



2/2 way Bellow Control Valve

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



Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

	Type 8696 Digital electropneumatic positioner for the integrated mounting on process control valves	▶
	Type 8694 Digital electropneumatic positioner for the integrated mounting on process control valves	▶
	Type 8692 Digital electropneumatic Positioner for the integrated mounting on process control valves	▶
	Type 8693 Digital electropneumatic process controller for the integrated mounting on process control valves	▶
	System example Customer specific block variant	

Type description

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 areas of application:

- Food and beverage industry
- Pharmaceutical & biopharmaceutical industry
- Cosmetics industry

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1. General technical data

Product properties	
Dimensions	Detailed information can be found in chapter "5. Dimensions" on page 6.
Material	
Medium contact	
Body	Stainless steel 316L ASME BPE (1.4435 BN2)
Bellows	Advanced PTFE
No medium contact	
Seal	EPDM, FKM
Controller	PPS, stainless steel
Actuator	304 (1.4301) or CF-8 (1.4308)
Standard surface quality	
Threaded connection	Ra 1.6 µm
Weld and clamp connections	Internal mechanically polished : Ra 0.6 µm Internal electrically polished : Ra 0.38 µm
Performance data	
K _{vs} value	0.05...1.8 m³/h
Seat leakage	< 0.01 % of full flow capacity (ANSI Class IV)
Pilot pressure (max.)	5.5...7 bar(g)
Reaction/switching time	Typical settling time < 1 sec.
Electrical data	
Electrical characteristics	Defined by the use of Type 869x
Electrical signal/communication	Analogue standard signal (e.g. 4...20 mA) Bus communication (e.g. Ethernet/IP, bÜS) (depending on Type 869x)
Medium data	
Medium	Gases and fluids (ultra-pure, sterile, dirty, aggressive, abrasive or also highly viscous); Steam (for sterilisation).
Medium temperature	0...+80 °C (-10 °C...+150 °C for restricted operating conditions ^{1.)})
Medium pressure	Vacuum up to 6 bar(g)
Control medium	Air or neutral gases (DIN ISO 8573-1: Dust Q.-Kl. 7, Water Q.-Kl. 3, Oil Q.-Kl. X)
Process/Port connection & communication	
Nominal diameter	DN4...DN15
Nominal seat size	DN1.5...DN10
Port connection	
Threaded connection	G (DIN EN ISO 228-1)
Welded connection	DIN 11850 series 0 DIN 11866 R. A / DIN 11850 R. 2 DIN 11866 R. B / DIN ISO 4200 DIN 11866 R. C / ASME BPE
Clamp connection	On request
Pilot air ports	Thread G 1/8
Electrical connection	Circular connectors (Multipole) / Cable gland (depending on Type 869x)
Approvals and certificates	
Conformity	CE acc. to EG declaration of conformity (2014/30/EU EMC) FDA EG regulation no. 1935/2004
Certificates	United States Pharmacopeia (USP) Class VI – 121 °C
Approvals	ATEX II Cat. 3 G/D (on request)
Environment and installation	
Installation position	See "7. Product installation" on page 8
Ambient temperature	-10...+55 °C
Degree of protection	IP65/67 acc. to EN 60529

1.) Medium pressure max. 4 bar (g)

