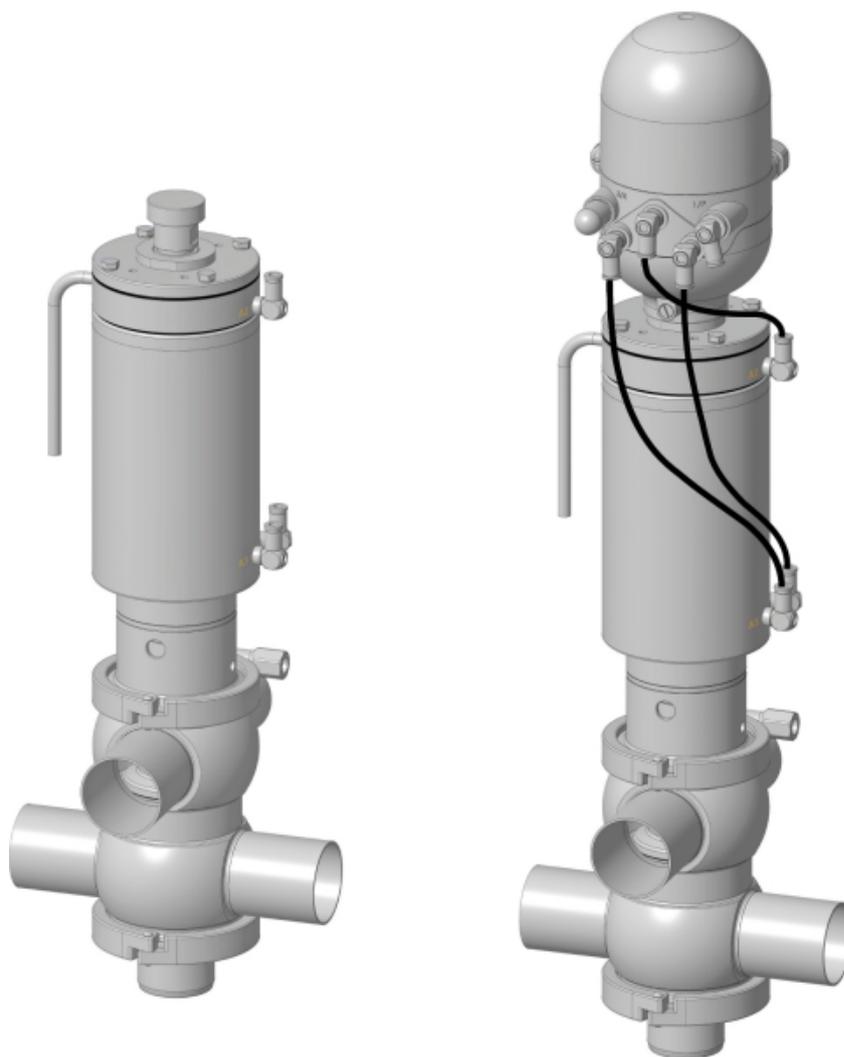


MA D600-CPL

Version 3.02

Part 2: Assembly Instructions Double Seat Valve Type D600 Complete

**DN 025 – 100, OD 1.00” – 4.00”
ISO 025 – 100**



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2. Safety instructions

**Danger**

*This symbol denotes an **imminent threat** to the life and health of persons!
Non-observance of these instructions can result in serious harm to health, and possibly even life-threatening injuries.*

**Caution**

*This symbol denotes a **potentially hazardous situation**!
Non-observance of these instructions can result in minor injuries or damage to material property.*



This symbol gives important information on the proper use of the double seat valve, which must be observed.

Non-observance of these instructions can result in malfunctions of the valve or in its surroundings.

- ⇒ The double seat valves by Pentair Südmo GmbH have been built using state-of-the-art standards and recognized safety regulations. However, the double seat valves may constitute a hazard if used by operating personnel in an incorrect manner or for a purpose other than the intended one. This can endanger the life of the user or a third party, or damage the functionality of the double seat valve and other material assets.



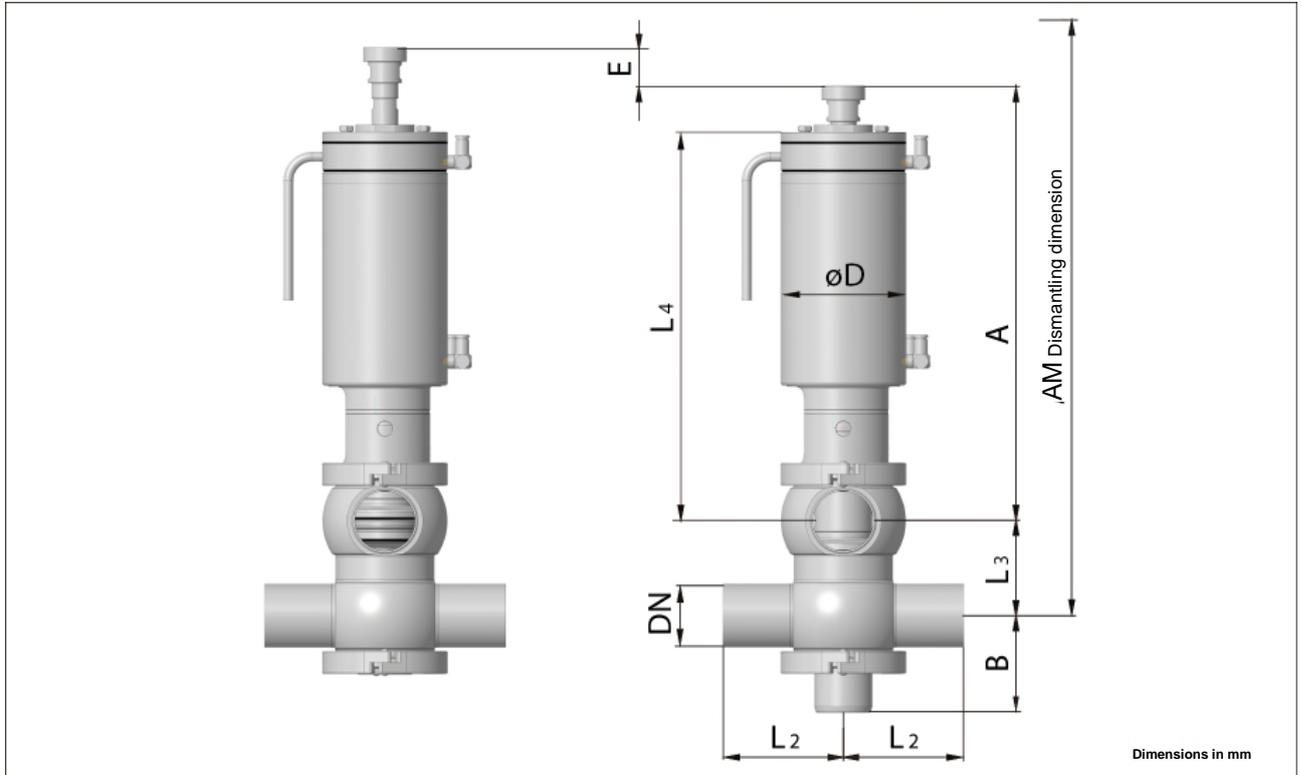
Each person who is involved with the assembly, commissioning, operation and maintenance of the double seat valve must have read and understood the complete operating instructions which consist of the documents listed below.

- ⇒ **Part 1: General operating instructions double seat valve BA DSV - CPL (In particular all listed safety instructions)**
- ⇒ **Part 2: Assembly instructions for double seat valve MA D600-CPL**
- ⇒ **Replacement parts catalogue**
- ⇒ **EU Declaration of Conformity**

- ⇒ The following naturally apply in addition to the “General Operating Instructions” BA DSV - CPL and these assembly instructions:
- appropriate accident prevention regulations
 - generally recognized safety-related regulations
 - national regulations in the country of use
 - in-house operation and safety regulations

3. Technical Data

3.1. Dimensions



DN	ø Tube	A	B	øD	E	L ₂	L ₃	L ₄	AM	kg		
										Housing maximum	Upper part of valve	Valve maximum
DN 025	29 x 1,5	341,0	57,5	104,0	20,5	80,0	47,0	302,0	520	1,7	9,5	12,4
DN 040	41 x 1,5	347,0	68,0	104,0	25,0	80,0	62,0	308,0	575	2,2	9,6	13,0
DN 050	53 x 1,5	364,0	81,2	104,0	32,0	100,0	79,0	325,0	645	2,6	10,3	14,1
DN 065	70 x 2,0	400,5	95,2	129,0	38,0	100,0	95,0	361,5	735	3,9	15,8	21,2
DN 080	85 x 2,0	408,0	102,7	129,0	38,0	120,0	110,0	369,0	785	5,3	18,3	25,2
DN 100	104 x 2,0	422,5	117,0	129,0	43,0	150,0	129,0	383,5	865	6,8	21,5	30,3
OD 1.00"	25,40 x 1,65	343,0	55,5	104,0	20,5	80,0	47,0	304,0	525	1,6	9,5	12,4
OD 1.50"	38,10 x 1,65	348,6	66,0	104,0	25,0	80,0	62,0	309,6	575	2,1	9,6	12,9
OD 2.00"	50,80 x 1,65	365,3	79,9	104,0	32,0	100,0	79,0	326,3	645	2,8	10,3	14,3
OD 2.50"	63,50 x 1,65	403,6	98,2	129,0	38,0	100,0	101,1	364,6	755	4,1	15,8	21,6
OD 3.00"	76,20 x 1,65	412,1	98,6	129,0	38,0	120,0	110,0	373,1	790	4,6	18,3	24,6
OD 4.00"	101,60 x 2,11	423,8	115,9	129,0	43,0	150,0	129,0	384,8	865	7,7	21,5	31,3
ISO 025	33,7 x 2,0	342,9	59,3	104,0	20,5	80,0	50,7	303,9	535	2,0	9,6	12,8
ISO 040	48,3 x 2,0	350,2	71,1	104,0	25,0	80,0	68,3	311,2	595	2,3	9,6	13,2
ISO 050	60,3 x 2,0	367,2	84,3	104,0	32,0	100,0	85,3	328,2	665	3,0	10,3	14,5
ISO 065	76,1 x 2,0	403,6	98,2	129,0	38,0	100,0	101,1	364,6	755	4,1	15,8	21,6
ISO 080	88,9 x 2,3	409,7	104,3	129,0	38,0	120,0	113,3	370,7	800	5,4	18,4	25,4
ISO 100	114,3 x 2,3	427,4	121,9	129,0	43,0	150,0	138,7	388,4	900	8,6	21,6	32,3

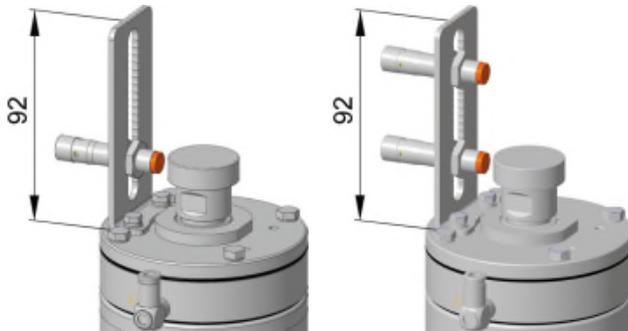
3.2. Valve use

Application: Shut-off valve
 Use: Low-germ processes
 Shut-off tightness:

Sealing material	Shut-off tightness
EPDM	max. 10 bar.
FKM	max. 10 bar.
HNBR	max. 10 bar.
FFKM	max. 10 bar.

