Fluid Control System with Angle-Seat Valve
for normal/slightly aggressive fluids and steam

TopControl System 2000

2/2-Way, DN 13...65 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 angle-seat valve system is designed for **On/Off controlled** and **Continuous controlled** process applications with various communication possibilities with sensors and a PLC.
The angle-seat 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 an angle-seat 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
- Progammable 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

- Gases and liquids up to 16 bar
- Steam up to 10 bar/180 °C
- Slightly aggressive fluids

Industries

- Chemical process engineering
- Food and feed processing
- Machine industry
- Textile dyeing and bleaching
- Water treatment
- Paper and pulb industry
- Medical technology (i.e. sterilizers)

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

Connections:

- G, NPT and Rc
- Butt weld
- Tri-Clamp®
- Flange (DIN, ANSI, JIS)

Valve sizes [mm]:

- ø 15.0
- ø 20.0
- ø 25.0
- ø 32.0
- ø 40.0
- ø 50.0
- ø 65.0 (only On/Off version)

Materials:

- Stainless Steel
- Gunmetal

Seats:

- SS/SS
- SS/PTFE

Flow direction:

- Below seat
- Above seat

CONTROL

Continuous

Power supply (3-wire technology):

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

On/Off

Power supply:

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

TopControl

Pneumatic connect.:
- G 1/4
- 1/4 NPT
- Rc 1/4

Continuous as
- **Position controller**
- **Process controller**

Integrated pilot valve:
- 2 x 2/2-way (single acting)
- 4 x 2/2-way (double acting)

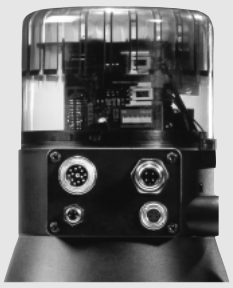
Limit switches (0, 1 or 2):
- Inductive

Signal Inputs and Outputs

Inputs:
- Frequency
- Pt 100
- 4...20 mA
- Setpoint 4...20 mA
  0...10 V
  0...5 V
  0...20 mA
- Binary

Outputs:
- Binary position feedback
- 2 x binary
- Analogue position feedback

Electrical Interfaces
- PG cable glands
- EaseOn box
- Multipole
- Field Bus Profibus/DeviceNet



Easy **Pneumatic Control**

Easy **ON/OFF Control**

Control Head

Pneumatic connect.:
- G 1/4
- 1/4 NPT
- Rc 1/4

On / Off

Integrated pilot valve:
- 3/2-way (single acting)
- 5/2-way (double acting)

Limit switches (0, 1 or 2):
- Mechanical
- Inductive

Signal Outputs
- Position feedback
- ASI-bus

Electrical Interfaces
- PG cable glands
- EaseOn box
- Multipole (ASI-bus)
- Cable end with ASI-clip

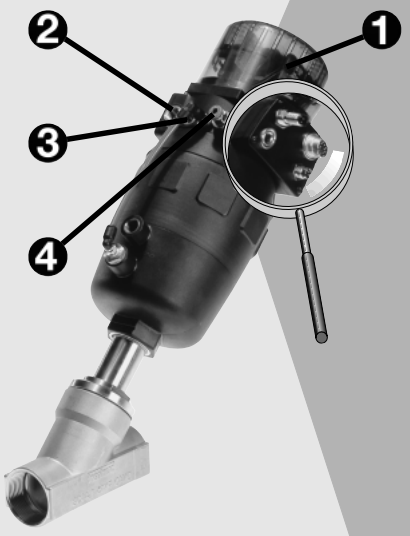
Actuator Configuration

Integrated pilot valve

Functions:❶
- 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 ± 10% (no technical direct voltage) Residual ripple 10%
- 110 V/50 Hz
- 230 V/50 Hz



Pneumatic connections

Supply port:❷	Service port:❸	Exhaust port:❹
• 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

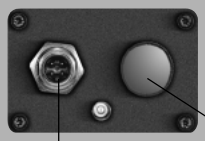
Medium:	Instrument air (filtered, non-lubricated)
Pressure range:	3...7 bar
QNn-value:	100 l/min.

Operation data

Rating:	IP65
Ambient temp.:	0...50°C

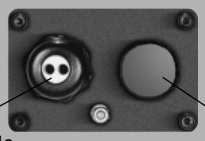
Electrical Interfaces

Multipole



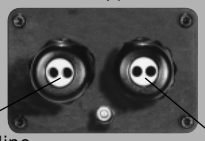
M12 ASI plug (4 pins) — Blind plate

PG Cable gland



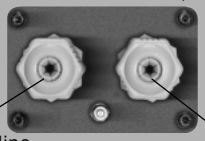
Round cable with ASI clip — Blind plate

PG cable glands
(wiring on terminal strip)



Command line (Power supply) — 2 Limit switches

EaseOn box
(wiring by push-in and turn-off)



Command line Power supply — 2 Limit switches

Communi-cation 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
- Tree
- Star
- Ring

Easy Link

- Sensor switch or relay output

Easy Link with Sensor (control)

- Easy Flow Control
  (dosing / batching / filling)
- Easy Analytical Control
  (dosing)
- Easy Pressure Control
  (stabilizing pressure range)
- Easy Level Control
  (filling / stabilizing / discharging & overfill protection)
- Easy Temperature Control
  (stabilizing temperature range)

for details, please see corresponding data sheets

Easy Networking

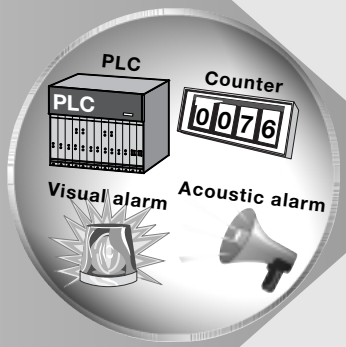
- PLC

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



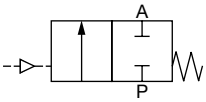
Fluid Control System with Angle-Seat Valve
for normal/slightly aggressive fluids and steam

System 2000
On/Off

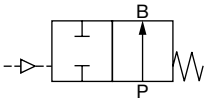
Technical data

Circuit functions

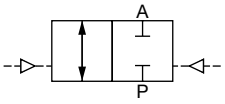
A 2/2 way valve
normally closed by spring return