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. Product versions

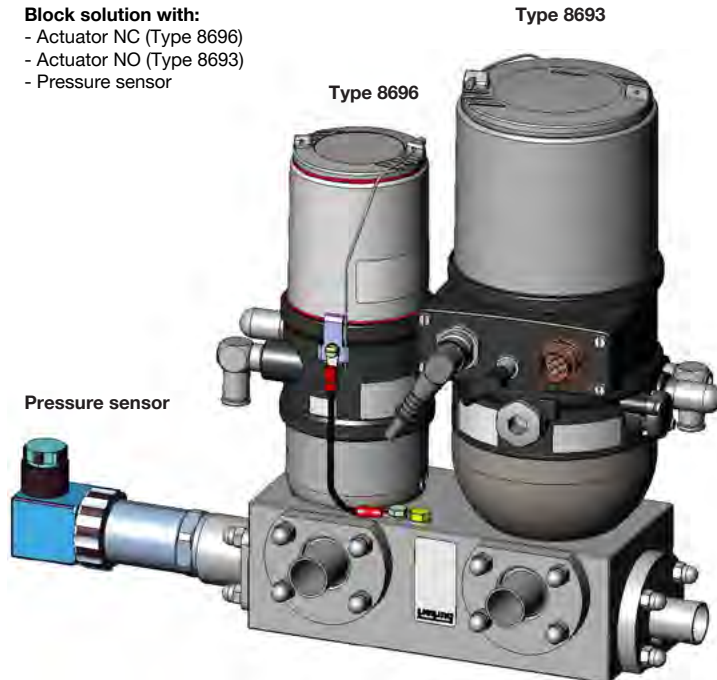
2.1. Example of a system solution

Pressure control unit, Type 8880

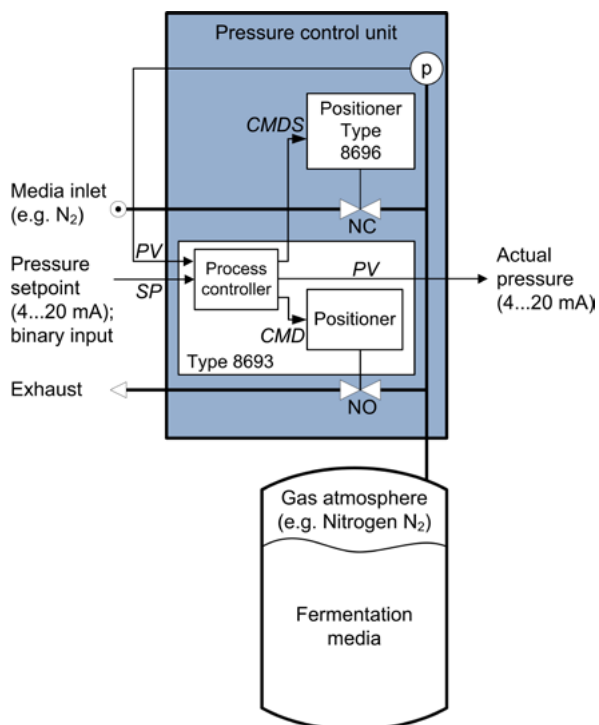
The pressure control unit controls the gas pressure cushion in the liquid tanks.

Block solution with:

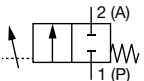
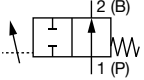
- Actuator NC (Type 8696)
- Actuator NO (Type 8693)
- Pressure sensor



Function diagram

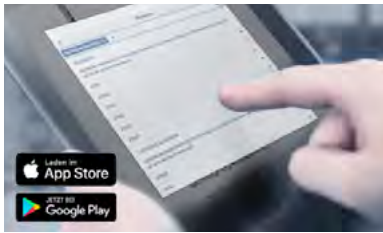


3. Circuit functions

Control function	Description
	CF: A, pneumatically operated control valve 2/2 way Flow direction above seat Normally closed by spring force
	CF: B, pneumatically operated control valve 2/2 way Flow direction above seat Normally open by spring force

4. Materials

4.1. Chemical Resistance Chart – Bürkert resistApp

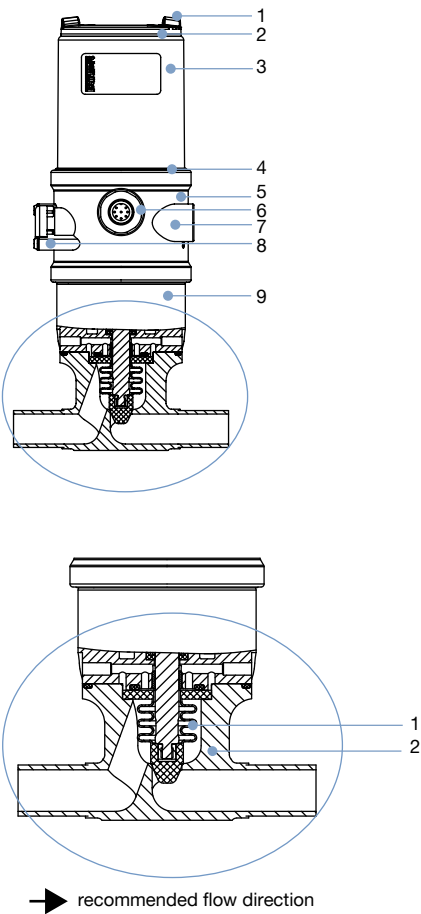


Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start Chemical Resistance Check

