bürkert
FLUID CONTROL SYSTEMS

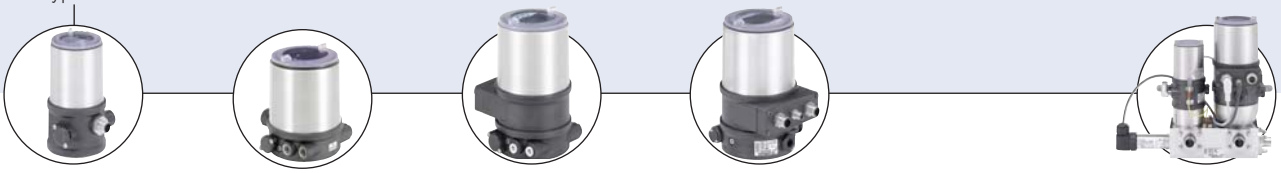
2/2-way Bellow Control Valve

Bellow valve + Type 8696

Bellow valve + Type 8693

- For neutral and aggressive media
- Media separation by PTFE bellow
- Hygienic design

The Type 2380 consists of the bellow valve and one of the controllers below:



Type 8696
Positioner
Basic

Type 8694
Positioner
Basic

Type 8692
Positioner

Type 8693
Positioner and
Process Controller

as system (e.g.)
Customized block
variant

The bellow control valve is a pneumatically operated process valve with a single-acting diaphragm actuator.
A PTFE bellow ensures the separation between medium and actuator.
The materials used and the design of the media space allow the use under hygienic or aggressive conditions. It has a good cleanability.
The combination with a controller (Type 869x) and the control cone integrated into the bellow enable the valve to handle demanding control tasks.
The space-saving actuator with low internal volume not only results in a very compact size but also in remarkably low response times.
The valve is characterized by a good control performance due to the low-friction design and has a linear characteristic.
A certain variety of body and block system solutions are deliverable.

Main fields of application:
- Food & Beverage industry
- Pharmaceutical & Biopharmaceutical industry
- Cosmetic industry

Technical Data	
Kvs values	0.4 to 2 m³/h
Orifice	DN3 to DN10
Port connections (for media) ▪ Thread ▪ Weld ends ▪ Clamp	 ▪ G (DIN EN ISO 228-1) ▪ DIN 11850 Series 0, DIN 11866 S. A / DIN 11850 S. 2, DIN 11866 S. B / DIN ISO 4200, DIN 11866 S. C / ASME BPE ▪ on request
Media	**gases and liquids** (ultrapure, sterile, dirty, aggressive, abrasive or even highly viscous), **steam** (for sterilization)
Media temperature	0 to +80 °C (-10 °C to +150 °C at limited operating conditions [1])
Media pressure	vacuum to 6 bar [2]
Ambient temperature	-10 to +55 °C
Seat leakage	<0.01 % of full open valve capacity (ANSI class IV)
Control media ▪ pilot pressure ▪ pilot ports	air acc. to DIN ISO 8573-1 or neutral gases ▪ 5.5 to 7 bar [2] ▪ threaded ports (G1/8)
Materials, media contacting ▪ valve body ▪ bellow ▪ surface quality for threaded ports ▪ surface quality for weld-end and clamp connections	 ▪ stainless steel 316L ASME BPE (1.4435 BN2) ▪ advanced PTFE ▪ R_a 1.6 µm ▪ R_a 0.6 µm (mechanically polished) or R_a 0.4 µm (electropolished)
Materials, not media contact. ▪ actuator ▪ positioner (controller) ▪ sealing	 ▪ 304 (1.4301) or CF-8 (1.4308) ▪ PPS, stainless steel ▪ EPDM, FKM

1) media pressure max. 4 bar
up to +134 °C: max. 60 min, ambient temperature max. +40 °C,
up to +150 °C: max. 30 min, ambient temperature max. +35 °C
2) all pressure values are listed as **overpressure** relating to atmospheric pressure in bar

