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: BStatus: RL (released | freigegeben) printed: 22.02.2018

Operating Instructions 1802/14_EU-ML_00805835 / Original DE

MAN 1000295313 EN Version: BStatus: RL (released | freigegeben) printed: 22.02.2018

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 these instructions 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 Symbols

DANGER!

Warns of an immediate danger.

- Failure to observe the warning may result in a fatal or serious injury.

WARNING!

Warns of a potentially dangerous situation.

- Failure to observe the warning may result in serious injuries or death.

CAUTION!

Warns of a possible danger.

- Failure to observe this warning may result in a moderately severe or minor injury.

NOTE!

Warns of damage to property.

- Failure to observe the warning may result in damage to the device or the equipment.

Indicates important additional information, tips and recommendations.

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

- Indicates an instruction to prevent risks.

→ Designates a procedure which you must carry out.

1.2 Definition of term / abbreviation

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

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

2 INTENDED USE

Non-intended use of the globe control valve Type 2301 may be a hazard to people, nearby equipment and the environment.

- The device is designed for the controlled flow of liquid and gaseous media. Operation is possible only in combination with a suitable control unit.
- In the potentially explosion-risk area the globe control valve Type 2301 may be used only according to the specification on the separate Ex type label. For use observe the additional information enclosed with the device together with safety instructions for the explosion-risk area.
- Devices without a separate Ex type label may not be used in a potentially explosive area.
- The admissible data, the operating conditions and conditions of use specified in the contract documents, operating instructions and on the type label are to be observed during use. The designated application cases are specified in the chapter entitled "5 Product description".
- Protect device from damaging environmental influences (e.g. radiation, humidity, steam, etc.). If anything is unclear, consult the relevant sales office.
- The device may be used only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- Use the device only as intended.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not make allowance for any

- contingencies and events which may arise during the installation. operation and maintenance of the devices.
- local safety regulations; the operator is responsible for observing these regulations, also with reference to the installation personnel.

DANGER!

Risk of injury from high pressure in the equipment or device!

- Before working on equipment or device, switch off the pressure and deaerate or drain lines.

Risk of injury from electric shock (when electrical component installed).

- Before reaching into the device, switch off the power supply and secure to prevent reactivation!
- Observe applicable accident prevention and safety regulations for electrical equipment!

WARNING!

Risk of injury when opening the actuator.

The actuator contains a tensioned spring. If the actuator is opened, there is a risk of injury from the spring jumping out.

- The actuator must not be opened.

Risk of injury from moving parts in the device.

- Do not reach into openings.

Danger due to loud noises.

- Depending on the operating conditions, the device may generate loud noises. More detailed information on the likelihood of loud noises is available from the relevant sales office.
- Wear hearing protection when in the vicinity of the device.

CAUTION!

Risk of burns!

The surface of the device may become hot during long-term operation.

- Do not touch the device with bare hands.

Leaking medium when the packing gland is worn.

- Regularly check relief bore for leaking medium.
- If the media is hazardous, protect the area surrounding the discharge point against dangers.

General hazardous situations.

To prevent injury, ensure that:

- That the system cannot be activated unintentionally.
- Installation and repair work may be carried out by authorized technicians only and with the appropriate tools.
- After an interruption in the power supply or pneumatic supply, ensure that the process is restarted in a defined or controlled manner.
- The device may be operated only when in perfect condition and in consideration of the operating instructions.
- Observe the safety regulations specific to the plant for application planning and operation of the device.
- The plant operator is responsible for the safe operation and handling of the plant.
- The general rules of technology apply to application planning and operation of the device.

To prevent damage to property of the device, ensure:

- Supply the media connections only with those media which are specified as flow media in the chapter entitled “7 Technical data”.
- Do not put any loads on the valve (e.g. by placing objects on it or standing on it).
- Do not make any external modifications to the valves. Do not paint the body parts or screws.
- Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- The exhaust air may be contaminated with lubricants in the actuator.

4 GENERAL INFORMATION

4.1 Contact address

Germany

Bürkert Fluid Control System
Sales Centre
Chr.-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

Contact addresses are found on the final pages of the printed operating manual.

You can also find information on the Internet under:

www.burkert.com

4.2 Warranty

The warranty is only valid if the device is used as authorized in accordance with the specified application conditions.

4.3 Information on the internet

The operating instructions and data sheets for Type 2301 can be found on the Internet at: www.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.

It uses neutral gases or air (control media) to control the flow of water, alcohol, oil, fuel, hydraulic fluid, saline solution, lye, organic solvent and steam (flow media).

The operation of the globe control valve Type 2301 is possible only in combination with an control unit. Possible control units are:

Positioner Type 8692, 8694 and 8696
Process controller Type 8693

5.2 Versions

There are 2 versions of the globe control valve type 2301:

- Standard version – **without** separate Ex type label.
  The standard version must not be used in the potentially explosive area.
- Ex version – **with** separate Ex type label.
  The Ex version may be used in the potentially explosive area. In doing so, observe the specifications on the separate Ex type label and the additional information enclosed with the device together with safety instructions for the Ex area.

5.3 Properties

- Direct installation of the positioners Type 8692 / 8694 / 8696 or the process controller Type 8693.
- Optimum valve selection for the application through three standard Kv values per line size (up to five 5 Kv values for ½" line size).
- High tightness by self-adjusting packing gland (spindle sealing element).
- Closes tightly when using the PTFE/PEEK control cone.
- High flow values by the streamlined valve body made of stainless steel.
- Generously dimensioned expansion space above the valve seat to prevent erosion on the body caused by cavitation.
- Simple and fast replacement of the control cone and the threaded valve seat.
- Actuator can be rotated steplessly through 360°.
- Maintenance-free under normal conditions.

5.4 Technical features

- Nominal width of valve body: 10-100, valve seat size: 3-100.
- Nominal pressure PN16 (PN25 on request).
- Valve body connections: flange connection, threaded connection, welded connection, Clamp connection.
- Valve body 316L.
- The globe series is characterized by screwed-in valve seats, which can be used to reduce the orifice of the control valve in particular.

5.4.1 Options

- Control unit, depending on the requirement, control units in various designs are available.
- Positioner Type 8692, 8694 and 8696
- Process controller Type 8693
- Vacuum
- Food conformity FDA
- DVGW
- ATEX
- Reduced pilot pressure

5.4.2 Device versions

Actuator sizes

Depending on the orifice, the globe control valve is available for the following actuator sizes:

Nominal width of valve body	Available actuator size ø [mm]			
15, 20	50	70	-	-
25	50	70	90	
32, 40, 50	-		90	130
65, 80, 100			-	130

Tab. 1: Actuator sizes

5.5 Designated application area

Observe the maximum pressure range according to the type label!

- Neutral gases and liquids up to 16 bar.
- Steam up to 11 bar absolute / 185 °C for valve seat seal steel / steel and PEEK.
  Steam up to 2.7 bar absolute / 130 °C for valve seat seal PTFE / steel.
- Aggressive media.

6 STRUCTURE AND FUNCTION

The operation of the globe control valve Type 2301 is possible only in combination with an 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.

Via a dowel pin, the control cone is modularly coupled to the actuator spindle for quick changeovers.

For the body, almost any line connections are possible.
A threaded port, a welded end and a flange are offered as a standard version.

The valve seats are screwed in. A reduction in the orifices of the valve seats can be achieved by simply exchanging the threaded valve seats. The flow direction is always below seat.

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

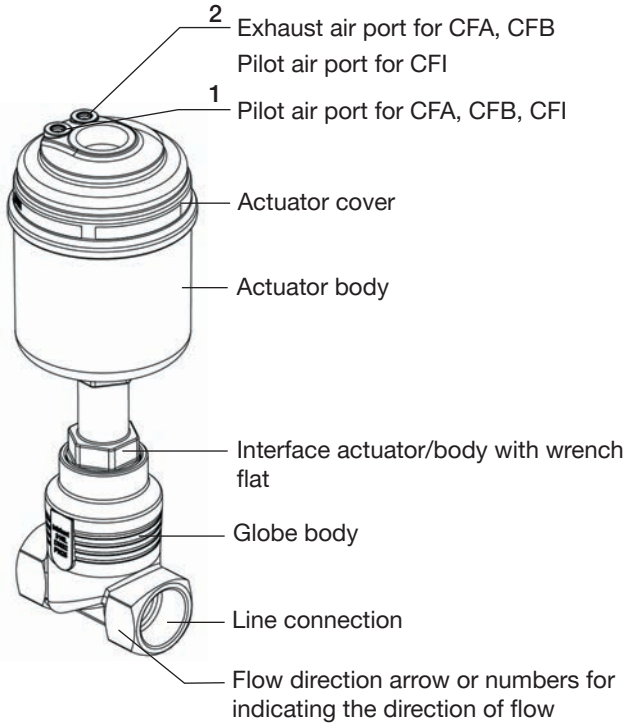


Fig. 1: Globe control valve Type 2301, structure and description

6.2 Function

The seat of the valve is always closed against the medium flow.

Spring force (CFA) or pneumatic pilot pressure (CFB and CFI) generates the closing force on the control cone. The force is transferred via a spindle which is connected to the actuator piston.

