bürkert
FLUID CONTROL SYSTEMS

Type 2301

2/2-way globe control valve
2/2-Wege-Geradsitzregelventil
Vanne de réglage à siège droit 2/2 voies

Operating Instructions

Bedienungsanleitung
Manuel d'utilisation

MAN 1000295313 EN Version: GStatus: RL (released | freigegeben) printed: 02.12.2021

We reserve the right to make technical changes without notice.
Technische Änderungen vorbehalten.
Sous réserve de modifications techniques.

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1 OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user and make them available to every new owner of the device.

The operating instructions contain important safety information.

Failure to observe these instructions may result in hazardous situations.

- The operating instructions must be read and understood.

1.1 Definition of terms/abbreviations

The term “device” used in these instructions always refers to the Type 2301 globe control valve.

The abbreviation “Ex” used in these instructions always stands for “explosion-proof”.

In these instructions, the unit bar stands for relative pressure. The absolute pressure is stated separately in bar(abs).

1.2 Symbols

DANGER!

Warns of an immediate danger.

- Failure to observe these instructions will result in death or serious injuries.

WARNING!

Warns of a potentially hazardous situation.

- Failure to observe these instructions may result in serious injuries or death.

CAUTION!

Warns of a potential danger.

- Failure to observe these instructions may result in moderate or minor injuries.

NOTE!

Warns of damage.

Important tips and recommendations.

Refers to information in these operating instructions or in other documentation.

- Designates instructions to avoid a danger.

→ Designates a procedure which you must carry out.

2 INTENDED USE

Unauthorised use of the Type 2301 globe control valve may be dangerous to people, nearby equipment and the environment.

- The device is designed to control the flow of liquid and gaseous media. It can only be operated in combination with a corresponding control unit.
- In potentially explosive environments, the Type 2301 globe control valve must only be used in accordance with the specifications on the separate Ex-type label. The additional information and safety instructions relating to Ex areas enclosed with the device must be adhered to when deploying the device.
- Devices without a separate Ex type label must not be used in the potentially explosive atmosphere.
- To use the device, observe the permitted data, operating conditions and application conditions. These specifications can be found in the contract documents, the operating instructions and on the type label.
- Protect device from harmful environmental influences (radiation, air humidity, fumes, etc.). For any matters requiring clarification, contact the relevant sales department.
- Prerequisites for safe and trouble-free operation are correct transportation, correct storage, installation, start-up, operation and maintenance.
- Use the device only in conjunction with third-party devices and components recommended or approved by Bürkert.
- Use the device only as intended.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances and events which occur during installation, operation and maintenance. The operator is responsible for observing the location-specific safety regulations, also with reference to personnel.

DANGER!

Risk of injury due to high pressure and escaping medium.

- Before working on the system or device, switch off the pressure and vent or empty the lines.

Risk of injury due to electric shock (with installed electrical components).

- Before working on the device or system, switch off the power supply. Secure against reactivation.
- Observe the applicable accident prevention and safety regulations for electrical devices.

WARNING!

Risk of injury when opening the actuator.

The actuator contains a spring under tension. When the actuator is opened, the spring will jump out and may cause injuries.

- Do not open the actuator.

Risk of injury due to moving parts in the device.

- Do not reach into openings in the device.

Danger due to loud noises.

- Depending on the usage conditions, the device may generate loud noises. Detailed information on the probability of loud noises is available from the respective sales department.
- Wear hearing protection when in the vicinity of the device.

CAUTION!

Risk of burns or fire from hot device surfaces due to prolonged operation.

- Only touch the device when wearing protective gloves.
- Keep the device away from highly flammable substances and media.

Discharge of medium if packing gland worn.

- Relief bore must be regularly inspected for any medium leakages.
- If the medium is hazardous, secure the area around the leakage to prevent risks.

General hazardous situations.

To prevent injuries, observe the following:

- Secure device or system to prevent unintentional activation.
- Only trained technicians may perform installation and maintenance work.
- Perform installation work and maintenance work using suitable tools only.
- Following interruption of the process, ensure that the process is restarted in a controlled manner. Observe the sequence:
  1. Apply electrical or pneumatic supply.
  2. Charge with medium.
- Use the device only when it is in perfect condition and in accordance with the operating instructions.
- For applications planning and operation of the device, observe the plant-specific safety regulations.
- The plant owner is responsible for the safe operation and handling of the plant.
- Observe the general rules of technology.

Please observe the following in order to protect against damage to the device:

- Feed only those media listed in chapter “7 Technical data” into the medium ports.
- Do not place the valve under mechanical stress (e.g. by placing objects on it or standing on it).
- Do not make any external modifications to the valves. Do not paint housing parts or screws.
- Transport, install and dismantle a heavy device only with the aid of a second person and using suitable equipment.
- The exhaust air can be contaminated by lubricants in the actuator.

4 GENERAL NOTES

4.1 Contact addresses

Germany

Bürkert Fluid Control Systems
Sales Center
Christian-Bürkert-Str. 13–17
D-74653 Ingelfingen
Tel. + 49 (0) 7940 - 10-91 111
Fax + 49 (0) 7940 - 10-91 448
E-mail: info@burkert.com

International

The contact addresses can be found on the back pages of the printed operating instructions.

They are also available online at: country.burkert.com

4.2 Warranty

A precondition for the warranty is that the device is used as intended in consideration of the specified operating conditions.

4.3 Information on the Internet

Operating instructions and data sheets for Type 2301 can be found online at: country.burkert.com

5 PRODUCT DESCRIPTION

5.1 General description

The 2/2-way globe control valve Type 2301 is suitable for liquid and gaseous media.

Using neutral gases or air (control media), it controls the flow of water, alcohol, oil, fuel, hydraulic fluid, saline solution, lye, organic solvents and vapour (flow media).

The Type 2301 globe control valve can only be used in combination with a control unit. Possible control units are:
Positioner Type 8692, 8694 and 8696
Process controller Type 8693

5.2 Variants

The Type 2301 globe control valve is available in 2 variants:

- Standard device – **without** separate Ex type label.
  Standard devices must not be used in the potentially explosive area.
- Ex variant – **with** separate Ex type label.
  The Ex variant may be used in the potentially explosive area. The specifications on the separate Ex type label and the additional device information with safety instructions for the Ex area must be followed.

5.3 Properties

- Direct installation of the positioner Type 8692/8694/8696 or process controller Type 8693.

- Optimal valve selection for the application via default 3 Kv values per DN (up to 5 Kv values for ½" DN).
- High seal tightness due to self-adjusting packing gland (spindle seal element).
- Tight-sealing when using the PTFE/PEEK control cone.
- High flow rate values due to the stainless steel valve body that aids in flow.
- Large expansion space above the valve seat that prevents body erosion caused by cavitation.
- Simple and quick replacement of the control cone and the screwed-in valve seat.
- Actuator can be seamlessly rotated by 360°.
- Maintenance-free under normal conditions.

5.4 Technical characteristics

- Body DN: DN10–DN100, valve seat size 3–100
- PN body PN25
- Body ports: Flange connection, threaded connection, welded connection, clamp connection
- Valve body 316L
- The globe series is distinctive for its screwed-in valve seats, which can be replaced to reduce the DN (in particular the control valve).

5.4.1 Options

Control unit
Depending on the requirements, various control unit variants are available.

- Positioner Type 8692, 8694 and 8696
- Process controller Type 8693
- Vacuum
- FDA foodstuff compliance
- DVGW
- ATEX
- Reduced pilot pressure

5.4.2 Device variants

Actuator sizes

The globe control valve is available for the following actuator sizes, depending on the DN:

Housing size DN	Available actuator size ø [mm]			
15	50	70	-	-
20	50	70	90	
25	50	70	90	
32	-		90	130
40			90	130
50			90	130
65			-	130
80				130
100				130

Tab. 1: Actuator sizes

5.5 Intended area of application

Observe the maximum pressure and temperature range on the type label!

- For neutral gases and liquids up to 25 bar.
- Vapour up to 230 °C for steel and PEEK valve seat seal (see chapter “7.4.2”).
  Vapour up to 130 °C for PTFE valve seat seal.
  Hot water up to 200 °C for steel and PEEK valve seat seal (see chapter “7.4.2”).
- Aggressive media.

6 STRUCTURE AND FUNCTION

The Type 2301 globe control valve can only be used in combination with a control unit.

Possible control units are:
Positioner Type 8692, 8694 and 8696
Process controller Type 8693

6.1 Structure

The globe control valve consists of a pneumatically operated piston actuator, a control cone and a 2/2-way globe body.

The control cone is modularly connected to the actuator spindle via a spring-type straight pin, and can thus be quickly replaced.

Nearly all port connections are possible for the body. Threaded connection, welded connection and flange are offered as the standard device.

The valve seats are screwed in. Reduced seat sizes are easy to achieve by replacing the screwed-in valve seats. The flow direction is always below the valve seat.

The description of the control functions (CF) can be found in chapter “6.2.1 Control functions (CF)”.

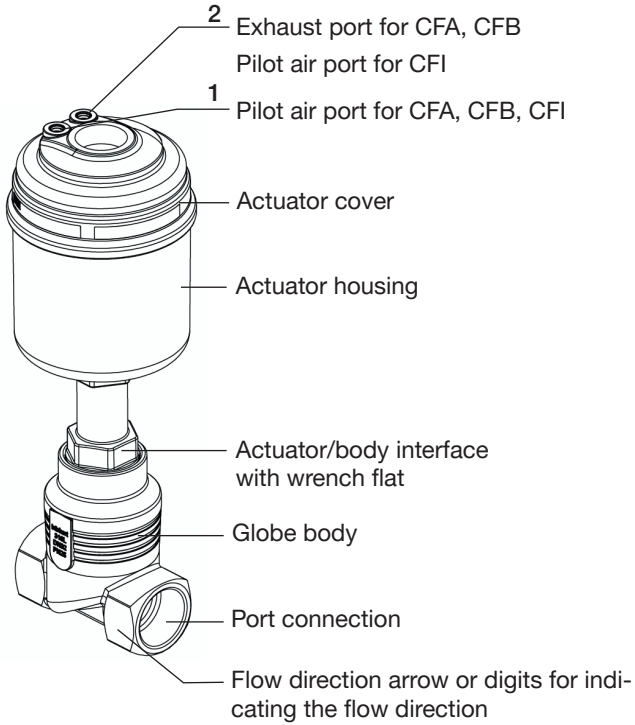


Image 1: Globe control valve Type 2301, structure and description

6.2 Function

The valve seat is always closed against the medium flow.

