bürkert
FLUID CONTROL SYSTEMS

Type 2063, 2064, 2065

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

Operating Instructions

Bedienungsanleitung
Manuel d'utilisation

MAN 1000296894 EN Version: BStatus: RL (released | freigegeben) printed: 10.09.2018

Operating Instructions 1809/01_EU-ML_00810533 / Original DE

MAN 1000296894 EN Version: BStatus: RL (released | freigegeben) printed: 10.09.2018

Contents

1 OPERATING INSTRUCTION 4
1.1 Definition of terms 4
1.2 Symbols 4
2 AUTHORISED USE 5
3 BASIC SAFETY INSTRUCTIONS 5
4 GENERAL INFORMATION 7
4.1 Contact address 7
4.2 Warranty 7
4.3 Information on the Internet 7
5 PRODUCT DESCRIPTION 7
5.1 Structure 7
5.2 Application area 9
5.3 Properties 9
5.4 Function 9
6 TECHNICAL DATA 10
6.1 Conformity 10
6.2 Standards 10
6.3 Labeling of the forged body 10
6.4 Labeling of the tube valve body (VP) 11
6.5 Type label 11
6.6 Operating conditions 12
6.7 General technical data 19
7 INSTALLATION 19
7.1 Installation position 19
7.2 Before installation 20
7.3 Remove the actuator from the valve body 21
7.4 Installation of the valve body 21
7.5 Installation of the actuator (welded body) 22
7.6 Pneumatic connection 23
8 REMOVAL 24
9 MAINTENANCE 24
9.1 Maintenance 24
9.2 Repairs 26
10 MALFUNCTIONS 28
11 REPLACEMENT PARTS 29
11.1 Order table 29
12 TRANSPORT, STORAGE, REMOVAL 30

1 OPERATING INSTRUCTION

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.

Important safety information.

Failure to observe these instructions may result in hazardous situations.

- The operating instructions must be read and understood.

1.1 Definition of terms

In these instructions, the term “device” always refers to the Types 2063, 2064 and 2065.

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 AUTHORISED USE

Non-authorized use of the diaphragm valve Type 2063, 2064 and 2065 may be a hazard to people, nearby equipment and the environment.

- The device is designed for the controlled flow of liquid media.
- In areas at risk of explosion, only use devices approved for use in those areas. These devices are labeled with a separate Ex type label. When utilized in a potentially explosive atmosphere, always pay attention to the details on the separate Ex type label and the Ex additional instructions contained in the scope of delivery.
- During use observe the authorized data, the operating conditions and conditions of use specified in the contract documents and operating instructions.
- The device may be used only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- Protect device from damaging environmental influences (e.g. radiation, humidity, steam, etc.). If anything is unclear, consult the relevant sales office.
- Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- The exhaust air may be contaminated with lubricants in the actuator.
- 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.

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

Danger – high pressure.

- Before loosening the lines and valves, turn off the pressure and vent 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 and secure to prevent 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 from moving parts in the device!

- Do not reach into openings.

Risk of burns and risk of fire if used continuously through hot device surface.

- Keep the device away from highly flammable substances and media and do not touch with bare hands.

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.

Leaking medium when 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 injury, ensure:

- 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 „6 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.

4 GENERAL INFORMATION

4.1 Contact address

Germany

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

International

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

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

5 PRODUCT DESCRIPTION

5.1 Structure

Piston-controlled diaphragm valve consists of a pneumatically actuated piston actuator and a 2/2-way valve body. Using neutral gases or air (control media), it controls the flow of dirty, aggressive, abrasive, ultrapure or sterile media, even highly viscous media can be used (flow media).

