

Type 2030, 2031, 2031 K, 2032, 2033, 2037

Piston-operated diaphragm valves,
Actuator sizes 40 - 125, Diameter DN8 - DN65
Kolbengesteuerte Membranventile,
Antriebsgröße 40 - 125 mm, Nennweiten DN8 - DN65
Vannes à membrane, commandé par piston, Tailles de
mécanisme 40 - 125 mm, Piston section nominale DN8 - DN65



Quickstart

English Deutsch Français

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

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Operating Instructions 1705/008F / Original DE

MAN 1000191863 ML Version: GStatus: RL (released | freigegeben) printed: 22.09.2017

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1 QUICKSTART

The quickstart guide comprises important information.

- ▶ Carefully read the quickstart guide and observe any safety information.
- ▶ The quickstart guide must be available to every user.
- ▶ The liability and warranty for types 2030, 2031, 2031 K, 2032, 2033 and 2037 do not apply if the quickstart instructions are not observed.

The quickstart guide illustrates the installation and commissioning of the equipment with examples. A detailed description of the device can be found in the operating instructions for types 2030, 2031, 2031 K, 2032, 2033 and 2037 in the internet at: www.burkert.com

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

2 SYMBOLS

Warning to prevent death or serious injuries:



Warns of an immediate danger!



Warns of a potentially dangerous situation!

Warning to prevent moderate or minor injuries:



Warns of a possible danger!

NOTE!

Warns of material damage!



Important tips and recommendations.



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

▶ designates instructions for risk prevention.

→ designates a procedure which you must carry out.

3 INTENDED USE

Incorrect use of type 2030, 2031, 2031 K, 2032, 2033 and 2037 can be dangerous to people, nearby equipment and the environment.

The diaphragm valve of type 2030 is designed for the control of contaminated and aggressive media. The valves of types 2031, 2031 K, 2032, 2033 and 2037 can also be used with ultrapure or sterile media with higher viscosity.

- ▶ In the potentially explosion-risk area the device 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. Secure system/equipment against unintentional activation.
- ▶ Observe the permitted usage conditions for the Equipment.
- ▶ Only operate when in perfect condition and always ensure proper storage, transportation, installation and operation.
- ▶ Only feed fluids into the media connections that are specified in section “[Technical Data](#)”.
- ▶ Do not make any internal or external changes to types 2030, 2031, 2031 K, 2032, 2033 and 2037. Secure equipment/ device against unintentional actuation.
- ▶ Only trained technicians may perform installation and maintenance work.
- ▶ After an interruption in the power supply, ensure that the process is restarted in a controlled manner.
- ▶ Do not subject the body to mechanical loading.
- ▶ Observe the general accepted technical rules.

4 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 – high pressure.

- ▶ Turn off the pressure and vent the lines before loosening lines or valves.

Risk of electric shock.

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

Risk of burns.

The surface of the equipment can become hot during continuous operation.

- ▶ Do not touch the device with bare hands.

Danger of bursting from overpressure.

- ▶ Observe the specifications on the type label for max. control and medium pressure as well as the permitted medium temperature.

5 CONTACT ADDRESSES

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Email: info@burkert.com

International

Contact addresses can be found in the internet at: www.burkert.com

6 TECHNICAL DATA

6.1 Conformity

The types 2030, 2031, 2031 K, 2032, 2033 and 2037 are compliant with the EU Directives according to the EU Declaration of Conformity.

6.2 Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU type test certificate and/or the EU Declaration of Conformity.

6.3 General technical data

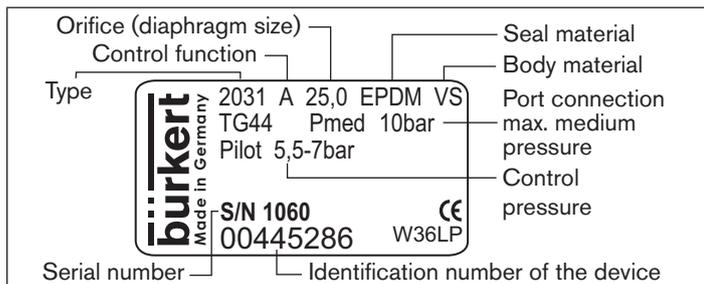
Control medium: neutral gases, air
Flow media: Type 2030 contaminated, corrosive media
Types 2031, 2031 K, 2032, 2033 and 2037 contaminated, ultrapure, sterile media and media with higher viscosity
Installation position: any, preferably with actuator facing up;
tank bottom valve Type 2033: Actuator facing downwards

Materials and connections see data sheet.

