Globe Valve System for continuous control

Type 8802/2301 electro-pneumatically operated globe valve

TWO YEAR WARRANTY
on this valve system

bürkert
FLUID CONTROL SYSTEMS

Burkert Type 8802/2301

Type 2301 Series
Globe valve

+

Type 8692 continuous
controller

=

Type 8802 continuous
control valve

The design of the System Type 8802 Pneumartically-operated ELEMENT globe valve enables the easy integration of automation modules whether they are electrical/ optical position feedback, pneumatic control units or an optional integrated fieldbus interface.

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

Support documentation for 2301 + 8692

2301 Datasheet

8692 Datasheet

Burkert Type 2301

- Excellent control characteristics and impact resistance
- High cycle life and maintenance-free operation
- Flow optimised body in stainless steel
- Several Kvs value per port size due to removable trim kit
- Control units can be mounted directly without external tubing

Technical Data	
Cvs values	See Chart
Port/Seat Size (orifice)	DN10 (3/8")...DN100 (4") / DN3...DN100 (4")
Nominal pressure	365 PSI
Port Connections Flange Thread Weld ends Clamp	 ANSI B 16.5 NPT (ASME B 1.20.1) ASME BPE ASME BPE
Medium	Neutral gases, water, alcohol, oils, fuel, hydraulic mediums, salt solution, alkali solutions, organic solvents, steam, optional fuel gas (EC Gas appliances Directive 2009/142/EG)
Viscosity	max. 600 mm^2/s
Medium temperature	14°F to 365°F; -10°C to 185°C (stainless steel seal / stainless steel cone) 14°F to 266°F; -10°C to 130°C (PTFE seal / stainless steel cone)
Abmient temperature	32°F to 131°F (when used with positioner or process controllers)
Seat leakage per IEC 534-4/ EN 1349	Shut-off class III and IV for St.st/St.st. Shut-off class VI for PTFE/St.st. and PEEK/St.st. (see details in ordering chart)
Safety position	A: normallly closed by spring action (NC)
Control medium	instrument air acc. DIN ISO 8573-1
Approval and Conformity	FDA, EGV 1935/2004; (ATEX and DVGW on request)

In line with Burkert's philosophy the construction of the 2301 globe valve fulfils tough criteria for process environments. Unrivaled cycle life and sealing integrity is guaranteed by the proved self adjusting spindle packing with exchangeable V-Seals.

Each globe valve body can be fitted with up 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 or PEEK seal for tight shut-off. Leakage class III, IV or VI are available.

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, integrate pneumatic lines, IP65/67 protection class and superior chemical resistance.

Burkert Type 8692

- Compact, robust stainless steel NEMA 4X design
- Contact-free position sensor
- Integrated control air routing
- Electrically isolated inputs and outputs
- Industry leading diagnostics alarms as standard
- Easy start-up by automatic X-Tune function

Technical Data	
Material Body Cover Sealing	PPS, stainless steel PC EPDM
Power supply	24 VDC +/- 10% UL; NEC Class 2
Residual ripple	max. 10%
Setpoint setting	0/4 to 20mA and 0 to 5/10 V
Output resistance	0/4 to 20 mA: 180 Ω 0 to 5/10 V: 19 k Ω
Control medium Dust concentration Particle density Pressure condensation point Oil concentration	neutral gases, air, quality classes acc. to ISO 8573-1 Class 7 (<40µm particle size) Class 5 (<10mg/m³) Class 3 (<-20°C) Class X (<25mg/m³)
Ambient temperature	0°C to 55°C; 32°F to 131°F
Pilot air ports	Threaded ports G1/8 stainless steel
Supply pressure	Low air flow rate 0 to 100 psi [1)] High air flow rate 43.5 to 100 psi
Air input filter	Exchangeable (mesh aperture ~0.1mm)
Actuator system Actuator series ELEMENT 23XX	 Low air flow rate Ø Actuator 70 / 90 mm High air flow rate Ø Actuator 130 mm
Position detection module	Contact-free, wear-free
Installation	As required, preferably with actuator in upright position
Protection type	IP65 and IP67 according to EN 60529
Power consumption	< 5 W
Electrical connection Multipole	 M12, 8-pins or 4-pins
Approvals	cULus Cert. No 238179
Protection class	3 acc. to DIN EN 61140
Conformity	EMC directive 2014/30/EU

The control air channel is integrated in the actuator without external tubings. The easy handling and he selection of additional software functions are done either on a big graphic display with backlight and keypad or over a PC interface.

