

## APV DELTA SWcip4

DOUBLE SEAL VALVE

FORM NO.: H316474 REVISION: UK-2

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT.



Scan for SWcip4 Valve  
Maintenance Video





We,

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Crawley, RH10 9PY

declare under our sole responsibility that the

**APV double seal and double seat valves** of the series  
SD4, SDT4, SDU4, SDMS4, SDMSU4, SDTMS4, SWcip4, DSV, DA4, DA4 DPF, D4 SL, DU4  
SL, DT4 SL, DP4 SL, D4, DA3, DA3SLD, DE3, DEU3, DET3, DKR2, DKRT2, DKRH2

**APV butterfly valves** of the series SV1, SVS1F, SV2, SVS2F, SVL, SVSL, SVE, SVSE

**APV ball valves** of the series BLV1

**APV single seat, diaphragm and spring loaded valves** of the series  
S2, SW4, SWhp4, SW4DPF, SWmini4, SWT4, SWS4, MF4, MS4, MSP4, AP/T1, CPV, RG4,  
RG4DPF, RGMS4, RGE4, RGE4DPF, RGEMS4, PR2, PRD2, SI2, UF/R3, UF/R4, VRA/H

and the valve manifolds installed thereof

**meet the requirements of the Machinery Directive 2006/42/EC**  
& EN ISO 12100-2010, DIN EN ISO 14159-2008-07, DIN EN 1672-2-2009-07.

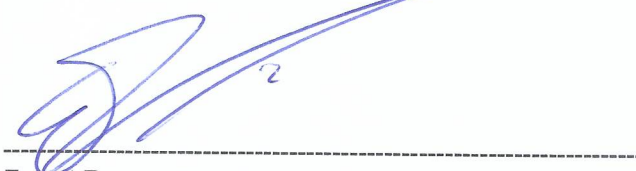
Holzwickede, November 2022



Dr.-Ing. Behdad Ariatabar, Design Center Lead - Valves

**meet the requirements of the Supply of Machinery (Safety) Regulations 2008 No. 1597**  
& BS harmonized standards.

Crawley, November 2022



Ewout Roozendaal, Director Global Pricing



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<b>Spare parts list DN and Inch design</b>	<b>RN 01.054.820</b>
<b>SW4 actuator</b>	<b>RN 01.054.86</b>
<b>SD4 leakage valves</b>	<b>RN 01.054.67</b>



## 1. General Terms

This instruction manual must be read carefully and observed by the responsible operating and maintenance personnel.

We point out that we will not accept any liability for damage or malfunctions resulting from the non-compliance with this instruction manual.

Descriptions and data given herein are subject to technical changes.

## 2. Safety Instructions

The valve must only be assembled, operated, disassembled, serviced and repaired by persons who have been trained accordingly.  
Please contact your local SPX FLOW representative if necessary.



This technical safety symbol draws your attention to important directions for operating safety. You will find it wherever the activities described are bearing health hazards or risks for persons or material assets.



**Danger!**  
Valve design NC: **Before releasing the clamp or the housing screws, the valve insert must be relieved by controlling the actuator.**



**Danger!**  
Never touch the open valve or the yoke!  
Risk of injury by sudden valve operation!  
In dismantled state there is the risk of bruising by sudden valve operation!

- During valve operation, operating leakage drains off via the leakage valves to the bottom.
- Schedule regular maintenance including replacement of all seals and bearing bushes in order to prevent leakages and emersion of liquids.
- Depressurize the line system before any maintenance work. Drain the valve if possible.
- Separate electric and pneumatic connections.
- Observe Service Instructions to ensure safe maintenance of the valve.



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## 2. Safety Instructions

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**Danger!**

Welded actuators are preloaded by spring force.

**Opening of the actuators is strictly forbidden.  
Danger to life!**

Actuators which are no longer used or defective must be disposed in professional manner.

Defective actuators must be returned to your SPX FLOW representative for their professional disposal and free of charge for you.

Please address to your local SPX FLOW representative.

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## 3. Intended Use

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The intended use as field of application of the SWcip4 double seal valve is the separation of CIP liquids at cross sections in the pipeline system.

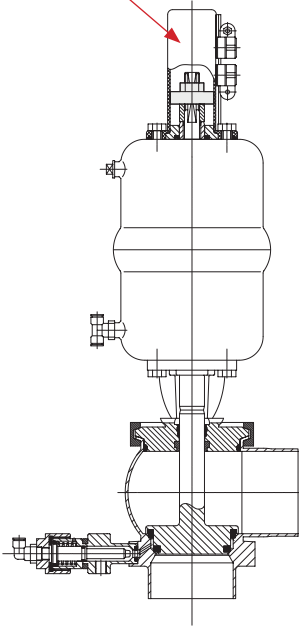
Arbitrary, constructive changes at the valve will influence safety as well as the intended functionality of the valve and are **not** permissible.



## 4. Mode of Operation

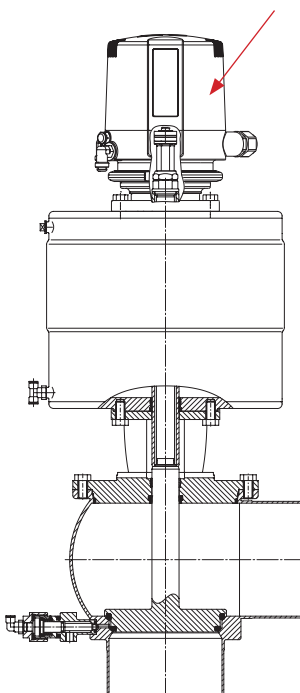
SWcip4  
DN25-100, 1"-4"

valve position indication



SWcip4  
DN125-150

CU41 control unit



### 4.1. General terms

The double seal valve DELTA SWcip4 has been developed for applications in the brewing and beverage, dairy and food industries as well as for chemical and pharmaceutical use.

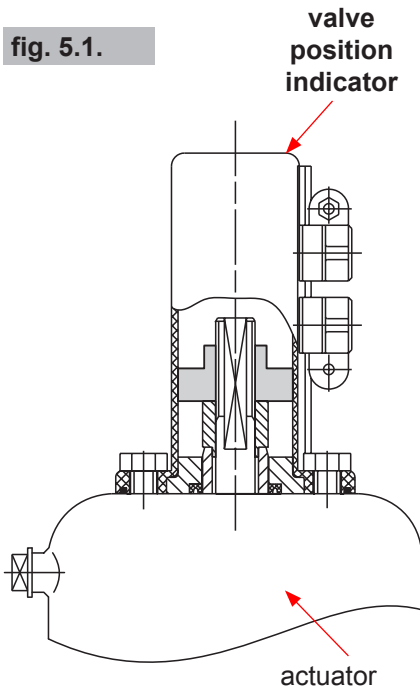
The valve is an universally applicable construction which stands out for its high mechanical reliability and its absolute ease of handling.

The SWcip4 valve is used for the safe separation of CIP liquids at cross-over points of piping systems. Separation is provided by two seat seals. A leakage chamber which is forcibly closed by a leakage valve or open to the atmosphere, is located between the seals.

- Leakage at the seat seals is indicated and discharged to the atmosphere by the leakage valve.
- Operation by pneumatic actuator with air connection, reset by spring force.
- The actuator is generally mounted in normally closed (NC) design.
- The inner parts of the actuator need not be serviced.
- To avoid pressure hammers, the valve shall be closed against the flow direction of the liquid.
- The standard valve version is equipped with a DELTA CU41 control unit for the pneumatic control of the valve.
- The SWcip4 valve can optionally be equipped with a proximity switch support or a control unit.
- The yellow luminous diodes in the control unit indicate the position of the valve shaft.
- Observe Service Instructions to ensure safe maintenance of the valve.
- During opening and closing of the SWcip4 valve, operating leakage drains off from the leakage valve to the bottom. A pipe or other means can be connected to safely drain the operating leakage.

## 5. Auxiliary Equipment

fig. 5.1.



### 5.1. Valve position indication

Proximity switch holders (PSH) for the valve position indication can be mounted direct on the actuator (fig. 5.1.). Proximity switches to signal the limit position of the valve seat can be installed at the proximity switch holder.

We recommend to use our APV standard types:  
 Operating distance: 5 mm / Diameter: 11 mm.  
 Operating voltage: 10 - 30 VDC  
 Outlet: operating voltage pnp positive switching  
 Connection: moulded cable 5 m length  
 Protective type: IP 67  
 Reference number: 08 - 60 - 011/93; H16223

Using a valve position indicator other than APV, we cannot accept any liability for a faultless function.

### 5.2. Control unit

For the SWcip4 valve different control units can be used. For the start-up as well as assembly and disassembly of the different designs, please use the respective manual.

CU4 control unit



<b>Direct Connect</b> reference number, ID-No.	<b>CU41 - S - Direct Connect</b> 08 - 45 - 100/93; H320460
<b>AS-interface extended</b> reference number, ID-No.	<b>CU41 - S - AS-i extended</b> 08 - 45 - 110/93; H320467
<b>Device Net</b> reference number, ID-No.	<b>CU31 - Device Net</b> 16 - 31 - 240/93; H209422
<b>Profibus</b> reference number, ID-No.	<b>CU31 - Profibus</b> 08 - 45 - 001/93; H315495

- An adapter is required to install the control unit on the SWcip4 valve.

