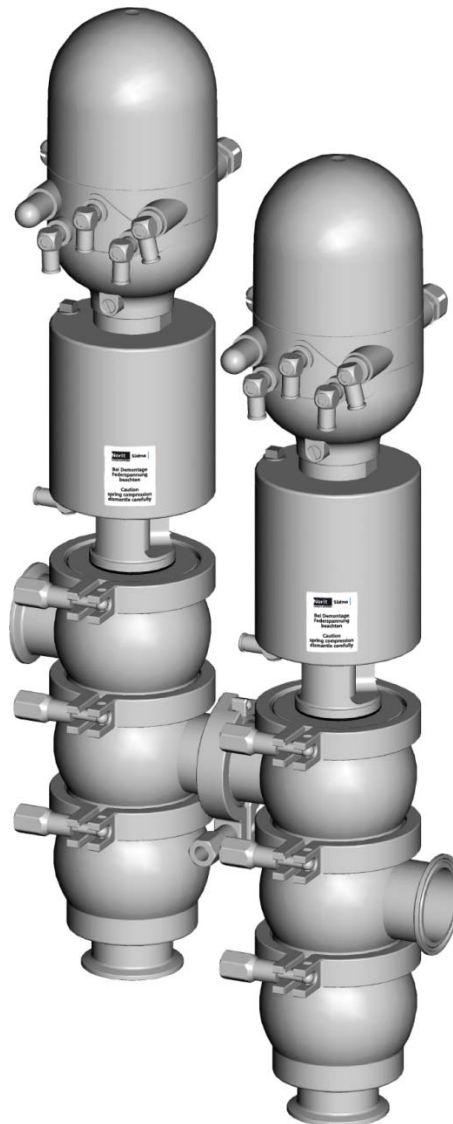


# BAA S400FDV-IT Select

Version 2.01

## Flow diversion valve DN 1" – 4"

Profile seal – PEEK seal, process control head IntelliTop® 2.0



Revision	Date	Name	Revision	Date	Name	Revision	Date	Name	Revision	Date	Name

created on/by 13.05.2011 Graf H.  
reviewed on/by 13.05.2011 Feldmeier T.



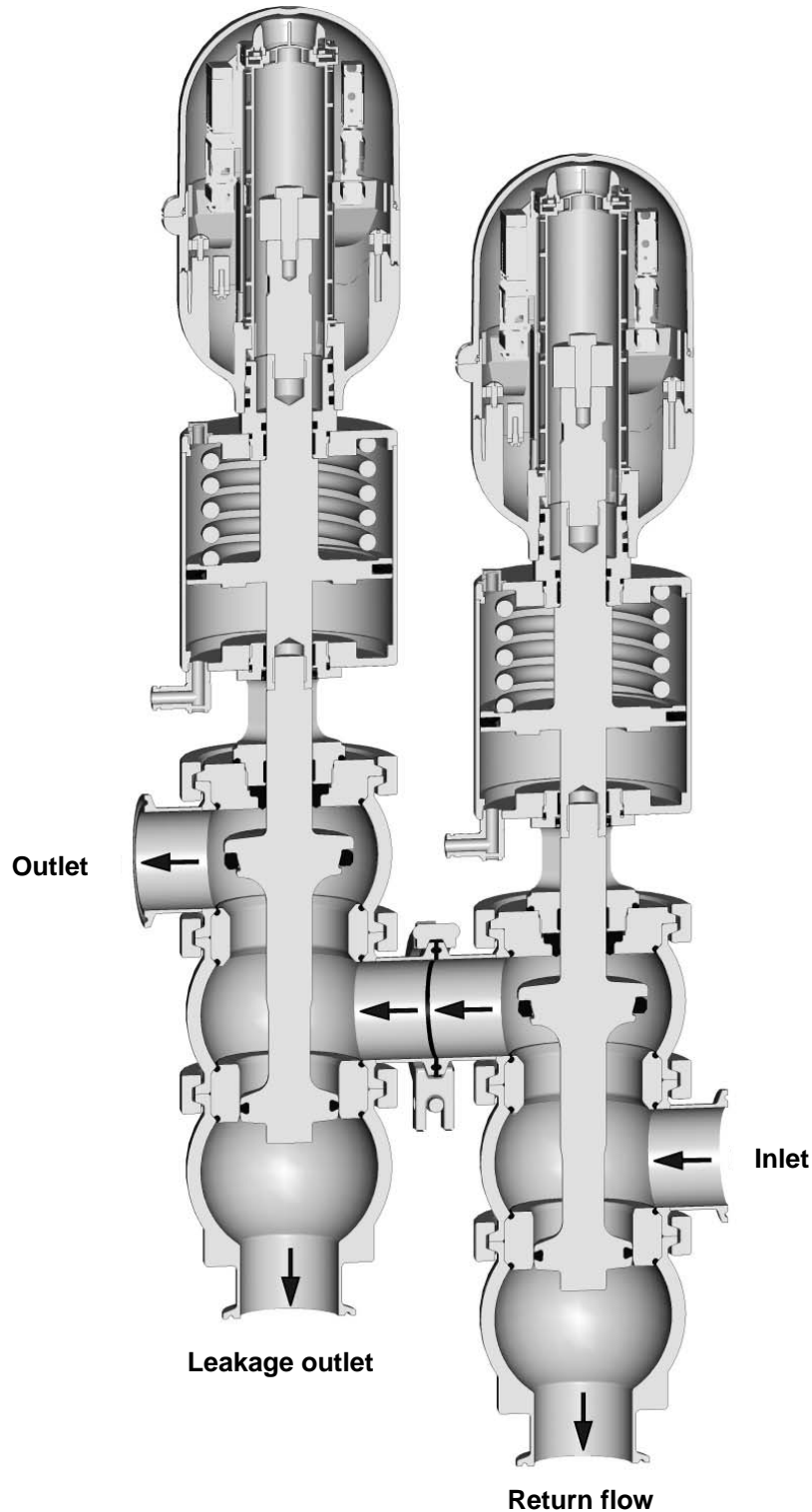
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**2. Flow diversion combination**

Operating pressure: max. 87 psi / 6 bar  
Control air pressure: 87 psi – 116 psi / 6 bar – 8 bar



### 3. Safety instructions



Hazard

This symbol denotes an **imminent danger** to life and health of persons!  
Non-observance of these instructions leads to health risks or life-threatening injuries.



Caution

This symbol denotes a **potentially dangerous situation!**  
Non-observance of these instructions can lead to light injuries or damage to material property.



This symbol gives important information on the proper handling of the flow diversion valve, which must be strictly observed.  
Non-observance of these instructions can result in malfunction of the valve or in its environment.

#### 3.1. General information

- ⇒ Flow diversion valves by Südmo Components GmbH have been manufactured in accordance with the state-of-the-art standards and recognized safety rules. However, these flow diversion valves may constitute a hazard if used by operating personal improperly or for a purpose other than the intended one. This may result in a risk to life and limb of the user or of third parties or cause damage to the flow diversion valve and other material property.
- ⇒ Anyone who has been authorized by the user to install, start up, operate and maintain these flow diversion valves must have read and understood the complete operating instructions (especially all stipulated safety instructions).
- ⇒ In addition to these operating instructions, the following applies as a matter of course:
  - relevant accident prevention regulations
  - generally recognized safety rules
  - national regulations in the country of use
  - in-house instructions concerning work and safety.

#### 3.2. Maintenance and service work

- ⇒ Any maintenance and repair work on the flow diversion valves must be carried out by specially trained, qualified personnel only.
  - Training or instruction in accordance with the current safety standards.

For systems with explosion protection: training or instruction or authorization to carry out work on systems subject to explosion hazards (observe ATEX regulations).

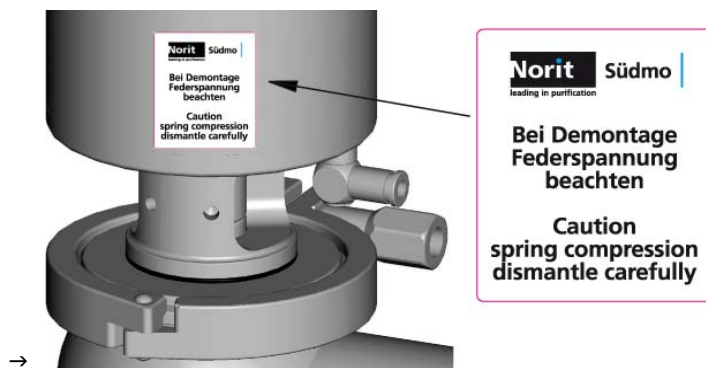


Diagram A

- ⇒ Get information on possible risks that could be caused by residues of the operating material and take appropriate measures if necessary (safety gloves, safety goggles, etc.), before carrying out maintenance and service work on the flow diversion valve.
- ⇒ Prior to carrying out any maintenance and service work, make sure that:
  - this work is only carried out in a depressurized state and with the media supply shut off.
  - the flow diversion valve and all piping elements leading to the valve have been drained and cleaned or flushed.
  - the fittings have cooled down.
  - the system cannot be started by a third person.
  - the pressure build-up which may form in sealed pipelines is counteracted.
  - dismounting - mounting of the flow diversion valve are carried out according to the mounting instructions (see chapter 8 "Dismounting - Mounting").
  - the power supply has been disconnected.
  - the flow diversion valve is removed from the piping section, if possible.
- ⇒ Avoid any working method impairing safety and function of the flow diversion valve.

### 3.3. Modifications to the flow diversion valve



- ⇒ **The flow diversion valve must be operated in accordance with its designated use set out in the operating instructions and only by safety-conscious persons who are fully aware of the risks involved in operating the valve.**
- ⇒ **Operate the flow diversion valve in perfect technical condition only.**
- ⇒ **No modifications to the flow diversion valve are allowed.**

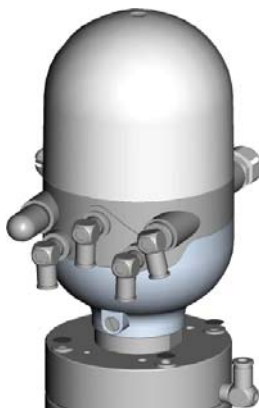
### 3.4. Cleaning, flushing, sterilization

- ⇒ The owner of the plant the flow diversion valve has been built into must draw up operating instructions so that all the information required for the operation of the valve is available to the operating and maintenance personnel.
- ⇒ The start-up and operating personnel must wear protective clothing (gloves and safety goggles) during the cleaning, flushing and sterilization work.

