

Type 2030, 2031, 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, commandées par piston,
Tailles d'actionneur 40...125 mm, Diamètre nominale DN8...DN65



Quickstart

English Deutsch Français

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

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Operating Instructions 2403/07_EUml_00810102 / Original DE

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1 QUICKSTART

The Quickstart contains important information.

- ▶ Carefully read the Quickstart and follow the safety instructions.
- ▶ The Quickstart must be available to each user.
- ▶ The liability and warranty for the Type 2030, 2031, 2032, 2033 and 2037 will be invalidated if the Quickstart instructions are not followed.

The Quickstart provides an exemplary description of the installation and start-up of the device. The detailed description of the device can be found in the operating instructions for Type 2030, 2031, 2032, 2033 and 2037 online at: country.burkert.com



Please contact the Bürkert sales department with any questions.

2 SYMBOLS

Warns of fatal or serious injuries:



DANGER!

Warns of an immediate danger!



WARNING!

Warns of a potentially hazardous situation!

Warns of moderate or minor injuries:



CAUTION!

Warns of a potential danger!

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.

3 INTENDED USE

Non-intended use of the device may be dangerous to people, nearby equipment and the environment.

The device is designed to control the flow of liquid and gaseous media. The permitted media are listed in chapter [“6.2 General technical data”](#) on page 6.

- ▶ Only use the devices for media that do not attack the body and sealing materials. Information on the ability of the materials to resist the media is available from your Bürkert sales department or on the Internet at: country.burkert.com → resistApp
- ▶ In the potentially explosive atmosphere, only use devices that are approved for this purpose. These devices are identified by a separate “Ex” type label. Before use, note the information on the separate Ex type label and the Ex additional instructions or the separate Ex operating Instructions.
- ▶ To use the device, observe the permitted data, operating conditions and usage conditions. These specifications can be found in the contract documents, the operating instructions and on the type label.
- ▶ Protect device from harmful environmental influences (e.g. radiation, air humidity, steam). For any matters requiring clarification, contact the relevant sales department.
- ▶ Use the device only in conjunction with third-party devices and components recommended or approved by Bürkert.
- ▶ Prerequisites for safe and trouble-free operation are correct transport, correct storage and installation as well as careful operation and maintenance.
- ▶ Use the device only as intended.

4 BASIC SAFETY INSTRUCTIONS

This safety information does not take into account any contingencies or occurrences that may arise during installation, use and maintenance of the device.

The operator is responsible for observing the location-specific safety regulations, also with reference to the personnel.



Risk of injury due to high pressure and escaping medium.

Switch off the pressure before working on the device or system.

Vent or empty the lines.

Danger of bursting in case of overpressure.

- ▶ Comply with the specifications on the type label regarding maximum pilot and medium pressure.
- ▶ Observe the permissible medium temperature.

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

- ▶ Before reaching into the device or the equipment, switch off the power supply. Secure against reactivation.
- ▶ Observe any applicable accident prevention and safety regulations for electrical devices.

Risk of injury from moving parts in and on the device.

- ▶ Do not reach into openings.

Hearing damage due to high noise level.

Depending on the usage conditions, the device may generate loud noises.

- ▶ If the noise level exceeds 75 dB(A), wear hearing protection when near the device.

Hot surfaces and fire hazard.

If the device is left on for an extended period of time, its surface can become hot.

- ▶ Wear suitable protective gloves.
- ▶ Keep highly flammable substances and media away from the device.

Medium may leak out if the diaphragm is worn.

- ▶ Relief bore must be regularly inspected for any medium leakages.
- ▶ If medium is leaking from the relief bore, change the diaphragm.
- ▶ 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 and maintenance work using suitable tools only.
- ▶ Transport, install and dismantle a heavy device only with the aid of a second person and using suitable equipment.
- ▶ Following interruption of the process, ensure that the process is restarted in a controlled manner. Observe sequence:
 1. Apply supply voltage or pneumatic supply.
 2. Pressurise the device 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 the technical equipment.
- ▶ The exhaust air can be contaminated by lubricants in the actuator.