B 2/2 way valve
normally open by spring return



I 2/2 way valve
with double-acting actuator



Specifications

Valve size (orifice)	Kv-value	Max. operating pressure for circuit function (A/B/I) – flow direction (above/below) • threaded connection • weld ends • flange connections			• Tri-clamp® • with steam			Actuator size ø	Weight threaded conn.	weld end	Tri-clamp®	flanged conn.
DN	water	A-above*	A-below	B/I-below*	A-above*	A-below	B/I-below*					
[mm]	[m³/h]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[mm]	[kg]	[kg]	[kg]	[kg]
15.0	4.2	16.0	16.0	16.0	10.0	10.0	10.0	63	1.9	1.9	1.9	3.2
20.0	8.0	16.0	16.0	16.0	10.0	10.0	10.0	63	2.2	2.2	2.2	4.0
25.0	19.0	16.0	11.0	16.0	10.0	10.0	10.0	63	2.6	2.6	2.6	4.9
32.0	27.5	16.0	6.0	13.0	10.0	6.0	10.0	63	3.5	3.5	3.5	6.9
32.0	27.5	–	15.0	–	–	10.0	–	80	3.9	3.9	3.9	7.3
40.0	42.0	16.0	4.0	16.0	10.0	4.0	10.0	63	3.8	3.8	3.8	7.6
40.0	42.0	16.0	10.0	16.0	10.0	10.0	10.0	80	4.3	4.3	4.3	8.1
40.0	42.0	16.0	12.5	16.0	10.0	10.0	10.0	100	4.8	4.8	4.8	9.6
50.0	55.0	16.0	2.5	14.0	10.0	2.5	10.0	63	6.8	6.8	6.8	12.0
50.0	55.0	16.0	6.0	16.0	10.0	6.0	10.0	80	7.3	7.3	7.3	12.5
50.0	55.0	16.0	7.2	16.0	10.0	7.2	10.0	100	7.9	7.9	7.9	13.0
50.0	55.0	16.0	10.0	16.0	10.0	10.0	10.0	125	11.1	11.1	11.1	16.5
(**) 65.0	90.0	15.0	3.5	15.0	10.0	9.5	10.0	80	9.1	9.1	–	–
(**) 65.0	90.0	16.0	5.2	16.0	10.0	5.2	10.0	125	11.9	11.9	–	–

* max. operating pressure circuit function A, above seat and circuit function B / I below seat (see Operating Pressure Diagrams on next page)
** for threaded and weld ends only
All pressures quoted are gauge pressures with respect to the prevailing atmospheric pressure.

Operating data

Threaded connection	G, NPT and Rc
Weld ends	ISO 4200
Tri-Clamp® connection	ISO 2852
Flange connection	DIN 2501,2633 and 2576 ANSI class 150 JIS 10 K
Flow direction	
Circuit function A	flow above or below seat
B	flow below seat
I	flow below seat
Nominal pressure	
Gunmetal	PN16
Stainless Steel	PN10* - PN16 (*Tri-Clamp®, steam)
Min. control pressure	2 bar
Max. control pressure	see diagram and specification chart
Max. viscosity	600 mm²/s
Ambient temperature	min. 0 °C max. + 50 °C
Fluid temperature	min. - 10 °C max. +180 °C

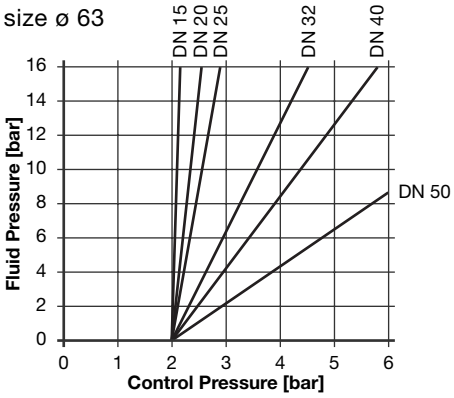
Body material	
Gunmetal or Stainless Steel	1.4435 (316L) threaded connection 1.4581 weld ends, Tri-Clamp® or flange connection
Seal material	PTFE
Packing gland	self-adjusting PTFE-stem seals, intermediate relieve and strainer/wiper
Fluids (examples)	water, alcohols, oils, fuels, hydraulic liquids, salt solutions, lyes, organic solvents, steam, CIP fluids, beverages, pharmaceutical products and cosmetics, acids

Electrical data (ASI version)

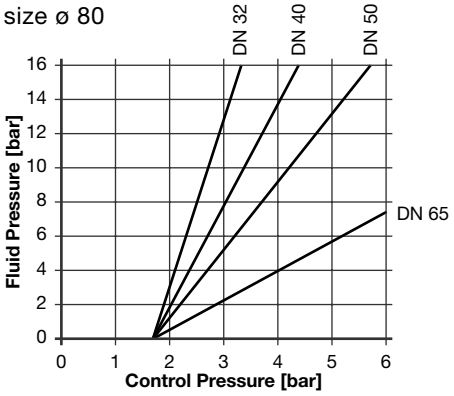
Electrical connection	• M12 ASI round plug • cable end with ASI clip
Power supply	29.5 up to 31.6 V/DC
Max. current	120 mA
Outputs	
Max. rupturing capacity	1 W above AS-interface integrated watchdog function

Control pressures

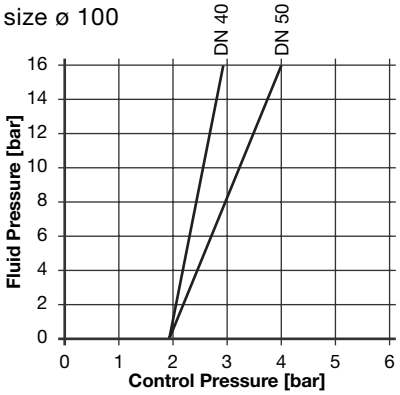
Circuit Function A with flow above seat
Actuator size ø 63



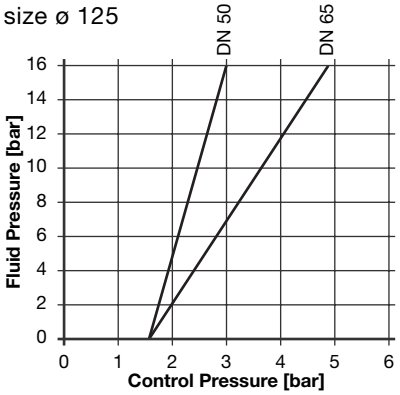
Circuit Function A with flow above seat
Actuator size ø 80



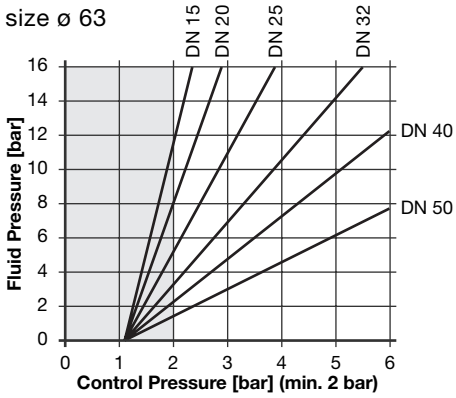
Circuit Function A with flow above seat
Actuator size ø 100



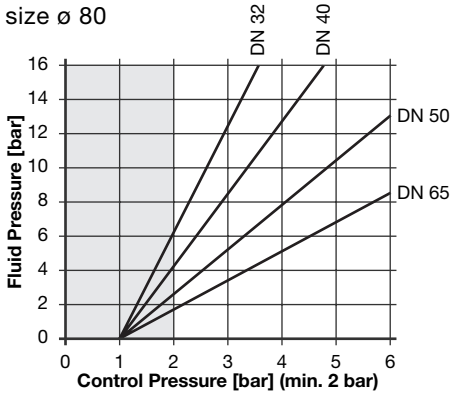
Circuit Function A with flow above seat
Actuator size ø 125



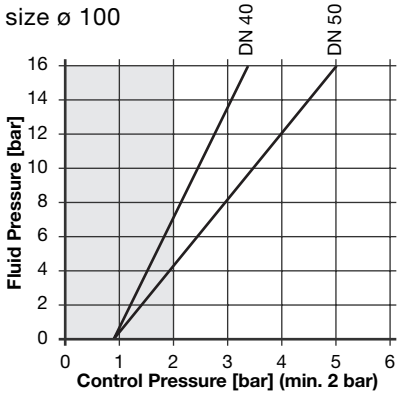
Circuit Function B and I with flow below seat
Actuator size ø 63