5.1.1 2/2-way valve Type 2063

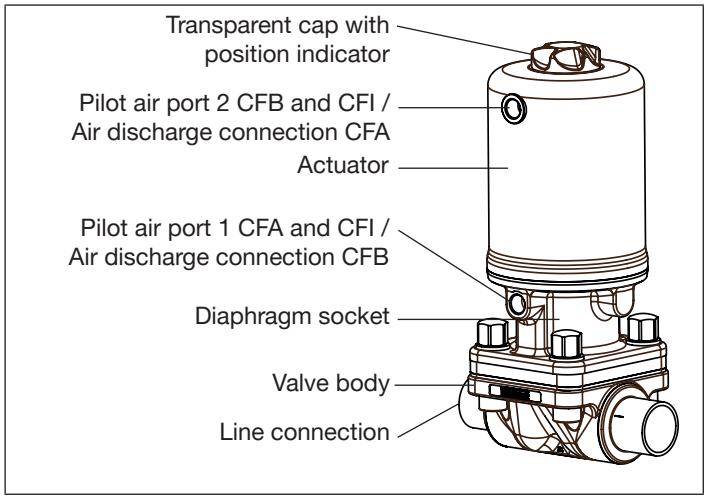


Fig. 1: 2/2-way valve Type 2063, structure and description

5.1.2 T-valve Type 2064

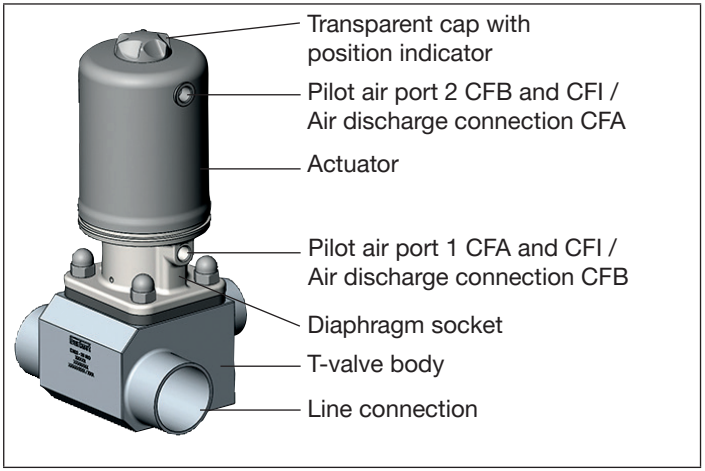


Fig. 2: T-valve Type 2064, structure and description

5.1.3 Tank bottom valve Type 2065

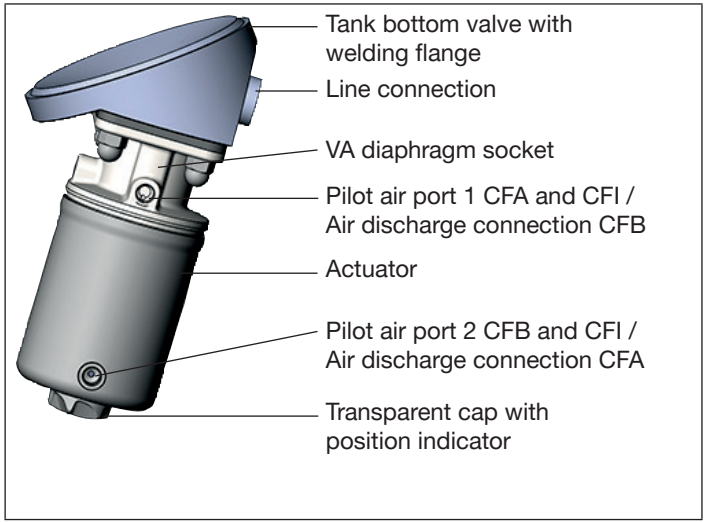


Fig. 3: Tank bottom valve Type 2065, structure and description

5.2 Application area

Observe the maximum pressure range according to the type label.

- Dirty, aggressive, abrasive, ultrapure or sterile media.
- Highly viscous media.

5.3 Properties

- Any flow direction.
- Self-draining for appropriate installation. The ends of the utilized connections must be cylindrical.
- Free of empty space.
- Low-turbulence flow.
- High flow values by the streamlined valve body.
- Maintenance-free under normal conditions.
- Diaphragms can be easily replaced.

5.3.1 Options

- Stroke limit (as max. or min./max. design)
  Adjusting screw used to limit open position of valve, thereby also limiting the flow rate.
- Feedback indicator
  Provides feedback on valve position using inductive proximity switch or type 8697 feedback indicator.

5.3.2 Device versions

The piston-controlled diaphragm valve is available for the following actuator sizes: ø 50 mm, ø 70 mm, ø 90 mm, ø 130 mm.

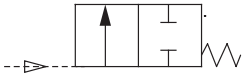
5.4 Function

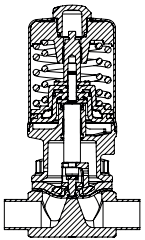
Spring force (CFA) or pneumatic pilot pressure (CFB and CFI) generates the closing force on the diaphragm pressure piece. The force is transferred via a spindle which is connected to the actuator piston.

5.4.1 Control functions (CF)

Control function A (CFA)

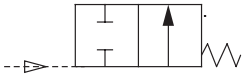
Normally closed by spring action

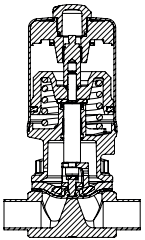




Control function B (CFB)

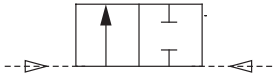
Normally open by spring action

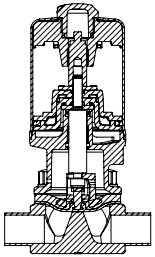




Control function I (CFI)

Actuating function via reciprocal pressurization





6 TECHNICAL DATA

6.1 Conformity

The Type 2063, 2064 and 2065 conforms with the EU Directives according to the EU Declaration of Conformity.

6.2 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.

6.3 Labeling of the forged body

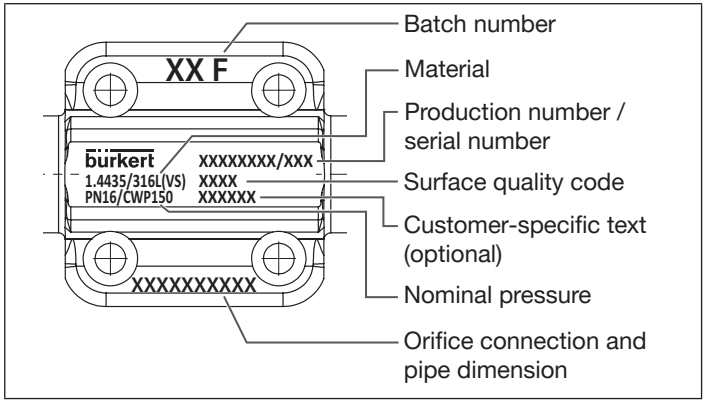


Fig. 4: Labeling of the forged body

6.4 Labeling of the tube valve body (VP)

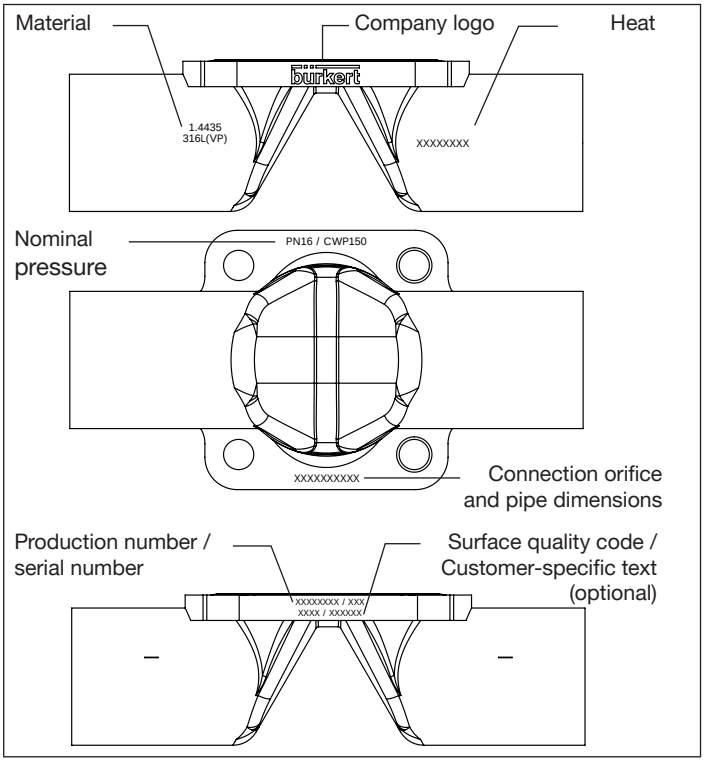


Fig. 5: Labeling of the tube valve body (VP)

6.5 Type label

WARNING!