### 3.5. Storage

- ⇒ Store the valve in a dry place protected against external influences.
- ⇒ Prior to handling (disassembly of the body / activation of the actuators) temporarily store the valves in a dry place for at least 24 hours at a temperature  $\geq 5^{\circ}\text{C}$ .

### 3.6. Flow diversion valve equipped with process control head IntelliTop® 2.0



- ⇒ Anyone who has been designated by the purchaser to install, start up, operate and maintain the process control head IntelliTop® 2.0 must have read and understood the complete operating instructions IntelliTop 2.0 (especially all stipulated safety instructions).

**3.7. Operation**



- ⇒ **Never touch the valve or the pipelines if hot media are processed or if the sterilizing process is running.**
- ⇒ **Always adhere exactly to the operating parameters (see chapter 6 "Technical Data").**

**3.8. Spare parts**



- Use original spare parts only.**
- ⇒ **For original spare parts, refer to the enclosed spare parts list.**
- ⇒ **Perfect functioning of the flow diversion valve is only guaranteed when using original spare parts.**

**3.9. Risk assessment**

- ⇒ All safety instructions in these operating instructions result from the risk assessment for the flow diversion valves.

**4. Field of application**

**4.1. Field of application of the flow diversion valves**

The Norit Südmo flow diversion valves are used, inter alia, in

- ⇒ breweries
- ⇒ the beverage industry
- ⇒ the foodstuffs industry
- ⇒ the pharmaceutical industry
- ⇒ the chemical industry
- ⇒ the cosmetic industry

**4.2. Allowed operating media, pressures and temperatures**

Media	Allowed operating pressure	Minimum allowed operating temperature	Maximum allowed operating temperature
<b>EPDM</b>			
Products Water, beverages, pumpable food and cosmetics (liquids, emulsions, flowing suspensions)	< 10.0 bar overpressure	-5 °C or 1 K above freezing point	99 °C or at least 1 K below the evaporation temperature at atmospheric pressure

Media	Allowed operating pressure	Minimum allowed operating temperature	Maximum allowed operating temperature
Aqueous cleaning base (based on sodium hydroxide solution, < 5 %*)	< 10.0 bar overpressure	-5 °C or 1 K above freezing point	99 °C or at least 1 K below the evaporation temperature at atmospheric pressure
Aqueous cleaning acid (based on nitric acid, < 3 %*)	< 10.0 bar overpressure	-5 °C or 1 K above freezing point	60 °C
Aqueous disinfectants (based on peracetic acid, < 0.7 %*)	< 10.0 bar overpressure	-5 °C or 1 K above freezing point	80 °C
Water vapor	< 2.7 bar abs or short-time (max. 20 min./day) < 4.7 bar abs	1 °C	short-time (max. 20 min./day) 150° C
<b>HNBR</b>			
Products Water, beverages, pumpable food and cosmetics (liquids, emulsions, flowing suspensions)	< 10.0 bar overpressure	0 °C or 1 K above freezing point	99 °C or at least 1 K below the evaporation temperature at atmospheric pressure
Aqueous cleaning base (based on sodium hydroxide solution, < 5 %*)	< 10.0 bar overpressure	0 °C or 1 K above freezing point	99 °C or at least 1 K below the evaporation temperature at atmospheric pressure
Aqueous cleaning acid (based on nitric acid, < 1.5 %*)	< 10.0 bar overpressure	0 °C or 1 K above freezing point	60 °C
Aqueous disinfectants (based on peracetic acid, < 0.2 %*)	< 10.0 bar overpressure	0 °C or 1 K above freezing point	30 °C
Water vapor	< 2.7 bar abs or short-time (max. 20 min./day) < 4.7 bar abs	1 °C	short-time (max. 20 min./day) 150° C

\* indications regarding the concentration refer to the dilution of the concentrate



**If application-specific cleaning agents or other aggressive media are used, make sure they are suitable for Cr-Ni steel (1.4404) and for the sealing material used and do not damage these materials.  
If in doubt please contact the valve manufacturer.**



**If the valve contains liquids, emulsions or suspensions above their respective evaporation temperature at atmospheric pressure, the switching of the valve or a leakage due to a wear of the seal may lead to a sudden escape of the complete contents of the pipe system in the form of vapor into the work area; this may result in a risk of injury to the persons staying in the work area.**

#### 4.3. Place of use, environment

- ⇒ The valve must only be used at places equipped with an acid- and base-resistant floor.
- ⇒ The places must be equipped with a normal illumination so that the labels and warning signs on the valve are clearly visible.
- ⇒ Permissible ambient temperature 0° C – 55° C.
- ⇒ Protect the valve rods against icing.

#### 4.4. Media to be transported

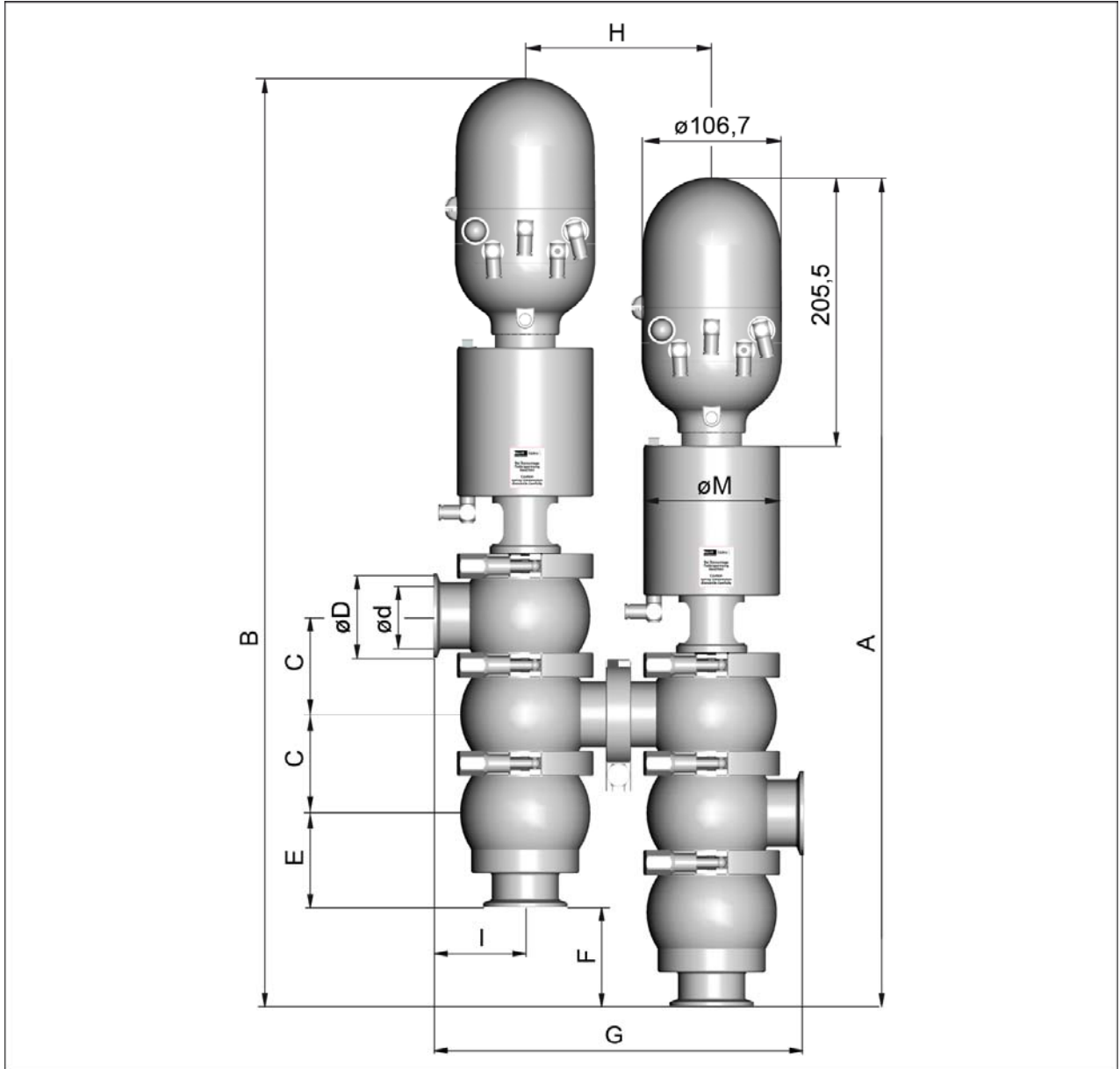
Allowed state of aggregation

Liquids / Gases / Suspensions

Inadmissible media

Radioactive, poisonous, very poisonous  
and environmentally hazardous media

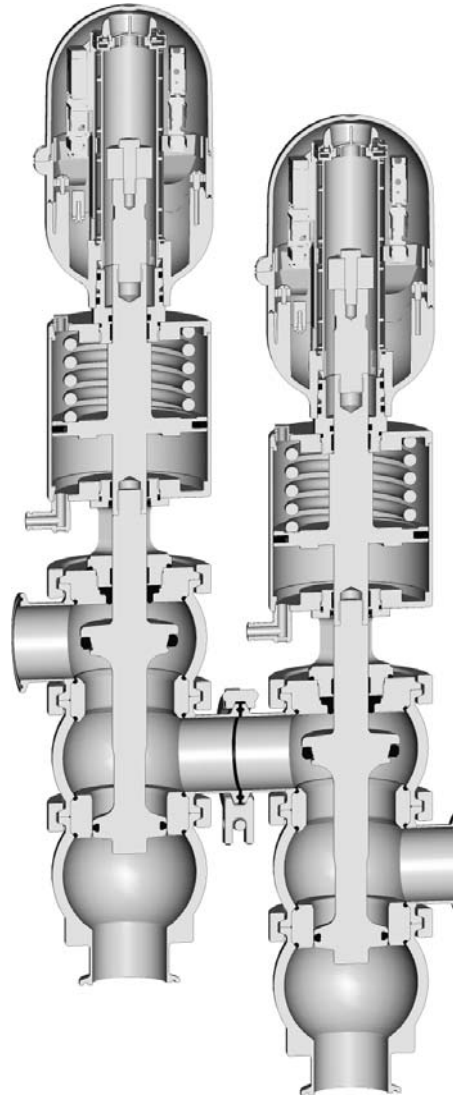
**5. Dimensions**



DN	A	B	C	øD	ød	E	F	G	H	I	øM
1"	546.4	596.5	50.1	50.5	22.1	50	50.1	240	120	60	104
1 ½"	584.5	647.3	62.8	50.5	34.8	55	62.8	240	120	60	104
2"	626.3	701.8	75.5	64	47.5	65	75.5	280	140	70	129
2 ½"	707	795.2	88.2	77.5	60.2	70	88.2	320	160	80	154
3"	807.5	908.3	100.8	91	72.8	80	100.8	360	180	90	154
4"	1024	1148.4	125.4	119	97.38	90	125.4	400	200	100	154

All dimensions in mm

**6. Technical Data**



**6.1. Valve use**

Application: Flow diversion valve  
 For use in: low-germ processes  
 Shut-off tightness: 6 bar max.