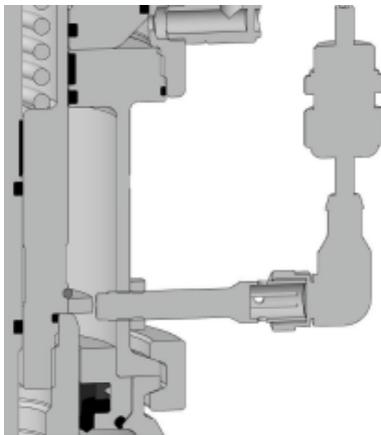
Vacuum: Leakage rate (residual pressure in the test item 0.5 mbar) = 1.6×10^{-6}

3.3. Feedback systems



3.3.1. Single or double feedback

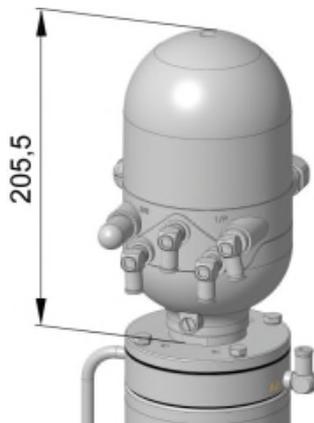
- ⇒ Report: Valve position “Open” and/or “Closed”
- ⇒ Inductive feedback unit – Thread M 12 according to customer order
- ⇒ Feedback unit data – refer to data sheet of the feedback unit manufacturer
- ⇒ Mounting kit for feedback – Order No. 2132531



3.3.2. Feedback valve disk monitoring

- ⇒ Report: Valve setting “Open”
- ⇒ Inductive feedback unit – Thread M 8 according to customer order
- ⇒ Feedback unit data – refer to data sheet of the feedback unit manufacturer
- ⇒ Mounting kit for feedback

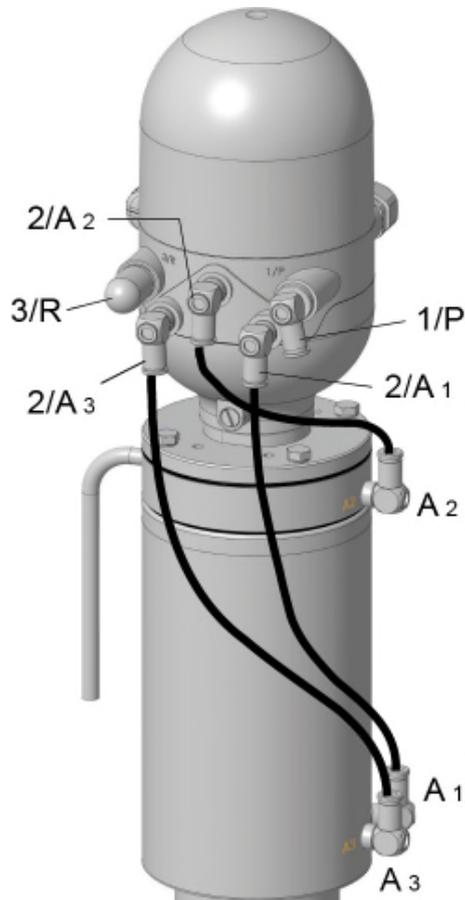
DN	Order no.
DN 025 / OD 1.00” / ISO 025	2145790
DN 040 / OD 1.50” / ISO 040	2145790
DN 050 / OD 2.00” / ISO 050	2310465
DN 065 / OD 2.50” / ISO 065	2310466
DN 080 / OD 3.00” / ISO 080	2310467
DN 100 / OD 4.00” / ISO 100	2310473



3.3.3. IntelliTop® process control head 2.0

Technical data see Operating Instructions IntelliTop 2.0
 Pneumatic connections see Operating Instructions IntelliTop 2.0
 Electrical connections see Operating Instructions IntelliTop 2.0
 Maintenance see Operating Instructions IntelliTop 2.0

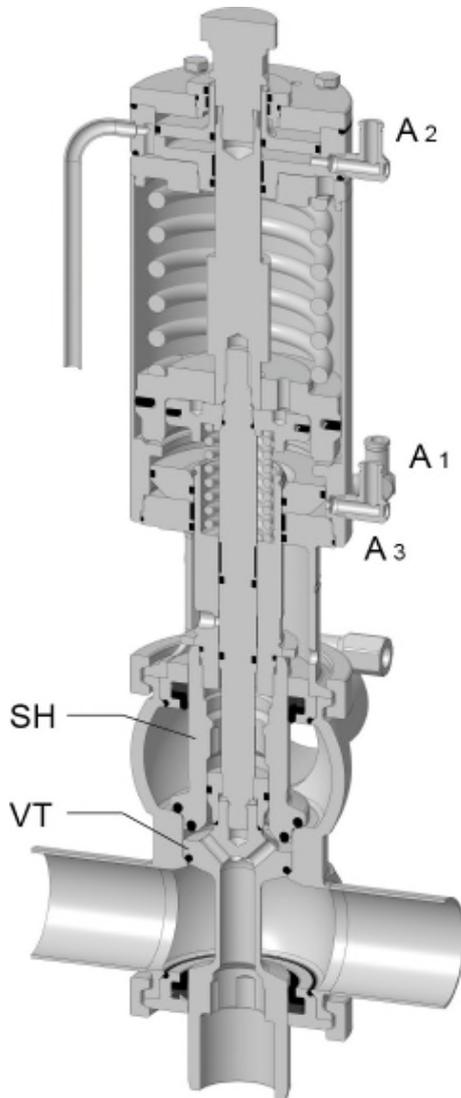
3.3.4. Wiring diagram - IntelliTop control head[®] 2.0



- ⇒ Main stroke
Connect air connection A₁ and control unit output 2/A₁ with an air hose
- ⇒ Pulse stroke valve disk
Connect air connection A₂ and control unit output 2/A₂ with an air hose
- ⇒ Pulse stroke closing sleeve
Connect air connection A₃ and control unit output 2/A₃ with an air hose

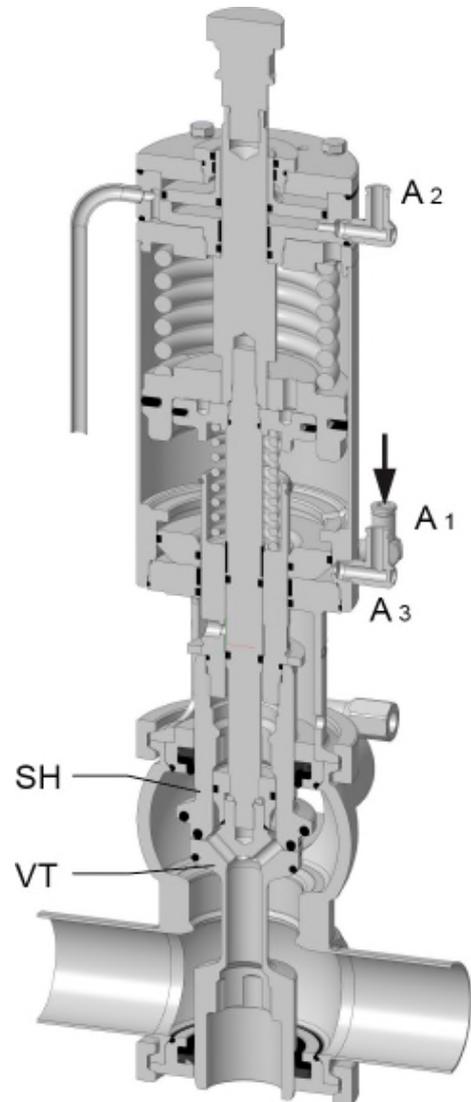
4. Valve Function

4.1. Valve position "closed"



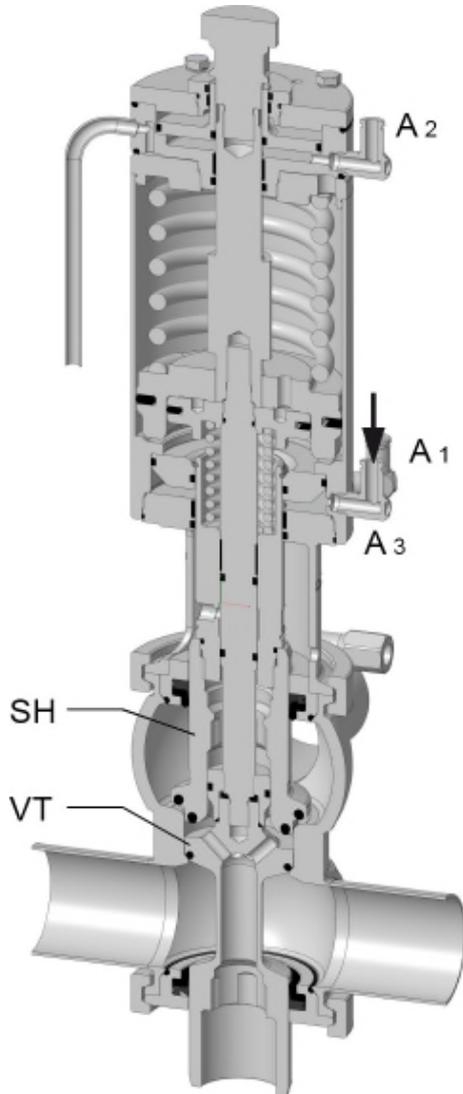
- ⇒ Control air pressure 0 bar on connection A₁ (main stroke)
- Control air pressure 0 bar on connection A₂ (pulse stroke valve disk VT)
- Control air pressure 0 bar on connection A₃ (pulse stroke closing sleeve SH)
- ⇒ Separation of two hostile media
- ⇒ Possible leakages are guided outwards through the leakage room in a depressurized state.

4.2. Valve position "OPEN"



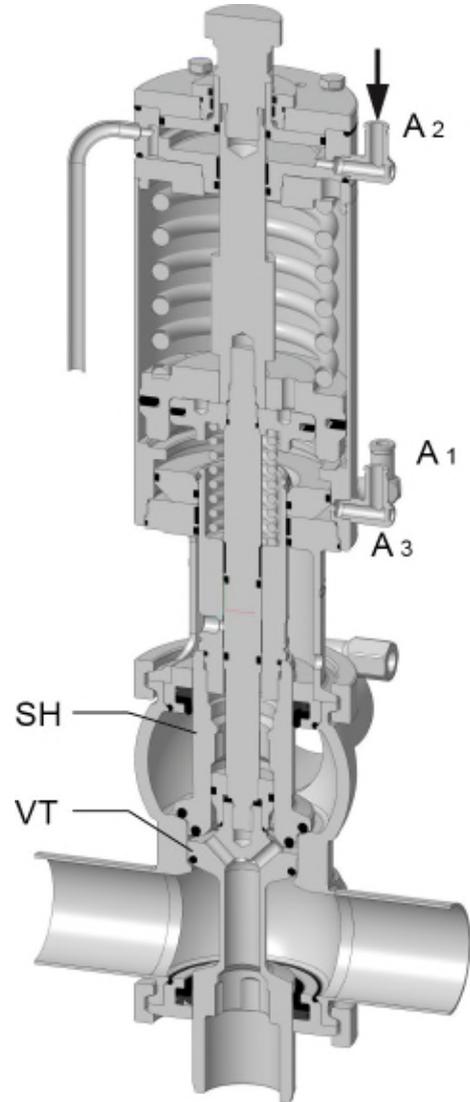
- ⇒ Control air pressure 6 bar on connection A₁ (main stroke)
- Control air pressure 0 bar on connection A₂ (pulse stroke valve disk VT)
- Control air pressure 0 bar on connection A₃ (pulse stroke closing sleeve SH)
- ⇒ Valve disk VT is lifted and closes the leakage room
- ⇒ Valve disk VT and closing sleeve SH in "Closed" position
- ⇒ Top and bottom rail will open in relation to each other.
- ⇒ During the switching operation "main stroke", the switching loss is guided outwards through the leakage room

4.3. Cleaning the upper valve body / valve seat



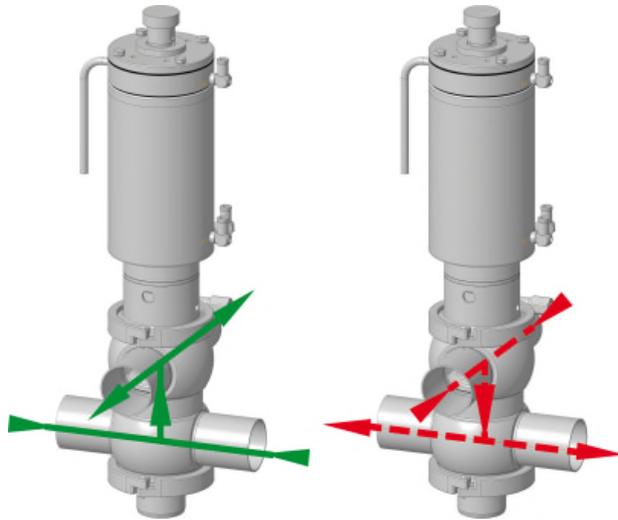
- ⇒ Control air pressure 0 bar on connection A₁ (main stroke)
- ⇒ Control air pressure 0 bar on connection A₂ (pulse stroke valve disk VT)
- ⇒ Control air pressure 6 bar on connection A₃ (pulse stroke closing sleeve SH)
- ⇒ Closing sleeve SH is lifted during cleaning
- ⇒ Valve seat, valve disk seals or the clearance and leakage outlet tube are cleaned.

