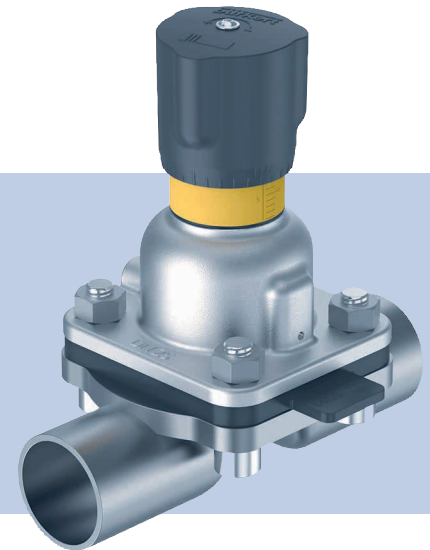


## Type 2933, 2934, 2935, 2973, 2974, 2975

Manually operated diaphragm valves



### Operating Instructions

Bedienungsanleitung  
Manuel d'utilisation

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

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Operating Instructions 2304/00\_EU-ML\_00815442 / Original DE

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# 1 OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions ready to hand at the operating site.

## Important safety information.

- ▶ Read these instructions carefully.
- ▶ Above all, observe the safety instructions, intended use and operating conditions.
- ▶ Persons who work on the device must read and understand these instructions.

## 1.1 Symbols



### DANGER

Warning of an immediate danger.

- ▶ Failure to comply will result in death or serious injury.



### WARNING

Warns of a potential danger.

- ▶ Failure to observe these warnings may result in serious injuries or death.



### CAUTION

Warns of a potential hazard.

- ▶ Failure to comply with these instructions may result in moderate or minor injury.

## NOTE

### Warns of damage.



Important tips and recommendations.



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

- ▶ Highlights instructions to avoid a danger.

→ Designates a procedure which you must carry out.

## 1.2 Definition of terms

Term	Definition for these instructions
Device	Diaphragm valve type 2933, 2934, 2935, 2973, 2974 and 2975
Ex area	Potentially explosive atmosphere
Explosion protection approval	Approval in potentially explosive atmosphere

## 2 INTENDED USE

The diaphragm valve type 2933, 2934, 2935, 2973, 2974 and 2975 is designed to control the flow of media. The authorised media are listed in chapter “Technical data”.

- ▶ Use the device only as intended. Non-intended use of the device may be dangerous to people, nearby equipment and the environment.
- ▶ Prerequisites for safe and trouble-free operation are correct transportation, correct storage, installation, start-up, operation and maintenance.
- ▶ 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.
- ▶ Use the device only in conjunction with third-party devices and components recommended or approved by Bürkert.
- ▶ 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, note the information on the separate Ex type label and the Ex additional instructions or the separate Ex operating Instructions.
- ▶ Protect device from environmental influences (e.g. radiation, air humidity, fumes). If you have any questions, contact your Bürkert sales department.

## 3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not take into account any unforeseen circumstances or events that occur during installation, operation and maintenance. The operator is responsible for observing the location-specific safety regulations, also with reference to 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.

### Electric shock due to installed electrical component.

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

### Danger of bursting in case of overpressure.

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

- ▶ Do not exceed the maximum medium pressure. Observe specifications on the type label.
- ▶ Observe allowable temperatures.

### Danger of burns and risk of fire.

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

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

**Medium may leak out if the diaphragm is worn.**

- ▶ Inspect relief bore for any medium leakages.
- ▶ Change the diaphragm if medium leaks.
- ▶ If the medium is hazardous, secure the area around the leakage to prevent risks.

**Danger of crushing due to mechanically moving parts.**

There is a risk of crushing due to the up and down movement of the device when it is actuated.

- ▶ Do not reach into the openings of the valve body.

**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.

**To avoid injury, observe the following:**

- ▶ Do not make any changes to the device and do not subject it to mechanical stress.
- ▶ Only trained technicians may perform installation and maintenance work.
- ▶ Only use suitable tools to perform installation and maintenance work.
- ▶ Heavy equipment must only be transported, assembled and disassembled with the help of a second person as appropriate and using suitable apparatus.
- ▶ Only hand-tighten the valve when closing. Too much tightening may damage the diaphragm.

- ▶ The process must be restarted in a defined or controlled manner after an interruption in the power supply or pneumatic supply.
- ▶ The device may be operated only when in perfect condition and in consideration of the operating instructions.
- ▶ For applications planning and operation of the device, observe the plant-specific safety regulations.
- ▶ Only the media listed in chapter [“Technical data”](#) should be fed into the medium ports.
- ▶ Observe the general rules of technical equipment.
- ▶ The plant owner is responsible for the safe operation and handling of the plant.

## 4 GENERAL NOTES

### 4.1 Contact addresses

#### Germany

Bürkert Fluid Control Systems  
Sales Centre  
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](mailto:info@burkert.com)

#### International

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

They are also available online at: [country.burkert.com](http://country.burkert.com)

### 4.2 Warranty

A precondition for the warranty is that the diaphragm valve is used as intended in consideration of the specified operating conditions.

### 4.3 Information on the Internet

Operating instructions and data sheets for type 2933, 2934, 2935, 2973, 2974, 2975 can be found online at: [country.burkert.com](http://country.burkert.com)

## 5 PRODUCT DESCRIPTION

### 5.1 Structure and description

The device is a manually controlled diaphragm valve with diaphragm seal. The valve consists of a manual actuator and a valve body.

### 5.2 Variants

Types 293x and 297x are differentiated by the actuator. The x is different to the valve body.