Spring force (CFA) or pneumatic pilot pressure (CFB and CFI) generate the closing force on the control cone. A spindle connected to the actuator piston transmits the force.

6.2.1 Control functions (CF)

WARNING!

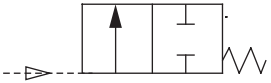
For control function I – risk of pilot pressure failure.

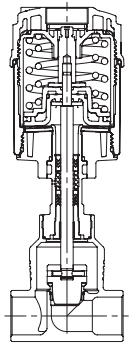
With control function I, the control unit and reset are pneumatic. No defined position is reached during a pressure failure.

- To ensure a controlled restart of the device, first apply pilot pressure and then activate the medium.

Control function A (CFA)

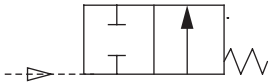
Closed by spring force in rest position

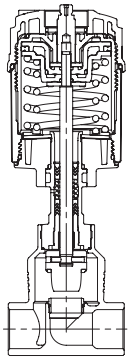




Control function B (CFB)

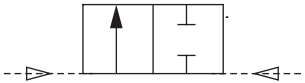
Opened by spring force in rest position

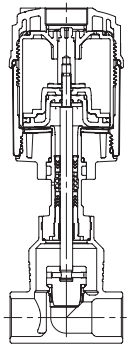




Control function I (CFI)

Actuating function via reciprocal pressurisation.





6.2.2 Flow direction below seat

Depending on the variant, the valve is closed against the medium flow with spring action (CFA) or with pilot pressure (CFB or CFI). Because the operating pressure is below the control cone, it helps open the valve.

WARNING!

Valve seat leak if there is too little minimum pilot pressure or high operating pressure.

Minimum pilot pressure for CFB and CFI that is too low, or failing to meet the permitted operating pressure, can cause a leak in the valve seat.

- Adhere to minimum pilot pressure.
- Do not exceed the operating pressure.
- See chapter “7.4.4 Pressure ranges”.

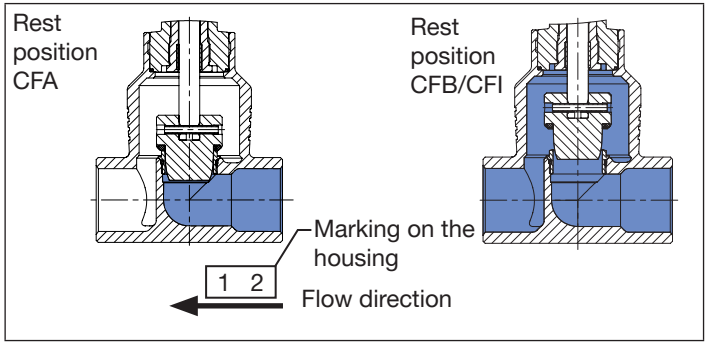


Image 2: Flow direction below seat (closing against medium)

7 TECHNICAL DATA

7.1 Conformity

The Type 2301 globe control valve conforms to the EU directives as per the EU Declaration of Conformity (if applicable).

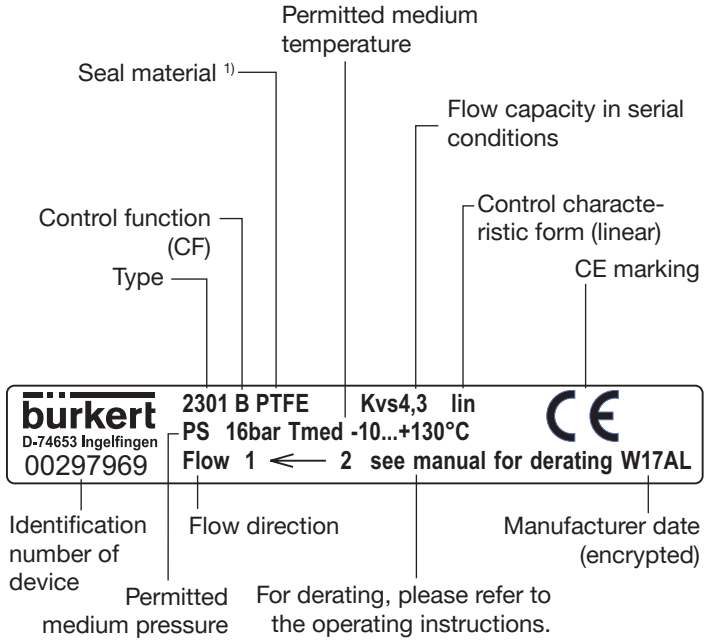
7.2 Standards

The applied standards, which are used to demonstrate conformity with EU Directives, are listed in the EU-type examination certificate and/or the EU Declaration of Conformity (if applicable).

According to Pressure Equipment Directive observe the following operating conditions:

Housing size DN	Maximum pressure for compressible fluids of Group 1 (dangerous gases and vapours according to Art. 3, no. 1.3, letter a, first dash)
DN65	15 bar
DN80	12.5 bar
DN100	10 bar

7.3 Type label



1) *For a variant description see "7.6 General technical data"*

7.4 Operating conditions

Note the permitted ranges on the device type label!

7.4.1 Actuator temperature ranges

Actuator size [mm]	Environment[2)]
ø 50 , ø 70	–10 – +60 °C[3)]
ø 90 , ø 130	–10 – +100 °C[4)]

Tab. 2: Actuator temperature ranges

The globe control valve is suitable for steam sterilisation.

2) *When using a control unit, the max. ambient temperature of these components must be noted and adhered to.*

3) *Pilot air connector as push-in connector*
4) *Control air connector as threaded bushing*

7.4.2 Valve seat seal temperature range

Recommendation for the valve seat seal of leak class III and IV: Steel.

Valve seat seal for leak class VI
For medium temperatures up to max. 130 °C: PTFE
For medium temperature over 130 °C: PEEK

Derating pressure and temperature ranges

Usage limits of the valve (derating operating pressure)

Temperature	Operating pressure
-10 – +50 °C	25 bar
100 °C	24.5 bar
150 °C	22.4 bar
200 °C	20.3 bar
230 °C	19 bar

Tab. 3: Derating the operating pressure as per DIN EN 12516-1/PN25

Temperature	Operating pressure
-29 – +38 °C	19 bar
50 °C	18.4 bar
100 °C	16.2 bar
150 °C	14.8 bar
200 °C	13.7 bar
230 °C	12.7 bar

Tab. 4: Derating the operating pressure as per ASME B16.5/ ASME B16.34 Cl.150

Temperature	Operating pressure
-10 – +50 °C	14 bar
100 °C	14 bar
150 °C	13.4 bar
200 °C	12.4 bar
230 °C	11.7 bar

Tab. 5: Derating the operating pressure as per JIS B 2220 10K

Usage limits of medium and ambient temperature

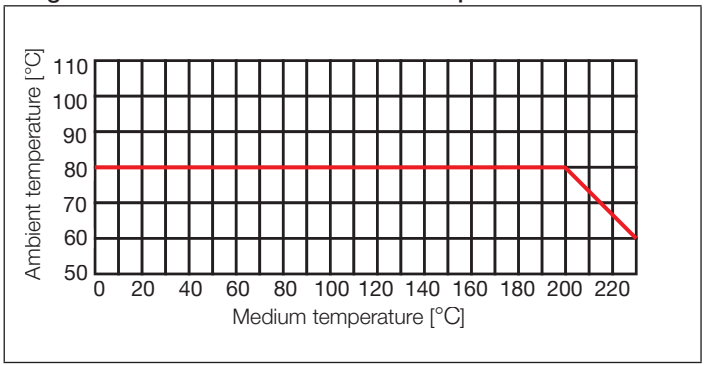


Image 3: Derating ELEMENT ANTG 50, 70, 90, 130

7.4.3 Control medium

In conjunction with pneumatic control units (positioner or process controller), pilot air as per DIN ISO 8573-1 must be used:

- Class 3 (for water content)
- Class 5 (for dust and oil content).

The exact specification is described in the operating instructions for the respective positioner/process controller in the chapter "Technical data".

7.4.4 Pressure ranges

Maximum pilot pressure for valves without a pneumatic control unit

Actuator size [mm]	Max. permitted pilot pressure[5)]
ø 50, 70, 90	10 bar
ø 130	7 bar

Tab. 6: Pilot pressure without a pneumatic control unit

5) *Observe the maximum pressure range on the type label!*

Operating pressure for control function A[6)]

Actuator size [mm]	Body DN	Max. sealed operating pressure [bar]		
		Steel/steel	PTFE/steel	PEEK/steel
ø 50	10/15	16	16	10
	20	10	10	-
	25	5	5	-
ø 70	10/15	25	25	10
	20	16	16	10
	25	12	12	7
ø 90	20/25	25	25	10
	32	16	16	10
	40	12	12	7
	50	7	7	-
ø 130	32/40	25	25	10
	50	25	25	10
	65	16 (15 *)	16 (15 *)	10
	80	10	10	6
	100	6	6	-

** According to the Pressure Equipment Directive for compressible fluids of Group 1 (dangerous gases and vapours according to Art. 3 No. 1.3 letter a, first dash)*

Tab. 7: Operating pressure for CFA

6) *The control functions are described in chapter "6.2.1 Control functions (CF)".*

Variants with lower pilot pressure (reduced spring force) are available on request.

Contact your Bürkert sales department or the Bürkert Sales Center (info@burkert.com).