4.4. Cleaning the lower valve housing / valve seat



- ⇒ Control air pressure 0 bar on connection A₁ (main stroke)
- ⇒ Control air pressure 6 bar on connection A₂ (pulse stroke valve disk VT)
- ⇒ Control air pressure 0 bar on connection A₃ (pulse stroke closing sleeve SH)
- ⇒ Valve disk VT is lifted during cleaning
- ⇒ Valve seat, valve disk seals or the clearance and leakage outlet tube are cleaned.

4.5. Direction of flow



 Recommended direction of flow for open double seat valve

 Risk of pressure shock when closing the double seat valve.

Closing of the valve only permissible under static pressure (flow speed = 0).



Pressure shocks (pressure > 10 bar) are present beyond the permissible operating parameters and do not therefore comply with the intended purpose. It follows that no warranty can be given for damage to the valve or other components in the piping.

5. Valve connection piping

5.1. Installation position

Vertical, horizontal

Bear in mind the idle times of the valve and piping.

5.2. Valve connections

- Connections
- Welding end
 - Threaded connection
 - Clamp connection
 - Small flange connection

Welding instructions, see chapter “Welding and assembly instructions” of the BA DSV-CPL operating instructions.

5.3. Installation instructions for double seat valves

- ⇒ Disassemble double seat valve according to assembly instructions.
- ⇒ Weld or assemble the double seat valve in the pipeline.



Caution

Welding information

- ⇒ *Dismantle the seals before welding.*
- ⇒ *Weld body free from tension and distortions.*
- ⇒ *Welding work must only be carried out by qualified skilled personnel (DIN EN ISO 9606-1 W8).*

Assembly instructions

- ⇒ *No foreign matter must remain in the pipeline when the valves are assembled.*

- ⇒ For assembly instructions, please refer to chapter 6 “Disassembly - Assembly”.

Operating Instructions

Part 2: Assembly instructions double seat valve

Type D600 Complete

DN 025 – 100, OD 1.00" – 4.00", ISO 025 – 100

6. Disassembly – Assembly

Generally, mount the double seat valve according to the hazard warnings (see chapter 6.1. Carry out "preparatory measures for disassembly - assembly").

6.1. Preparatory measures for disassembly – assembly

Before disconnecting the valve connections and the flange connection of the valve body, the following steps must always be carried out:



- ⇒ **Assembling the double seat valves must only be carried out by trained and qualified personnel.**
 - **Training or instruction according to the current standards of the safety regulations.**
 - **For systems with explosion protection:
Training or instruction or authorization to carry out work on the 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 works on the double seat valve.**
- ⇒ **Before disconnecting the valve connections and the flange connection of the valve bodies, make sure that**
 - **the work must only be carried out in a depressurized state and with the media supply shut off.**
 - **the double seat valve and all piping elements leading to the valve are drained, cleaned or rinsed.**
 - **the fittings are cooled down.**
 - **the commissioning of the system through a third party is excluded.**
 - **the pressure build-up which may form in sealed pipelines is counteracted.**
 - **the disassembly - assembly of the double seat valve is carried out according to the assembly instructions.**
 - **when dismantling the valve top, the closing spring is preloaded with auxiliary assembly air. In case of non-observance there is a risk of injury when removing the clamp connection due to the released spring tension of the actuator.**
 - **Double seat valves are secured against signaling, voltage and signal cut-off, operation or activation.**
 - **the power supply is disconnected.**
 - **the double seat valve is removed from the pipeline section, if possible.**

Note

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

6.2. Spare parts



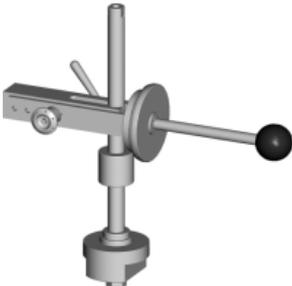
Only use original spare parts.

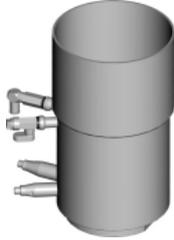
⇒ **Original spare parts, see attached spare parts list (see chapter 13 "Spare parts list").**

⇒ **Optimal function of the double seat valve is only guaranteed when using original spare parts.**

6.3. Assembly tools

Quantity	Tool	for	Order no.
1	Combination wrench (wrench size) 10 	DN 025 – 050 OD 1.00" – 2.00" ISO 025 – 050	2117613
1	Combination wrench (wrench size) 13 	DN 065 – 100 OD 2.50" – 2.00" ISO 065 – 100	2117614
1	Double open ended wrench (wrench size) 17 – 19 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2112372
1	Combination wrench (wrench size) 24 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2117618
1	Combination wrench (wrench size) 46 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2123662
1	Torque wrench with socket wrench SW 17 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	
1	Drift punch ø8 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2144734
1	Punch 155 mm 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	0098525

Quantity	Tool	for	Order no.
1	Face spanner ø8 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2117636
1	Assembly pliers for circlips 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2132644
1	Water pump pliers 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2132645
1	Hammer 300 g 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2117644
2	Assembly shaft 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2144190
1	Socket wrench 	DN 025 – 050 OD 1.00" – 2.00" ISO 025 – 050 DN 065 – 100 OD 2.50" – 4.00" ISO065 – 100	2160290 2144338
1	Screwdriver 3.0 mm (slot) 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2112374
1	Screwdriver 5.5 mm (slot) 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2117639
1	Assembly device 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2162595

Quantity	Tool	for	Order no.
1	Assembly cylinder 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2132441
1	Workbench stands for assembly cylinder 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2160221
1	Flat seal 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2132725
2	Brush (small) S400 size 2 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	0050799
1	Hexagonal screwdriver 4.0 mm 	DN 025 – 100 OD 1.00" – 4.00" ISO 025 – 100	2127638

6.4. Assembly of joint clamp

Assembly of joint clamp:

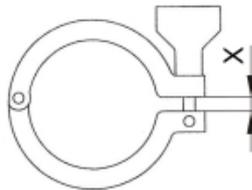


Fig. 1



Fig. 2



- ⇒ Only assemble clamp if it is in optimal working condition (Fig. 1).
- ⇒ Check gap X and ensure the shaft is parallel (Fig. 1).
- ⇒ Assembly must not occur if the shafts are bent (Fig. 2).

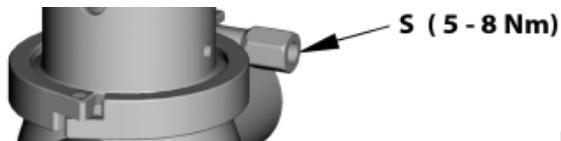


Fig. 3

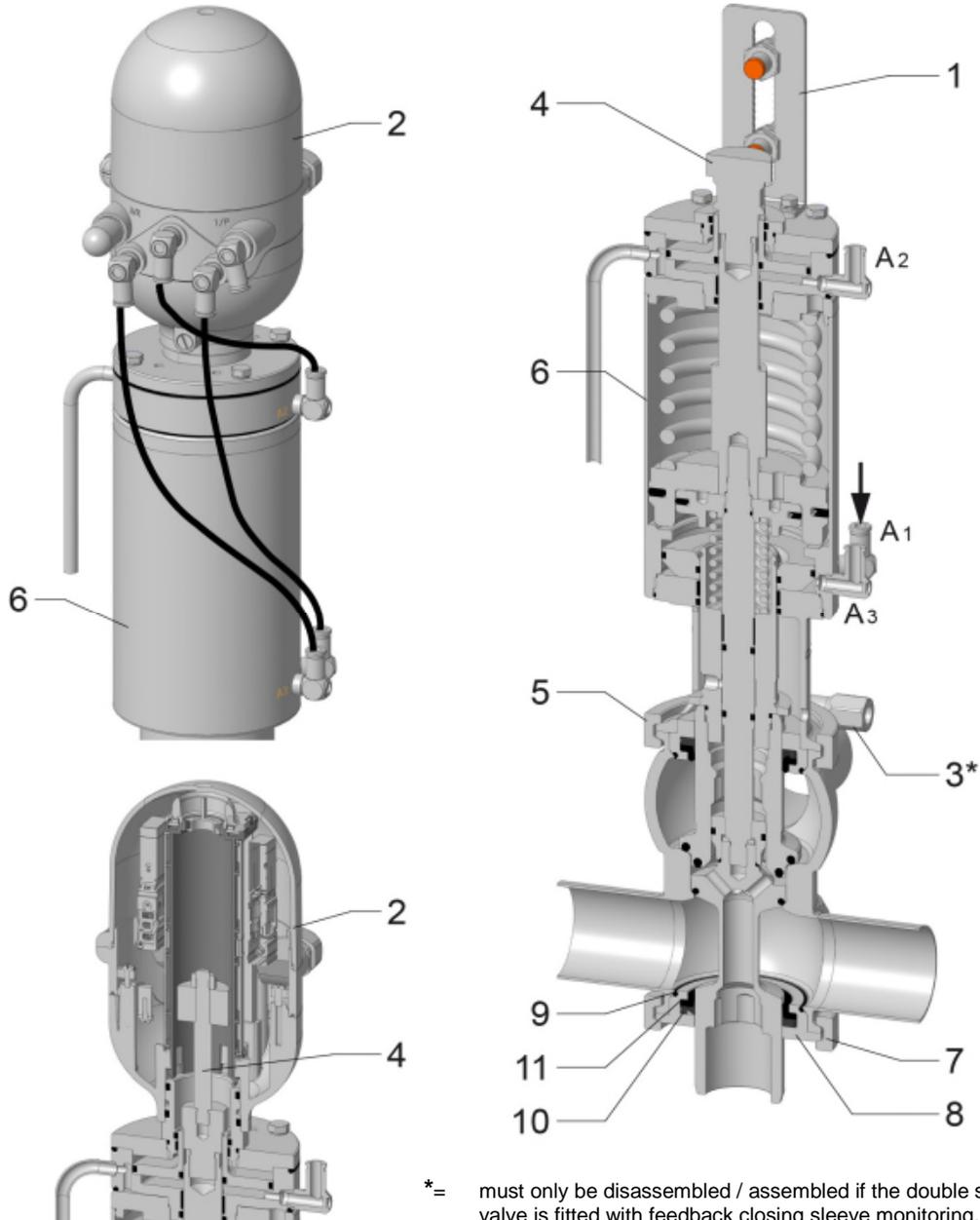
- ⇒ Grease screw thread before assembly → grease type IBF PW 119
 - ⇒ Place clamp on clamp connection.
 - ⇒ Insert screw with hexagonal nut (S) into retaining bracket groove.
 - ⇒ Fasten hexagonal nut (S) with torque wrench → torque 5 – 8 Nm.
- The maximum torque of 8 Nm must not be exceeded.**

6.5. Replacement of the seals in contact with the product



Caution

Avoid any damage to the valve disk surfaces of the regulating cones and to valve disk seals.