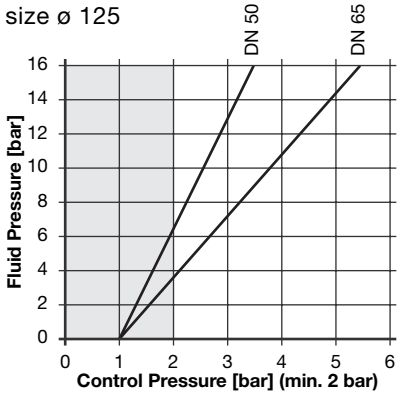
Circuit Function B and I with flow below seat
Actuator size ø 80



Circuit Function B and I with flow below seat
Actuator size ø 100

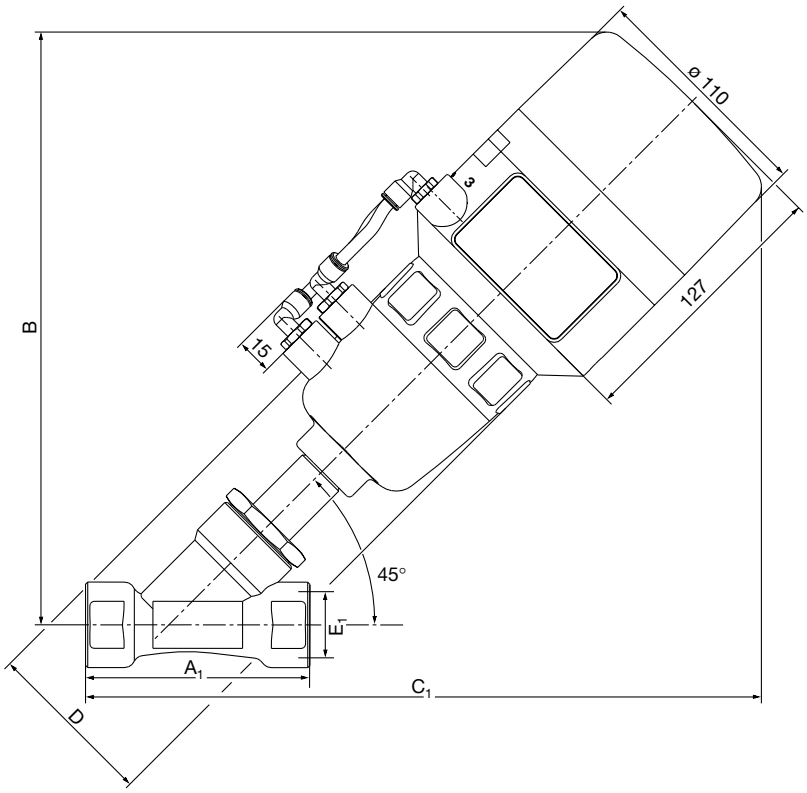


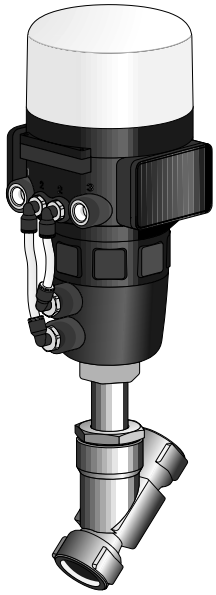
Circuit Function B and I with flow below seat
Actuator size ø 125



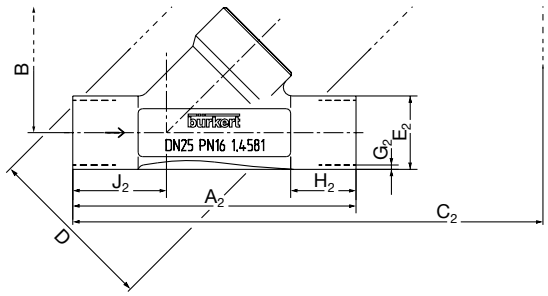
Dimensions [mm] On/Off - without display (threaded and weld end connection)

Threaded connection





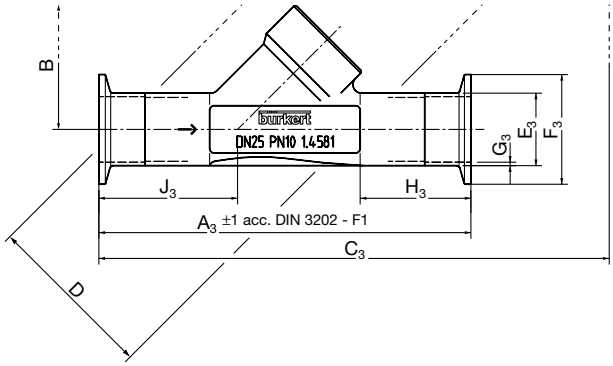
Weld end connection



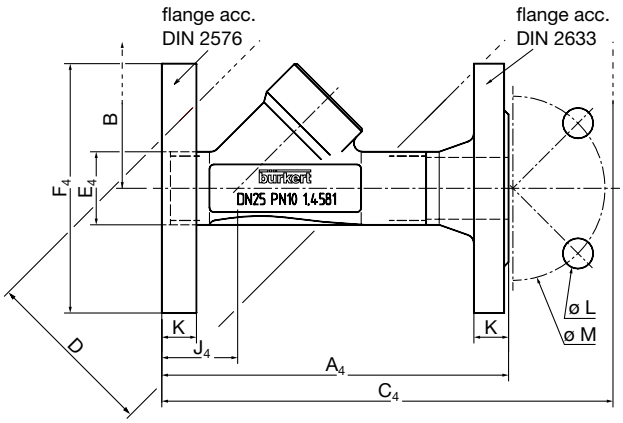
Orifice DN	Actuator size ø	Measurements										
		E_1 threaded connection	E_2 weld end connection	A_1	A_2	B	C_1	C_2	D	G_2	H_2	J_2
[mm]	[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	63.0	G / Rc / NPT 1/2	21.3	85.0	100.0	262.0	305.0	306.0	79.6	1.6	20.0	34.0
20	63.0	G / Rc / NPT 3/4	26.9	95.0	115.0	273.0	309.0	312.0	79.6	1.6	25.0	39.0
25	63.0	G / Rc / NPT 1	33.7	105.0	130.0	276.0	315.0	319.0	79.6	2.0	30.0	43.0
32	63.0	G / Rc / NPT 1 1/4	42.4	120.0	145.0	289.0	329.0	333.0	79.6	2.0	30.0	45.0
32	80.0	G / Rc / NPT 1 1/4	42.4	120.0	145.0	307.5	352.5	356.5	100.6	2.0	30.0	45.0
40	63.0	G / Rc / NPT 1 1/2	48.3	130.0	160.0	292.0	333.0	341.0	79.6	2.0	30.0	49.0
40	80.0	G / Rc / NPT 1 1/2	48.3	130.0	160.0	310.5	347.5	355.5	100.6	2.0	30.0	49.0
40	100.0	G / Rc / NPT 1 1/2	48.3	130.0	160.0	353.8	394.8	402.8	126.6	2.0	30.0	49.0
50	63.0	G / Rc / NPT 2	60.3	150.0	175.0	308.0	353.0	358.0	79.6	2.6	30.0	50.0
50	80.0	G / Rc / NPT 2	60.3	150.0	175.0	322.5	367.5	372.5	100.6	2.6	30.0	50.0
50	100.0	G / Rc / NPT 2	60.3	150.0	175.0	364.8	409.8	414.8	126.6	2.6	30.0	50.0
50	125.0	G / Rc / NPT 2	60.3	150.0	175.0	388.0	433.0	438.0	157.6	2.6	30.0	50.0
65	80.0	G / Rc / NPT 2 1/2	–	185.0	–	336.5	393.5	–	100.6	–	–	–
65	125.0	G / Rc / NPT 2 1/2	–	185.0	–	402.0	459.0	–	157.6	–	–	–