Required minimum control pressure with control function B depending on operating pressure

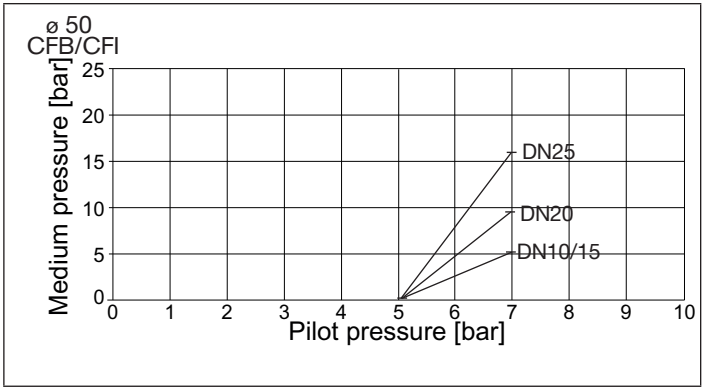


Image 4: Pressure diagram, actuator ø 50 mm, control function B

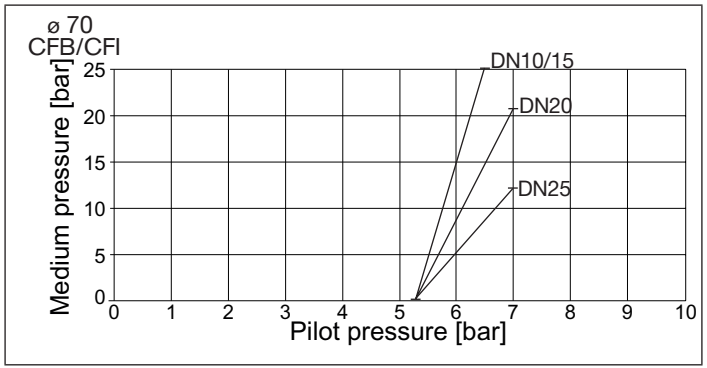


Image 5: Pressure diagram, actuator ø 70 mm, control function B

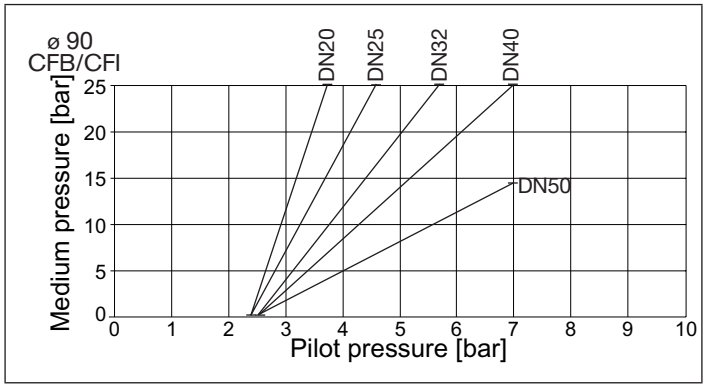


Image 6: Pressure diagram, actuator ø 90 mm, control function B

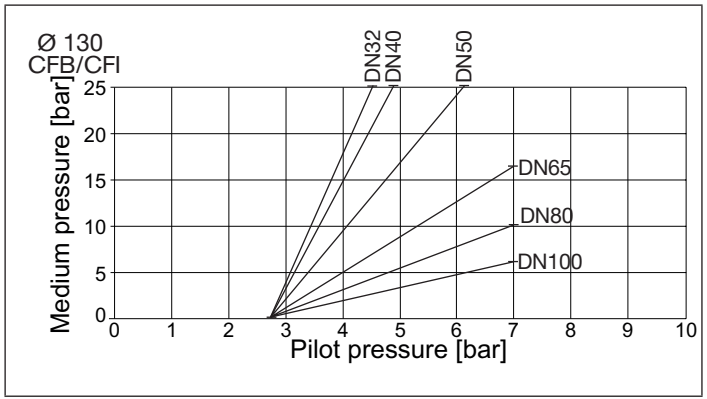


Image 7: Pressure diagram, actuator ø 130 mm, control function B

7.5 Flow values and characteristics

7.5.1 Flow characteristic

Graphical presentation

The detailed values are listed in the following tables.

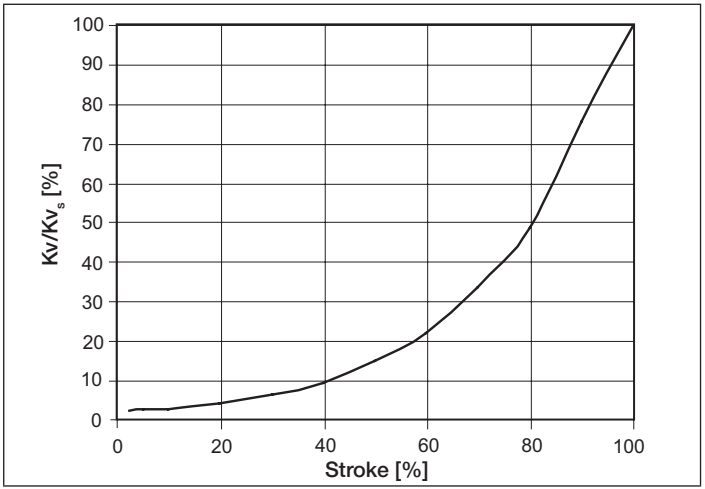


Image 8: Flow characteristic

Notes on the flow characteristic:

- Linear cone for valve seat size 3 to 6
- Cone of equal per cent for valve seat sizes 8 to 100 (valve seat size 6 optional with cone of equal per cent)
- Flow characteristic as per DIN EN 60534-2-4
- Theoretical rangeability (K_{VS}/K_{VO}) for actuator size 70, 90, 130:
  50: 1 for valve sizes 8 to 100
  25: 1 for valve seat size 6
  10: 1 for valve sizes 3 and 4
- K_{VR} value at 5% of the stroke for valve seat sizes > 10
  K_{VR} value at 10% of the stroke for valve seat sizes ≤ 10
  (K_{VR} value = lowest K_V value at which the tilt tolerance as per DIN EN 60534-2-4 is still observed)
- Actuator size 70 offers better control quality over actuator size 50, and is thus preferable.

Flow values

Body DN [mm]	Actuator size [mm]	K_{VS} values													
		Valve seat size													
		3	4	6	8	10	15	20	25	32	40	50	65	80	100
10	50–70	0.10	0.50	1.2	2.0	2.7	-	-	-	-	-	-	-	-	-
15	50–70	0.10	0.50	1.2	2.1	3.1	4.3	-	-	-	-	-	-	-	-
20	50–70		-	-	-	3.2	5.2	7.1	-	-	-	-	-	-	-
25	50–90		-	-	-	-	5.3	7.2	12.0	-	-	-	-	-	-
32	90		-	-	-	-	-	5.5	9.9	13.4	-	-	-	-	-
	130		-	-	-	-	-	8.0	13.0	17.8	-	-	-	-	-
40	90		-	-	-	-	-	-	10.3	14.4	17.5	-	-	-	-
	130		-	-	-	-	-	-	13.6	20.0	24.0	-	-	-	-
50	90		-	-	-	-	-	-	-	15.3	18.0	28.0	-	-	-
	130		-	-	-	-	-	-	-	21.0	25.0	37.0	-	-	-
65	130		-	-	-	-	-	-	-	-	29.0	45.0	65	-	-
80	130		-	-	-	-	-	-	-	-	-	45.0	73	100	-
100	130		-	-	-	-	-	-	-	-	-	-	77	110	140

Tab. 8: K_{VS} values

K_V values

Body DN		Valve seat size		Actuator size	K_V values [m³/h]										
					Stroke [%]										
[mm]	[in]	[mm]	[in]	[mm]	5	10	20	30	40	50	60	70	80	90	100
10	3/8"	3	0.12	50–70	0.001	0.003	0.007	0.015	0.025	0.037	0.052	0.065	0.078	0.090	0.10
		4	1/8"		0.040	0.050	0.10	0.16	0.22	0.27	0.32	0.36	0.40	0.44	0.50
		6	3/16"		0.050	0.12	0.32	0.48	0.62	0.76	0.88	0.98	1.1	1.1	1.2
		8	1/4"		0.060	0.070	0.090	0.12	0.18	0.26	0.42	0.61	0.92	1.5	2.0
		10	3/8"		0.090	0.11	0.13	0.19	0.30	0.48	0.73	1.00	1.6	2.3	2.7
15	1/2"	4	1/8"	50–70	0.040	0.050	0.10	0.16	0.22	0.27	0.32	0.36	0.40	0.4	0.5
		6	3/16"		0.050	0.12	0.32	0.48	0.62	0.76	0.88	0.98	1.1	1.1	1.2
		8	1/4"		0.070	0.080	0.11	0.13	0.19	0.27	0.43	0.63	0.95	1.6	2.1
		10	3/8"		0.090	0.11	0.15	0.19	0.31	0.49	0.75	1.1	1.7	2.5	3.1
		15	1/2"		0.14	0.17	0.22	0.35	0.52	0.80	1.2	1.8	2.7	3.7	4.3
20	3/4"	10	3/8"	50–90	0.11	0.12	0.16	0.20	0.33	0.52	0.77	1.2	1.8	2.6	3.2
		15	1/2"		0.14	0.17	0.22	0.35	0.52	0.80	1.2	1.8	2.9	4.0	5.2
		20	3/4"		0.20	0.25	0.30	0.45	0.70	1.1	1.6	2.4	3.5	5.2	7.1
25	1"	15	1/2"	50–90	0.14	0.17	0.22	0.35	0.52	0.80	1.2	1.8	2.9	4.1	5.3
		20	3/4"		0.20	0.25	0.31	0.47	0.70	1.1	1.6	2.5	3.8	5.4	7.2
		25	1"		0.35	0.38	0.65	1.00	1.50	2.2	3.4	5.1	7.0	9.4	12.0
32	1 1/4"	20	3/4"	90	0.21	0.24	0.33	0.45	0.62	0.85	1.3	1.8	2.6	3.8	5.5
				130	0.22	0.25	0.35	0.50	0.75	1.1	1.6	2.5	3.8	5.8	8.0
		25	1"	90	0.38	0.45	0.65	0.95	1.35	2.0	2.9	4.0	5.6	7.4	9.9
				130	0.40	0.47	0.73	1.1	1.60	2.5	3.7	5.4	7.5	10.3	13.0
		32	1 1/4"	90	0.45	0.58	0.80	1.1	1.70	2.5	3.5	4.9	7.0	10.1	13.4
				130	0.48	0.60	0.85	1.3	2.10	3.1	4.5	6.8	10.2	14.0	17.8