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Technical Data (continued)	
Electrical Data / Settings	defined by the Type 869x used
Electrical connections	multipole connector cable gland (in dependence of the Type 869x used)
Electrical signals / communication	analogue standard signals bus communication (AS-i, DeviceNet, Profibus-DP) (in dependence of the Type 869x used)
Reaction / switching time	typical regulating time <1 s
Protection class	IP 65/67 acc. to EN 60529
Installation for self-draining	see Fig. 1 below
Certifications / approvals	CE acc. to EC Declaration of Conformity (2014/30/EU EMC) FDA EC Regulation No 1935/2004 USP class VI – 121°C ATEX II Kat. 3 G/D (on request)

Controllers Type 869x that can be used with the bellow valve:

Type	Function	Communication	Display
8696	positioner	analogue	LEDs
8694	positioner	analogue or bus (AS-i)	LEDs
8692	positioner	analogue or bus (Profibus / DVN)	graphic display
8693	positioner and process controller	analogue or bus (Profibus / DVN)	graphic display

For more details see datasheets (DS) and user manuals (MA) of Type 869x on our homepage: www.burkert.com

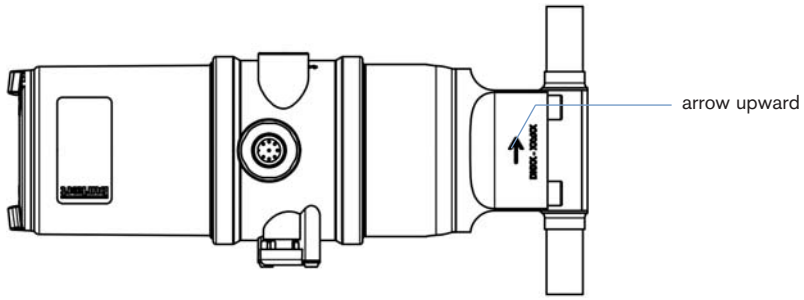

Fig. 1: Installation position for self-draining

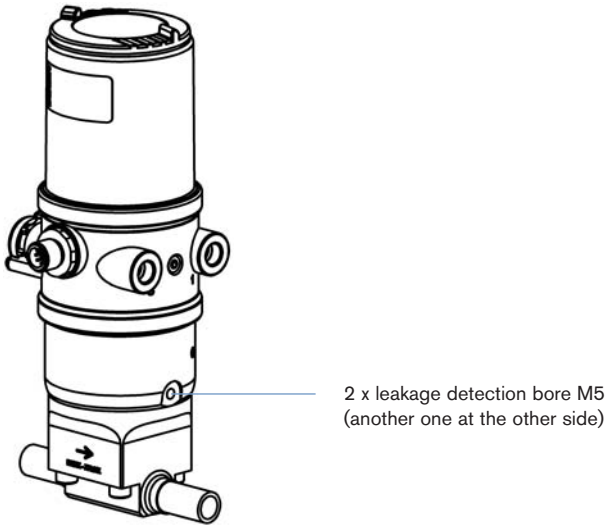

Fig. 2: Leakage detection bores

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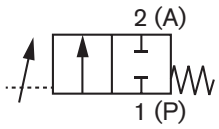
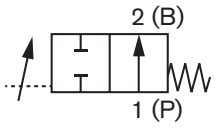
Control functions



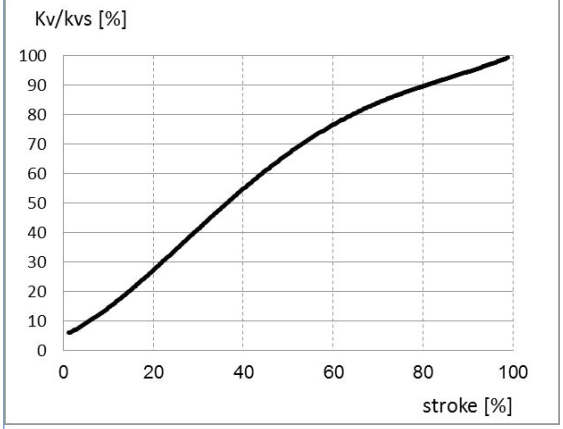
A: 2/2-way valve, normally closed (NC)
in resting postion by spring force