<b>Designation</b> reference number, ID-No.	<b>CU4 S-adapter complete</b> 08-48-600/93; H320474
<b>Designation</b> reference number, ID-No.	<b>CU4 Smax. - adapter</b> DN125 - 150 08 - 46 - 610/93; H321988
<b>Designation</b> reference number, ID-No.	<b>CU3 adapter SD4 / SDM4</b> 08-48-415/93; H209430

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## 5. Auxiliary Equipment

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### 5.3. Connections:

Beside the housings with weld ends, the following connections are alternatively available:

- threaded port according to DIN 11851
- threaded port IDF / ISS according to ISO 2853
- threaded port RJT according to BS 4825-5
- threaded port SMS
- threaded port according to DS 722
- flange connection FGN1 DIN
- flange connection FGN1 Inch
- clamp connection according to DIN 32676
- clamp connection according to ISO 2852

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## 6. Cleaning

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For the cleaning of SWcip4 valves, distinction is made between two areas.

### 6.1. The flow chambers

The passages of the valve are cleaned by the cleaning liquid during cleaning of the connected pipelines.

### 6.2. The leakage chamber

Cleaning of the leakage chamber does not exist.

Depending on the degree and substances of soiling, cleaning liquids, times and processes must be scheduled for the individual application.

## 7. Installation

### 7.1. General terms

Installation must be undertaken in such a way that liquids can drain off the valve housing and should preferably be carried out in vertical position.

The valve housing can be welded direct into the pipeline system. Separate connections at the lateral ports of the valve housing should be provided.

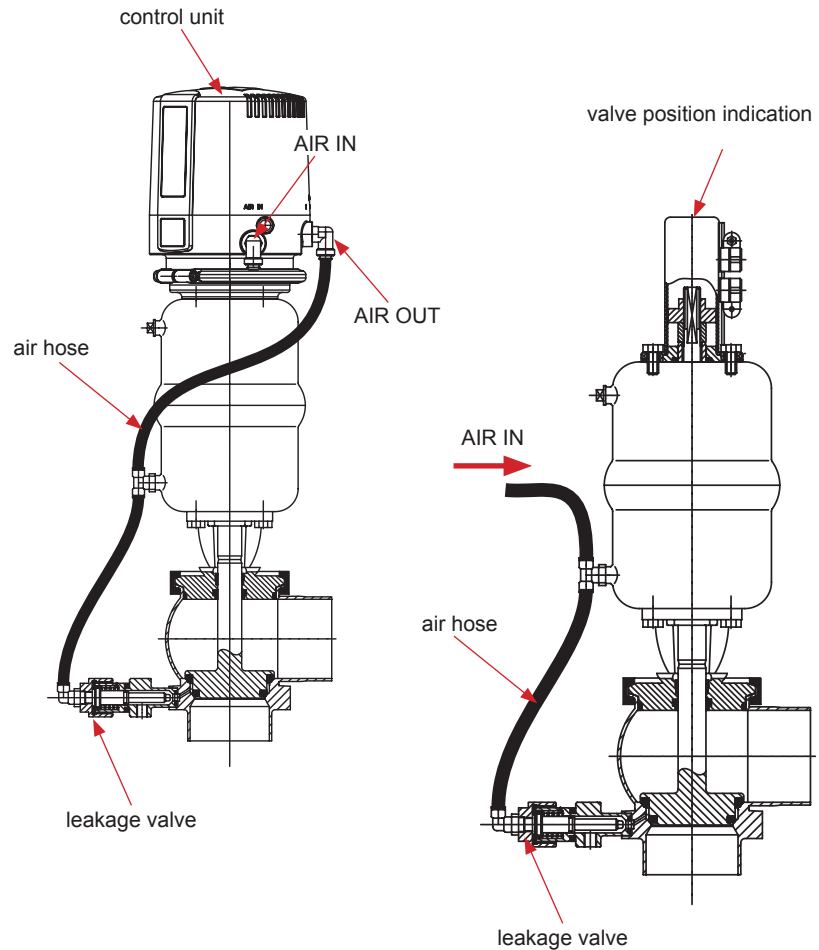
**Attention!** Observe Welding Instructions 7.3.

### 7.2. Hosing

Designation of air connections at the CU41 control unit

**AIR IN :** air supply with integrated particle filter

**AIR OUT:**     **1**     pneumatic air connection for main actuator  
                       **2**  
                       **3**     -----



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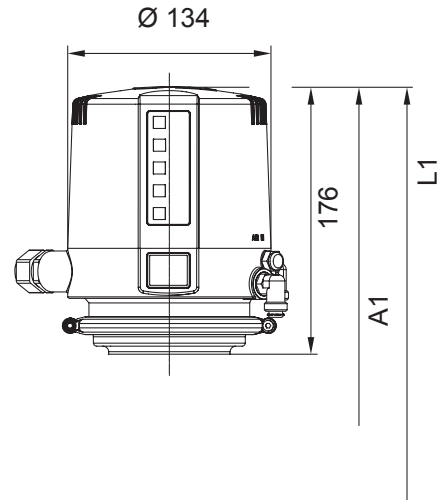
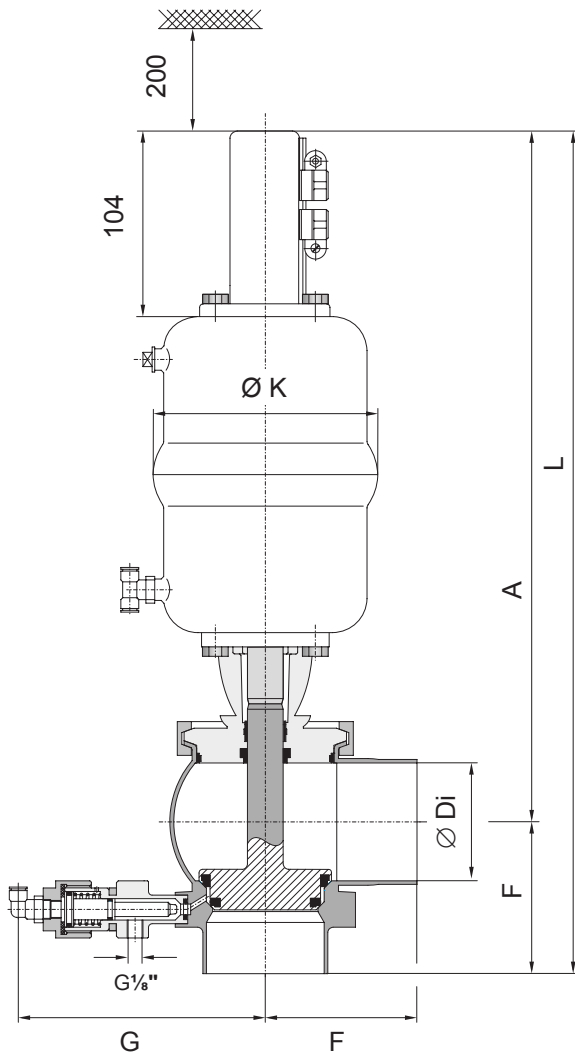
## 7. Installation

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### 7.3. Welding instructions

- Before welding of the valves, the valve insert must be dismantled. The leakage valve must also be dismantled. Careful handling to avoid damage to the parts is necessary.
- Welding should only be carried out by certified welders (DIN EN ISO 9606-1). (seam quality DIN EN ISO 5817)
- The welding of the valve housings must be undertaken in such a way that the valve body is not deformed.
- The preparation of the weld seam up to 3 mm thickness must be carried out as a square butt joint without air. (Consider shrinkage!).
- TIG orbital welding is best!
- After welding of the valve housings or of the mating flanges and after work at the pipelines, the corresponding parts of the installation or pipelines must be cleaned from welding residues and soiling. If these cleaning instructions are not observed, welding residues and dirt particles can settle in the valve and cause damage.
- Any damage resulting from the non-observance of these welding instructions is not subject to our guarantee.
- Welding directives for aseptic applications shall be drawn from the AWS/ANSI Directives and EHEDG Guidelines.