**6.2. Material Data**

**6.2.1. Sealing materials**

⇒ PEEK natural color

Temperature for continuous application in air: -25° C to +250° C / -13° F to +482° F




**The operating parameters and resistance depend on the sealing quality of the valve disk**

⇒ **EPDM**

Temperature for continuous application in air:	-5° C to +130° C / 23° F to +266° F
Resistant to:	
Hot water:	up to 100° C / 212° F
Steam:	up to 130° C / 266° F continuous load, short-term up to 150° C / 302° F
Wort:	up to 100° C / 212° F
Sodium hydroxide solution:	up to 100° C / 212° F and a concentration of up to 5 %
Nitric acid:	up to 60° C / 140° F and a concentration of up to 3 %
Peracetic acid:	up to 80° C / 176° F and a concentration of up to 0.7 %
Raspberry flavor	at room temperature
Cherry flavor	at room temperature

⇒ **HNBR**

Temperature for continuous application in air:	0° C to +130° C / 32° F to +266° F
Resistant to:	
Hot water:	up to 100° C / 212° F
Steam:	up to 130° C / 266° F continuous load, short-term up to 150° C / 302° F
Sodium hydroxide solution:	up to 100° C / 212° F and a concentration of up to 5 %
Nitric acid:	up to 60° C / 140° F and a concentration of up to 1.5 %




**The operating parameters of the seals depend on:**

- ⇒ **Operating time per day**
- ⇒ **Switching intervals**
- ⇒ **Type of product, temperature, etc.**
- ⇒ **Type of cleaning (CIP / SIP)**

**6.2.2. Stainless steels**

In contact with product:	1.4404
Not in contact with product:	1.4301

**6.3. CIP cleaning**



- ⇒ **Inner chambers of the valve must be cleaned regularly.**
- ⇒ **When selecting the detergent, please observe the following:**
  - **Do not use abrasive detergents.**
  - **Use only detergents that are suitable for seals and stainless steel.**
- ⇒ **Do not exceed the concentrations and temperatures recommended by the detergent manufacturer.**
- ⇒ **Observe the safety data sheets issued by the cleaning agents manufacturers!**
- ⇒ **Non-observance of these instructions will exempt the manufacturer from any warranty and liability.**

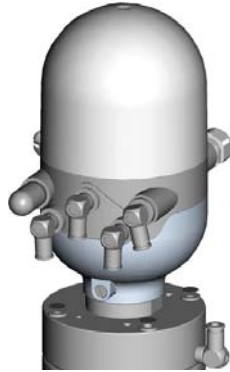
Cleaning example for EPDM process valves in the food industry:

Cleaning step	Explanation	Duration	Flow velocity
Pre-rinsing	Process water at ambient temperature	5 – 10 min.	2 m/s
Main cleaning process I (base step)	Base in aqueous solution 3% strength at 80°C	30 – 60 min.	2 m/s
Intermediate rinsing	Process water at ambient temperature	5 – 10 min.	2 m/s
Main cleaning process II (acid step)	Acid in aqueous solution 2% strength at 60°C	10 – 20 min.	2 m/s
Final rinsing	Water (drinking water quality) at ambient temperature	5 – 10 min.	2 m/s

#### 6.4. Surfaces

Surfaces in contact with the product:	$R_a \leq 0.8 \mu\text{m}$ $R_a \leq 31.5 \mu\text{inch}$
Optionally:	electropolished
Surfaces not in contact with product:	bright metal finish

#### 6.5. Feedback systems



##### 6.5.1. Process control head IntelliTop® 2.0

For the technical data.

see Operating Instructions IntelliTop 2.0

For the pneum. connections.

see Operating Instructions IntelliTop 2.0

For the electrical connections.

see Operating Instructions IntelliTop 2.0

For maintenance.

see Operating Instructions IntelliTop 2.0

#### 6.6. Electrical and pneumatic connections

##### Electrical connections

Perform electrical installation after the installation of fittings.



**Electrical installation must be carried out by skilled personnel**

- ⇒ Observe VDE-EVU and other locally applicable regulations.
- ⇒ Before connecting the unit, check whether the operating voltage and current intensity match specifications.

##### Pneumatic connections

- ⇒ Angular screw-in connection G 1/8, air hose PE 1/4" (ø 6.35)

##### Air hose

Always use hose quality according to Norit Südmo article no. 0490227 (6/4 hose) and 0735563 (8/6 hose) or equivalent:

- ⇒ Black air hose
- ⇒ Material: Polyamide 12
- Linear coefficient of expansion:  $15 \times 10^{-5}$
- Version according to DIN 73378 soft
- ⇒ Max. operating pressure: OD 6/ ID 4 = 27 bar
- OD 8/ ID 6 = 19 bar

all pressure indications at 20°C, higher temperatures have a negative effect on the max. operating pressure



- ⇒ **Use only calibrated hose pipes with an external diameter of 6 mm or 1/4" or 8 mm or 5/16" (tolerance +0.05/-0.1).**
- ⇒ **Cut the hose pipe only with a special hose cutter, otherwise the pipe can be damaged.**
- ⇒ **Improper cutting can result in a leak at the cutting point which can cause pressure loss.**



- ⇒ The length of the hose must be dimensioned in a way that prevents its buckling. Even single buckling of the hose damages it permanently. This can cause pressure loss or interruption of the control air supply. Please refer to manufacturer's instructions regarding the minimum bending radius of the hose.
- ⇒ Insert the air hose tangentially into the connector and fasten it. Avoid diagonal deflection of the hose at the connector as the air hose may buckle or leakages can occur. This can cause pressure loss or interruption of the control air supply.

## 6.7. Control air

### 6.7.1. Control air pressure

SVP-control head

min. 6 bar – max. 8 bar

min. 87 psi – max. 116 psi

Process control head IntelliTop® 2.0

see Operating Instructions IntelliTop 2.0



**Use only clean and dry control air!**

### 6.7.2. Control air quality

according to DIN ISO 8573.1

Solids content

Particle size max. 5 µm

Particle density max. 5 mg/m<sup>3</sup> (quality class 3)

Water content

Quality class 3

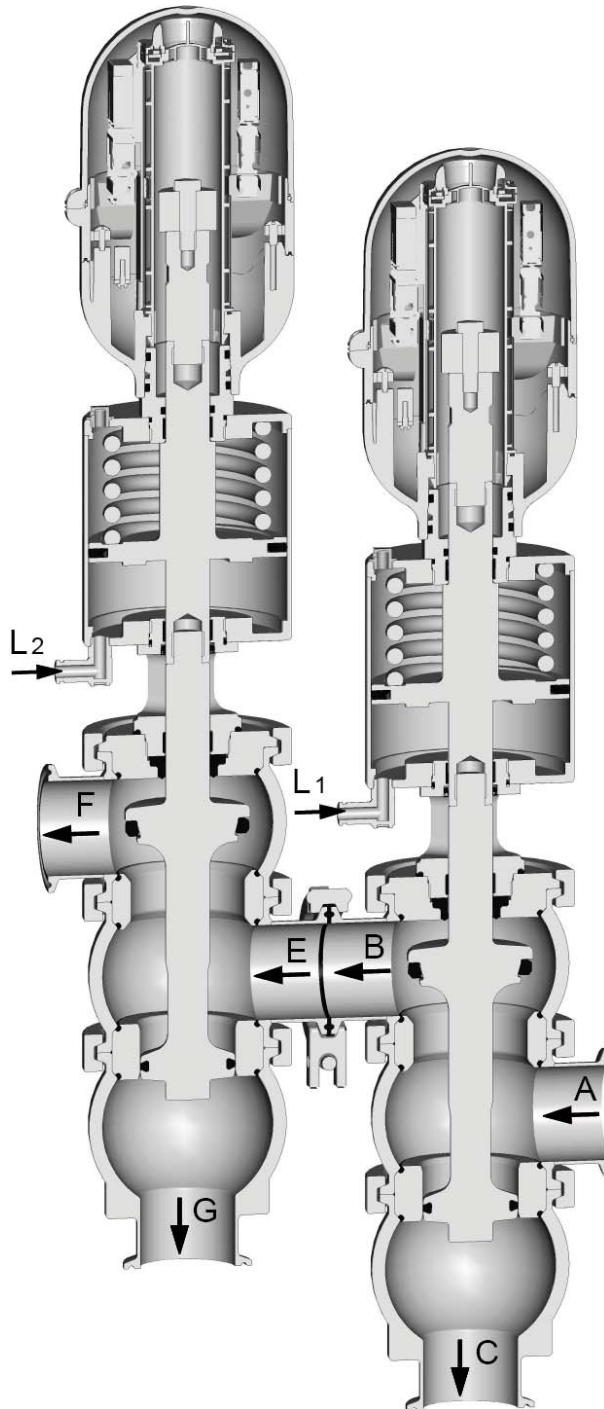
Dew point -20° C / -4° F

or min. 10° C below the lowest ambient temperature

Oil content

Quality class 3, preferably oil-free, max. 25 mg of oil per 1 m<sup>3</sup> of air

**7. Valve function**



**Product path A ⇒ C, leakage outlet E ⇒ G open**

Connections F and B

- ⇒ Spring force closed
- ⇒ Control air pressure 0 bar/psi on air connections L 1 and L2
- ⇒ Safety position
- ⇒ Closing force against product pressure 6 bar

**Product path A ⇒ B ⇒ E ⇒ F open**

Connections C and G

- ⇒ closed
- ⇒ Control air pressure 6 bar on air connections L 1 and L2
- ⇒ Closing force against product pressure 6 bar / 87 psi

## 8. Valve connection piping

### 8.1. Installation position

Vertical, horizontal

Ensure that product can drain from the valve and piping.