Tab. 9: K_V values port size 10 to 32

Body DN		Valve seat size		Actuator size	K_V values [m^3/h]										
					Stroke [%]										
[mm]	[in]	[mm]	[in]	[mm]	5	10	20	30	40	50	60	70	80	90	100
40	1 1/2"	25	1"	90	0.38	0.48	0.70	0.95	1.4	2.0	3.0	4.1	5.8	7.9	10.3
				130	0.40	0.50	0.75	1.1	1.7	2.6	3.8	5.6	8.0	10.7	13.6
		32	1 1/4"	90	0.45	0.55	0.80	1.1	1.7	2.5	3.6	5.0	7.2	10.8	14.4
				130	0.48	0.60	0.65	1.3	2.1	3.2	4.6	6.9	11.0	15.0	20.0
		40	1 1/2"	90	0.55	0.67	1.00	1.5	2.3	3.2	4.5	6.5	9.5	13.7	17.5
				130	0.60	0.70	1.1	1.7	2.7	4.0	6.0	9.2	13.8	18.2	24.0
50	2"	32	1 1/4"	90	0.45	0.56	0.80	1.1	1.7	2.5	3.6	5.0	7.2	11.4	15.3
				130	0.48	0.60	0.90	1.3	2.1	3.2	4.6	6.9	11.6	16.0	21.0
		40	1 1/2"	90	0.57	0.68	0.90	1.5	2.1	3.2	4.5	6.4	9.5	13.8	18.0
				130	0.60	0.70	1.00	1.7	2.6	4.0	5.9	9.2	14.0	18.9	24.5
		50	2"	90	0.85	1.1	1.7	2.6	3.8	5.4	7.7	11.4	16.0	21.7	28.0
				130	0.90	1.1	1.9	2.9	4.5	6.8	10.5	15.5	22.0	29.3	37.0
65	2 1/2"	40	1 1/2"	130	0.65	0.75	1.1	1.8	2.8	4.3	6.5	10.4	16.0	22.0	29.0
		50	2"	130	1.0	1.2	2.0	3.1	4.8	6.7	9.7	16.0	24.0	35.0	45.0
		65	2 1/2"	130	1.6	2.0	3.0	5.0	8.0	13.5	22.0	33.0	45.0	56	65
80	3"	50	2"	130	1.0	1.2	2.0	3.4	5.3	8.3	13.0	19.0	26.0	35.0	45.0
		65	2 1/2"	130	1.6	2.0	2.9	5.0	8.2	13.0	22.0	35.0	48.0	61	73
		80	3"	130	2.5	3.4	6.3	10.7	16.0	27.0	42.5	58	73	87	100
100	4"	65	2 1/2"	130	1.4	1.8	2.8	5.0	8.8	15.0	25.0	37.0	50	64	77
		80	3"	130	2.2	3.1	5.9	10.3	17.5	30.0	48.0	66	82	97	110
		100	4"	130	3.8	5.2	9.5	15.0	26.0	46.5	67.5	90	111	128	140

Tab. 10: K_V values port size 40 to 100

7.6 General technical data

Control functions (CF)	Valve seat always closes against medium flow
Control function A	Closed by spring force in rest position
Control function B	Opened by spring force in rest position
Control function I	Settings function of the alternating pressurisation (not for actuator size ø 50 mm in combination with Type 8696)
Actuator sizes	ø 50 mm, ø 70 mm, ø 90 mm, ø 130 mm

Materials

Valve body	316L
Actuator	PPS and stainless steel
Sealing elements	FKM and EPDM
Spindle seal (with silicone grease)	PTFE V-rings with spring compensation
Control cone	Control cone with PTFE seal, PEEK seal or steel/steel seal
Spindle	1.4401/1.4404
Spindle guide	1.4401/1.4404/316L

Ports

Pilot air port	prepared for direct coupling

Body ports

Flange:	DIN EN 1092-1, ANSI B 16.5, JIS 10K
Thread:	G, RC, NPT (EN ISO 228-1, ISO 7/1/ DIN EN 10226-2, ASME B 1.20.1)
Welded connection:	EN ISO 1127 row 1/ISO 4200/ DIN 11866 row B, DIN 11850 row 2/DIN 11866 row A/ DIN EN 10357 row A, ASME BPE/DIN 11866 row C, BS 4825-1, SMS 3008
Clamp:	ISO 2852, DIN 32676 row A and row B, ASME BPE/DIN 32676 row C, BS 4825-3

Media

Control medium	Instrument air as per DIN ISO 8573-1
Flow media	Water, alcohols, fuels, hydraulic fluids, saline solutions, lyes, organic solvents
Any	installation position, preferably actuator face up
Degree of protection	IP67 as per IEC 529/EN 60529

8 INSTALLATION

8.1 Safety instructions

DANGER!

Risk of injury from high pressure in the system.

- ▸ Before loosening lines and valves, turn off the pressure and vent the lines.

WARNING!

Risk of injury due to improper installation.

- ▸ Installation may be carried out by authorised technicians only and with the appropriate tools.

Risk of injury due to unintentional activation of the system and uncontrolled restart.

- ▸ Secure the system against unintentional activation.
- ▸ Following installation, ensure a controlled restart.

For control function I – risk of pilot pressure failure.

With control function I, the control unit and reset are pneumatic. No defined position is reached during a pressure failure.

- ▸ To ensure a controlled restart of the device, first apply pilot pressure and then activate the medium.

Risk of injury due to moving parts in the device.

- ▸ Do not reach into openings.

CAUTION!

Risk of injury due to heavy device.

During transportation or installation work, a heavy device may fall down and cause injuries.

- ▸ Transport, install and remove heavy device with the aid of a second person only.
- ▸ Use suitable tools.

8.2 Before installation

- Any installation position of the globe control valve is possible, preferably with the actuator facing upward.
- Ensure that pipelines are aligned before connecting the valve.
- Note the flow direction (flow direction always below seat).

8.2.1 Preparatory work

→ Clear impurities from pipelines (seal material, metal chips, etc.).

Devices with welded connection

NOTE!

For valves with a mounted control unit:

When welding the valve body into the pipeline, the control unit must not be installed.

- ▸ Uninstall the control unit from the actuator as described below.

Uninstall the control unit from the actuator (if present):

→ Clamp valve body into a holding device.

→ Loosen fastening screws (2 x).

→ Pull the control unit upward.

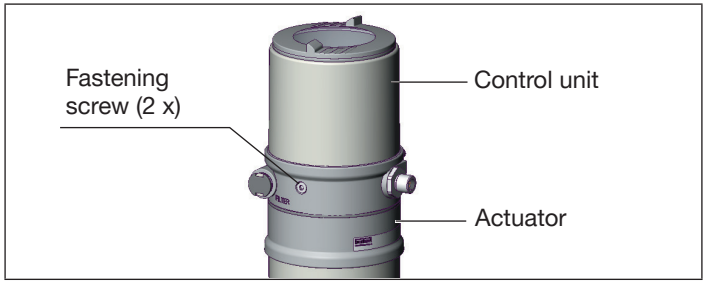


Image 9: Uninstall control unit

Remove the actuator from the valve body:

→ Install collet (white nozzle) in pilot air port 1.

NOTE!

Damage to the valve seat seal or seat contour.

▸ When removing the actuator, the valve must be in the open position.

→ For control function A pressurise the pilot air port 1 with compressed air (5 bar): Valve opens.

→ Place a suitable open-end wrench on the wrench flat of the nipple.

→ Unscrew actuator from the valve body.

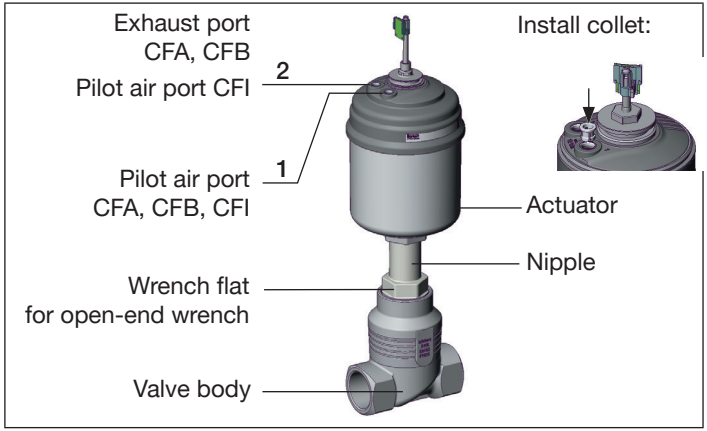


Image 10: Installation

Other device variants

→ Only uninstall the actuator if required by the customer.

→ For procedure see “Devices with welded connection”.

8.3 Installation

WARNING!

Risk of injury due to improper installation.

Failure to observe the tightening torque value is dangerous due to the risk of damage to the device.

- Use an open-end wrench for installation, never a pipe wrench.
- Observe tightening torque (see “Tab. 11”).

Dirt trap for devices with approval according to EN 161

According to EN 161 “Automatic shut-off valves for gas burners and gas appliances”, a dirt trap, which prevents the penetration of a 1 mm test pin, must be installed upstream of the valve.

8.3.1 Installing the body

Welded connection

→ Weld or bond valve body in pipeline system.

Other body variants

→ Connect body to pipeline.

8.3.2 Install actuator (welded connection)

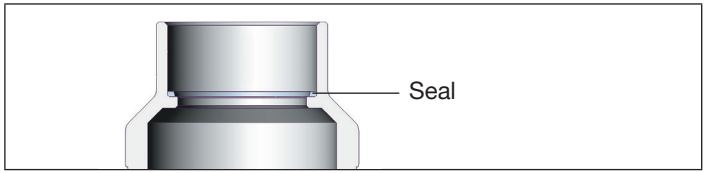


Image 11: Seal

→ Check seal and replace if required.

WARNING!

Danger due to incorrect lubricants.

Unsuitable lubricant may contaminate the medium. There is a risk of explosion in oxygen applications.

- For specific applications, e.g. oxygen or analysis applications, use approved lubricants only.

→ Before re-installation, grease nipple thread of the actuator (e.g. using Klüberpaste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or seat contour.

- When installing the actuator, the valve must be in the open position.

→ For control function A pressurise the pilot air port 1 with compressed air (5 bar): Valve opens.

→ Screw actuator into the valve body. Observe tightening torque (see “Tab. 1”).

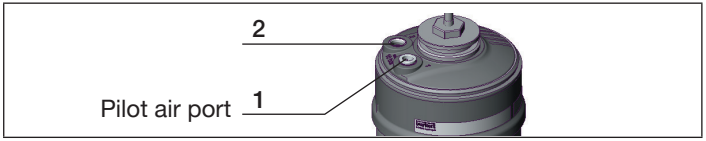


Image 12: Ports

Tightening torques valve body/nipple	
Body DN	**Tightening torque [Nm]**
10/15	45 ± 3
20	50 ± 3
25	60 ± 3
32	65 ± 3
40	
50	70 ± 3
65	100 ± 3
80	120 ± 5
100	150 ± 5

Tab. 11: Tightening torques valve body/nipple

8.3.3 Install control unit

Before installation, check the state of the control unit connections and align the actuator if necessary.
For a description see chapter “8.3.4 Turning actuator”.