4.2. Material specifications



No.	Element	Material
1	Cover	Polycarbonate
2	Seals	EPDM
3	Outer casing	Stainless steel
4	Seals	EPDM
5	Basic positioner body	PPS
6	Plug connector M12	Stainless steel
7	Threaded connection	Stainless steel
8	All screws in positioner	Stainless steel
9	Actuator	1.4301/1.4308

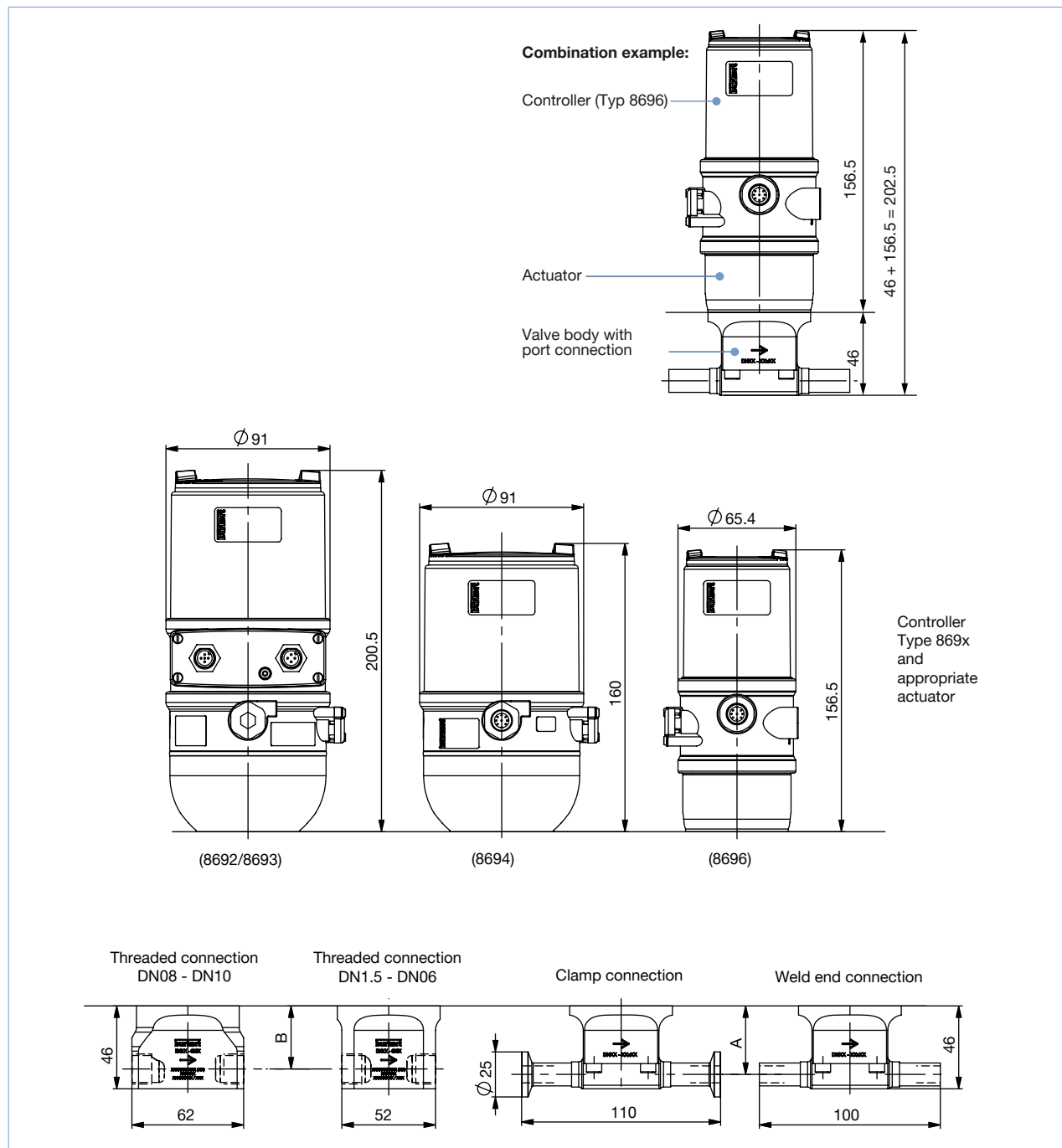
No.	Element	Material
1	Bellows	Advanced PTFE
2	Valve body	1.4435 BN2