B: 2/2-way valve, normally open (NO)
in resting postion by spring force

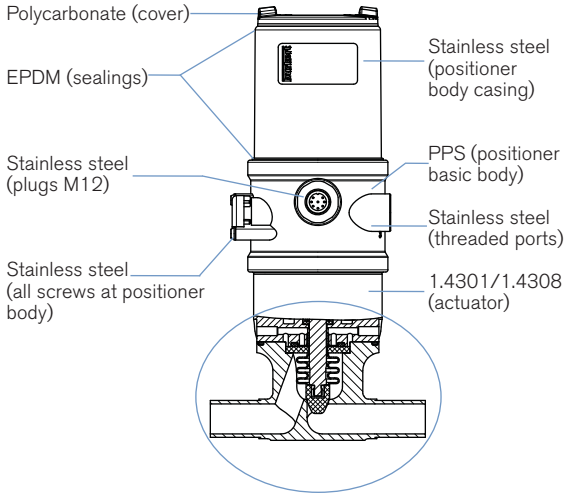
Flow characteristics and Kv values [m³/h]

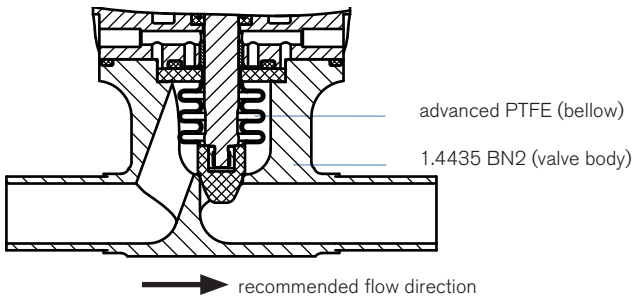
Port size (tube)		Orifice	Stroke [%]										
[mm]	ASME size	[mm]	5	10	20	30	40	50	60	70	80	90	100 (Kvs)
6.35x0.89	1/4"	DN3	0.08	0.11	0.15	0.23	0.29	0.32	0.36	0.37	0.38	0.39	0.41
6.35x0.89	1/4"	DN4	0.11	0.14	0.23	0.27	0.3	0.34	0.39	0.43	0.45	0.47	0.49
8.0x1.0	-	DN6	0.12	0.22	0.41	0.5	0.61	0.69	0.77	0.84	0.9	0.93	0.95
12.7x1.65	1/2"	DN6	0.07	0.16	0.28	0.40	0.51	0.61	0.75	0.88	1.02	1.12	1.19
12.7x1.65	1/2"	DN8	0.25	0.35	0.63	0.91	1.1	1.22	1.36	1.44	1.52	1.57	1.64
12.7x1.65	1/2"	DN10	0.18	0.29	0.54	0.83	1.04	1.25	1.39	1.5	1.6	1.66	1.74
19.0x1.5	-	DN10	0.18	0.29	0.52	0.76	0.99	1.31	1.5	1.64	1.74	1.83	1.97



Remarks on the flow characteristic
Theoretical control ratio (Kvs/Kv):
40 : 1 for the orifices DN8 to DN10
20 : 1 for the orifices DN6
10 : 1 for the orifices DN3 to DN4