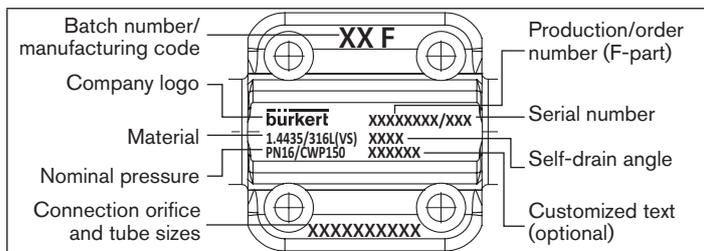
6.4 Control functions

A		Closed by spring force in rest position
B		Opened by spring force in rest position
I		Actuating function via reciprocal pressurization

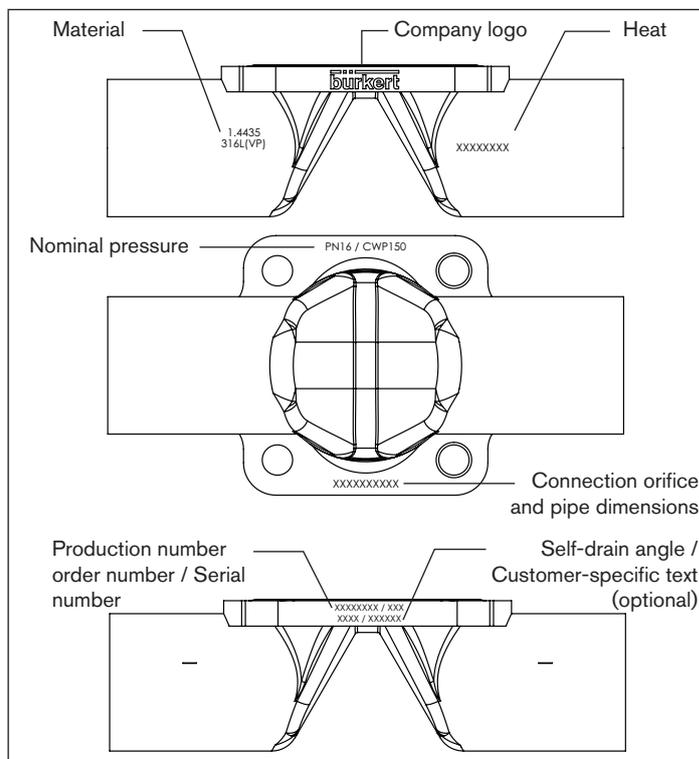
6.5 Type label



6.6 Labeling of forged body



6.7 Labeling of tube valve body (VP)



6.8 Application conditions



WARNING!

Danger of bursting from overpressure.

If the device explodes, there is a risk of serious injuries, chemical burns, scalding.

- ▶ Do not exceed the maximum control and medium pressure. Observe specifications on the type label.
- ▶ Observe permitted ambient and media temperature.

Ambient temperature for actuators:

Material	Actuator size	Temperature
PA	40 - 125 mm	-10...+60 °C
PPS	40 - 80 mm	+5...+140 °C
	100 mm, 125 mm	+5...+90 °C (briefly up to +140 °C)

Medium temperature for body:

Body material	Temperature
Stainless steel	-10 ... +140 °C
PVC (see PT graph)	-10 ... +60 °C
PVDF (see PT graph)	-10 ... +120 °C
PP (see PT graph)	-10 ... +80 °C

Medium temperature for diaphragms:

Material	Temperature [°C] ¹⁾	Remarks
EPDM (AB)	-10...+130	Steam sterilization up to +140 °C / 60 min
EPDM (AD)	-5...+143	Steam sterilization up to +150 °C / 60 min
FKM (FF)	0...+130	No steam / dry heat up to +150 °C / 60 min
PTFE (EA)	-10...+130	Steam sterilization up to +140 °C / 60 min
Advanced PTFE (EU)	-5...+143	Steam sterilization up to +150 °C / 60 min
Gylon (ER)	-5...+130	Steam sterilization up to +140 °C / 60 min

- ¹⁾ The indicated medium temperatures apply only to media which do not corrode or swell the diaphragm materials. The behavior of the medium with respect to the diaphragm may be changed by the medium temperature. The function properties, in particular the service life of the diaphragm, may deteriorate if the medium temperature increases. Do not use the diaphragms as steam shut-off element.

Maximum permitted medium pressure:

Permitted medium pressure depending on the medium temperature for plastic bodies:

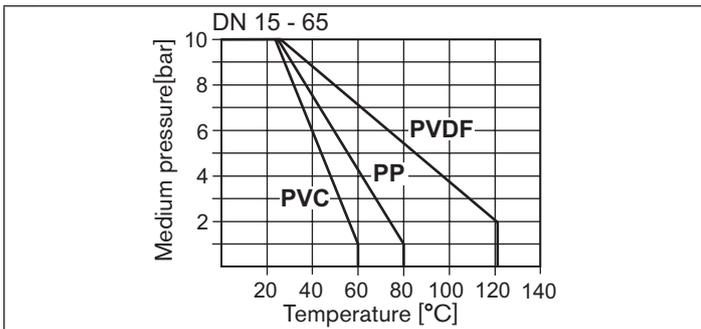


Fig. 1: Graph of medium pressure / medium temperature

Permitted control pressure:

Actuator size \varnothing [mm]	Actuator material	Min. control pressure [bar]	Max. control pressure [bar]
40 - 100	PA	2	10
125	PA	2	7
40 - 125	PPS	2	7

Control pressure for control function A:

The values apply to body made of:

- plastic,
- stainless steel: block material, forged, casted and tube valve body.

Diaphragm size DN [mm]	Actuator size [mm]	Control pressure [bar] at medium pressure ²⁾	
		0 bar	maximum
8	40	5	4
	50	5	3.5
15	63	5	4
	80	5.5	4
20	63	5	4
	80	5.5	4.5
25	63	5.5	4.5
	80	5.5	4
32	100	5.5	4
	125	5.5	4
40	100	5.5	3.5
	125	5.5	3
50	100	5.5	3
	125	5.5	3
65	125	5.5	4.5

Tab. 1: Control pressure CFA



²⁾ Approximate data, exact values can be found on the type label.

The required minimum control pressure P_{min} with control function B and I is dependent on the medium pressure.



The pressure diagrams can be found in the operating instructions on the internet at: www.burkert.com.

7 INSTALLATION



DANGER!

Danger – high pressure.

- ▶ Turn off the pressure and vent the lines before loosening lines or valves.

Risk of electric shock.

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



WARNING!

Risk of injury from incorrect installation.

- ▶ Installation may only be performed by authorized technicians with the appropriate tools.

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

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

7.1 Before installation

- Before connecting the valve, ensure that the pipelines are aligned.
- The flow direction is optional.

7.1.1 Installation position general

Installation for self-drainage of the body



It is the responsibility of the installer and operator to ensure self-drainage.

Installation for leakage detection



One of the bores in diaphragm socket for monitoring leakage must be at the lowest point.

7.1.2 Installation position 2/2-way valve

Installation position: any position, preferably with the actuator face up.

To ensure self-drainage:

- Install body at an angle $\alpha = 10^\circ$ to 40° to the horizontal (see “Fig. 2”).
- Maintain an inclination of $1^\circ \dots 5^\circ$.
There is a mark on forged and cast bodies, which must face upwards (12 o'clock position, see “Fig. 3”).
- One of the bores in the diaphragm socket for monitoring leakage, must be at the lowest point.