5. Dimensions

5.1. Combination of controller, actuator and valve body

Note:

- For more details see the **product enquiry** form at the end of this document.
- Dimensions in mm



Threaded connection			B [mm]	Nominal diameter (DN)		A [mm]
GM82	G ¼		36	1.5 / 3.0 / 4.0 / 6.0 8.0 / 10.0		38 36
GM83	G ⅜		35			
GM84	G ½		33			

6. Performance specifications

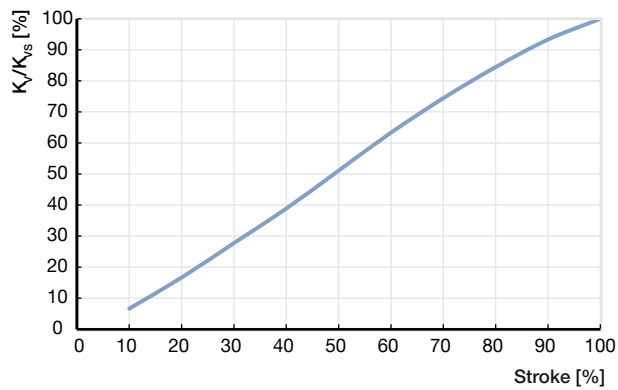
6.1. Flow characteristics

Flow characteristic and K_v value (typical value)

Nominal diameter (pipeline)		Seat nominal diameter DN	K _v value at stroke [m³/h]										K _{vs} value
[mm]	ASME size		10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %	
6.35x0.89	¼"	1.5	0.005	0.009	0.013	0.018	0.023	0.028	0.033	0.038	0.044	0.05	
6.35x0.89	¼"	3	0.01	0.025	0.05	0.075	0.1	0.125	0.15	0.175	0.2	0.22	
6.35x0.89	¼"	4	0.02	0.05	0.09	0.14	0.2	0.25	0.3	0.35	0.4	0.44	
12.7x1.65	½"	6	0.06	0.15	0.25	0.35	0.46	0.57	0.67	0.76	0.84	0.9	
12.7x1.65	½"	8	0.1	0.3	0.5	0.65	0.8	0.95	1.1	1.2	1.3	1.4	
12.7x1.65	½"	10	0.15	0.4	0.6	0.8	1	1.15	1.3	1.45	1.55	1.6	
19x1.5	—	10	0.15	0.4	0.6	0.8	1	1.2	1.4	1.55	1.7	1.8	

