



Manually operated 2-way angle seat control valve

- Excellent control accuracy combined with high flow capacity
- Also suitable for demanding operating conditions
- Robust actuator with optional stroke limitation and locking
- Stainless steel valve body with socket, clamp or welded connection

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

Can be combined with

	Type 2300 Pneumatically operated 2-way angle seat control valve ELEMENT ▶
	Type 3360 Electromotive 2-way angle seat control valve ▶
	Type 2920 Manually operated 2/2-way angle seat valve ▶
	Type 2961 Manually operated 2-way globe control valve ▶
	Type 8802 ELEMENT continuous control valve systems – overview ▶
	Type 8840 Modular process valve cluster – distributor and collector ▶

Type description

The Type 2960 control valve consists of a manual actuator and an angle seat valve body made of high-quality stainless steel. A parabolic cone enables a flow capacity that is up to 35 % higher compared to conventional control valves. The precise spindle guide enables control, even under demanding operating conditions. A soft PTFE or PEEK seal guarantees reliable sealing. The actuator is made of high-quality plastic and is suitable for use in demanding environments. It possesses a visual position indicator and can be optionally equipped with stroke limitation and locking. The spindle seal uses tried-and-tested V-seals and possesses spring compensation, which means that it does not need to be pulled back manually.

1. General technical data

Product properties	
Dimensions	Further information can be found in chapter "4. Dimensions" on page 7.
Material	Further information can be found in chapter "3. Materials" on page 6.
Design	Angle seat control valve
Nominal diameter	DN 10...DN 65, NPS ¾...NPS 2½
Flow direction	Flow to open (below seat)
Performance data	
Operating pressure	0 bar(g)...25 bar(g), see "5.1. Fluidic data" on page 11
Nominal pressure	PN 25 (DIN EN 1333), Class 150 (DIN EN 1759)
Seat leakage	According to DIN EN 60534 - 4:2006, see "5.1. Fluidic data" on page 11
Leakage class III	Stainless steel
Leakage class VI	PTFE and PEEK
K _v value	5 m³/h...90 m³/h, see "5.1. Fluidic data" on page 11
Operating characteristic	Modified equal percentage
Medium data	
Process medium	Steam, neutral gases, water, alcohol, oils, fuels, hydraulic fluids, salt solutions, alkalis, organic solvents
Medium temperature	-40 °C...230 °C, see "5.2. Operating limits" on page 12
Viscosity	Max. 600 mm²/s
Process/Port connection & communication	
Port connection	
Threaded connection	G (DIN ISO 228 - 1) NPT (ASME B1.20.1) RC (ISO 7 - 1)
Welded connection	DIN EN ISO 1127 / ISO 4200 / DIN 11866 series B DIN 11850 - 2 / DIN 11866 series A ASME BPE / DIN 11866 series C SMS 3008
Clamp connection	DIN 32676 series B (pipe: ISO 4200) DIN 32676 series A (pipe: DIN 11850 - 2) ASME BPE
Approvals and conformities	
Further information can be found in chapter "2. Approvals and conformities" on page 4.	
Environment and installation	
Ambient temperature	-10 °C...+60 °C
Installation position	As required, preferably with actuator in upright position

2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available versions can be supplied with the below mentioned approvals or conformities.

2.2. Conformity



In accordance with the Declaration of Conformity, the product is compliant with the EU Directives. This includes the following directives:

- Pressure Equipment Directive 2014/68/EU


2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.


2.4. Explosion protection

Approval	Description			
 	Optional: Explosion protection As a category 2 device suitable for zone 1/21 and zone 2/22 (optional).			
	ATEX: EPS 18 ATEX 2 008 X II 2G Ex h IIC T4...T2 Gb II 2D Ex h IIIC T135 °C...T300 °C Db			
	IECEx: IECEx EPS 18.0007 X Ex h IIC T4...T2 Gb Ex h IIIC T135 °C...T300 °C Db			
	Temperature class	T2	T3	T4
	Permissible surface temperature	+ 300 °C	+ 200 °C	+ 135 °C
	Ambient temperature	- 10...+ 60 °C	- 10...+ 60 °C	- 10...+ 60 °C
Restrictions from the device				
Maximum medium temperature		+ 230 °C	+ 185 °C	+ 125 °C
Restrictions from the device				

