

## 2301 cryogenic



### 2/2-way Globe Control Valve with stainless steel design for high-quality cryogenic applications and steam

- High cycle life
- Flow optimised body in stainless steel 316L
- Clean design for optimal use in cryogenic/food/hygienic environment

Type 2301 can be combined with...



**Type 8692/8693**

Positioner / Process  
Controller TopControl



**Type 8694**

Positioner  
TopControl Basic



**Type 8696**

Positioner  
TopControl Basic

In line with Bürkert's philosophy for modular valves and sensors the construction of the 2301 globe valve fulfils tough criteria for process environments. Unrivalled cycle life and sealing integrity is guaranteed by the proven self adjusting packing gland.

Each globe valve body can be fitted with three to five sizes of trim sets. These parabolic trims provide a reliable and repeatable characteristic to vary the flow. The control cones are available in either stainless steel or with a durable PTFE seal for tight shut-off up to 1" (DN25).

The design enables the easy integration of automation modules whether they are digital electropneumatic positioner or process controller.

The fully integrated system has a compact and smooth design, integrated pneumatic lines, IP65/67/NEMA4X protection class and superior chemical resistance.

#### Applications:

- ▶ Steam up to 150 PSI
- ▶ LN<sub>2</sub>, O<sub>2</sub>, Ar, CO<sub>2</sub>
- ▶ LNG storage and distribution
- ▶ Food processing – lyophilization systems
- ▶ Dewars and tanks
- ▶ Medical facilities
- ▶ Automated filling systems
- ▶ Transfer lines
- ▶ Vacuum jacketed and non-jacketed systems

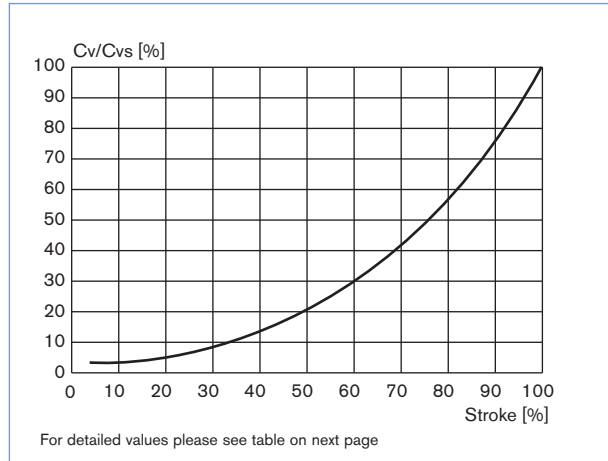
Technical data	
<b>Orifice</b>	5/32" to 2" (DN 4 to 50)
<b>Port connection</b> Flange connection acc. to Welded and threaded ports	DIN EN 1092-1, ANSI B 16.5, JIS 10K on request
<b>Body materials</b>	Cast stainless steel 316L
<b>Actuator material</b> Actuator Cover	PPS Stainless steel 1.4561 (316Ti)
<b>Plug sealing</b>	PTFE/St.st. (PTFE/stainless steel) up to 1" (DN25) and St.st./St.st. (stainless steel/stainless steel)
<b>Seat leakage IEC 534-4/EN 1349</b>	Shut-off class IV for St.st./St.st. Shut-off class VI for PTFE/St.st.
<b>Media</b>	Water, nitrogen, argon, and liquid oxygen on request
<b>Viscosity</b>	max. 600 mm <sup>2</sup> /s
<b>Packing gland</b>	PTFE V-rings with spring compensation
<b>Medium temperature</b>	-320°F to 365°F (-196°C to +180°C)
<b>Ambient temperature</b>	14°F to 140°F (-10°C to +60°C)
<b>Control medium</b>	Neutral gases, air
<b>Max. pilot pressure</b>	79.75 PSI to 101.5 PSI
<b>Pilot air ports</b>	Push-in connector for external ø 6 mm or 1/4" tube
<b>Installation</b>	With actuator upright

