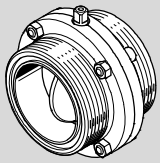
Hygienic Butterfly Valve
VZFB-...



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(en) Operating instructions

8028375
1310NH
[8031195]

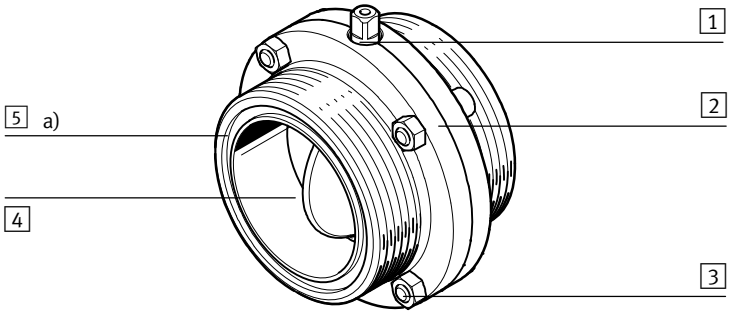
Original: en

VZFB-... ..... **English**

Note

Fitting and commissioning is to be carried out only by trained, qualified personnel in accordance with these operating instructions

1 Operating elements and connections



1 Disc
2 Housing
3 Bolt
4 Inside the housing: seal, disc
5 Pipe connection:
a) thread
Not pictured:
b) weld-on end
c) clamp

Fig. 1

2 Design

The 2/2-way stainless steel butterfly valves of the VZFB series consist of:
– a two-part housing comprising two halves that are connected via four sets of bolts and nuts
– a soft-sealing disc as a sealing body in the middle.

The product is available in several variants:

Key features		Type codes						Description					
Type		VZFB						Hygienic butterfly valve					
Standard		A						ASME					
		D						DIN11851					
		SZ						SMS					
Size (nominal diameter)	[inch]	1"	1½"	2"	2½"	3"	4"	1	1½	2	2½	3	4
	[DN]	25	40	50	65	80	100	DN25	DN40	DN50	DN65	DN80	DN100
Connection		CC						Clamp/Clamp					
		WW						Weld/Weld					
		TT						Thread/Thread					
Body material		V2						High alloy steel, stainless (AISI 304)					
		V4						High alloy steel, stainless (ANSI 316L)					
Disc material		V2						High alloy steel, stainless (AISI 304)					
		V4						High alloy steel, stainless (ANSI316L)					
Seal material		E						EPDM					
		V						FPM					

Fig. 2

3 Function

The rotation of the mounted quarter turn actuator or hand lever is transmitted to the switching shaft of the butterfly valve.

The switching shaft transmits the rotation to the soft-sealing disc. Depending on the switching position the disc blocks or enables the flow. The disc can be switched by 90° to the two positions “OPEN” and “CLOSED”.

Fig. 3

4 Application

The butterfly valves of the VZFB series are intended to be used as a process valve for the flow control of water and neutral fluids in piping systems.
The products are tailored to the requirements of factory and process automation (➔ catalogue www.festo.com/catalogue). They are suitable for use in the food and beverage, pharmaceutical and fine-chemical industries.

For special ambient conditions:
When the device is used in very dusty environments, surfaces and actuators must be cleaned at regular intervals. The cleaning intervals depend on the amount of dust present and on the surface temperature generated by the fluid.

The butterfly valves can be operated with an appropriate quarter turn actuator (flange to ISO 5211) or hand lever.
– Operation with abrasive media and solids is not permissible.
– Before using the product, test the compatibility of the medium with the materials of the product in order to avoid damage to the product (➔ Technical Data).
– Note that the maximum limit values such as medium pressure and temperature must not be exceeded, even as an individual load.
– For product variants with fittings 'CC' or 'TT': Welding on the tubing is not permissible! Use appropriate fittings to connect the product to the tubing.

5 Transport and storage

Take the product's weight into account. Storage locations should be cool, dry and shady to prevent corrosion.

