bürkert
FLUID CONTROL SYSTEMS

Type 2063, 2064, 2065

Piston-controlled diaphragm valve
Kolbengesteuertes Membranventil
Vanne à membrane commandée par piston

Quickstart

English Deutsch Français

MAN 1000291778 EN Version: DStatus: RL (released | freigegeben) printed: 11.09.2023

Operating Instructions 2309/03_EU-ML_ 00810478/ Original DE

Contents

1 QUICKSTART

The quickstart contains the most important information and notes regarding the use of the device. Keep the quickstart in a location which is easily accessible to every user, and make these instructions available to every new owner of the device.

Important Safety Information.

Failure to observe these instructions may result in hazardous situations.

▸ Quickstart must be read and understood.

A detailed description of the device can be found in the operating instructions for Type 2063, 2064 and 2065.

The operating instructions can be found on the Internet at: country.burkert.com

1.1 Definition of terms

Term	in these instructions, refers to
Device	Types 2063, 2064 and 2065
Ex area	Potentially explosive atmosphere
Explosion protection approval	Approval for use in potentially explosive areas

1.2 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 moderate or minor injury.

NOTE!

Warns of damage to property.

Important tips and recommendations.

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

- designates an instruction to prevent risks.

→ designates a procedure which you must carry out.

2 INTENDED USE

Only use diaphragm valves type 2063, 2064 and 2065 as intended. Improper use of the device may be dangerous to people, nearby equipment and the environment.

Diaphragm valves type 2063, 2064 and 2065 are designed for the control of contaminated, high-purity or sterile media as well as for abrasive or aggressive media (also with higher viscosity).

The device is designed to control the flow of liquid and gaseous media.

- Only use the devices for media that do not attack the body and sealing materials (see type label). Information on the resistance of the materials to the media is available from your Bürkert sales office or on the Internet at: country.burkert.com → resistApp
- Only use equipment that is approved for this type of potentially explosive area. These devices are identified by a separate Ex type label. Before use, observe 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 application conditions. These specifications can be found in the contract documents, the operating instructions and on the type label.
- Protect device from harmful environmental influences (e.g. radiation, air humidity, steam). For any matters requiring clarification, contact the relevant sales office .
- Use the device only in conjunction with third-party devices and components recommended or approved by Bürkert.

- ▸ Correct transportation, correct storage and installation and careful use and maintenance are essential
- ▸ Use the device only as intended.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not consider any

- contingencies or incidents which occur during installation, operation and maintenance of the devices.
- local safety regulations that are within the operator's scope of responsibility, including those relating to the installation personnel.

Risk of injury from high pressure and discharge of medium.

- ▸ Before working on the device or system, switch off the pressure. Vent or empty the lines.

Danger of bursting from overpressure.

- ▸ Observe the specifications on the type label for maximal control and medium pressure.
- ▸ Observe permitted 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 it against reactivation.
- ▸ Observe applicable accident prevention and safety regulations for electrical equipment!

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.

- ▸ Do not open the actuator.

Risk of injury due to moving parts in and on 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.

Risk of burns or risk of fire.

Quickly switching actuators or hot medium may cause the surface of the device to become hot.

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

Medium may leak out if the diaphragm is worn.

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

General hazardous situations.

To prevent injuries, ensure:

- Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- That the system cannot be activated unintentionally.
- Only trained technicians may perform installation and maintenance work.
- Perform installation work and maintenance work using suitable tools only.
- After an interruption, ensure that the process is restarted in a controlled manner. Observe sequence:
  1. Apply supply voltage or pneumatic supply.
  2. Charge the device with medium.
- Use the device only when it is in perfect condition and in accordance with the operating instructions.
- For deployment planning and device operation, 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 technical equipment.
- The exhaust air of the device may be contaminated with lubricants.

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

- Feed only those media listed in chapter "6 Technical data" into the medium ports.
- Do not make any changes to the device and do not subject it to mechanical stress.