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

- ▶ Only the media listed in chapter [“6 Technical data”](#) should be fed into the medium ports.
- ▶ Do not modify the device.
- ▶ Do not subject the device to mechanical stress.

5 GENERAL NOTES

5.1 Contact addresses

Germany

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

International

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

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

5.2 Warranty

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

5.3 Information online

Operating instructions and data sheets for Type 2030, 2031, 2032, 2033 and 2037 can be found on the Internet at:

country.burkert.com

6 TECHNICAL DATA

6.1 Standards and directives

The device complies with the relevant EU harmonisation legislation. In addition, the device also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity/UK Declaration of Conformity.

6.2 General technical data

Control medium	Neutral gases, air
Flow media	Type 2030: contaminated and aggressive media Type 2031, 2032, 2033 and 2037: contaminated, aggressive, high-purity, sterile media and media with higher viscosity
Installation position	Types 2030, 2031, 2032 and 2037: Installation position: any, preferably actuator face up. Tank bottom valve type 2033: Actuator face down

For materials and ports: see data sheet

6.3 Control functions (CF)

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

6.4 Type label

DN (diaphragm size)
Control function

Seal material
Body material

Type

2031 A 25,0 EPDM VS
TG44 Pmed 10bar
Pilot 5,5-7bar

Port connection,
max. medium
pressure
Pilot pressure

S/N 1060
00445286

Serial number
Identification number of device

CE W36LP

6.5 Labelling of forged steel valve body

Batch number

Company logo

Material

Nominal pressure

Nominal diameter and pipe dimensions

XX F

bürkert
1.4435/316L(VS)
PN16/CWP150

XXXXXXXXXX/XXXX
XXXXXX
XXXXXX

Production number/serial number

Self-draining angle

Customer-specific text (optional)

XXXXXXXXXX

6.6 Labelling of tube valve body (VP)

Material

Company logo

Heat

1.4435
316L(VP)

XXXXXXXXXX

Nominal pressure

PN16 / CWP150

Nominal diameter and pipe dimensions

XXXXXXXXXX

Production number/serial number

Self-draining angle/customer-specific text (optional)

XXXXXXXXXX / XXXX
XXXX / XXXXXXX

6.7 Usage conditions



WARNING!

Danger of bursting in case of overpressure.

If the device bursts, the medium may cause injuries, burns or scalds.

- ▶ Do not exceed the maximum pilot and medium pressure.
Observe specifications on the type label.
- ▶ Observe the permissible ambient and medium temperature.

Ambient temperature for actuators:

Material	Actuator size ø	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... +150 °C
PVC-U (see PT diagram "Fig. 1")	+10... +60 °C
PVDF (see PT diagram "Fig. 1")	-20... +120 °C
PP (see PT diagram "Fig. 1")	+10... +90 °C

Medium temperature for diaphragms:



The indicated medium temperatures apply only to media which do not corrode or swell the diaphragm materials.

The behaviour 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 a steam shut-off element.

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

Tab. 1: Medium temperature for diaphragms

Pressure temperature diagram for plastic valve body

Permitted medium pressure depending on medium temperature in plastic valve body:

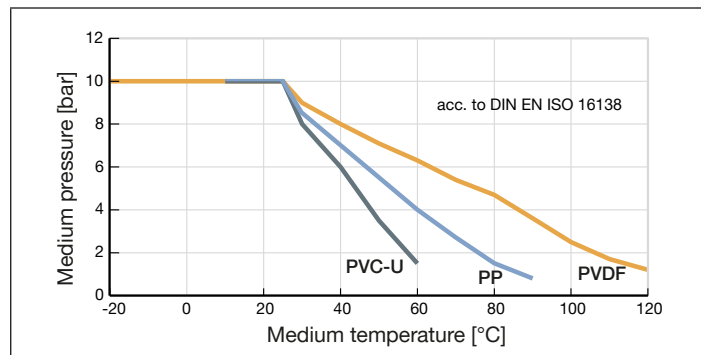


Fig. 1: Pressure temperature diagram for plastic valve body



The information in the pressure-temperature diagram is important for material selection.