#### 5.2.1 Type 2933

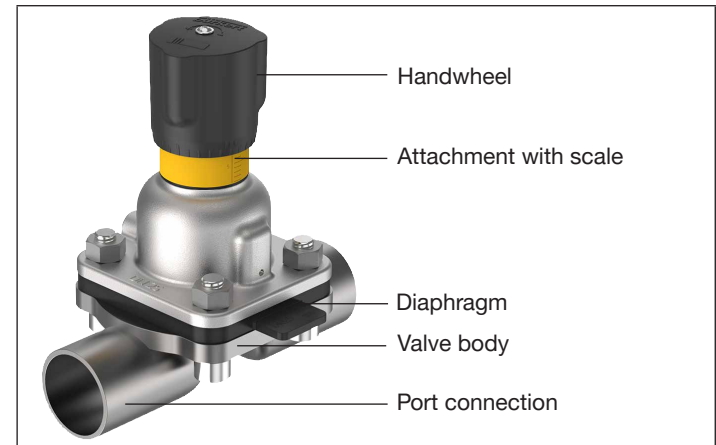


Fig. 1: Example of 2/2-way valve, type 2933

## 5.2.2 Type 2934 with T-valve body

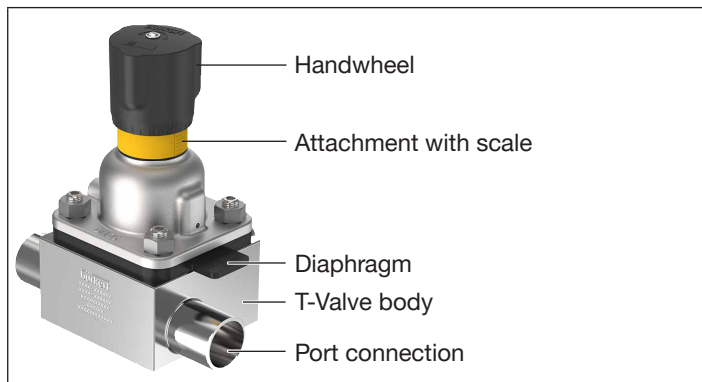


Fig. 2: Example of valve with T-valve body, type 2934

## 5.2.3 Type 2935 with tank bottom body

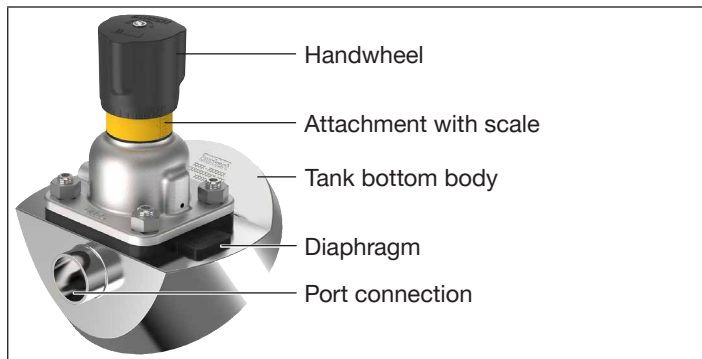


Fig. 3: Example of valve with tank bottom body, type 2935

## 5.2.4 Type 2973, 2974, 2975

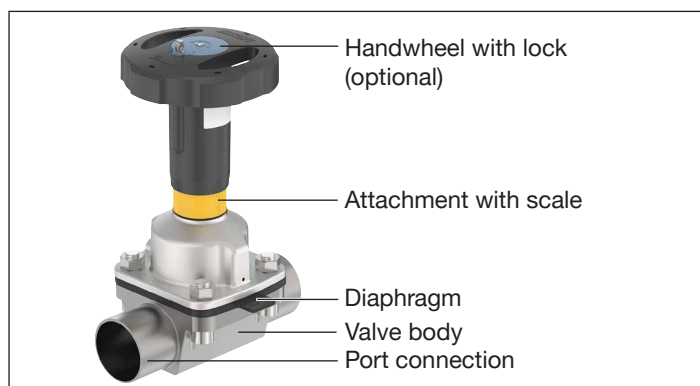


Fig. 4: Example of 2/2-way valve, type 2973

## 5.3 Function

By manually activating the handwheel, the force is transmitted via a spindle and the valve is opened or closed. The medium in the valve body is released or shut off. Turning the handwheel anticlockwise opens the valve, turning it clockwise closes the valve.

### 5.3.1 Position indicator actuator

#### 5.3.1.1 Actuator DN8

When turning the handwheel anticlockwise, a yellow marking becomes visible between the attachment and the handwheel.

**!** The visibility of the yellow marking is not directly related to the closed position of the valve. Depending on the construction of the valve, the marking may:

- not be visible when the valve is open, or
- visible when the valve is closed.

### 5.3.1.2 Actuator DN15 to DN50

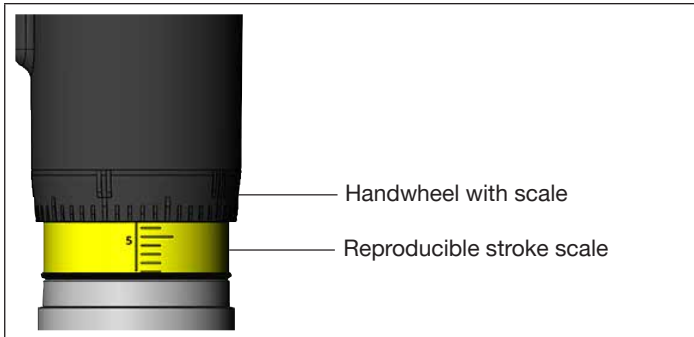


Fig. 5: Position indicator

When turning the handwheel anticlockwise, a reproducible stroke scale becomes visible between the attachment and the handwheel.

**!** The visibility of the stroke scale is not directly related to the closed position of the valve. Depending on the construction of the valve, the reproducible stroke scale may:

- not be visible when the valve is open, or
- visible when the valve is closed.