*= must only be disassembled / assembled if the double seat valve is fitted with feedback closing sleeve monitoring.

Dismounting the valve

- I.1. Disconnect the pneumatic and electrical supply lines.
- I.2. Complete feedback (1) - see chapter 6.8. "Assembling the single or double feedback" or process control head (2) - see chapter 6.9. "Assembling the IntelliTop® 2.0 process control head on the double seat valve" - disassemble.
- I.3. Dismount feedback unit (3).
- I.4. Mount pneumatic pipe (auxiliary assembly air).

- I.5. Preload the actuator spring ⇒ Control air pressure min. 5 bar (auxiliary assembly air) on connection A1.
- I.6. Dismount the clamp (5).

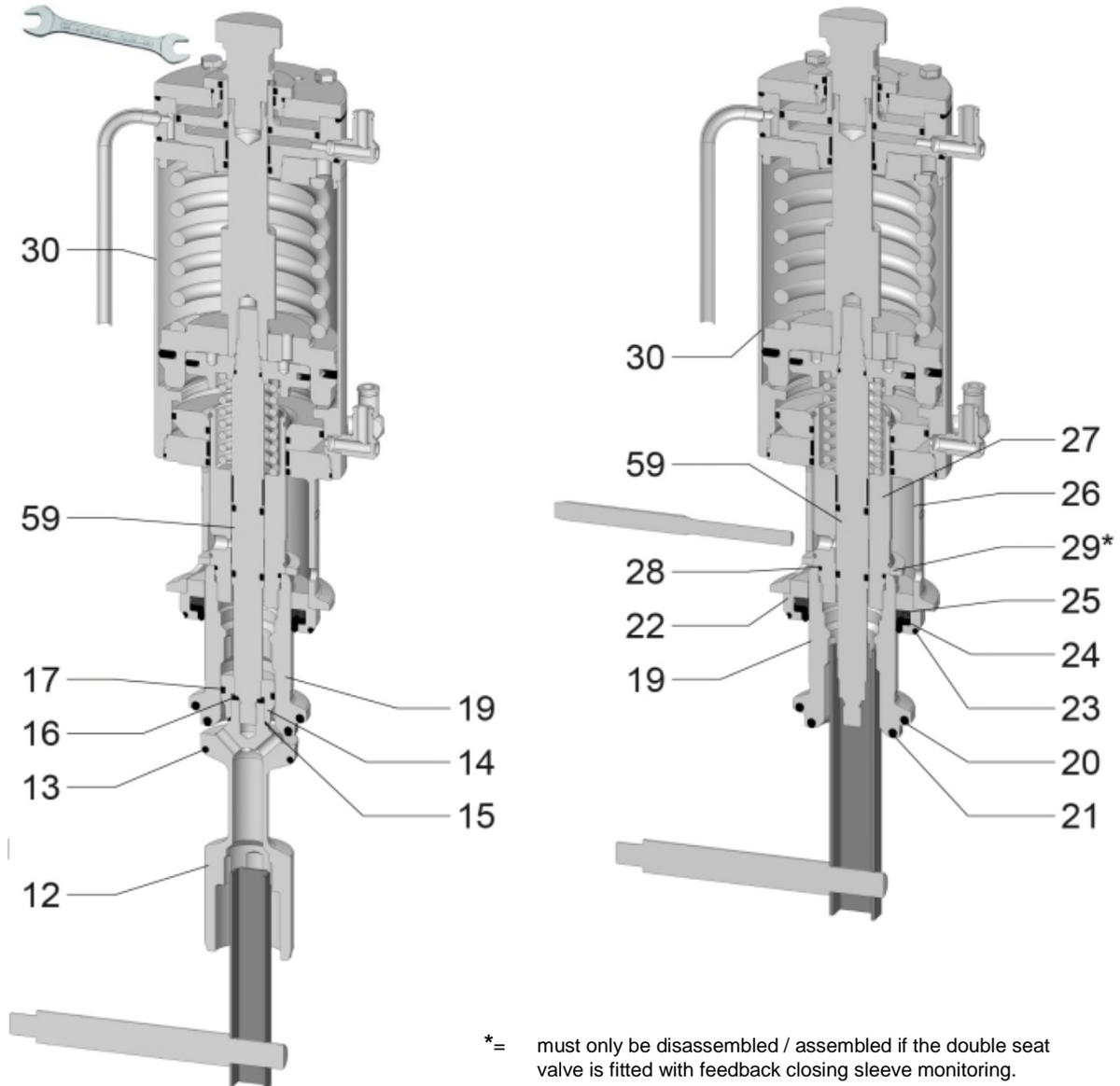




⇒ **Before loosening the clamp (5), make sure that the closing spring is preloaded before dismantling the valve top. In case of non-compliance there is a risk of injury when removing the clamp connection, due to the released spring tension of the drive.**

⇒ **Do not reach into the openings of the closing head support (50)**
 → **Accident hazard.**
Risk of limbs being crushed or cut off.

- I.7. Release the drive spring ⇒ Control air pressure min. 0 bar (auxiliary assembly air) on connection A1.
- I.8. Loosen pneumatic pipe (auxiliary assembly air).
- I.9. Remove upper part of valve (6).
- I.10. Loosen clamp (7) and remove the housing lid (8).
- I.11. Remove the O-ring (9), profile seal (11) and support ring (10) from the housing lid (8).



*= must only be disassembled / assembled if the double seat valve is fitted with feedback closing sleeve monitoring.

- I.12. Check contact button (4) for firm seating – tighten if necessary.
- I.13. Dismount valve disk (12) with a socket wrench, assembly shaft and open-ended wrench, wrench size 24 (to hold on the contact button) and remove O-rings (13, 15) - See Chapter 6.6. "Assembling the O-rings".
- I.14. Dismount valve disk guide (14) using water pump pliers and remove spring washer (16) and O-ring (17).
- I.15. Dismount closing sleeve (19) with a socket wrench, assembly shaft and drift punch $\varnothing 8$ and remove O-rings (20, 21) - see chapter 6.6. "Assembling the O-rings".



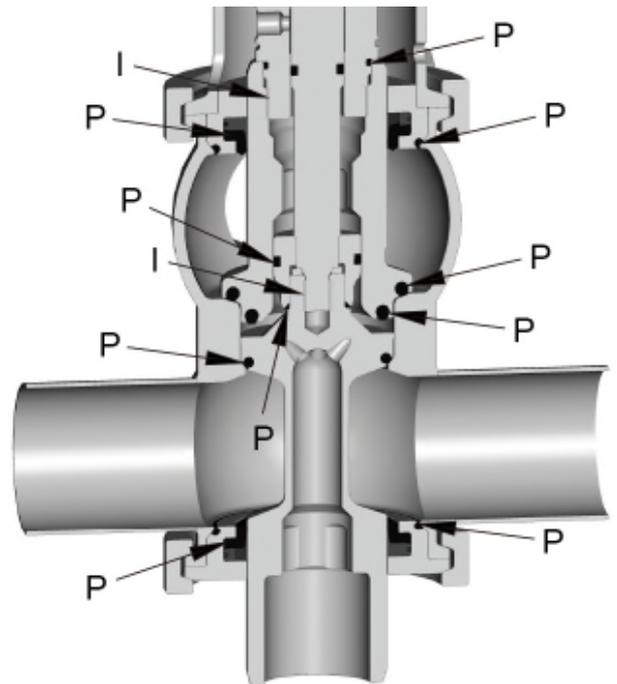
If during the disassembly of the closing sleeve (19) no mounting hole of the intermediate piece (27) is visible in the area of the window of the closing head support (26), the closing sleeve (19) must be rotated clockwise with the intermediate piece (27) until a mounting hole appears in the visible area of the window of the closing head support (26).

- I.16. Detach support (22) from the closing sleeve (19) and remove the O-ring (23), profile seal (24) and support ring (25).
- I.17. Remove the washer (29) from intermediate piece (27).
- I.18. Dismount the O-ring (28) from intermediate piece (27).

Valve assembly

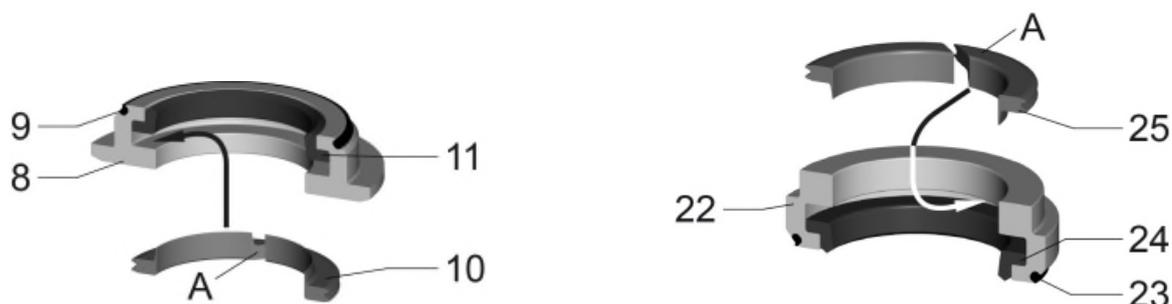
- I.19. Prior to assembly, clean and grease the shafts and sliding surfaces.

Sealing materials	Lubricant type
EPDM	PARALIQ GTE 703 (P) apply a thin layer at the perimeter with a brush
HNBR	PARALIQ GTE 703 (P) apply a thin layer at the perimeter with a brush
FKM	PARALIQ GTE 703 (P) apply a thin layer at the perimeter with a brush
FFKM	PARALIQ GTE 703 (P) apply a thin layer at the perimeter with a brush
Thread	IBF PW 119 (I) apply a thin layer at the perimeter with a brush



Caution

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



- I.20. Mount O-ring (28) in the intermediate piece (27).
- I.21. Mount O-ring (9) and profile seal (11) in the housing lid (8).
- I.22. Mount support ring (10) in the housing lid (8).



- ⇒ Pay attention to the installation position of the support ring (10).
- ⇒ Insert end A of the support ring (10) into the gap between the profile seal (11) and housing lid (8).
- ⇒ Gradually insert support ring (10) into the gap between the profile seal (11) and housing lid (8).

- I.23. Mount O-ring (23) and profile seal (24) in the support (22).
- I.24. Assemble support ring (25) onto the support (22).



- ⇒ Pay attention to the installation position of the support ring (25).
- ⇒ Insert end A of the support ring (25) into the gap between the profile seal (24) and support (22).
- ⇒ Gradually insert the support ring (25) into the gap between the profile seal (24) and support (22).

- I.25. Mount O-rings (20, 21) on the closing sleeve (19) – see chapter 6.6. "Assembling the O-rings".
- I.26. Assembling complete support (22) onto to closing sleeve (19).
- I.27. Mount O-ring (28) on the intermediate piece (27).
- I.28. Insert the washer (29) onto the intermediate piece (27).
- I.29. Screw the closing sleeve (19) with a socket wrench, assembly shaft and drift punch $\varnothing 8$ on to the spindle (57) of the actuator (30).