## Technical data for Type 2301 Globe Control Valve

### Cvs values

Port size (tube)		Orifice DN (seat) [inch]									
ISO, DIN [mm]	BS, ASME [inch]	5/32"	1/4"	5/16"	3/8"	9/16"	3/4"	1"	1 1/4"	1 1/2"	2"
10	1/2"	0.58	1.41	2.35	3.17	–	–	–	–	–	–
15	3/4"	0.58	1.41	2.46	3.64	3.76	–	–	–	–	–
20	1"	–	–	–	3.76	6.11	8.82	–	–	–	–
25	–	–	–	–	–	6.23	8.46	13.6	–	–	–
32	1 1/2"	–	–	–	–	–	5.88	11.1	15.9	–	–
40	2"	–	–	–	–	–	–	11.4	15.8	19.6	–
50	2 1/2"	–	–	–	–	–	–	–	18.5	21.8	32.8

### Flow curve and description



#### Remarks on the flow characteristic

- Equipercentile parabolic plug for the orifices 5/16" to 2 1/2" (DN8 to DN65)
- Linear plug for the orifices 5/32" (DN4) and 1/4" (DN6)
- Flow characteristic runs within DIN/IEC 534-2-4
- Theoretical control ratio (Cvs/Cvo):
  - 50:1 for the orifices 5/16" to 2 1/2" (DN8 to DN65)
  - 25:1 for the orifice 1/4" (DN6)
  - 10:1 for the orifice 5/32" (DN4)
- CVR value at 5% of stroke for DN > 10 mm  
CVR value at 10% of stroke for DN ≤ 10 mm

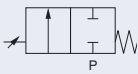
(CVR value = smallest Cv value at which the gradient tolerance to DIN/IEC 534-2-4 is still complied with)

Technical data for Type 2301 Globe Control Valve (continued)

Cvs values

Port size (tube)			Orifice (seat)		Stroke [%]											
ISO, DIN		BS, ASME														
[mm]	[inch]	[inch]	[mm]	[inch]	5	10	20	30	40	50	60	70	80	90	100	
10	3/8"	1/2"	4	1/8"	0.04	0.05	0.11	0.18	0.25	0.31	0.37	0.42	0.47	0.51	0.58	
			6	3/16"	0.05	0.14	0.37	0.56	0.72	0.89	1.03	1.15	1.25	1.32	1.41	
			8	1/4"	0.07	0.08	0.10	0.14	0.21	0.30	0.49	0.71	1.08	1.76	2.35	
			10	3/8"	0.10	0.12	0.15	0.22	0.35	0.56	0.85	1.17	1.88	2.70	3.17	
15	1/2"	3/4"	4	1/8"	0.04	0.05	0.11	0.18	0.25	0.31	0.37	0.42	0.47	0.51	0.58	
			6	3/16"	0.05	0.14	0.37	0.56	0.72	0.89	1.03	1.15	1.25	1.32	1.41	
			8	1/4"	0.08	0.09	0.12	0.15	0.22	0.31	0.50	0.74	1.11	1.88	2.46	
			10	3/8"	0.10	0.12	0.17	0.22	0.36	0.57	0.88	1.29	1.99	2.94	3.64	
			15	1/2"	0.15	0.17	0.24	0.36	0.57	0.90	1.29	1.99	3.05	4.23	4.93	
20	3/4"	1"	10	3/8"	0.12	0.14	0.18	0.23	0.38	0.61	0.90	1.41	2.11	3.05	3.76	
			15	1/2"	0.16	0.19	0.25	0.41	0.61	0.94	1.41	2.11	3.41	4.70	6.11	
			20	3/4"	0.24	0.27	0.37	0.57	0.84	1.29	1.99	2.94	3.99	6.70	8.82	
25	1"	-	15	1/2"	0.16	0.19	0.25	0.41	0.61	0.94	1.41	2.11	3.41	4.82	6.23	
			20	3/4"	0.23	0.29	0.36	0.55	0.82	1.29	1.88	2.94	4.46	6.35	8.46	
			25	1"	0.41	0.44	0.76	1.17	1.76	2.58	3.99	5.99	8.23	11.0	14.1	
32	1 1/4"	1 1/2"	20	3/4"	0.16	0.17	0.27	0.38	0.56	0.82	1.17	1.76	2.82	4.23	5.88	
			25	1"	0.34	0.44	0.61	0.95	1.41	2.11	3.17	4.58	6.46	8.82	11.1	
			32	1 1/4"	0.56	0.68	0.95	1.41	1.99	2.94	4.23	5.88	8.46	13.1	15.9	
40	1 1/2"	2"	25	1"	0.34	0.39	0.62	0.91	1.41	2.11	3.17	4.70	6.70	8.93	11.4	
			32	1 1/4"	0.39	0.48	0.63	1.03	1.64	2.46	3.64	5.40	8.70	11.8	15.8	
			40	1 1/2"	0.63	0.78	1.17	1.64	2.46	3.64	5.17	7.40	10.8	16.3	19.6	
50	2"	2 1/2"	32	1 1/4"	0.47	0.55	0.83	1.11	1.88	2.82	4.11	6.11	10.2	14.1	18.5	
			40	1 1/2"	0.55	0.65	0.87	1.52	2.35	3.64	5.29	8.23	12.4	16.8	21.8	
			50	2"	1.17	1.41	2.11	3.05	4.46	6.35	9.05	13.1	19.2	23.1	32.8	