6.2.1 Control functions (CF)

WARNING!

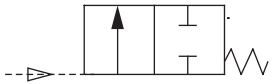
For control function I – Danger if pilot pressure fails.

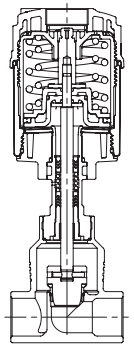
For control function I control and resetting occur pneumatically. If the pressure fails, no defined position is reached.

- To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.

Control function A (CFA)

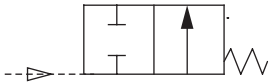
Normally closed by spring action.

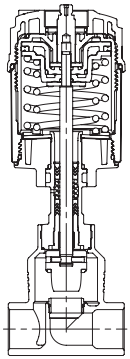




Control function B (CFB)

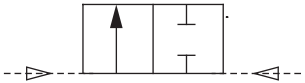
Normally open by spring action.

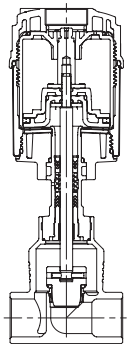




Control function I (CFI)

Actuating function via reciprocal pressurization.





6.2.2 Flow direction below the seat

Depending on the version, the valve is closed against the medium flow with spring force (CFA) or with pilot pressure (CFB or CFI).
As the medium pressure is under the control cone, this pressure contributes to the opening of the valve.

WARNING!

Medium may be discharged if minimum pilot pressure is too low or medium pressure too high.

If the minimum pilot pressure is too low for CFB and CFI or the permitted medium pressure is exceeded, leaks may occur.

- Observe minimum pilot pressure.
- Do not exceed medium pressure.
- See chapter entitled “7.4.4 Pressure ranges”.

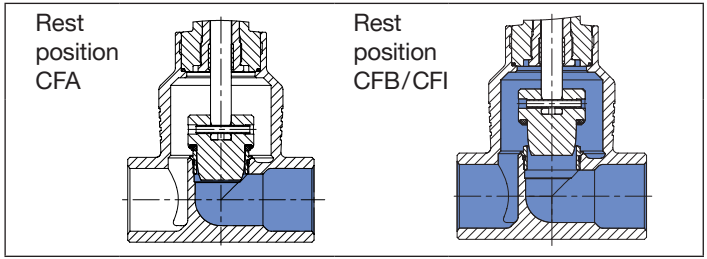


Fig. 2: Flow direction below the seat (closing against medium)

7 TECHNICAL DATA

7.1 Conformity

Type 2301 conforms with the EU Directives according to the EU Declaration of Conformity (if applicable).

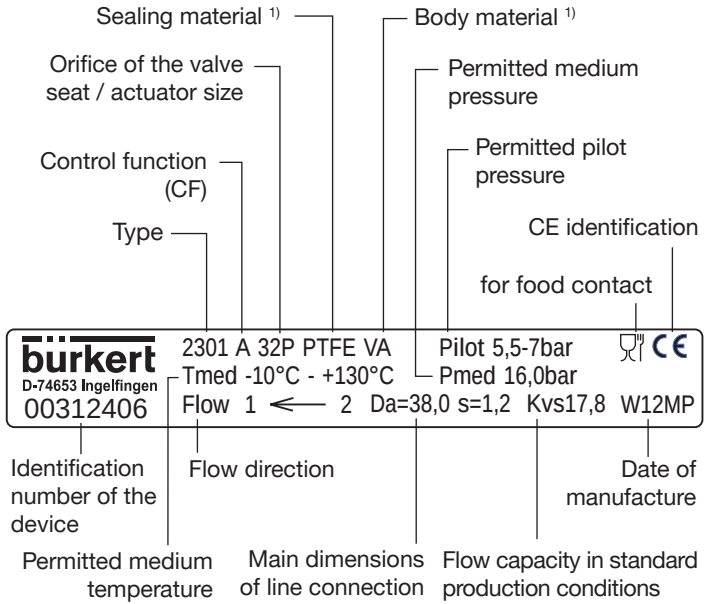
7.2 Standards

The applied standards, which verify conformity with the EU Directives, can be found on the EU-Type Examination Certificate and / or the EU Declaration of Conformity (if applicable).

According to Pressure Equipment Directive the following operating conditions must be observed:

Nominal width of valve body	Maximum pressure for compressible fluids of Group 1 (hazardous gases and vapors 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 description of versions see "7.6 General technical data"

7.4 Operating conditions

Observe permitted ranges on the type label of the device!

7.4.1 Temperature ranges for actuators

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

Tab. 2: Temperature ranges for actuators

The globe control valve is suitable for steam sterilization.

2) When using a control, observe and comply with the max. ambient temperature of this component.

3) Pilot air ports with push-in connector
4) Pilot air ports with threaded bushing.

7.4.2 Temperature range of valve seat seal

Recommendation for the valve seat seal of leakage classes III and IV: Steel / Steel.

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

7.4.3 Control medium

In conjunction with pneumatic control units (positioner and process controllers), pilot air according to DIN ISO 8573-1 must be used:

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

The specification is described in detail in the operating instructions of the respective positioner / process controller in the chapter entitled “Technical Data”.

7.4.4 Pressure ranges

Maximum pilot pressure for valves without pneumatic control units

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

Tab. 3: Pilot pressure for valves without pneumatic control units

5) *Observe the maximum pressure range according to the type label!*

Operating pressure for control function A[6)]

Actuator size [mm]	Nominal width of valve body	Max. sealed medium 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 / 20	16	16	10
	25	12	12	7
ø 90	25 / 32	16	16	10
	40	12	12	7
	50	7	7	-
ø 130	32 / 40 / 50	16	16	10
	65	16 (15*)	16 (15*)	10
	80	10	10	6
	100	6	6	-

** According to Pressure Equipment Directive for compressible fluids of Group 1 (hazardous gases and vapors according to Art. 3 No. 1.3 Letter a first dash)*

Tab. 4: Operating pressure for control function A

6) *The description of the control function (CF) can be found in chapter entitled "6.2.1 Control functions (CF)".*

Designs with lower pilot pressure (reduced spring force) are available on request. Contact your Bürkert sales office or our Sales Centre. E-mail: info@de.buerkert.com

Required minimum pilot pressure depending on medium pressure for circuit function B

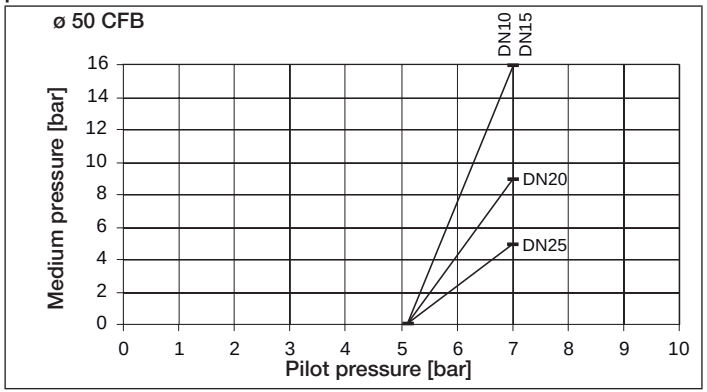


Fig. 3: Pressure graph, actuator ø 50 mm, control function B

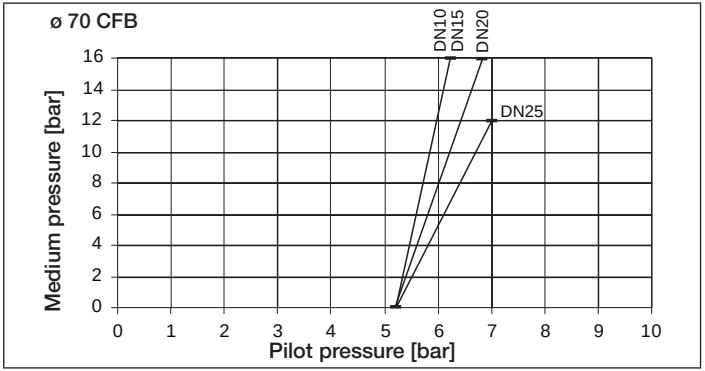


Fig. 4: Pressure graph, actuator ø 70 mm, control function B

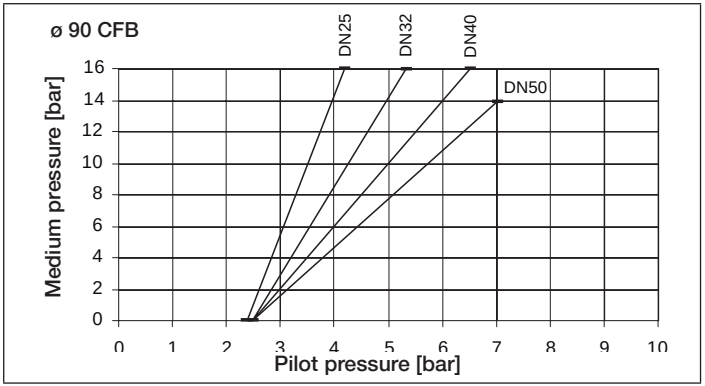


Fig. 5: Pressure graph, actuator ø 90 mm, control function B

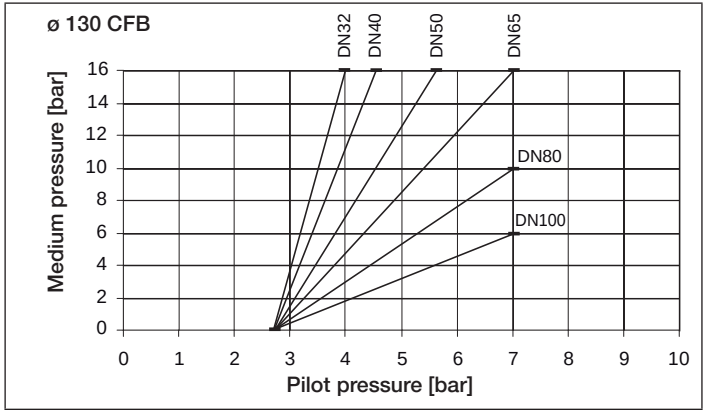


Fig. 6: Pressure graph, actuator ø 130 mm, control function B

7.5 Flow values and characteristics

7.5.1 Flow characteristic

Illustration as an example:

The detailed values are listed in the table below.