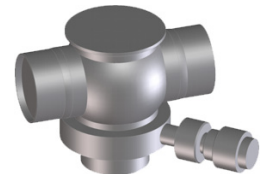
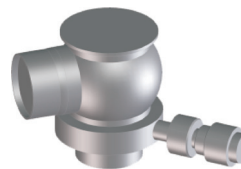
## 8. Dimensions / Weights



### housing variants

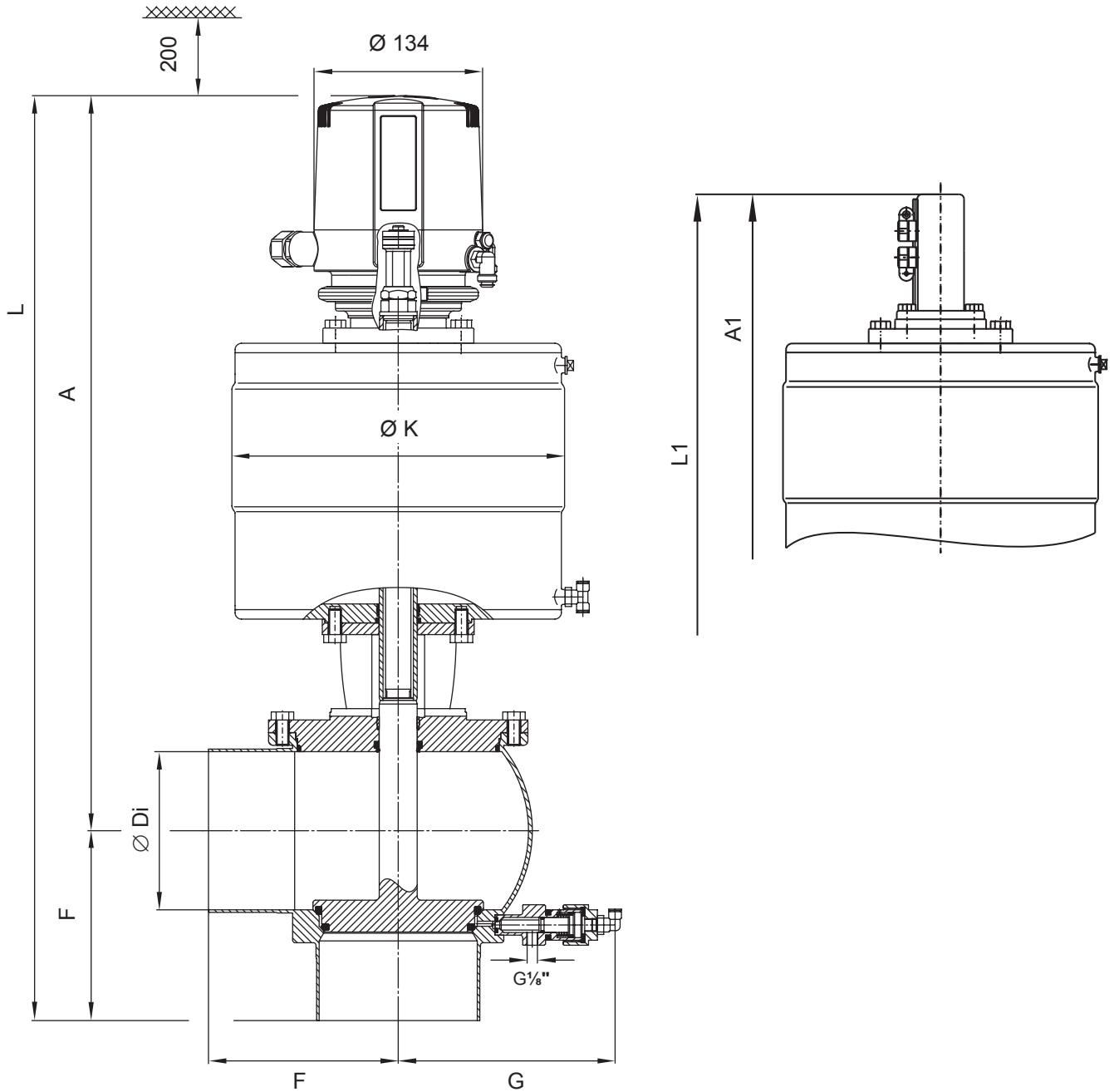
SWcip 41

SWcip 42



Dimensions in mm									Weight in kg
DN	A	A1	Ø Di	F	G	Ø K	L	L1	
25	338	398	26	50	116	86	388	448	5,2
40	342	402	38	67	122	86	409	469	5,8
50	379	439	50	72	128	126	451	511	8,0
65	387	447	66	85	136	126	472	532	9,7
80	440	500	81	98	144	189	538	598	16,0
100	450	510	100	111	153	189	561	621	17,8
Inch									
1"	336	396	22,6	50	116	86	386	446	5,2
1,5"	340	400	34,9	67	122	86	407	467	5,8
2"	378	438	47,6	72	128	126	450	510	8,0
2,5"	384	444	60,3	85	133	126	469	529	9,7
3"	435	495	72,9	90	140	189	525	585	16,0
4"	448	508	97,6	111	153	189	559	619	17,8

## 8. Dimensions / Weights



Dimensions in mm									Weight in kg
DN	A	A1	Ø Di	F	G	Ø K	L	L1	
125	584	512	125	150	172	263	734	662	47,4
150	596,5	524,5	150	150	192	263	746,5	674,5	52,5

## 9. Technical Data

### 9.1. General data

- Product-wetted parts: 1.4404 (DIN EN 10088)
- Other parts: 1.4301 (DIN EN 10088)
  
- Seals: EPDM
  
- max. line pressure: 10 bar
- operating pressure: depending on the size of the actuator see chapter 9.7.
  
- max. operating temperature: 135°C EPDM
- **short-term load:** **140°C EPDM**
  
- CIP connection of leakage valves: G1/8"
  
- air connection (for hose): 6 x 1mm
- max. control air pressure: 8 bar
- min. control air pressure: 6 bar

Use dry and clean air, only!

### 9.2. Compressed air quality

- compressed air quality: quality class according to ISO 8573-1
- content of solid particles: quality class 3,  
max. size of solid particles per m<sup>3</sup>  
10000 of 0,5 µm < d ≤ 1,0 µm  
500 of 1,0 µm < d ≤ 5,0 µm
- content of water: quality class 4,  
max. dew point temperature +3 °C  
For installations at lower temperatures or at higher altitudes, additional measures must be considered to reduce the pressure dew point accordingly.
- content of oil: quality class 1,  
max. 0,01 mg/m<sup>3</sup>

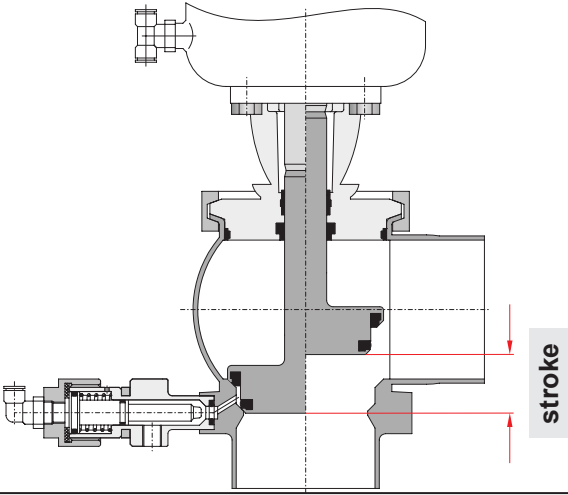
The oil applied must be compatible with Polyurethane elastomer materials.



## 9. Technical Data

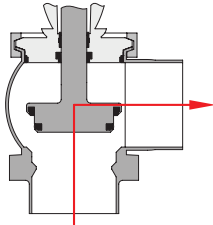
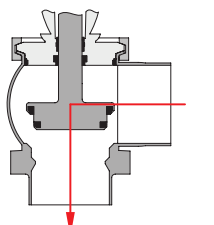
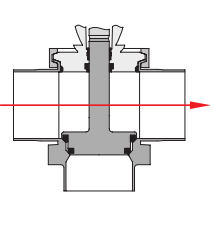
9.3. Closing times SWcip4			
		closing times in seconds control air pressure 6 bar	
		hose length	
DN	Inch	1m	10m
25	1"	1 sec.	2 sec.
40	1,5"	1 sec.	2 sec.
50	2"	3 sec.	2 sec.
65	2,5"	3 sec.	4 sec.
80	3"	5 sec.	6 sec.
100	4"	5 sec.	6 sec.
125	----	14 sec.	18 sec.
150	----	14 sec.	18 sec.

Times mentioned are only approximate values from sample measurements.  
 The opening and closing times of the valves with control unit can be fixed by adjusting the throttle screw at the solenoid valve.