The Positioner registers the valve position without deterioration through a contact-free, analog position sensor. The control of single or double-acting actuators is done without internal air consumption. With integrated diagnostic functions operation conditions of the control valve can be monitored. Through status signals valve diagnostic messages are transmitted according to NAMUR NE107 and recorded as history entries.

The housing is easy to clean and features proved IP protection and chemically resistant materials for use in hygienic processing, in food, beverage, and pharmaceutical industries. Combine with Burkert ELEMENT actuators the unique pilot valve system enables a compressed air recycling that avoids actuator chambers contamination from the environment.

[1)] The supply pressure has to be 7.25 - 14.5 psi above the minimum required pilot pressure for the valve actuator

Flow direction below the seat, Control function A (NC) Flanged & NPT

Port size	Seat size		Actuator size Ø	Operating pressure seal/control cone	Pilot pressure	Leakage Class seal/control cone		CV values at stroke [gpm]						CV values
				St.st. or PTFE/ St.st.		PTFE or PEEK/ St.st.	St.st./ St.st							
[inch]	[mm]	[inch]	[mm]	[PSI]	[PSI]			5%	10%	30%	50%	70%	90%	[gpm]
1/2	15	0/59	70	232	80-100	VI	IV	0.16	0.19	0.40	0.93	2.09	4.30	5
3/4	20	0.79	70	232	80-100	VI	IV	0.23	0.29	0.52	1.28	2.79	6.04	8.26
1	25	0/98	90	232	80-100	VI	IV	0.40	0.44	1.16	2.56	5.93	10.93	13.95
1 1/2	40	1.6	130	232	80-100	VI	IV	0.69	0.81	1.97	4.65	10.69	21.16	27.67
2	50	2.0	130	232	80-100	VI	IV	1.04	1.27	3.37	7.90	18.02	34.06	43.02
2 1/2	65	2.6	130	232	81-100	VI	IV	1.86	2.32	5.81	15.69	38.37	65.11	75.58
3	80	3.2	130	145	80-100	VI	III	2.9	3.95	12.44	31.39	67.44	101.16	116.27
4	100	3.9	130	87	81-100	VI	III	4.41	6.04	17.44	54.06	104.65	148.83	162.79