4 GENERAL INFORMATION

4.1 Contact address

Germany

Bürkert Fluid Control Systems
Sales Center
Chr.-Bürkert-Str. 13-17
D-74653 Ingelfingen
Tel. : 07940 - 10 91 111
Fax: 07940 - 10 91 448
E-mail: info@burkert.com

International

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

Information on the Internet under: country.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 2063, 2064 and 2065 can be found on the Internet at: country.burkert.com

5 STRUCTURE AND FUNCTION

5.1 General description

The diaphragm valve consists of a pneumatically actuated piston actuator and a 2-way body. It uses neutral gases or air to control the flow of contaminated, aggressive, abrasive, high-purity or sterile media; media with high viscosity can also be used.

5.1.1 2/2-way valve Type 2063

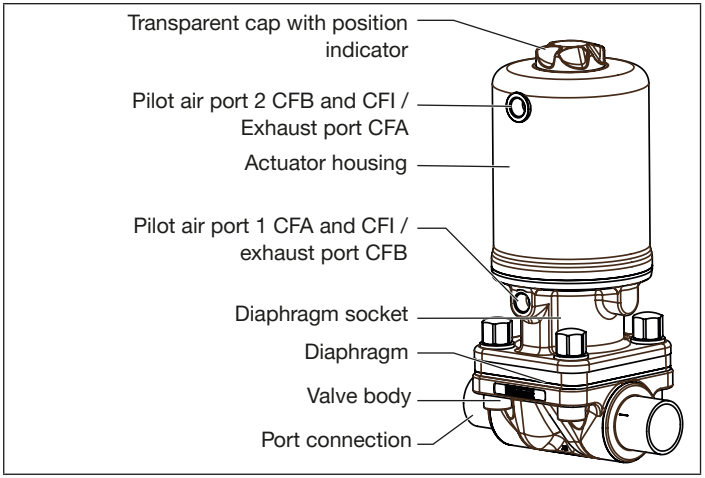


Fig. 1: 2/2-way valve type 2063, design and description

5.1.2 T-valve Type 2064

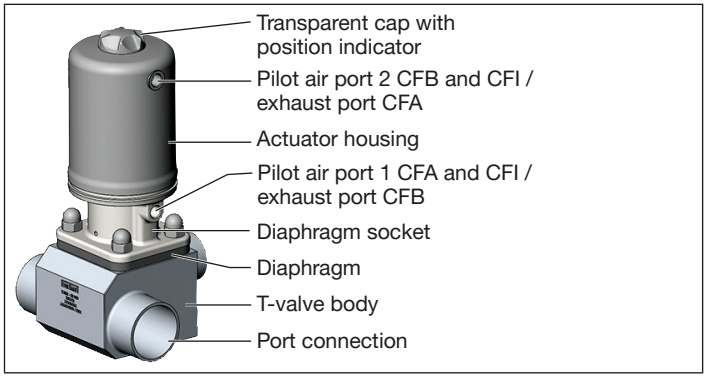


Fig. 2: T-valve Type 2064, structure and description

5.1.3 Tank bottom valve Type 2065

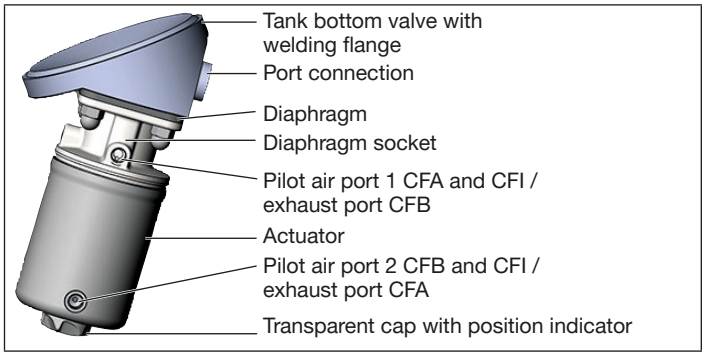


Fig. 3: Tank bottom valve Type 2065, structure and description

5.2 Function

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

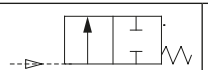
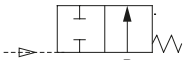
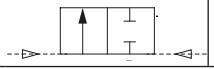
5.2.1 Control functions (CF)

WARNING!

For control function I: Danger if pilot pressure fails.