6 Requirements for product use

Note

Incorrect handling and failure to observe regulations can lead to product damage.
- Make sure that all the information in these operating instructions is observed. This will ensure the product will function correctly and safely.

– Compare the limit values specified in these operating instructions with your actual application (e.g. medium, pressure, temperature, mass).
– Unauthorised product modification is not permitted.
– Only use the product if it is in perfect technical condition.
– All applicable national and international regulations must be complied with.

The user/operator is responsible for the correct application and observation of the relevant safety regulations while operating the butterfly valves.

7 Mounting

Assembly and operation only by trained, qualified personnel.

Warning

Danger of crushing and shearing!
During operation of the butterfly valve, body parts can be crushed or cut in the orifice of the butterfly valve.
- Do not reach into the orifice of the butterfly valve.

- Before installation, carry out a function test.

It must be possible to completely open and close the valve.. Butterfly valves with detectable operative malfunctions must not be installed.
- Ensure that the equipment is free of stress during installation.
- When mounting a quarter turn actuator, observe the documentation for that actuator.
- Avoid additional pipe connector forces.

The butterfly valve design takes typical stress within the piping during operation into consideration. Longitudinal or bending forces can occur in piping systems that are subject to temperature fluctuations.
- Use appropriate mountings on the process valve to avoid such forces.

Information for product variants with fittings 'WW':

1. To protect the seal in the middle of the butterfly valve: Dismantle both connecting flanges from the butterfly valve and weld on separately.
2. Allow the connecting flanges to cool down and reconnect them with the seals, using the bolts. When doing this, make sure the seals are clean.
3. Tighten the bolts crosswise and check the connection points for tightness - tightening torques ➔ Fig. 8

8 Commissioning

- Make sure that the permissible pressure range of the product is not exceeded (➔ Technical Data).

The actuating elements of the butterfly valves are harmonised to the maximum forces of the shaft and disc. Changes to these components are not permissible and can cause damage.

9 Operation

- Make sure that the permissible limit values are adhered to (➔ Technical Data). Permissible medium pressures are shown in the pressure-temperature diagram (➔ Fig. 4).

The permissible medium pressure p [bar] decreases as a function of the temperature t [°C] of the medium.

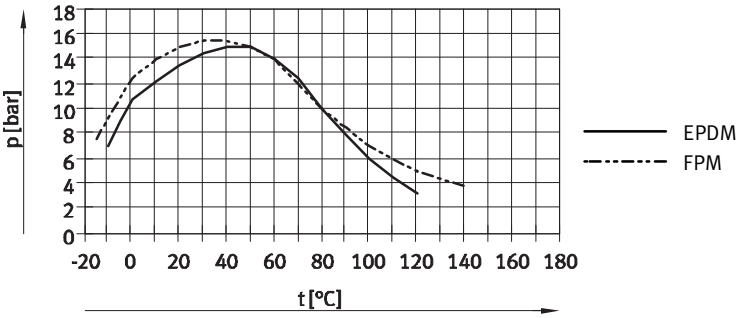


Fig. 4

10 Maintenance and care

Maintenance the valve needs to be carried out at specific time intervals; these may vary according to the nature and type of working conditions of the valve.
If necessary, the seals can be replaced as part of preventive maintenance after 12 months if necessary. The bushing needs to be replaced at the same time as the seals.
In any other case, the seals must be replaced at the end of the process if the valve's performance is affected due to damaged seals.

10.1 Cleaning the valve

Warning

Danger of burns.
Aggressive cleaning products such as caustic soda and nitric acid can cause skin burns

- Proper care and safety measures need to be followed while handling acid and alkaline solutions and during the cleaning process.

Cleaning-in-place (CIP)

The valve can be cleaned in place with the following solutions:

Note

- Use water that is clean and free from chlorine.