### 8.2. Valve connections

- Connections
- ⇒ Welding end disconnectable connection required
  - ⇒ Threaded connection
  - ⇒ Clamp connection
  - ⇒ Small flange connection

For welding instructions, please refer to chapter 9 "Welding and assembly information".

### 8.3. Installation information for flow diversion valve

- ⇒ Dismount the flow diversion valve in accordance with the mounting instructions.
- ⇒ Weld or mount flow diversion valve into pipeline.



#### Welding information flow diversion valve

- ⇒ **Dismount the seals before welding.**
- ⇒ **Weld valve body free from tension and distortions.**
- ⇒ **Welding work must be carried out by qualified skilled personnel (DIN 287-1 W11) only.**

#### Assembly information

- ⇒ **When fitting the valves, no foreign material must remain in the pipeline.**

- ⇒ For assembly instructions, please refer to chapter 10 "Disassembly - Assembly".

## 9. Welding and assembly information

### 9.1. General notes



Caution

**Welding work must be carried out by qualified skilled personnel (DIN 287-1 W11) only.**

Norit Südmo cannot be held liable for any damage resulting from incorrect installation.

### 9.2. As-delivered state of the flow diversion valve

- ⇒ Factory-tested
- ⇒ Ready for installation or prepared for welding into the piping

### 9.3. Installation guidelines

#### 9.3.1. Installation space

Determine and define the connection axes before fitting. Please refer to the dimensional drawings for installation dimensions.

Ensure that there is sufficient space available for both operation and servicing.

#### 9.3.2. Installation

Make sure to avoid any tensile or compressive stresses.

### 9.4. Welding guidelines

Field of application Welding of fittings into pipes according to DIN 11850 series 1, 2; OD-Tube; DIN EN ISO 1127

Welding process TIG (tungsten inert gas welding)

- Type of weld seam
- ⇒ preparation of weld seam according to DIN 2559 (edge form I / for I seams)
  - ⇒ weld seams correspond to DIN EN ISO 5817
    - evaluation group B (high)

### 9.5. Weld seam preparation

- ⇒ Saw off the pipe ends planar at a right angle and debur them (pipe saw M882).
- ⇒ Align the welding ends of the valve body and piping radially and axially for a flush fit (centering device).



- ⇒ **Avoid too large a gap at the flush-fitting welding ends.**
- ⇒ **Make sure that enough forming gas arrives at the welding seam.**

### 9.6. Welding

- ⇒ Connect the forming gas.
- ⇒ Tack at 3 or 4 points.
- ⇒ Weld valve → type of welding TIG manual or orbital (automatic welding).

**9.7. Welding filler**

Material allocation

Material of parts to be welded	Suitable welding filler		
	1.4430	1.4440	1.4519
1.4404	X		
1.4435	X	X	X
1.4571	X	X	

**9.8. Weld seam finishing**

**9.8.1. Interior**

Depending on requirements, for example

- ⇒ untreated.
- ⇒ abrasive surface finishing (at accessible points).

**9.8.2. Exterior**

Weld finishing methods

- ⇒ Pickling - ensure proper disposal of pickling paste
- ⇒ Brushing
- ⇒ Grinding
- ⇒ Polishing

**9.9. Cleaning of the valve**

Clean thoroughly before mounting.

**9.10. Valve assembly**

Perform assembly according to the assembly instructions (see chapter 10 "Disassembly - Assembly").

## 10. Disassembly - Assembly

Assemble the flow diversion valve in general after having read the safety instructions (see chapter 10.1. "Preparatory measures for disassembly - assembly").

### 10.1. Preparatory measures for disassembly - assembly

Before disconnecting the valve connections and the flange connection of the valve bodies, always carry out the following steps:



- ⇒ **The flow diversion valves must be mounted by qualified expert personnel only.**
  - *Training or instruction in accordance with the current safety standards.*
  - *For systems with explosion protection: training or instruction or authorization to carry out work on systems subject to explosion hazards (observe ATEX regulations).*
- ⇒ **Get information on possible risks that could be caused by residues of the operating material and take appropriate measures if necessary (safety gloves, safety goggles, etc.), before carrying out maintenance and service work on the flow diversion valve.**
- ⇒ **Before disconnecting the valve connections and the flange connection of the valve bodies, make sure that**
  - *this work is only carried out in a depressurized state and with the media supply shut off.*
  - *the flow diversion valve and all piping elements leading to the valve have been drained and cleaned or flushed.*
  - *the fittings have cooled down.*
  - *the system cannot be started by a third person.*
  - *the pressure build-up which may form in sealed pipelines is counteracted.*
  - *dismounting - mounting of the flow diversion valve are carried out according to the mounting instructions.*
  - *when dismantling the control head, the closing spring is preloaded with auxiliary assembly air. To actuate the valves in the manual mode, the supply voltage and/or electrical signal must be applied.*
  - *when dismantling the control head, the closing spring is preloaded. In case of non-observance there is a risk of injury when removing the clamp connection, due to the release of the spring tension of the actuator.*
  - *flow diversion valves are secured against signaling, voltage and signal cut-off, operation or actuation.*
  - *the power supply has been disconnected.*
  - *the flow diversion valve is removed from the piping section, if possible.*

**Note**

- ⇒ **Cordon off assembly area.**
- ⇒ **Ensure that the assembly area remains cordoned off while work is being performed.**

**10.2. Spare parts**




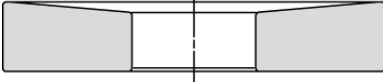
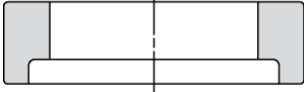



**Use original spare parts only.**

⇒ **For original spare parts, refer to the enclosed spare parts list.**

⇒ **Perfect functioning of the flow diversion valve is only guaranteed when using original spare parts.**

**10.3. Assembly tools**

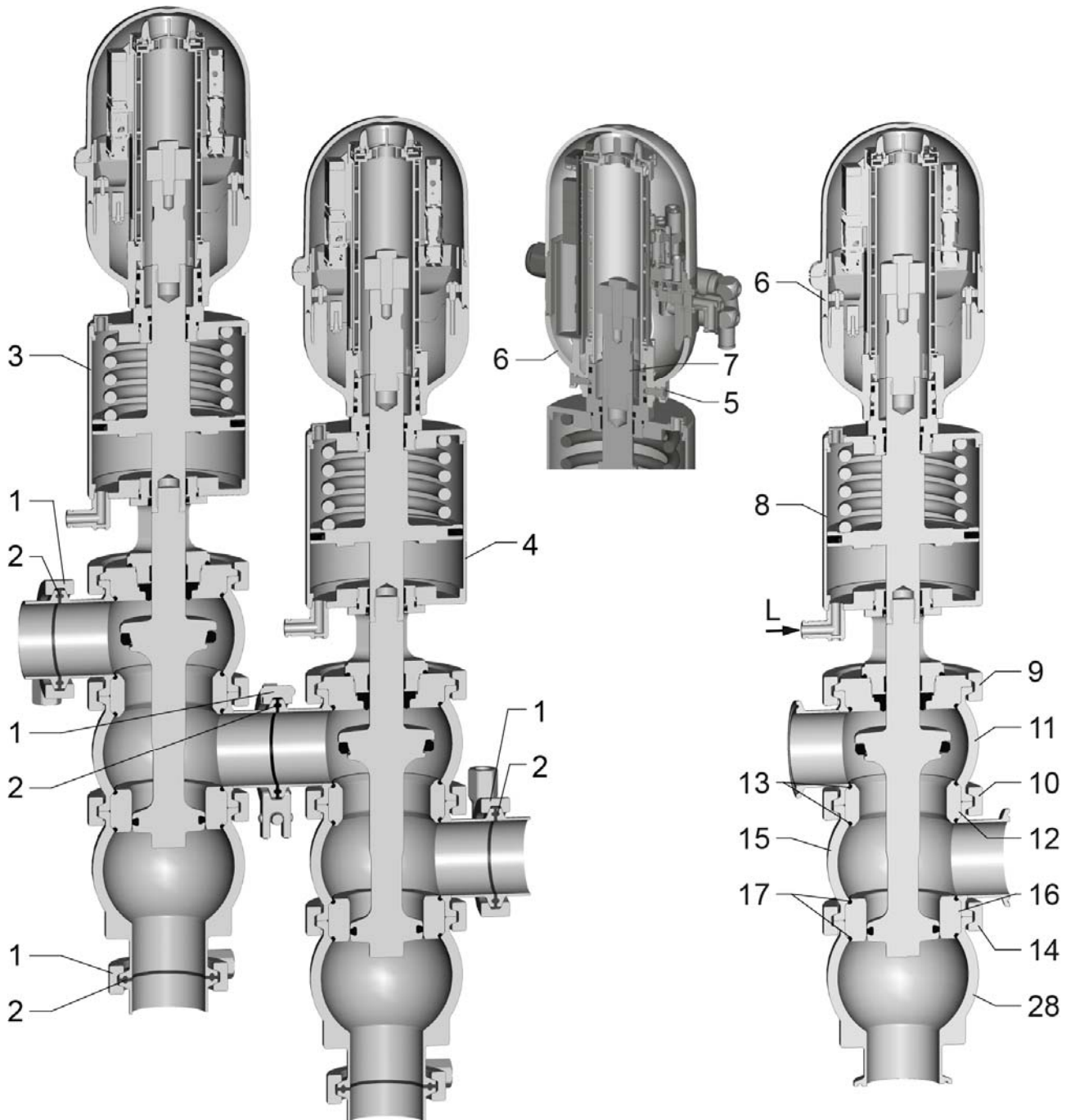
Tools	for	Article no.	Intended Use
Fork wrench 17-19 mm 	DN 1" – DN 4"	0098558	Pneum. flow diversion valve
Pin wrench 45/50 	DN 1" – DN 4"	2153550	Pneum. flow diversion valve
Soldering iron 	DN 1" – DN 4"		Pneum. flow diversion valve
Support 	DN 1" – DN 4"	2154223	Pneum. flow diversion valve
Plunger 	DN 1" DN 1 ½" DN 2" DN 2 ½" DN 3" DN 4"	2154226 2154050 2158727 2158728 2158729 2343565	Pneum. flow diversion valve
Sleeve 	DN 1" DN 1 ½" DN 2" DN 2 ½" DN 3" DN 4"	2158730 2158731 2158732 2158733 2158734 2158735	Pneum. flow diversion valve