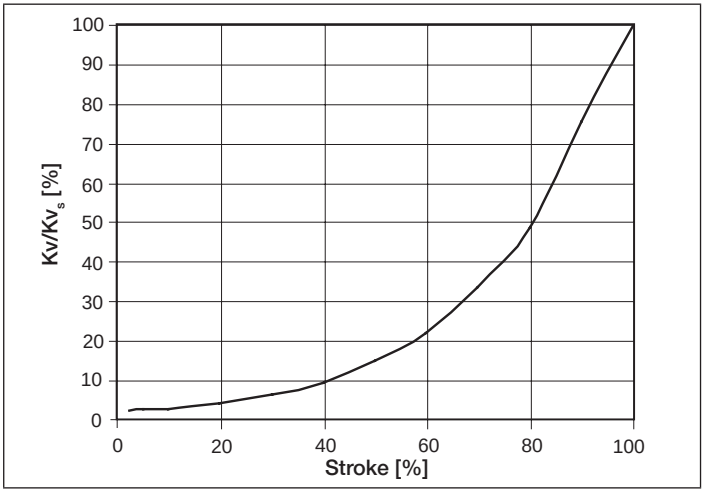


Fig. 7: Flow characteristic

Comments on the flow characteristic:

- Linear cone for valve seat size 3 to 6
- Equal percentage cone for valve seat size 8 to 100 (valve seat size 6 optionally with equal percentage cone)
- Flow characteristic according to DIN EN 60534-2-4
- Theoretical setting ratio (K_{VS} / K_{VO}) for actuator size 70, 90, 130:
  50 : 1 for valve seats DN8 to DN100
  25 : 1 for valve seat DN6
  10 : 1 for valve seats DN3 and DN4
- K_{VR} value at 5 % of the stroke for DN > 10 mm
  K_{VR} value at 10 % of the stroke for DN ≤ 10 mm
  (K_{VR} value = lowest K_V value at which the inclination tolerance according to DIN EN 60534-2-4 is still observed)
- Compared with actuator size 50, actuator size 70 offers a better control quality and is therefore preferred.

Flow values

Nominal width of valve body [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	0.1	0.5	1.2	2.0	2.7	-	-	-	-	-	-	-	-	-
15	50 – 70	0.1	0.5	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	20.2	23.8	-	-	-	-
50	90		-	-	-	-	-	-	-	15.3	18.0	28.0	-	-	-
	130		-	-	-	-	-	-	-	21.0	24.6	37.0	-	-	-
65	130		-	-	-	-	-	-	-	-	29.0	45.0	65.0	-	-
80	130		-	-	-	-	-	-	-	-	-	45.0	73.0	100	-
100	130		-	-	-	-	-	-	-	-	-	-	77.0	110	140

Tab. 5: K_{VS} values

K_V values

Nominal width of valve body		Valve seat size		Actuator size	K_V values [m³/h]										
					Stroke [%]										
[mm]	[Inch]	[mm]	[Inch]	[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	0.100
		4	1/8"		0.04	0.05	0.10	0.16	0.22	0.27	0.32	0.36	0.40	0.44	0.50
		6	3/16"		0.05	0.12	0.32	0.48	0.62	0.76	0.88	0.98	1.07	1.13	1.20
		8	1/4"		0.06	0.07	0.09	0.12	0.18	0.26	0.42	0.61	0.92	1.50	2.00
		10	3/8"		0.09	0.11	0.13	0.19	0.30	0.48	0.73	1.00	1.60	2.30	2.70
15	1/2"	4	1/8"	50 – 70	0.04	0.05	0.10	0.16	0.22	0.27	0.32	0.36	0.40	0.44	0.50
		6	3/16"		0.05	0.12	0.32	0.48	0.62	0.76	0.88	0.98	1.07	1.13	1.20
		8	1/4"		0.07	0.08	0.11	0.13	0.19	0.27	0.43	0.63	0.95	1.60	2.10
		10	3/8"		0.09	0.11	0.15	0.19	0.31	0.49	0.75	1.10	1.70	2.50	3.10
		15	1/2"		0.14	0.17	0.22	0.35	0.52	0.80	1.20	1.80	2.70	3.70	4.30
20	3/4"	10	3/8"	50 – 70	0.11	0.12	0.16	0.20	0.33	0.52	0.77	1.20	1.80	2.60	3.20
		15	1/2"		0.14	0.17	0.22	0.35	0.52	0.80	1.20	1.80	2.90	4.00	5.20
		20	3/4"		0.20	0.25	0.30	0.45	0.70	1.10	1.60	2.40	3.50	5.20	7.10
25	1"	15	1/2"	50 – 90	0.14	0.17	0.22	0.35	0.52	0.80	1.20	1.80	2.90	4.10	5.30
		20	3/4"		0.20	0.25	0.31	0.47	0.70	1.10	1.60	2.50	3.80	5.40	7.20
		25	1"		0.35	0.38	0.65	1.00	1.50	2.20	3.40	5.10	7.00	9.40	12.00
32	1 1/4"	20	3/4"	90	0.21	0.24	0.33	0.45	0.62	0.85	1.25	1.75	2.60	3.75	5.50
				130	0.22	0.25	0.35	0.50	0.75	1.10	1.60	2.50	3.80	5.80	8.00
		25	1"	90	0.38	0.45	0.65	0.95	1.35	1.95	2.85	4.00	5.55	7.40	9.90
				130	0.40	0.47	0.73	1.10	1.60	2.50	3.70	5.40	7.50	10.30	13.00
		32	1 1/4"	90	0.45	0.58	0.80	1.10	1.70	2.50	3.50	4.90	7.00	10.10	13.40
				130	0.48	0.60	0.85	1.30	2.10	3.10	4.50	6.80	10.20	14.00	17.80

Tab. 6: K_V values connection size 10 – 32

Nominal width of valve body		Valve seat size		Actuator size	K_V values [m³/h]										
					Stroke [%]										
[mm]	[Inch]	[mm]	[Inch]	[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	1.40	2.00	2.95	4.10	5.75	7.90	10.30
				130	0.40	0.50	0.75	1.10	1.70	2.60	3.80	5.60	8.00	10.70	13.60
		32	1 1/4"	90	0.45	0.55	0.80	1.10	1.70	2.50	3.60	4.95	7.15	10.80	14.40
				130	0.48	0.60	0.65	1.30	2.10	3.20	4.60	6.90	11.00	15.00	20.20
		40	1 1/2"	90	0.55	0.67	1.00	1.50	2.25	3.15	4.50	6.50	9.50	13.65	17.50
				130	0.60	0.70	1.10	1.70	2.70	4.00	6.00	9.20	13.80	18.20	23.80
50	2"	32	1 1/4"	90	0.45	0.56	0.80	1.10	1.70	2.50	3.60	4.95	7.15	11.40	15.30
				130	0.48	0.60	0.90	1.30	2.10	3.20	4.60	6.90	11.60	16.00	21.00
		40	1 1/2"	90	0.57	0.68	0.90	1.45	2.10	3.15	4.50	6.40	9.50	13.80	18.00
				130	0.60	0.70	1.00	1.70	2.60	4.00	5.90	9.20	14.00	18.90	24.60
		50	2"	90	0.85	1.05	1.70	2.55	3.75	5.35	7.70	11.40	16.00	21.70	28.00
				130	0.90	1.10	1.90	2.90	4.50	6.80	10.50	15.50	22.00	29.30	37.00
65	2 1/2“	40	1 1/2“	130	0.65	0.75	1.10	1.80	2.80	4.30	6.50	10.40	16.00	22.00	29.00
		50	2“	130	1.00	1.20	2.00	3.10	4.80	6.70	9.70	16.00	24.00	35.00	45.00
		65	2 1/2“	130	1.60	2.00	3.00	5.00	8.00	13.50	22.00	33.00	45.00	56.00	65.00
80	3“	50	2“	130	1.00	1.20	2.00	3.40	5.30	8.30	13.00	19.00	26.00	35.00	45.00
		65	2 1/2“	130	1.60	2.00	2.90	5.00	8.20	13.00	22.00	35.00	48.00	61.00	73.00
		80	3“	130	2.50	3.40	6.30	10.70	16.00	27.00	42.50	58.00	73.00	87.00	100.0
100	4“	65	2 1/2“	130	1.40	1.80	2.80	5.00	8.80	15.00	25.00	37.00	50.00	64.00	77.00
		80	3“	130	2.20	3.10	5.90	10.30	17.50	30.00	48.00	66.00	82.00	97.00	110.0
		100	4“	130	3.80	5.20	9.50	15.00	26.00	46.50	67.50	90.00	111.0	128.0	140.0