If during the disassembly of the closing sleeve (19) no mounting hole of the intermediate piece (27) is visible in the area of the window of the closing head support (26), the closing sleeve (19) must be rotated clockwise with the intermediate piece (27) until a mounting hole appears in the visible area of the window of the closing head support (26).

- I.30. Slide support (22) into the closing head support (26).
- I.31. Mounting O-rings (13, 15) on the valve disk (12) – see chapter 6.6. "Assembling the O-rings".
- I.32. Mount O-ring (17) in the valve disk guide (14).
- I.33. Mount valve disk guide (14) on the spindle (57) of the actuator (30).
- I.34. Mount spring washer (15) on the spindle (57) of the actuator (30).
- I.35. Check contact button (4) for firm seating – tighten if necessary.
- I.36. Mount the valve disk (12) with a socket wrench, assembly shaft and open-ended wrench, wrench size 24 (to hold on the contact button) on to the spindle (57) of the actuator (30).
- I.37. Mount housing lid (8) with clamp (7) in the valve body and fasten clamp (7) – tightening torque max. 8 Nm.

Operating Instructions

Part 2: Assembly instructions double seat valve

Type D600 Complete

DN 025 – 100, OD 1.00” – 4.00”, ISO 025 – 100

- I.38. Insert the valve top (6) axially into the valve body.



Caution

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

- I.39. Mount pneumatic pipe (auxiliary assembly air).

- I.40. Preload the actuator spring ⇒ Control air pressure min. 5 bar (auxiliary assembly air) on connection A1.



⇒ Do not reach into the openings of the closing head support (26)
→ Accident hazard.
Risk of limbs being crushed or cut off.

- I.41. Tighten clamp (5) – tightening torque max. 8 Nm.

- I.42. Release the drive spring ⇒ Control air pressure min. 0 bar (auxiliary assembly air) on connection A1.

- I.43. Loosen pneumatic pipe (auxiliary assembly air).

- I.44. Mount feedback unit (3).



After assembly, set the switching distance of the feedback units (3).

- I.45. Complete feedback (1) - see chapter 6.8. "Assembling the single or double feedback" or process control head (2) - see chapter 6.9. "Assembling the IntelliTop[®] 2.0 process control head on the double seat valve" - assemble.

- I.46. Connect pneumatic and electrical supply lines.

6.6. Assembling the O-rings

Installing the O-rings*

- ⇒ Carefully remove the installed O-rings from the seal groove using a pricking awl.



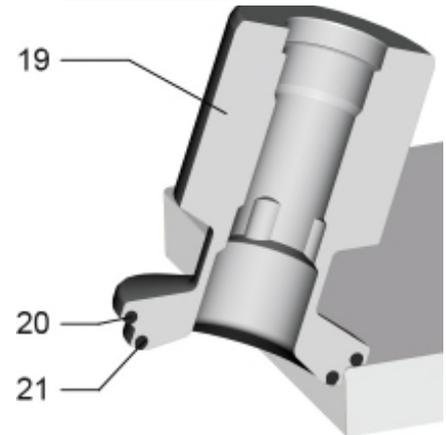
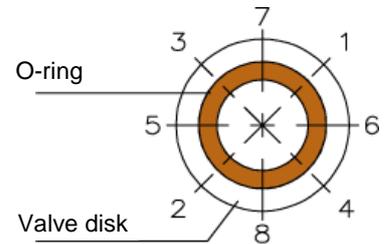
Avoid the pricking awl slipping

⇒ **Risk of injury.**

- ⇒ Fasten O-ring in a crosswise sequence (in the order 1 - 2, 3 - 4 etc.) in four positions in the groove.
- ⇒ Roll the O-ring on the edge of a table (section by section 1 - 6, 5 - 2 etc.) and light rolling movements on a clean surface into the groove.
- ⇒ Use a plastic surface for the assembly (if possible, avoid surfaces made of wood or metal).



Avoid twisting and damaging the O-ring.

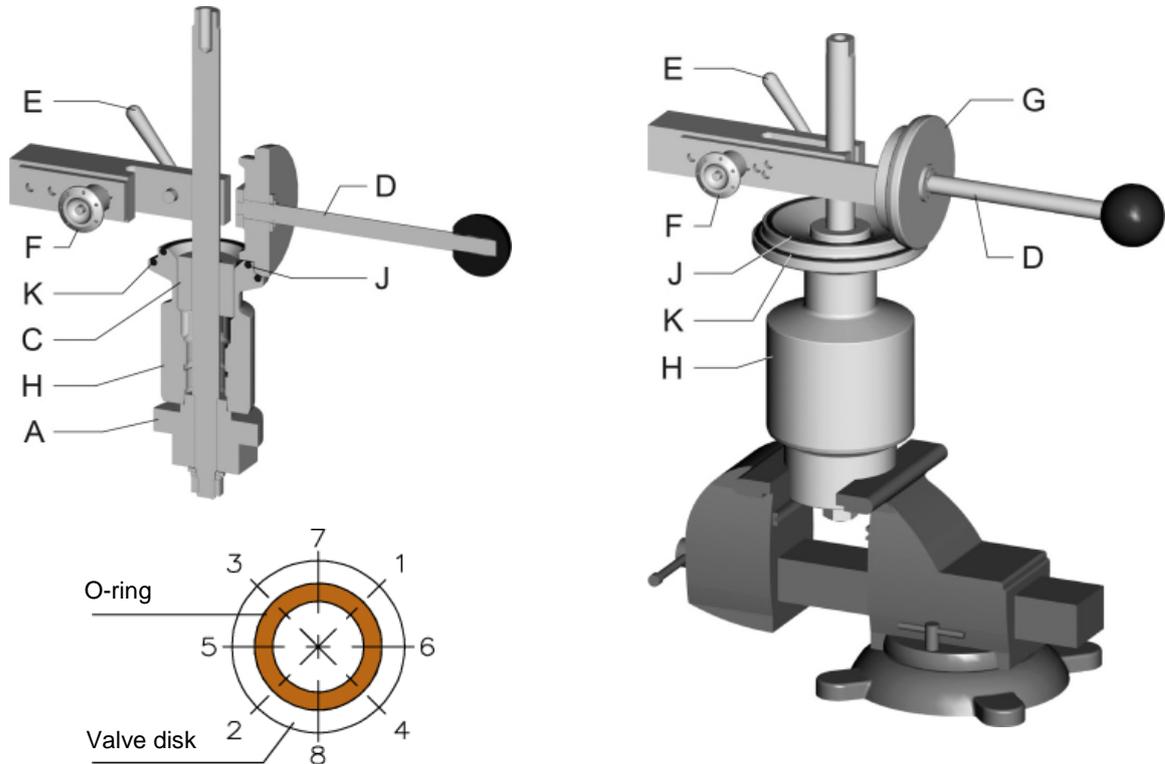


*Assembly of O-rings of FFKM material



- Before installing the O-rings (13, 20, 21) in the valve disk and closing sleeve grooves, warm them in 80° C water for about 10 minutes.
- O-rings (13, 20, 21) must be installed in the valve disk groove in heated condition.
- The Pentair Südmö roller tool (article no. 2162595) must be used for installation!

Mounting the O-rings* with a mounting device



- ⇒ Clamp the assembly device (A) into the bench vise.
- ⇒ Position the closing sleeve (H) in the assembly device (A) and fasten with the guide ring (C).
The installation sizes up to DN 050, DN 2.00" and DN 040 (ISO) require the small guide ring (ø30 mm) and the installation sizes as of DN 065, DN 2.50", DN 050 (ISO) require the big one (ø38 mm).
- ⇒ Adjust the lever (D) with the ball lock pin (F) to the corresponding closing sleeve diameter. Afterwards, position the lever (D) horizontally and tighten with clamping nut (E).
- ⇒ Insert the O-rings (J) in the order 1 - 2, 3 - 4 etc., into the groove - For the installation, use the lever (D) with the wheel (G).
- ⇒ Roll the O-rings (J) section by section 1 - 6, 5 - 2 into the groove - For the installation, use the lever (D) with the wheel (G).
- ⇒ Roll the O-rings (J) into the groove with **even manual force** with the lever (D) (perform the rotary movement several times).
- ⇒ Insert the O-rings (K) in the order 1 - 2, 3 - 4 etc., into the groove - For the installation, use the lever (D) with the wheel (G).
- ⇒ Roll the O-rings (K) section by section 1 - 6, 5 - 2 into the groove - For the installation, use the lever (D) with the wheel (G).
- ⇒ Roll the O-rings (J) into the groove with **even manual force** with the lever (D) (perform the rotary movement several times).



Check the positive seat of the O-rings after assembly.

Mounting the O-rings is also possible with the mounting device – see chapter 6.6. "Mounting the O-rings - Installing the O-rings".

*Assembly of O-rings of FFKM material



- Before installing the O-rings (13, 20, 21) in the valve disk and closing sleeve grooves, warm them in 80° C water for about 10 minutes.
- O-rings (13, 20, 21) must be installed in the valve disk groove in heated condition.

6.7. Replacing the actuator seals

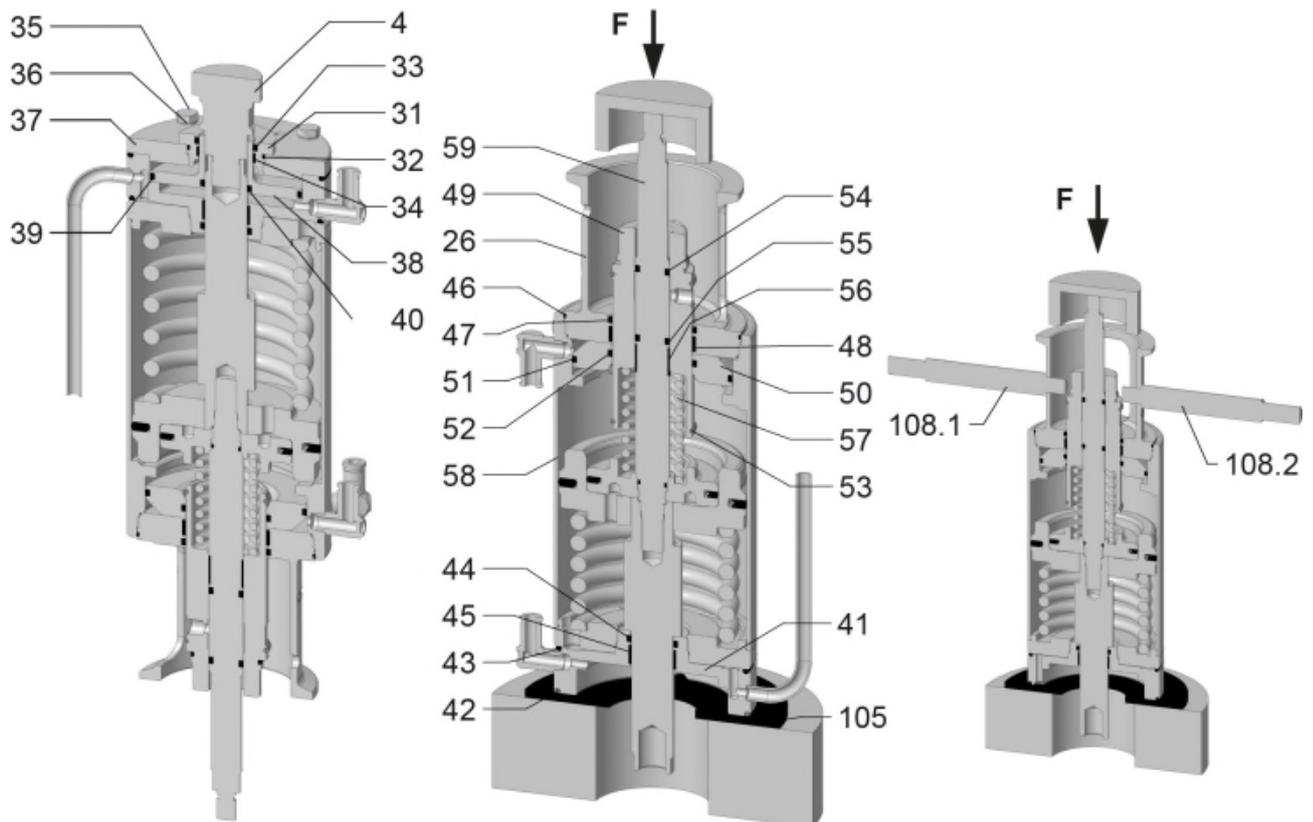
6.7.1. Seal replacement with lifting device