**10.4. Replacement of seals in contact with the product**



Caution

**Avoid any damage to the metallic surfaces of the valve disks and to the valve disk seal.**



Disassembly of the valve

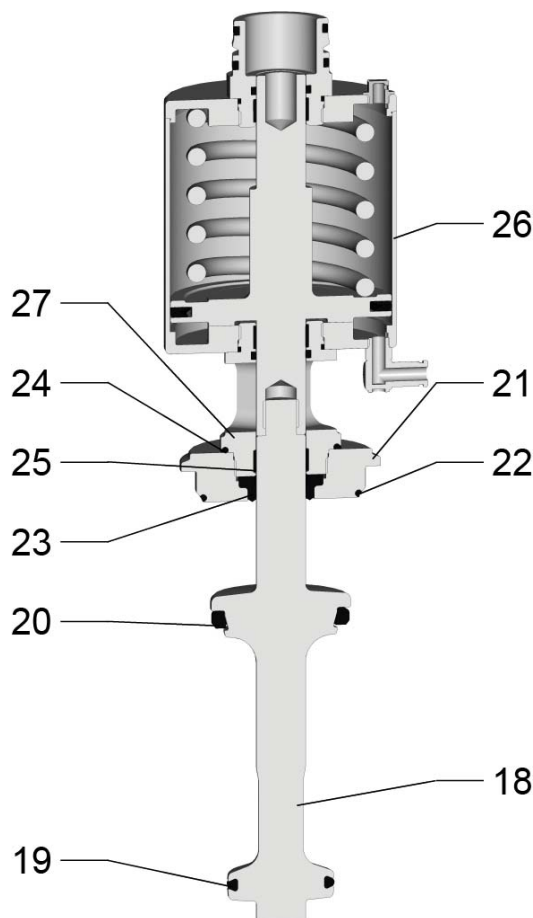
- I.1. Disconnect the electrical and pneumatic leads.

- I.2. Dismount pipeline clamps (1), remove seals (2) and take flow diversion valves (3, 4) out of the pipeline system together with the valve body.
- I.3. Unscrew socket head screws (5) and take off process control top (6).
- I.4. Remove the contact button (7).
- I.5. Attach the pneumatic supply line (auxiliary assembly air).
- I.6. Preload the actuator spring  $\Rightarrow$  control air pressure min. 5 bar / 72 psi (auxiliary assembly air) to connection L.
- I.7. Disassemble clamp (9).



- $\Rightarrow$  **Before disconnecting the clamp connection, make sure that the closing spring is preloaded, before disassembling the control head. In case of non-compliance there is a risk of injury when removing the clamp connection, due to the released spring tension of the actuator.**
- $\Rightarrow$  **Do not reach into the openings of the SVP control head.**
- $\rightarrow$  **Risk of accidents.**
- Risk of limbs being crushed or cut off.**

- I.8. Release the actuator spring  $\Rightarrow$  control air pressure 0 bar (auxiliary assembly air) on connection L.
- I.9. Disconnect the pneumatic supply line (auxiliary assembly air).
- I.10. Remove upper part of valve (8).
- I.11. Remove valve body from the vice.
- I.12. Remove clamp (10) and then remove upper part of the valve body (11)
- I.13. Remove valve seat (12) and then the O rings (13).
- I.14. Dismount clamp (14) and remove lower part of valve body (15).
- I.15. Remove valve seat (16) and then the O rings (17).



- I.16. Unscrew valve disk (18).  
Assembly tool - wrench size 17 – 19 mm
- I.17. Remove O-ring (19) - see 10.5 "Assembly information - O-rings".
- I.18. Dismount valve disk seal (20) - see chapter 10.6 "Assembly information - Valve disk seal".
- I.19. Unscrew support (21) and remove O-ring (22) and profile seal (23).
- I.20. Remove O-ring (24) - see 10.5 "Assembly information - O-rings".
- I.21. Remove friction bearing (25).


Valve assembly

- I.22. Prior to assembly, clean and grease the shafts and sliding surfaces.

Sealing materials	Grease type
EPDM	PARALIQ GTE 703
HNBR	PARALIQ GTE 703
PEEK	No grease
NBR	RENOLIT SI 410 M

⇒ **If a different grease is used**  
    ⇒ **corrosion of the sealing elements.**  
 ⇒ **Do not use mineral greases and animal fat.**  
 ⇒ **Do not use petroleum-based grease.**


- I.23. Install friction bearing (24).
- I.24. Install O-ring (24) - see 10.5 "Assembly information - O-rings".
- I.25. Install O-ring (22) and profile seal (23) in the support (21) and screw the complete support onto the actuator (26).
- I.26. Mount valve disk seal (20) on valve disk (18) - see chapter 10.6 "Assembly information - Valve disk seal".
- I.27. Mount O-ring (19) on valve disk (18) - see 10.5 "Assembly information - O-rings".
- I.28. Mount complete valve disk (19).



**Secure the threaded connection with adhesive (article no. 0630210).**  
Assembly tools  
 - Fork wrench 17-19 mm

Caution


- I.29. Install O-rings (17) in valve seat (16) and insert valve seat (16) in valve body (28).
- I.30. Place lower part of valve body (16) on valve body (28) and mount clamp (15).
- I.31. Install O-rings (14) in valve seat (13) and insert valve seat (17) in lower part of valve body (16).
- I.32. Place upper part of valve body (12) on lower part of valve body (16) and mount clamp (13).
- I.33. Insert the upper part of the valve (8) axially into the valve body.



⇒ **When installing the upper part of the valve avoid damaging the metallic seats/support or seals.**

Caution

- I.34. Attach the pneumatic supply line (auxiliary assembly air).
- I.35. Preload the actuator spring ⇒ control air pressure min. 5 bar / 72 psi (auxiliary assembly air) to connection L.



⇒ **Do not reach into the openings of the closing head support (27)**  
    ⇒ **Risk of accidents.**  
    **Risk of limbs being crushed or cut off.**

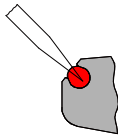
Hazard

- I.36. Install the clamp (6).
- I.37. Release the actuator spring ⇒ control air pressure 0 bar (auxiliary assembly air) on connection L.
- I.38. Disconnect the pneumatic supply line (auxiliary assembly air).
- I.39. Install the contact button (7).
- I.40. Mount process control head (6) on SVP control head.
- I.41. Fasten process control head (6) by means of socket head screws (5).
- I.42. Mount seals (2)
- I.43. Install flow diversion valves (3, 4) together with the valve body in pipeline system and mount pipeline clamps (1).
- I.44. Connect pneumatic and electrical supply lines.

## 10.5. Assembly information - O-ring

### 10.5.1. Dismounting

- ⇒ The O-ring is installed in positive contact under pretension.
- ⇒ Remove the O-ring as shown in the drawing.



Caution

**Do not damage the seal groove (edges of the groove).**

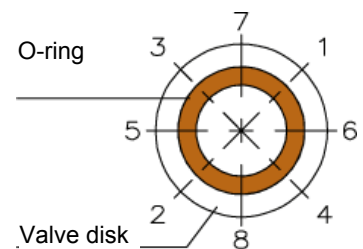
### 10.5.2. Assembly

- ⇒ Insert the O-ring in the sequence 1 - 2, 3 - 4, etc., into the groove.
- ⇒ Roll the O-ring section by section 1 – 6, 5 – 2 into the groove.
- ⇒ Use round object made of plastic or wood for the installation.



Caution

**Avoid twisting and damaging the O-ring.**



**10.6. Assembly information - Valve disk seal**

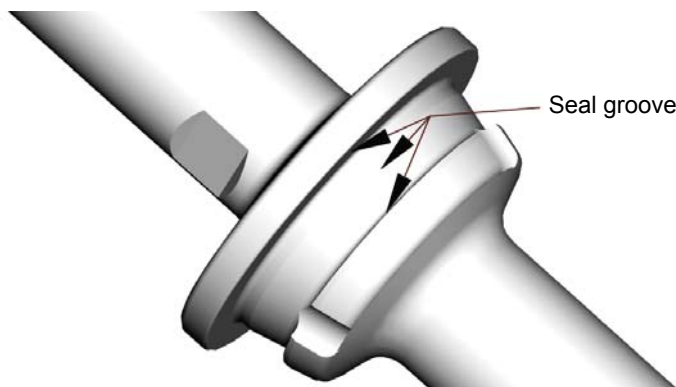
**10.6.1. Dismounting**

Cut valve disk seal in two using a soldering iron (soldering tip temperature min. 380° C)

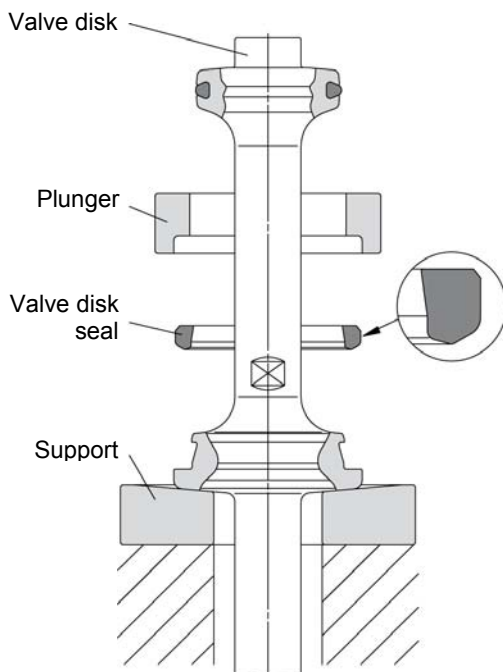


To avoid injuries and damage to the valve disk, do not cut valve disk seal in two with a knife, saw or the like.