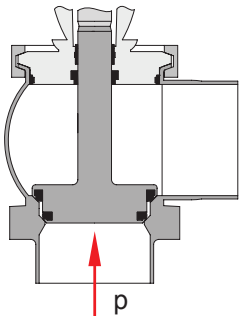
9.4. Valve stroke SWcip4		
		
DN	Inch	Stroke in mm
25	1"	12 mm
40	1,5"	25 mm
50	2"	28 mm
65	2,5"	28 mm
80	3"	28 mm
100	4"	28 mm
125	----	45 mm
150	----	45 mm

## 9. Technical Data

9.5. Pneumatic air consumption at 6 bar control pressure	
Actuator	per stroke NL
Ø 74mm	1,0
Ø 110mm	2,1
Ø 165mm	4,5
Ø 255mm	16,0

9.6. DELTA SWcip4 Kvs values in m <sup>3</sup> /h			
	SWcip 41, 42	SWcip 41, 42	SWcip 42
			
<b>DN</b>			
25	16	13	28
40	35	31	60
50	63	57	120
65	131	112	215
80	159	151	350
100	207	209	540
125	289	289	820
150	406	406	1200
<b>Inch</b>			
1"	15	13	26
1,5"	35	31	57
2"	62	53	118
2,5"	112	102	185
3"	142	127	300
4"	196	205	530

## 9. Technical Data

9.7. DELTA SWcip4 calculatory max. product pressures in (bar)					
valve normally closed (NC) or in case of compressed air failure					
					
		Ø actuator in mm			
DN	Inch	Ø 74	Ø 110	Ø 165	Ø 255
25	1"	10,0			
40	1,5"	6,0			
50	2"		9,0		
	2,5"		6,0		
65			5,7		
	3"			9,7	
80				9,0	
100	4"			5,7	
125	----				5,0
150	----				6,8

= standard actuator

## 10. Maintenance

Scan for SWcip4 Valve  
Maintenance Video



The maintenance intervals depend on the corresponding application and are to be determined by the operator himself carrying out temporary checks.

The valve must not be cleaned with products containing abrasive or polishing material. Especially the valve shaft must not, under any circumstances, be cleaned with such agents. Damage of the valve shaft can lead to leakages.



Required tools:

- 1x wrench SW13
- 1x wrench SW17
- 1x wrench SW19
- 1x wrench SW24
- 1x inner hexagon socket wrench 6 mm
- assembly tool for seat seal  
**(see chapter 14.)**
- Exchange of seals is done according to Service Instructions.  
Customer stock keeping of spare seals is recommended.  
For valve service actions we supply complete seal kits including seal grease (see spare parts lists).
- All seals must be provided with a thin layer of grease before their installation!

**Attention!** Use food-grade grease and special greases being suited for the respective seal material, only!

**Recommendation:**

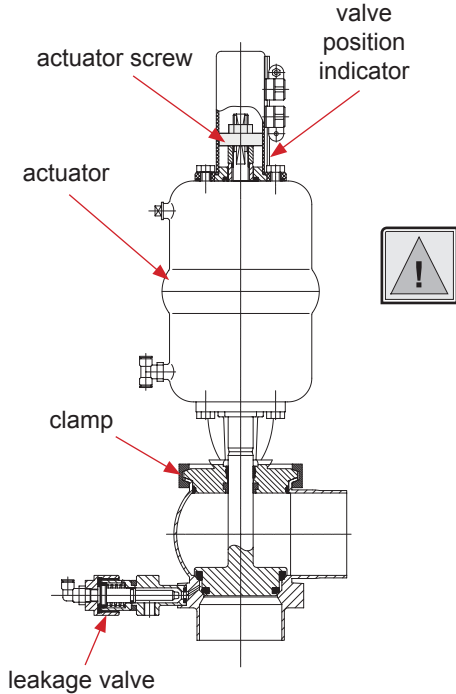
APV assembly grease for EPDM, FPM, HNBR and NBR  
(0,75 kg/tin - ref.-No. 000 70-01-019/93 ; H147382)  
(60 g/tube - ref.-No. 000 70-01-018/93 ; H147381)

- ! Do not use grease containing mineral oil for EPDM seals.

Less suited grease types can influence function and service life.

## 11. Service Instructions

SWcip4  
DN25-100, 1"-4"



The item numbers refer to the spare parts drawings:  
RN 01.054.820

### 11.1. Dismantling from the line system

1. Shut off the line pressure in the product and cleaning lines, drain lines if possible.

2. Control actuator with air.

**Do not touch movable valve parts!**  
**Risk of injury.**

3. Release clamp or flange connection to the housing.  
Lift valve insert including actuator out of the housing.

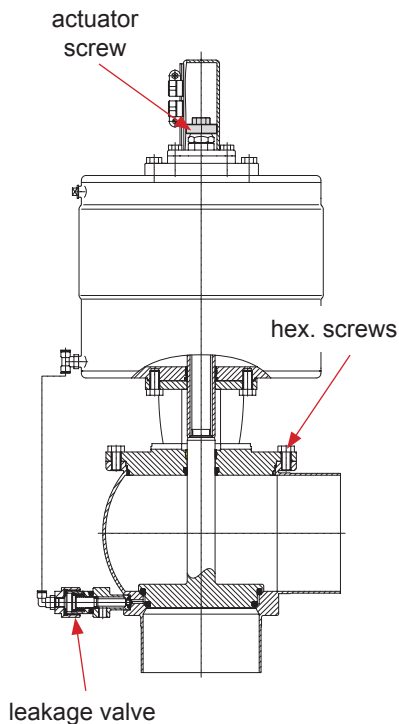
4. Shut off compressed air.

5. **Design with control unit:**  
Release air hoses from the CU4 and "AIR OUT" connection.  
Remove control unit.

- **Design with valve position indication:**  
Remove proximity switches. Remove indicator housing (proximity switch holder) from the actuator. Remove the air hose from the actuator.

6. Dismantle the leakage valve. Release inner hexagon screws (15) and strap (14).  
Remove the leakage valve (12) from the housing.

SWcip4  
DN125-150



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## 11. Service Instructions

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### 11.2. Dismantling of wear parts (product-wetted parts)

#### Design with CU and valve position indication:

##### DN 25-100, 1"-4"

Unscrew the actuator screw. Hold up the centering washer (22).  
Remove the centering washer.

##### DN 125-150

- Unscrew the actuator screw.
- Release the hex. nut (23) while holding up the centering washer (22). Remove the hex. nut and centering washer.
  
- Remove the control unit adapter (CU design).

Pull the shaft (2) and guide rod (5) out of the actuator (18).  
Remove the seat seals (10 and 11).

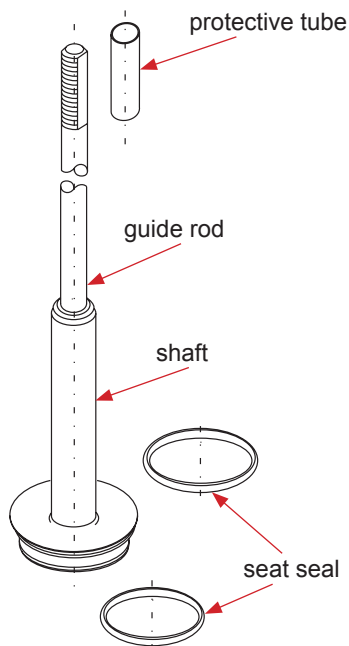
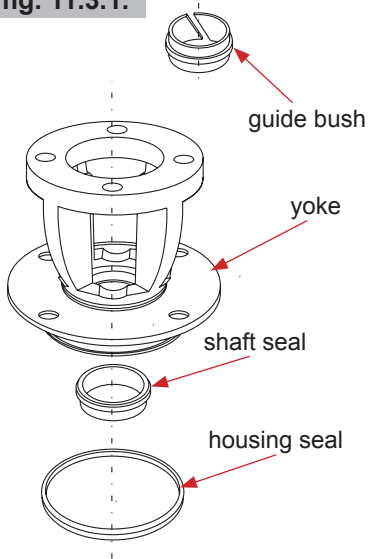
7. Remove the yoke (3) from the actuator (18).
- The actuator can be serviced.

**(see 13. Service Instructions - Actuator)**

8. Remove the housing seal (9), shaft seal (8) and guide bush (7) from the yoke.
  
9. Clean the valve housing, yoke, actuator and shaft with a low solution of a cleaning liquid. Never use cleaning agents containing grinding or polishing materials.

## 11. Service Instructions

fig. 11.3.1.



### 11.3. Installation of seals and assembly of valve

Slightly grease all seals before their installation.

1. Insert the guide bush (7), shaft seal (8) and housing seal (9) in the yoke.
2. Mount the yoke (5) at the actuator (20).
3. Install the two seat seals in the shaft. At first, install the **axial** seat seal (10) using the assembly tool (see chapter 14). Then install the radial seat seal (11). Press the seal around its circumferences into the groove by means of an assembly tool (screwdriver with round edges). After the installation of the seat seals, vent the seal groove between the seal and groove wall. See to an even fit of the seal.

Install the protective pipe via the thread of the guide rod. Slide the shaft through the yoke and actuator, place the centering washer (22).

- Screw on the actuator screw and tighten it.
- Screw on and tighten hex. screw (23) only for **DN125-150**.  
Screw on the actuator screw and tighten it. Hold up the centering washer during this process.  
**Tightening torque 40 Nm.**

4. Mount the adapter for the control unit on the actuator. Apply a drop of a screw locker (e.g. Loctite semi-solid) in the area of the thread bore of the actuator screw. Screw the actuator screw on the guide rod.

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## 11. Service Instructions

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### 11.4. Installation of valve insert

1. Mount the leakage valve.
2. Connect leakage valve with air hose as illustrated in 7.2.

**Design with control unit:**

Place the control unit on the adapter and fasten the assembly with the clamp halves. Connect the CU air hose, connection "AIR OUT" with the actuator.

- **Design with valve position indication:**

Mount the indicator housing on the actuator and fasten the proximity switches. Mount the air hose at the actuator.