The scale on the handwheel determines the rotation position of the handwheel (type 293x: 30 positions, type 297x: 50 positions). The reproducible stroke scale shows the relative position of the valve and serves as a fixed point for determining the rotational position.

## 5.4 Product identification

### 5.4.1 Type label

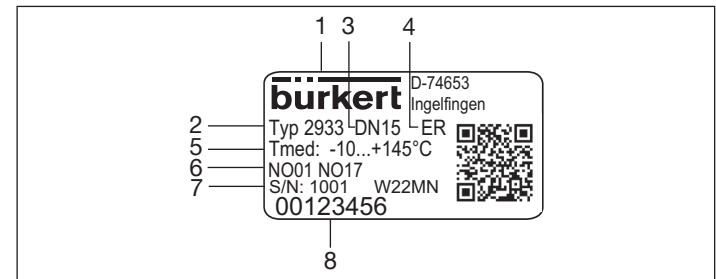


Fig. 6: Description of the type label (example)

Item	Description	Item	Description
1	Manufacturer	5	Medium temperature
2	Type	6	Valve body surface roughness
3	Nominal diameter	7	Serial number
4	Seal material	8	Order number

### 5.4.2 Labelling on forged steel valve body

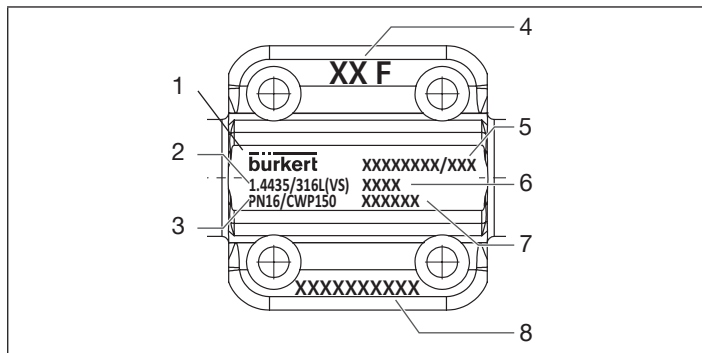


Fig. 7: Labelling on forged steel valve body

Item	Description	Item	Description
1	Company logo	5	Production number/ serial number
2	Material	6	Self-draining angle
3	Nominal pressure class (PN)	7	Customer-specific text (optional)
4	Batch number	8	Nominal diameter and pipe dimensions

### 5.4.3 Labelling on cast valve body

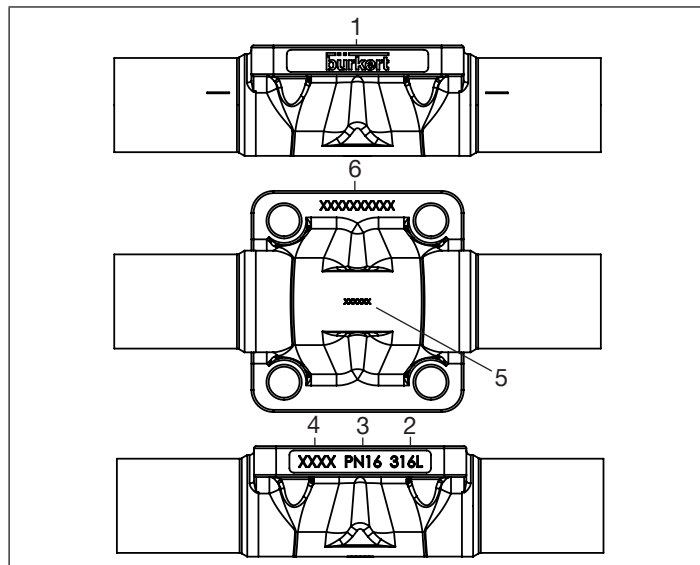


Fig. 8: Labeling on cast valve body

Item	Description	Item	Description
1	Company logo	4	Nominal diameter (diaphragm size)
2	Material	5	Batch number
3	Nominal pressure class (PN)	6	Nominal diameter and pipe dimensions

#### 5.4.4 Labelling on tube valve body

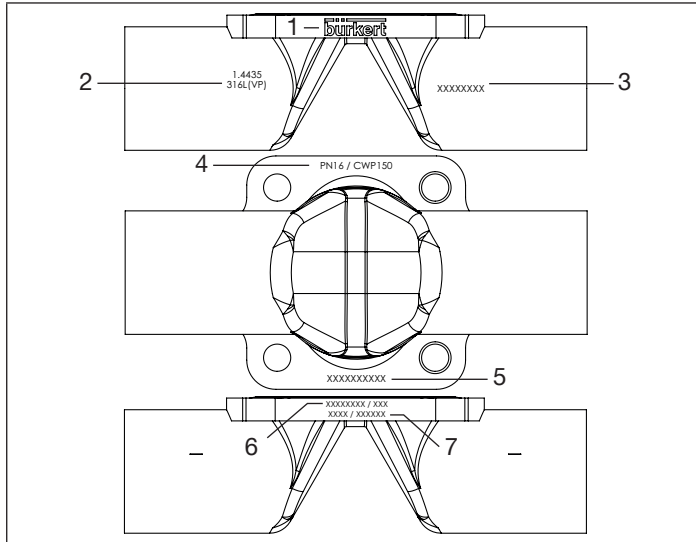


Fig. 9: Labelling on tube valve body

Item	Description	Item	Description
1	Company logo	5	Nominal diameter and pipe dimensions
2	Material	6	Serial number
3	Heat	7	Self-draining angle
4	Nominal pressure class (PN)		

## 6 TECHNICAL DATA

### 6.1 Standards and directives

The device complies with the valid 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.



UKCA marking with the importer address.