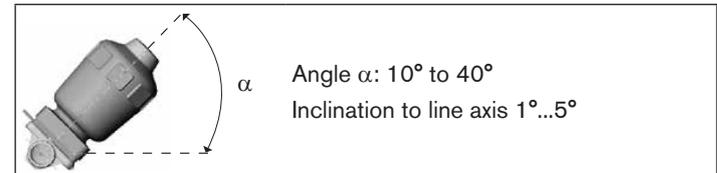


Fig. 2: Installation position for self-drainage of the body

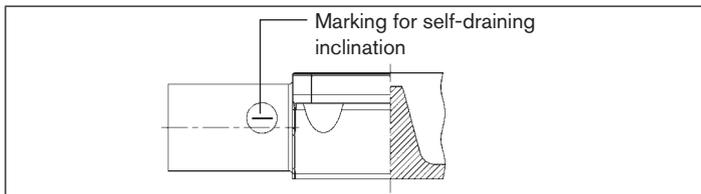


Fig. 3: Mark for correct installation position

7.1.3 Installation position of T-valve Type 2032

The following positions are recommended for installation in the ring circuits:

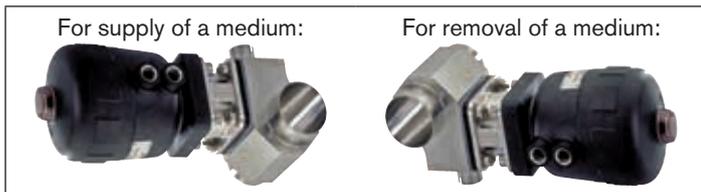


Fig. 4: Installation position of Type 2032

7.1.4 Installation position of Y-valve Type 2037

The following positions are recommended for installation in the systems:



Fig. 5: Installation position of Type 2037

7.1.5 Installation of tank bottom valve Type 2033



Observe the sequence:

1. To weld the tank bottom body prior to the container installation. To weld the tank bottom body in the center of the drain to ensure optimum draining of the container.
2. Weld tank bottom body in pipeline system.



For further information on containers and welding instructions, please refer to the standard ASME VIII Division I.



Prior to commencing the welding process, check the charge number indicated on the supplied manufacturer's certificate 3.1.

Prior to welding, please check to ensure that:

- Use suitable welding material for tank bottom body.
- The tank bottom body does not collide with other equipment components. The assembly and disassembly of the actuator must be possible.
- A minimal distance between two welding joints three times the thickness of the container wall is adhered to.
- The hole diameter in the tank and the body flange must be the same size. The body flange has two welded edges to facilitate positioning and welding of the valve. The welded edges are approx. 3 mm wide. If the container wall is more than 3 mm thick, grind the container wall (see "Fig. 6").

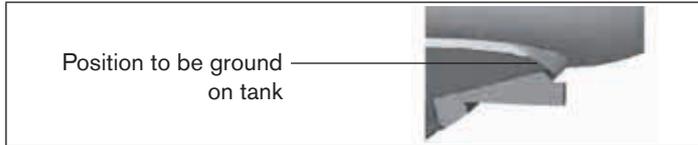


Fig. 6: Position to be ground on tank

! Observe the applicable laws and regulations of the respective country with regard to the qualification of welders and the execution of welding work.

Observance of these instructions will prevent deformation and tension inside the containers:

- Position the flange into the hole so that the flange surface is tangent to the drain surface.
- Tack 4 welding points and check the position of the valve body.
- Weld the valve evenly to the inside and outside of the container.
- Allow the welds to cool down.
- Welds buffing and brushing.

7.1.6 Preparatory work

- Clean pipelines (sealing material, swarf, etc.).
- Support and align pipelines.

Devices with welded or bonded body:

! Before welding or bonding the body, the actuator and diaphragm must be removed.

7.2 Installation

! If used in a corrosive environment, we recommend running a pneumatic hose from all free pneumatic connections to a neutral atmosphere.

! **WARNING!**

Risk of injury from incorrect installation.

Non-observance of the specified tightening torque is hazardous as the device may be damaged.

- ▶ Observe tightening torque during installation (see "[Tab. 2: Tightening torques for diaphragms](#)").

7.2.1 Devices with welded or bonded body

NOTE!

! **To avoid damage!**
Before welding or bonding the body, the actuator and diaphragm must be removed.