Dimensions [mm] On/Off - without display (DIN flange and tri-clamp® connection)

Tri-clamp® connection



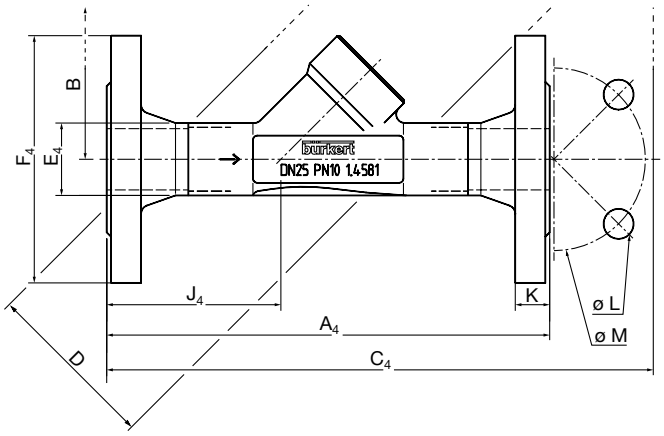
Flange connection acc. DIN 3202, F1



Orifice	Actuator	Measurements															
DN	size ø	E_3 Tri-clamp® connection	E_4 flange connection	A_3	A_4	B	C_3	C_4	D	F_3	F_4	H_3	J_3	J_4	K	L	M
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	63.0	21.3	21.3	130.0	130.0	262.0	321.0	301.0	79.6	34.0	95.0	35.0	49.0	29.0	14.0	14.0	65.0
20	63.0	26.9	26.9	150.0	150.0	273.0	329.5	309.0	79.6	50.5	105.0	42.5	56.5	36.0	16.0	14.0	75.0
25	63.0	33.7	33.7	160.0	160.0	276.0	334.0	311.0	79.6	50.5	115.0	45.0	58.0	35.0	16.0	14.0	85.0
32	63.0	42.4	42.4	180.0	180.0	289.0	354.5	328.0	79.6	50.5	140.0	47.5	62.5	40.0	16.0	18.0	100.0
32	80.0	42.4	42.4	180.0	180.0	307.5	374.0	351.5	100.6	50.5	140.0	47.5	62.5	40.0	16.0	18.0	100.0
40	63.0	48.3	48.3	200.0	200.0	292.0	361.0	336.0	79.6	64.0	150.0	50.0	69.0	44.0	16.0	18.0	110.0
40	80.0	48.3	48.3	200.0	200.0	310.5	375.5	350.5	100.6	64.0	150.0	50.0	69.0	44.0	16.0	18.0	110.0
40	100.0	48.3	48.3	200.0	200.0	353.8	423.3	397.8	126.6	64.0	150.0	50.0	69.0	44.0	16.0	18.0	110.0
50	63.0	60.3	60.3	230.0	230.0	308.0	385.5	368.0	79.6	77.5	165.0	57.5	77.5	60.0	18.0	18.0	125.0
50	80.0	60.3	60.3	230.0	230.0	322.5	400.0	382.5	100.6	77.5	165.0	57.5	77.5	60.0	18.0	18.0	125.0
50	100.0	60.3	60.3	230.0	230.0	364.8	442.3	424.8	126.6	77.5	165.0	57.5	77.5	60.0	18.0	18.0	125.0
50	125.0	60.3	60.3	230.0	230.0	388.0	465.5	448.0	157.6	77.5	165.0	57.5	77.5	60.0	18.0	18.0	125.0

Dimensions [mm] On/Off - without display (ANSI and JIS flange connection)