Materials





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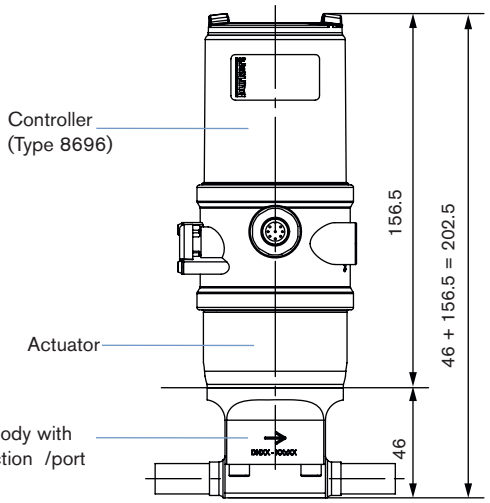
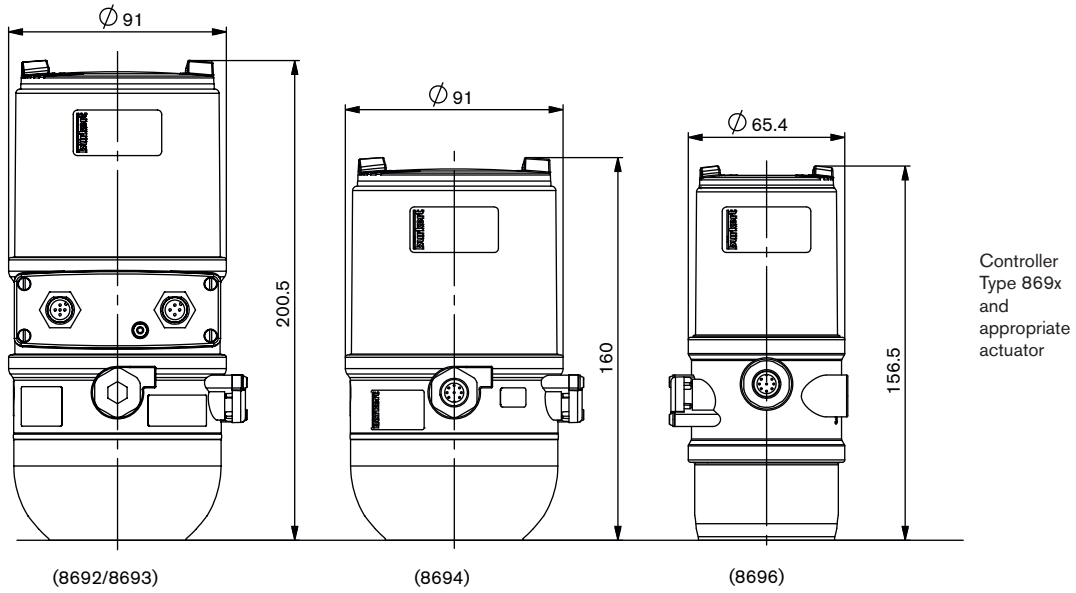
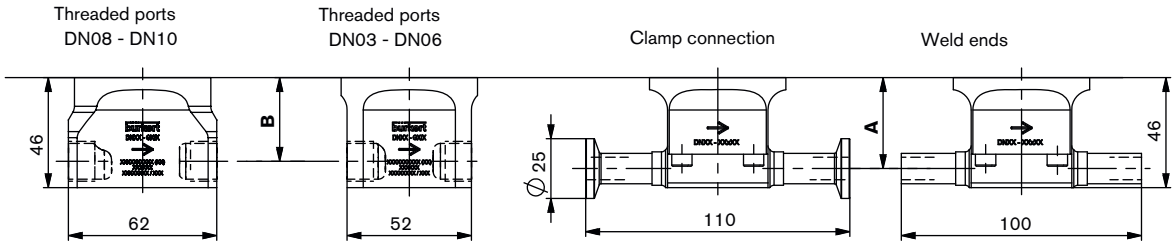
Dimensions [mm] (for several combinations of control type and actuator + valve body)

Example of combination:





Controller Type 869x and appropriate actuator



Threaded port		B [mm]
GM82	G1/4	36
GM83	G3/8	35
GM84	G1/2	33

For further details see “valve features - specification key 1” next page

Orifice (DN)	A [mm]
03.0 / 04.0 / 06.0	38
08.0 / 10.0	36

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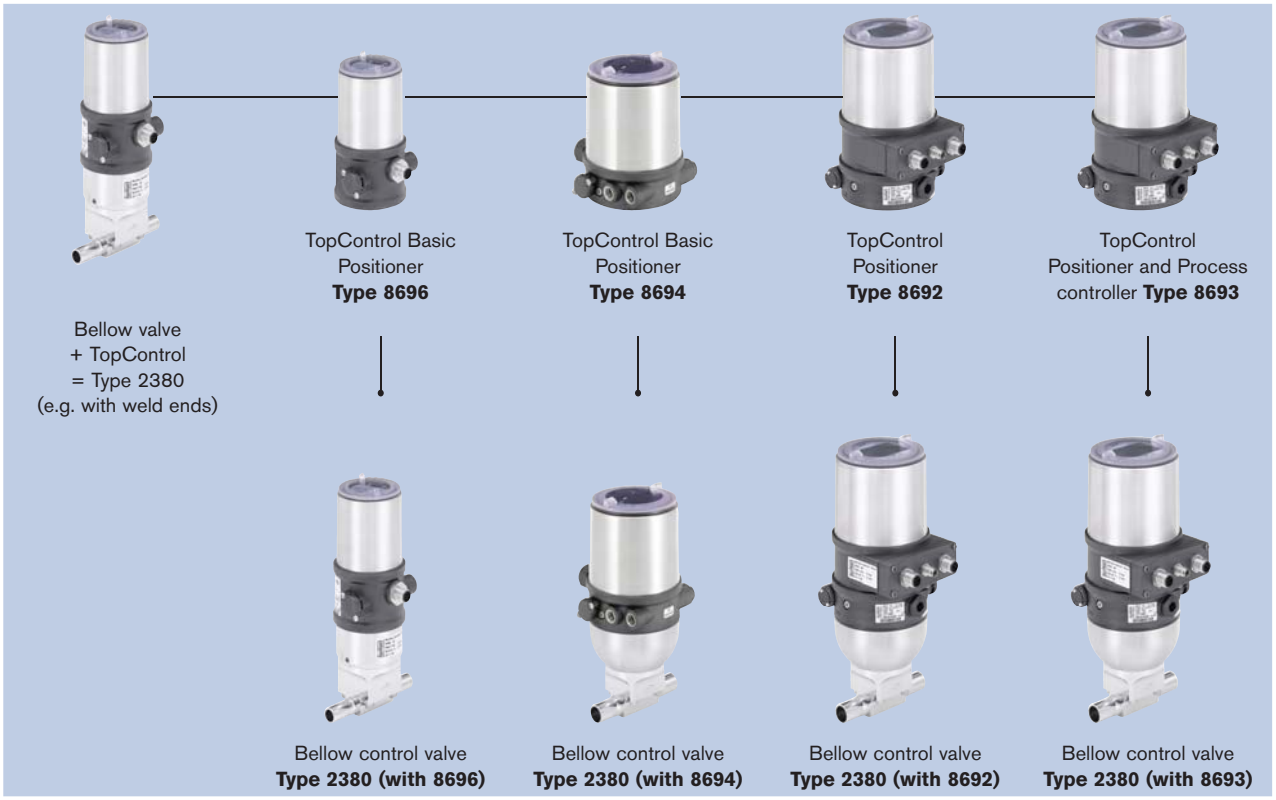
Bellow control valve Type 2380 - possible combinations

The bellow control valve Type 2380 is a combination of a bellow valve and a controller Type 869x.

The range of control unit consists of:
- a digital electropneumatic Positioner Basic Type 8696
- a digital electropneumatic Positioner Basic Type 8694
- a digital electropneumatic Positioner Type 8692
- a digital electropneumatic Positioner/Process Controller Type 8693.

For the configuration of the bellow control valve Type 2380 please fill in the tables “Specification key 1and 2” on pages 8 and 9 go to page
as well as the “Request for quotation” on page 10. go to page



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Bellow control valve Type 2380 - further information about TopControl Type 869x

Positioner TopControl Basic Type 8696

The compact positioner Type 8696 is designed for integrated mounting on pneumatic actuators from the process control valve series Type 23xx/2103 and specifically for the requirements of hygienic process environments. The operation and parameterisation are done via push buttons and DIP switches. Device configuration and parameterisation can be carried out easily by the Bürkert-COMMUNICATOR software tool via a PC interface.