Risk of injury from high pressure.

Excessive pressure can damage the device.

- Comply with pressure range values on the type label.

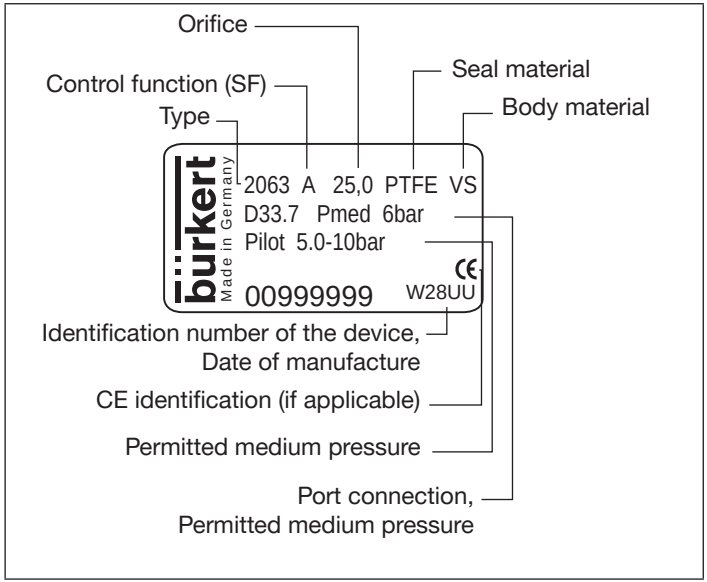


Fig. 6: Description of the type label (Example)

6.6 Operating conditions

6.6.1 Temperature ranges

Permitted ambient temperature for actuator

Actuator sizes	Actuator material	Ambient temperature
ø 50 mm	Stainless steel	0...+80 °C
ø 70 mm		
ø 90 mm		
ø 130 mm		

Tab. 1: Ambient temperature for actuator

Permitted medium temperature for bodies

Body material		Medium temperature
Cast body (VG)	1.4435 (AISI 316L)	-10...+150 °C
Forged body (VS)	1.4435 BN2 (AISI 316L) according to ASME BPE 1997	
Tube valve body (VP)	1.4435 BN2 (AISI 316L)	

Tab. 2: Medium temperature for bodies

Permitted medium temperature for diaphragms

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.

Material	Temperature	Remarks
EPDM (AB)	-10...+130 °C	Steam sterilization up to +140 °C / 60 min
EPDM (AD)	-10...+143 °C	Steam sterilization 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 sterilization up to +140 °C / 60 min
Advanced PTFE (EU)	-5...+143 °C	Steam sterilization up to ‘ +150 °C / 60 min
Gylon (ER)	-5...+130 °C	Steam sterilization up to +140 °C / 60 min

Tab. 3: Permitted medium temperature for diaphragms

6.6.2 Pressure ranges

Maximum pilot pressure

Actuator size	Actuator material	Max. pilot pressure
ø 50 mm	Stainless steel	10.5 bar
ø 70 mm		
ø 90 mm		
ø 130 mm		7 bar

Tab. 4: Maximum pilot pressure

Pilot pressure for control function A

Actuator size [mm]	Orifice DN (diaphragm size) [mm]	Pilot pressure [bar] for medium pressure	
		0 bar	maximal
ø 50	15	5.4	5.0
ø 70		4.8	4.5
ø 70	20	4.8	4.5
ø 70	25	5.5	4.3
ø 90		5.0	4.0
ø 90	32	5.0	4.5
ø 90	40	5.0	4.5
ø 130		5.0	4.6
ø 130	50	5.0	4.8

Tab. 5: Pilot pressure for control function A

Operating pressure for control function A

The values apply to body made of

- forged steel (VS)
- precision casting (VG)
- tube valve body (VP)

Actuator size [mm]	Orifice DN (diaphragm size) [mm]	Max. sealed medium pressure [bar]			
		Pressure on one side		Pressure on both sides	
		EPDM/FKM	PTFE	EPDM/FKM	PTFE
ø 50	15	8.5	5	5	3.5
ø 70		10	10	10	10
ø 70	20	10	10	10	7.5
ø 70	25	6.5	4.5	5.5	3.5
ø 90		10	8	10	7
ø 90	32	8	6	6	4
ø 90	40	5.5	5	4	3
ø 130		10	10	10	9
ø 130	50	10	7	7	5

Tab. 6: Operating pressure for control function A

Required minimum pilot pressure depending on medium pressure

The following graphs illustrate the required minimum pilot pressure depending on the medium pressure for control functions B and I.

The values apply to body made of

- forged steel (VS)
- precision casting (VG)
- tube valve body (VP)

Control function B / elastomer diaphragm

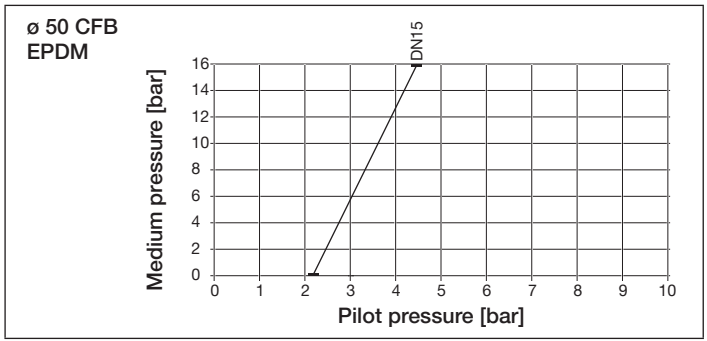


Fig. 7: Pressure graph, actuator ø 50 mm, control function B, elastomer diaphragm

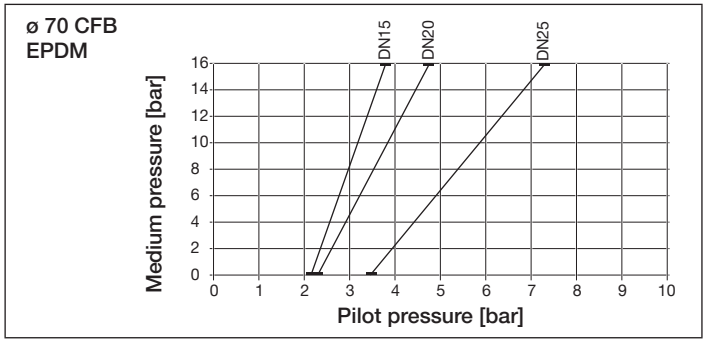


Fig. 8: Pressure graph, actuator ø 70 mm, control function B, elastomer diaphragm