⇒ **Do not damage the seal groove**



**10.6.2. Installation**



⇒ Required devices and tools:

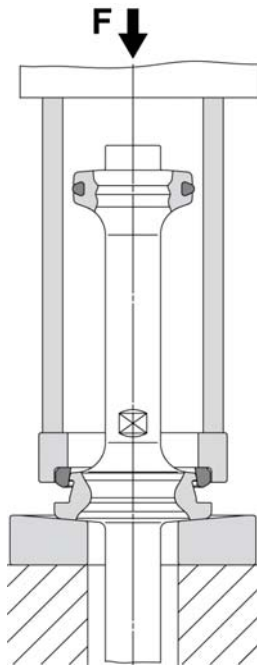
- Lifting device, press, box column drill: hydr., pneum. or mech.
- Plunger - for article no.. see page 16
- Support - for article no.. see page 16
- Sleeve - for article no.. see page 16

⇒ Position support and valve disk in lifting device as shown on assembly drawing

⇒ Insert valve disk seal

**Ensure correct assembly position of the valve disk seal!**

⇒ Place plunger on valve disk seal



⇒ Lower pressing device slowly onto plunger and press it into the groove. As soon as the seal has snapped into place in the groove, immediately stop lowering motion.



***Do not* press seal against solid stop.**

⇒ **If pressed against the solid stop, valve disk seal will become damaged.**

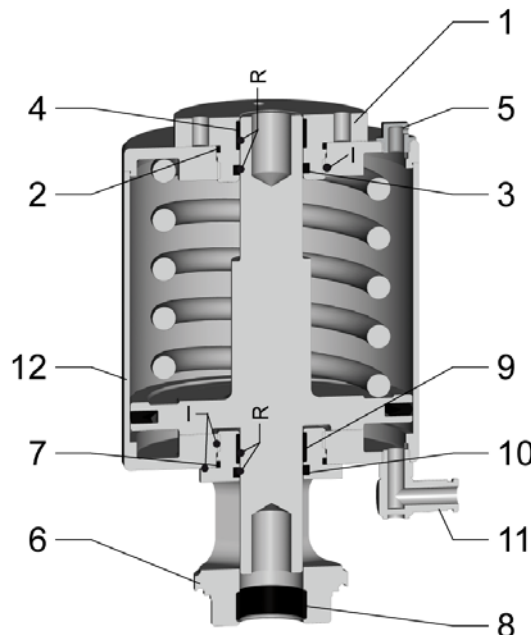


Caution

**Do not use a hammer for mounting the valve disk seal.**

## 10.7. Pneum. control head

### 10.7.1. Mode of operation air to open - spring to close



#### Actuator dismounting

- II.1. Unscrew the centering screw (1) and remove the friction bearing (4) and O-rings (2, 3).
- II.2. Unscrew the threaded plug (5).
- II.3. Dismantle closing head support (6) and remove friction bearings (8, 9) and O-rings (7, 10).
- II.4. Disconnect the air connection (11).

Replacement of the seal

II.5. Replace the seals and friction bearings.



**Use original Norit Südmo spare parts only**

- ⇒ **For Norit Südmo spare parts, refer to the enclosed spare parts list**
- ⇒ **If other spare parts are used**
- **Exclusion of liability**

II.6. Prior to assembly, clean and grease the shafts and sliding surfaces. Grease the sealing elements before installation.

Lubrication plan

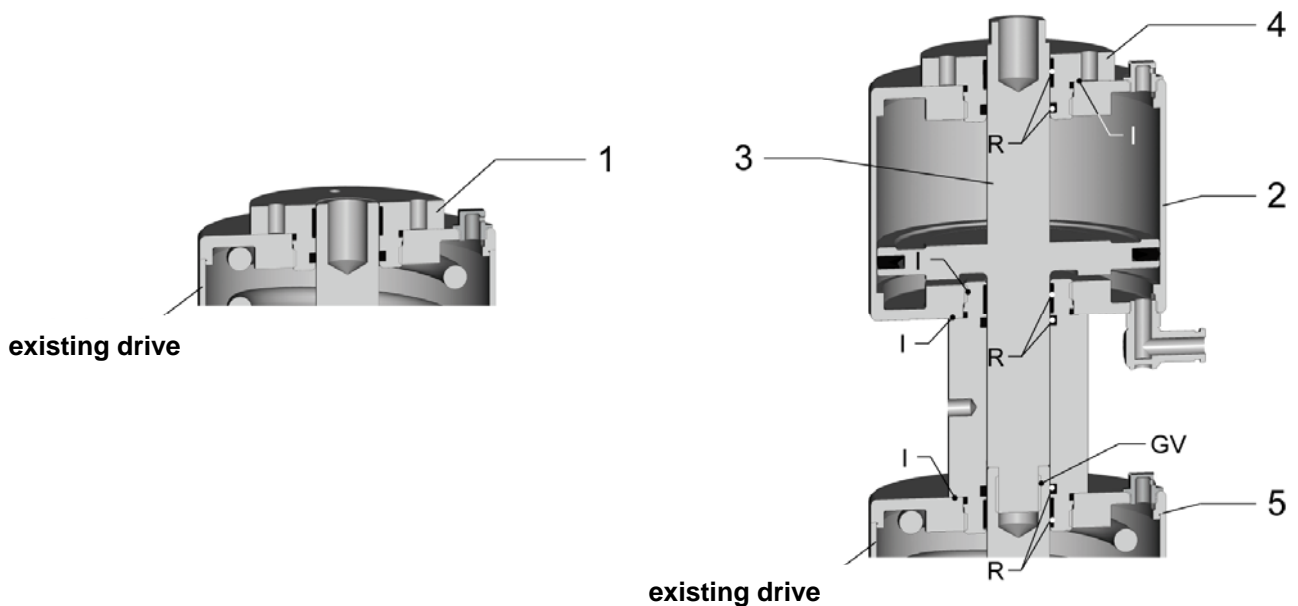
- Apply R = RENOLIT SI 410 M - at the periphery using a brush
- Skim I = IFB PW 119 - at the periphery using a brush

Actuator mounting

- II.7. Reconnect the air connection (11).
- II.8. Install friction bearings (8, 9) and O-rings (7, 10) in the closing head support (6).
- II.9. Screw the closing head support (6) onto the actuator cylinder (12).
- II.10. Unscrew the threaded plug (5).
- II.11. Install the friction bearing (4) and O-rings (2, 3) in the centering screw (1).
- II.12. Screw the centering screw (1) onto the actuator cylinder (12).

**10.8. Pneum. control head with booster**

**10.8.1. Subsequent installation of the booster**



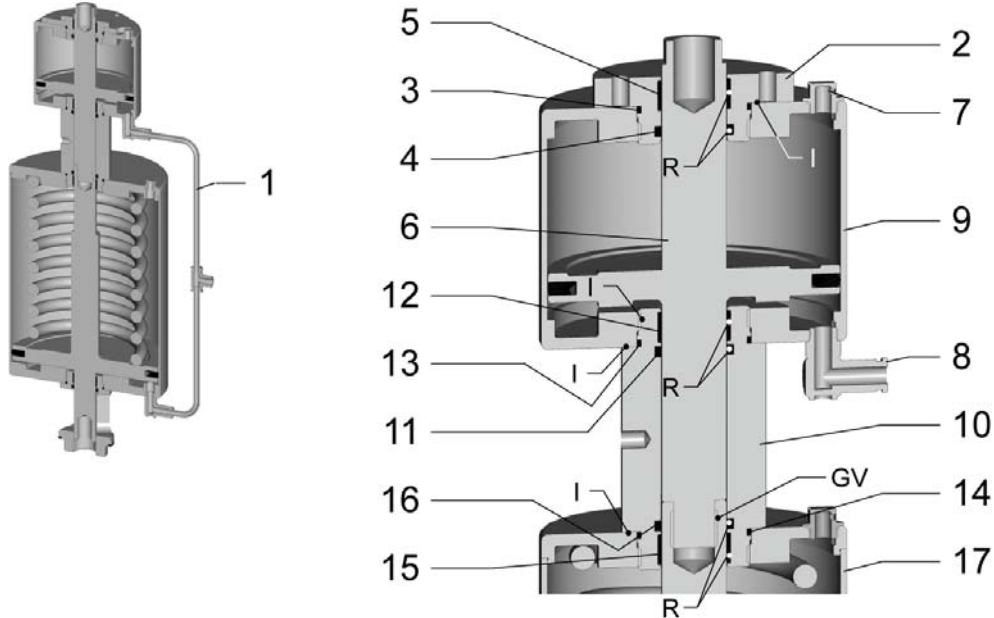
- III.1. Unscrew centering screw (1).
- III.2. Mount (2) on actuator (5).
- III.3. Screw piston rod (3) on actuator spindle.



**Secure the threaded connection GV with adhesive (article no. 0630210).**

III.4. Unscrew centering screw (4).

**10.8.2. Replacement of the seals**




Disassembly of booster

- IV.1. Disconnect the air hose (1).
- IV.2. Unscrew the centering screw (2) and remove the friction bearing (5) and O-rings (3, 4).
- IV.3. Unscrew piston rod (6) from actuator spindle.
- IV.4. Unscrew the threaded plug (7).
- IV.5. Disconnect the air connection (8).
- IV.6. Unscrew booster (9) from actuator (17).
- IV.7. Dismount adapter (11) and remove friction bearings (12, 15) and O-rings (11, 13, 14, 16).

Replacement of the seal

IV.8. Replace the seals and friction bearings.



Caution

Use original Norit Südmo spare parts only

⇒ For Norit Südmo spare parts, refer to the enclosed spare parts list

⇒ If other spare parts are used

→ Exclusion of liability

IV.9. Prior to assembly, clean and grease the shafts and sliding surfaces. Grease the sealing elements before installation.

Lubrication plan

- Apply R = RENOLIT SI 410 M - at the periphery using a brush
- Skim I = IFB PW 119 - at the periphery using a brush

Assembly of booster

- IV.10. Mount friction bearings (12, 15) and O-rings (11, 13, 14, 16) in adapter (10).
- IV.11. Screw adapter (10) onto booster (9).
- IV.12. Screw booster (9) onto actuator (17).
- IV.13. Reconnect the air connection (8).
- IV.14. Screw in the threaded plug (7).

IV.15. Screw piston rod (6) on actuator spindle.



Secure the threaded connection GV with adhesive (article no. 0630210).

Caution

IV.16. Install the friction bearing (5) and O-rings (3, 4) in the centering screw (2).

IV.17. Unscrew centering screw (2).

IV.18. Reconnect the air hose (1).