When replacing the seals with a lifting device, generally ensure that



- ⇒ **the actuator cylinder (58) is firmly positioned in the device.**
- ⇒ **it cannot slip when using the lifting device.**
- ⇒ **nobody can reach into the actuator cylinder (56) when using the lifting device.**



Disassembling the actuator

- II.1. Disassembly contact button (4).
- II.2. Disassemble retaining screw (31) and remove O-rings (32, 33) and guide belt (34).
- II.3. Unscrew the hexagonal screws (35) and remove the spring washer (36) and lid (37).
- II.4. Remove lift piston (38) and dismount O-rings (39, 40).
- II.5. Position the actuator cylinder (56) centrally in the lifting device – use the flat seal (105) as a support.
- II.6. Lower the plunger with slow lifting movements onto the piston rod of the actuator cylinder (56). Move the piston rod up to the stop with force F in the direction of the force.
- II.7. Loosen the closing head support (26) with the assembly shaft and hammer.
- II.8. Dismount closing head support (26) with 2 assembly shafts.



Do not reach into the actuator cylinder (58)

⇒ **Accident risk**

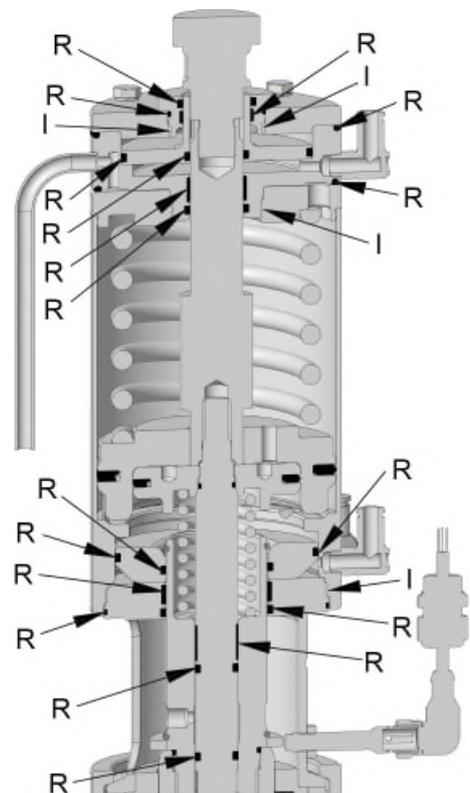
Risk of limbs being crushed or cut off.

- II.9. Release spring force.
- II.10. Remove closing head support (26).
- II.11. Disassemble circlip (53) with mounting pliers.
- II.12. Detach the lift piston (50) from the intermediate piece (49) and remove the O-rings (51, 52).
- II.13. Remove the intermediate piece (49) from the closing head support (26).
- II.14. Remove the O-rings (46, 47) and guide belt (46) from the closing head support (26).
- II.15. Remove pressure springs (55).
- II.16. Dismount O-rings (52, 53) and friction bearing (54).
- II.17. Unscrew the lift cylinder (41) from the actuator cylinder (58) with a face spanner.
- II.18. Dismount the O-rings (42, 43, 44) and friction bearing (45) from the lift cylinder (41).

Assembling the actuator

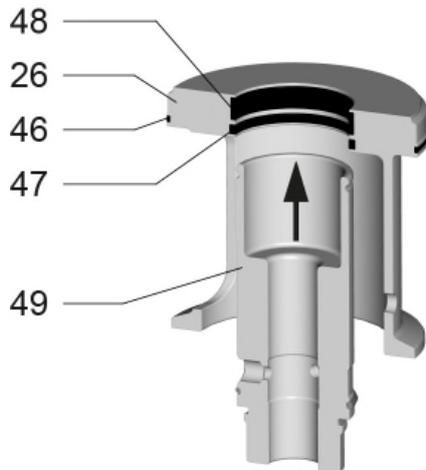
- II.19. Prior to assembly, clean and grease the shafts and sliding surfaces.

Sealing materials	Lubricant type
NBR	RENOLIT SI 410 M (R) apply a thin layer at the perimeter with a brush
EPDM	PARALIQ GTE 703 (P) apply a thin layer at the perimeter with a brush
Thread	IBF PW 119 (I) apply a thin layer at the perimeter with a brush



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

- II.20. Mount the O-rings (42, 43, 44) and friction bearing (45) in the lift cylinder (41).
- II.21. Mount the lift cylinder (41) on the actuator cylinder (58) with a face spanner.
- II.22. Mount O-rings (54, 55) and friction bearing (54) in the spindle (59) of the actuator cylinder (58).
- II.23. Insert the pressure spring (57) in the actuator cylinder (58).



- II.24. Mount O-rings (46, 47) and guide belt (48) in the closing head support (26).
- II.25. Mount the intermediate piece (49) in the closing head support (26).
- II.26. Assemble O-rings (51, 52) in the lift piston (50).
- II.27. Slide lift piston (50) onto the intermediate piece (49).
- II.28. Mount the circlip (53) on the intermediate piece (49).
- II.29. Place closing head support (26) onto the actuator cylinder (58).
- II.30. Position the actuator cylinder (58) centrally in the lifting device – use the flat seal (105) as a support.
- II.31. Lower the plunger with slow lifting movements onto the piston rod of the actuator cylinder (58). Move the piston rod up to the stop with force F in the direction of the force.
- II.32. Mount closing head support (26) with 2 assembly shafts.



Do not reach into the actuator cylinder (58)

⇒ **Accident risk**

Risk of limbs being crushed or cut off.

- II.33. Ensure tight fit of the closing head support (26) with the assembly shaft and hammer – O-ring (46) is no longer visible.
- II.34. Release spring force.
- II.35. Assemble O-rings (39, 40) in the lift piston (38).
- II.36. Insert lift piston (38) into the lift cylinder (41).
- II.37. Assemble lid (37) with hexagonal screws (35) and mount spring washer (36) on to the lift cylinder (41).
- II.38. Assemble O-rings (32, 33) and guide belt (34) in the retaining screw (31).
- II.39. Insert the pressure spring (31) in the lid (37).
- II.40. Mount contact button (4).

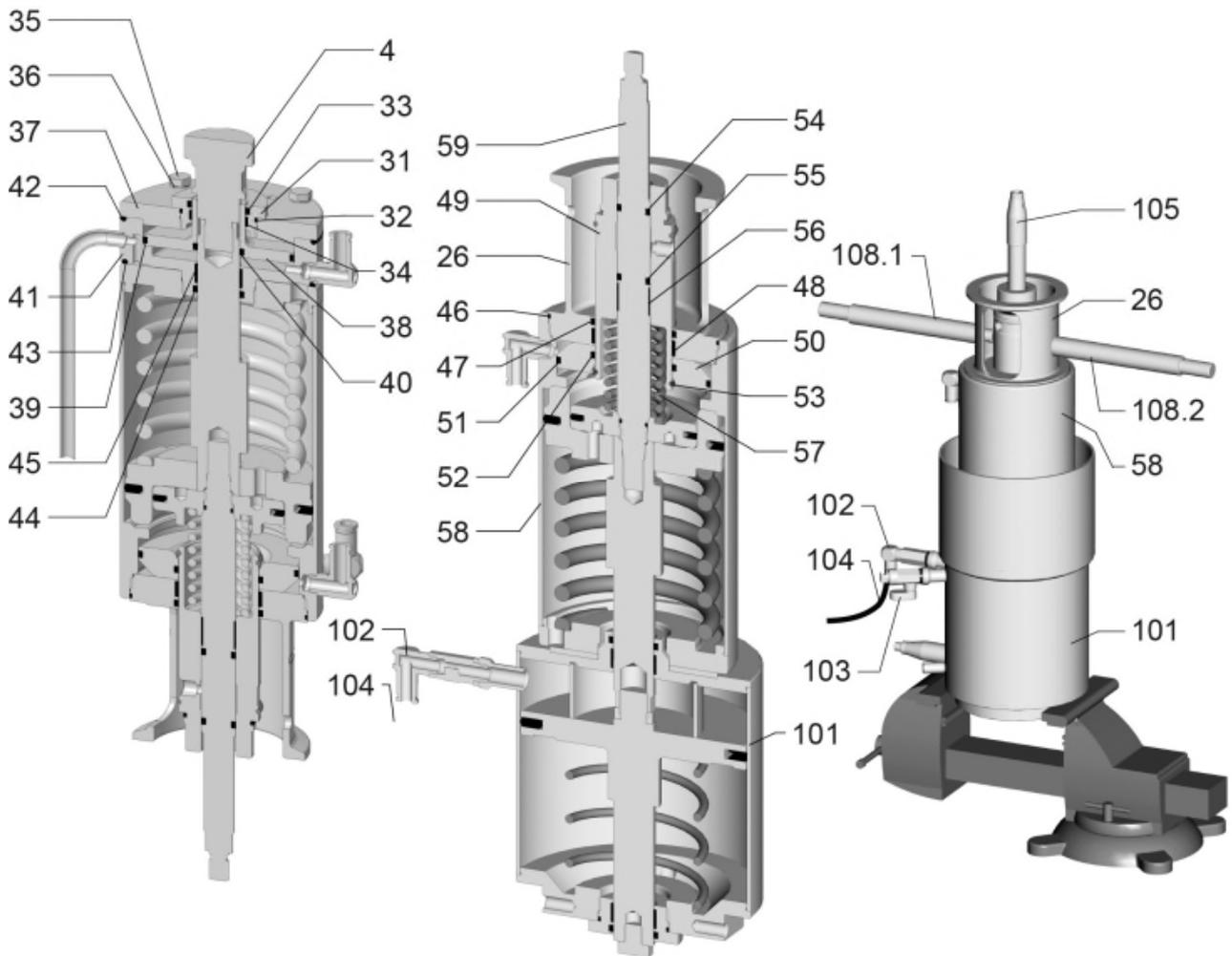
6.7.2. Seal replacement with mounting cylinder




When replacing the seals with a mounting cylinder, ensure that

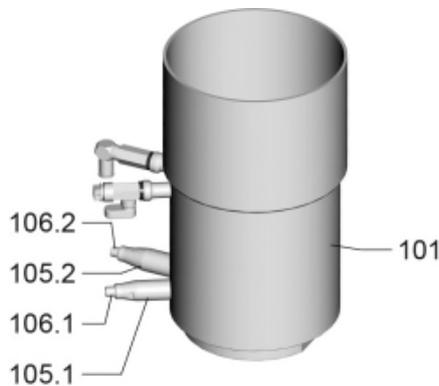
- ⇒ **the actuator cylinder (58) is firmly positioned in the bench stand or is firmly clamped in the bench vise.**
- ⇒ **it cannot slip when carrying out replacement work.**
- ⇒ **nobody can reach into the actuator cylinder (58) when carrying out replacement work.**
- ⇒ **the thread (GV) of the mounting cylinder is greased with a brush before assembly (grease type IFB PW 119).**





Disassembling the actuator

- III.1. Disassembly contact button (4).
- III.2. Disassemble retaining screw (31) and remove O-rings (32, 33) and guide belt (34).
- III.3. Unscrew the hexagonal screws (35) and remove the spring washer (36) and lid (37).
- III.4. Remove lift piston (38) and dismount O-rings (39, 40).
- III.5. Unscrew the lift cylinder (41) from the actuator cylinder (58) with a face spanner.
- III.6. Dismount the O-rings (42, 43, 44) and friction bearing (45) from the lift cylinder (41).