For control function I (CFI) 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.

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

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 Labelling of forged steel valve body

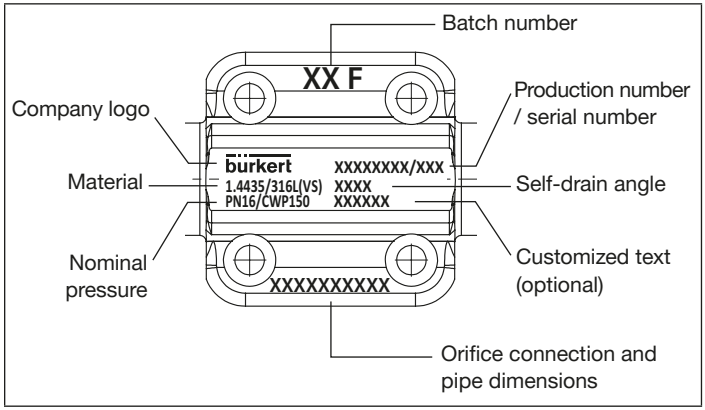


Fig. 4: Labeling of forged steel valve body

6.3 Labeling of the tube valve body (VP)

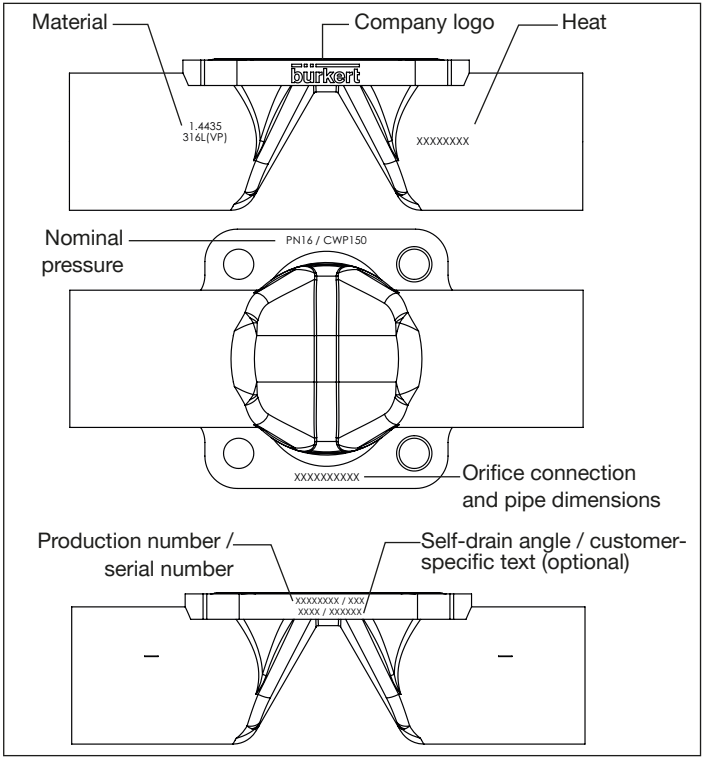


Fig. 5: Labeling of the tube valve body (VP)

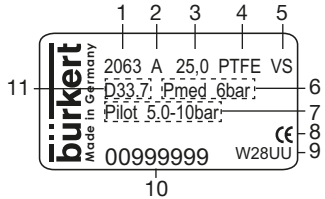
6.4 Type label

WARNING!

Risk of injury from high pressure.

Excessive pressure can damage the device.

▸ Comply with pressure range values on the type label.



1 Type
2 Control function (CF)
3 Orifice (diaphragm size)
4 Seal material
5 Body material
6 max. medium pressure
7 Permitted pilot pressure
8 CE marking
9 Date of manufacture (encrypted)
10 Article number
11 Port connection

Fig. 6: Description of the type label (Example)

6.5 General technical data

Media

Control medium	neutral gases, air
Flow media	liquids and gases; contaminated, high-purity, sterile, abrasive or aggressive media (also with higher viscosity)

Installation position

Type 2063, 2064	at will, preferably actuator in upright position
Type 2065	preferably with the actuator to the bottom (tank bottom valve)

7 INSTALLATION

DANGER!