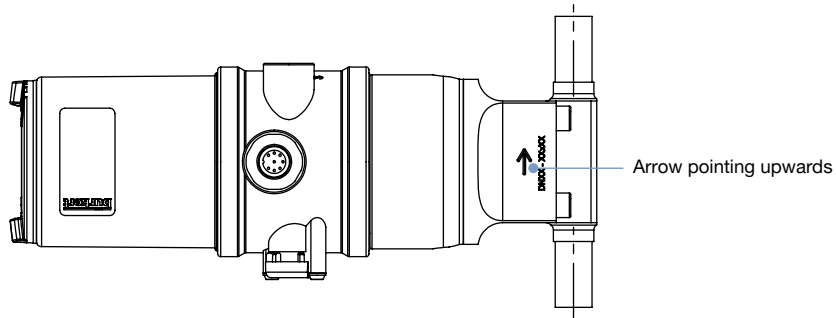
Flow rate characteristics

Linear, theoretical setting ratio (K_{vs}/K_v) 20:1

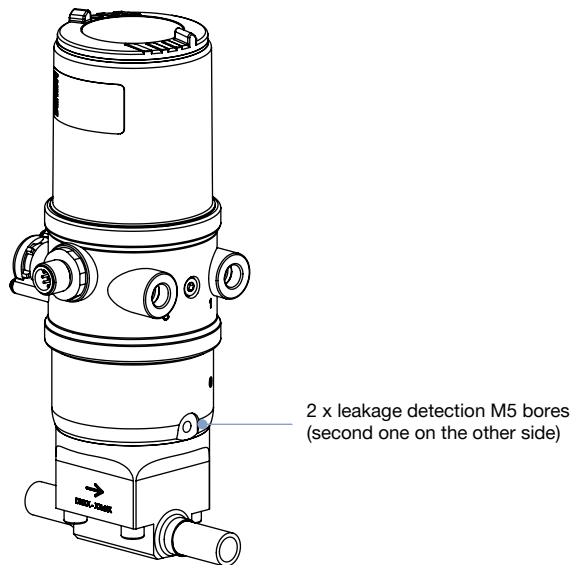


7. Product installation

7.1. Installation position for self-draining



7.2. Leakage detection bores



8. Product accessories

Process controller TopControl	
Type 8693 ▶ Actuator size Ø 70/90/130 mm	Description
	The intelligent process controller Type 8693 is designed for integrated mounting on pneumatic actuators from the process control valve series Type 23xx/2103 and especially for the requirements of hygienic process conditions. Using the TUNE-Functions, the process controller and positioner can be initialized automatically. Easy operation and selection of additional software functions as well as parameterization are carried out via the large graphic display and the keypad. Device configuration and parameterization can also be conveniently carried out by the Bürkert Communicator software tool via a PC interface.
	Features • Contact-free position sensor • Universal positioning system for single and double-acting actuators • Ultra dynamic positioning system without air consumption in steady state • Integrated diagnostic functions for valve monitoring • Automatic initialization of the positioner and process controller using the TUNE-Function • Defined safe position in case of electrical or pneumatic auxiliary power failure • PROFIBUS DP-V1, DeviceNet, EtherNet/IP, PROFINET, Modbus TCP, Bürkert system bus (büS) • Compact and robust hygienic stainless steel design
	Customer benefits • Quick and easy commissioning • Intuitive and simple operation via graphic display with backlight and keypad • High degree of system availability due to increased actuator service life by means of spring chamber ventilation • Guaranteed reliability and predictable maintenance through valve monitoring and diagnostics • Easy maintenance and process monitoring

Positioner TopControl	
Type 8692 ▶ Actuator size Ø 70/90/130 mm	Description The intelligent electropneumatic positioner Type 8692 is designed for integrated attachment to pneumatic actuators of the process control valve series Type 23xx/2103 and especially for the requirements of hygienic process conditions. The positioner can be initialized automatically using the TUNE-Function. Easy operation and the selection of the extensive additional software functions as well as parameterization are carried out via the large graphic display and keypad. The device configuration and parameterization can also be conveniently carried out using the Bürkert Communicator software tool via a PC interface.
	Features • Contact-free position sensor • Universal positioning system for single and double-acting actuators • Ultra dynamic positioning system without air consumption in steady state • Integrated diagnostic functions for valve monitoring • Automatic initialization of the positioner by means of the TUNE-Function • Defined safe position in case of electrical or pneumatic auxiliary power failure • PROFIBUS DP-V1, DeviceNet, EtherNet/IP, PROFINET, Modbus TCP, Bürkert system bus (bÜS) • Compact and robust hygienic stainless steel design Customer benefits • Quick and easy commissioning • Intuitive and simple operation via graphic display with backlight and touch keypad • High degree of system availability due to increased actuator service life by means of spring chamber ventilation • Guaranteed reliability and predictable maintenance through valve monitoring and diagnostics
Positioner TopControl BASIC	
Type 8694 ▶ Actuator size Ø 70/90/130 mm	Description The compact positioner Type 8694/8696 is designed for integrated attachment to pneumatic actuators of the Type 23xx/2103 process control valve series and especially for the requirements of hygienic process conditions. Operation and parameterization are performed via push buttons and DIP switches. The device configuration and parameterization can also be conveniently carried out using the Bürkert Communicator software tool via a PC interface.
	Features • Contact-free position sensor • Universal positioning system for single and double-acting actuators • Ultra dynamic positioning system without internal control air consumption • AS-Interface, IO-Link, Bürkert system bus (bÜS) (only 8694) • Compact and robust hygienic stainless steel design
Type 8696 ▶ Actuator size Ø 50 mm	Customer benefits • Simple and safe commissioning through Teach-In function • Minimum space requirement in the plant pipework for more flexibility in plant design • High degree of system availability due to increased actuator service life by means of spring chamber ventilation
	

