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## 2 Introduction

### 2.1 Valve use

The Hovap Varioflow double safety valve is a valve with a double seat. Mixture of products is prevented in case of seat leakage. The drain removes any leakage liquid.

### 2.2 Application area

The valve has been designed for use in the food & beverage and pharmaceutical industries.

### 2.3 Incorrect use

The valve is not suitable for use in gas systems.

Liquids with hard solid parts cause increased wear of the gaskets.

## 3 Safety

The valve must be installed/protected in such a way that cleaning- or draining liquids, which leave the drainpipe cannot cause harm or damage to anyone who might be present in the area.

There must be a free space of at least 150 mm above or below the valve. This prevents the jamming of parts of the body during opening/closing of the valve.

Prevent that, during maintenance, liquids can pressurize the pipework in which the valve has been installed.

Prevent that fingers or hand get jammed between valve and seats during operation of a disconnected valve.

During maintenance of the actuator, the indications according to 7.6 and 7.7 must be followed carefully to avoid injury caused by the expanding pressure springs.

During cleaning and operation at elevated temperatures, the valve can become so hot that touching the surface causes burning.

## 4 Transport and storage

The valve has been wrapped in plastic. This prevents dust and dirt to enter the valve interior. Re-wrap the interior when the valve is unpacked for installation of the body into the pipework.

## 5 Installation instructions

### 5.1 Mounting

To ensure a correct operation of the leakage indication, it is essential that the valve will be installed vertically with the actuator upwards.

### 5.2 Installation into pipework

The valve can be installed directly into the pipework. The body can be welded after removing the valve interior, including all O-rings/gaskets.

### 5.3 Operating space

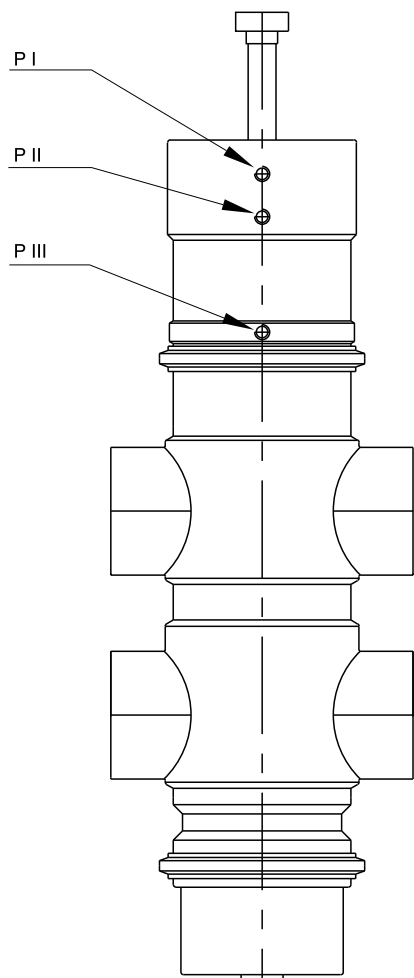
Above and below the valve, a free space is required of at least:

- 60 mm, for valves 1 1/2", 2", DN 40 and DN 50.
- 70 mm, for valves 2 1/2", 3", DN 65 and DN 80.
- 80 mm, for valves 4" and DN 100.

### 5.4 Mounting space

To enable valve maintenance, a free space above the valve is required of at least:

- 350 mm, for the valves 1 1/2", 2", DN 40 and DN 50.
- 420 mm, for the valves 2 1/2", 3", DN 65 and DN 80.
- 490 mm, for the valves 4" and DN 100.



## 6 Operation

### 6.1 Operation with air

The valve is provided with three air connections with 1/8" BSP female-thread.

P I: Clean drain space via lower valve body.

P II: Open valve.

P III: Clean drain space via upper valve body.

