert are machined from block.

Please select modules according specific application (either On/Off or Continuous control):

General data

Configuration number: _____
Quantity: _____

Medium data

Medium: _____
Temperature: _____
Pressure: Min. / Max. _____



On/Off control

General data

Command line coming from: PLC ☐
Sensor ☐
Relay/Switch ☐

Actuator

Circuit function: Single acting (NC) ☐
Single acting (NO) ☐
Double acting ☐
Material: PA ☐
PPS ☐



Control head	No Bus ▼	OR	with Bus ▼
Communication:			ASI Bus ☐
Power supply:	24V/DC ☐ 110V/AC ☐ 230V/AC ☐		
Electrical connection:	PG cable glands ☐ EaseOn box ☐		PG cable glands ☐ (with round cable end) Multipole ☐
Limit switches:	0 ☐ 1 ☐ 2 ☐ Mechanical ☐ Inductive (only for 24 V/DC version) ☐		0 ☐ 1 ☐ 2 ☐
Pneumatic connection:	Stainless Steel ☐ G ☐ NPT ☐ Rc ☐		Stainless Steel ☐ G ☐ NPT ☐ Rc ☐

Continuous control

Actuator

Circuit function: Single acting (NC) ☐
Single acting (NO) ☐
Double acting ☐
Material: PA ☐
PPS ☐



TopControl	No Bus ▼	OR	with Bus ▼
Type of control:			
Position control ☐			
Process control ☐			
Communication:			DeviceNet ☐ Profibus DP ☐
Electrical connection:	PG cable glands ☐ EaseOn box ☐ Multipole ☐		
Outputs:			
Limit switches	0 ☐		0 ☐
(only Multipole version)	1 ☐		1 ☐
	2 ☐		2 ☐
Analogue position feedback or Actual process value	☐		
2 Binary outputs	☐		
PG cable glands and Ease-On box versions: instead of input actual process value - for position control	☐		
Inputs:			
Binary input	☐		
(only Multipole version)	☐		
Actual process value	☐		
PG cable glands and Ease-On box versions: instead of 2 binary outputs - for position control	☐		
Pneumatic connection:	Stainless Steel ☐ G ☐ NPT ☐ Rc ☐		Stainless Steel ☐ G ☐ NPT ☐ Rc ☐

Please continue on next page

Fax order form: Individual system configurations

Part 2 of 3

Please select modules according specific application:

Valve body type 2030

Type 2030	Item-No.: (reference)		☐
Material and corresponding ends:	PVC	☐	Ends: True union ☐ Solvent spigots ☐
	PVDF	☐	Fusion spigots ☐
	PP	☐	Weld ends ☐
Diaphragm material:	EPDM	☐	
	PTFE / Butyl	☐	
	PTFE / FPM	☐	
	FPM	☐	
Orifice:	DN	15	☐
		20	☐
		25	☐
		32	☐
		40	☐
		50	☐

Valve body type 2031 (General Purpose version)

Type 2031	Item-No.: (reference)		☐
Material and corresponding ends:	Formed SS	☐	Ends: threaded G ☐
		☐	NPT ☐
		☐	Rc ☐
		☐	ISO 4220 ☐
		☐	DIN 11850 R2 ☐
		☐	O.D. tubing (BS 4825 Part 1) ☐
		☐	DIN 2633 ☐
		☐	ANSI Class 150 ☐
		☐	JIS 10K ☐
Diaphragm material:	EPDM	☐	
	PTFE / EPDM	☐	
Orifice:	DN	15	☐
		20	☐
		25	☐
		32	☐
		40	☐
		50	☐

Valve body type 2031 (High purity version)

Type 2031:	Item-No.: (reference)		☐
Material and corresponding ends:	Forged SS	☐	Ends: threaded G ☐
		☐	NPT ☐
		☐	Rc ☐
		☐	sterile threaded DIN 11851 ☐
		☐	ISO 4200 ☐
		☐	DIN 11850 - Series 1 ☐
		☐	Series 2 ☐
		☐	Series 3 ☐
		☐	SMS 3008 ☐
		☐	BS O.D. Tubing ☐
		☐	JIS sanitary ☐
		☐	JIS utility ☐
		☐	clamp connect. ISO 2852 / SMS 3017 ☐
		☐	BS 4825 Tri-Clamp ☐
		☐	DIN 32676 ☐
		☐	others
Surface finish:	External 1.6 µm	☐	
	(electro polished) 0.8 µm	☐	
	Internal 0.6 µm	☐	
	(electro polished) 0.3 µm	☐	
	0.1 µm	☐	
Diaphragm material:	EPDM	☐	
	PTFE / EPDM	☐	
	FPM	☐	
	CSM	☐	
	Silicon	☐	
	Others	☐	
Orifice:	DN	15	☐
		20	☐
		25	☐
		40	☐
		50	☐