Flange connection acc. ANSI class 150 and JIS 10 K

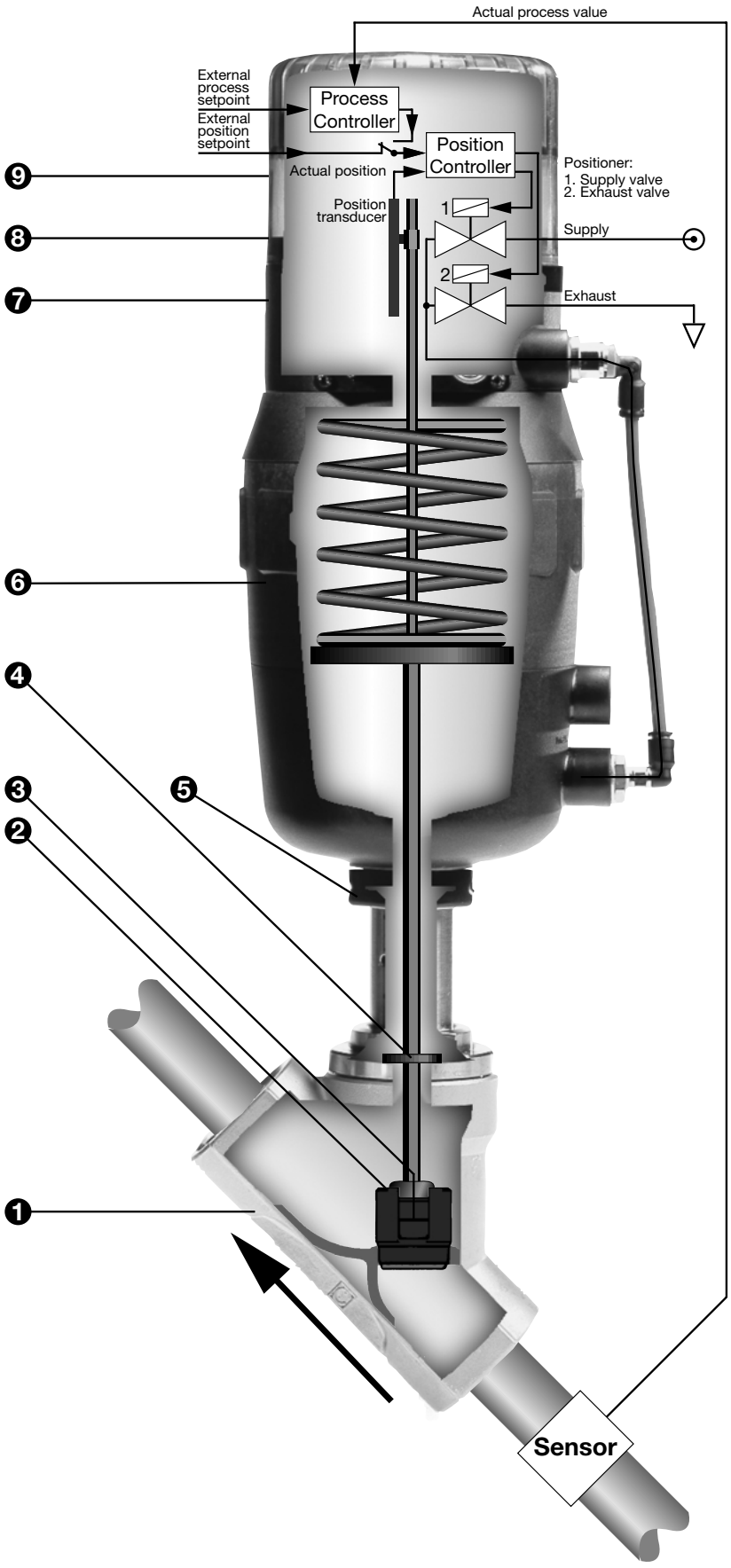


Orifice	Actuator	Measurements																
DN	size ø	E_4 flange connection	A_4 ANSI	A_4 JIS	B	C_4 ANSI	C_4 JIS	D	F_4 ANSI	F_4 JIS	J_4 ANSI	J_4 JIS	K ANSI	K JIS	L ANSI	L JIS	M ANSI	M JIS
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	63.0	21.3	195.0	165.0	262.0	354.0	338.5	79.6	89.0	95.0	82.0	66.5	11.2	12.0	15.8	15.0	60.3	70.0
20	63.0	26.9	218.0	184.0	273.0	364.0	346.5	79.6	99.0	100.0	91.0	73.5	12.7	14.0	15.8	15.0	69.8	75.0
25	63.0	33.7	241.0	196.0	276.0	375.0	341.0	79.6	108.0	125.0	99.0	65.0	14.3	14.0	15.8	19.0	79.4	90.0
32	63.0	42.4	258.0	208.0	289.0	390.0	364.5	79.6	117.0	135.0	102.0	76.5	15.9	16.0	15.8	19.0	88.9	100.0
32	80.0	42.4	258.0	208.0	307.5	413.5	388.0	100.6	117.0	135.0	102.0	76.5	15.9	16.0	15.8	19.0	88.9	100.0
40	63.0	48.3	283.0	235.0	292.0	403.0	378.5	79.6	127.0	140.0	111.0	86.5	17.5	16.0	15.8	19.0	98.4	105.0
40	80.0	48.3	283.0	235.0	310.5	417.5	393.0	100.6	127.0	140.0	111.0	86.5	17.5	16.0	15.8	19.0	98.4	105.0
40	100.0	48.3	283.0	235.0	353.8	464.8	440.3	126.6	127.0	140.0	111.0	86.5	17.5	16.0	15.8	19.0	98.4	105.0
50	63.0	60.3	300.0	247.0	308.0	421.0	394.0	79.6	152.0	156.0	113.0	86.0	19.1	16.0	19.0	19.0	120.6	120.0
50	80.0	60.3	300.0	247.0	322.5	435.5	408.5	100.6	152.0	156.0	113.0	86.0	19.1	16.0	19.0	19.0	120.6	120.0
50	100.0	60.3	300.0	247.0	364.8	477.8	450.8	126.6	152.0	156.0	113.0	86.0	19.1	16.0	19.0	19.0	120.6	120.0
50	125.0	60.3	300.0	247.0	388.0	501.0	474.0	157.6	152.0	156.0	113.0	86.0	19.1	16.0	19.0	19.0	120.6	120.0

Fluid Control System with Angle-Seat Valve
for normal/slightly aggressive fluids and steam

System 2000
Continuous

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**
   1.4581 Stainless Steel
2. **Plug and Stem**
   1.4401 Stainless Steel or
   1.4401 Stainless Steel and PTFE
3. **Pin**
   1.4401 Stainless Steel
4. **Packing glands**
   PTFE

   Packing box
   1.4401 Stainless Steel
5. **Valve bonnet**
   1.4401 Stainless Steel
6. **Actuator**
   PA or PPS
7. **TopControl** (lower cap - black)
   POM
8. **TopControl** (sealing)
   NBR
9. **TopControl** (upper cap - transparent)
   PSU (Ultrason S)

Actuator Configuration

Intelligent actuator

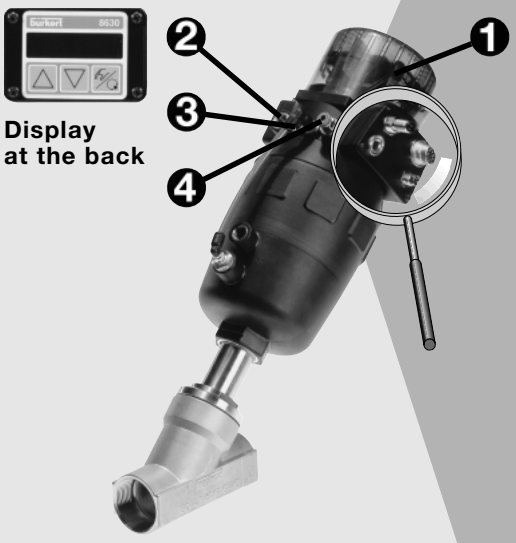
- **Positioner**
- **Process controller - integrated PID**

Integrated pilot valve

Functions:❶
- 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 ± 10%
  (no technical direct voltage)
  Residual ripple 10%



Pneumatic connections

Supply port:❷	Service port:❸	Exhaust port:❹
• 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

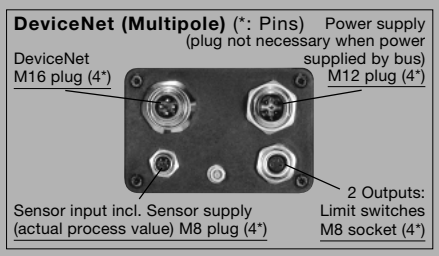
Medium:	Instrument air (filtered, non-lubricated)
Pressure range:	3...7 bar
QNn-value:	100 l/min.

Operation data

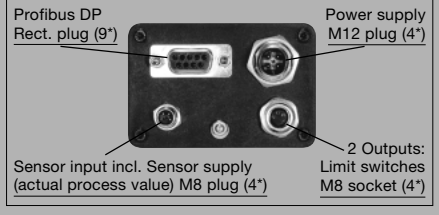
Rating:	IP65
Ambient temp.:	0...50°C

Electrical Interfaces

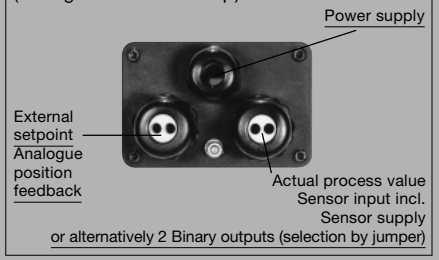
DeviceNet (Multipole) (*: Pins)



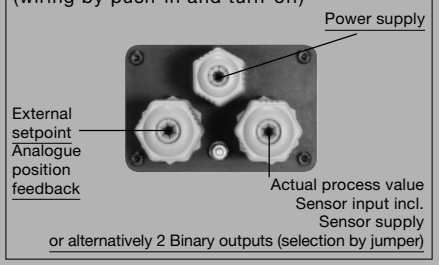
Profibus DP (Multipole) (*: Pins)



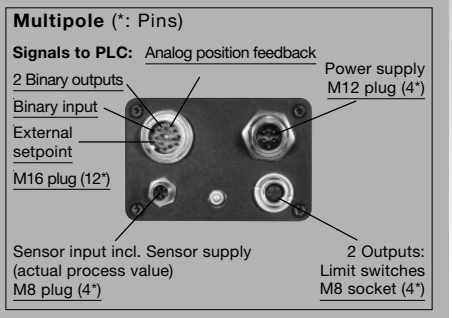
PG cable glands
(wiring on terminal strip)