Flow direction below the seat, Control function A (NC) OD Tube BW & Clamp

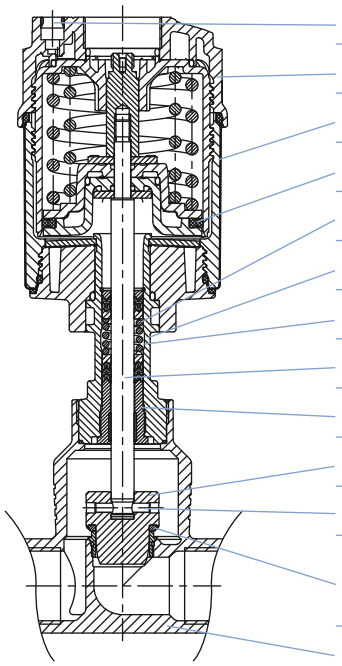
Port size	Seat size		Actuator size Ø	Operating pressure seal/control cone	Pilot pressure	Leakage Class seal/control cone		CV values at stroke [gpm]						CV values
				St.st. or PTFE/ St.st.		PTFE or PEEK/ St.st.	St.st./ St.st							
[inch]	[mm]	[inch]	[mm]	[PSI]	[PSI]			5%	10%	30%	50%	70%	90%	[gpm]
1/2	10	0.39	70	232	80-100	VI	IV	0.1	0.13	0.22	0.56	1.16	2.67	3.14
	15	0.59						0.16	0.2	0.41	0.93	2.09	4.3	5.0 *
3/4	15	0.59	70	232	80-100	VI	IV	0.16	0.20	0.41	0.93	2.09	4.3	5.0
1	20	0.79	70	232	80-100	VI	IV	0.23	0.29	0.52	1.28	2.79	6.05	8.26
1 1/2	32	1.3	130	232	80-100	VI	IV	0.56	0.70	1.51	3.60	7.91	16.28	20.7
2	40	1.6	130	232	80-100	VI	IV	0.70	0.81	1.98	4.65	10.70	21.16	27.67
2 1/2	50	2.0	130	232	81-100	VI	IV	1.05	1.28	3.37	7.91	18.02	34.07	43.02
3	65	2.6	130	232	80-100	VI	III	1.86	2.33	5.81	15.70	38.37	65.12	75.58
4	100	3.9	130	87	81-100	VI	III	4.42	6.05	17.44	54.07	104.65	148.84	162.79

* For 1/2" clamp connection with 15 mm orifice only

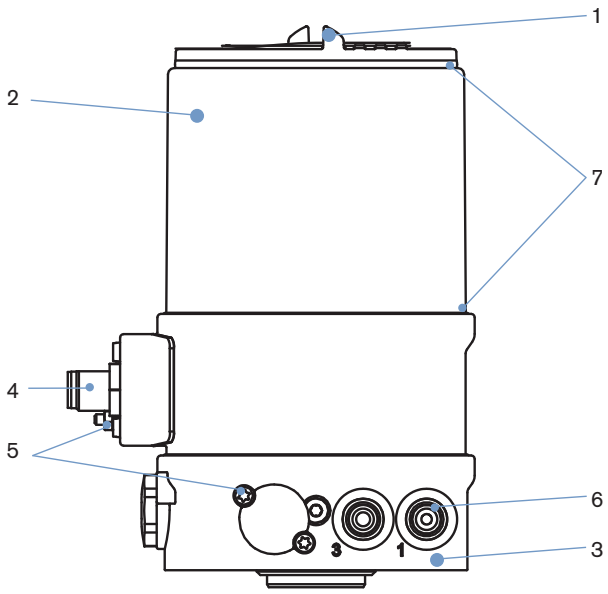
Design and materials view

The detailed parts and materials are displayed in the following picture:

Note: as the **globe control valve Type 2301** could be delivered with miscellaneous port connection (flange, thread, weld ends and clamp), there will not be represented on the picture, but are made with same material as the valve body.

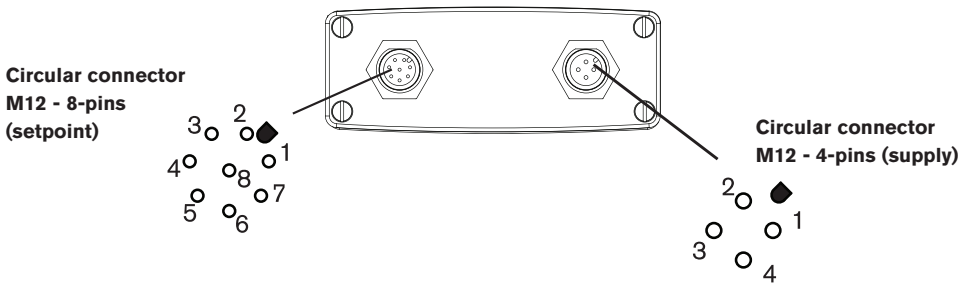
2301 globe control valve	Description	Material
	**Pilot air ports**	Push-in connector PP
	Actuator	PPS
	Cover	Stainless steel 1.4561 (316Ti)
	Piston seal	FKM
	Spring	Stainless steel 1.4310
	Tube	Stainless steel 1.4401 (316)
	Spindle packing	PTFE
	Spindle	Stainless steel 1.4401 (316) / 1.4404 (316L)
	Spindle guidance	Stainless steel 1.4404 (316L)
	Control cone	Stainless steel 1.4571
	Spring straight pin	Stainless steel 1.4310
	Control cone seal	Stainless steel 1.4571 / PTFE or PEEK disc for soft seat sealing
	Valve body	Cast stainless steel 316L