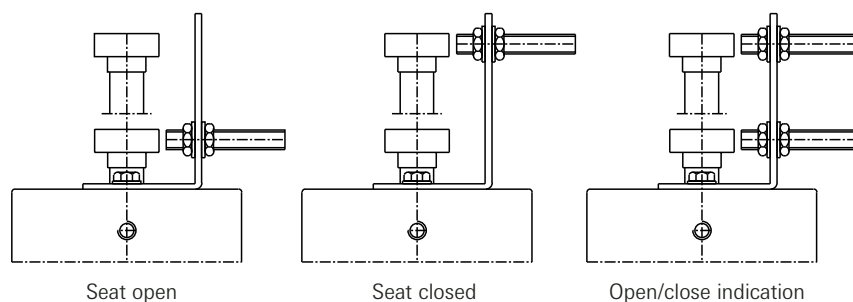
The air supply must be connected to the valve such that it is impossible to pressurize more than one connection at a time.

During cleaning it must be impossible to pressurize P II and P III simultaneously.

There must be a delay of about 10 s when changing from one connection to another.

### 6.2 Indication of valve position

The valve can be provided with a bracket for proximity switches. The following situations are possible:



### 6.3 Control unit

The valve can also be provided with a control unit. Separate instructions are available.

## 7 Cleaning and maintenance

### 7.1 Cleaning

The valve is suitable for C.I.P. cleaning.

The drain space can be cleaned by supplying pressurized air for a few seconds to P II (to clean the upper body) or P III (to clean the bottom body). See 6.1

The valve material is resistant to detergents that are commonly used in the food industry, such as a lye (NaOH) or acid (HNO<sub>3</sub>) solution of about 1% at a temperature of about 80°C. After cleaning, the system must be rinsed with clean water to prevent corrosion.

### 7.2 Lead-time

Sealing and wearing parts of the valve must be checked once a year. For special applications (such as highly viscous or crystallizing liquids) the lead-time must be adjusted in consultation with the manufacturer.

### 7.3 Safety measures during maintenance

When disassembling the valve, the pipework must be empty. With disassembled valves, it must be prevented that the pipework can be filled accidentally by, e.g., starting a pump or activating a valve.

When disassembling or assembling the actuator, the instructions must be followed.

Pressure springs, assembled in a closed springhousing, will expand the actuator parts at disassembling about 10 mm apart.

#### 7.4 Grease to be used

See Appendix A

*Product side*

Quad-rings 17 and O-rings 23, 40, 41 and 49 may only be greased with Molykote 111. Other grease has an adverse effect on valve operation.

O-ring pos. 25 must be installed dry.

*Non-product side*

These O-rings can be greased with grease that has been approved for use in the food industry.

#### 7.5 Disassembling the valve

See Appendix A

- A - Remove, if present, the indicators from the top of the valve.
- B - Remove the nipples from the air connections.
- C - Loosen clamp 7 on the side of the actuator 3.
- D - Pull actuator 3 with lower valve 31 and upper valve 32 out of valve body 1.
- E - Remove positioner 26.
- F - Pull lower valve 31 and upper valve 32 out of actuator 3.
- G - Use a pin spanner to remove insert 39 from upper valve 32.
- H - Loosen clamp 7 on the side of the protection cover 2.
- I - Remove protection cover 2.
- J - Check all O-rings, both bearings 11, guide ring 42 and cylindrical bearing 36.
- K - Replace guide ring 42 and O-rings 49, when they have been removed of the upper valve 32.