Features:
- Hygienic stainless steel design according to EHEDG guidelines
- Contact and wearless analogue position sensor
- Universal positioning system for single and double-acting actuators

Customer Benefits:
- Simple design
- Simple and safe start-up by teach function
- High plant availability through increased drive life by spring chamber ventilation
- Little space requirement in the plant piping

Positioner TopControl Basic Type 8694

The compact positioner Type 8694 is designed for integrated mounting on pneumatic actuators from the process control valve series Type 23xx/2103 and specifically for the requirements of hygienic process environments. The operation and parameterisation are done via push buttons and DIP switches. Device configuration and parameterisation can be carried out easily by the Bürkert-COMMUNICATOR software tool via a PC interface.

Features:
- Hygienic stainless steel design according to EHEDG guidelines
- Contact and wearless analogue position sensor
- Universal positioning system for single and double-acting actuators
- AS-Interface Field bus communication

Customer Benefits:
- Simple design
- Simple and safe start-up by teach function
- High plant availability through increased drive life by spring chamber ventilation
- Little space requirement in the plant piping

Positioner TopControl Type 8692

The intelligent electro-pneumatic positioner Type 8692 is designed for integrated mounting on pneumatic actuators from the process control valve series Type 23xx/2103 and specifically for the requirements of hygienic process environments. The initialisation of the positionners can be automatically performed using Tune-Functions. The easy handling and the selection of additional software functions and parameterisation are done either on a big graphic display and keypad. Device configuration and parameterisation can be carried out easily by the Bürkert-COMMUNICATOR software tool via a PC interface.

Features:
- Hygienic stainless steel design according to EHEDG guidelines
- Contact and wearless analogue position sensor
- Universal positioning system for single and double-acting actuators
- Highly dynamic positioning system without internal control air consumption
- Integrated diagnostic functions for valve monitoring
- Ensuring failure of the electrical or pneumatic power supply
- Profibus DPV1 or DeviceNet Field bus communication (optional)

Customer Benefits:
- Intuitive and easy operation via the large graphic display with backlight and keypad
- Automatic initialisation of positioners and process controllers using TUNE function
- High plant availability through increased drive life by spring chamber ventilation
- Guaranteed reliability and services can be scheduled through valve monitoring and diagnosis

Positioner & Process Controller TopControl Type 8693

The intelligent process controller Type 8693 is designed for integrated mounting on pneumatic actuators from the process control valve series Type 23xx/2103 and specifically for the requirements of hygienic process environments. The initialisation of the process controller and positionners can be automatically performed using Tune-Functions. The easy handling and the selection of additional software functions and parameterisation are done either on a big graphic display and keypad. Device configuration and parameterisation can be carried out easily by the Bürkert-COMMUNICATOR software tool via a PC interface.

Features:
- Hygienic stainless steel design according to EHEDG guidelines
- Contact and wearless analogue position sensor
- Universal positioning system for single and double-acting actuators
- Highly dynamic positioning system without internal control air consumption
- Integrated diagnostic functions for valve monitoring
- Ensuring failure of the electrical or pneumatic power supply
- Profibus DPV1 or DeviceNet Field bus communication (optional)

Customer Benefits:
- Intuitive and easy operation via the large graphic display with backlight and keypad
- Automatic initialisation of positioners and process controllers using TUNE function
- High plant availability through increased drive life by spring chamber ventilation
- Guaranteed reliability and services can be scheduled through valve monitoring and diagnosis
- Outstanding price/performance ratio