Materials



1	**Cover**	PC
2	**Body casing**	Stainless steel
3	**BASIC body**	PPS
4	**Plug M12**	Stainless steel
5	**Screws**	Stainless steel
6	**Threaded ports G 1/8**	Stainless steel
7	**Sealing**	EPDM

Connection multipole



Circular connector M12 - 8-pins (setpoint)

Pin	Configuration
8	Setpoint + (0/4 - 20 mA / 0 - 5/10 V)
7	Setpoint GND

Circular connector M12 - 8-pins (in / output signal)*

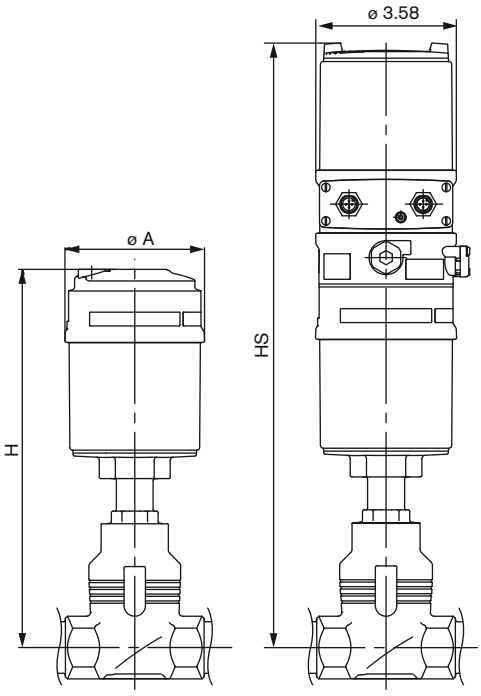
Pin	Configuration
6	Analogue feedback +
5	Analogue feedback GND
4	Binary output 1
3	Binary output 2
2	Binary output GND
1	Binary input +

* with the option analogue feedback or binary output

Circular connector M12 - 4-pins (supply)

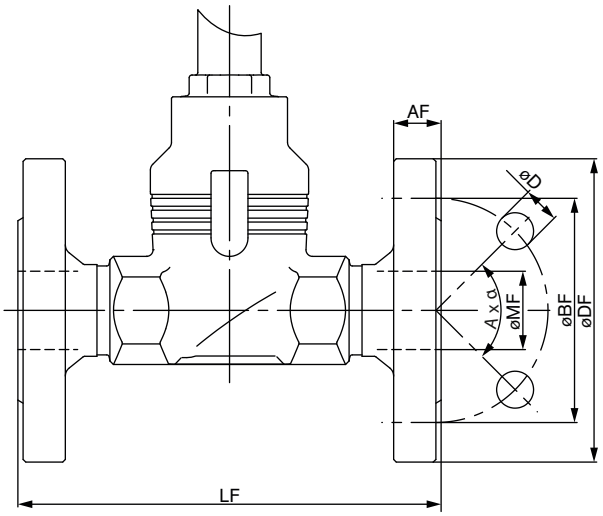
Pin	Configuration
1	Operating voltages + 24 V DC
3	Operating voltage GND