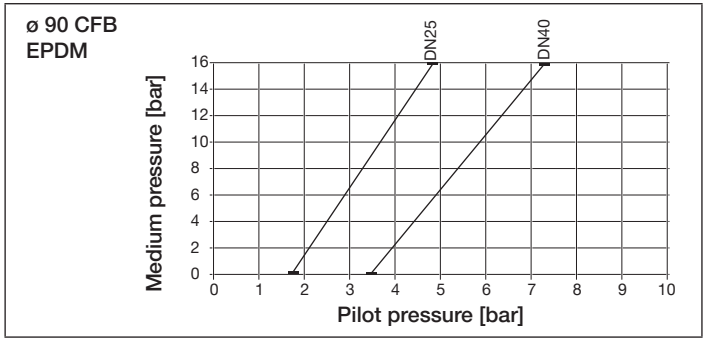


Fig. 9: Pressure graph, actuator ø 90 mm, control function B, elastomer diaphragm

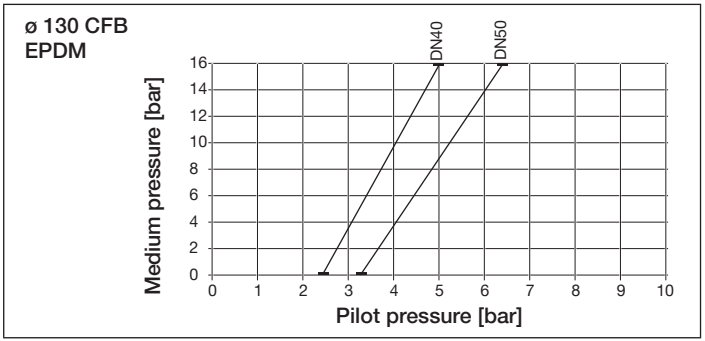


Fig. 10: Pressure graph, actuator ø 130 mm, control function B, elastomer diaphragm

Control function B / PTFE elastomer diaphragm

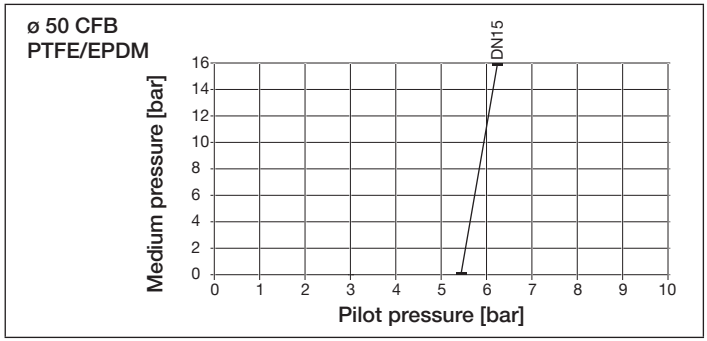


Fig. 11: Pressure graph, actuator ø 50 mm, control function B, PTFE elastomer diaphragm

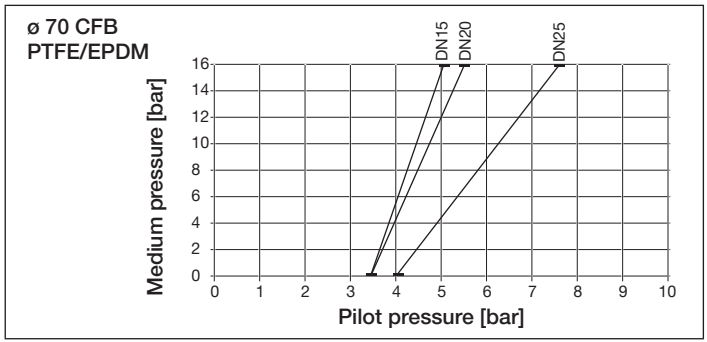


Fig. 12: Pressure graph, actuator ø 70 mm, control function B, PTFE elastomer diaphragm

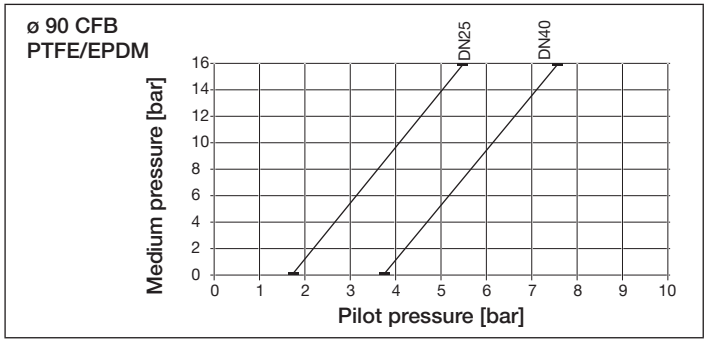


Fig. 13: Pressure graph, actuator ø 90 mm, control function B, PTFE elastomer diaphragm

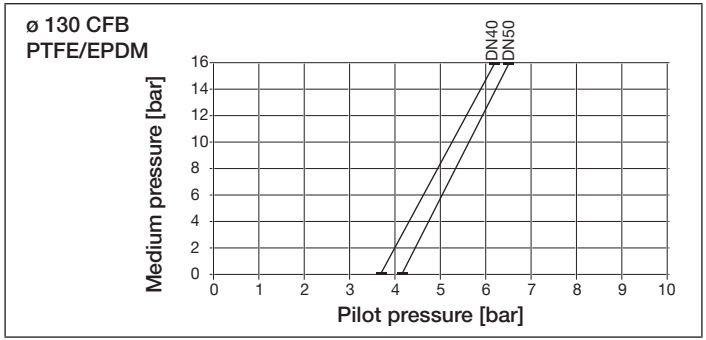


Fig. 14: Pressure graph, actuator ø 130 mm, control function B, PTFE elastomer diaphragm