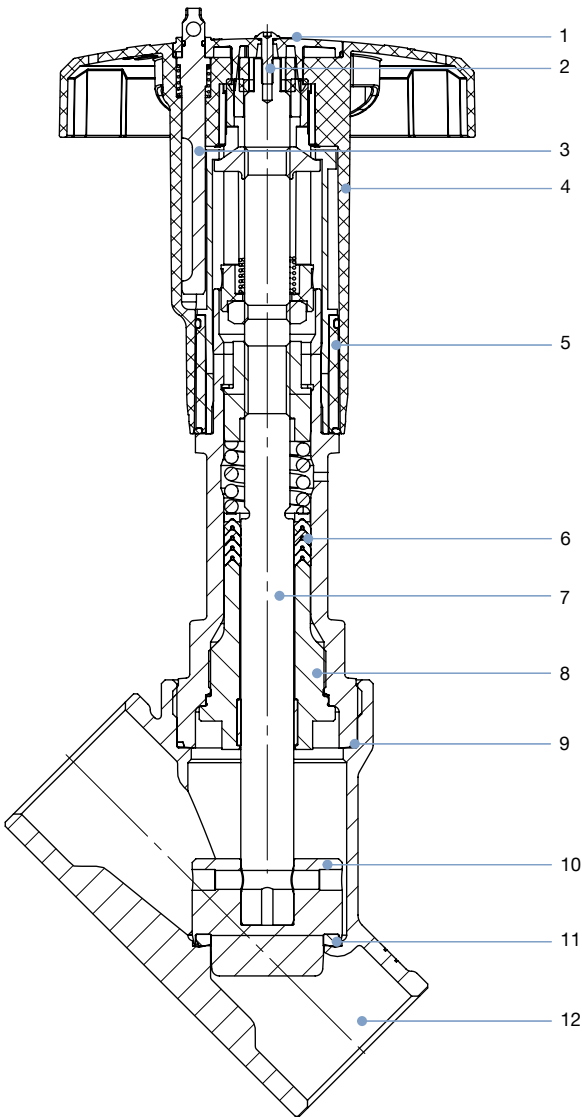
2.5. Drinking water

Conformity	Description
	Suitable for use in drinking water applications The materials comply with the assessment principles (UBA) for materials in contact with drinking water (TrinkwasserV).
	Stainless steel body PF39: Suitable for products with medium temperature up to 85 °C (hot water)

2.6. Foods and beverages/Hygiene

Conformity	Description
FDA	FDA – Code of Federal Regulations (valid for the variable code PL02) All wetted materials are compliant with the Code of Federal Regulations published by the FDA (Food and Drug Administration, USA) according to the manufacturer's declaration.
	EC Regulation 1935/2004 of the European Parliament and of the Council (valid for the variable code PL01, PL02) All wetted materials are compliant with EC Regulation 1935/2004/EC according to the manufacturer's declaration.