3. Control actuator with air.

**Do not touch movable valve parts!**

**Risk of injury by sudden valve operation.**

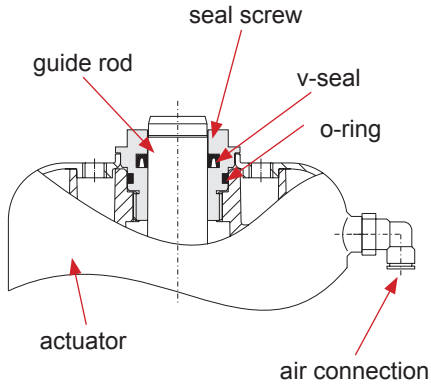


4. Place the valve insert carefully into the housing and fasten it. The housing seal must not be damaged during this process.
5. Version NC: Shut off compressed air.
6. Check the basic adjustment of the valve position feedback.
  - By turning the positioning screw in the control unit the shift points can be adjusted.



## 12. Service Instructions - Actuator

**fig. 12.1.**



Spare parts list: RN01.054.86

### 12.1. Maintenance of actuator Ø74, Ø110, Ø 165 (fig. 12.1.)

1. Remove the air hoses from the actuator.
2. Remove the inner hexagon screws from the adapter of the control unit. - Remove the adapter.
3. Unscrew the two seal screws with a wrench SW 30 by holding up the actuator with a strap wrench..
4. Remove o-rings and v-seals.

### 12.2. Installation of seals and assembly of actuator

1. Install the greased o-ring and the v-seals in the seal screws (**fig. 12.2.**).  
**See to the correct installing direction of the v-seal.**
2. Slide the seal screws over the piston rod at both sides of the actuator and fasten them.
3. Fasten the adapter for the control unit and the yoke on the actuator.

**Attention:** Observe the position of the adapter.

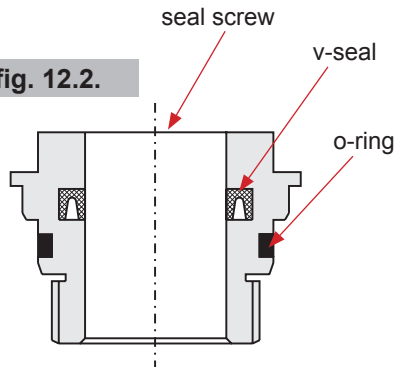
**Attention:** Observe the required valve design NC or NO during the assembly of the adapter and the yoke.  
**NC** = normally closed (air-to-raise, spring-to-lower)  
**NO** = normally open (air-to-lower, spring-to-raise)

4. Fix the air hoses.

### 12.3. Maintenance of actuator Ø255

The actuator is maintenance-free.  
 Check the fit of the two o-rings during the assembly.

**fig. 12.2.**

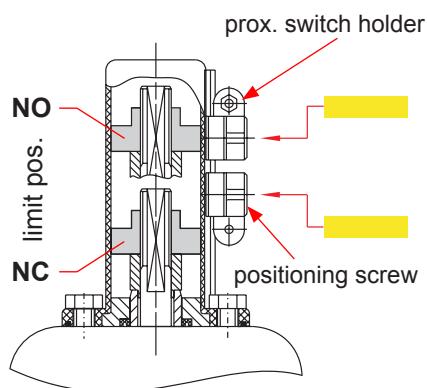


## 12. Service Instructions - Actuator

### 12.4. Actuator with valve position feedback (fig. 12.4.) Assembly of holder

1. Install the actuator screw on the actuator.
2. Provide the housing with the o-ring.
3. Fasten the housing on the actuator by means of the 4 hexagon screws M8.
4. Release the screws at the proximity switch holder and insert the corresponding proximity switches. Fasten the screws, afterwards.
5. Place the actuator in one final position.
6. Put the corresponding proximity switch into the corresponding position. Release the positioning screw for this purpose and move the holder until the corresponding signal is indicated. Afterwards, continue this movements by 2 to 3 mm to ensure the indication. Fasten the positioning screw.
7. Position the actuator in the other final position and carry out the positioning of the second proximity switch.

fig. 12.4.



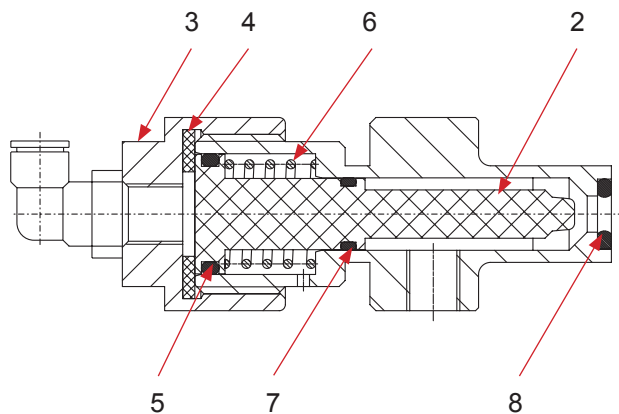
- Upper valve position indication: valve "normally open" NO
- Lower valve position indication: valve "normally closed" NC

## 13. Service Instructions - Leakage valve

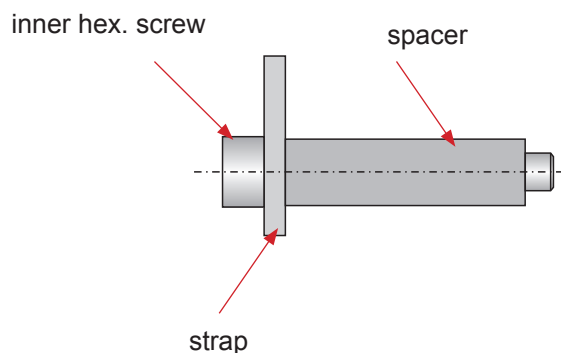
### 13.1. Maintenance of leakage valve

The item numbers refer to the corresponding spare parts list  
 Leakage valve SD4 RN: **01.054.67**

1. Pull out the pneumatic air line at the leakage valve.
2. Remove the drain line at the leakage valve.
3. Release the inner hexagon screws and remove the strap.  
 Leckageventil aus dem Gehäuse herausziehen.
4. Twist off the screw-in cap (3), pull out piston (2) and spring (6).
5. Dismantle all seals (5, 7, 8).
6. Assembly is done in reverse order.

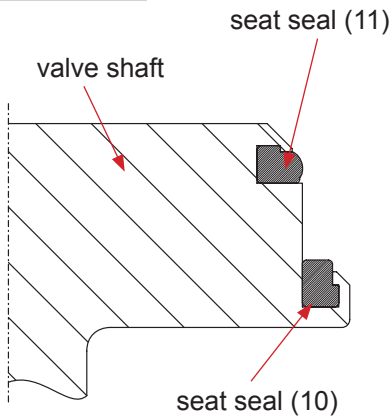


Holder for leakage valves



## 14. Installation of Seat Seal

fig. 14.



By means of the assembly tool, only the seat seal (10) can be installed (see fig. 14.). This seat seal must be mounted to the valve shaft, at first.

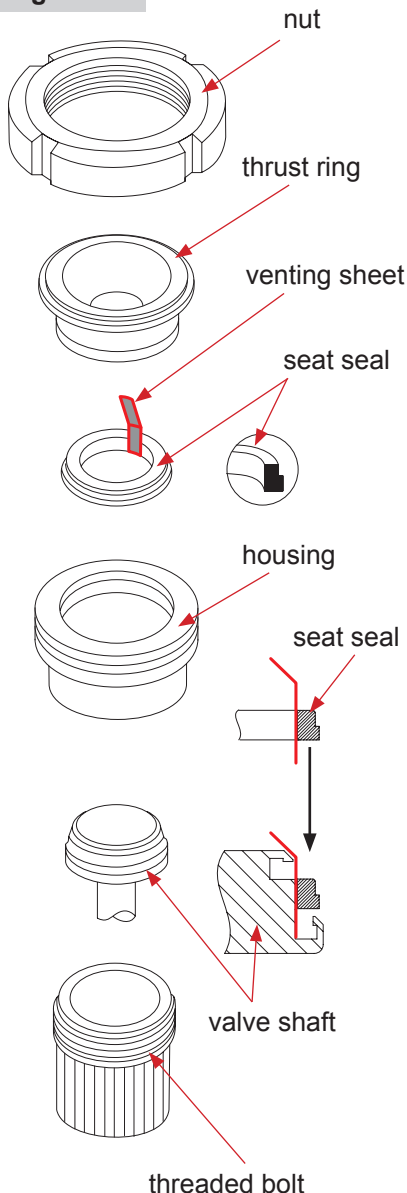
Afterwards install the seat seal (11) into the groove by hand, see 14.2.

The assembly tool (fig. 14.1) consists of:

- nut
- thrust ring
- ring with vent nose
- housing
- threaded bolt

### 14.1. Installation of seat seal in the valve shaft

fig. 14.1.