Control function I / elastomer diaphragm

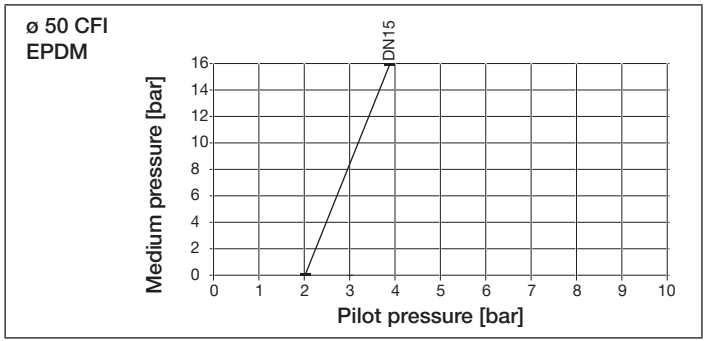


Fig. 15: Pressure graph, actuator ø 50 mm, control function I, elastomer diaphragm

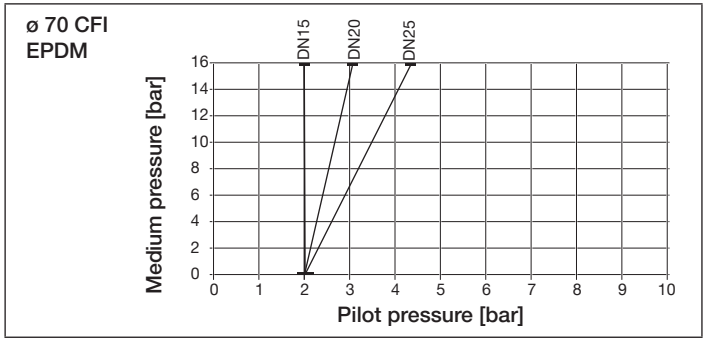


Fig. 16: Pressure graph, actuator ø 70 mm, control function I, elastomer diaphragm

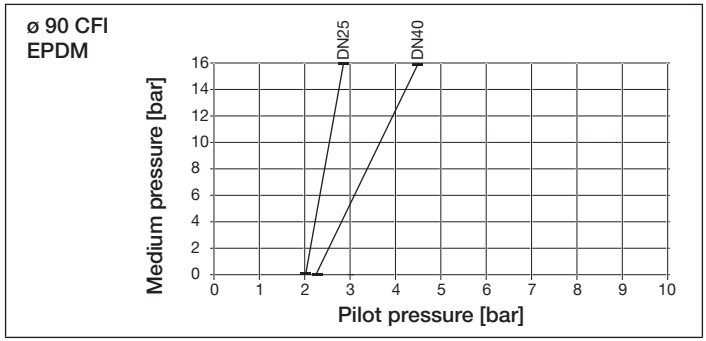


Fig. 17: Pressure graph, actuator ø 90 mm, control function I, elastomer diaphragm

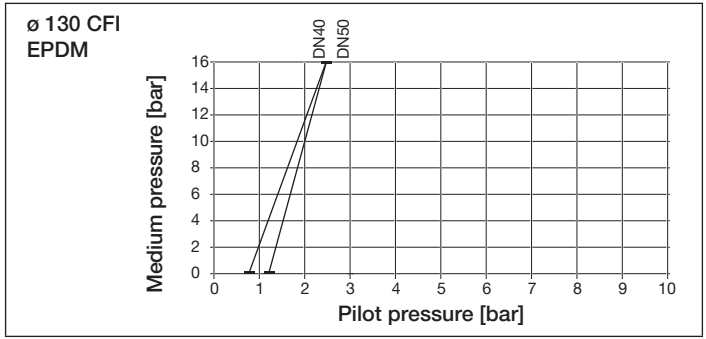


Fig. 18: Pressure graph, actuator ø 130 mm, control function I, elastomer diaphragm

Control function I / PTFE elastomer diaphragm

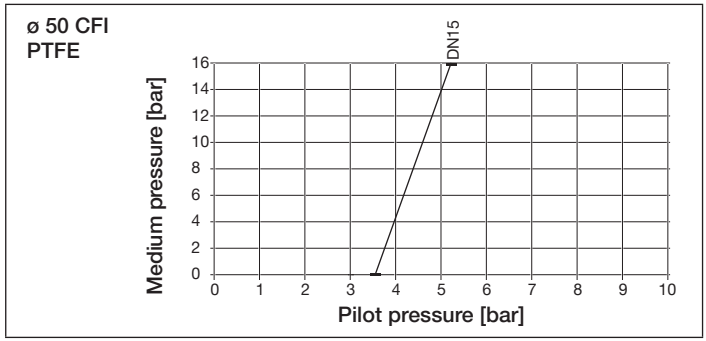


Fig. 19: Pressure graph, actuator ø 50 mm, control function I, PTFE elastomer diaphragm

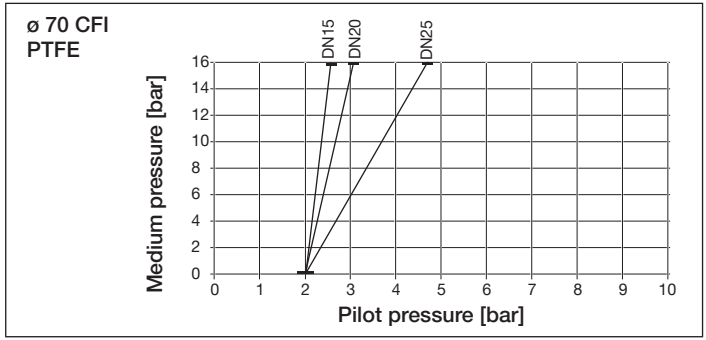


Fig. 20: Pressure graph, actuator ø 70 mm, control function I, PTFE elastomer diaphragm

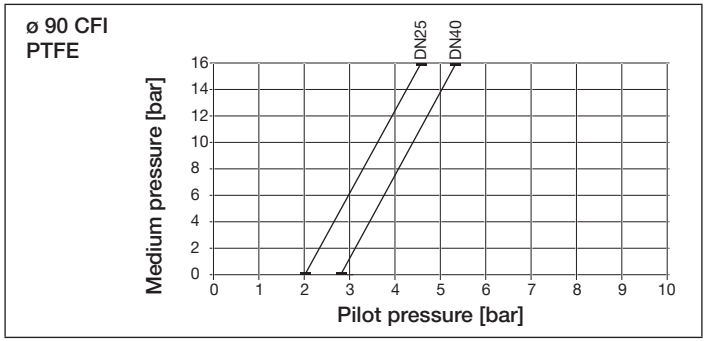


Fig. 21: Pressure graph, actuator ø 90 mm, control function I, PTFE elastomer diaphragm