3.2. Material specifications

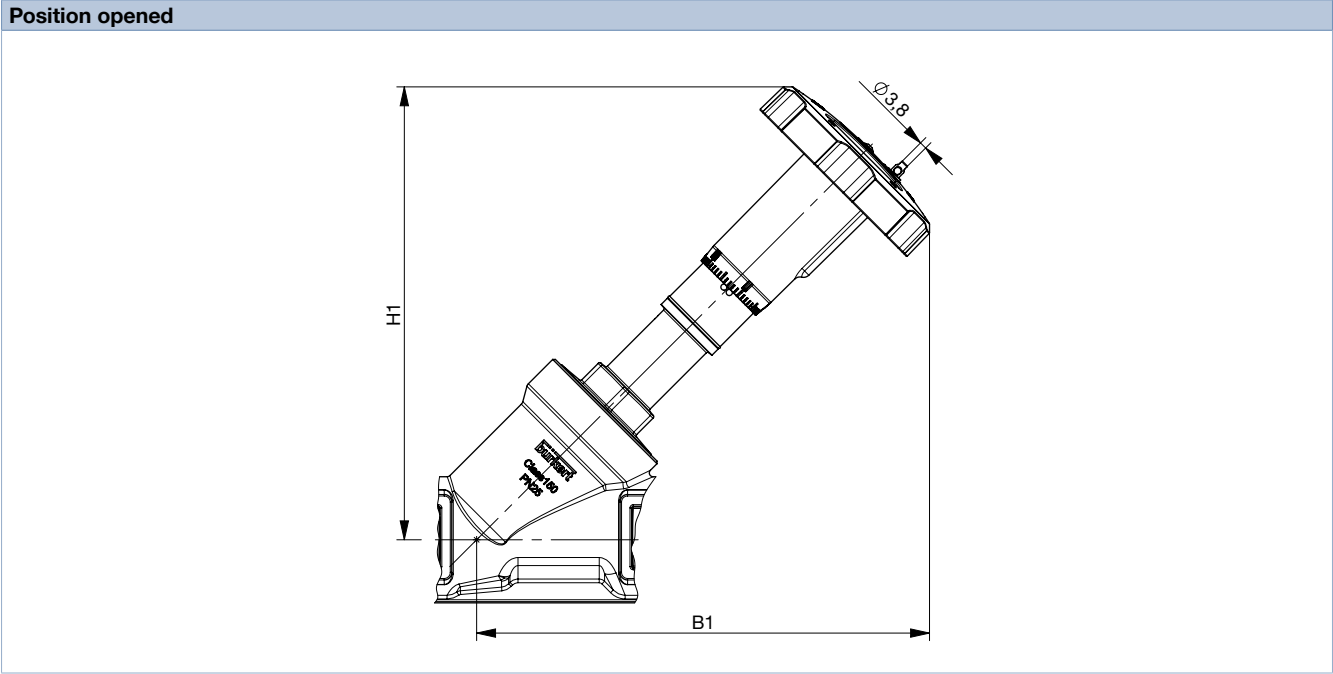


No.	Element	Material
1	Cover	Polyamide (PA)
2	Screw	Stainless steel 1.4301
3	Lock pin	Stainless steel 1.4305
4	Handwheel	Polyphenylene sulfide (PPS)
5	Optical position indicator with scale	Polyamide (PA)
6	Spindle seal	PTFE V-rings (filled), with spring compensation
7	Spindle	Stainless steel 1.4401 or 1.4404
8	Spindle guide	Stainless steel 1.4404 (316L), PTFE filled
9	Body seal	Graphite
10	Control cone	1.4571 (optionally hardened)
11	Seat seal (optional)	PTFE or PEEK
12	Valve body	Stainless steel 316L/CF3M