### 6.2 Mechanical data

#### Materials

Valve body type 2933, 2973	PVC, PP, PVDF Precision-cast stainless steel (VG), Forged steel (VS), Stainless steel tube valve body (VP)
Valve body type 2934, 2935, 2974, 2975	Stainless steel block material
Actuator	PPS handwheel and attachment, PPS handwheel and stainless steel attachment
Diaphragm	EPDM, PTFE/EPDM, advanced PTFE/ EPDM, GYLON®/EPDM laminated, FKM

## 6.3 Port connections valve body

Stainless steel valve body	Welded connection
	Clamp connection
Plastic valve body	Spigot
	True union

## 6.4 Operating conditions

Media	Dirty, aggressive, ultra-pure, sterile media with higher viscosity
-------	--

### 6.4.1 Allowable temperatures

Ambient temperature for actuators	-10...+130 °C (short-term up to +150 °C)
-----------------------------------	---

#### Medium temperature for valve body

Stainless steel	-10...+150 °C
PVC-U (see "Fig. 10")	+10...+60 °C
PVDF (see "Fig. 10")	-20...+120 °C
PP (see "Fig. 10")	+10...+90 °C

#### Medium temperature for diaphragms

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

## 6.4.2 Permitted medium pressure

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

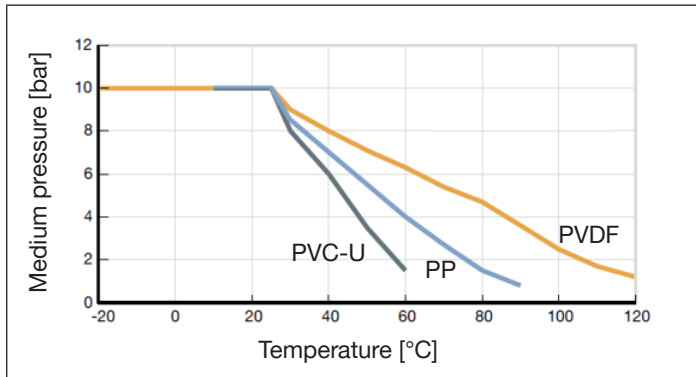


Fig. 10: Pressure temperature diagram for plastic valve body as per DIN EN ISO 16138



The information is important for the material selection. Observe the permitted operating pressure, depending on the medium temperature.

## Maximum permitted medium pressure

The values are valid for valve bodies made from:

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

Nominal diameter DN (diaphragm size)	Maximum permitted medium pressure [bar]	
	EPDM/FKM	PTFE/advanced PTFE/Gylon®
8	10	10
15	10	10
20	10	10
25	10	10
32	10	10
40	10	10
50	7*/10	7*/10

Tab. 1: Maximum permitted medium pressure

\* for handwheel and attachment made of PPS

## 6.5 Flow values

### 6.5.1 Flow values for forged steel valve bodies

Kv values [m³/h] for forged steel valve bodies VS								
Diaphragm size	Nominal diameter port connection (DN)	Seal material	DIN	ISO	ASME	BS	SMS	
8	6	EPDM	1.1					
		PTFE	1.1					
	8 / 1/4"	EPDM	1.7	1.5	0.7	0.5		
		PTFE	1.9	2.0	0.7	0.5		
	10 / 3/8"	EPDM	1.5	1.5	1.6	1.4		
		PTFE	1.9	2.0	1.8	1.6		
	15 / 1/2"	EPDM			1.5			
		PTFE			1.9			
	15	10 / 3/8"	EPDM	3.5	5.5			
			PTFE	3.4	5.2			
15 / 1/2"		EPDM	6.5	6.5	3.1	3.7		
		PTFE	6.0	6.0	3.1	3.6		
20 / 3/4"		EPDM			6.5			
		PTFE			6.0			

20	20 / 3/4"	EPDM	12.4	12.5	8.4	8.9	
		PTFE	12.0	12.0	8.5	8.8	
25	25 / 1"	EPDM	20.0	18.0	15.5		16.0
		PTFE	17.0	16.0	14.5		14.8
40	32	EPDM	34.0				
		PTFE	34.0				
	40 / 1 1/2"	EPDM	40.0	41.0	37.0		38.0
		PTFE	40.0	40.0	37.5		38.0
50	50 / 2"	EPDM	66.0	66.0	66.0		66.0
		PTFE	66.0	67.0	66.0		66.0
	2 1/2"	EPDM			66.0		
		PTFE			66.0		

Tab. 2: Kv values for forged steel valve bodies

### 6.5.2 Flow values for cast valve bodies

Kv values [m³/h] for cast valve bodies VG			
Diaphragm size	Nominal diameter port connection (DN)	Seal material	Cast valve body VG (all standards)
8	8	EPDM	0.95
		PTFE	1.5
15	15	EPDM	5.6
		PTFE	5.3
20	20	EPDM	10.7
		PTFE	10.5
25	25	EPDM	14.6
		PTFE	13.6
32	32	EPDM	-
		PTFE	-
40	40	EPDM	35.0
		PTFE	35.0
50	50	EPDM	47.0
		PTFE	48.0

Tab. 3: Kv values for cast valve bodies

### 6.5.3 Flow values for tube valve bodies

Kv values [m³/h] for tube valve body VP (IHU2) TVB3G						
Diaphragm size	Nominal diameter port connection (DN)	Seal material	DIN	ISO	ASME	
8	8 / 1/4"	EPDM		1.9		
		PTFE		2.4		
	10 / 3/8"	EPDM	1.9			
		PTFE	2.4			
	15 / 1/2"	EPDM				
		PTFE			2.2	
15	15 / 1/2"	EPDM	7.2	7		
		PTFE	6.7	6.6		
	20 / 3/4"	EPDM	6.9			
		PTFE	5.5		6.5	
	20	20 / 3/4"	EPDM		13.5	
			PTFE		12.1	
25 / 1"		EPDM	14.9			
		PTFE	13.7		12.7	