EaseOn box
(wiring by push-in and turn-off)



Multipole (*: Pins)



Communi-cation Line
Inputs
Outputs

Communication

Inputs ← 1 Input ← Easy Link with Sensor (control)

Actual process value:
- Sensor

- *Easy* Flow Control (dosing / batching / filling)
- *Easy* Analytical Control (dosing)
- *Easy* Pressure Control (stabilizing pressure range)
- *Easy* Level Control (filling / stabilizing / discharging & overfill protection)
- *Easy* Temperature Control (stabilizing temperature range)

for details, please see corresponding data sheets

2 Outputs →

Binary 24 V / 0 V:
- PG / EaseOn version: instead of input actual process value

Communication line ↔

- DeviceNet
- Profibus DP

← ← Easy Link ← Easy Link with Sensor (control)

Actual process value:
- Sensor (only for versions with integrated PID)

- *Easy* Flow Control (dosing / batching / filling)
- *Easy* Analytical Control (dosing)
- *Easy* Pressure Control (stabilizing pressure range)
- *Easy* Level Control (filling / stabilizing / discharging & overfill protection)
- *Easy* Temperature Control (stabilizing temperature range)

for details, please see corresponding data sheets

← 1 Input

External setpoint:
- PLC - 4...20 mA
  - 0...20 mA
  - 0...10 V
  - 0...5 V

← 1 Input (Binary)

0...10 V / 0...30 V:
- Switch (sensor or mechanical)

2 Outputs →

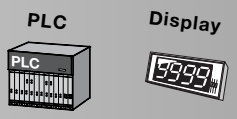
Position feedback limit switch(es):
- Inductive
  - Upper / Lower (NC), 24 V / 0 V

2 Outputs →

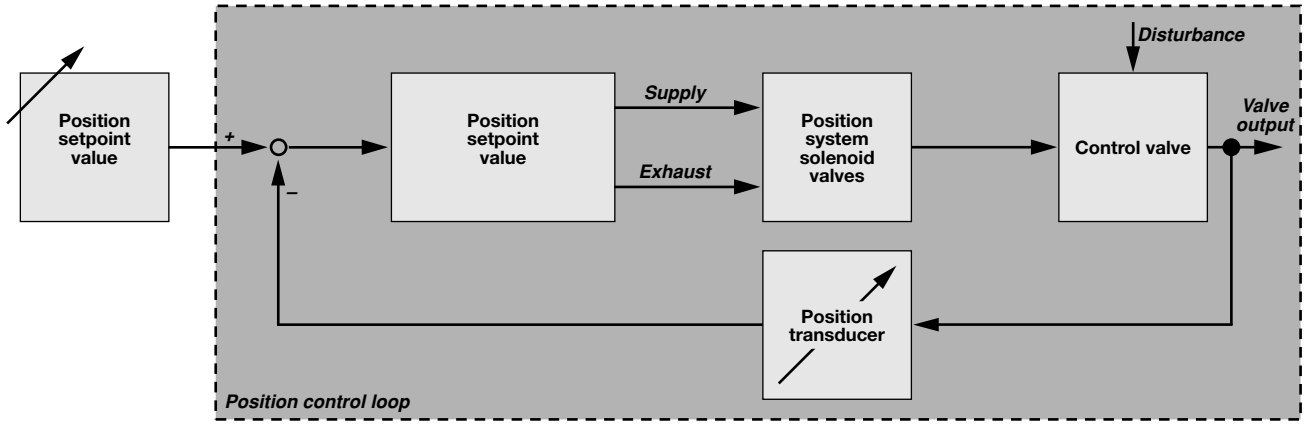
Binary 24 V / 0 V:
- PG / EaseOn version: instead of input actual process value (sensors)

1 Output →

Analogue position feedback:

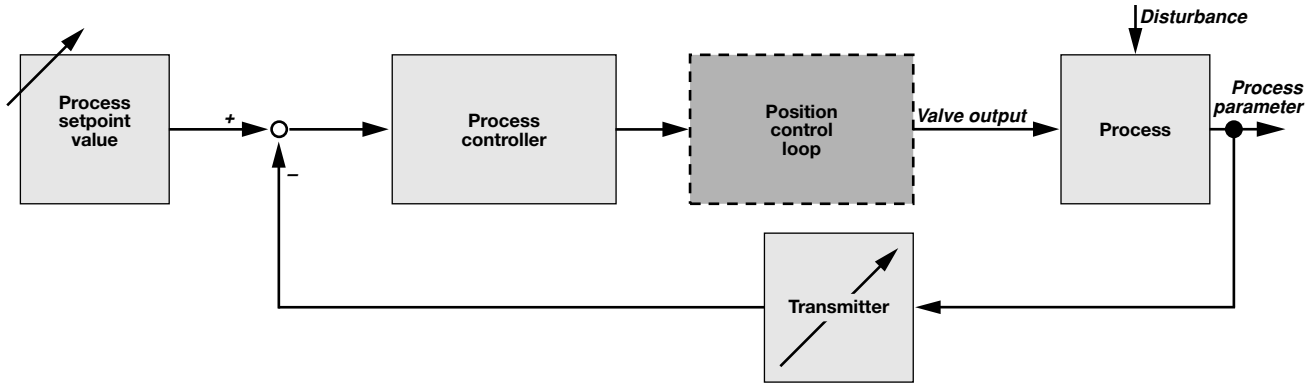


TopControl as Position Controller



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

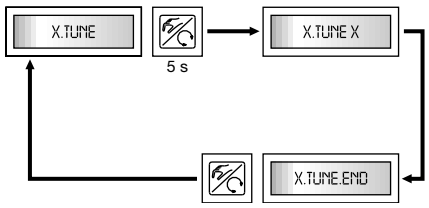


In case of the TopControl as process control, the position control loop works as a secondary service control loop. The process controller in the main control loop has a PID algorithmic function. The process setpoint value will be compared with the actual value of the process parameter to be controlled.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

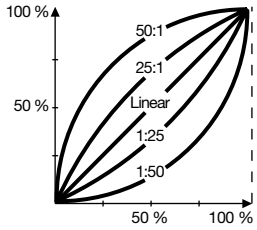
Software characteristics

Specific functions of the positioner:

★ **Autotune function**
Automatic adjustment to the connected valve (self calibration).

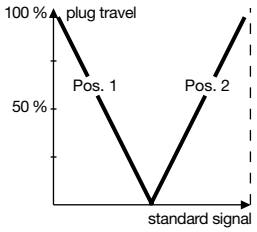


★ **Characteristic curves for process valve adjustment**
(correction characteristics)
- linear curve
- equal percentage curve; rangeability 1:25
- equal percentage curve; rangeability 1:33
- equal percentage curve; rangeability 1:50
- inverse equal percentage curve; rangeability 25: 1
- inverse equal percentage curve; rangeability 33: 1
- inverse equal percentage curve; rangeability 50: 1
- freely programable 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 transfered 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.
- **Invertion 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.