Tab. 7: K_V values connection size 40 – 100

7.6 General technical data

Control functions (CF)	The valve seat is always closed against the medium flow
Control function A	Normally closed by spring action
Control function B	Normally open by spring action
Control function I	Actuating function via reciprocal pressurization (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 sealing (with silicone grease)	PTFE V rings with spring compensation
Control cone	Control cone with PTFE seal, PEEK seal or Steel / steel seal
Spindle Spindle guide	1.4401 / 1.4404 1.4401 / 1.4404 / 316L

Connections

Pilot air port	prepared for direct connection
Valve body connections:	
Flange connection:	DIN EN 1092-1, ANSI B 16.5, JIS 10K
Threaded connection:	G, RC, NPT (EN ISO 228-1, ISO 7/1 / DIN EN 10226-2, ASME B 1.20.1)
Welded connection:	EN ISO 1127 series 1/ ISO 4200/ DIN 11866 series B, DIN 11850 series 2 / DIN 11866 series A / DIN EN 10357 series A, ASME BPE / DIN 11866 series C, BS 4825-1, SMS 3008
Clamp connection:	ISO 2852, DIN 32676 series A and series B, ASME BPE / DIN 32676 series C, BS 4825-3

Media

Control medium	Instrument air according to DIN ISO 8573-1
Flow media	Water, Alcohol, Fuel, Hydraulic liquids, Saline solutions, Lyes, Organic solvents
Installation position	as required, preferably with actuator in upright position
Protection class	IP67 in accordance with IEC 529/EN 60529

8 INSTALLATION

8.1 Safety instructions

DANGER!

Danger – high pressure in the equipment.

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

WARNING!

Risk of injury from improper installation.

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

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- ▸ Secure system from unintentional activation.
- ▸ Following assembly, ensure a controlled restart.

For control function I – Danger if pilot pressure fails.

For control function I control and resetting occur pneumatically.
If the pressure fails, no defined position is reached.

- ▸ To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.

Risk of injury from moving parts in the device.

- ▸ Do not reach into openings.

CAUTION!

Risk of injury due heavy devices!

- ▸ During transport or during assembly, a heavy device may fall and cause injury.
- ▸ Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- ▸ Use appropriate tools.

8.2 Before installation

- The globe control valve can be installed in any installation position, preferably with the actuator in upright position.
- Before connecting the valve, ensure the pipelines are flush.
- Make certain the flow direction is correct (Flow direction always below seat).

8.2.1 Preparatory work

→ Clean pipelines (Sealing material, swarf, etc.).

Devices with welded body

NOTE!

For valves with installed control:

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

- ▸ Remove control from the actuator described below.

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

→ Clamp the valve body in a holding device.

→ Loosen the fastening screws (2x).

→ Remove the control unit upwards.

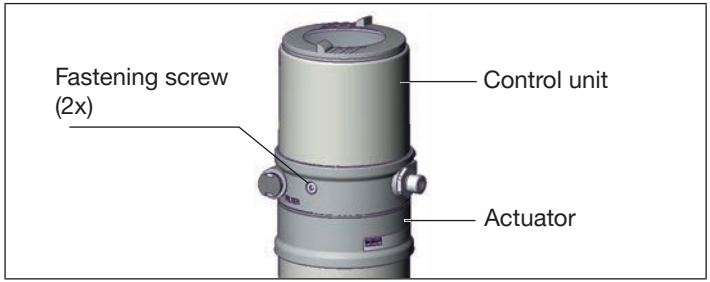


Fig. 8: Disassembly the control unit

Remove the actuator from the valve body.

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

NOTE!

Damage to the valve seat seal or the valve seat contour!

- When removing the actuator, ensure that the valve is in open position.

→ Control function A pressurize the pilot air port 1 with compressed air (5 bar): valve opens.

→ Using a suitable open-end wrench, place the wrench flat on the pipe.

→ Unscrew the actuator from the valve body.

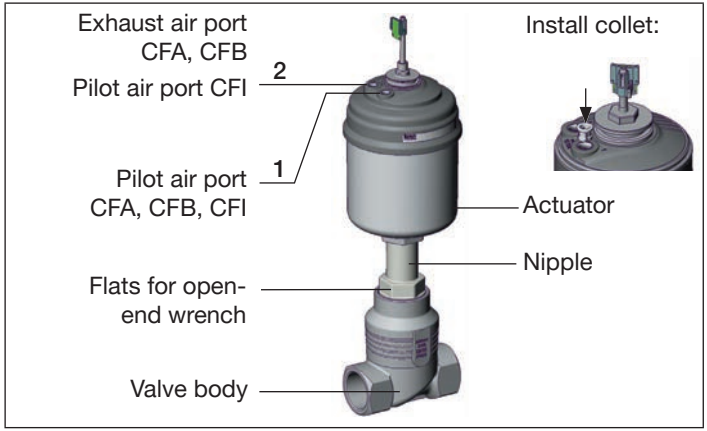


Fig. 9: Installation

Other device versions

→ Do not remove actuator unless this is a customer-specific requirement.

→ Procedure see “Devices with welded body”.

8.3 Installation

WARNING!

Risk of injury from improper installation.

Assembly with unsuitable tools or non-observance of the tightening torque is dangerous as the device may be damaged.

- For installation use an open-end wrench, never a pipe wrench.
- Observe the tightening torque (see “Tab. 8: Tightening torques of valve body / nipples”).

Dirt trap for devices with authorisation in accordance with DIN EN 161

In accordance with DIN EN 161 “Automatic shut-off valves for gas burners and gas appliances” a dirt trap must be connected upstream of the valve and prevent the insertion of a 1 mm plug gauge.

8.3.1 Installation of the valve body

Welded bodies

→ Weld valve body in pipeline system.

Other body versions

→ Connect body to pipeline.

8.3.2 Install actuator (welded body)

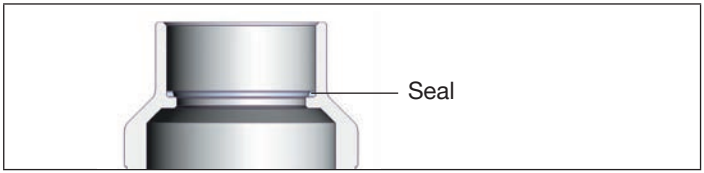


Fig. 10: Seal

→ Check the seal and if required, replace it.

WARNING!

Danger if incorrect lubricants used.

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

- In specific applications, e.g. oxygen or analysis applications, use appropriately authorized lubricants only.

→ Grease nipple thread before re-installing the actuator (e.g. with Klüber paste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or the valve seat contour!

- When installing the actuator, ensure that the valve is in open position.

→ Control function A pressurize the pilot air port 1 with compressed air (5 bar): valve opens.

→ Screw actuator into the valve body.
Observe tightening torque (see “Tab. 8”).

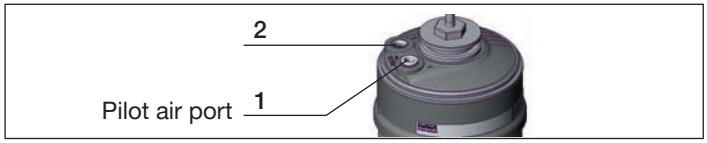


Fig. 11: Connections

Tightening torques of valve body / nipples	
Nominal width of valve body	**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. 8: Tightening torques of valve body / nipples

8.3.3 Install control unit

Before installation, check the position of the ports on the control unit and, if required, align the actuator.
Description see chapter “8.3.4 Rotating the actuator”.

→ Remove collet from pilot air port 1.

→ Check that the O-rings are correctly positioned in the pilot air ports.

→ Align the puck holder and the control unit until
1. the puck holder can be inserted into the guide rail of the control unit and
2. the supports of the control unit can be inserted into the pilot air ports of the actuator (see also “Fig. 13”).

NOTE!

Damaged printed circuit board or malfunction!

▸ Ensure that the puck holder is situated flat on the guide rail.