Ordering chart Type 2301 Globe Control Valve, flow direction below seat (for gases and liquid)

Control function	Port Size [inch]	Actuator size Ø [inch]	Min. pilot pressure [PSI]	Operating pressure up to 365°F [PSI]	Item no.
A 2/2-way valve, NC 	3/16"	2"	79.75	232	
	3/4"	2 3/4"	79.75	232	
	1"	2 3/4"	79.75	232	
	1 1/4"	3 1/2"	79.75	232	
	1 1/2"	3 1/2"	79.75	232	
	2"	3 1/2"	79.75	145	

**i** Further versions on request

**Control function**  
B (normally open)

**Port connection**  
Welded and threaded ports

## Ordering information for valve system Continuous ELEMENT Type 8802-GD

A valve system Continuous ELEMENT Type 8802-GD consists of a globe control valve Type 2301 and a digital electropneumatic Positioner Type 8692, a digital electropneumatic Process Controller Type 8693 or a digital electropneumatic Positioner Basic Type 8694 (for valve actuator sizes  $\varnothing$  70/90 mm) or a digital electropneumatic Positioner Type 8696 (for valve actuator size  $\varnothing$  50 mm) (see separate datasheets).

You order two components and receive a complete assembled and certified valve.

### Ordering the valve system Continuous ELEMENT Type 8802-GD with valve actuator sizes $\varnothing$ 70/90 mm

Globe control valve Type 2301  
with actuator sizes  $\varnothing$  70/  $\varnothing$  90 mm

Control unit



Type 8692



Type 8693



Type 8694

Globe control valve  
with desired control unit



Valve system  
Continuous  
ELEMENT  
Type 8802-GD-I  
2301 + 8692



Valve system  
Continuous  
ELEMENT  
Type 8802-GD-J  
2301 + 8693



Valve system  
Continuous  
ELEMENT  
Type 8802-GD-L  
2301 + 8694

If you click on any of the "More info" orange boxes below you will be taken to the product on our website where you can download the datasheet.

Positioner TopControl  
Type 8692

More info.

Process Controller  
TopControl Type 8693

More info.



PROFIBUS

DeviceNet™



The new generation of integrated positioners/process controllers for combination with actuators from the process valve series Type 23xx/2103 is specially designed for the requirements of hygienic process environments. The easy handling and the selection of additional software functions are done either on a big graphic display with backlight and keypad or via a PC interface. A contact-free analog position sensor registers the valve position without deterioration. Single-acting or double-acting actuators are controlled via the integral positioner system. With Type 8693, the process controller function is superimposed on the position control loop. Profibus DPV1 and DeviceNet communication interfaces are available as options.