1. Insert the valve shaft into the housing in such a way that the seal groove is in the housing.
2. Clamp the valve shaft into the housing by means of the threaded bolt. Clamp the housing into a vice.
3. Slightly grease the seat seal with APV food-grade grease. Insert the seal with the venting sheet. The venting sheet must be inserted into the groove ground until it stops.
4. Introduce the ring with the installed seat seal into the housing and press it down until it stops.
5. Introduce the thrust ring into the housing. Screw on the nut and tighten it with a hook spanner until stop.
6. Release the nut. Take ring and thrust ring off the housing.
7. Take housing out of the vice, take off the threaded bolt. Detach
8. the valve shaft from the housing.

**Check the even fit of the seat seal.**

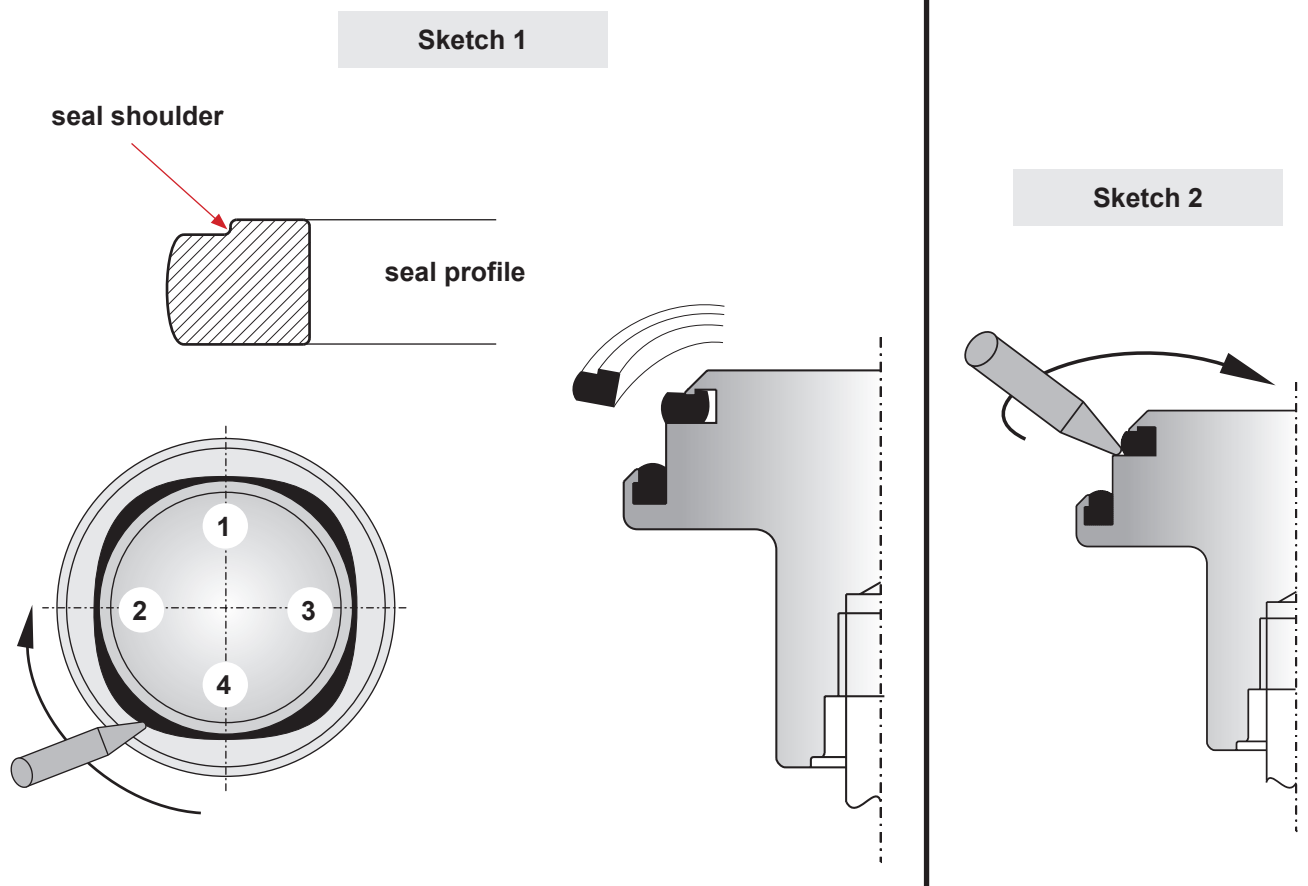
To simplify the installation of the seat seal, the following assembly tools are available:

Assembly tool for SWcip4 seat seal			
DN	Inch	Reference number	ID No.
25	1"	000 51-13-110/17	H179465
40	1,5"	000 51-13-111/17	H179466
50	2"	000 51-13-112/17	H179467
	2,5"	000 51-13-120/17	H179468
65		000 51-13-113/17	H179469
	3"	000 51-13-121/17	H179470
80		000 51-13-114/17	H179471
100	4"	000 51-13-115/17	H179472
125		000 51-13-116/17	H204817
150		000 51-13-117/17	H204818

## 14. Installation of Seat Seal

### 14.2. Manual installation of seat seal (pos. 11)

1. Provide the seat seal with a thin layer of grease before its installation. The reception groove for the seat seal must not be greased.
2. Clamp the valve shaft in a vice.  
  
The valve shaft must not be damaged during this process. Use protective jaws.
3. Press the slightly greased seal at four spots, the wide side to the front, into the groove (**see sketch 1**).
4. Press the seal at four opposite spots **1-2, 3-4** into the groove by means of an assembly tool (screwdriver with round edges can be used) (**see sketch 1**).
5. Press the seal into the groove step by step. Work alternately at the opposite spots. See to an even fit of the seat seal.
6. Afterwards, introduce the assembly tool between the seal shoulder and the groove wall. Work around the complete circumferences of the groove. The groove bottom is vented and the seal shoulder locks in place during this process (**see sketch 2**).



## 15. Trouble Shooting

Failure	Remedy
Valve is untight, leakage via the leakage valve	Replace seat seal. Check line pressure: Permissible line pressure, see chapter 9.
Leakage at leakage valve cylinder	Replace o-rings, see RN 01.054.67 Check cleaning liquid supply.
Leakage between housing and yoke flange	Replace housing seal.
<b>Actuator</b>	
Air escapes from the actuator rod.	Replace complete seal screw for actuator.
Actuator does not work (air escapes permanently from the venting plug).	Replace complete actuator.
<b>Valve position indication</b>	
Feedback is missing.	Carry out fine adjustment.

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## 16. Spare Parts Lists

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- The reference numbers of the spare parts for the different valve designs and sizes are included in the attached spare parts drawings with corresponding lists.

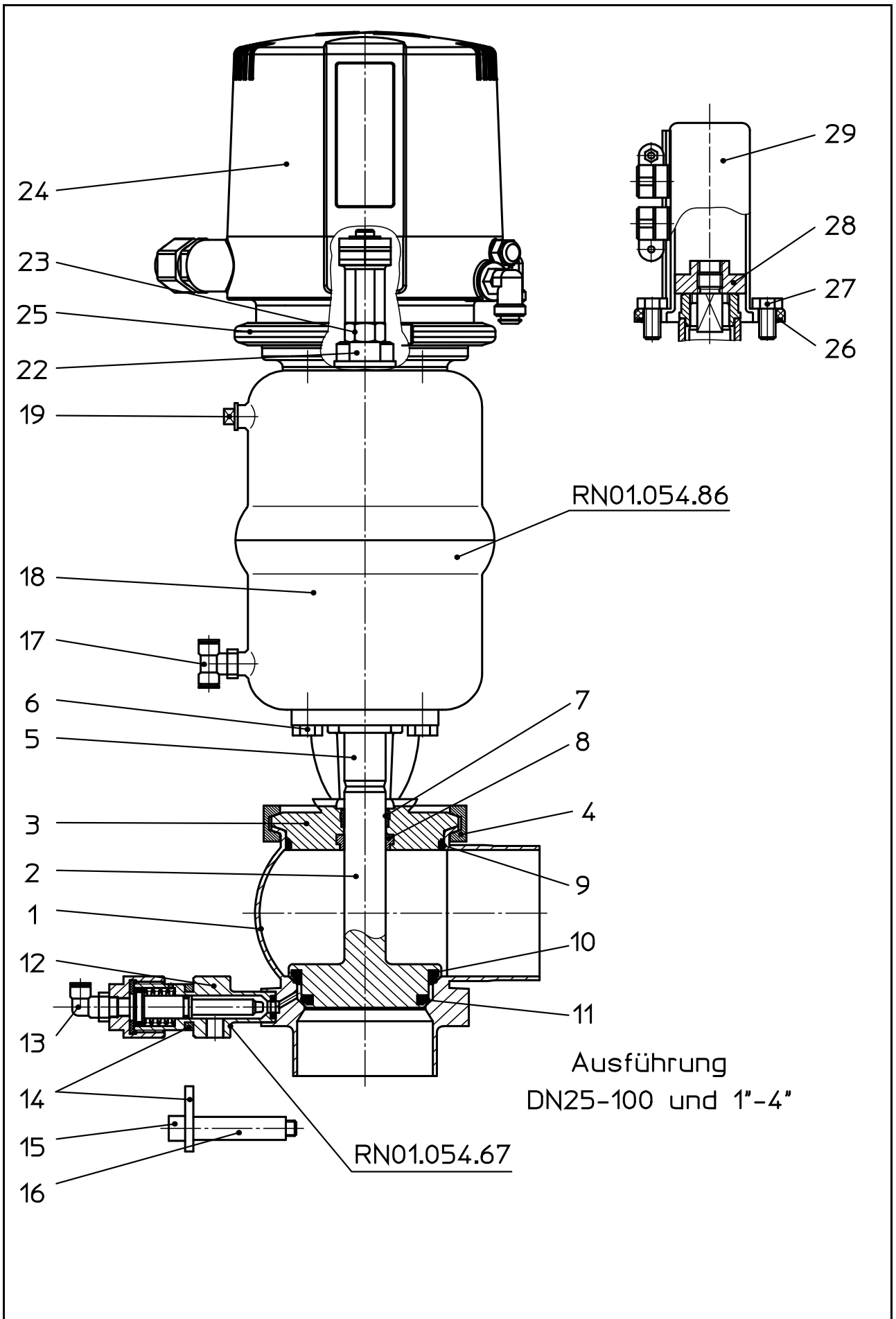
Please indicate the following data to place an order for spare parts:

- number of required parts
- reference number
- designation.





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 SPX FLOW, Germany



Ausführung  
 DN25-100 und 1"-4"

Datum:	11/08	10/13	18.09.14	10.09.15							
Name:	Peters	Trytko	Trytko	Trytko							
Geprüft:											

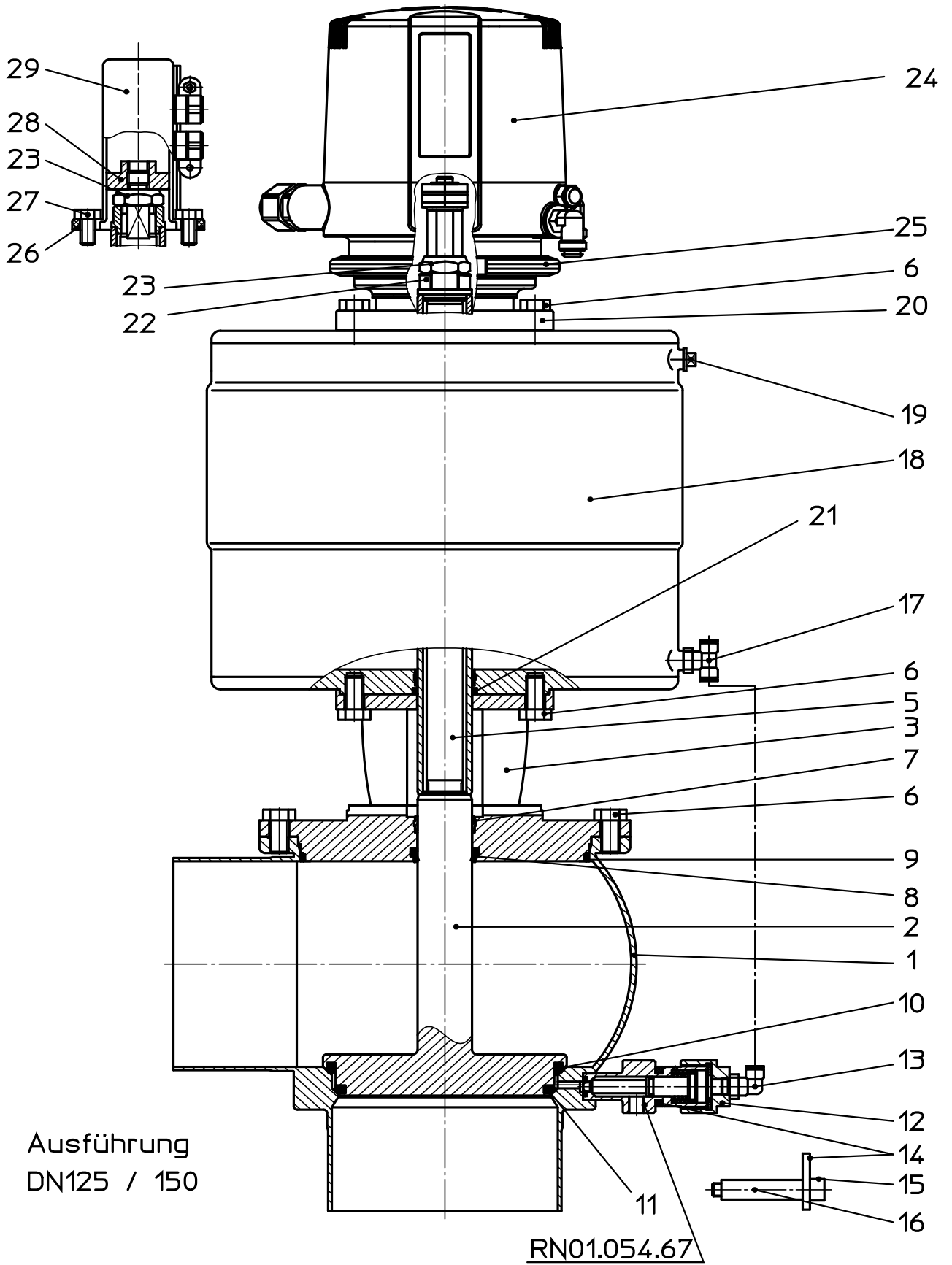
Ersatzteilliste: spare parts list  
**SWcip41, SWcip42 FS-CU4 VSM DN 25-150 ; 1"-4"**  
**SWcip41, SWcip42 FS-CU4 PSH DN 25-150 ; 1"-4"**

**>APV**

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**RN 01.054.820**



Ausführung  
DN125 / 150

RN01.054.67

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SPX FLOW, Germany

Datum:	11/08	10/13	10.09.15																
Name:	Peters	Trytko	Trytko																
Geprüft:																			

Ersatzteilliste: spare parts list

**SWcip41, SWcip42 FS-CU4 VSM DN 25-150 ; 1"-4"**  
**SWcip41, SWcip42 FS-CU4 PSH DN 25-150 ; 1"-4"**



SPX FLOW  
Germany

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**RN 01.054.820**

Ersatzteilliste: spare parts list

**SWcip41, SWcip42 FS-CU4 VSM DN 25-150 ; 1" - 4"**  
**SWcip41, SWcip42 FS-CU4 PSH DN 25-150 ; 1" - 4"**

Datum:	11/08	11.06.12	23.10.13	18.09.14
Name:	Peters	Tytko	Tytko	Tytko
Geprüft:				
Datum:	10.09.15			
Name:	Tytko			
Geprüft:				

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<b>RN 01.054.820</b>				



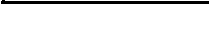
pos.	Quantity	Beschreibung	Material	DN25	1"	DN40	1,5"	DN50	2"
item		description		WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
1	1	Gehäuse Housing	1.4404	15-60-286/47 H315625	15-60-311/47 H315361	15-60-386/47 H315626	15-60-411/47 H315632	15-60-436/47 H315627	15-60-461/47 H315633
	1	Gehäuse Housing	1.4404	15-61-286/47 H315637	15-61-311/47 H315643	15-61-386/47 H315638	15-61-411/47 H315644	15-61-436/47 H315639	15-61-461/47 H315645
2	1	Schaft Valve Shaft	1.4404	15-25-298/42 H314706	15-25-323/42 H314712	15-25-398/42 H314707	15-25-423/42 H314713	15-25-448/42 H314708	15-25-473/42 H314714
3	1	Laterne Yoke	1.4404	15-40-940/47 H208097		15-40-941/47 H208098		15-40-942/47 H208099	
4	1	Gelenkklemme Clamp	1.4301	42-40-287/12 H126263		42-40-387/12 H126264		42-40-437/12 H126265	
5	1	Zugstange Guide rod	1.4404		15-23-850/12 H171061			15-23-851/12 H171062	
6	4	Skt. Schraube Hex. screw	1.4301			65-01-081/15 M8x16 H78772			
7	1	Führungsbuchse Bushing	Ketron			08-01-178/23 H207154			
8	1	Schaftdichtung Shaft seal	EPDM			58-33-019/94 H331328			
9	1	Gehäusedichtung Housing seal	EPDM	58-33-267/93 H136432		58-33-292/93 H77439		58-33-124/93 H170665	
10	1	Tellerdichtung Seat seal	EPDM	58-33-293/93 H77442		58-33-392/93 H77467		58-33-443/93 H77491	
11	1	Tellerdichtung Seat seal	EPDM	58-33-244/93 H315098		58-33-294/93 H77445		58-33-394/93 H77470	
12	1	Leckageventil kpl. Leakage valve	EP-1.4404			20-37-068/59 H173482			
13	1	W-Verschraubung Angular union			G1/8	08-60-350/93 H175300			
14	1	Lasche Bracket	1.4301			08-17-200/12 H315382			
15	2	Zyl. Schraube Cyl. screw	1.4301		65-05-130/13 M8x65 H315761			65-05-126/13 M8x35 H175438	