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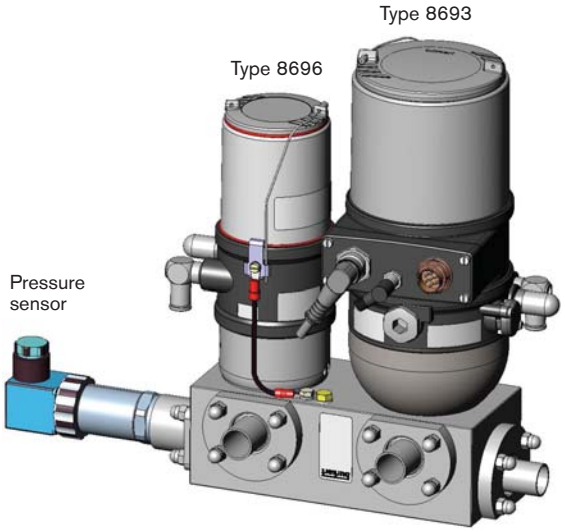
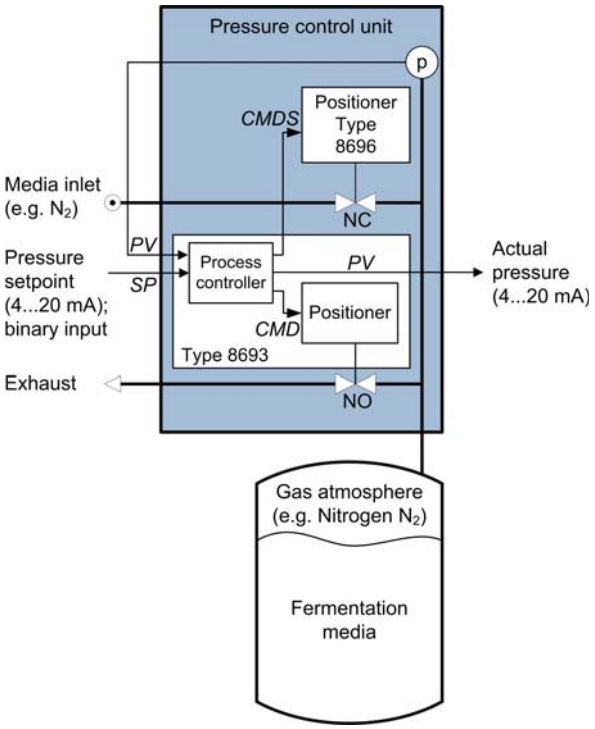
Example of a system solution

Pressure control unit
(control of gas pressure cushion in liquid tanks)

block solution with:
- actuator NC (Type 8696)
- actuator NO (Type 8693)
- pressure sensor



Function diagram



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Valve features, specification key 1

Example

2380	N	A	10.0	EE	VI	SA41	E	I	0	0

Specification key 1

(Please make a choice)

2380	N	A		EE	VI		E	I	0	0

TYPE OF CONTROL (+ actuator)

N	Type 8696
L	Type 8694
I	Type 8692
J	Type 8693

CONTROL FUNCTION

A	NC - normally closed
B	NO - normally open

ORIFICE [mm]

03.0	
04.0	
06.0	
08.0	
10.0	
0000	without bellow for devices without valve body

SEALING MATERIAL

00	without bellow for devices without valve body
EE	PTFE

VALVE BODY MATERIAL

00	for devices without valve body
VI	1.4435 acc. to BN2
	(others on request)

APPROVAL

0	without
1	with (select the relevant "Variable code" at "specification key 2" at next page)

COMMUNICATION

0	no bus communication	
D	DeviceNet	only for Type 8692 or 8693
Y	Profibus DP-V1	
C	AS-i (62 slaves, analogue profile)	only for Type 8694

additional INPUTS/OUTPUTS

0	no additional in-/output (only for bus communication)
H	1 binary input
I	1 binary input + 1 analogue output
F	1 binary input + 1 analogue output + 2 binary outputs (only for Types 8692 and 8693)
K	16-bit feedback via bus (only AS-i)

POWER SUPPLY

E	24 V DC
3	via bus (only AS-i)