→ Remove the collet from pilot air port 1.

→ Check the correct position of the O-rings in the pilot air ports.

→ Align the puck and control unit such that
1. the puck enters into the guide rail of the control unit and
2. the connection pieces of the control unit enter into the pilot air connections of the actuator (see “Image 14”).

NOTE!

Damage to the printed circuit board or functional failure!

▸ Make sure that the puck is lying flat on the guide rail.

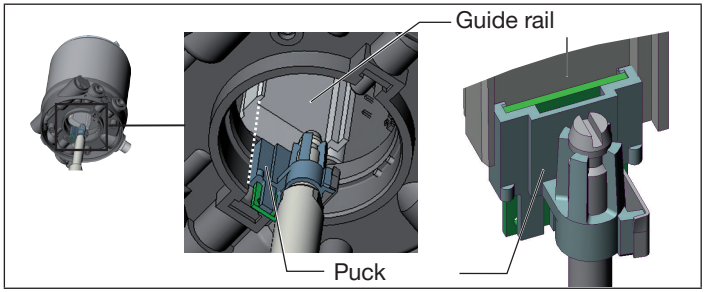


Image 13: Aligning the puck

→ Push the control unit onto the actuator without rotating it until no gap is visible at the form seal.

NOTE!

Excessive torque when tightening the fastening screw cannot ensure the degree of protection IP65/IP67.

▸ The fastening screws must only be applied with a maximum torque of 1.5 Nm.

→ Attach the control unit to the actuator using the two lateral fastening screws. Only lightly tighten the screws (maximum torque: 1.5 Nm).

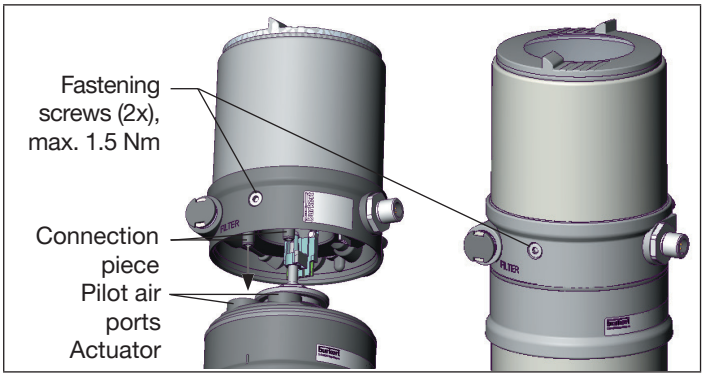


Image 14: Control unit installation

8.3.4 Turning actuator

The position of the ports can be seamlessly aligned by turning the actuator 360°.

Only the actuator can be rotated. It is not possible to rotate the control unit against the actuator.

NOTE!

Damage to the valve seat seal or seat contour.

▸ When turning the actuator, the valve must be in the open position.

Procedure:

→ Clamp valve body in a collet (only for valves which have not yet been installed).

→ For **control function A**:
Without control unit: pressurise the pilot air port 1 with compressed air (5 bar): Valve opens.
With control unit: open the valve in accordance with the operating instructions of the control unit.

→ Counter with a suitable open-end wrench on the wrench flat of the nipple.

WARNING!

Risk of injury from discharge of pressure and escaping medium.

The body connection can loosen when rotated incorrectly.

- Only turn the actuator **in the specified direction** (see "Image 15")!

→ Place a suitable open-end wrench on the hexagon head of the actuator.

→ Move the actuator into the required position by turning it counterclockwise (seen from below).

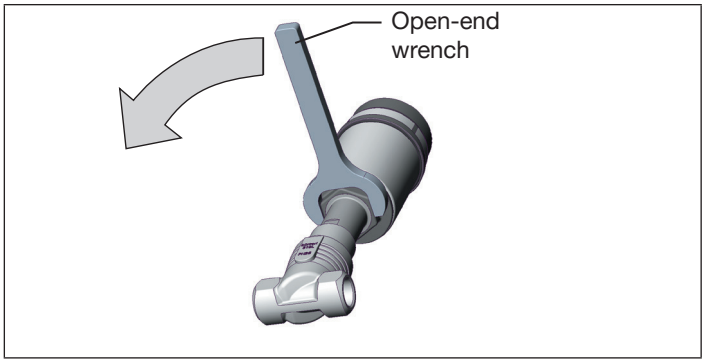


Image 15: Rotating with open-end wrench

8.4 Pneumatic connection

DANGER!

Risk of injury from high pressure in the system.

- Before loosening lines and valves, turn off the pressure and vent the lines.

WARNING!

Risk of injury due to unsuitable connection hoses.

Hoses that cannot withstand the pressure and temperature range can cause hazardous situations.

- Only use hoses that are permitted for the specified pressure and temperature range.
- Note the data sheet information from the hose manufacturers.

For control function I – risk of pilot pressure failure.

With control function I, the control unit and reset are pneumatic. No defined position is reached during a pressure failure.

- To ensure a controlled restart of the device, first apply pilot pressure and then activate the medium.

The pneumatic connection of the globe control valve can only be performed in conjunction with the corresponding control unit.

Possible control units are:
Positioner Type 8692, 8694 and 8696
Process controller Type 8693

8.4.1 Connecting the control medium

→ Connect the control medium to the pilot air port (1) (3–7 bar; instrument air, oil-/water-/dust-free).

→ Mount the exhaust air line or a silencer onto the exhaust air port (3) and, if available,onto the additional exhaust air port (3.1).

For usage in an aggressive environment, we recommend using a pneumatic hose to drain all free pneumatic ports in a neutral atmosphere.

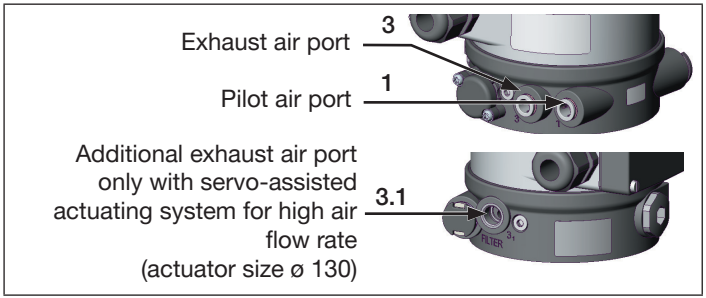


Image 16: Pneumatic connection

Pilot air hose:

Pilot air hoses of sizes 6/4 mm or 1/4" can be used.
Optionally a pilot air port via G1/8 thread is possible.

8.5 Start-up

Perform the *X.TUNE* after installing the device. This function presets the control parameters.

For a description, please refer to the operating instructions of the control unit.

8.6 Disassembly

DANGER!

Risk of injury from discharge of pressure and escaping medium.

Dismantling a device which is under pressure is hazardous due to a sudden discharge of pressure or escaping medium.

▸ Before disassembly, shut off the pressure and vent all lines.

Procedure:

→ Loosen pneumatic connection.

→ Disassemble the device.

9 ELECTRICAL CONTROL UNIT

The Type 2301 valve can be combined with the following control units:

- Type 8692 Positioner
- Type 8694 Positioner
- Type 8696 Positioner
- Type 8693 Process controller

The electrical port of the pilot valve or the control units is described in the respective operating instructions of the pilot valve/control unit.

10 MAINTENANCE, CLEANING

10.1 Safety instructions

DANGER!

Risk of injury from high pressure in the system.

- Before loosening lines and valves, turn off the pressure and vent the lines.

Risk of injury due to electric shock.

- Before reaching into the system, switch off the power supply and secure against reactivation.
- Observe the applicable accident prevention and safety regulations for electrical devices!

WARNING!

Risk of injury due to improper maintenance work.

- Maintenance may be carried out by authorised technicians only.
- Use an open-end wrench, never a pipe wrench, to screw the valve body or actuator in or out, and observe the tightening torque.

Risk of injury due to unintentional activation of the system and uncontrolled restart.

- Secure the system against unintentional activation.
- Following maintenance, ensure a controlled restart.

WARNING!

For control function I – risk of pilot pressure failure.

With control function I, the control unit and reset are pneumatic. No defined position is reached during a pressure failure.

- ▸ To ensure a controlled restart of the device, first apply pilot pressure and then activate the medium.

Risk of injury due to moving parts in the device.

- ▸ Do not reach into openings.

10.2 Maintenance work

Actuator:

When used in accordance with these operating instructions, the actuator of the globe control valve is maintenance-free.

Wearing parts of the globe control valve:

Parts which are subject to natural wear are:

- Valve seat
- Control cone
- Seals

→ If there is a leak, replace the respective wearing part with a corresponding spare part.
(For spare part sets and assembly tools see chapter "12 Spare parts").

Replacement of the wearing parts is described in chapter "10.3 Replacing wearing parts".

Visual inspection:

According to the usage conditions, perform regular visual inspections:

→ Check medium ports for tightness.

→ Check relief bore on the pipe for leaks.

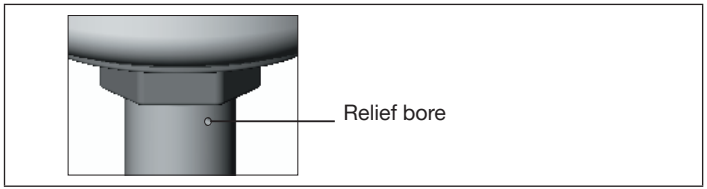


Image 17: Relief bore

10.2.1 Cleaning

Commercially available cleaning agents can be used to clean the outside.

NOTE!

Avoid causing damage with cleaning agents.

- ▸ Before cleaning, check that the agents are compatible with body materials and seals.

10.3 Replacing wearing parts

10.3.1 Replacing the control cone set

The control cone set consists of

- Control cone
- Seal
- Spring-type straight pin
- Lubricant

To change the control cone set, first remove the actuator from the valve body.

DANGER!

Risk of injury from discharge of pressure and escaping medium.

Dismantling a device which is under pressure is hazardous due to a sudden discharge of pressure or escaping medium.

▸ Before disassembly, shut off the pressure and vent all lines.

WARNING!

Risk of injury due to using wrong tool.

Performing installation work, using unsuitable tools, is hazardous due to possible damage to the device.