4. Dimensions

4.1. Actuator

Note:
Dimensions in mm

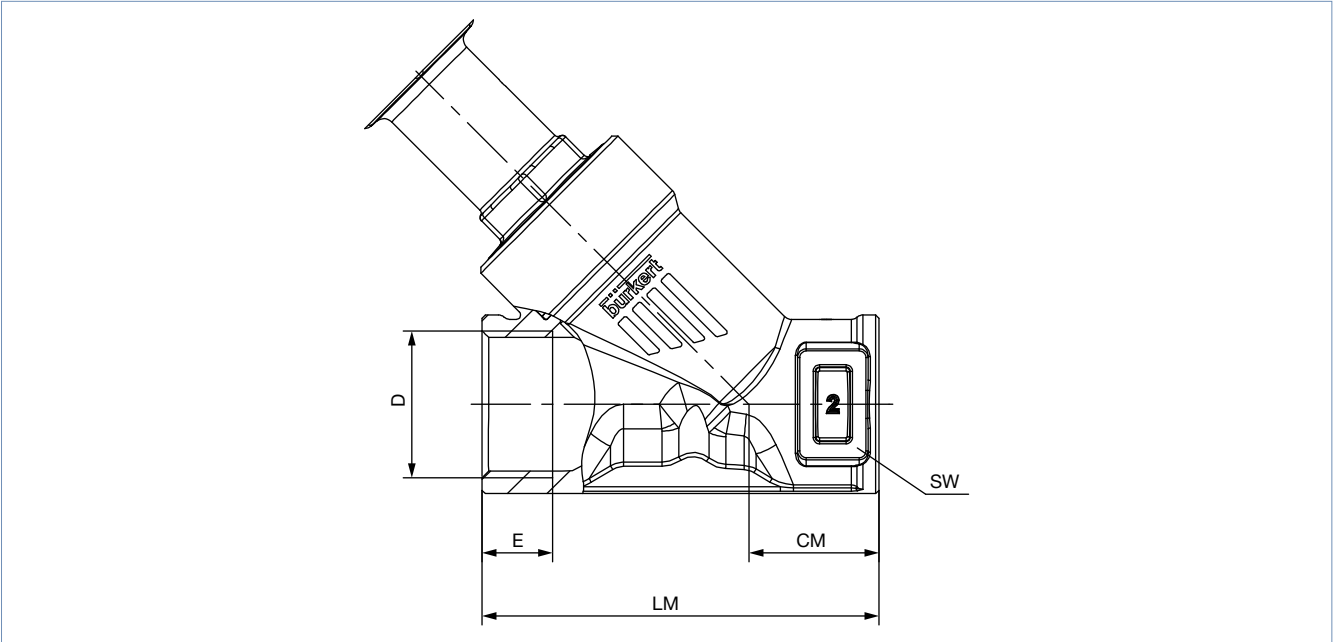


Nominal connection size (pipe)		Handwheel diameter Ø	B1 ^{1.)}	H1 ^{1.)}
DN	NPS	[mm]		
15	½	45 (S)	148	148
20	¾	45 (S)	154	154
25	1	45 (S)	163	163
32	1¼	110 (M)	224	224
40	1½	110 (M)	224	224
50	2	110 (M)	241	241
65	2½	160 (L)	290	290

1.) The dimensions for B and H are maximum dimensions and may be up to 6 mm less, depending on the nominal diameter and standard.

4.2. Body with threaded connection

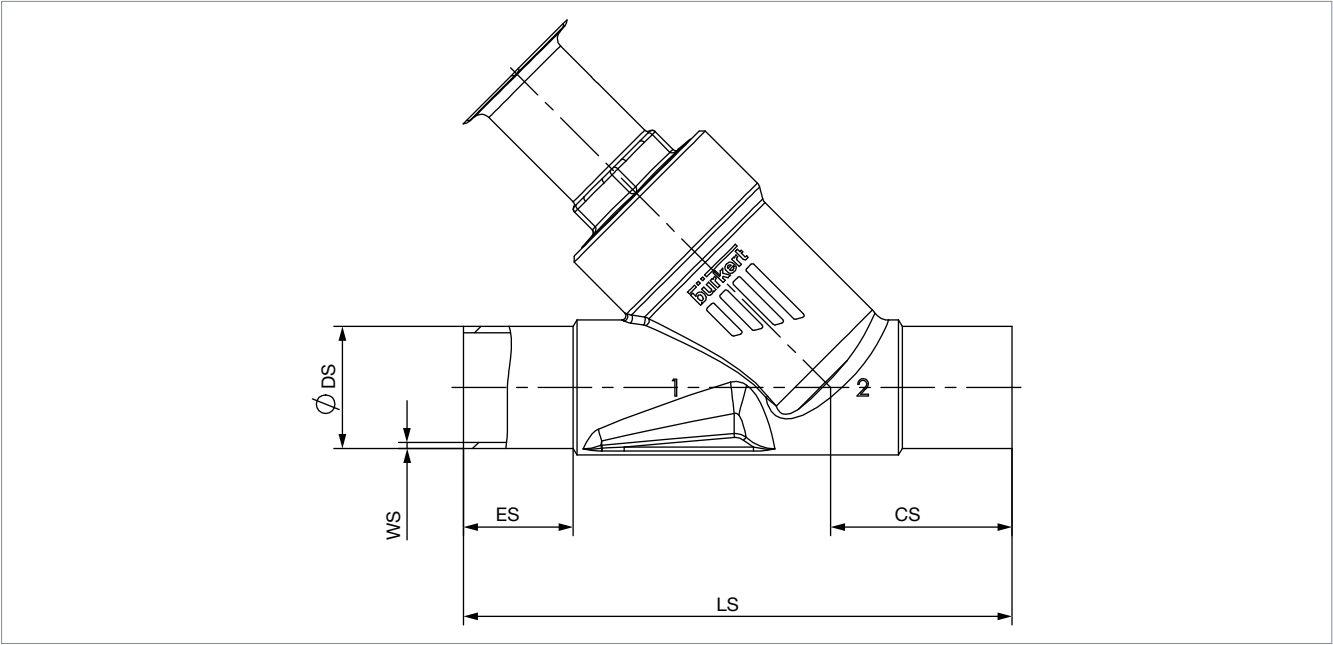
Note:
Dimensions in mm



Nominal diameter (pipe)	G (DIN ISO 228 - 1), NPT (ASME B 1.20.1), Rc (ISO7 - 1)					CM	LM	SW
	D	E						
DN	NPS	[G]	[NPT]	[Rc]				
15	½	14	13.7	13.2		24	65	27
20	¾	16	14.0	14.5		27	75	34
25	1	18	16.8	16.8		29.5	90	41
32	1¼	16	17.3	19.1		36	110	50
40	1½	18	17.3	19.1		35	120	55
50	2	24	17.6	23.4		45	150	70
65	2½	26	23.7	26.7		57	185	85