25	25 / 1"	EPDM		17.3		
		PTFE		14.1		
	32	EPDM	18.6			
		PTFE	14.2			
	25 / 1"	EPDM		19.1		
		PTFE		15.6		
32	EPDM	20.0				
	PTFE	15.8				
32	32	EPDM		36.0		
		PTFE		36.0		
	40 / 1 1/2"	EPDM	35.0			
		PTFE	34.5		32.0	
40	40 / 1 1/2"	EPDM		48.0		
		PTFE		47.0		
	50 / 2"	EPDM	46.0			
		PTFE	43.5		45.0	
	50	50 / 2"	EPDM		70.0	
			PTFE		70.0	

Tab. 4: Kv values for tube valve bodies

## 7 INSTALLATION



### DANGER

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.



### WARNING

Risk of injury due to improper installation.

- ▶ Assembly may be carried out by authorised technicians only and with the appropriate tools.
- ▶ Observe tightening torques.

Risk of injury from 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 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 Information for the correct installation position

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

Installation for leakage detection:



One of the relief bores in the diaphragm socket for monitoring leakages must be at the lowest position.

### 7.1.1 Installation position of 2/2-way valve body

Installation position: any, preferably actuator facing up.

Ensuring self-draining:



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

Self-draining must be considered during the installation:

1. Angle of inclination of the pipeline:

- The angle of inclination should correspond to the angle of inclination of the pipeline. For the pipeline, we recommend the inclination angles according to the valid ASME BPE.

2. Self-draining angle for valve body:

- The self-draining angle ( $\alpha$ ) 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 “Fig. 7” and “Fig. 9”).

- The marking on the port connection of valve bodies serves as an orientation aid. 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.burkert.com](http://www.burkert.com)  
Type /Manuals /Supplementary information  
“[Angle information for self-drainage of diaphragm valves](#)”.

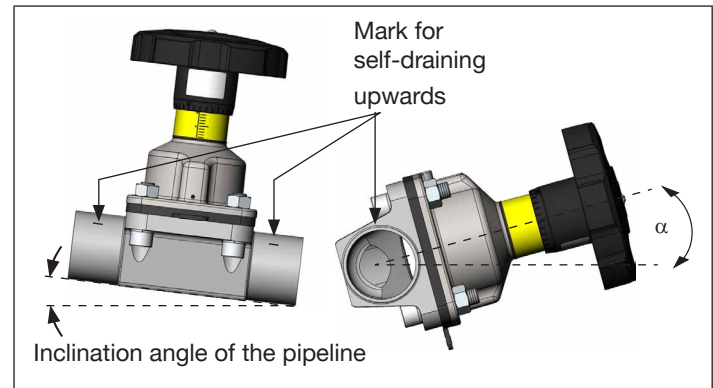


Fig. 11: Installation position for self-draining of the valve body

## 7.1.2 Installation position of T-valve body

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

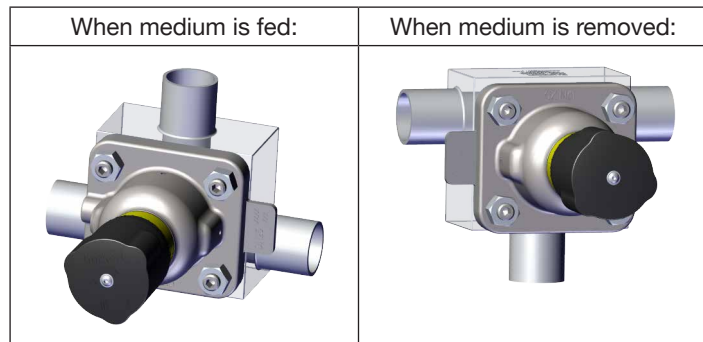


Fig. 12: Installation position of type 2934/2974

## 7.2 Preparatory work

- Clear impurities from pipelines (seal material, metal chips, etc.).
- Support and align pipelines.

Devices with bonded or adhesive bodies:



The actuator and diaphragm must be dismantled before welding or bonding the valve body.

### 7.2.1 Welding tank bottom body



#### DANGER

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.



#### Recommendations

Observe the 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 pipeline.

- 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.



For information on containers and instructions for welding, refer to the ASME VIII Division I standard. Check the batch number indicated on the manufacturer's certificate 3.1 supplied before starting welding work.



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

→ Welding the tank bottom body to the container.

#### NOTE

##### Note when welding:

- ▶ Only use welding materials that 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.

→ Weld the tank bottom body into the pipeline.  
Ensure that there is no voltage present and minimal vibration during installation.

→ Install diaphragm and actuator after welding.

## 7.3 Install device

### NOTE

The following must be heeded when installing the device in the system:

- ▶ The device and relief bore must be accessible for inspections and maintenance work.

### 7.3.1 Device with welded connection or bond connection

#### NOTE

To prevent damage.

- ▶ Dismantle the actuator and diaphragm before welding or bonding the valve body.
- Rotate the handwheel anticlockwise until it comes to a stop (UP position).
- Loosen the fastening screws crosswise and remove the actuator with diaphragm from the valve body.
- Weld or bond the valve body into the pipeline.
- After welding or bonding the valve body, smooth the body surface (if necessary) by sanding.
- Clean valve body carefully.
- Place the actuator together with diaphragm on the valve body.
- Slightly tighten the fastening screws crosswise until the diaphragm rests between the valve body and the actuator.
- Close and open the diaphragm valve twice to ensure that the diaphragm is properly seated.
- Close the diaphragm valve again and open it approx. 20 %.