Risk of injury from high pressure in the system.

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

WARNING!

Risk of injury due to improper installation.

- Installation may only be performed by qualified and trained personnel.
- Ensure a controlled restart after installation.

For control function I: Risk of pilot pressure failure.

The valve stays in an undefined position in the event of a pilot pressure failure.

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

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

- Secure the system against unintentional activation.
- Ensure a controlled restart after installation.

CAUTION!

Risk of injury due to heavy device.

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

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

7.1 Installation position 2/2-way valves

The piston-controlled diaphragm valve can be installed in any position, preferably with the actuator facing up.

Installation for leakage detection

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

Ensuring self-draining

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

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

- **Inclination angle of the pipeline:**
  The inclination angle of the diaphragm valves 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-drainage angle for valve body:**
  The self-drainage-angle (α) depends on the valve body size (diaphragm size) and the inner diameter of the port connection (DN).
  The self-draining angle is indicated as a value on forged steel valve bodies (VS) and tube valve bodies (VP) (see “Fig. 4” and “Fig. 5”).
  The marking on the port connection of valve bodies serves as an orientation aid (see “Fig. 7”). The marking must point upwards.
  The actual self-drainage angle must be set with a suitable measuring tool.

For valve bodies without angle specification, you will find information on the self-drainage angle on the Internet at country.burkert.com → Type → Manuals → Additional manual "Angles for self-draining of diaphragm valves".

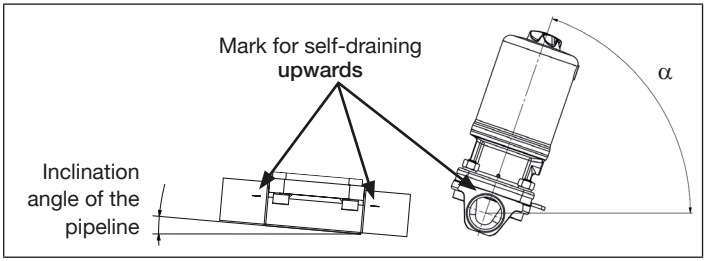


Fig. 7: Installation position for self-drainage of the valve body

7.1.1 Installation position T-valve type 2064

Installation for leakage detection
One of the holes in the diaphragm socket for monitoring the leakage must be at the lowest point.

The following installation positions are recommended for the installation of a T-valve in circular pipelines:

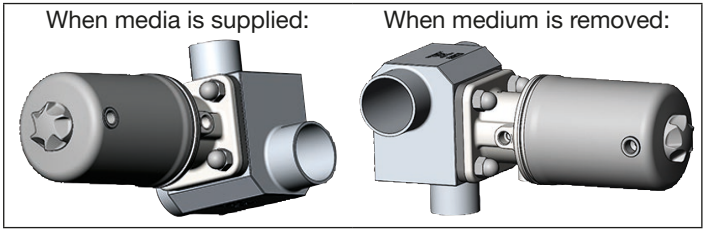


Fig. 8: Installation position of the type 2064

7.1.2 Installation position for tank bottom body, type 2065

Preferably with the actuator to the bottom.

7.2 Installation into the pipeline

7.2.1 Preparatory work

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

7.2.2 Installation requirements

Pipelines: Ensure that pipelines are in alignment.
The flow direction is optional.

NOTE!

Damage to the diaphragm or the actuator.
- Remove the actuator and diaphragm before welding in the valve body.

7.3 Removing actuator with diaphragm from the valve body

NOTE!

Damage to the diaphragm or the seat contour.

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

→ For control function A pressurize the pilot air port 1 with compressed air: Valve opens.

→ Loosen the body screws cross-wise and remove the actuator with diaphragm from the body.

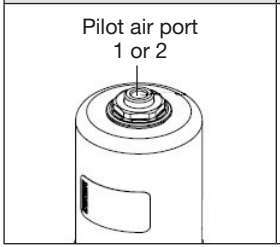
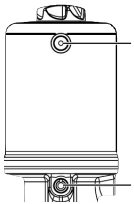
Actuator size ø 32 mm	Actuator size ø 50...130 mm
	

Fig. 9: Pneumatic connection

7.4 Installing valve body

7.4.1 Installation of 2-way valve body and T-valve body

Installation conditions

Pipelines: Ensure that pipelines are in alignment.