Observe the permissible medium pressure depending on the medium temperature!

Permitted pilot pressure:

Actuator size ø [mm]	Actuator material	Minimum pilot pressure [bar]	Maximum pilot pressure [bar]
40...100	PA	2	10
125	PA	2	7
40...125	PPS	2	7

Pilot pressure for control function A:

The values are valid for bodies made from:

- Plastics
- Stainless steel: block material, forged or casted and tube valve body

Nominal diameter DN (diaphragm size)	Actuator size ø [mm]	Pilot pressure [bar] at medium pressure ¹⁾	
		0 bar	Maximum
8	40	5	4
15	50	5	3.5
	63	5	4
20	63	5.5	4
	80	5	4
25	63	5	4.5
	80	5.5	4.5
32	100	5.5	4
40	100	5.5	4
	125	5.5	4
50	100	5.5	3.5
	125	5.5	3
65	125	5.5	4.5

Tab. 2: Pilot pressure CFA



¹⁾ Approximate data, exact values are indicated on the type label.

The required minimum pilot pressure P_{min} for control function B and I depends on the medium pressure.



The pressure graphs can be found in the operating instructions on the Internet at country.burkert.com.

7 INSTALLATION



DANGER!

Danger from high pressure.

- ▶ Before loosening lines or valves, switch off the pressure and bleed the lines.

Danger from electrical voltage.

- ▶ Before reaching into the device or the system, switch off the electrical voltage and secure to prevent reactivation.
- ▶ Observe any applicable accident prevention and safety regulations for electrical devices.



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.



CAUTION!

Risk of injury due to a 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.

7.1 Installation positions

The installation positions of the diaphragm valves vary depending on the valve body.

7.1.1 Installation position 2/2-way valve

Installation position: any, preferably actuator facing up.

Installation for leakage detection



One of the holes in the diaphragm bonnet for monitoring the leakage must be at the lowest point.

Ensuring self-draining



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

The following points must be observed during installation regarding self-draining:

- Inclination angle of the pipeline:

The inclination angle is the responsibility of the installer and operator and should correspond to the inclination angle of the pipeline.

For the pipeline, we recommend the inclination angles according to the valid ASME BPE.

- Self-draining angle for valve body:

The self-draining angle (α) depends on the valve body size (diaphragm size) and the inner diameter of the port connection (DN).

The self-draining angle is specified as a value on forged steel valve bodies (VS) and tube valve bodies (VP) (see chapters “6.5” and “6.6”).

The marking on the port connection of valve bodies serves as an orientation aid (see “Fig. 2”). The marking must point upwards.

The actual self-draining angle must be set with a suitable measuring tool.

For valve bodies without angle information, you can find the self-draining angle on the internet: [www.buerkert.de/Type/Manuals/Supplementary information “Angle information for self-drainage of diaphragm valves”](http://www.buerkert.de/Type/Manuals/Supplementary%20information%20%E2%80%9CAngle%20information%20for%20self-drainage%20of%20diaphragm%20valves%E2%80%9C).

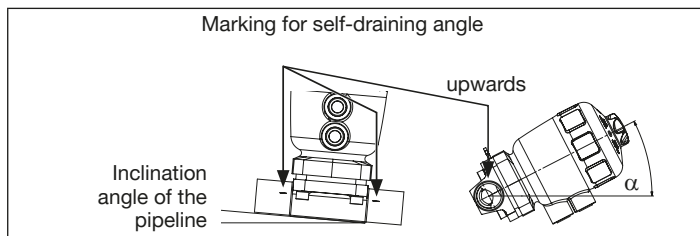


Fig. 2: Installation position for self-draining of the valve body
If you require clarification, contact your Bürkert sales department.