## NOTE

Damage to the device when failing to observe tightening torque.

► Observe tightening torques.

→ Tighten each fastening screw in 3 stages (approx. 1/3, approx. 2/3, 3/3 of the tightening torque in accordance with “Tab. 5”) crosswise. The diaphragm should be positioned and pressed evenly around the actuator and valve body.

### 7.3.2 Tightening torques

Nominal diameter DN (diaphragm size)	Tightening torques [Nm]*	
	Diaphragm EPDM/FKM	Diaphragm PTFE/advanced PTFE/Gylon®
8	2	2.5
15	3.5	4
20	4	4.5
25	5	6
32	6	8
40	8	10
50	12	15

Tab. 5: Tightening torques depending on diaphragm

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

## 7.4 Set stroke limit

### 7.4.1 Set stroke limit, type 293x

Minimum stroke limit is available for type 2933, 2934 and 2935. A hexagon nut is used for this purpose.

- Turn the handwheel clockwise to move the valve to the closed position.
- Loosen the screw on the handwheel (hexagon socket, width across flats 2) and remove handwheel.

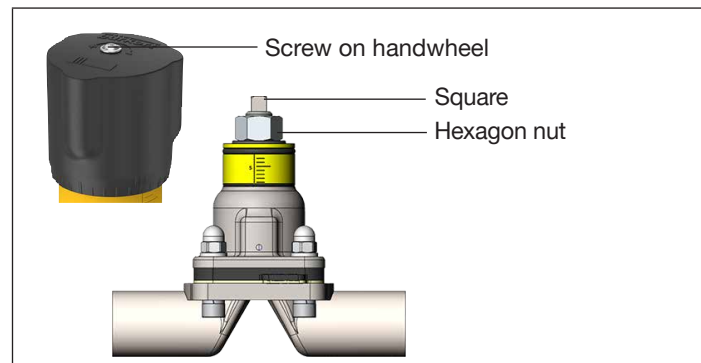


Fig. 13: Set stroke limit type 293x

- Screw hexagon nut down as far as it will go. Minimum stroke is set.
- Mount handwheel on actuator. The square on the spindle and the hexagon of the nut must be in correct alignment with the geometry in the handwheel so that they fit into each other.

## NOTE

Damage to the device due to incorrectly positioned hexagon nut.

- ▶ Do not screw the hexagon nut in the area of the square.
- ▶ Use min. stroke limitation only in the range of 0-25 % opening stroke.

→ Tighten the screw on the handwheel with 0.9 Nm.

### 7.4.2 Set stroke limit, type 297x

Minimum and maximum stroke limit is available for type 2973, 2974, 2975 (diaphragm size DN15 to DN50). An adjusting sleeve is used for this purpose.

- Turn the handwheel clockwise to move the valve to the closed position.
- Loosen the screw on the handwheel (hexagon socket, width across flats 2) and remove handwheel.
- Screw adjusting sleeve down clockwise as far as it will go. Minimum stroke is set.
- Mount handwheel on actuator. The square on the spindle and the hexagon of the adjusting sleeve must be in correct alignment with the geometry in the handwheel so that they fit into each other.
- Move the valve to the desired maximum opening position.
- Loosen the screw on the handwheel and remove handwheel.
- Pull adjusting sleeve upwards and at the same time, screw anticlockwise until it comes to a stop: maximum stroke is set.

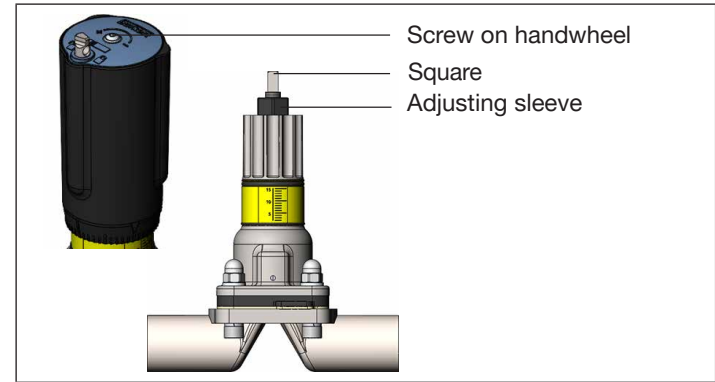


Fig. 14: Set stroke limit type 297x

- Mount handwheel on actuator. The square on the spindle and the hexagon of the adjusting sleeve must be in correct alignment with the geometry in the handwheel so that they fit into each other.
- Tighten the screw on the handwheel with 0.9 Nm.

### 7.5 Lock handwheel

The handwheel lock option is available for type 2973, 2974, 2975 to provide protection against accidental or unauthorised operation of the valve (from diaphragm size DN15 to DN50).

- Handwheel DN15-DN25 can be locked in 12 locking positions per revolution (every 30° corresponds to 0.15 mm stroke).
- Handwheel DN32-DN50 can be locked in 13 locking positions per revolution (every 27° corresponds to 0.15 mm stroke).