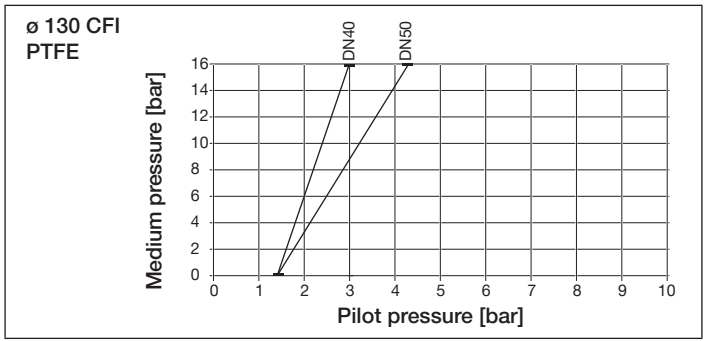


Fig. 22: Pressure graph, actuator ø 130 mm, control function I, PTFE elastomer diaphragm

6.6.3 Flow value

Diaph-ragm size	Line connection		Kv value forged [m³/h][1)]		
	[mm]	[Zoll]	DIN EN ISO 1127 ISO 4200 DIN 11866 RB	DIN 11850 R2 DIN 11866 RA DIN EN 10357 RA	ASME BPE DIN 11866 RC
15	15	1/2“	6.5	6.5	3.1
20	20	3/4“	12.5	12.4	8.4
25	25	1“	18	20	15.5
40	40	1 1/2“	41	40	37
50	50	2“	66	66	66

Tab. 7: Kv value for forged valve body

1) Values determined with forged valve body and elastomer diaphragm:
measurement at 20 °C, 1 bar pressure at valve inlet and free outlet.

6.7 General technical data

Actuator size	see type label
Control function	see type label. Description of control functions see chapter „5.4.1“
Installation	
Type 2063, 2064	at will, preferably actuator in upright position
Type 2065	preferably with the actuator to the bottom (tank bottom valve)
Media:	
Control media	neutral gases, air
Flow media	liquids; ultrapure, sterile, aggressive or abrasive media
Materials	
Body	
Type 2063	precision casting (VG), forged steel (VS), tube valve body (VP)
Type 2064, 2065	stainless steel block material
Actuator	stainless steel
Sealing elements	FKM and EPDM
Diaphragm	EPDM, PTFE, FKM
Connections	
Pilot air ports	stainless steel threaded bushing G1/8
Medium connection	weld end: in accordance with EN ISO 1127 (ISO 4200), DIN 11850 R2 other connections on request

7 INSTALLATION

DANGER!

Danger - high pressure.

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

WARNING!

Risk of injury from improper installation.

- Installation may only be performed by qualified and trained personnel.
- Use an open-end wrench for the assembly.
- Following assembly, perform 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.

7.1 Installation position

Depending on the valve body, the installation position of the diaphragm valve is different.

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 the diaphragm socket for monitoring leakage must be at the lowest point.

7.1.1 Installation position 2-way body Type 2063

Installation position: at will, preferably with the actuator upright.

To ensure self-drainage:

→ Install valve body inclined by an angle α = 10° to 40° to the horizontal.
Forged and cast body: Mark on the valve body must point upwards (12 o'clock position, see „Fig. 23“).

→ Observe an inclination angle of 1° – 5° to the line axis.

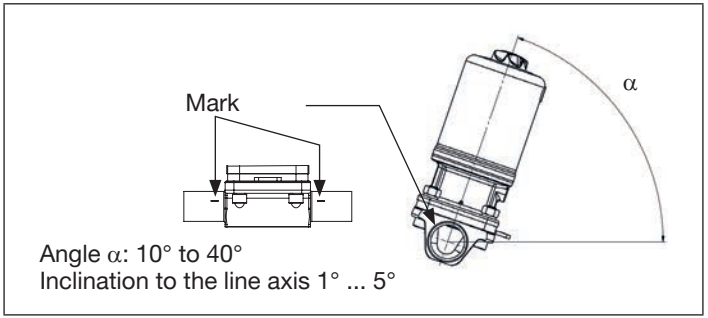


Fig. 23: Installation position for self-drainage of the valve body

7.1.2 Installation position T-valve body Type 2064

For the installation of the T-valves into circular pipelines, we recommend the following installation positions:

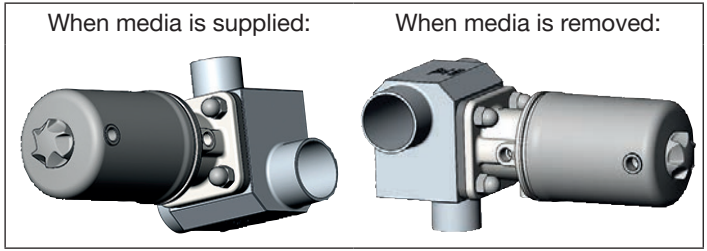


Fig. 24: Installation position type 2064

7.1.3 Installation position tank bottom body Type 2065

Preferably with the actuator to the bottom.

7.2 Before installation

- Ensure the pipelines are flush..
- The flow direction is optional.

7.2.1 Preparatory work

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

→ Support and align pipelines.

Devices with VG/VS welded body

NOTE!

Damage to the diaphragm or the actuator.

- Before welding in the body, remove the actuator.

7.3 Remove the actuator from the valve body

NOTE!

Damage to the diaphragm or the seat contour.

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

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

→ Remove actuator with diaphragm by loosening the body screws.

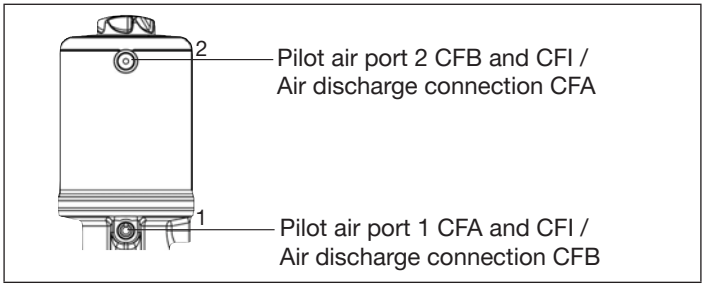


Fig. 25: Pneumatic connection

7.4 Installation of the valve body

WARNING!