4.3. Body with welded connection

Note:
Dimensions in mm

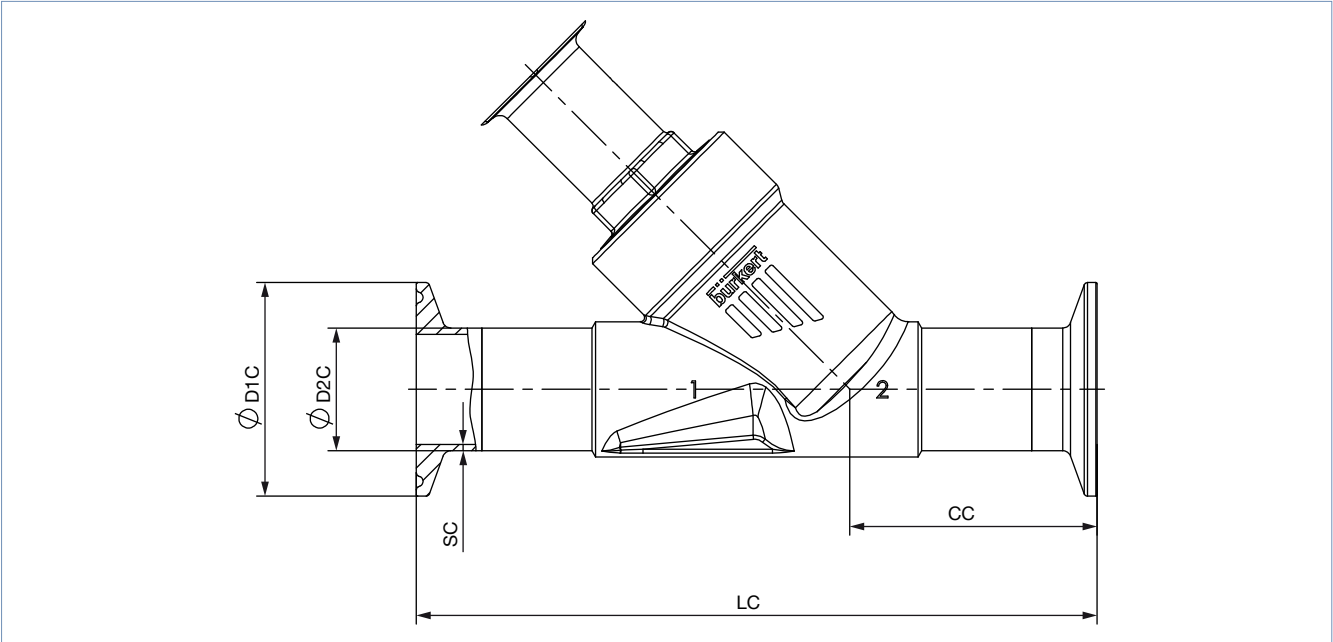


Nominal diameter (pipe)	DIN EN ISO 1127 ISO 4200 DIN 11866 B					DIN 11850 2 DIN 11866 A				
DN	ES	CS	LS	Ø DS	WS	ES	CS	LS	Ø DS	WS
15	19	34	100	21.3	1.6	19	34	100	19	1.5
20	20	39	115	26.9	1.6	20	39	115	23	1.5
25	26	43	130	33.7	2.0	26	43	130	29	1.5
32	26	45	145	42.4	2.0	26	45	145	35	1.5
40	26	49	160	48.3	2.0	26	49	160	41	1.5
50	26	50	175	60.3	2.0	26	50	175	53	1.5
65	26	50	210	76.1	2.3	26	50	210	70	2