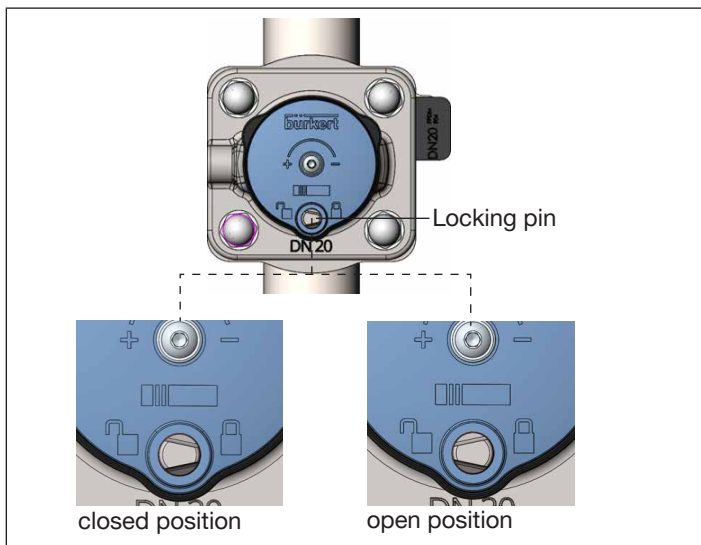


Fig. 15: Lock handwheel

**!** The locking pin contains a bore ( $\varnothing 3.8$ ) and can be secured against unauthorised use with the aid of a padlock (not included in scope of delivery).

- Push locking pin down and rotate by  $180^\circ$  (either clockwise or anticlockwise). It may be necessary at this point to rotate the handwheel slightly, so that the locking pin reaches its end position.
- Insert locking pin through the bore into a padlock and secure.

## 8 MAINTENANCE



### DANGER

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.

Risk of escaping medium if the diaphragm is worn.

- ▶ Check the relief bore for escaping medium.
- ▶ Replace the diaphragm if medium escapes.
- ▶ In the case of hazardous media, protect the area around the discharge point against hazards.



### WARNING

Risk of injury due to improper maintenance work.

- ▶ Maintenance may only be performed by authorised technicians and with the appropriate tools.

### 8.1 Cleaning

Commercially available cleaning agents can be used to clean the outside.

#### NOTE

Avoid causing damage with cleaning agents.

- ▶ Before cleaning, check that the cleaning agents are compatible with body materials and seals.

## 8.2 Maintenance work

### 8.2.1 Actuator

When used in accordance with these operating instructions, the actuator is maintenance-free.

### 8.2.2 Inspection intervals

The following maintenance work is required for the diaphragm valve

- After the first steam sterilisation, or when required, re-tighten fastening screws crosswise.
- After maximum 10<sup>5</sup> switching cycles check the diaphragm for wear.



Muddy and abrasive media require correspondingly shorter inspection intervals.

### 8.2.3 Diaphragm

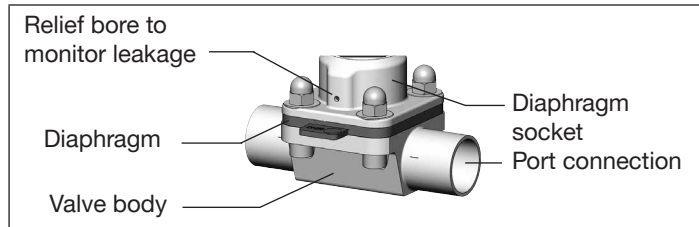


Fig. 16: Relief bore to monitor leakage

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

- Diaphragm material
- Medium

- Medium pressure
- Medium temperature
- Closing force

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

→ Conduct regular inspections of the relief bore.



A bulging PTFE diaphragm may reduce the flow rate.

## 8.3 Replacing the diaphragm

The diaphragm is attached in different ways:

Nominal width DN (diaphragm size)	Diaphragm fastening types	
	PTFE / advanced PTFE	EPDM / FKM / Gylon®
8	Buttomed	
15	Bayonet catch	
20		
25	Bayonet catch	Threaded connection
40		
50		

Tab. 6: Fastening types for diaphragms

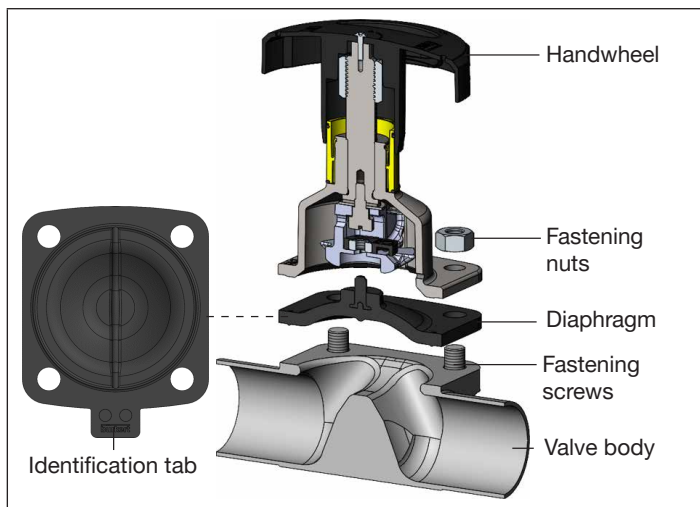


Fig. 17: Replacing the diaphragm

- Clamp valve body in a collet (only for valves which have not yet been installed).
- Rotate the handwheel anticlockwise until it comes to a stop (UP position).
- Loosen the fastening screws crosswise and remove the actuator with diaphragm from the valve body.
- Rotate the handwheel clockwise until it comes to a stop (CLOSED position).
- Unbutton or unscrew the old diaphragm. When fastening with a bayonet catch, loosen the diaphragm by rotating it 90°.

For DN25-DN50, see chapter “8.3.1”.

## NOTE

**Damage to the diaphragm with threaded connection due to live pin.**

- ▶ First screw on the diaphragm hand-tight, then loosen it by rotating it anticlockwise with one half-turn.
- Install new diaphragm in the actuator (see “Tab. 6”).
- Rotate the handwheel anticlockwise until it comes to a stop (UP position).
- Align diaphragm.  
Identification tab at a 90-degree angle to the direction of flow.
- Place the actuator together with diaphragm on the valve body.
- Slightly tighten fastening screws crosswise.
- Close and open the diaphragm valve twice to ensure that the diaphragm is properly seated.
- Close the diaphragm valve again and open it approx. 20 %.