Main customer benefits:

- Compact design of the valve system with integrated positioner/process controller meets the demands for plant washdown environments through the selection of materials, external seals and integrated control air supply to the actuator
- Extremely simple commissioning and operation thanks to the backlighting of the graphics display and proven multilingual software structure
- Automatic parameterisation of the positioner and process controller using the TUNE functions
- Field bus communication via Profibus DPV1 or DeviceNet
- Air intake filter enhances the process valve system availability
- Simple and reliable actuator adaption
- Explosion-proof models for zone 2/22

Positioner TopControl Basic Type 8694

More info.



The new generation of integrated positioners for combination with actuators from the process valve series Type 23xx/2103 is specially designed for the requirements of hygienic process environments. The operation and selection of the software functions close tight function, inversion of the operating direction of the setpoint signal, characteristic curves selection and switching manual/automatic operation are effected via push-buttons and DIP switches or via the PC interface. The position setpoint is set using the standard signal 4 - 20 mA. In addition, the enable can be controlled via the binary input and an optional position feedback can be integrated. The positioner, Type 8694, registers the valve position without deterioration through a contact-free analogue position sensor. Single-acting or double-acting actuators are controlled via the integral positioner system. An AS-Interface communication interface is available as an option.

Main customer benefits:

- Compact design of the valve system with integrated positioner meets the demands for plant washdown environments through the selection of materials, external seals and integrated control air supply to the actuator
- Automatic parameterisation of the process controller using the Process TUNE function
- Field bus communication via optional AS-Interface
- Air intake filter enhances the process valve system availability
- Simple and reliable actuator adaption allowing additional actuators of the process valve series, Type 20xx or actuators from other manufacturers to be used
- Explosion-proof models for zone 2/22

## Ordering information for valve system Continuous ELEMENT Type 8802-GD, continued

A valve system Continuous ELEMENT Type 8802-GD consists of a globe control valve Type 2301 and a digital electropneumatic Positioner Type 8692, a digital electropneumatic Process Controller Type 8693 or a digital electropneumatic Positioner Basic Type 8694 (for valve actuator sizes  $\varnothing$  70/90 mm) or a digital electropneumatic Positioner Type 8696 (for valve actuator size  $\varnothing$  50 mm) (see separate datasheets).

You order two components and receive a complete assembled and certified valve.

### Ordering the valve system Continuous ELEMENT Type 8802-GD with valve actuator size $\varnothing$ 50 mm

**Globe control valve Type 2301**  
with actuator size  $\varnothing$  50 mm



**Control Head**



Type 8696

**Globe control valve with**  
**desired control unit**



**Valve system**  
**Continuous ELEMENT**  
**Type 8802-GD-M**  
**2301 + 8696**

If you click on the "More info" orange box below you will be taken to the product on our website where you can download the datasheet.

#### TopControl Basic Type 8696



**More**  
**info.**

The new generation of integrated positioners for combination with small actuators from the process valve series Type 23xx/2103 is specially designed for the requirements of hygienic process environments. The operation and selection of the software functions close tight function, inversion of the operating direction of the setpoint signal, characteristic curves selection and switching manual/automatic operation are effected via push-buttons and DIP switches or via the PC interface. The position setpoint is set using the standard signal 4 - 20 mA. In addition, the enable can be controlled via the binary input and an optional position feedback can be integrated. The positioner, Type 8696, registers the valve end position without deterioration through a contact-free analogue position sensor. Single-acting actuators are controlled via the integral positioner system.

Main customer benefits:

- Compact design of the valve system with integrated positioner meets the demands for plant washdown environments through the selection of materials, external seals and integrated control air supply to the actuator
- Automatic parameterisation of the positioner using the TUNE function
- Simple and reliable actuator adaption
- Explosion-proof models for zone 2/22