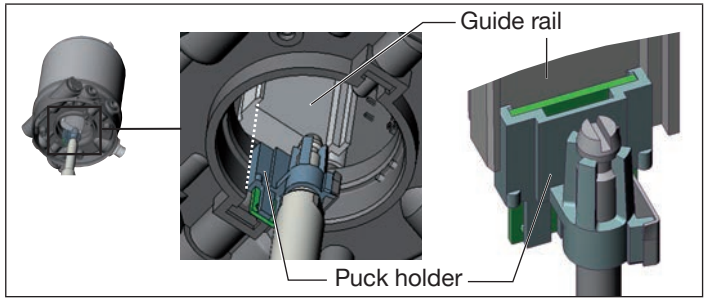


Fig. 12: Aligning the puck holder

→ Push the control unit, without turning it, onto the actuator until no gap is visible on the form seal.

NOTE!

Too high torque when screwing in the fastening screw does not ensure protection class IP65 / IP67.

- The fastening screws may be tightened to a maximum torque of 1.5 Nm only.

→ Attach the control unit to the actuator using the two side fastening screws. In doing so, tighten the screws only hand-tight (max. torque: 1.5 Nm).

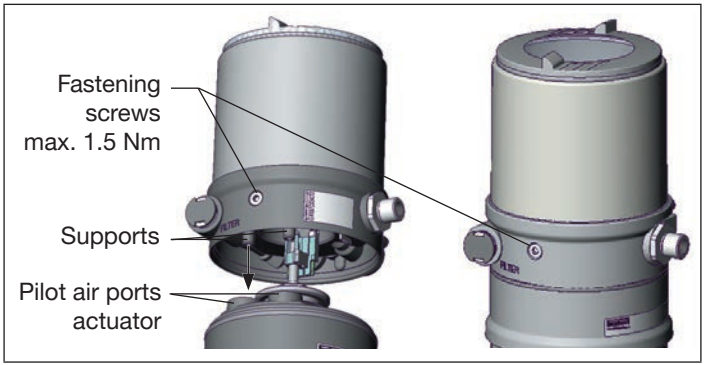


Fig. 13: Install control unit

8.3.4 Rotating the actuator

The position of the connections can be aligned steplessly by rotating the actuator through 360°.

Only the entire actuator can be rotated. The control unit cannot be rotated contrary to the actuator.

NOTE!

Damage to the valve seat seal or the valve seat contour!

- When rotating the actuator, ensure that the valve is in open position.

Procedure:

→ Clamp the valve body in a holding device (applies only to valves which have not yet been installed).

→ **Control function A**:
Without unit control: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.
With unit control: open the valve according to the operating instructions for the control unit.

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

WARNING!

Risk of injury from discharge of medium and pressure.

If the direction of rotation is wrong, the body interface may become detached.

- Rotate the actuator module in the specified direction only (see "Fig. 14")!

Actuator with hexagon:

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

→ Rotate counter-clockwise (as seen from below) to bring the actuator into the required position.

Actuator without hexagon:

→ Fit special wrench[10] exactly into the wrench contour on the underside of the actuator.

→ Rotate clockwise (as seen from below) to bring the actuator into the required position.

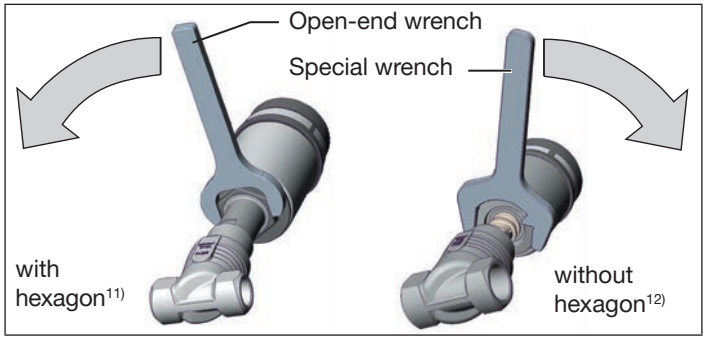


Fig. 14: Rotating with special key / open-end wrench

7) The special key (identification number 00 665 702) is available from your Bürkert sales office.
8) Series production status since middle of 2011
9) Series production status up to middle of 2011.

8.4 Pneumatic connection

DANGER!

Danger – high pressure in the equipment.

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

WARNING!

Risk of injury from unsuitable connection hoses.

Hoses which cannot withstand the pressure and temperature range may result in hazardous situations.

- Use only hoses which are authorized for the indicated pressure and temperature range.
- Observe the data sheet specifications from the hose manufacturers.

For control function I – Danger if pilot pressure fails.

For control function I control and resetting occur pneumatically. If the pressure fails, no defined position is reached.

- To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.

The pneumatic connection of the globe control valve can be carried out only in connection with the appropriate control unit.

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

8.4.1 Connection of the control medium

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

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

If used in an aggressive environment, we recommend conveying all free pneumatic connections into a neutral atmosphere with the aid of a pneumatic hose.

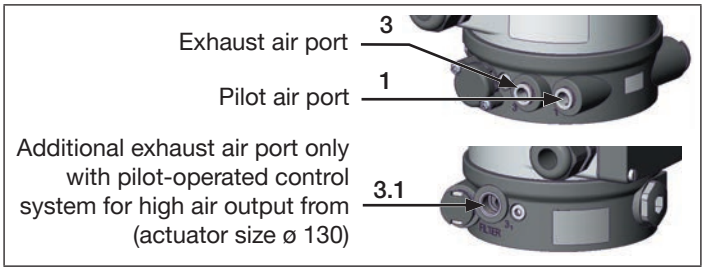


Fig. 15: Pneumatic connection

Control air hose:

6/4 mm or 1/4" pilot air hoses can be used.
A pilot air port via G 1/8 thread is available as an option.

8.5 Start-up

After installing the device, run the *X.TUNE* function. This function presets the control parameters.

Description – see operating instructions for the control.

8.6 Removal

DANGER!

Risk of injury from discharge of medium and pressure.

It is dangerous to remove a device which is under pressure due to the sudden release of pressure or discharge of medium.

▸ Before removing a device, switch off the pressure and vent the lines.

Procedure:

→ Loosen the pneumatic connection.

→ Remove the device.

9 ELECTRICAL CONTROL UNIT

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

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

The electrical connection of the pilot valve or the control unit is described in the respective operating instructions for the pilot valve/control unit in the chapter titled “Installation”.

10 MAINTENANCE, CLEANING

10.1 Safety instructions

DANGER!

Danger – high pressure in the equipment.

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

Risk of injury due to electrical shock.

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

WARNING!

Risk of injury from improper maintenance.

- Maintenance may be performed by authorised technicians only.
- To screw on or unscrew valve body or actuator, use an open-end wrench, never a pipe wrench, and observe tightening torques.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

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

WARNING!

For control function I – Danger if pilot pressure fails.

For control function I control and resetting occur pneumatically.
If the pressure fails, no defined position is reached.

- ▸ To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.

Risk of injury from moving parts in the device.

- ▸ Do not reach into openings.

10.2 Maintenance work

Actuator:

The actuator of the globe control valve is maintenance-free provided it is used according to these operating instructions.

Wearing parts of the globe control valve:

Parts which are subject to natural wear:

- Valve seat
- Control cone
- Seals

→ If leaks occur, replace the particular wearing part with an appropriate spare part.
(For spare-part sets and installation tools see chapter entitled "12 Replacement parts").

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

Visual inspection:

Perform regular visual inspections according to the application conditions:

→ Check media connections for leaks.

→ Check release bore on the tube for leaks.

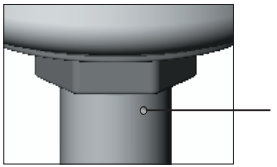


Fig. 16: Release bore

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 cleaning agents are compatible with the body materials and seals.

10.3 Replacing the wearing parts

10.3.1 Replacing the control cone set

The control cone set consists of

- Control cone
- Seal
- Dowel pin
- Lubricant

Before the control cone set can be replaced, the actuator must be removed from the valve body.

DANGER!

Risk of injury from discharge of medium and pressure.

It is dangerous to remove a device which is under pressure due to the sudden release of pressure or discharge of medium.

- ▸ Before removing a device, switch off the pressure and vent the lines.

WARNING!

Risk of injury if the wrong tools are used.

It is dangerous to use unsuitable tools for installation work as the device may be damaged.

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

Removing the actuator from the valve body

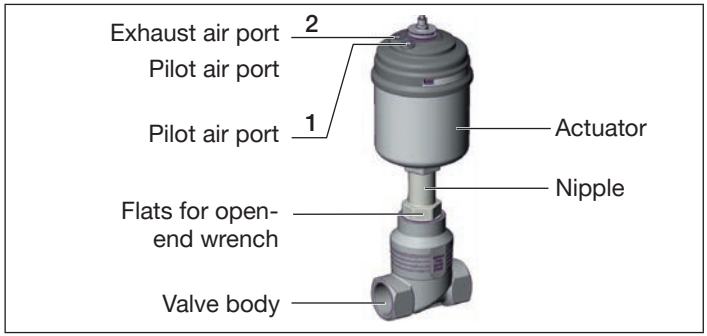


Fig. 17: Valve

→ Clamp the valve body in a holding device (applies only to valves which have not yet been installed).

NOTE!

Damage to the valve seat seal or the valve seat contour!

- ▸ When removing the actuator, ensure that the valve is in open position.

→ **Control function A:**
Without unit control: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.
With unit control: open the valve according to the operating instructions for the control unit.