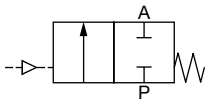
★ **Teach In** (for Flow Control Systems)

- **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**

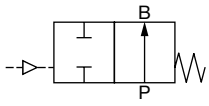
Technical data

Circuit functions

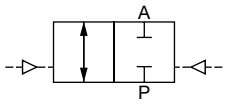
A 2/2 way valve
normally closed by spring return



B 2/2 way valve
normally open by spring return
(on request)



I 2/2 way valve
with double-acting actuator



Specifications

Valve size (orifice) DN	Kv-value water	Max. operating pressure for circuit function (A/B/I) – flow direction (below) • threaded connection • weld ends • flange connections		• Tri-clamp® • with steam		Actuator size ø	Weight threaded conn.	weld end	Tri-clamp®	flanged conn.
		A-below	B- and I-below	A-below	B- and I-below					
[mm]	[m³/h]	[bar]	[bar]	[bar]	[bar]	[mm]	[kg]			[kg]
15.0	please see separate chart below	16.0	16.0	10.0	10.0	80	3.9			5.4
20.0		16.0	16.0	10.0	10.0	80	4.1			6.1
25.0		16.0	16.0	10.0	10.0	80	5.0			7.5
32.0		15.0	16.0	10.0	10.0	80	6.4			9.9
40.0		12.5	16.0	10.0	10.0	100	7.8			11.8
50.0		7.2	16.0	7.2	10.0	100	9.1			14.1

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

Flow capacity

	Kv-value (water) [m³/h]					
Plug travel [%]	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

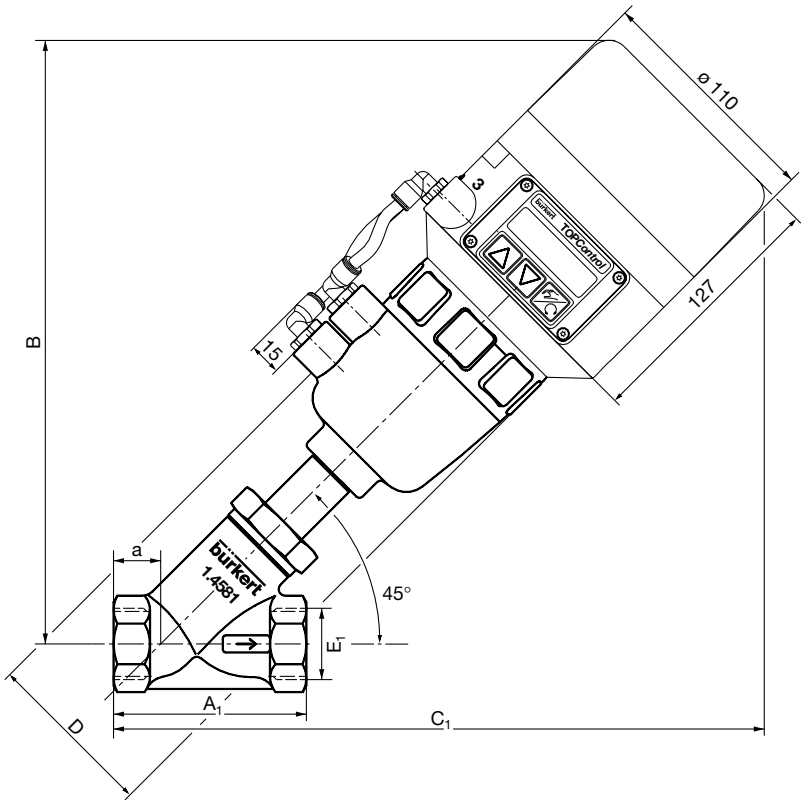
Operating data

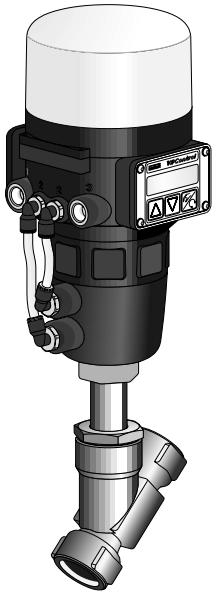
Threaded connection	G, NPT and Rc
Weld ends	ISO 4200
Tri-Clamp® connection	ISO 2852
Flange connection	DIN 2501,2633 and 2576 ANSI class 150 JIS 10 K
Flow direction	
Circuit function A	flow below seat
B	flow below seat (on request)
I	flow below seat
Nominal pressure	
Stainless Steel	PN10* - PN16 (*Tri-Clamp®, steam)
Min. control pressure	5.5 bar
Max. control pressure	7.0 bar
Max. viscosity	600 mm²/s
Ambient temperature	min. 0 °C max. + 50 °C
Fluid temperature	min. - 10 °C max. +180 °C

Body material	
Stainless Steel	1.4581 (body) 1.4404 (flange)
Seal material	PTFE
Packing gland	self-adjusting PTFE-stem seals, intermediate relieve and strainer/wiper
Fluids (examples)	water, alcohols, oils, fuels, hydraulic liquids, salt solutions, lyes, organic solvents, steam, CIP fluids, beverages, pharmaceutical products and cosmetics, acids

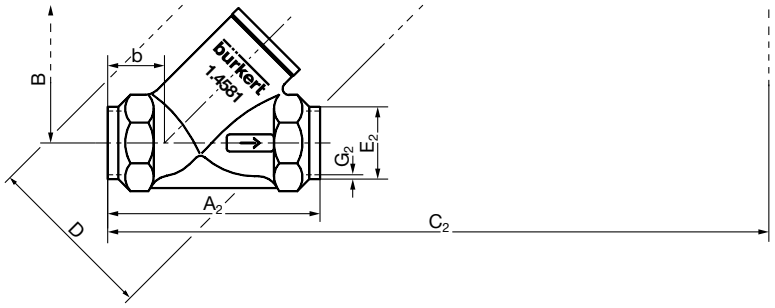
Dimensions [mm] Continuous - with display (threaded and weld end connection)