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

Valve body with welded connection

→ Weld valve body into pipeline system.

Other valve bodies

→ Connect valve body to pipeline.

7.4.2 Welding tank bottom body type 2065

Observe sequence:

1. Welding tank bottom body onto the base of the tank before installing the tank. Welding onto a tank which has already been installed is possible but more difficult
Weld the tank bottom body in the middle of the tank base so that the tank can be optimally drained.

2. Weld the tank bottom body into the pipeline.

Installation conditions

Pipelines: Ensure that pipelines are in alignment.

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

DANGER!

Risk of injury from high pressure.

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

For information on tanks and instructions on welding observe the standard ASME VIII Division I.

Before you start welding, check the batch number indicated on the supplied manufacturer's certificate 3.1.

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

1. Welding tank bottom body onto the tank.

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. Welding the tank bottom body into the pipeline.
   Ensure installation is de-energized and low-vibration.

After welding in the valve body:

→ Mount the actuator with diaphragm on the valve body.

7.5 Mount the actuator with diaphragm on the valve body

NOTE!

Damage to the diaphragm or the seat contour!

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

Installation for actuator with control function A:

→ Pressurise pilot air port 1 with compressed air: Valve opens.

→ Place actuator together with diaphragm on the valve body.

→ Lightly tighten the body screws **cross-wise** until the diaphragm lies between the valve 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, approx. 2/3, 3/3 of the full tightening torque, according to "Tab. 1"), in each case tightening them **cross-wise**. The diaphragm should be positioned and pressed evenly all around the actuator and body.

Installing actuators with control function B and I:

→ Place actuator together with diaphragm on the valve body.

→ Lightly tighten the body screws **cross-wise** without applying pressure until the diaphragm is between the valve body and the actuator. **Do not tighten the screws yet.**

→ Pressurise pilot air port 2 with compressed air (value as indicated on the type label).

→ Actuate the diaphragm valve twice to position the diaphragm correctly.

→ With applying pressure, tighten the body screws in three stages (approx. 1/3, approx. 2/3, 3/3 of the full tightening torque, according to "Tab. 1"), in each case tightening them **cross-wise**. The diaphragm should be positioned and pressed evenly all around the actuator and body.

DN (diaphragm size)	Tightening torques for diaphragms [Nm]	
	EPDM/FKM	PTFE/ advanced PTFE/ laminated PTFE
8	2.5	2.5
15	3.5	4
20	4	4.5
25	5	6
32	8	10
40	8	10
50	12	15

Tab. 1: Diaphragm tightening torques for mounting the drive

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

7.6 Pneumatic connection

WARNING!

Risk of injury from unsuitable connection hoses.

- 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: Risk of pilot pressure failure.

The valve stays in an undefined position in the event of a pilot pressure failure.

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

7.6.1 Connecting the control medium

Control function A and B

→ Connect the control medium to pilot air port **1**.

Control function I

→ Connect control medium to pilot air port **1** and **2**.
Pressure on pilot air port 1 opens the valve.
Pressure on pilot air port 2 closes the valve.

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

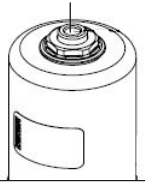
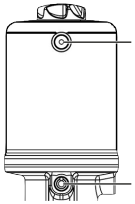
Actuator size ø 32 mm	Actuator size ø 50...130 mm
Pilot air port 1 or 2 	 Pilot air port 2 CFB and CFI / exhaust port CFA Pilot air port 1 CFA and CFI / exhaust port CFB

Fig. 10: Pneumatic connection

8 TRANSPORTATION, STORAGE, DISPOSAL

NOTE!

Transport damages.

Inadequately protected devices may be damaged during transport.

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

Incorrect storage may damage the device.

- For longer storage, loosen the body screws to avoid deformation of the diaphragm.
- Mark loosened screws for safety reasons.
- Store the device in a dry and dust-free location.

Storage temperature –20 – +65 °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 country.burkert.com.

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