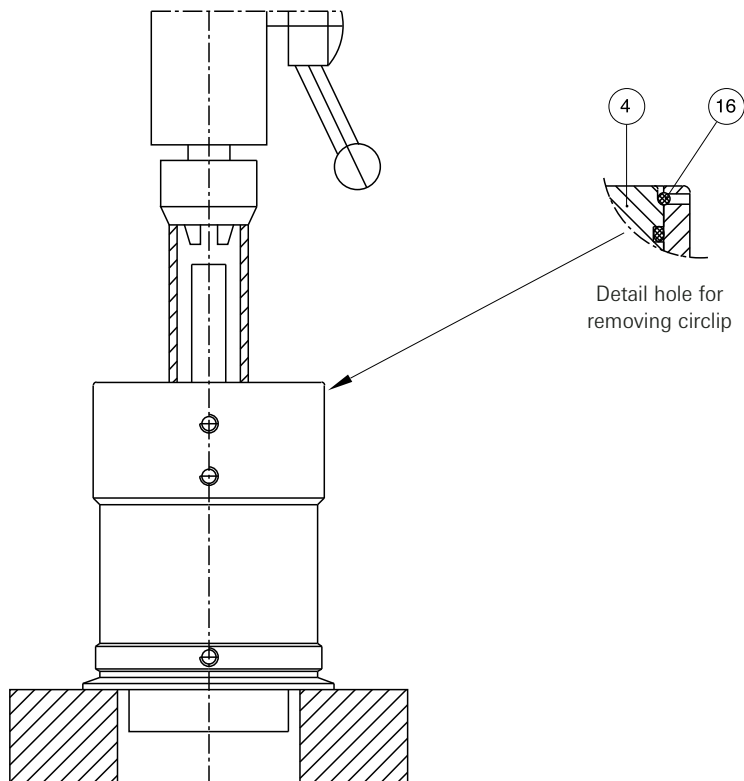
#### 7.6 Disassembling the actuator

See Appendix A

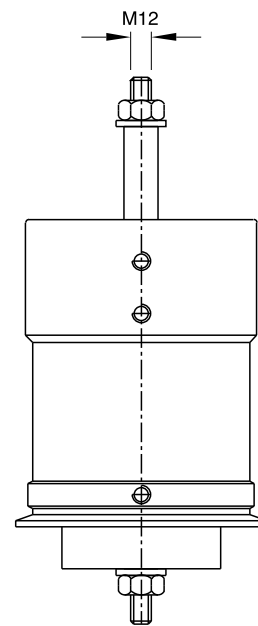
- A - Place the actuator on the table of a drill. Put a length of tube on cover 4 over spring cup 10. If no drill is available, a threaded end with nuts can be used.
- B - Press cover 4 about 10 mm downward against the spring pressure.

**Caution: springs under pressure!**

- C - Use a pin to remove circlip 16 from its groove.
- D - Allow the springs to expand and disassemble the actuator.
- E - Check gaskets, O-rings and cylindrical bearing 15.



Disassembling with drilling machine



Disassembling with threaded end

### 7.7 Assembling the actuator

See Appendix A

- A - Place the O-rings.
- B - Loosely assemble all parts.
- C - Put the actuator on the table of a drill or use a threaded end.
- D - Press cover 4 downward against the spring pressure.  
**Caution: springs under pressure!**
- E - Mount circlip 16.
- F - Allow the springs to expand. Check carefully if circlip 16 fits correctly in the groove of cover 4.

### 7.8 Assembling the valve

See Appendix A

- A - Mount O-ring 25 on insert 39. Mount O-rings 40 and 41 (only on valve size 2½" and larger) on upper valve 32. Grease the thread of the upper valve 32 with anti-seize compound. Mount greased O-rings 49 in grooves of guide ring 42 and place those on upper valve 32 by mounting insert 39, using a pin spanner.
- B - Place O-rings 20 and 23, TV O-ring 18 and spring 27 in upper valve 32.
- C - Place TV O-ring 18 in lower valve 31.
- D - Place O-ring 22 around valve stem 6.
- E - Place lower valve 31 into upper valve 32 and place tube 46.
- F - Place valve set 31/32 in actuator 3.
- G - Fasten positioner 26.
- H - Place both bearings 11 in valve body 1.
- I - Slightly stretch quad-rings 17 and place them into valve body 1.
- J - Place actuator 3 with valve set 31/32 and O-ring 19 in valve body 1.
- K - Check the correct installation of quad-rings 17 by blowing into the leakage holes of the connecting pieces.
- L - Fasten clamp 7 on the side of the actuator.
- M - Place protection body 2.
- N - Connect the air supply.
- O - Check if the valve operates smoothly.

### 7.9 Failures

See Appendix A

#### Leakage out of holes at clamp 7

Check quad-rings 17.

#### Leakage via drainpipe 30

Check TV ring 18 if leakage occurs in closed position of valve.  
Check O-ring 25 if leakage occurs in open position of the valve.