- Alkaline solution: 1% by weight of NaOH (caustic soda) at 70 °C
  Example:
  – 1 kg NaOH + 100 l of water = cleaning solution
  – 2.2 l 33% NaOH + 100 l of water = cleaning solution
- Acid solution: 0.5% by weight HNO_3 (nitric acid) at 70 °C
  Example:
  – 0.7 l 53% HNO_3 + 100 l of water = cleaning solution

Sterilization-in-place (SIP)

Note

- Do not use SIP process with FPM seals

Either steam or hot water can be used for cleaning:

- Maximum temperature: 140 °C
- Maximum duration: 30 min

11 Disassembly and repair

Repair must only be performed by trained personnel using spare parts from Festo.
Information about spare parts and auxiliary tools
➔ www.festo.com/spareparts.
Before dismantling:

- Completely relieve the pressure in the tubing and the process valve.

Especially with harmful media, make sure:

- that no one is in front of the outlet orifice when it opens.
- the tubing is completely drained before disassembly, and it must be rinsed in order to avoid risk from dangerous media.

12 Troubleshooting

Malfunction	Possible cause	Remedy
Leakage at the switching shaft	Wear of the sealing elements on the switching shaft	• Replace the seal[2)] • Recheck for compatibility of the seal with the medium used and change the seal to a suitable material if necessary
Leakage at the separate halves of the housing	Working in operating conditions other than the ones mentioned in the technical specifications	• Tighten the two halves if they are loose[1)] • Replace the housing seal if it is damaged • Check for dirt and clean if necessary
Leakage in the butterfly valve through-hole	Disc seal damaged by solids in the medium	Replace the disc seal[2)]
Valve does not open and close smoothly	• Damaged seals • Dirt between the valve disc and seals • Improper functioning of actuator	• Change seals if necessary • Clean the inside of the valve and the seals • Check the troubleshooting details of the actuator if there is an issue with the actuator

1) Tightening torque ➔ Fig. 8
2) Refer to the spare parts catalogue on the Internet (➔ www.festo.com/spareparts).

Fig. 5

13 Accessories

Note

- Select appropriate accessories from the catalogue (➔ www.festo.com/catalogue).

14 Technical data

General data			VZFB
Connection			➔ Type code Fig. 2
Type of mounting			In-line installation
Medium			Water
			Neutral fluids
Actuation type			Manual/Pneumatic
Sealing principle			Soft
Mounting position			Any
Design			2-way butterfly valve
Direction of flow			reversible
Storage temperature		[°C]	15 ... 30
Storage humidity		%	<60
Temperature of medium	EPDM	[°C]	–10 ... +120 ➔ Fig. 4 (higher temperature is suitable for SIP process)
	FPM	[°C]	–15 ... +140 ➔ Fig. 4
Nominal pressure (PN)		[bar]	10 bar; ➔ Fig. 4
Materials			
Seals	Variant -E		EPDM
	Variant -V		FPM
Housing, disc, shaft			High alloy steel, stainless

Fig. 6

Size		Connection type	Approx. product weight [kg]	Actuating torque [Nm]1)	Inside diameter ø [mm]2)	Nominal size [DN]
[inch]	1	CC	1.2	8	22.4	25
		WW	1.0			
		TT	1.1			
[inch]	1½	CC	1.2	10	35.1	40
		WW	1.1			
		TT	1.5			
[inch]	2	CC	1.7	14	47.8	50
		WW	1.5			
		TT	2.0			
[inch]	2½	CC	2.0	15	59.9	65
		WW	1.8			
		TT	2.6			
[inch]	3	CC	2.4	18	72.2	80
		WW	2.1			
		TT	3.2			
[inch]	4	CC	3.3	35	97.6	100
		WW	2.8			
		TT	4.8			
[DN]	25	WW	0.9	8	26	25
	40	WW	1.1	10	38	40
	50	WW	1.6	14	50	50
	65	WW	2.1	18	66	65
	80	WW	2.5	20	81	80
	11	WW	3.1	35	100	100

1) Torque required for actuation at PN; dependent on pressure, temperature and medium
2) Smallest flow diameter

Fig. 7

Tightening torque [Nm]	
Size	**Bolt** 3
[inch] 1-4	21
[DN] 25-100	

Fig. 8