7.1.2 Installation position T-valve Type 2032

Installation for leakage detection



One of the holes in the diaphragm bonnet for monitoring the leakage must be at the lowest point.

Recommendation for installing the T-valve in circular pipelines:

When medium is supplied:



When medium is removed:



Fig. 3: Installation position Type 2032

7.1.3 Installation position Y-valve Type 2037

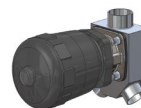
Installation for leakage detection



One of the holes in the diaphragm bonnet for monitoring the leakage must be at the lowest point.

Recommendation for installing the Y-valves in systems:

When medium is supplied:



When medium is removed:

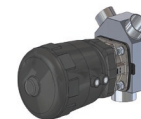


Fig. 4: Installation position Type 2037

7.2 Installation into the pipeline

7.2.1 Preparatory work

- Clear impurities from pipelines (seal material, metal chips, etc.).
- Support and align pipelines.
- Ensure that pipelines are in alignment.

The flow direction is optional.



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

7.2.2 Weld or glue the valve body Types 2030, 2031, 2032 and 2037 into the pipeline

The installation is divided into the following steps:

1. Disassemble the actuator with diaphragm (see chapter [“7.3”](#)).
2. Weld or glue the valve body into the pipeline.
 - After welding or bonding the surface of the valve body, smooth by sanding if necessary.
 - Clean valve body carefully.
3. Install the actuator with diaphragm (see chapter [“7.4”](#)).

7.2.3 Weld tank bottom body Type 2033



Observe sequence:

1. Weld the tank bottom body to the container base before the container is assembled. It is possible to weld onto a ready-assembled container but it is more difficult.
Note: weld the tank bottom body in the middle of the container base so that the container can be optimally drained.
2. Weld the tank bottom body into the pipelines.

Installation conditions

- Ensure that pipelines are in alignment.
- Support and align pipelines. To ensure that the pipeline is self-draining, we recommend the inclination angles according to the valid ASME BPE.



DANGER!

Danger from high pressure.

- ▶ Before loosening lines or valves, switch off the pressure and bleed the lines.



Note the standard ASME VIII Division I for information about containers and welding instructions.

Verify the specified batch number on the supplied manufacturer's certificate 3.1.



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


1. Weld the tank bottom body to the container bottom.

NOTE

Before welding, note the following:

- ▶ Only use welding materials which are suitable for the tank bottom body.
- ▶ The tank bottom valve must not collide with any other installation part. The actuator must be easy to install and remove.

2. Weld the tank bottom body into the pipeline.

-  Ensure that there is no voltage present and minimal vibration during installation.

After welding:

- Mount the actuator with diaphragm.

7.3 Dismount the actuator with diaphragm from the valve body

Procedure for control function A

- Pressurise lower pilot air port (see “[Fig. 5](#)”) with compressed air (value as indicated on the type label). This is required to detach the diaphragm without damage from the body.
- Loosen the body screws crosswise and remove the actuator with diaphragm from the valve body.

Procedure for control function B and I

- Loosen the body screws crosswise and remove the actuator with diaphragm from the valve body.

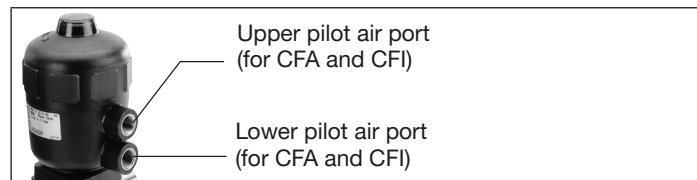


Fig. 5: Pilot air port

7.4 Mount the actuator with diaphragm on the valve body



WARNING!