Risk of injury from improper installation.

- Installation may only be performed by qualified and trained personnel.
- For installation use an open-end wrench.
- Observe the tightening torque.

7.4.1 Installation 2-way body and T-valve body

Welded bodies

→ Weld valve body in pipeline system.

Other bodies

→ Connect body to pipeline.

7.4.2 Welding tank bottom body type 2065

Observe sequence:

1. Weld the 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 valve body into the pipeline.

Installation requirements:

Pipelines: Ensure that the pipelines are aligned.

Preparation: Support and align pipelines. To ensure that the pipeline is self-draining, observe an inclination angle of 1° – 5°.

DANGER!

Risk of injury from high pressure!

- Before working on the system, switch off the pressure and vent or drain 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:

ATTENTION!

Before welding, note the following:

- Use only welding material which is 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 tank bottom body into the pipeline:

→ Weld in tank bottom body.

⚠ Ensure installation is de-energized and low-vibration.

After welding in the valve body:

Install the diaphragm and the actuator.

7.5 Installation of the actuator (welded body)

NOTE!

Damage to the diaphragm or the seat contour.

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

Installation for actuator with control function A:

→ Pressurize the pilot air port 1 with compressed air: valve opens.

→ Lightly cross-tighten the body screws until the diaphragm is between the valve body and actuator.
Do not tighten the screws yet.

→ Actuate the diaphragm valve twice.

→ Tighten body screws without pressurization in diagonal pairs in three stages (approx. 1/3, approx. 2/3, 3/3 of the tightening torque), according to Table (see „Tab. 8“). The diaphragm should be positioned and pressed evenly all around the actuator and body.

Installation for actuator with control functions B and I:

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

→ Actuate the diaphragm valve twice.

→ Tighten body screws with pressurization in diagonal pairs in three stages (approx. 1/3, approx. 2/3, 3/3 of the tightening torque), according to Table (see „Tab. 8“). The diaphragm should be positioned and pressed evenly all around the actuator and body.

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

Tab. 8: Tightening torques for installation of the actuator

→ 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 – 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.

7.6.1 Connection of the control medium

Control functions A and B

→ Connect the control medium to the pilot air port 1 (see „Fig. 26: Pneumatic connection“).

Control functions I

→ Connect the control medium to the pilot air port **1** and **2** (see „Fig. 26: Pneumatic connection“).
Pressure on connection 1 opens the valve.
Pressure on connection 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.

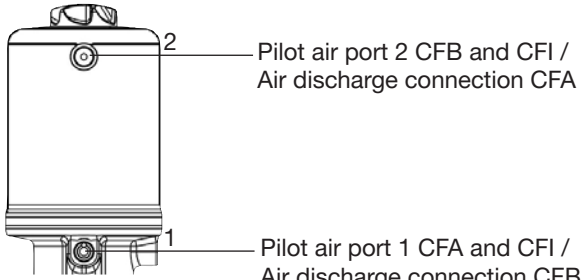


Fig. 26: Pneumatic connection

8 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.

→ Loosen the pneumatic connection.

→ Remove the device.

Replacement of the diaphragm is described in the chapter entitled „9.2 Repairs“.

9 MAINTENANCE

DANGER!

Danger - high pressure.

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

Risk of electric shock.

- ▸ 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 from improper maintenance.

- ▸ Maintenance may be performed by authorised technicians only.
- ▸ Maintenance work use only the appropriate tools.
- ▸ Following maintenance, perform a controlled restart.

9.1 Maintenance

9.1.1 Actuator

The actuator of the diaphragm valve is maintenance-free.

9.1.2 Spare 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 (see chapter entitled „11 Replacement parts“).

A bulging PTFE diaphragm may reduce the flow.

The replacing of the wearing parts is described in chapter „9.2 Repairs“.

9.1.3 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 10^5 switching cycles check the diaphragm for wear and replace if required.

Muddy and abrasive media require correspondingly shorter inspection intervals!

9.1.4 Service life of the diaphragm

The service life of the diaphragm depends on the following factors:

- Diaphragm material
- Medium
- Medium pressure
- Medium temperature
- Actuator size
- Pilot pressure for CFB and CFI.

Protecting the diaphragm

→ For CFA match the actuator size (actuator force) to the medium pressure to be actuated. If required, select the actuator with reduced spring force EC04.

→ For CFB and CFI try and select the pilot pressure not higher than is required to actuate the medium pressure.

9.1.5 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.

9.2 Repairs

9.2.1 Replacing the diaphragm

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.

Fastening types

Orifice DN (diaphragm size)	Fastening types for diaphragms	
	PTFE	EPDM / FKM / laminated PTFE
15	Diaphragm with bayonet catch	Diaphragm with bayonet catch
20		
25	Diaphragm with bayonet catch	Diaphragm screwed in
32		
40		
50		

Tab. 9: Fastening types for diaphragms

Replacement for control function A

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

→ Pressurize pilot air port **1** with compressed air: valve opens.

→ Loosen the four body screws.

NOTICE!

Damage to the diaphragm or the seat contour.

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

→ Remove the actuator from the valve body.

→ Release compressed air.

→ Unbutton or unscrew old diaphragm. If attachment is with a bayonet catch, remove the diaphragm by rotating it through 90°.

NOTE

For diaphragms with the 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 counterclockwise.

→ Install new diaphragm.

→ Align diaphragm.
The mark tab of the diaphragm must be perpendicular to the direction of flow (see „Fig. 27“).

→ Pressurize pilot air port **1** with compressed air.

→ Place actuator back on the valve body.

→ Insert the body screws and lightly cross-tighten until the diaphragm is between the body and actuator.
Do not tighten the screws yet.

→ Actuate the diaphragm valve twice.

→ Tighten body screws without pressurization in diagonal pairs in three stages (approx. 1/3, approx. 2/3, 3/3 of the tightening torque), according to Table (see „Tab. 10“). The diaphragm should be positioned and pressed evenly all around the actuator and body.