→ Using a suitable open-end wrench, place the wrench flat on the pipe.

→ Unscrew the actuator from the valve body.

Replace the control cone set

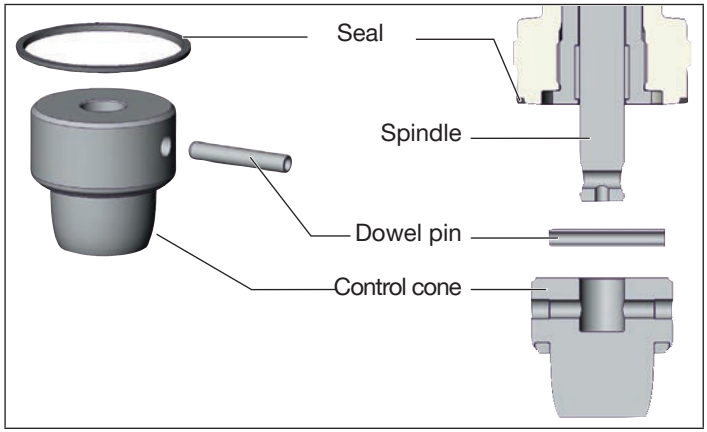


Fig. 18: Replacing the control cone set

NOTE!

Important information for the problem-free and safe functioning of the device!

The sealing face of the control cone must not be damaged.

Procedure:

→ Knock out dowel pin with 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.

→ Attach new control cone to the spindle.

→ Align bores of the control cone and spindle.

→ Support control cone on the cylindrical part with the aid of a prism or something similar.

→ Put on dowel pin and carefully knock in with a hammer.

→ Position the dowel pin in the centre of the spindle axis.

Install the actuator (with control unit) on the valve body

→ Check the seal and if required, replace it.

WARNING!

Danger if incorrect lubricants used.

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

- In specific applications, e.g. oxygen or analysis applications, use appropriately authorised lubricants only.

→ Grease nipple thread before re-installing the actuator (e.g. with Klüber paste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or the valve seat contour!

- When installing the actuator, ensure that the valve is in open position.

→ **Control function A**:
Without unit control: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.
With unit control: open the valve according to the operating instructions for the control unit.

→ Screw actuator into the valve body.
Observe tightening torque (see “Tab. 9: Tightening torques of valve body / nipples”).

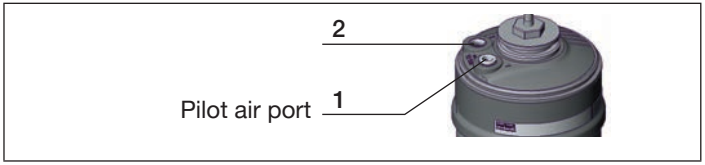


Fig. 19: Connections

Tightening torques of valve body / nipples	
Nominal width of valve body	**Tightening torques [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. 9: Tightening torques of valve body / nipples

If the position of the pilot air ports for installation of the hoses is unfavorable, these can be aligned steplessly by rotating the actuator through 360°.

The procedure is described in the chapter entitled “8.3.4 Rotating the actuator”.

10.3.2 Replacing the valve seat set

When replacing the valve seat, the actuator must be removed.
The necessary work steps are described in the previous sub chapter “10.3.1 Replacing the control cone set”.

When installing a valve seat with a modified orifice, the identification number for the globe control valve changes.

The valve seat set consists of

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

DANGER!

Risk of injury from discharge of medium and pressure.

It is dangerous to remove a device which is under pressure due to the sudden release of pressure or discharge of medium.

- Before removing a device, switch off the pressure and vent the lines.

WARNING!

Risk of injury from improper installation.

Assembly with unsuitable tools or non-observance of the tightening torque is dangerous as the device may be damaged.

- Replacement only with special installation tools (for order numbers refer to chapter entitled “12.2 Installation tools”).
- Observe the tightening torque (see “Tab. 10: Tightening torques for valve seat installation” and “Tab. 11: Tightening torques of valve body / nipples”).

Procedure:

→ With the actuator being removed, replace the valve seat as follows.

Replacing the valve seat

→ Unscrew the old valve seat using the installation tool (with matching tool insert) and a spanner.

→ Clean the thread of the body and the sealing surface with compressed air.

→ If required, replace tool insert in the assembly tool (depending on orifice of the new valve seat).

→ Place the new valve seat onto the installation tool.

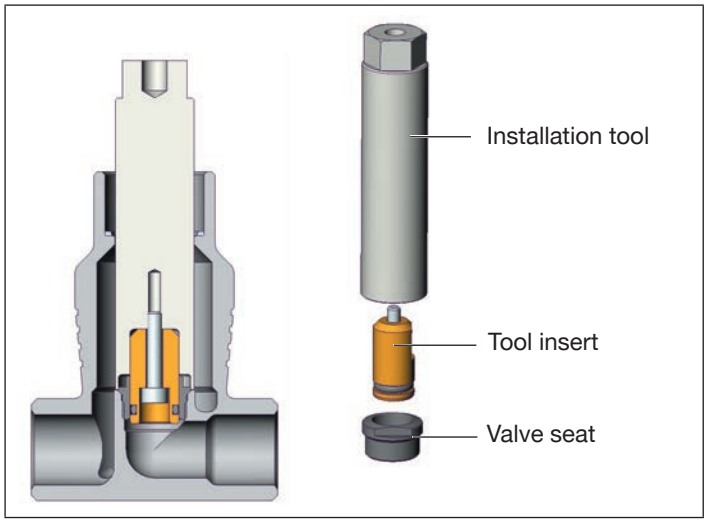


Fig. 20: Replacing the valve seat

WARNING!

Danger if incorrect lubricants used.

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

- In specific applications, e.g. oxygen or analysis applications, use appropriately authorised lubricants only.

→ Grease the thread of the valve seat with stainless steel lubricant (e.g. with Klüber paste UH1 96-402 from Klüber).

→ Manually screw the fitted valve seat into the thread of the body.

→ Screw the valve seat in place using a torque wrench. Observe the tightening torque (see "Tab. 10").

Tightening torques for valve seat installation	
Valve seat size	Tightening torque [Nm]
	Valve seat coated
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. 10: Tightening torques for valve seat installation

Install the actuator (with control unit) on the valve body

→ Check the seal and if required, replace it.

WARNING!

Danger if incorrect lubricants used.

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

- In specific applications, e.g. oxygen or analysis applications, use appropriately authorised lubricants only.

→ Grease nipple thread before re-installing the actuator (e.g. with Klüber paste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or the valve seat contour!

- When installing the actuator, ensure that the valve is in open position.

→ **Control function A:**
Without unit control: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.
With unit control: open the valve according to the operating instructions for the control unit.

→ Screw actuator into the valve body.
Observe tightening torque (see "Tab. 11").

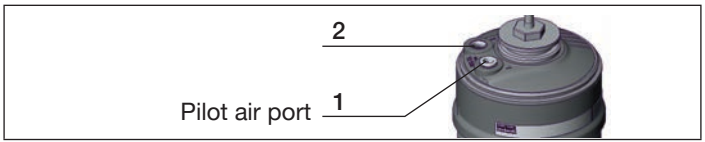


Fig. 21: Connections

Tightening torques of valve body / nipples	
Nominal width of valve body	**Tightening torques [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 of valve body / nipples

If the position of the pilot air ports for installation of the hoses is unfavorable, these can be aligned steplessly by rotating the actuator through 360°.

The procedure is described in the chapter entitled "8.3.4 Rotating the actuator".

10.3.3 Replacing the packing gland

The seal set for the packing gland contains:

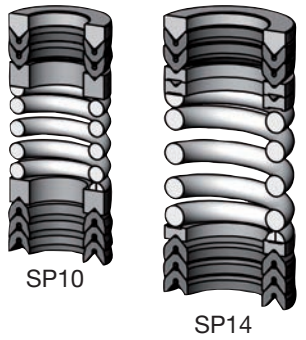
SP10 / SP14	
• 1 support ring • 5 chevron seal • 2 or 3 pressure rings[13)] • 1 pressure spring • 1 seal • Lubricant	
SP22	
• 1 support ring • 7 chevron seal • 2 pressure rings • 1 pressure spring • 1 spacer • 1 seal • Lubricant	

Fig. 22: Seal set for packing gland

10) depending on the spindle diameter

DANGER!

Risk of injury from discharge of medium and pressure.

It is dangerous to remove a device which is under pressure due to the sudden release of pressure or discharge of medium.

- ▸ Before removing a device, switch off the pressure and vent the lines.

WARNING!

Risk of injury if the wrong tools are used.

It is dangerous to use unsuitable tools for installation work as the device may be damaged.

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

Before the packing gland can be replaced, the actuator must be removed from the valve body and the control cone removed.

Removing the actuator from the valve body

→ Clamp the valve body in a holding device (applies only to valves which have not yet been installed).

NOTE!

Damage to the valve seat seal or the valve seat contour!

▸ When removing the actuator, ensure that the valve is in open position.

→ **Control function A:**
Without unit control: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.
With unit control: open the valve according to the operating instructions for the control unit.