## 11. Electrical Connection

120 VAC version


Designation Terminal strip	Configuration	
PE	Protection earth - protective conductor	
L	live conductor	Electrical power supply 120 V AC
N	neutral conductor	
S1 OUT	Output position 1	
S2 OUT	Output position 2	
S3 OUT	Output position 3	
S4 OUT	External initiator output	
Y1	Solenoid valve 1 input	
Y2	Solenoid valve 2 input	
Y3	Solenoid valve 3 input	

24 VDC version

Designation Terminal strip	Configuration
24 V	Power supply 24V
GND	GND
S1 OUT	Output position 1
S2 OUT	Output position 2
S3 OUT	Output position 3 (order variant "Analog": output - analog signal)
S4 OUT	External initiator output
Y1	Solenoid valve 1 input
Y2	Solenoid valve 2 input
Y3	Solenoid valve 3 input

- ⇒ The electrical installation must be carried out by trained, skilled personnel.
- ⇒ The VDE and local regulations and all necessary safety measures must be observed.
- ⇒ The supply voltage must correspond to the specification on the rating plate.
- ⇒ The terminal assignment must be as indicated on the circuit diagram.

**Future information see operating instructions BA IntelliTop 2.0 capture 10.5. and 13.5.**



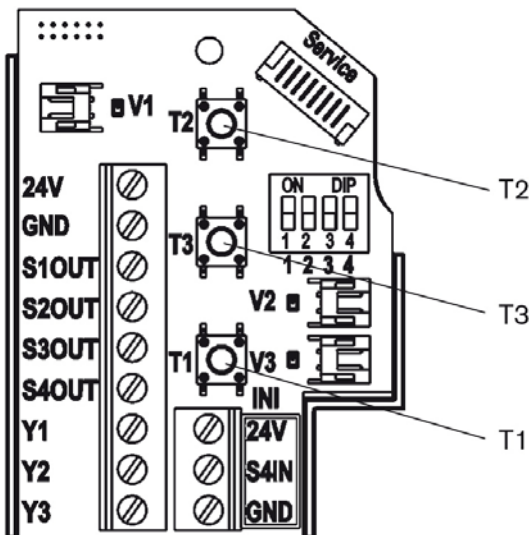
Anyone who has been designated by the purchaser to install, start up, operate and maintain the process control head IntelliTop® 2.0 must have read and understood the complete operating instructions BA IntelliTop 2.0 (especially all stipulated safety instructions).

Hazard

## 12. Setting the Position Measuring System (Teach-In)

### 12.1. Adjustment procedure

- ⇒ Open the housing observing the notes contained in chapter.
- ⇒ Supply electrical power so that the position measuring system and the LED display can function.
- ⇒ Position the process valve at the lower switching position.
- ⇒ Depress the lower Teach-In button (T1) for approx. 1.5 seconds:  
The LED corresponding to this position will flash quickly three times during the teaching phase. Once this position has been stored, the corresponding LED will remain continuously lit until the position of the piston is changed.
- ⇒ Afterwards, position the process valve at the upper switching position to be recorded.
- ⇒ Depress the upper Teach-In button (T2) for approx. 1.5 seconds:  
The LED corresponding to this position will flash quickly three times during the teaching phase. Once this position has been stored, the corresponding LED will remain continuously lit until the position of the piston is changed.
- ⇒ If necessary, return control head and system to normal state (switching position, power supply).
- ⇒ Close the housing observing the notes contained in chapter



**Future information see operating instructions BA IntelliTop 2.0 capture 15**



**Anyone who has been designated by the purchaser to install, start up, operate and maintain the process control head IntelliTop® 2.0 must have read and understood the complete operating instructions BA IntelliTop 2.0 (especially all stipulated safety instructions).**

**12.2. Feedback areas (position measuring system)**

(A feedback area is the area within which a position (e.g. S1) is reported back.)

Meeting 3A Standards and compliant to PMO criteria the setting of both target zones T1/S1 and T2/S2 shall be fixed to ±1mm (recommended 1/18<sup>th</sup> inch).

Valves that are delivered readily assembled and purchased as compliant to the above mentioned criteria's will already be delivered in fixed target-zones of ±1mm from the factory.

For supplementary customizing see Quickstart Smartphone / PC software description for IntelliTop 2.0!

<p>Screen: Start-up - Ranges (Feedback areas)</p>	<ul style="list-style-type: none"> <li>Indicates the current values of the feedback areas. (Details on feedback areas in the operating instructions for the IntelliTop 2.0 control head in the chapter "Factory Settings of the Firmware")</li> </ul> <p>Press  to return to SYSTEM mode.</p>
---	---

**Future information see Quickstart Smartphone / PC Software for IntelliTop 2.0**

**13. Start-up flow diversion valve**

 <b>Caution</b>	<p>⇒ <b>Ensure that no foreign objects are present in the piping system.</b></p> <p>⇒ <b>Avoid temperature shock!</b></p> <p><b>Warm up the fitting slowly to the operating temperature.</b></p>
--------------------	--

**13.1. Functional test of the flow diversion valve**

Multiple switching of the valve by means of actuation with compressed air.  
System must be cleaned before the first product run.

	<p><b>Flow Diversion Valve set requires that the leak detect valve open to flush some seconds prior to the forward flow valve opening.</b></p>
--	--

**13.2. Leak test of the flow diversion valve**

Check visually if the seals have any leaks.  
Replace defective seals.

## 14. Maintenance

### 14.1. Preparatory maintenance measures



- ⇒ The flow diversion valves must be mounted by qualified expert personnel only.
  - Training or instruction in accordance with the current safety standards.
  - For systems with explosion protection: training or instruction or authorization to carry out work on systems subject to explosion hazards (observe ATEX regulations).
- ⇒ Get information on possible risks that could be caused by residues of the operating material and take appropriate measures if necessary (safety gloves, safety goggles, etc.), before carrying out maintenance and service work on the flow diversion valve.
- ⇒ Before disconnecting the valve connections and the flange connection of the valve bodies, make sure that
  - this work is only carried out in a depressurized state and with the media supply shut off.
  - the flow diversion valve and all piping elements leading to the valve have been drained and cleaned or flushed.
  - the fittings have cooled down.
  - the system cannot be started by a third person.
  - the pressure build-up which may form in sealed pipelines is counteracted.
  - dismantling - mounting of the flow diversion valve are carried out according to the mounting instructions (see chapter 10 "Dismounting - Mounting").
  - when dismantling the control head, the closing spring is preloaded with auxiliary assembly air. To actuate the valves in the manual mode, the supply voltage and/or electrical signal must be applied.
  - when dismantling the control head, the closing spring is preloaded. In case of non-observance there is a risk of injury when removing the clamp connection, due to the release of the spring tension of the actuator.
  - flow diversion valves are secured against signaling, voltage and signal cut-off, operation or actuation.
  - the power supply has been disconnected.
  - the flow diversion valve is removed from the piping section, if possible.



#### Note

- ⇒ Cordon off assembly area.
- ⇒ Ensure that the assembly area remains cordoned off while work is being performed.

### 14.2. Inspection

Norit Südmo valves do not require special maintenance. In the intervals between maintenance procedures, however, it is necessary to check the tightness and correct operation of the seals by means of regular visual inspections.

### 14.3. Preventive maintenance

Practice-oriented maintenance intervals can only be determined by the respective user/operator as they depend on the following application parameters:

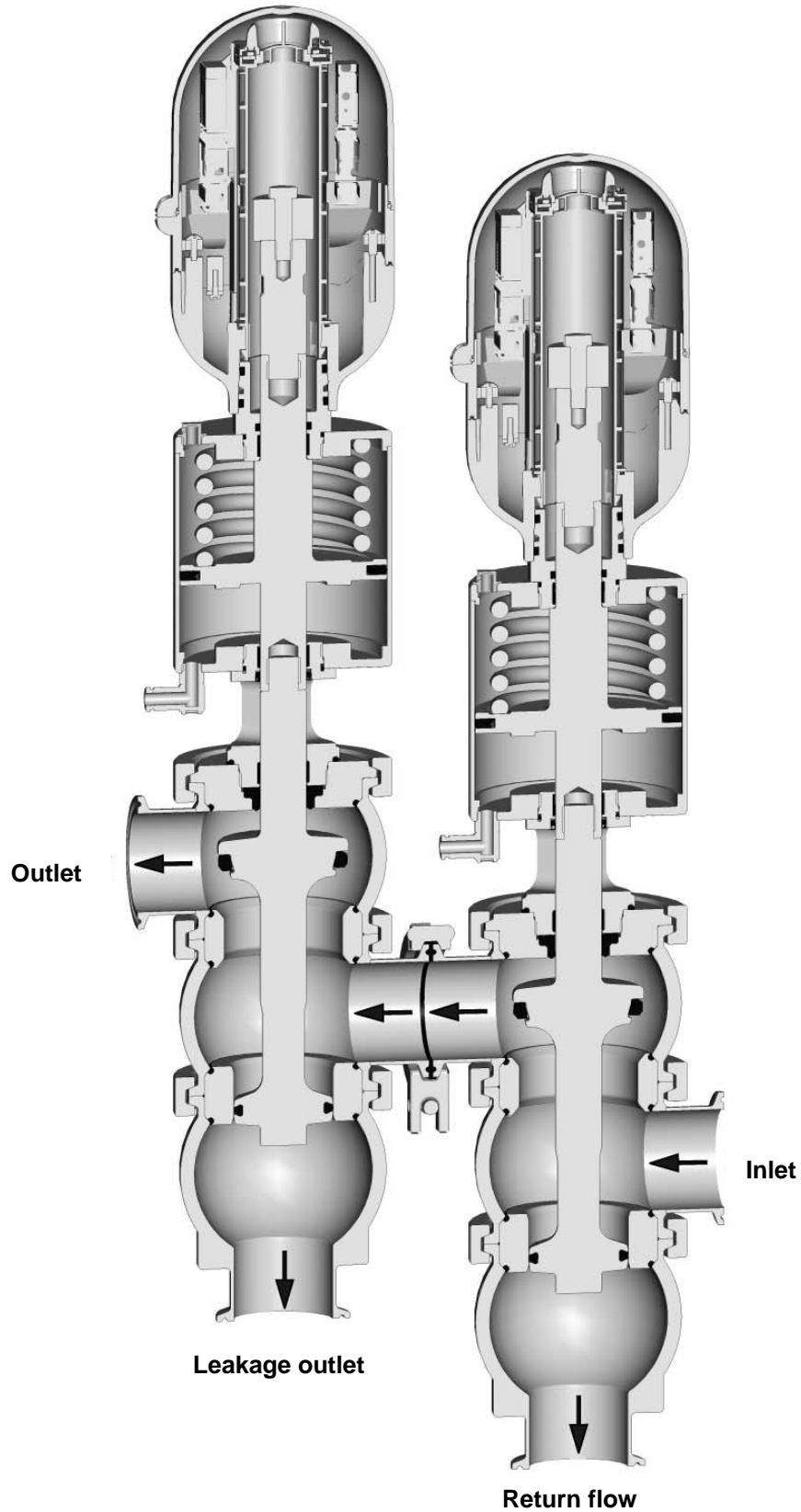
- ⇒ Operating time per day
- ⇒ Switching intervals
- ⇒ Type of product, temperature, etc.
- ⇒ Type of cleaning (CIP / SIP)