▸ To remove the actuator from the valve body, use an open-end wrench, never a pipe wrench.

Remove the actuator from the valve body

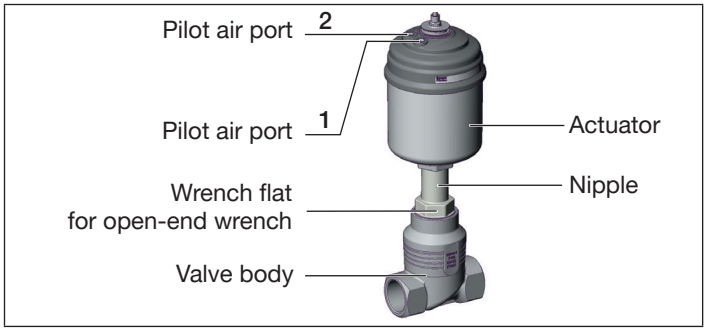


Image 18: Valve

→ Clamp valve body in a collet (only for valves which have not yet been installed).

NOTE!

Damage to the valve seat seal or seat contour.

▸ When removing the actuator, the valve must be in the open position.

→ For **control function A**
Without control unit: pressurise pilot air port 1 with compressed air (5 bar). Valve opens.
With control unit: Open the valve in accordance with the operating instructions of the control unit.

→ Place a suitable open-end wrench on the wrench flat of the nipple.

→ Unscrew actuator from the valve body.

Change control cone set

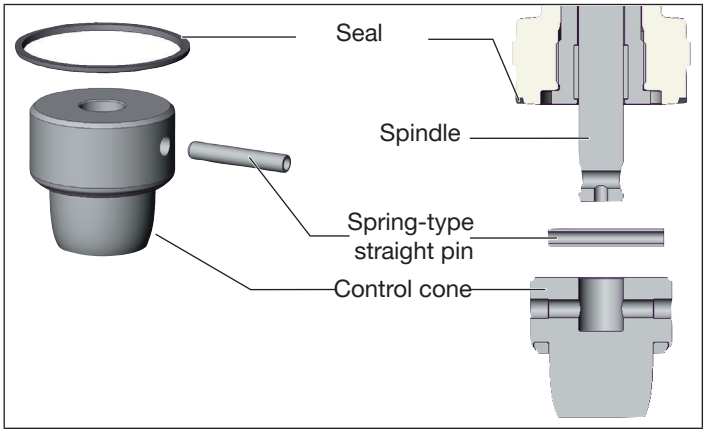


Image 19: Replacing the control cone set

NOTE!

Important for impeccable and stable device function.

The seal surface of the control cone must not be damaged.

Procedure:

→ Knock out spring-type straight pin using a suitable pin punch.
Pin punch ø 4 mm, with spindle diameter 10 mm
Pin punch ø 5 mm, with spindle diameter 14 mm

→ Remove control cone.

→ Place new control cone on the spindle.

→ Align boreholes in the control cone and spindle.

→ Support control cone on the cylindrical part using a prism or something similar.

→ Set up the spring-type straight pin and carefully hammer it in.

→ Centre the spring-type straight pin with the spindle axis.

Install actuator (with control unit) on the valve body

→ Replace the seal if necessary.

WARNING!

Danger due to incorrect lubricants.

Unsuitable lubricant may contaminate the medium. There is a risk of explosion in oxygen applications.

- For specific applications, e.g. oxygen or analysis applications, use approved lubricants only.

→ Before re-installation, grease nipple thread of the actuator (e.g. using Klüberpaste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or seat contour.

- When installing the actuator, the valve must be in the open position.

→ For **control function A**
Without control unit: pressurise pilot air port 1 with compressed air (5 bar). Valve opens.
With control unit: open the valve in accordance with the

operating instructions of the control unit.

→ Screw actuator into the valve body. Observe tightening torque (see “Tab. 1: Actuator sizes”).

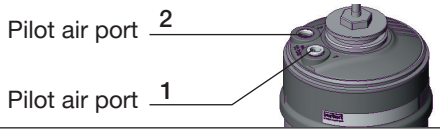


Image 20: Ports

Tightening torques valve body/nipple	
Body DN	**Tightening torque [Nm]**
10/15	45 ± 3
20	50 ± 3
25	60 ± 3
32, 40	65 ± 3
50	70 ± 3
65	100 ± 3
80	120 ± 5
100	150 ± 5

Tab. 12: Tightening torques valve body/nipple

If the position of the pilot air ports is unfavourable for installing the hoses, these can be seamlessly aligned by rotating the actuator by 360°.

The procedure is described in chapter “8.3.4 Turning actuator”.

10.3.2 Replacing the valve seat set

The actuator must be uninstalled when replacing the valve seat.
The necessary steps are described in chapter “10.3.1 Replacing the control cone set”.

When installing a valve seat with another DN, the identification number of the globe control valve changes.

The valve seat set consists of

- Valve seat
- Graphite seal
- O-ring (depending on variant)
- Lubricant

DANGER!

Risk of injury from discharge of pressure and escaping medium.

Dismantling a device which is under pressure is hazardous due to a sudden discharge of pressure or escaping medium.

▸ Before disassembly, shut off the pressure and vent all lines.

WARNING!

Risk of injury due to improper installation.

Failure to observe the tightening torque value is dangerous due to the risk of damage to the device.

- Only perform the replacement with special assembly tools (for order numbers see chapter “12.2 Assembly tools”).
- Observe the tightening torque (see “Tab. 12: Tightening torques valve body/nipple” and “Tab. 13: Tightening torques valve seat assembly”).

Procedure:

→ Replace the valve seat as described below when the actuator is removed.

Replacing valve seat

→ Use the assembly tool (with suitable tool attachment) and a wrench to unscrew the old valve seat.

→ Clean the body thread and seal surface with compressed air.

→ If applicable, replace the tool attachment in the assembly tool (depending on the DN of the new valve seat).

→ Attach a new valve seat to the assembly tool.

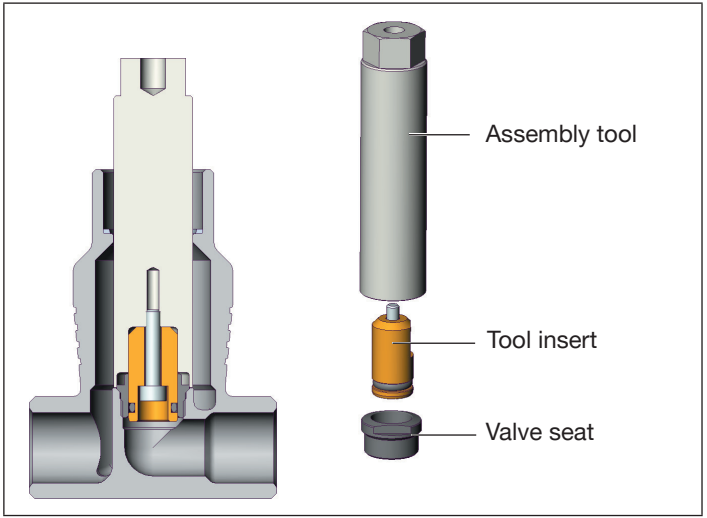


Image 21: Replacing the valve seat

WARNING!

Danger due to incorrect lubricants.

Unsuitable lubricant may contaminate the medium. There is a risk of explosion in oxygen applications.

- For specific applications, e.g. oxygen or analysis applications, use approved lubricants only.

→ Grease the valve seat thread using a lubricant (e.g. Klüberpaste UH1 96-402 from Klüber).

→ Manually screw attached valve seat into the body thread.

→ Tighten valve seat using torque wrench. Observe tightening torque (see “Tab. 13”).

Tightening torques valve seat assembly	
Valve seat size	**Tightening torque [Nm]**
	Coated valve seat
4–15	20 ± 3
20	28 ± 3
25	40 ± 5
32	65 ± 5
40	85 ± 8
50	120 ±8
65	150 + 10
80	180 + 10
100	220 + 10

Tab. 13: Tightening torques valve seat assembly

Install actuator (with control unit) on the valve body

→ Replace the seal if necessary.

WARNING!

Danger due to incorrect lubricants.

Unsuitable lubricant may contaminate the medium. There is a risk of explosion in oxygen applications.

▸ For specific applications, e.g. oxygen or analysis applications, use approved lubricants only.

→ Before re-installation, grease nipple thread of the actuator (e.g. using Klüberpaste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or seat contour.

▸ When installing the actuator, the valve must be in the open position.

→ For **control function A**
Without control unit: pressurise pilot air port 1 with compressed air (5 bar). Valve opens.
With control unit: Open the valve in accordance with the operating instructions of the control unit.

→ Screw actuator into the valve body. Observe tightening torque (see “Tab. 14: Tightening torques valve body/nipple”).

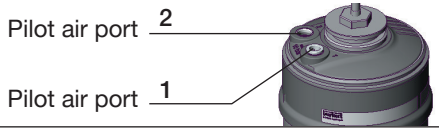


Image 22: Ports

Tightening torques valve body/nipple	
Body DN	**Tightening torque [Nm]**
10/15	45 ± 3
20	50 ± 3
25	60 ± 3
32	65 ± 3
40	
50	70 ± 3
65	100 ± 3
80	120 ± 5
100	150 ± 5

Tab. 14: Tightening torques valve body/nipple

If the position of the pilot air ports is unfavourable for installing the hoses, these can be seamlessly aligned by rotating the actuator by 360°.

The procedure is described in chapter “8.3.4 Turning actuator”.

10.3.3 Replacing the packing gland

The seal set for the packing gland includes

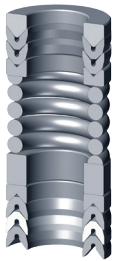
SP10/SP14 • 1 support ring • 5 chevron seals • 2 or 3 thrust collars[7)] • 1 compression spring • 1 spacer • 1 seal • Lubricant	 SP10/14
SP22 • 1 support ring • 7 chevron seals • 2 thrust collars • 1 compression spring • 1 spacer • 1 seal • Lubricant	

Image 23: Seal set for packing gland

7) *depending on spindle diameter (10 or 14 mm)*

DANGER!

Risk of injury from discharge of pressure and escaping medium.

Dismantling a device which is under pressure is hazardous due to a sudden discharge of pressure or escaping medium.

- Before disassembly, shut off the pressure and vent all lines.

WARNING!

Risk of injury due to using wrong tool.

Performing installation work, using unsuitable tools, is hazardous due to possible damage to the device.