Remove actuator and diaphragm from the body:

Procedure for control function A

- Pressurize the lower control air connection with compressed air (value on type label) (see "[Fig. 7: Control air connection](#)"). This is required so that the diaphragm detaches from the body and is not damaged.
- Loosen fastening screws in diagonal pairs and remove actuator together with diaphragm from the body.
- Weld or glue body into the pipeline.

Procedure for control functions B and I

- Loosen fastening screws in diagonal pairs and remove actuator together with diaphragm from the body.

→ Weld or glue body into the pipeline.

Mount actuator and diaphragm on the body:

- After welding or bonding the body, smooth the body surface by grinding if required.
- Carefully clean the body.

Procedure for control function A

- Pressurize the lower control air connection with compressed air (value on type label) (see “[Fig. 7: Control air connection](#)”).
- Place actuator on the body.
- Gently tighten the body screws in diagonal pairs until the diaphragm lies between the body and actuator.

Do not fully tighten screws yet.

- Actuate the diaphragm valve twice to position the diaphragm correctly.
- Without applying pressure, tighten the body screws to the permitted tightening torque (see “[Tab. 2: Tightening torques for diaphragms](#)”).
- Pressurize the lower control air connection with compressed air (value on type label).
- Check the tightening torque of the screws again.

Procedure for actuator with control functions B and I:

- Place actuator on the body.
 - Gently tighten the body screws in diagonal pairs without pressurization until the diaphragm is between the body and actuator.
- Do not fully tighten screws yet.**
- Pressurize the lower control air connection with compressed air (value on type label) (see following “[Fig. 7: Control air connection](#)”).
 - Actuate the diaphragm valve twice.

→ Tighten the body screws to the permitted tightening torque (see “[Tab. 2: Tightening torques for diaphragms](#)”).

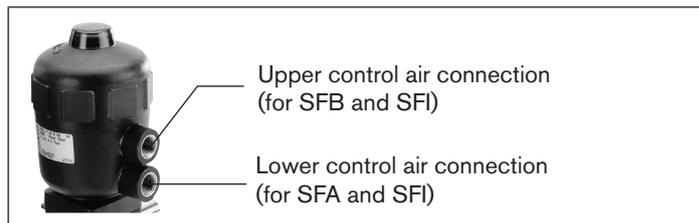


Fig. 7: Control air connection

Orifice (Diaphragm size) [mm]	VS, PP, PVC, PVDF, VG		VA and VP	
	EPDM/ FKM	PTFE/advanced PTFE/laminated PTFE	EPDM/ FKM	PTFE/advanced PTFE/laminated PTFE
8	2	2.5	2.5	2.5
15	3.5	4	3.5	4
20	4	4.5	4	4.5
25	5	6	7	8
32	6	8	8	10
40	8	10	12	15
50	12	15	15	20
65	20	30	-	-

Tab. 2: Tightening torques for diaphragms

7.2.2 Connection of the control medium

Control function A:

→ Connect control medium to lower connection.

Control function B:

→ Connect control medium to upper connection.

Control function I:

→ Connect control medium to upper and lower connections

(see "Fig. 7: Control air connection").

→ Pressure on the upper connection closes the valve.

→ Pressure on the lower connection opens the valve.

7.3 Maintenance work

7.3.1 Actuator

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

7.3.2 Wearing parts of the diaphragm valve

Parts which are subject to natural wear:

- Seals
- Diaphragm

→ If leaks occur, replace the particular wearing part with an appropriate spare part.



The maintenance and repair instructions can be found in the internet at: www.burkert.com.



A distended PTFE diaphragm may reduce the flow-rate.

7.3.3 Inspection intervals

The following maintenance work is required for the diaphragm valve:

→ After the first steam sterilization or when required retighten body screws crosswise.

→ After maximum 10⁵ switching cycles check the diaphragm for wear.



Muddy and abrasive media require correspondingly shorter inspection intervals!

8 TRANSPORTATION, STORAGE, DISPOSAL

NOTE!

Transport and storage damage.

- Protect the device against moisture and dirt in shock-resistant packaging during transportation and storage.
- Permitted storage temperature: -40...+55 °C.

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

- Dispose of the device and packaging in an environmentally friendly manner!

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