We can recommend the following data as reference values:

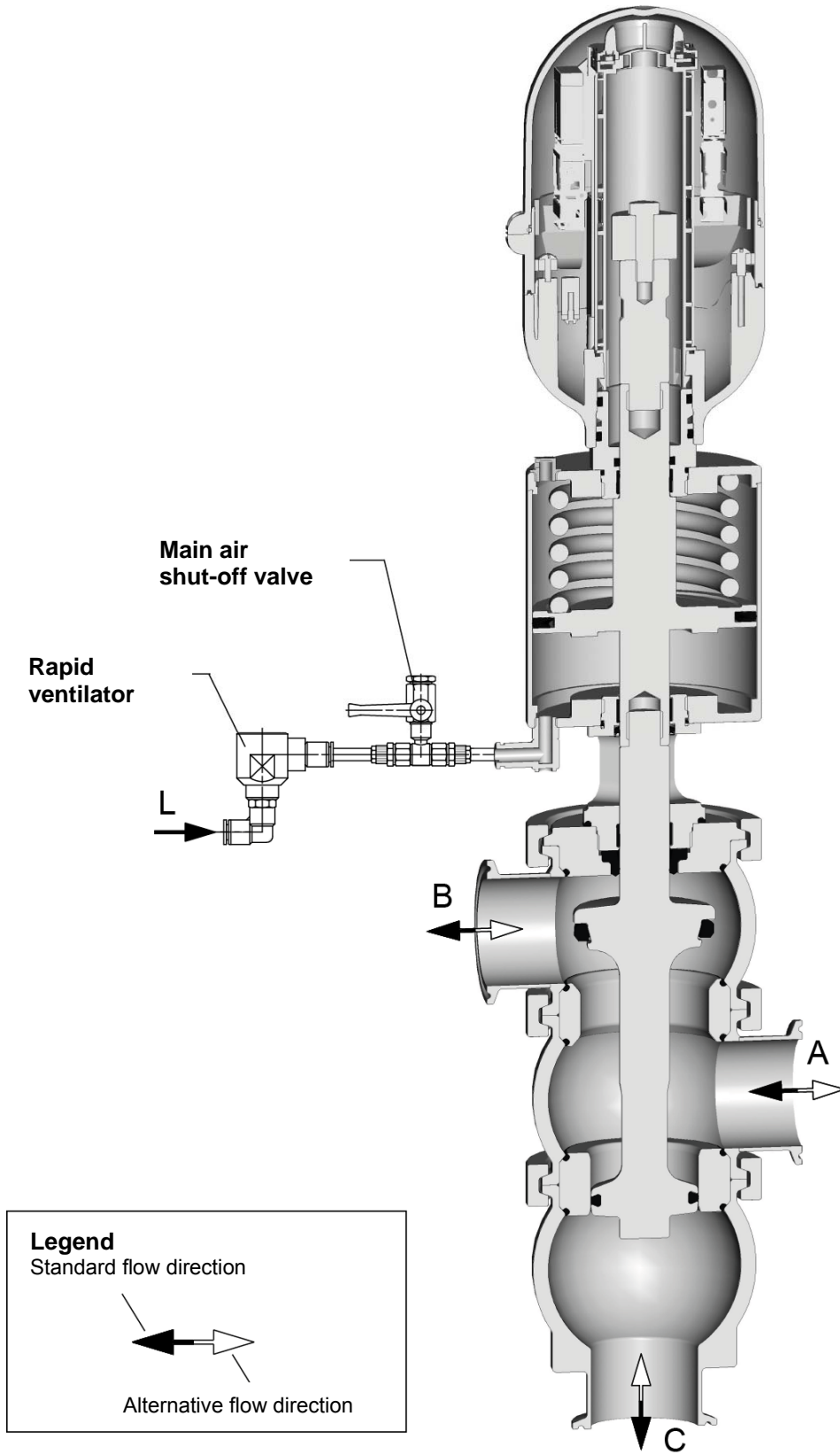
- ⇒ for liquids with solid particles and temperatures of 80° C to 100° C approx. every 3-6 months
- ⇒ for liquids with solid particles and temperatures of 60° C approx. every 12 months
- ⇒ for liquids without solid particles and temperatures of max. 60° C every 24 months.

Intervals of 12 months are recommended for cleaning systems.

**15. Flow diversion valve and control head**



**16. Application of the flow diversion valve**



**17. Dual stem device testing procedure****17.1. General**

The following procedures have been developed by Südmö Components GmbH to comply with the current Pasteurized Milk Ordinance, 2003 Revision, for the Dual Stem Device Assembly.

**17.2. Device Assembly, Dual Stem Device****17.2.1. Apparatus**

Spacer is 0.059 inches/ 1.5mm wide.

**17.2.2. Method**

Observe function of metering pump when flow-diversion device is improperly assembled.

**17.2.3. Procedures**

The spacer may be installed at any time, however it is easiest to loosen the target when valve is in the forward flow position.

- a. With the system temperature at sub-legal (divert), turn the Mode Switch to INSPECT.
- b. After the valves have assumed the forward flow position, close the air shut-off valve thereby trapping air in the valve and retaining the valve in forward flow position.
- c. Remove the feedback target assembly from the top of the valve stem with a 19 mm spanner.
- d. Place the spacer on the threads of the target assembly and screw it back on the valve stem.
- e. Open the air valve allowing valve to operate normally.
- f. Turn the mode switch to PROCESS and turn on the metering pump. The metering pump or any other flow- promoting device should not start.
- g. Attach a new sealing wire to the air shut-off valve handle and record your results.
- h. Repeat the above steps for the leak detect valve.

**17.2.4. Corrective Action**

If metering pump fails to respond as indicated, an immediate check of the device assembly, feedback, and wiring is required to locate and correct the cause.

Picture below is for reference purposes only. The spacer is 1.5mm wide and the feedback range of the measuring system is 1 mm wide.



### 17.3. Alternative Valve Dismantling Procedure

(See dismantling - assembly, page 16)



**Danger**

⇒ **It must be ensured that no foreign objects or product are present in the piping system.**

- a. With the system temperature at sub-legal (divert), turn the Mode Switch to INSPECT.
- b. After the valves have assumed the forward flow position, close the air shut-off valve thereby trapping air in the valve and retaining the valve in forward flow position.
- c. Turn the mode switch to PROCESS and turn on the metering pump. The metering pump should not start.
- d. Remove the uppermost body clamp. Remove the complete insert (actuator, control top, and stem) from the housing to expose the wrench flats on stem of valve. Depending on the valve size, the wrench flats may be on various locations of the stem.
- e. With the valve still in the forward flow position, loosen the stem from the actuator approximately 0.06 inches / 1.5 mm.
- f. Assemble the insert back into the housing.
- g. Slowly open the air shut-off valve allowing the valve to assume the DIVERT position
- h. Turn on the metering pump switch. The metering pump should not start.
- i. Turn the Mode Switch back to INSPECT and allow the valve to assume the forward flow position
- j. Again remove the insert, retighten the stem to the actuator, and reassemble the insert back into the housing



**At this time you may want to completely disassemble the valve and inspect for construction, gaskets, O-rings, etc.**

- k. Turn the Mode Switch from INSPECT to PROCESS and allow the valve to assume the divert flow position.
- l. Repeat the above steps for the leak detect valve.
- m. Attach a new sealing wire to the air shut-off valve handle and record your results.

#### 17.3.1. Corrective Action

If metering pump fails to respond as indicated, an immediate check of the device assembly, micro-switch, and wiring is required to locate and correct the cause.

## 18. Malfunctions - Troubleshooting



- ⇒ **In case of malfunctions, immediately shut off the valve and secure it against restart.**
- ⇒ **Malfunctions must be eliminated by qualified and trained personnel only while observing the safety instructions.**



- ⇒ **Never touch the valve or the pipelines if hot media are processed or if the sterilizing process is running.**
- ⇒ **Always adhere exactly to the operating parameters (see chapter 6 "Technical Data").**

Malfunction	Cause	Troubleshooting
Valve does not work	⇒ Fault in the control system	⇒ Check the system configuration
	⇒ No compressed air	⇒ Check compressed air supply
	⇒ Compressed air level is too low	⇒ Check if air hoses are free and tight
	⇒ Fault in the electrical system	⇒ Check activation / process control head and electrical lines
Air escapes from the actuator	⇒ Pilot valve is defective	⇒ Replace the pilot valve
	⇒ Seal on the stem is defective	⇒ Replace the seals
Valve does not close	⇒ Seals in the actuator are defective	⇒ Replace the actuator cylinder
	⇒ Dirt / foreign objects in the seat area	⇒ Clean the valve body and the valve disk/closing sleeve sealing area
Valve closes too slowly	⇒ Seals in the actuator are dry (friction losses)	⇒ Grease the seals - See lubrication plan
Leakage at support or spindle duct	⇒ Seals are defective	⇒ Replace the seals
Valve closes jerkily	⇒ Seals are dry (friction losses)	⇒ Grease the seals - See lubrication plan
		⇒ Replace the seals

## 19. Disposal

- ⇒ Dismount the flow diversion valve in accordance with the mounting instructions (see chapter 10 "Dismounting - Mounting").
- ⇒ Dispose of the flow diversion valve in accordance with the local regulations of the country of destination.

## Operating Instructions

Flow diversion valve

Profile seal – PEEK seal, process control head IntelliTop® 2.0

DN 1" – 4"

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**20. Service address**



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