## NOTE

**Damage to the device when failing to observe tightening torque.**

- ▶ Observe tightening torques.
- Tighten each fastening screw in three stages (approx. 1/3, approx. 2/3, 3/3 of the tightening torque) crosswise. The diaphragm should be positioned and pressed evenly around the actuator and valve body.



Observe tightening torques in accordance with the tables in chapter “7.3.2”.

### 8.3.1 Change between PTFE and EPDM diaphragms

DN8:

→ Unbutton PTFE diaphragm and button on new EPDM diaphragm.

DN15 and DN20:

→ Loosen PTFE diaphragm bayonet and insert new EPDM diaphragm.

DN25 to DN50:

→ Loosen PTFE diaphragm bayonet.

→ Fitting the insert into the pressure piece.

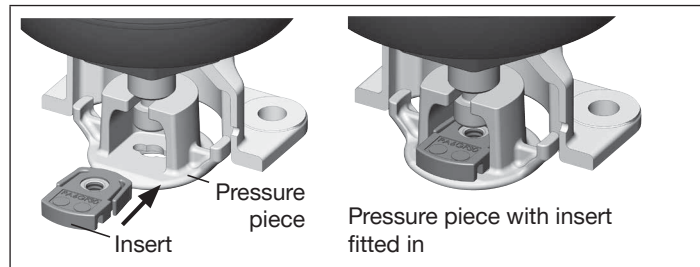


Fig. 18: Fitting the insert into the pressure piece

#### NOTE

Damage to the diaphragm with threaded connection due to live pin.

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

→ Insert and screw in the EPDM diaphragm.

## 9 REPLACEMENT PARTS, ACCESSORIES



### CAUTION

Risk of injury and/or damage due to incorrect parts.

Incorrect accessories and unsuitable spare parts may cause injuries and damage the device and the area around it.

- ▶ Use only original accessories and original spare parts from Bürkert.

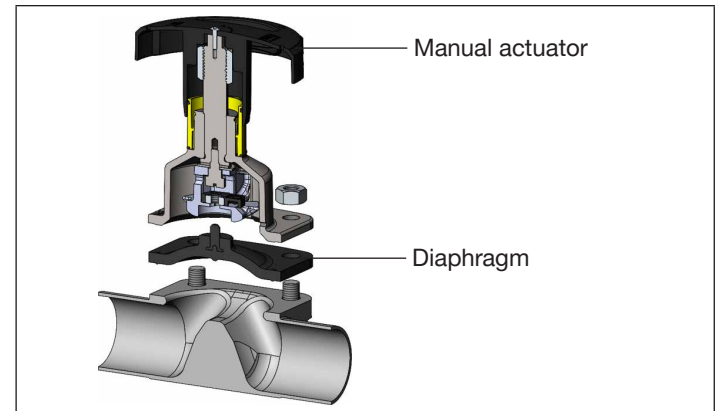


Fig. 19: Spare parts

The following are available as replacement parts for manually actuated diaphragm valves:

- Complete manual actuator
- Diaphragm

## 9.1 Replacement diaphragms

Replacement diaphragms can be ordered according to the table below. The diaphragms are marked with a material code that specifies them. The material code is located on the identification tab or, in the case of two-piece diaphragms, on the tab of the support diaphragm and the diaphragm plate (see “Fig. 16”). The material code may differ for older materials. Diaphragm fixings see “Tab. 6”.

Diaphragm size	EPDM (AD*)		FKM (FF*)		PTFE / EPDM (EA*)		Advanced PTFE / EPDM (EU*)		Gylon® laminated / EPDM (ER*)	
	Article number	Material code	Article number	Material code	Article number	Material code	Article number	Material code	Article number	Material code
8	688 421	EPDM E04	677 684	FKM F01	677 674	PTFE L10	679 540	PTFE L09	693 175	PTFE L08
15	693 163	EPDM E04	693 164	FKM F01	677 675	EPDM E04 / PTFE P01	679 541	EPDM E04 / PTFE P02 or hole	693 176	PTFE L08
20	693 166	EPDM E04	693 167	FKM F01	677 676	EPDM E04 / PTFE P01	679 542	EPDM E04 / PTFE P02 or hole	693 177	PTFE L08
25	688 424	EPDM E04	677 687	FKM F01	677 677	EPDM E04 / PTFE P01	679 543	EPDM E04 / PTFE P02 or hole	693 178	PTFE L08
32	688 425	EPDM E04	677 688	FKM F01	677 678	EPDM E04 / PTFE P01	679 544	EPDM E04 / PTFE P02 or hole	693 179	PTFE L08
40	688 426	EPDM E04	677 689	FKM F01	584 378	EPDM E04 / PTFE P01	584 379	EPDM E04 / PTFE P02 or hole	693 180	PTFE L08
50	688 427	EPDM E04	677 690	FKM F01	584 386	EPDM E04 / PTFE P01	584 387	EPDM E04 / PTFE P02 or hole	693 181	PTFE L08

Tab. 7: Order table for diaphragms

\* Bürkert SAP code



You can find further information on replacement parts on the data sheets for the diaphragm valves. You can find the data sheets on the Internet at: [www.burkert.com](http://www.burkert.com)

## 10 TRANSPORTATION, STORAGE, DISPOSAL



### CAUTION

**Risk of injury due to heavy device.**

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

- ▶ Heavy equipment must only be transported, assembled and disassembled with the help of a second person.
- ▶ Use suitable tools.

### NOTE

**Damage in transit due to inadequately protected devices.**

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

**Incorrect storage may damage the device.**

- ▶ Store the device in a dry and dust-free location.
- ▶ Storage temperature: -40 °C...+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](https://country.burkert.com)



[www.burkert.com](http://www.burkert.com)