Risk of injury due to damaged device or malfunction.

Failure to observe the tightening torque can damage the device or lead to malfunctions.

- ▶ Observe tightening torque (see “[Tab. 3](#)”).

NOTE!

For diaphragms with threaded connection:

If the pin is live, the diaphragm may be damaged.

- ▶ First screw on the diaphragm hand-tight, then loosen it by one-half turn anticlockwise.

Procedure for control function A

- Pressurise lower pilot air port (see “[Fig. 5](#)”) with compressed air (value as indicated on the type label).
- Place the actuator together with diaphragm on the body.

- Slightly tighten the body screws crosswise until the diaphragm rests between the body and the actuator.
Do not tighten the screws yet.
- Actuate the diaphragm valve twice to position the diaphragm correctly.
- Without applying pressure, tighten the body screws in three stages (approx. 1/3, then 2/3, and then full tightening torque, in accordance with “[Tab. 3](#)”), in each case crosswise. The diaphragm should be positioned and pressed evenly all around the actuator and body.

Procedure for control function B and I

- Place the actuator together with diaphragm on the body.
- Slightly tighten the body screws crosswise without applying pressure until the diaphragm rests between the body and actuator. **Do not tighten the screws yet.**
- Pressurise upper pilot air port with compressed air (value as indicated on the type label) (see “[Fig. 5](#)”).
- Actuate the diaphragm valve twice to position the diaphragm correctly.
- Applying pressure, tighten the body screws in three stages (approx. 1/3, then 2/3, then full tightening torque, in accordance with “[Tab. 3](#)”), in each case crosswise. The diaphragm should be positioned and pressed evenly all around the actuator and body.

Nominal diameter DN (diaphragm size)	Tightening torques for diaphragms [Nm]			
	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	20	30

Tab. 3: Tightening torques for diaphragms

A tolerance of +10% of the respective tightening torque applies to all values.

7.5 Connecting the control medium

Control function A:

- Connect control medium to lower port.

Control function B:

- Connect control medium to upper port.

Control function I:

- Connect control medium to upper and lower port (see “[Fig. 5](#)” on page 13).

Pressure on top port closes the valve.

Pressure on bottom port opens the valve.

8 MAINTENANCE WORK

8.1 Actuator

When used in accordance with these operating instructions, the actuator of the diaphragm valve is maintenance-free provided it is used according to these operating instructions.

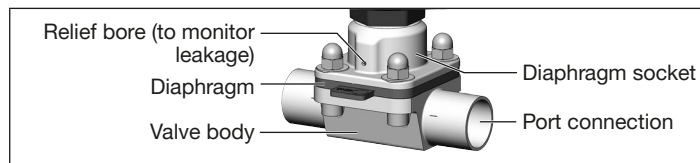
8.2 Wearing parts of the diaphragm valve

Parts which are subject to natural wear are:

- Seals
- Diaphragm

→ If there is a leak, replace the respective wearing part with a corresponding spare part.

→ Periodic control of the relief bore



For information on maintenance and repair, see operating instructions (DN8–DN65) at country.burkert.com.



A bulging PTFE diaphragm may reduce the flow rate.

8.3 Inspection intervals

The following maintenance must be performed on the diaphragm valve:

- After the first steam sterilisation, or when required, retighten body screws crosswise.
- Check the diaphragm for wear after a maximum of 10⁵ switching cycles.



Muddy and abrasive media require correspondingly shorter inspection intervals.

9 TRANSPORTATION, STORAGE, DISPOSAL

NOTE!

Damage from transport and storage.

- Protect the device against moisture and dirt in shock-resistant packaging during transportation and storage.

Permitted storage temperature: -40... +55 °C.

Environmentally friendly disposal



- Follow national regulations regarding disposal and the environment.
- Collect electrical and electronic devices separately and dispose of them as special waste.

Further information at country.burkert.com.

country.burkert.com