Nominal diameter (pipe)	ASME BPE DIN 11866 C				
NPS	ES	CS	LS	Ø DS	WS
½	30	46	135	12.7	1.65
¾	30	52	145	19.05	1.65
1	30	51	152	25.4	1.65
1½	30	60	182	38.1	1.65
2	30	64	210	50.8	1.65
2½	26	56	230	63.5	1.65

4.4. Body with clamp connection

Note:
Dimensions in mm



Nominal diameter (pipe)	Clamp: DIN 32676 B					Clamp: DIN 32676 A (DN 15, similar to DIN 32676 B)				
	Pipe: DIN EN ISO 1127 ISO 4200 DIN 11866 B					Pipe: DIN 11850 2 DIN 11866 A				
DN	LC	CC	Ø D1 C	Ø D2 C	SC	LC	CC	Ø D1 C	Ø D2 C	SC
15	156	49.0	50.5	21.3	1.6	130	49.5	34.0	19	1.5
20	150	56.5	50.5	26.9	1.6	150	57.0	34.0	23	1.5
25	160	58.0	50.5	33.7	2.0	160	58.5	50.5	29	1.5
32	200	57.5	50.5	42.4	2.0	180	58.0	50.5	35	1.5
40	200	69.0	64.0	48.3	2.0	200	69.5	50.5	41	1.5
50	230	77.5	77.5	60.3	2.6	230	78.0	64.0	53	1.5

Nominal diameter (pipe)	Clamp: ASME BPE				
	Pipe: ASME BPE DIN 11866 C				
NPS	LC	CC	Ø D1 C	Ø D2 C	SC
½	130	49.0	25.0	12.7	1.65
¾	150	56.5	25.0	19.05	1.65
1	160	58.0	50.5	25.4	1.65
1½	200	69.0	50.5	38.1	1.65
2	230	77.5	64.0	50.8	1.65

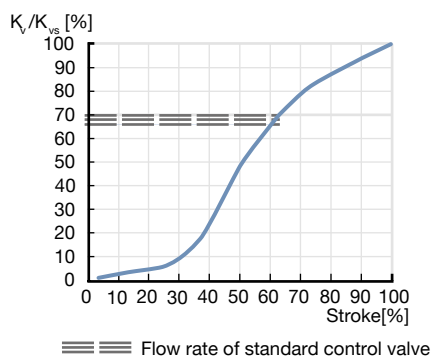
5. Performance specifications

5.1. Fluidic data

Flow characteristics

Note:

- Modified equal percentage flow characteristic.
- Higher flow values compared to globe control valves



Overview of fluidic data for flow below seat (for liquids, steam and gases)

Note:

- K_v value [m^3/h]: measurement with water according to DIN EN 60534-2-4
- Seat leakage according to DIN EN 60534-4
- See [“7.2. Bürkert product filter”](#) on page 15