Threaded connection





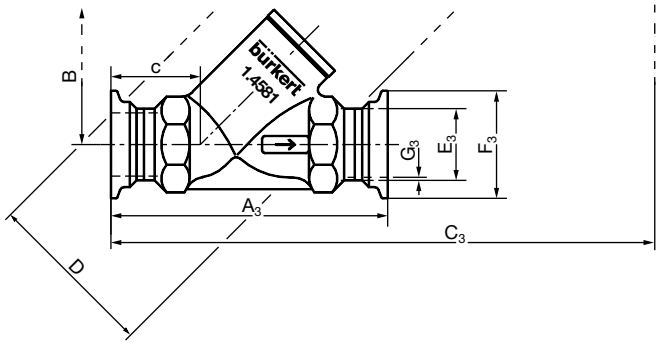
Weld end connection



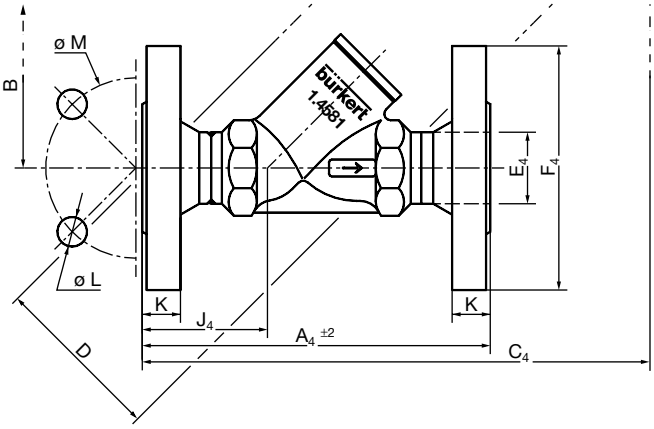
Orifice	Actuator	Measurements											
DN	size ø	E_1 threaded connection	E_2 weld end connection	A_1	A_2	B	C_1	C_2	D	G_2	a		b
											G thread.	Rc/NPT thread.	
[mm]	[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	80.0	G / Rc / NPT 1/2	21.3	65.0	75.0	293.0	312.0	317.0	100.6	1.6	19.0	26.0	24.0
20	80.0	G / Rc / NPT 3/4	26.9	75.0	83.0	296.0	315.0	319.0	100.6	1.6	19.0	25.0	23.0
25	80.0	G / Rc / NPT 1	33.7	90.0	99.0	305.0	327.0	332.0	100.6	2.0	22.0	29.0	27.0
32	80.0	G / Rc / NPT 1 1/4	42.4	110.0	115.0	310.0	348.0	351.0	100.6	2.0	32.0	37.0	34.5
40	100.0	G / Rc / NPT 1 1/2	48.3	120.0	115.0	346.0	403.0	401.0	126.6	2.0	35.0	35.0	32.5
50	100.0	G / Rc / NPT 2	60.3	149.0	144.0	360.0	428.0	425.0	126.6	2.6	37.0	37.0	34.0

Dimensions [mm] Continuous - with display (DIN flange and tri-clamp® connection)

Tri-clamp® connection



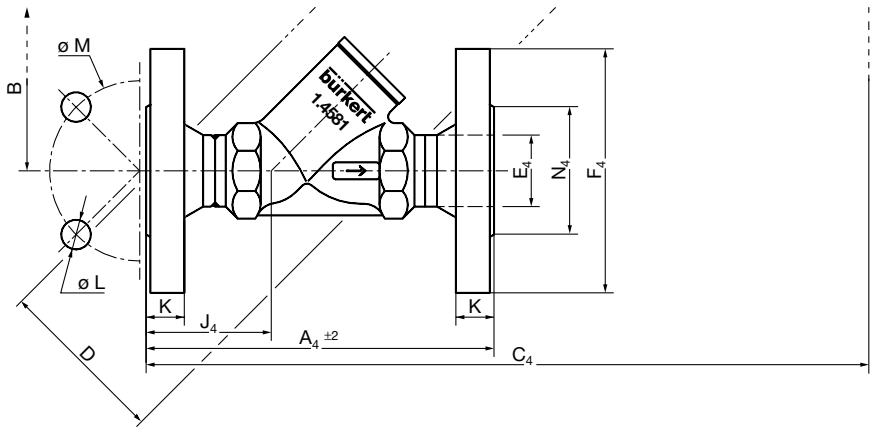
Flange connection acc. DIN 2576



Orifice	Actuator	Measurements														
DN	size ø	E_3 Tri-clamp® connection	E_4 flange connection	A_3	A_4	B	C_3	C_4	D	F_3	F_4	c	J_4	K	L	M
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	80.0	21.3	21.3	106.0	130.0	293.0	333.0	337.0	100.6	34.0	95.0	39.5	44.0	14.0	14.0	65.0
20	80.0	26.9	26.9	119.0	150.0	296.0	337.0	353.0	100.6	50.5	105.0	41.0	56.5	16.0	14.0	75.0
25	80.0	33.7	33.7	130.0	160.0	305.0	348.0	365.0	100.6	50.5	115.0	42.5	57.0	16.0	14.0	85.0
32	80.0	42.4	42.4	151.0	180.0	310.0	369.0	396.0	100.6	50.5	140.0	52.5	67.0	16.0	18.0	100.0
40	100.0	48.3	48.3	156.0	200.0	346.0	421.0	452.0	126.6	64.0	150.0	53.0	70.0	16.0	18.0	110.0
50	100.0	60.3	60.3	200.0	230.0	360.0	453.0	484.0	126.6	77.5	165.0	62.0	77.0	18.0	18.0	125.0

Dimensions [mm] Continuous - with display (ANSI and JIS flange connection)

Flange connection acc. ANSI class 150 and JIS 10 K



Orifice	Actuator	Measurements																	
DN	size ø	E_4 flange connection	A_4	B	C_4		D	F_4		J_4		K		L		M		N_4	
					ANSI	JIS		ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS	ANSI	JIS
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	80.0	21.3	140.0	293.0	337.0	337.0	100.6	89.0	95.0	44.0	44.0	12.0	12.0	15.8	15.0	60.3	70.0	34.9	–
20	80.0	26.9	152.0	296.0	354.0	354.0	100.6	99.0	100.0	57.5	57.5	14.0	14.0	15.8	15.0	69.8	75.0	42.9	–
25	80.0	33.7	165.0	305.0	368.0	368.0	100.6	108.0	125.0	59.5	59.5	16.0	14.0	15.8	19.0	79.4	90.0	50.8	–
32	80.0	42.4	178.0	310.0	395.0	395.0	100.6	117.0	135.0	66.0	66.0	18.0	16.0	15.8	19.0	88.9	100.0	63.5	–
40	100.0	48.3	190.0	346.0	452.0	449.0	126.6	127.0	140.0	70.0	67.0	19.0	16.0	15.8	19.0	98.4	105.0	73.0	–
50	100.0	60.3	216.0	360.0	477.0	477.0	126.6	152.0	155.0	70.0	70.0	21.0	16.0	19.0	19.0	120.6	120.0	92.1	–

Fluid Control System with Angle-Seat Valve
for normal/slightly aggressive fluids and steam

TopControl System 2000

Fax order form: Individual system configurations — **Part 1 of 2**

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 ☐

Valve body

Material: Gunmetal ☐ Stainless Steel ☐
Orifice: DN 15 / 1/2" ☐ 20 / 3/4" ☐ 25 / 1" ☐ 32 / 11/4" ☐ 40 / 11/2" ☐ 50 / 2" ☐ (**) 65 / 2 1/2" ☐
Connection: G threaded ☐ NPT threaded ☐ Rc threaded ☐ Butt welded ☐ Tri-clamp® ☐ Flange / DIN ☐ Flange / ANSI ☐ Flange / JIS ☐
Flow direction: Below seat ☐ Above seat ☐

Type: **2000** ☐ **2002** ☐
Item-No: (reference) .....

**for threaded and weld ends only

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 (only Multipole version)	0 ☐ 1 ☐ 2 ☐		0 ☐ 1 ☐ 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 ☐

Valve body

Seat: SS / SS ☐ SS / PTFE ☐
Orifice: DN 15 / 1/2" ☐ 20 / 3/4" ☐ 25 / 1" ☐ 32 / 1 1/4" ☐ 40 / 1 1/2" ☐ 50 / 2" ☐
Connection: G threaded ☐ NPT threaded ☐ Rc threaded ☐ Butt welded ☐ Tri-clamp® ☐ Flange / DIN ☐ Flange / ANSI ☐ Flange / JIS ☐

Type: **2632** ☐
Item-No: (reference) .....

Fax order form **Part 2 of 2**

Customer data

Name of company: _____

Department: _____

Street / No.: _____

City: _____

Postal code: _____

Country: _____

Name of contact person:

Name: _____ First name: _____

Telephone number: _____

Telefax number: _____

Signature: _____

Easy to order

Thank you very much for filling in our fax order form.

Please send part 1 and 2 of this order to your specific Burkert company by fax.
If you have any questions concerning this matter, please do not hesitate to contact us.

bürkert
Easy Fluid Control Systems