	Assembly sleeve		Set screw	
	Pos. 105.1	Pos. 105.2	Pos. 106.1	Pos. 106.2
DN 025 / OD 1.00” ISO 025	X		X	
DN 040 / OD 1.50” ISO 040	X		X	
DN 050 / OD 2.00” ISO 050	X		X	
DN 065 / OD 2.50” ISO 065		X		X
DN 080 / OD 3.00” ISO 080		X		X
DN 100 / OD 4.00” ISO 100		X		X

- III.7. Position the assembly cylinder (101) in the bench vise or bench stand.
- III.8. Disassemble the assembly sleeve (105.1 or 106.1) by loosening the set screw (105.2 or 106.2) from the assembly cylinder (101).
- III.9. Assemble assembly sleeve (105.1 or 106.1) and set screw (105.2 or 106.2) on the spindle (59) of the actuator cylinder (58).
- III.10. Assemble the actuator cylinder (58) on the assembly cylinder (101).



Screw the spindle (59) of the actuator cylinder (58) to the assembly cylinder (101) up to the stop.

- III.11. Connect auxiliary assembly air (104) to the air connection (102).
- III.12. Turn ball valve (103) to Closed position.
- III.13. Apply auxiliary assembly air to the assembly cylinder (101).
- III.14. Loosen the closing head support (26) with the assembly shaft and hammer.
- III.15. Dismount closing head support (26) with 2 assembly shafts.



Do not reach into the actuator cylinder (58)
 ⇒ **Accident risk**
Risk of limbs being crushed or cut off.

- III.16. Shut down auxiliary assembly air.
- III.17. Turn ball valve (103) to Open position.



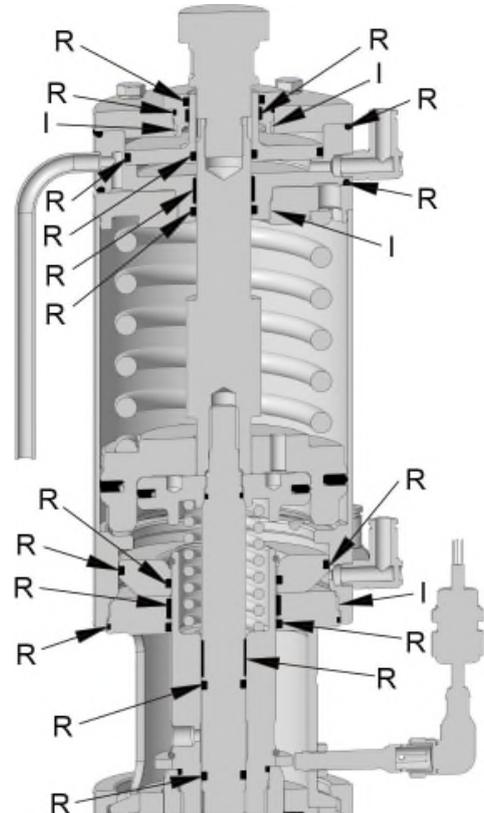
Do not reach into the actuator cylinder (58)
 ⇒ **Accident risk**
Risk of limbs being crushed or cut off.

- III.18. Disassemble circlip (53) with mounting pliers.
- III.19. Detach the lift piston (50) from the intermediate piece (49) and remove the O-rings (51, 52).
- III.20. Remove the intermediate piece (49) from the closing head support (26).
- III.21. Remove the O-rings (46, 47) and guide belt (48) from the closing head support (26).
- III.22. Remove pressure springs (57).
- III.23. Dismount O-rings (54, 55) and friction bearing (56).

Assembling the actuator

III.24. Prior to assembly, clean and grease the shafts and sliding surfaces.

Sealing materials	Lubricant type
NBR	RENOLIT SI 410 M (R) apply a thin layer at the perimeter with a brush
EPDM	PARALIQ GTE 703 (P) apply a thin layer at the perimeter with a brush
Thread	IBF PW 119 (I) apply a thin layer at the perimeter with a brush

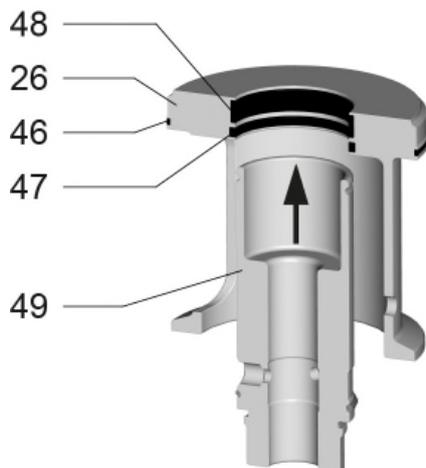


Caution

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

III.25. Mount O-rings (54, 55) and friction bearing (56) in the spindle (59) of the actuator cylinder (58).

III.26. Insert the pressure spring (57) in the actuator cylinder (58).



- III.27. Mount O-rings (46, 47) and guide belt (48) in the closing head support (26).
- III.28. Mount the intermediate piece (49) in the closing head support (26).
- III.29. Assemble O-rings (51, 52) in the lift piston (50).
- III.30. Slide lift piston (50) onto the intermediate piece (49).
- III.31. Mount the circlip (53) on the intermediate piece (49).
- III.32. Turn ball valve (103) to Closed position.
- III.33. Apply auxiliary assembly air to the assembly cylinder (101).



Do not reach into the actuator cylinder (58)

⇒ **Accident risk**

Risk of limbs being crushed or cut off.

- III.34. Mount closing head support (26) with 2 assembly shafts.
- III.35. Ensure tight fit of the closing head support (26) with the assembly shaft and hammer – O-ring (46) is no longer visible.
- III.36. Shut down auxiliary assembly air.
- III.37. Turn ball valve (103) to Open position.



Do not reach into the actuator cylinder (58)

⇒ **Accident risk**

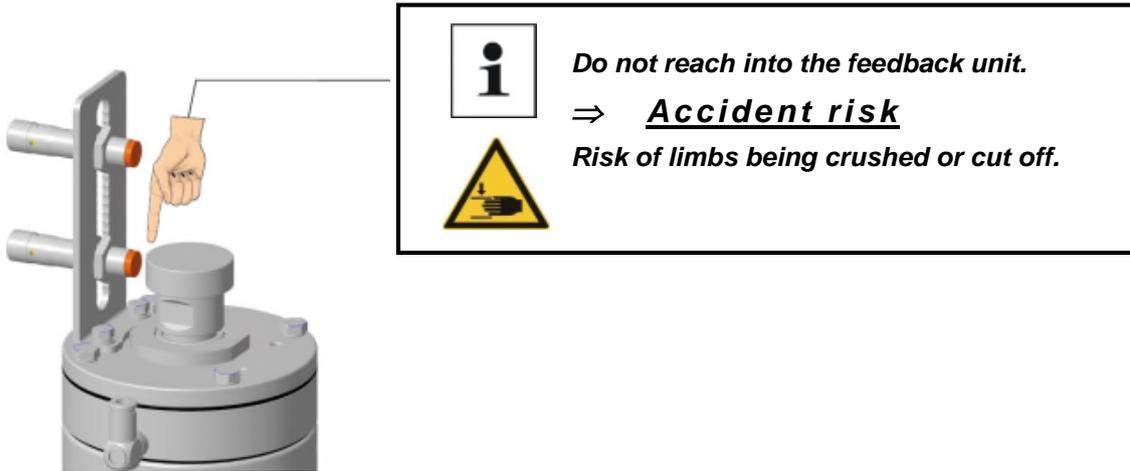
Risk of limbs being crushed or cut off.

- III.38. Disassemble auxiliary assembly air (104) from air connection (102).
- III.39. Unscrew the spindle (59) of the actuator cylinder (58) from the assembly cylinder (101) and remove the actuator cylinder (58).
- III.40. Disassemble assembly sleeve (105.1 or 106.1) and set screw (105.2 or 106.2).
- III.41. Mount O-ring (44) and friction bearing (45) in the lift cylinder (43).
- III.42. Mount the lift cylinder (43) on the actuator cylinder (58) with a face spanner.
- III.43. Assemble O-rings (41, 42) in the lift piston (40).
- III.44. Insert lift piston (40) into the lift cylinder (43).
- III.45. Assemble lid (37) with hexagonal screws (35) and mount spring washer (36) on to the lift cylinder (41).
- III.46. Assemble O-rings (32, 33) and guide belt (34) in the retaining screw (31).
- III.47. Insert the pressure spring (31) in the lid (37).
- III.48. Mount contact button (4).

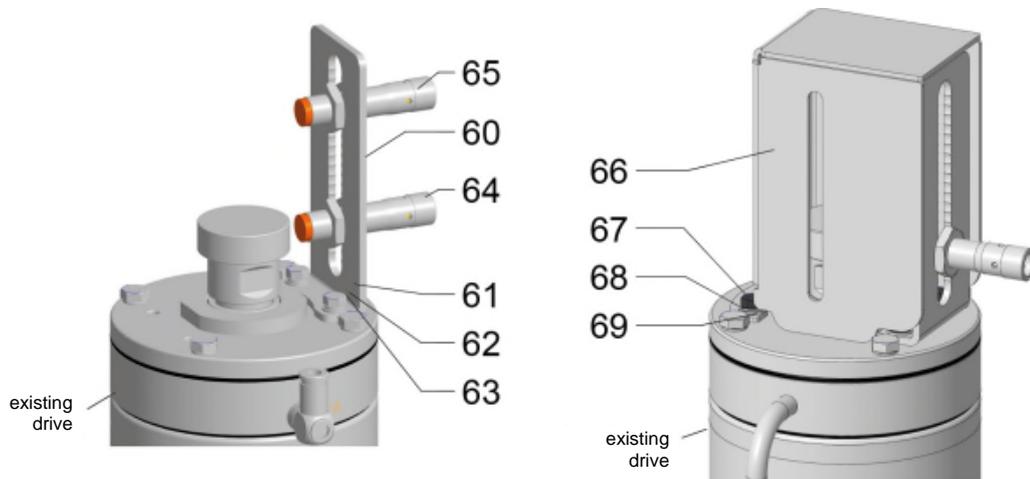
6.8. Assembling the single or double feedback on the double seat valve

6.8.1. General tips

- ⇒ Prior to assembly/disassembly of the feedback, ensure that
 - the work is carried out in a depressurized state
 - prior to the assembly, connection and disassembly work, the operator of the system in which the double seat valve has been installed, must ensure that the double seat valve cannot be automatically switched on involuntarily by third parties during the entire period of work.