9. Networking and combination with other Bürkert products

9.1. Combination possibilities for bellows control valve, Type 2380

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

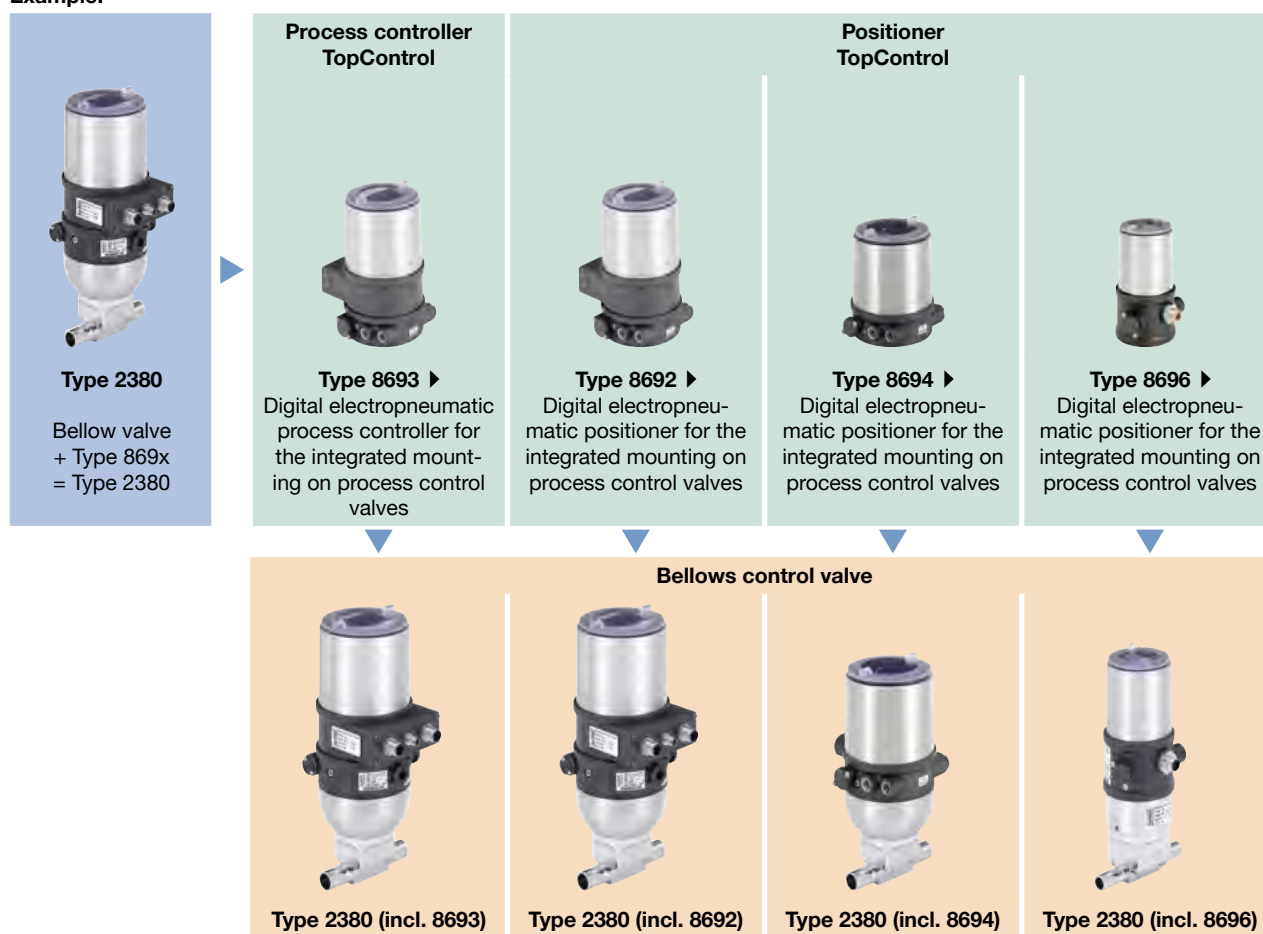
The following controllers are eligible:

- A digital electropneumatic **basic positioner**, Type 8696
- A digital electropneumatic **basic positioner**, Type 8694
- A digital electropneumatic **Positioner Type**, 8692
- A digital electropneumatic **positioner or process controller**, Type 8693

Note:

- For the configuration of further valve systems please use the **product enquiry form** at the end of this data sheet.
- The controller is included in the Type 2380 and does not need to be ordered separately.

Example:



10. Ordering information

10.1. Bürkert eShop – Easy ordering and quick delivery



Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

[Order online now](#)

10.2. Bürkert product filter



Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

[Try out our product filter](#)

10.3. Bürkert product enquiry form

Bürkert product enquiry form: Would you like to make a specific product enquiry based on your technical requirements? Please use our product enquiry form **at the end of this data sheet**. There you will find all the information relevant to your Bürkert contact person that will help us to process your enquiry in the best possible way.

Bürkert specification key: In our product enquiry form you will find a complete explanation of the composition of our specification key. You will find our product enquiry form **at the end of this data sheet**.

10.4. Ordering chart accessories

Spare part set

Each set contains:

- 1 x O-ring 20 x 2.5
- 1 x O-ring 52 x 2
- 1 x bellows DNx

Nominal diameter	Article no.
DN1.5	759879
DN3	796530
DN4	796531
DN6	796532
DN8	796533
DN10	796534

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Product Enquiry Form - Bellow control valve

Thank you for your interest in our products! In order to provide you with optimum advice, please fill out the following form and send it to your **Bürkert representative** or e-mail address: info@burkert.com. All information submitted will of course be kept strictly confidential.

Please fill in the **required fields!** *

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Personal Information			
Company		Contact person	
Customer no.		Department	
Street		Postcode / Town	
Telephone no.		Email	

Delivery
Required delivery date

Operating data					
Process medium					
Medium	Fluid	Steam	Gas		
Flow rate (Q, Q _N , W) ^{1.)}	Min	Nominal	Max	Unit	
Temperature at valve inlet T ₁	Min	Nominal	Max	Unit	
Pressure ^{2.)} at valve inlet P ₁	Min	Nominal	Max	Unit	
Pressure ^{2.)} at valve outlet P ₂	Min	Nominal	Max	Unit	
Steam pressure P _v	Min	Nominal	Max	Unit	
Kinematic viscosity (ν)	mm ² /s or cSt				
Dynamic viscosity (η)	mPa·s or cP				
Standard density	kg/m ³				

1.) Standard unit: Liquid: Q = m³/h | Gas: Q_N = Nm³/h | Steam: W = kg/h

2.) Note: Pressure data in bar: Overpressure to atmospheric pressure

Approvals / Conformity
CE acc. to EG declaration of conformity
FDA conformity
EG regulation no. 1935/2004
USP class VI – 121 °C
ATEX II cat. 3 G/D

Additional Requirements / Comment

Specification key - Example

Note:

Key components **1**, **2**, **9**, **10** and **15** marked in blue do not need to be selected and are therefore not listed in the **Specification key** below.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	V1	16	17
2380	LA	N	A	10.0	EE	VI	SA41	0	0	E	I	0	0	0	PL02	MP	NO17

Specification key

Note:

Below you will find the **Key legend** to fill in the fields.