#### Air leakage via cover 4

Check O-rings 20 and 21.

#### Air leakage via connections P II or P III (see 6.1)

Check O-rings 20.

#### Liquid in the actuator

Check O-ring 23.

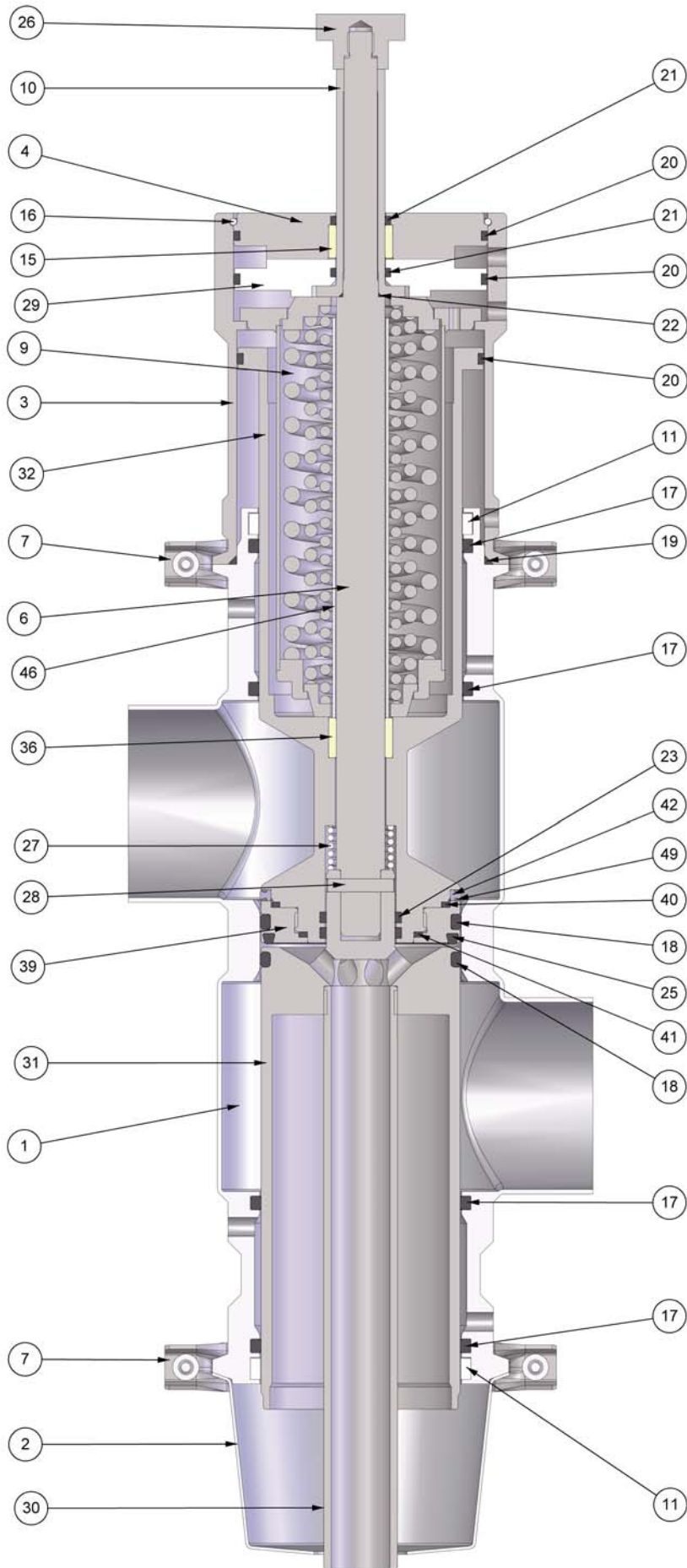
#### Valve opens/closes slowly

Air supply pressure is below 6 bar.  
Air tube is too long or the diameter is too small.  
Liquid in the actuator.

#### Valve opens/closes with irregular movement

Quad-rings pos. 17 are dry. Remove these quad-rings and install new ones that have been greased with Molykote 111.