Dimensions valve actuator/controller



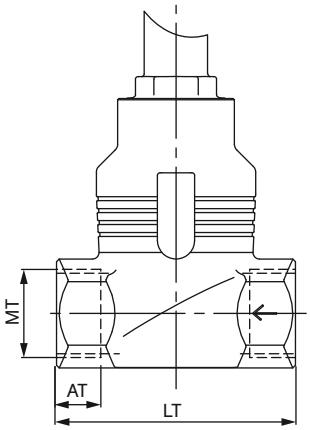
Port size (tube)	Actuator size (mm)	Ø A	H	HS with 8692
1/2	70	3.583	9.409	15.079
3/4	70	3.583	9.646	15.315
1	90	4.724	11.850	17.520
1-1/2	130	6.260	15.197	20.866
2	130	6.260	15.433	21.102
2-1/2	130	6.260	17.559	23.228
3	130	6.260	17.874	23.543
4	130	6.260	18.268	23.937

Body valve Continuous ELEMENT Type 2301



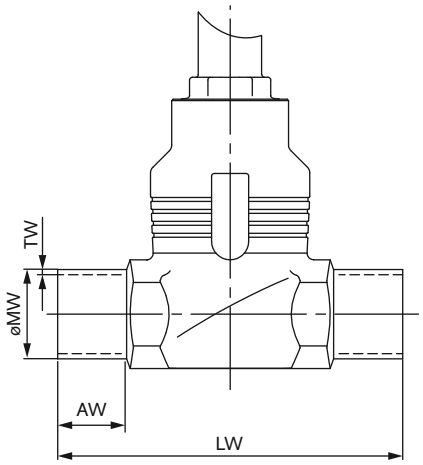
Port size (tube) [inch]	Actuator size [mm]	ANSI B 16.5 Class 150					
		Ø DF	LF	Ø BF	AF	Ø D	Ø MF
1/2	70	3.504	7.244	2.382	0.441	0.618	0.618
3/4	70	3.898	7.244	2.752	0.5	0.618	0.819
1	90	4.252	7.244	3.118	0.559	0.618	1.051
1-1/2	130	5.0	8.740	3.882	0.689	0.618	1.051
2	130	5.984	10.0	4.752	0.752	0.752	2.071
2-1/2	130	7.008	10.866	5.5	0.878	0.752	2.48
3	130	7.48	11.732	6.004	0.941	0.752	3.071
4	130	9.016	13.858	7.5	0.941	0.752	4.016

Thread port connection - NPT (ASME B 1.20.1)



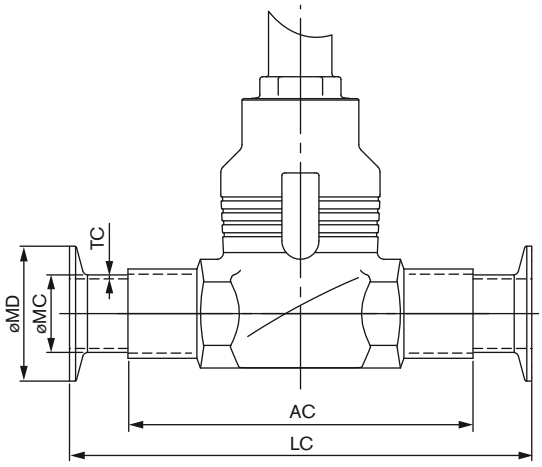
Port size MT NPT	Actuator size [mm]	LT	AT NPT
1/2	70	2.559	0.539
3/4	70	2.953	0.551
1	90	3.543	0.661
1-1/2	130	4.724	0.681
2	130	5.906	0.693
2-1/2	130	7.283	0.933

Weld end port connection - ASME BPE



Port size (tube) [inch]	Actuator size [mm]	AW	LW	ASME BPE	
				Ø MW	TW
1/2	70	0.787	3.543	0.500	0.065
3/4	70	0.787	3.543	0.750	0.065
1	90	0.787	3.937	1.0	0.065
1-1/2	130	1.024	5.512	1.5	0.065
2	130	1.024	5.906	2.0	0.065
2-1/2	130	1.024	6.89	2.5	0.065
3	130	1.024	8.268	3.0	0.065
4	130	1.024	10.236	4.0	0.079