Key No. →	Quantity	Control type (+ actuator)	Control function	Nominal diameter [mm]	Seal material	Body material	Connection	Power supply	Additional inputs/outputs	Communication	Approval	Variable Codes	Electrical connections	Surface quality
		3	4	5	6	7	8	11	12	13	14	V1	16	17
Selection →												PL02		
Comments														

Key legend

Note:

- Other versions on request
- For more information, see the data sheet

Key no. 3: Control type (+ actuator)	
N	Type 8696
L	Type 8694
I	Type 8692
J	Type 8693
Key no. 4: Control function	
A	NC - normally closed
B	NO - normally open
Key no. 5: Nominal diameter [mm]	
1.5	8.0
3.0	10.0
4.0	0000 ^{1.)}
6.0	
1.) Without bellows for devices without body	
Key no. 6: Seal material	
00	Without bellow for devices without valve body
EE	PTFE
Key no. 7: Body material	
00	For devices without valve body
VI	1.4435 BN2
Others on request	

Key no. 8: Connection			
Listed in detail below			
Key no. 11: Power supply			
E	24 V DC		
3	Via Bus		
Key no. 12: Additional inputs/outputs			
0	No additional inputs/outputs (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)		
Key no. 13: Communication			
0	No bus communication	J	Profinet
C	AS-i (62 slaves, analogue profile)	K	Modbus TCP
D	DeviceNet	Q	IO-Link
G	büS	Y	Profibus DP-V1
I	EtherNet/IP		
Key no. 14: Approval			
0	Without		
1	With (select the appropriate variable code)		

Key no. V1: Variable codes	
Note: Select all required features	
PL02	Suitable for foodstuffs (conformity with FDA and EG regulation 1935/2004)
MK04	Customised software setting
PX03	With approval / certification for ATEX II 3 GD
Others on request	

Key no. 16: Electrical connections	
KD	With cable gland (not for Type 8696 and not for bus communication)
MP	With multipole circular plug M12 (not for Type 8694 with AS-I)
SK	Flat cable clip with 1 m cable (only for AS-I)

Key no. 17: Surface quality	
NO13	Without surface finishing (Ra = 1.6 µm)
NO17	Internal electrically polished (Ra = 0.38 µm - for weld end)
NO23	Internal mechanically polished (Ra = 0.6 µm - for weld end)

Key no. 8: Connection

Note:

0000 - Code for units without body; other connections (e.g. clamp) / connection sizes on request

Seat nominal diameter	Threaded connection	Welded connection			
	DIN ISO 228-1	DIN 11850 R. 0	DIN 11866 R. A / DIN 11850 R. 2	DIN 11866 R. B / ISO 4200	DIN 11866 R. C / ASME BPE
DN 1.5 / DN 3 / DN 4	GM82 - G ¼	SC40 - 6.0 x 1.0 SC41 - 8.0 x 1.0	SD40 - 13.0 x 1.5	SA78 - 10.2 x 1.6	SA90 - ¼" (6.35 x 0.89) SA91 - ⅜" (9.53 x 0.89) SA92 - ½" (12.7 x 1.65)
DN 6	GM83 - G ⅝	SC41 - 8.0 x 1.0	SD40 - 13.0 x 1.5	SA78 - 10.2 x 1.6 SA40 - 13.5 x 1.6	SA91 - ⅜" (9.53 x 0.89) SA92 - ½" (12.7 x 1.65)
DN 8 / DN 10	GM83 - G ⅝ GM84 - G ½	SC42 - 10.0 x 1.0 (only DN 8)	SD40 - 13.0 x 1.5 SD42 - 19.0 x 1.5	SA40 - 13.5 x 1.6 SA41 - 17.2 x 1.6	SA92 - ½" (12.7 x 1.65) SA93 - ¾" (19.05 x 1.65)