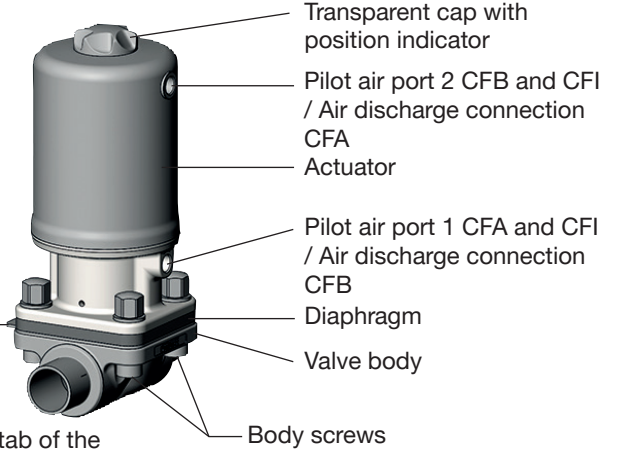


Fig. 27: Maintenance

Replacement for control functions B and I

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

→ Loosen the four body screws.

NOTICE!

Damage to the diaphragm or the seat contour.

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

→ Remove the actuator from the valve body.

→ Pressurize pilot air port **1** with compressed air.

→ Unbutton or unscrew old diaphragm. If attachment is with a bayonet catch, remove the diaphragm by rotating it through 90°.

NOTE

For diaphragms with the 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 counterclockwise.

→ Install new diaphragm.

→ Align diaphragm.
The mark tab of the diaphragm must be perpendicular to the direction of flow (see „Fig. 27“).

→ Place actuator back on the valve body.

→ Lightly cross-tighten the body screws without pressurization until the diaphragm is between the body and actuator.
Do not tighten screws yet.

→ Actuate the diaphragm valve twice.

→ Tighten body screws with pressurization in diagonal pairs in three stages (approx. 1/3, approx. 2/3, 3/3 of the tightening torque), according to Table (see „Tab. 10“). The diaphragm should be positioned and pressed evenly all around the actuator and body.

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

Tab. 10: Tightening torques

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

9.2.2 Switch between PTFE and EPDM diaphragms

Orifice DN15 and DN20:

→ Loosen PTFE diaphragm bayonet and attach new EPDM diaphragm.

Orifice DN25 up to DN50:

→ Loosen PTFE diaphragm bayonet.

→ Place the insert in the pressure piece.

NOTE

For diaphragms with the 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 counterclockwise.

→ Insert and screw in EPDM diaphragm.

10 MALFUNCTIONS

Malfunction	Cause /remedial action
Actuator does not switch	Pilot air port interchanged CFA: Connecting pilot air port 1 CFB: Connecting pilot air port 2 CFI: Pilot air port 1: Open Pilot air port 2: Close
	Pilot pressure too low See pressure specifications on the type label.
	Medium pressure too high See pressure specifications on the type label.
Valve is not sealed	Medium pressure too high See pressure specifications on the type label.
	Pilot pressure too low See pressure specifications on the type label.
Flow rate reduced	PTFE diaphragm bulging → Replace diaphragm.

Tab. 11: Malfunction

11 REPLACEMENT PARTS

CAUTION!

Risk of injury and 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.

The diaphragm is available as a replacement part for the piston-controlled diaphragm valve Type 2063, 2064 and 2065.

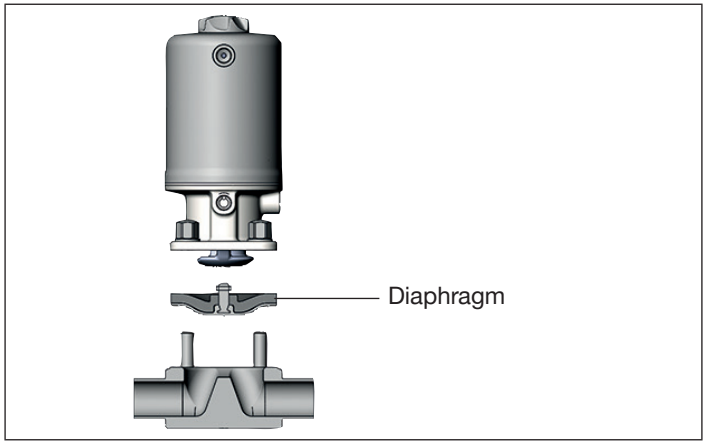


Fig. 28: Diaphragm replacement part

11.1 Order table

Orifice (Diaphragm size) [mm]	Order numbers for diaphragms					
	EPDM (AB*)		EPDM (AD*)		FKM (FF*)	
15 BC**	693 162	E02**	693 163	E03**	693 164	F01**
20 BC**	693 165	E02**	693 166	E03**	693 167	F01**
25	677 667	E01**	688 424	E03**	677 687	F01**
32	677 668	E01**	688 425	E03**	677 688	F01**
40	677 669	E01**	688 426	E03**	677 689	F01**
50	677 670	E01**	688 427	E03**	677 690	F01**
65	677 671	E01**	688 428	E03**	677 691	F01**
	PTFE (EA*)		Advanced PTFE (EU*)		Laminated Gylon (ER*)	
15	677 675	E02-PTFE**	679 541	E02-PTFE+Hole**	693 176	L06**
20	677 676	E02-PTFE**	679 542	E02-PTFE+Hole**	693 177	L06**
25	677 677	E02-PTFE**	679 543	E02-PTFE+Hole**	693 178	L06**
32	677 678	E02-PTFE**	679 544	E02-PTFE+Hole**	693 179	L06**

40	677 679	E02-PTFE**	679 545	E02-PTFE+Hole**	693 180	L06**
50	677 680	E02-PTFE**	679 546	E02-PTFE+Hole**	693 181	L06**
65	677 681	E02-PTFE**	679 743	E02-PTFE+Hole**	–	–

Tab. 12: Order numbers for diaphragms

* *Feature keys, device key.*

** *Marking on the diaphragm.*

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

12 TRANSPORT, STORAGE, REMOVAL

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.

bürkert
FLUID CONTROL SYSTEMS

www.burkert.com

MAN 1000296894 EN Version: BStatus: RL (released | freigegeben) printed: 10.09.2018