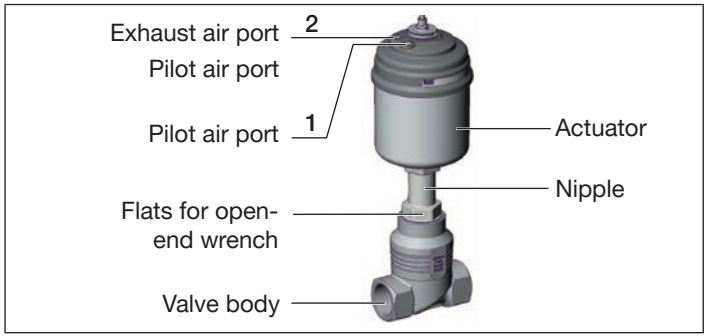


Fig. 23: Valve

→ Using a suitable open-end wrench, place the wrench flat on the pipe.

→ Unscrew the actuator from the valve body.

Removing the control cone set

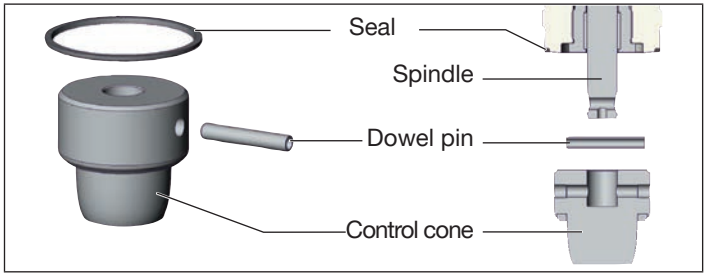


Fig. 24: Replacing the control cone set

NOTE!

Important information for the problem-free and safe functioning of the device.

The sealing face of the control cone must not be damaged.

Procedure:

→ Knock out the dowel pin with 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 up to April 2012):

→ Unscrew the spindle guide with the aid of the installation wrench[14)] and an open-end wrench.

VA spindle guide (Series production status since April 2012):

→ Unscrew spindle guide using a modified socket wrench[14)].

SP22:

→ Unscrew the VA spindle guide with the aid of an open-end wrench.

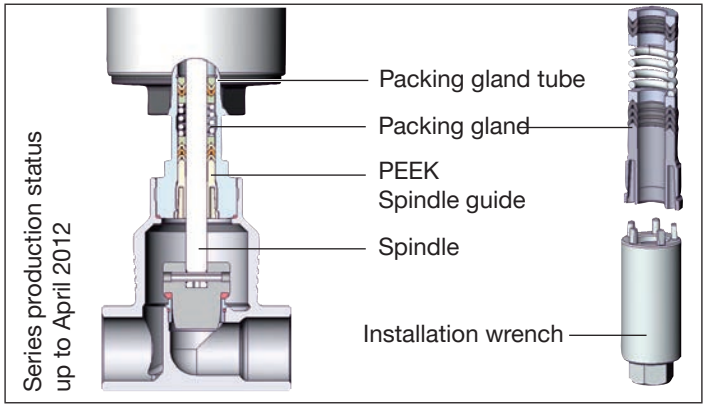


Fig. 25: Replacing packing gland (PEEK spindle guide)

11) *The installation wrench or modified socket wrench is available from your Bürkert sales office.*

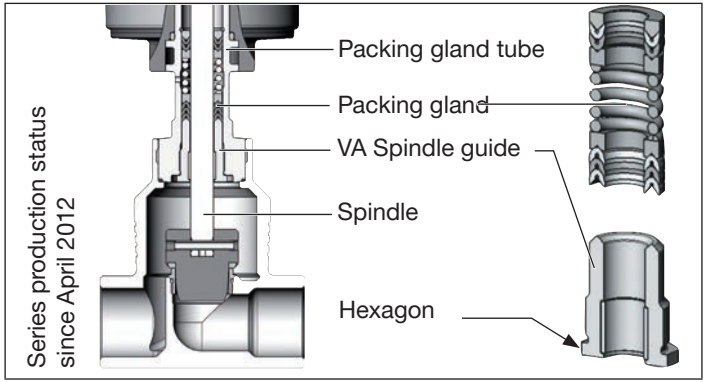


Fig. 26: Replacing packing gland (VA spindle guide)

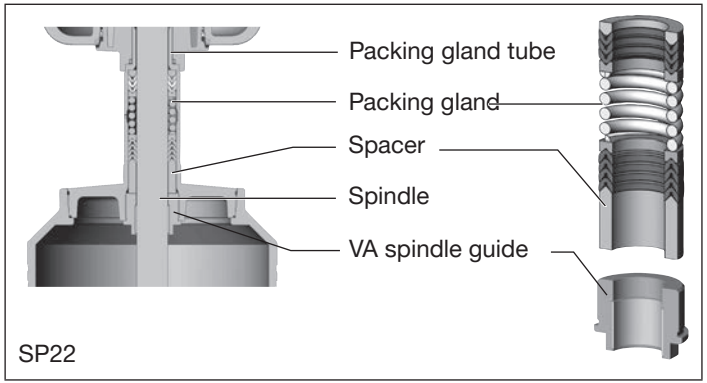


Fig. 27: Replacing packing gland SP22

WARNING!

Risk of injury from parts jumping out.

When the spindle opening is exposed, the individual parts of the packing gland are pressed out at an undefined speed when the pilot air ports is pressurized.

- Before pressurizing with control air, safeguard the ambient area of the discharge opening (e.g. place spindle on a firm base).

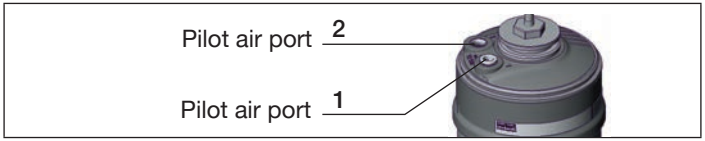


Fig. 28: Connections

→ Press out packing gland:
Control function A and I Pressurize pilot air port 1 with 6 – 8 bar.
Control function B Pressurize pilot air port 2 with 6 – 8 bar.

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

→ Connect the individual parts to the spindle in the specified direction and sequence (as illustrated in “Fig. 29” or “Fig. 30”).

→ Push packing gland into the packing gland tube.

If the valve features a PEEK spindle guide (series production status up to April 2012), we recommend replacing it with a VA spindle guide (see “Tab. 20: VA spindle guide for packing gland”, page 46)

→ Grease thread of the spindle guide (Klüber paste UH1 96-402).

→ Screw spindle guide back in. Observe tightening torque (see “Tab. 12: Tightening torques of spindle”).

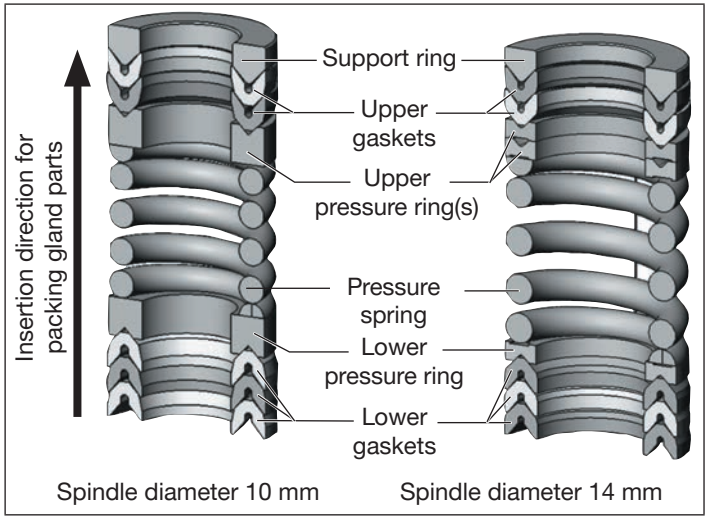


Fig. 29: Seal set for packing gland

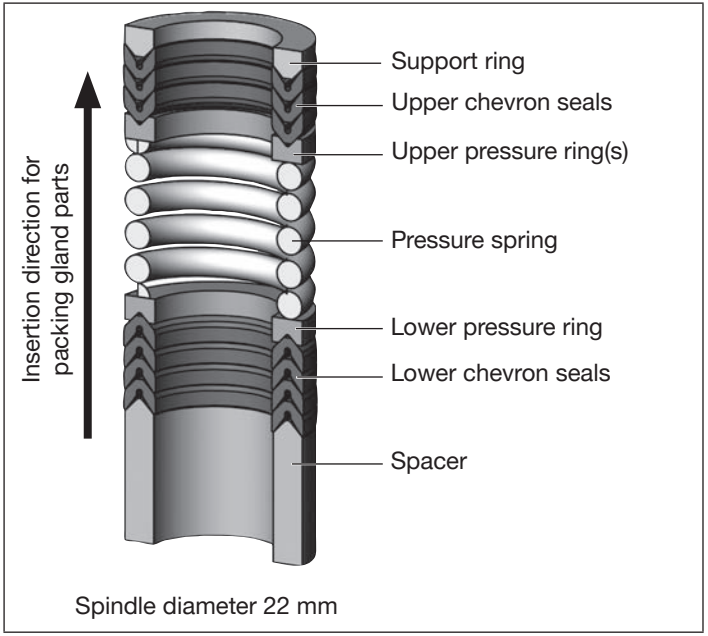


Fig. 30: Seal set for packing gland SP22

Tightening torques of spindle			
Spindle diameter	**Nominal width of valve body**	**Material of spindle guide**	**Tightening torque [Nm]**
10 mm		PEEK	6
	10/15	1.4401 / 1.4404 / 316L	15
	20 – 25		25
	32		50
14 mm		PEEK	15
	25	1.4401 / 1.4404 / 316L	25
	32-50		60
22 mm	65 – 100	1.4401 / 1.4404	60

Tab. 12: Tightening torques of spindle

Installing the control cone

→ Attach new control cone to the spindle.
→ Align bores of the control cone and spindle.
→ Support control cone on the cylindrical part with the aid of a prism or something similar.
→ Put on dowel pin and carefully knock in with a hammer.
→ Position the dowel pin in the centre of the spindle axis.