6.8.2. Retrofitting of the single or double feedback unit

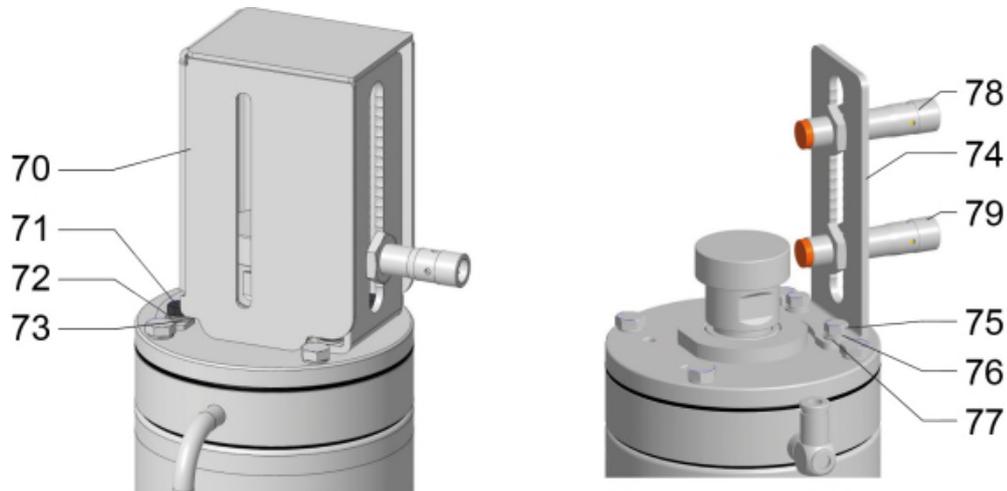


- IV.1. Disassemble pneumatic supply line.
- IV.2. Assemble the sensor holder (60) with hexagonal screws (61), lock washers (62) and washers (63) on the double seat valve.
- IV.3. Assemble the feedback unit (64 and/or 65) in the sensor holder (60).

After assembly, set the switching distance of the feedback unit(s) (64, 65).

- IV.4. Assemble the finger protector (66) with hexagonal screws (67), lock washers (68) and washers (69) on the double seat valve.
- IV.5. Connect pneumatic supply line.

6.8.3. Assembly-disassembly of the single or double feedback unit



Disassembling the feedback unit

- V.1. Disassemble pneumatic supply line.
- V.2. Disassemble the finger protector (70) by loosening the hexagonal screws (71) and removing the lock washers (72) and washers (73) from the double seat valve.
- V.3. Disassemble the feedback unit (78 and/or 79) out of the sensor holder (74).
- V.4. Disassemble the sensor holder (74) by loosening the hexagonal screws (75) and removing the lock washers (76) and washers (77) from the double seat valve.

Assembling the feedback unit

- V.5. Assemble the sensor holder (74) with hexagonal screws (75), lock washers (76) and washers (77) on the double seat valve.
- V.6. Assemble the feedback unit (78 and/or 79) in the sensor holder (74).

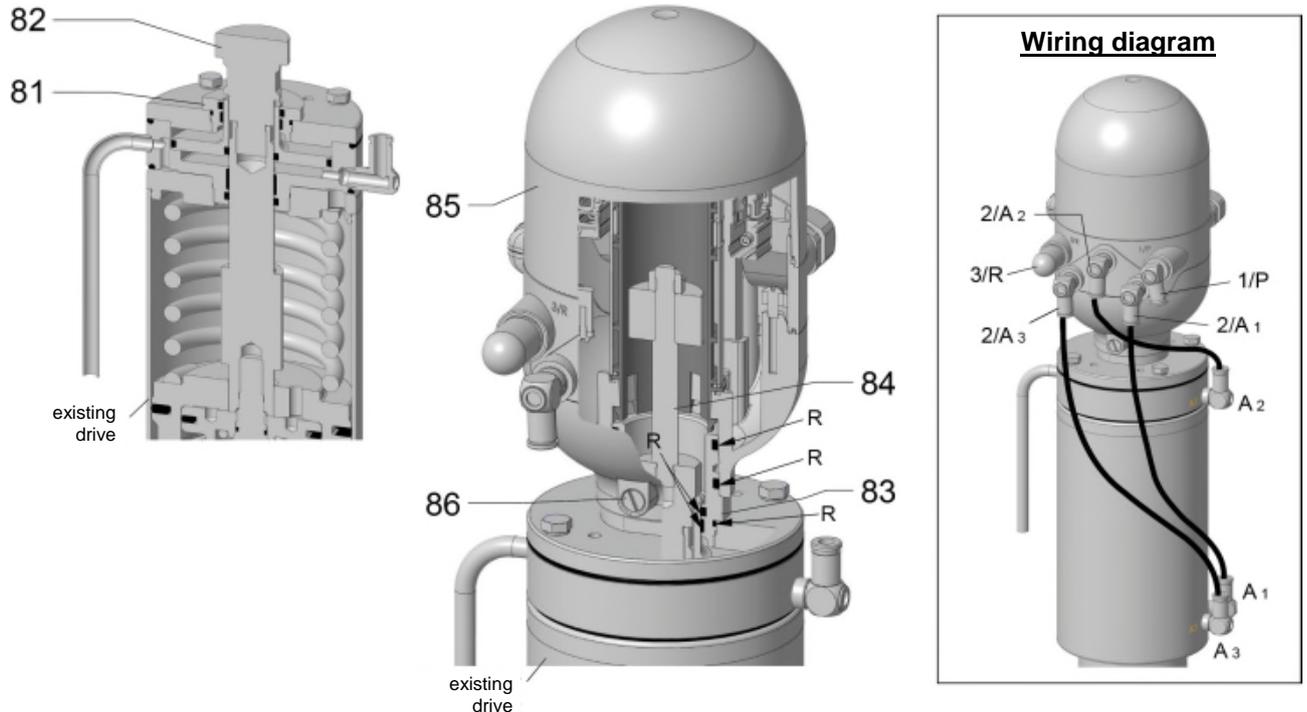


After assembly, set the switching distance of the feedback unit(s) (78, 79).

- V.7. Assemble the finger protector (70) with hexagonal screws (71), lock washers (72) and washers (73) on the double seat valve.
- V.8. Connect pneumatic supply line.

6.9. Assembly of the IntelliTop® 2.0 process control head on the double seat valve

6.9.1. Subsequent assembly of the IntelliTop® 2.0 process control head



Dismounting the control head

- VI.1. Disconnect the air connection (82) and contact button (82) - only required when retrofitting the process control head.
- VI.2. Disassemble pneumatic supply line
- VI.3. Disconnect the cylinder screw (86).
- VI.4. Detach process control head (85) from the adapter (83).
- VI.5. Unscrew contact button (84).
- VI.6. Disconnect the adapter (83).

Mounting control head

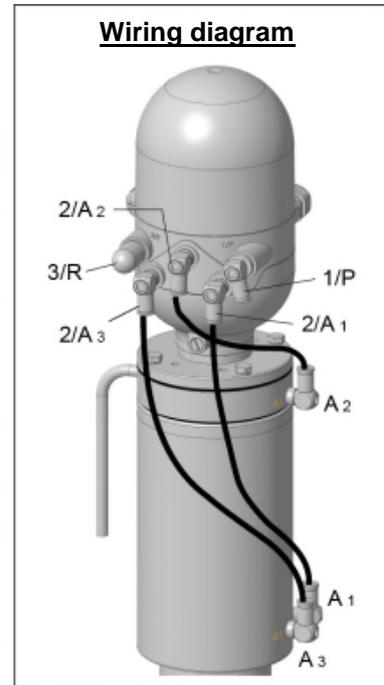
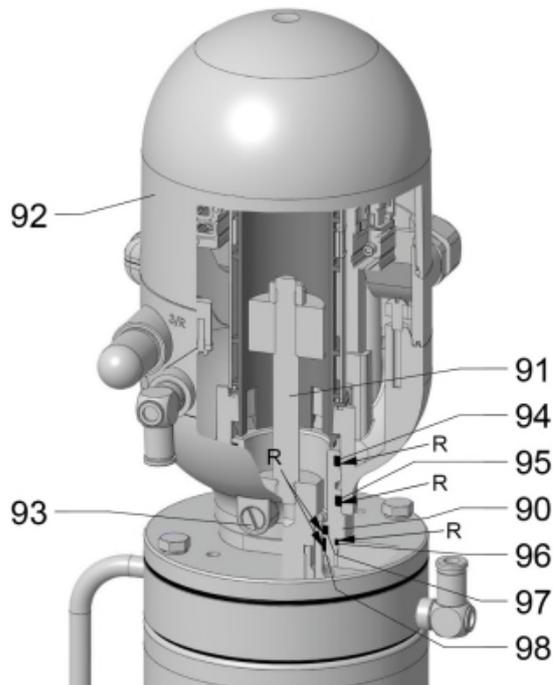
- VI.7. Prior to assembly, clean and grease the shafts and sliding surfaces. Lubricate sealing elements prior to installation.
- VI.8. Mount the adapter (83) on the double seat valve. Prior to assembly, clean and lubricate the shafts and sliding surfaces. Lubricate sealing elements prior to installation.

Grease diagram

R = RENOLIT SI 410 M - apply a thin layer at the perimeter with a brush

- VI.9. Screw contact button (84) on to piston rod of the double seat valve.
- VI.10. Assemble the process control head (85) on the adapter (83).
- VI.11. Screw in cylinder screw (86).
- VI.12. Connect pneumatic supply lines according to connection diagram.

6.9.2. Assembly - Disassembly of the process control head IntelliTop® 2.0



Dismounting the control head

- VII.1. Disassemble pneumatic supply line
- VII.2. Unscrew the cylinder screws (93) until the entire screw head is visible.
- VII.3. Detach process control head (92) from the adapter (90).
- VII.4. Unscrew contact button (91).
- VII.5. Disconnect the adapter (90).
- VII.6. Dismount O-rings (94, 95, 96, 97) and friction bearing (98).

Mounting control head

- VII.7. Prior to assembly, clean and lubricate the shafts and sliding surfaces. Lubricate sealing elements prior to installation.

Grease diagram

R = RENOLIT SI 410 M - apply a thin layer at the perimeter with a brush

- VII.8. Dismount O-rings (94, 95, 96, 97) and friction bearing (98).
- VII.9. Mount the adapter (90) on the double seat valve. Screw contact button (91) on to piston rod of the double seat valve.
- VII.10. Assemble the process control head (92) on the adapter (90).
- VII.11. Assemble cylinder screw (93) – tightening torque to max. 3.2 Nm
- VII.12. Connect pneumatic supply lines according to connection diagram.

7. Malfunctions – Troubleshooting



Caution

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



Danger

- ⇒ **Never touch the valve or pipelines when hot media are being processed or if the sterilization process is running.**
- ⇒ **Always adhere exactly to the operating parameters (see chapter 4 “Technical data”).**

Malfunctions	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 the air hoses for clean passageway and tightness
	⇒ Fault in the electrical system	⇒ Check activation / process control head and electrical wiring
	⇒ Pilot valve is faulty	⇒ Replace pilot valve
Air escapes from the drive	⇒ Seals faulty in drive	⇒ Replace faulty seals. ⇒ Replace actuator
Valve does not close	⇒ Dirt / foreign objects in the seat area	⇒ Clean the valve body and sealing area of the valve disk/closing sleeve
Valve closes too slowly	⇒ Seals in the actuator are dry (losses of friction)	⇒ Lubricate seals - see lubrication diagram
Leakage from leakage chamber.	⇒ Valve disk or closing sleeve seal faulty	⇒ Replace the seals
Leakage on the support	⇒ Seals faulty	⇒ Replace the seals
Leakage on the housing lid	⇒ Seals faulty	⇒ Replace the seals
Valve jerks when it is being closed	⇒ Seals in the actuator are dry (losses of friction)	⇒ Lubricate seals - see lubrication diagram
		⇒ Replace faulty seals.

Operating Instructions

Part 2: Assembly instructions double seat valve

Type D600 Complete

DN 025 – 100, OD 1.00" – 4.00", ISO 025 – 100

8. Service address

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