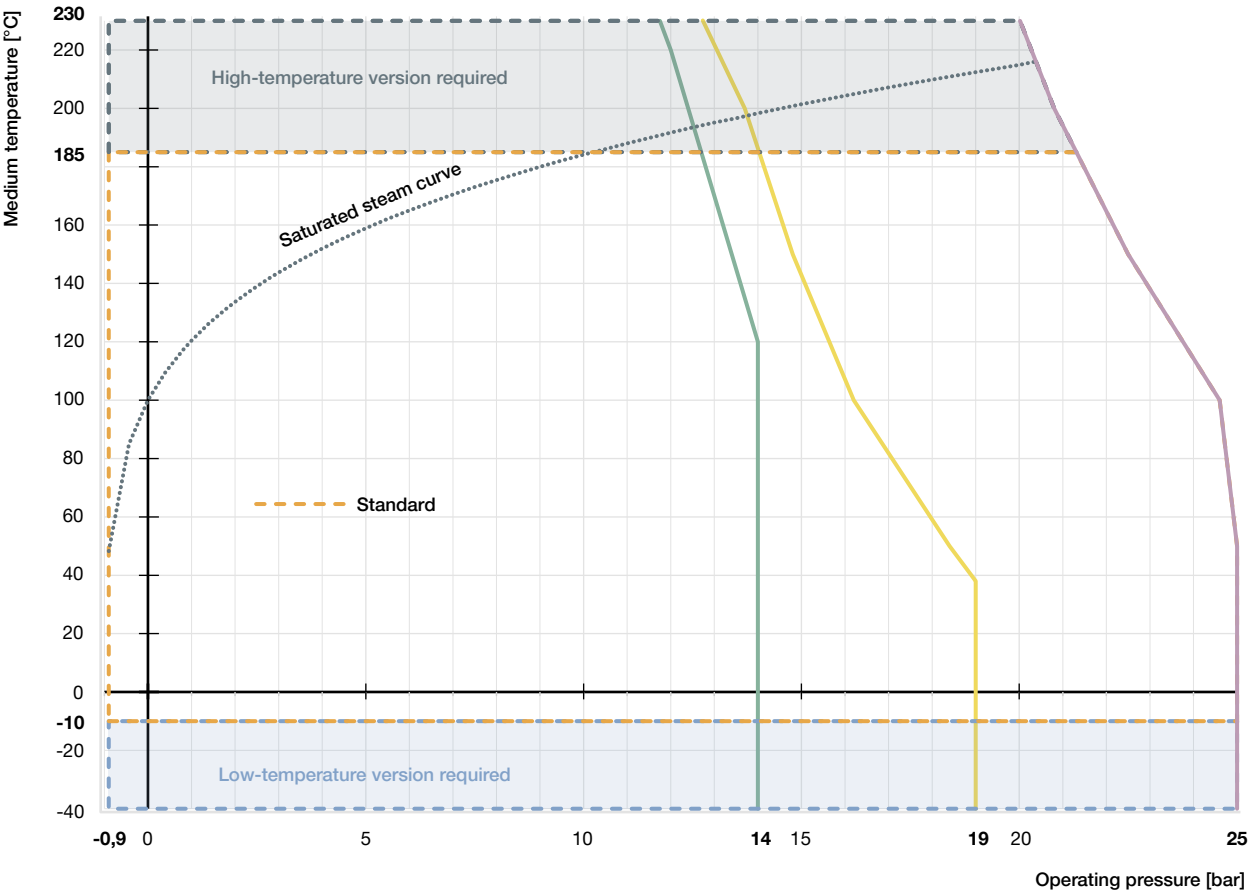
Nominal diameter (pipe)		Hand-wheel diameter Ø	Operating pressure max. leakage class)			K _v value at stroke [m³/h]											K _{vs} value
			Valve seat seal														
			Stain-less steel	PTFE	PEEK												
DN	NPS	[mm]	[bar(g)]	[bar(g)]	[bar(g)]	5 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	[m³/h]	
ASME BPE (12.7 mm x 1.65 mm / 0.5" x 0.065")																	
15	½	45 (S)	25 (III)	25 (VI)	25 (VI)	0.22	0.24	0.30	0.56	1.2	1.5	1.6	1.6	1.6	1.6	1.6	
All standards																	
15	½	45 (S)	25 (III)	25 (VI)	25 (VI)	0.16	0.17	0.22	0.40	1.2	2.7	3.5	4.0	4.5	4.8	5.0	
20	¾	45 (S)	25 (III)	25 (VI)	25 (VI)	0.26	0.27	0.40	1.1	4.0	5.9	7.2	8.3	9.1	9.6	10.0	
25	1	45 (S)	25 (III)	25 (VI)	25 (VI)	0.34	0.36	0.62	1.5	5.2	8.9	11.5	13.0	14.2	15.4	16.0	
32	1 ¼	110 (M)	25 (III)	25 (VI)	25 (VI)	0.43	0.52	0.82	1.4	4.0	9.3	13.8	16.4	19.2	21.5	23.0	
40	1 ½	110 (M)	25 (III)	25 (VI)	25 (VI)	0.48	0.66	1.4	5.1	14.0	20.0	24.5	28.5	31.5	34.5	36.0	
50	2	110 (M)	25 (III)	25 (VI)	20 (VI)	0.87	1.2	1.8	4.0	15.2	26.0	35.0	40.5	45.0	48.0	53	
65	2 ½	160 (L)	24 (15) ¹⁾ (III)	24 (15) ¹⁾ (VI)	14 (VI) ¹⁾ (VI)	1.7	2.0	6.5	20.0	35.0	48.0	58	67	75	83	90	

1.) According to pressure equipment directive 97/23/EC for compressible fluids of group 1 (dangerous gases and vapours) according to article 3, number 1.3, letter a, first indent)

5.2. Operating limits

Operating limits for medium temperature and operating pressure

The operating range of Bürkert process valves is limited in addition to the maximum operating pressures by the nominal pressure according to the relevant standard.