	THREADED PORTS	PORT CONNECTION WELD END			
Orifice	**DIN ISO 228-1**	**DIN 11850 S. 0**	**DIN 11866 S. A / DIN 11850 S. 2**	**DIN 11866 S. B / ISO 4200**	**DIN 11866 S. C / ASME BPE**
DN3	**GM82** (G1/4)	**SC40** 6.0 x 1.0			**SA90** 1/4" (6.35 x 0.89)
DN4	**GM82** (G1/4)	**SC40** 6.0 x 1.0			**SA90** 1/4" (6.35 x 0.89)
DN6	**GM83** (G3/8)	**SC41** 8.0 x 1.0		**SA78** 10.2 x 1.6	**SA91** 3/8" (9.53 x 0.89)
DN8	**GM83** (G3/8)	**SC42** 10.0 x 1.0	**SD40** 13.0 x 1.5	**SA40** 13.5 x 1.6	**SA92** 1/2" (12.7 x 1.65)
	GM84 (G1/2)		**SD42** 19.0 x 1.5	**SA41** 17.2 x 1.6	**SA93** 3/4" (19.05 x 1.65)
DN10	**GM83** (G3/8)		**SD40** 13.0 x 1.5	**SA40** 13.5 x 1.6	**SA92** 1/2" (12.7 x 1.65)
	GM84 (G1/2)		**SD42** 19.0 x 1.5	**SA41** 17.2 x 1.6	**SA93** 3/4" (19.05 x 1.65)

0000 - code for devices without valve body;
other connections (e.g. clamp connection) / port sizes **on request**

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Valve features, specification key 2

Example

PL02				MP	NO17

Specification key 2

(Please make a choice)

PL02				MP	NO17

VARIABLE CODE (select as many as required)

PL02	suitable for food (conform to FDA and EC regulation 1935/2004)
MK04	customer specific software settings
PX03	with approval / certification for ATEX II 3 GD
	others on request

ELECTRICAL CONNECTION

KD	with cable gland (not for Type 8696 and not for bus communication)
MP	with multipole connection (not for Type 8694 with AS-i)
SK	flat cable clip with 1 m cable (only for AS-i)

SURFACE FINISH

NO13	without further surface finish (Ra = 1.6 µm)
NO17	inner surface electropolished (Ra = 0.4 µm - for weld-end)
NO23	inner surface mechanically polished (Ra = 0.6 µm - for weld-end)

Spare part sets / order number

Orifice	Order no. of spare part set
DN3	00796530
DN4	00796531
DN6	00796532
DN8	00796533
DN10	00796534

Each set contains:
1 x O-ring 20x2.5
1 x O-ring 52x2
1 x bellow DNx

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You can fill out the fields directly in the PDF file before printing out the form.

Bellow control valve - request for quotation

Please fill out this form and send to your local Bürkert Sales Centre with your inquiry or order

Company		Contact person	
Customer no.		Dept.	
Address		Tel./Fax	
Town / Postcode		E-Mail	

■ = Mandatory fields

Quantity

Desired date of delivery (YYYY-MM-DD)

Process / operating data

■ Type of process medium ☐ Liquid ☐ Gas ☐ Steam (only for sterilisation)

■ Process medium

	min.	standard	max.	unit
■ Flow rate (Q, Q_N, W) [1]				
■ Temperature at valve inlet				
■ Pressure[2] at valve inlet P1				
■ Pressure[2] at valve outlet P2				
Steam pressure P_V				
Kinematic viscosity (ν)		mm²/s or cSt		
Dynamic viscosity (η)		mPa·s or cP		
Standard density		kg/m³		

1) **Standard unit:** Liquid Q = m³/h | Gas Q_N = Nm³/h | Steam W = kg/h
2) **Note:** state all pressure values as **overpressure** relating to atmospheric pressure in bar

Valve features

Specification key 1

2380	N	A		EE	VI		E	I	0	0

(automatically transfered from page 8)

Specification key 2

PL02				MP	NO17

(automatically transfered from page 9)

Certifications, required

X	CE acc. to EC Declaration of Conformity (2014/30/EU EMC)	X	USP class VI – 121°C
X	FDA		ATEX II Kat. 3 G/D
X	Regulation (EC) No 1935/2004		

Remarks / comments:

i Further versions on request

Reset Form

In case of special application conditions, please consult for advice.

1603/0_EU-en_00895301

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