- To remove the actuator from the valve body, use an open-end wrench, never a pipe wrench.
- To replace the packing gland, use special installation wrench, modified socket wrench or open-end wrench.
- Observe tightening torques.

To replace the packing gland, first remove the actuator from the valve body and remove the control cone.

Remove the actuator from the valve body

→ Clamp valve body in a collet (only for valves which have not yet been installed).

NOTE!

Damage to the valve seat seal or seat contour.

- When turning the actuator, the valve must be in the open position.

→ For **control function A**
Without control unit: pressurise pilot air port 1 with compressed air (5 bar). Valve opens.
With control unit: Open the valve in accordance with the operating instructions of the control unit.

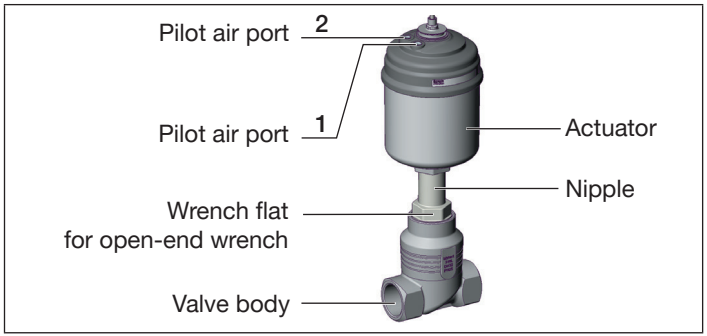


Image 24: Valve

→ Place a suitable open-end wrench on the wrench flat of the nipple.

→ Unscrew actuator from the valve body.

Remove control cone

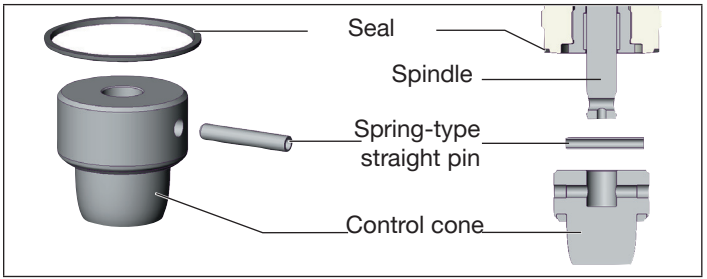


Image 25: Replacing the control cone set

NOTE!

Important for impeccable and stable device function!

The seal surface of the control cone must not be damaged.

Procedure:

→ Knock out spring-type straight pin using a suitable pin punch.
Pin punch ø 4 mm, for spindle diameter 10 mm.
Pin punch ø 5 mm, for spindle diameter 14 mm.

→ Remove control cone.

Replacing packing gland

PEEK spindle guide (series-production status until April 2012):

→ Unscrew the spindle guide using the installation wrench[8)] and an open-end wrench.

VA spindle guide SP10/SP14 (series-production status as of April 2012):

→ Unscrew the spindle guide using a modified socket wrench[8)].

VA spindle guide SP22:

→ Unscrew the VA spindle guide using an open-end wrench.

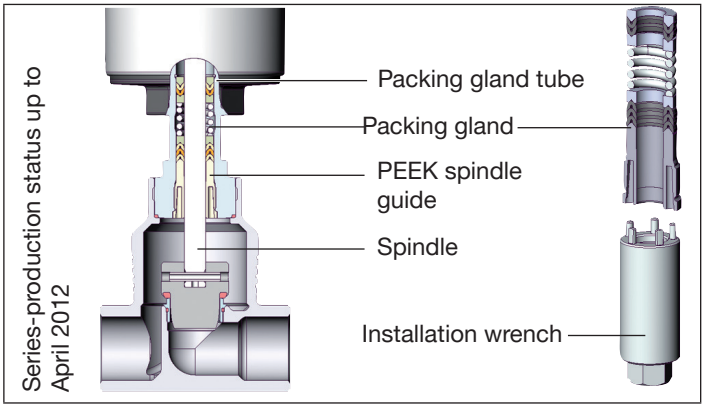


Image 26: Replacing the packing gland (PEEK spindle guide)

8) *The assembly wrench or modified socket wrench are available from your Bürkert sales department.*

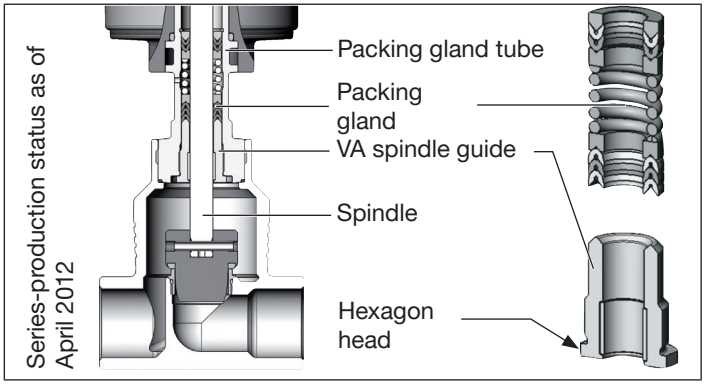


Image 27: Replacing the packing gland (VA spindle guide)

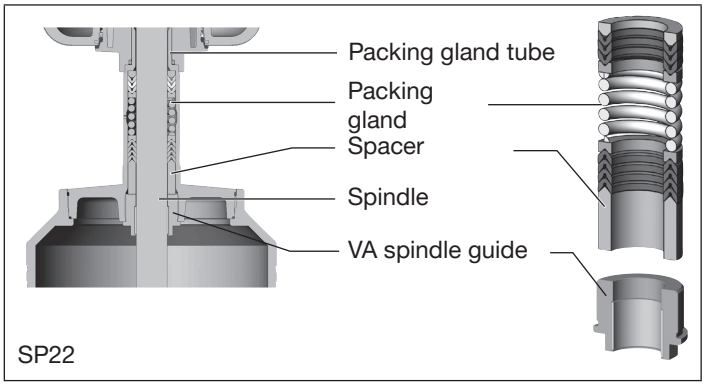


Image 28: Replacing the packing gland SP22

WARNING!

Risk of injury due to parts being ejected.

When the spindle opening is exposed, the individual parts of the packing gland will be pressed out at an undefined speed when the pilot air port is pressurised.

- ▸ Before pressurising with pilot air, safeguard the area around the outlet, (e.g. place spindle on a firm surface).

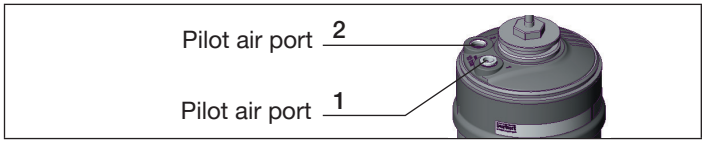


Image 29: Ports

→ Push the packing gland out:
For **control function A and I** pressurise the pilot air port **1** with 6–8 bar of compressed air.
For **control function B** pressurise the pilot air port **2** with 6–8 bar of compressed air.

→ Grease the individual parts of the new packing gland with the supplied lubricant.

→ Place individual parts on the spindle in the specified direction and sequence (see “Image 30” or “Image 31”).

→ Push the packing gland into the packing gland tube.

If the valve is equipped with a PEEK spindle guide (SP10/SP14 series-production status up to April 2012), we recommend replacing it with a VA spindle guide (see “Tab. 23: VA spindle guide for packing gland” on page 46).

→ Lubricate the spindle guide thread (e. g. Klüberpaste UH1 96-402).

→ Screw spindle guide back in. Observe tightening torque (see “Tab. 15: Tightening torques spindle guide”).

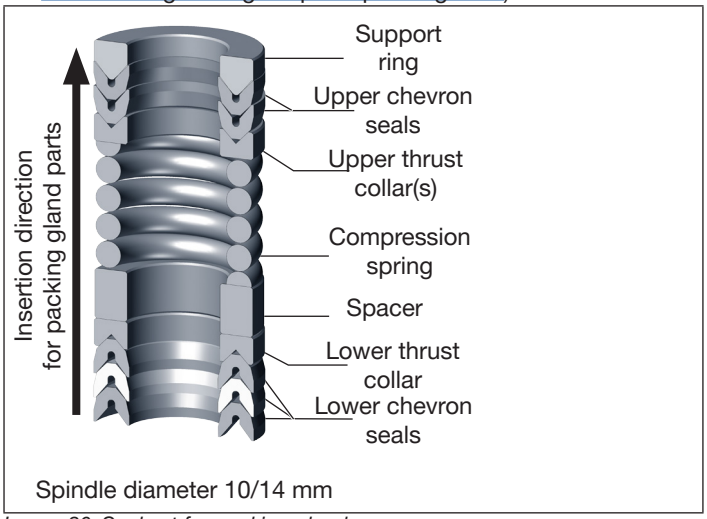


Image 30: Seal set for packing gland

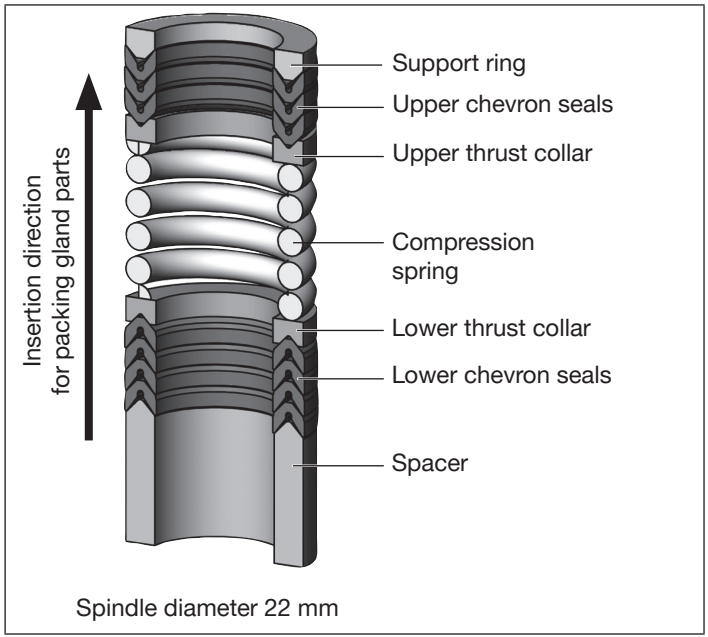


Image 31: Seal set for packing gland SP22

Tightening torques spindle guide			
Spindle diameter	Body DN	Spindle guide material	Tightening torque [Nm]
10 mm	-	PEEK	6
	10/15	1.4401/1.4404/316L	15
	20/25		25
	32		50
14 mm	-	PEEK	15
	20–25	1.4401/1.4404/316L	25
	32–50		60
22 mm	65–100	1.4401/1.4404	60

Tab. 15: Tightening torques spindle guide

Mount control cone

→ Place control cone on the spindle.