Clamp port connection



Port size (tube) [inch]	Actua-tor size [mm]	AC	LC	Clamp: ASME BPE		
				Ø MW	TW	TC
1/2	70	3.543	4.961	0.5	0.984	0.065
3/4	70	3.937	5.354	0.75	0.984	0.065
1	70	3.937	6.811	1.0	1.988	0.065
1-1/2	130	5.906	7.598	1.5	1.988	0.065
2	130	6.89	8.583	2.0	2.52	0.065

Ordering chart Globe Control Valve Type 2301

Flange & NPT connections

Port Size (tube)		Seat size		Actuator size Ø	Cvs-value	Item no. ANSI B 16.5 flange		Item no. NPT	
						Seal/Cone		Seal/Cone	
[mm]	[inch]	[mm]	[inch]	[mm]	[gpm]	PTFE/ St.st.	St.st./ St.st	PTFE/ St.st.	St.st./ St.st
15	1/2	15	0.59	70	5	338 037	337 323	337 384	467 880
20	3/4	20	0.79	70	8.26	338 038	337 324	338 073	337 413
25	1	25	0.98	90	13.95	338 039	337 338	467 881	337 134
40	1 1/2	40	1.6	130	27.67	338 042	337 339	338 075	337 414
50	2	50	2.0	130	43	338 045	467 872	338 124	337 416
65	2 1/2	65	2.6	130	75.6	338 049	333 067	338 216	337 419
80	3	80	3.2	130	116.28	338 070	333 059	-	-
100	4	100	3.9	130	162.79	338 072	337 340	-	-

Flow direction below the seat, Control function A (NC)

OD TUBE BW & Clamp Connections

Port Size (tube)		Seat size		Actuator size Ø	Cvs-value	Item no. ASME BPE OD Tube		Item no. ASME BPE clamp	
						Seal/Cone		Seal/Cone	
						PTFE/ St.st.	St.st./ St.st	PTFE/ St.st.	St.st./ St.st
[mm]	[inch]	[mm]	[inch]	[mm]	[gpm]	Connection MW x TW		Connection MC x TC, TC	
15	1/2					0.5 x 0.065		0.5 x 0.065, 0.984	
		10	0.39	70	3.6	338 227	337 316	-	-
		15	0.59	70	5	-	-	338 255	333 093
20	3/4					0.75 x 0.065		0.75 x 0.065, 0.984	
		15	0.59	70	5	338 234	337 317	337 288	338 257
25	1					1.0 x 0.065		1.0 x 0065, 1.988	
		20	0.79	70	8.26	338 239	336 479	337 289	338 249
40	1 1/2					1.5 x 0.065		1.5 x 0.065, 1.988	
		32	1.3	130	20.7	338 242	336 459	337 290	338 259
50	2					2.0 x 0.065		2.0 x 0.065, 2.52	
		40	1.6	130	27.67	336 462	336 474	338 256	338 253
65	2 1/2					2.5 x 0.065			
		50	2.0	130	43.02	338 244	338 223	-	-
80	3					3.0 x 0.065			
		65	2.6	130	75.58	338 246	337 320	-	-
100	4					4.0 x 0.079			
		100	3.9	130	162.79	338 248	336 350	-	-

Flow direction below the seat, Control function A (NC)

Ordering chart accessories

Description	Item no.
M12 socket, 8-pins, 5m assembled cable	919 267
M12 socket, 4-pins, 5m assembled cable	918038
Silencer G1/8 (spare part)	788934
Sensor puck (spare part)	682 240
G1/8 X 1/4" push tube connector (spare part)	98132544

All valve systems come pre-assembled and tested. 1/4" push tube connections and air mufflers are also included.

One M12 socket, 8-pin cable and one M12 socket, 4-pin is required. See accessories chart for ID#.

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