Varioflow double safety process valves - series 8700  
DN 40-100 / Appendix A - Cross-section



**Parts**

Pos.	Qty.	Description	Pos.	Qty.	Description
1	1	Valve body	23	2	O-ring
2	1	Protection cover	25	1	O-ring
3	1	Actuator	26	1	Positioner
4	1	Cover	27	1	Spring
6	1	Valve stem	28	1	Pin
7	2	Clamp	29	1	Auxiliary piston
9	1	Spring housing	30	1	Drain pipe
10	1	Spring dish	31	1	Lower valve
11	2	Bearing	32	1	Upper valve
15	1	Cylindrical bearing	36	1	Cylindrical bearing
16	1	Circlip	39	1	Insert
17	4	Quad-ring	40	1	O-ring
18	2	TV-O-ring	41	1	O-ring (2 1/2" and larger)
19	1	O-ring	42	1	Guide ring
20	3	O-ring	46	1	Tube
21	2	O-ring	49	2	O-ring
22	1	O-ring			

**Spare parts**

Pos.	Qty.	Description	1 1/2"-2"	2 1/2"-3"	4"
			DN 40-50	DN 65-80	DN 100
11	2	Bearing			
15	1	Cylindrical bearing			
17	4	Quad-ring	69.0 x 5.33	90.0 x 5.33	99.0 x 5.33
18	2	TV O-ring	59.69 x 5.33	78.74 x 5.33	88.27 x 5.33
19	1	O-ring	88 x 3	108 x 3	124.5 x 3
20	3	O-ring	85.32 x 3.53	104.37 x 3.53	123.42 x 3.53
21	2	O-ring	22 x 3	22 x 3	22 x 3
22	1	O-ring	15 x 1.5	15 x 1.5	15 x 1.5
23	2	O-ring	31.34 x 3.53	31.34 x 3.53	31.34 x 3.53
25	1	O-ring	50.17 x 5.33	66.04 x 5.33	78.74 x 5.33
36	1	Cylindrical bearing			
40	1	O-ring	52 x 2	72 x 3	82 x 3
41	1	O-ring		48 x 3	48 x 3
42	1	Guide ring			
49	2	O-ring	63.22 x 1.78	82.27 x 1.78	91.7 x 1.78

**Ordering spare parts**

When ordering spare parts, please include the following information:

- The valve number.
- The valve ordering code. See Appendix C.
- The valve size.
- The valve part position number.
- The quality of any quad-rings and O-rings. See Appendix C.

# Varioflow double safety process valves - series 8700

DN 40-100 / Appendix C - Technical specification

## Valve material

All metal parts that come into contact with the liquid are made of stainless steel according to W.Nr. 1.4401. The metal parts that do not come into contact with the liquid are made of stainless steel W.Nr. 1.4301 or of plastics. The bearings in the actuator are made of self-lubricating bronze.

## Gasket material

The quad- and O-rings on the product side are made of EPDM. The TV O-rings in the valve have a FKM core with a FEP coating. Other O-rings are of NBR. Alternatives for the material of quad- and O-rings on the product side are available.

## Noise level

The noise caused by the valve has an A-weighted equivalent continuous noise pressure of less than 70 dB(A).

## Air supply pressure

The air supply pressure must be between 5 and 10 bar. Recommended is the use of dry air of 6 bar.

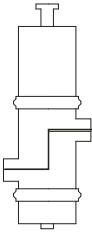
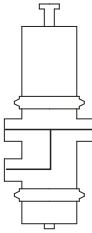

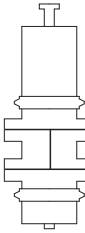
## Air consumption

The air consumption in nl per stroke is given in the table below. Air consumption has been calculated at 6 bar air pressure.

Size	Opening	Cleaning drain space via upper body	Cleaning drain space via lower body
1 1/2" - 2" DN 40-50	4.7	1.1	0.7
2 1/2" - 3" DN 65-80	8.4	1.4	0.9
4" DN 100	12	2.6	1.3

## Version and ordering code

The following versions are available:

Version				
Ordering code	8711	8712	8721	8722