→ Align boreholes in the control cone and spindle.

→ Support control cone on the cylindrical part using a prism or something similar.

→ Set up the spring-type straight pin and carefully hammer it in.

→ Centre the spring-type straight pin with the spindle axis.

Install actuator (with control unit) on the valve body

→ Replace the seal if necessary.

WARNING!

Danger due to incorrect lubricants.

Unsuitable lubricant may contaminate the medium. There is a risk of explosion in oxygen applications.

- For specific applications, e.g. oxygen or analysis applications, use approved lubricants only.

→ Before re-installation, grease nipple thread of the actuator (e.g. using Klüberpaste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or seat contour.

- When turning the actuator, the valve must be in the open position.

→ For **control function A**
Without control unit: pressurise pilot air port 1 with compressed air (5 bar). Valve opens.
With control unit: Open the valve in accordance with the operating instructions of the control unit.

→ Screw actuator into the valve body.
Observe tightening torque (see “Tab. 16”).

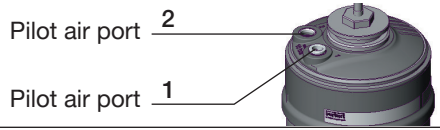


Image 32: Ports

Tightening torques valve body/nipple	
Body DN	**Tightening torque [Nm]**
10/15	45 ± 3
20	50 ± 3
25	60 ± 3
32	65 ± 3
40	
50	70 ± 3
65	100 ± 3
80	120 ± 5
100	150 ± 5

Tab. 16: Tightening torques valve body/nipple

If the position of the pilot air ports is unfavourable for installing the hoses, these can be seamlessly aligned by rotating the actuator by 360°.

The procedure is described in chapter “8.3.4 Turning actuator”.

11 FAULTS

Fault	Elimination
Actuator does not switch	Pilot air port interchanged[9)] CFA → Connect pilot air port 1 CFB → Connect pilot air port 1 CFI → Pilot air port 1: Open Pilot air port 2: closing
	Pilot pressure too low → Observe pressure specifications on the type label
	Operating pressure too high → Observe pressure specifications on the type label
	Flow direction interchanged → Note arrow direction on the body

Tab. 17: Faults – 1

9) *see “Image 16: Pneumatic connection” in the eponymous chapter.*

Fault	Elimination
Valve is not tight	Dirt between seal and valve seat → Install dirt trap
	Valve seat seal worn → install new control cone
	Flow direction interchanged → Note arrow direction on the body
	Operating pressure too high → Observe pressure specifications on the type label
	Pilot pressure too low → Observe pressure specifications on the type label
Valve is leaking on the relief bore	Packing gland worn → Replacing packing gland

Tab. 18: Faults – 2

12 SPARE PARTS

WARNING

Risk of injury when opening the actuator.

The actuator contains a spring under tension. The spring that ejects when the actuator opens may cause injuries.

▸ The actuator must not be opened.

CAUTION!

Risk of injury and/or damage due to incorrect parts.

Incorrect accessories and unsuitable spare parts may cause injuries and damage the device and the area around it

▸ Use only original accessories and original spare parts from Bürkert.

12.1 Replacement part set

The following replacement part sets are available for the globe control valve Type 2301:

- Control cone set
  consists of control cone, spring-type straight pin, seal, lubricant.
- Valve seat set
  consists of valve seat, O-ring (depending on variant), seal, lubricant.
- Seal set for packing gland
  consists of the individual parts of the packing gland, seal and lubricant

(the modified socket wrench is not included in the seal set).

- Spindle guide for packing gland
  VA spindle guide, seal, lubricant

1 Seal
2 Spring-type straight pin
} Control cone set
3 Control cone
4 Valve seat
5 Seal set for packing gland SP10/SP14
6 Seal set for packing gland SP22
7 VA spindle guide SP10/SP14
8 VA spindle guide SP22

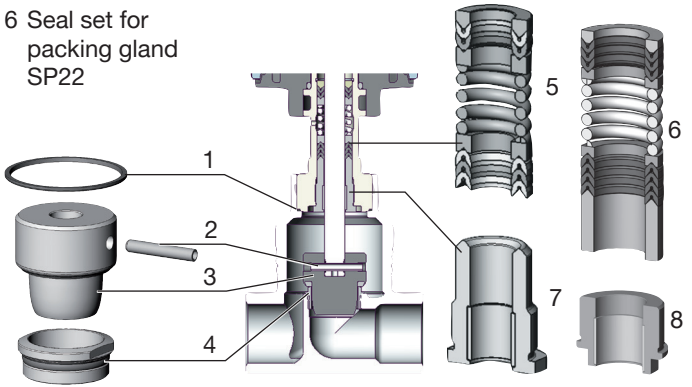


Image 33: Spare parts

When installing a valve seat with a changed DN, the identification number of the globe control valve changes.

12.1.1 Replacement part set

Control cone set contains: Control cone, spring-type straight pin, seal				
Valve seat size [mm]	DN [mm]	Order number		
		Steel/steel	PTFE/steel	PEEK/steel
3	10/15	-	-	-
4	10/15	149 934	-	-
6	10/15	152 696	-	-
8	10/15	149 935	149 962	271233
10	10/15	149 912	149 963	-
	20	149 914	149 965	-
15	15	149 915	149 943	231726
	20	149 916	149 944	301312
	25	149 917	149 945	301314
20	20	149 918	149 946	231732
	25	149 951	149 947	292348
	32	226 951	226 963	301315
25	25	149 953	149 949	226723
	32	226 952	226 964	301317
	40	226 954	226 966	301319
32	32	226 953	226 965	301318
	40	226 955	226 967	301322
	50	226 957	226 969	301324

Tab. 19: Control cone set DN4–32

Control cone set contains: Control cone, spring-type straight pin, seal

Valve seat size [mm]	DN [mm]	Order number		
		Steel/steel	PTFE/steel	PEEK/steel
40	40	226 956	226 968	301323
	50	226 958	226 970	301369
	65	226 960	226 972	301386
50	50	226 959	226 971	272656
	65	226 961	226 973	301562
	80	239 880	239 890	301563
65	65	226 962	226 974	272657
	80	239 883	239 891	301564
	100	239 886	239 920	301566
80	80	239 885	239 892	280976
	100	239 888	239 922	301567
100	100	239 889	239 923	301568

Tab. 20: Control cone set DN40–100

Valve seat set
contains: valve seat, O-ring (depending on variant), seal

Valve seat size [mm]	DN [mm]	Order. no.
4	10.15	262 143
6	10.15	262 146
8	10.15	262 147
10	10.15	262 149
	20	262 151
15	15	262 152
	20	262 153
	25	262 155
20	20	262 157
	25	262 160
	32	262 163
25	25	262 170
	32	262 171
	40	262 173
32	32	262 174
	40	262 175
	50	262 176

Valve seat size [mm]	DN [mm]	Order. no.
40	40	262 177
	50	262 178
	65	262 202
50	50	262 179
	65	262 203
	80	262 205
65	65	262 204
	80	262 206
	100	262 208
80	80	262 207
	100	262 209
100	100	262 210

Tab. 21: Valve seat sets

You can receive valve seats sets from your Bürkert sales department upon request.

Seal set for packing gland				
Body DN	Actuator size	Order number		
		Standard variant	Hot water version (up to 200 °C)	High temperature version (up to 230 °C)
10/15–25	Ø 50	216 436	372 658	372 659
	Ø 70			
20–50	Ø 90	216 438	372 656	372 657
	Ø 130			
65–100	Ø 130	252 545	-	200 23063

Tab. 22: Seal set for packing gland

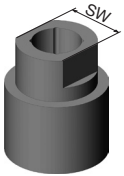
VA spindle guide for packing gland			
Spindle Ø	Body DN	Actuator size	Order number
10	10/15	Ø 50, Ø 70	0024 6577
	20–25	Ø 50, Ø 70	0024 6578
	32	Ø 70	0024 6582
14	20	Ø 90	6000 4091
	25	Ø 90	0024 6579
	32	Ø 90, Ø 130	0024 6583
	40	Ø 90, Ø 130	0024 6593
	50	Ø 90, Ø 130	0024 6593
22	65–100	Ø 130	0025 2543

Tab. 23: VA spindle guide for packing gland

12.2 Assembly tools

Only for PEEK spindle guide: **Installation wrench for packing gland** (Series-production status up to January 2013)	
Installation wrench	**Order number**
Spindle diameter 10 mm	665 700
Spindle diameter 14 mm	665 701

Tab. 24: Installation wrench for PEEK spindle guide

Modified socket wrench for packing gland (Series-production status as of January 2013)				
	**Socket wrench**	**Body DN**	**SW**	**Order number**
	Spindle Ø 10 mm	15	19	683 220
	Spindle Ø 10 mm	20–25	21	683 222
	Spindle Ø 14 mm	25–50	21	683 223

Tab. 25: Modified socket wrench

Assembly tool for replacing valve seat		
Body DN	**Valve seat size**	**Order number**
15	4, 6, 8, 10, 15	652 604
20	10, 15, 20	652 605
25	15, 20, 25	652 606
32	20, 25, 32	652 607
40	25, 32, 40	652 608
50	32, 40, 50	652 609
65	40, 50, 65	655 562
80	50, 65, 80	655 563
100	65, 80, 100	655 564

Tab. 26: Assembly tool

If you have any questions, please contact your Bürkert sales department.

13 TRANSPORT, STORAGE, PACKAGING

NOTE!

Transport damage.

Inadequately protected devices may be damaged during transport.

- Protect the device against moisture and dirt in shock-resistant packaging during transportation.
- Avoid exceeding or dropping below the permitted storage temperature.

Incorrect storage may damage the device.

- Store the device in a dry and dust-free location.
- Storage temperature –20 – +65 °C.

Damage to the environment caused by device parts contaminated with media.

- Dispose of the device and packaging in an environmentally-friendly manner.
- Observe applicable disposal and environmental regulations.

Note:
Observe national waste disposal regulations.

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