Install the actuator (with control unit) on the valve body

→ Check the seal and if required, replace it.

WARNING!

Danger if incorrect lubricants used.

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

- In specific applications, e.g. oxygen or analysis applications, use appropriately authorised lubricants only.

→ Grease nipple thread before re-installing the actuator (e.g. with Klüber paste UH1 96-402 from Klüber).

NOTE!

Damage to the valve seat seal or the valve seat contour!

- When installing the actuator, ensure that the valve is in open position.

→ **Control function A:**
Without unit control: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.
With unit control: open the valve according to the operating instructions for the control unit.

→ Screw actuator into the valve body.
Observe tightening torque (see “Tab. 13”).

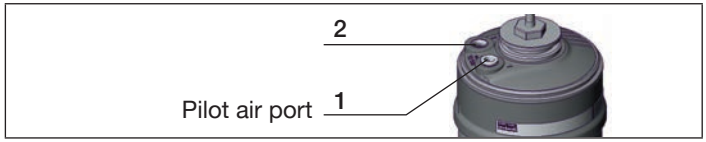


Fig. 31: Connections

Tightening torques of valve body / nipples	
Nominal width of valve body	**Tightening torques [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. 13: Tightening torques of valve body / nipples

If the position of the pilot air ports for installation of the hoses is unfavorable, these can be aligned steplessly by rotating the actuator through 360°.

The procedure is described in the chapter entitled “8.3.4 Rotating the actuator”.

11 MALFUNCTIONS

Malfunction	Remedial action
Actuator does not switch	Pilot air port interchanged[15)] CFA → Connecting pilot air port 1 CFB → Connecting pilot air port 1 CFI → Pilot air port 1: Open Pilot air port 2: Close
	Pilot pressure too low → Observe pressure specifications on the type label
	Medium pressure too high → Observe pressure specifications on the type label
	Flow direction reversed → Observe direction arrow on the body

Tab. 14: Malfunctions - 1

Malfunction	Remedial action
Valve is not sealed	Dirt between seal and valve seat → Installing dirt trap
	Valve seat seal worn → Installing a new control cone
	Flow direction reversed → Observe direction arrow on the body
	Medium 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 release bore	Packing gland worn → Replacing packing gland

Tab. 15: Malfunctions - 2

12) *See diagram "Fig. 15: Pneumatic connection" in the chapter of the same name.*

12 REPLACEMENT PARTS

WARNING!

Risk of injury when opening the actuator.

The actuator contains a tensioned spring. If the actuator is opened, there is a risk of injury from the spring jumping out.

▸ The actuator must not be opened.

CAUTION!

Risk of injury and/or damage by the use of incorrect parts.

Incorrect accessories and unsuitable replacement parts may cause injuries and damage the device and the surrounding area.

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

12.1 Replacement part sets

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

- Control cone set consisting of control cone, dowel pin, seal and lubricant.
- Valve seat set consisting of valve seat, O-ring (depending on the version), seal and lubricant.
- Sealing set for packing gland consisting of the individual parts of the packing gland seal and lubricant (the (modified) socket wrench is not included in the sealing set).
- Spindle guide for packing gland consisting of VA spindle guide, seal and lubricant.

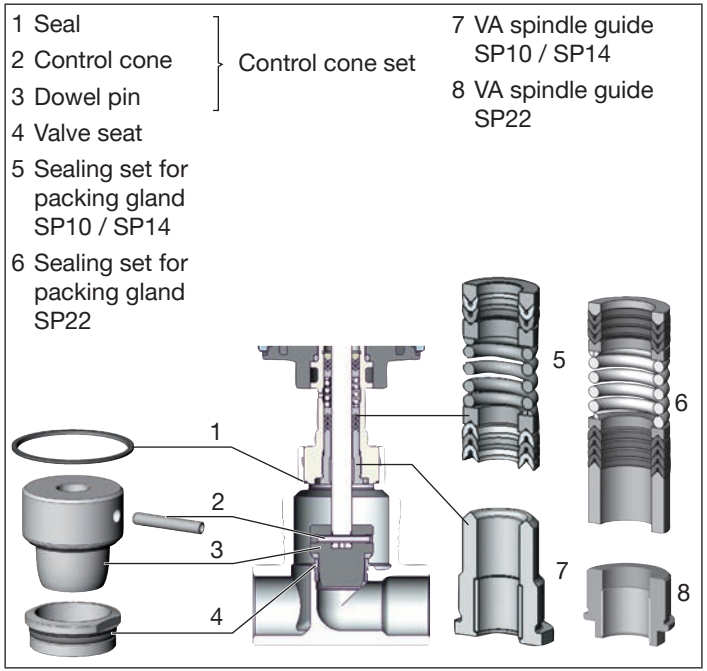


Fig. 32: Replacement parts

When installing a valve seat with a modified orifice, the identification number for the globe control valve changes.

12.1.1 Replacement part sets

Control cone set consisting of: control cone, dowel pin, seal				
Valve seat size [mm]	Nominal width of valve body [mm]	Order no.		
		Steel/ Steel	PTFE/ Steel	PEEK/ Steel
4	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

Control cone set consisting of: control cone, dowel pin, seal				
Valve seat size [mm]	Nominal width of valve body [mm]	Order no.		
		Steel/ Steel	PTFE/ Steel	PEEK/ Steel
32	32	226 953	226 965	301318
	40	226 955	226 967	301322
	50	226 957	226 969	301324

Tab. 16: Control cone set DN4 – 32

Control cone set consisting of: control cone, dowel pin, seal				
Valve seat size [mm]	Nominal width of valve body [mm]	Order no.		
		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. 17: Control cone set DN40 – 100

Valve seat set
consisting of: valve seat, O-ring (depending on the version), graphite seal

Valve seat size [mm]	Nominal width of valve body [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]	Nominal width of valve body [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. 18: Valve seat set

Valve seat sets are available on request from your Bürkert sales office.

Sealing set for packing gland			
Spindle ∅	Nominal width of valve body	Actuator size	Order no.
10	10/15 – 25	∅ 50	216 436
		∅ 70	
14	25 - 50	∅ 90	216 438
		∅ 130	
22	65 - 100	∅ 130	252 545

Tab. 19: Sealing set for packing gland

VA spindle guide for packing gland			
Spindle ∅	Nominal width of valve body	Actuator size	Order no.
10	10/15	∅ 50, ∅ 70	246 577
	20/25	∅ 50, ∅ 70	246 578
	32	∅ 70	246 582
14	25	∅ 90	246 579
	32	∅ 90, ∅ 130	246 583
	40	∅ 90, ∅ 130	246 593
	50	∅ 90, ∅ 130	246 593
22	65 – 100	∅ 130	252 543

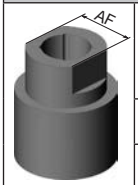
Tab. 20: VA spindle guide for packing gland

12.2 Installation tools

Only for PEEK spindle guide: **Installation wrench for packing gland** (Series-production status until January 2013)	
Installation wrench	**Order no.**
Spindle diameter 10 mm	665 700
Spindle diameter 14 mm	665 701

Tab. 21: Installation wrench

Modified socket wrench for packing gland
(Series production status since January 2013)



Socket wrench	Nominal width of valve body	AF	Order no.
Spindle ∅ 10 mm	15	19	683 220
Spindle ∅ 10 mm	20 – 25	21	683 222
Spindle ∅ 14 mm	32 – 50	21	683 223

Tab. 22: Modified socket wrench

Only for actuator without hexagon: **Special wrench for rotating the actuator** (Series-production status until end of 2011)	
Order no.	665 702

Tab. 23: Special wrench

Installation tools for the replacement of the valve seat		
Orifice valve body DN	Valve seat size	Order no.
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. 24: Installation tool

If you have any queries, please contact your Bürkert sales office.

13 PACKAGING, TRANSPORT, STORAGE

NOTE!

Transport damages.

Inadequately protected equipment may be damaged during transport.

- During transportation protect the device against wet and dirt in shock-resistant packaging.
- 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 components contaminated with media.

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

Note:

Observe national waste disposal regulations.

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