- Operating limits for PN25 according to DIN EN 12516-1
- Operating limits for flange 10K according to JIS B 2220
- Operating limits for Class 150 according to ASME B16.34
- Saturated steam curve for water

Operating limits seat seal

Tight sealing required	Leakage class (DIN EN 60534 - 4)	Medium temperature	Seat seal
No An additional shut-off valve is recommended.	III (metallic sealing) Metal-sealed valves have larger leakages (0.1 % of the nominal flow rate are permissible). Metal seals are impervious even under demanding process conditions, but can wear more quickly in manually operated actuators due to the rotating spindle during closure.	-40...+230 °C	Stainless steel
Yes An additional shut-off valve is often unnecessary.	VI (soft seals) By using plastics as sealing material, the control valves can close tightly. Their use is not recommended in cases of increased erosion due to demanding process conditions.	-40...+130 °C (recommended for ≤ +130 °C) -10...230 °C (recommended for > +130 °C)	PTFE PEEK

Operating limits for optional versions

High-temperature version

Thanks to an adaption of the spindle sea, this version is suitable for applications with steam, neutral gases and other heat transfer mediums up to +230 °C.

Water version

For applications with water up to +200 °C, a special configuration of the spindle seal increases service life significantly. It is recommended for all water applications.

Drinking water version

The materials comply with the assessment principles (UBA) for materials in contact with drinking water up to +85 °C.

Low-temperature version

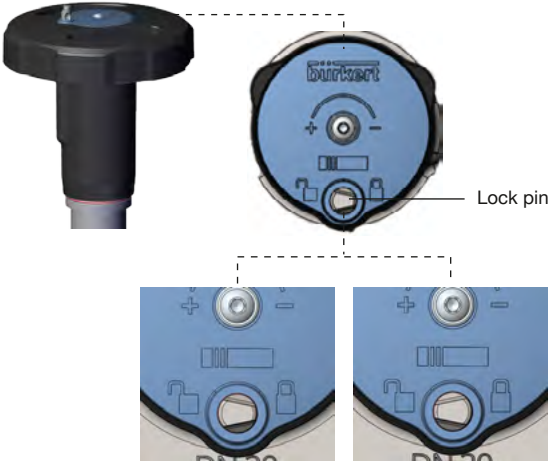
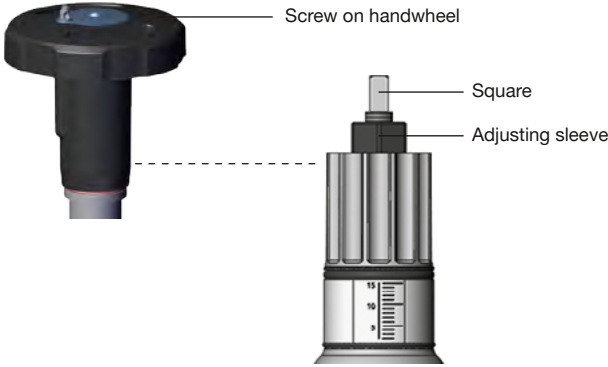
Suitable for minimum medium temperatures down to -40 °C

6. Product design and assembly

6.1. Product features

Note

More detailed information can be found in the **operating instructions Type 2960** ►.

<p>Position indicator</p> <p>When turning the handwheel counterclockwise, the reproducible stroke scale becomes visible between the attachment and the handwheel visible.</p> <p>The scale on the handwheel, together with the stroke scale, enables reproducible adjustment of the flow rate.</p>	 <p>Handwheel with scale</p> <p>Reproducible stroke scale</p>
<p>Interlock (optional)</p> <p>The valve can be secured against unintentional or unauthorized operation.</p> <p>For this purpose, a securing pin can be pressed down and turned.</p> <p>The locking pin has a hole (Ø 3.8) and can be secured with a padlock.</p>	 <p>Lock pin</p> <p>Closed position</p> <p>Open position</p>
<p>Stroke limitation (optional)</p> <p>Both the minimum and the maximum position of the valve can be adjusted via an adjustment sleeve. The handwheel can be removed for this purpose.</p>	 <p>Screw on handwheel</p> <p>Square</p> <p>Adjusting sleeve</p>