Ersatzteilliste: spare parts list

**SWcip41, SWcip42 FS-CU4 VSM DN 25-150 ; 1"- 4"**  
**SWcip41, SWcip42 FS-CU4 PSH DN 25-150 ; 1"- 4"**

Datum:	11/08	23.10.13	18.09.14	10.09.15
Name:	Peters	Trytko	Trytko	Trytko
Geprüft:				
Datum:				
Name:				
Geprüft:				

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<b>RN 01.054.820</b>	



pos. item	Menge quantity	Beschreibung description	Material	DN25	1"	1,5"	DN50	2"
				WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
16	2	Schutzrohr Protective tube	1.4301		15-04-130/12 H315742			15-04-131/12 H315743
17	1	T-Verschraubung Tee connector				08-60-370/93 H175301		
18	1	Steuerkopf Actuator	1.4301		15-32-050/17 H171378			15-32-051/17 H171379
19	1	Entlüftungsstopfen Venting plug	PE-Hard			08-60-005/93 H16218		
20	1	Deckel Steuerkopf Cover actuator	PA6.6			----- -----		
21	1	O-Ring O-ring	NBR			----- -----		
22	1	Zentrierscheibe Centering nut	1.4301			15-28-940/12 H170196		
23	1	Skt. Mutter Hex. Nut	1.4301			65-50-101/15 H79298		
24	1	CU41-S-Direct Connect CU41-S-Direct Connect				08-45-100/93 H320460		
	1	CU31 Profibus CU31 Profibus				08-45-001/93 H315495		
	1	CU31 Device Net CU31 Device Net				16-31-240/93 H209422		
	1	CU31 AS-Interface 2.1 CU31 AS-Interface 2.1				08-45-020/93 H315507		
25	1	CU4-S-Adapter kpl. CU4-S-adapter cpl.				08-48-600/93 H320474		
	1	CU3 Adapter - SW4, M4 CU3 adapter - SW4, M4				08-48-480/93 H315806		
26	1	O-Ring O-ring	NBR			58-06-297/83 H173930		
27	4	Skt. Schraube Hex. screw	1.4301			65-01-081/15 M8x16 H78772		



Ersatzteilliste: spare parts list

**SWcip41, SWcip42 FS-CU4 VSM DN 25-150 ; 1" - 4"**  
**SWcip41, SWcip42 FS-CU4 PSH DN 25-150 ; 1" - 4"**

pos. item	Menge Quantity	Beschreibung description	Material	DN65	2,5"	DN80	3"	Datum:			11/08	23.10.13	18.09.14	10.09.15
								WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.				
1	1	Gehäuse Housing	1.4404	15-60-486/47 H315628	15-60-511/47 H315634	15-60-536/47 H315629	15-60-561/47 H315635	15-60-636/47 H315630	15-60-661/47 H315636	15-60-661/47 H315636				
2	1	Gehäuse Housing	1.4404	15-61-486/47 H315640	15-61-511/47 H315646	15-61-536/47 H315641	15-61-561/47 H315647	15-61-636/47 H315642	15-61-661/47 H315648	15-61-661/47 H315648				
3	1	Schaft Valve Shaft	1.4404	15-25-498/42 H314709	15-25-523/42 H314715	15-25-548/42 H314710	15-25-573/42 H314716	15-25-648/42 H314711	15-25-673/42 H314717	15-25-673/42 H314717				
4	1	Laterne Yoke	1.4404	15-40-943/47 H208100	15-40-944/47 H208101	15-40-946/47 H208103	15-40-945/47 H208102	15-40-947/47 H208104	15-40-947/47 H208104	15-40-947/47 H208104				
5	1	Gelenkklemme Clamp	1.4301	42-40-487/12 H126266	42-40-487/12 H126266	42-40-537/12 H126267	42-40-537/12 H126267	42-40-537/12 H126268	42-40-537/12 H126268	42-40-537/12 H126268				
6	4	Zugstange Guide rod	1.4404	15-23-851/12 H171062	15-23-851/12 H171062	15-23-852/12 H171063	15-23-852/12 H171063	15-23-852/12 H171063	15-23-852/12 H171063	15-23-852/12 H171063				
7	1	Skt. Schraube Hex. screw	1.4301	M8x16 H78772	M8x16 H78772	65-01-081/15 M8x16 H78772	65-01-081/15 M8x16 H78772	65-01-081/15 M8x16 H78772	65-01-081/15 M8x16 H78772	65-01-081/15 M8x16 H78772				
8	1	Führungsbuchse Bushing	Ketron	08-01-178/23 H207154	08-01-178/23 H207154	08-01-178/23 H207154	08-01-178/23 H207154	08-01-178/23 H207154	08-01-178/23 H207154	08-01-178/23 H207154				
9	1	Schaftdichtung Shaft seal	EPDM	58-33-019/94 H331328	58-33-019/94 H331328	58-33-019/94 H331328	58-33-019/94 H331328	58-33-019/94 H331328	58-33-019/94 H331328	58-33-019/94 H331328				
10	1	Gehäusedichtung Housing seal	EPDM	58-33-442/93 H77488	58-33-125/93 H170667	58-33-492/93 H77512	58-33-126/93 H170669	58-33-127/93 H170671	58-33-127/93 H170671	58-33-127/93 H170671				
11	1	Tellerdichtung Seat seal	EPDM	58-33-493/93 H77515	58-33-109/93 H170662	58-33-543/93 H77546	58-33-568/93 H77561	58-33-643/93 H77586	58-33-643/93 H77586	58-33-643/93 H77586				
12	1	Tellerdichtung Seat seal	EPDM	58-33-194/93 H77430	58-33-444/93 H77494	58-33-569/93 H77564	58-33-194/93 H77430	58-33-194/93 H77430	58-33-194/93 H77430	58-33-194/93 H77430				
13	1	Leckageventil kpl. Leakage valve	EP-1.4404	20-37-068/59 H173482	20-37-068/59 H173482	20-37-068/59 H173482	20-37-068/59 H173482	20-37-068/59 H173482	20-37-068/59 H173482	20-37-068/59 H173482				
14	1	W-Verschraubung Angular union	1.4301	08-60-350/93 H175300	08-60-350/93 H175300	08-60-350/93 H175300	08-60-350/93 H175300	08-60-350/93 H175300	08-60-350/93 H175300	08-60-350/93 H175300				
15	2	Lasche Braket	1.4301	08-17-200/12 H315382	08-17-200/12 H315382	08-17-200/12 H315382	08-17-200/12 H315382	08-17-200/12 H315382	08-17-200/12 H315382	08-17-200/12 H315382				
16	2	Zyl. Schraube Cyl. screw	1.4301	DIN EN ISO 4762-A2-70	DIN EN ISO 4762-A2-70	DIN EN ISO 4762-A2-70	DIN EN ISO 4762-A2-70	DIN EN ISO 4762-A2-70	DIN EN ISO 4762-A2-70	DIN EN ISO 4762-A2-70				



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RN 01.054.820







Ersatzteilliste: spare parts list

**SWcip41, SWcip42 FS-CU4 VSM DN 25-150 ; 1"- 4"**  
**SWcip41, SWcip42 FS-CU4 PSH DN 25-150 ; 1"- 4"**

		Datum:		11/08		23.10.13		10.09.15		APV SPX FLOW Germany	
		Name:		Peters		Trytko		Trytko		Blatt 9 von 11	
		Geprüft:								RN 01.054.820	
pos.	Menge	Beschreibung	Material	DN125	5"	DN150	6"	WS-Nr.	WS-Nr.	WS-Nr.	WS-Nr.
item	quantity	description	material	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
1	1	Gehäuse Housing	1.4404	15-60-686/47 H323571	----- -----	15-60-736/93 H323573	----- -----				
	1	Gehäuse Housing	1.4404	15-61-686/47 H323572	----- -----	15-61-736/93 H323574	----- -----				
2	1	Schaft Valve Shaft	1.4404	15-25-698/42 H323583	----- -----	15-25-748/93 H323584	----- -----				
3	1	Laterne Yoke	1.4404	15-40-948/47 H323588	----- -----	15-40-949/47 H323589	----- -----				
4	1	Gelenkklemme Clamp	1.4301	----- -----	----- -----	----- -----	----- -----				
5	1	Zugstange Guide rod	1.4404	15-26-055/12 H201616	----- -----	15-26-055/12 H201616	----- -----				
6	16	Skt. Schraube Hex. screw	1.4301	65-01-132/15 M10x20 H78809	----- -----	65-01-132/15 M10x20 H78809	----- -----				
7	1	Führungsbuchse Bushing	Ketron	08-01-065/23 H207296	----- -----	08-01-065/23 H207296	----- -----				
8	1	Schaftdichtung Shaft seal	EPDM	58-33-033/93 H333723	----- -----	58-33-033/93 H333723	----- -----				
9	1	Gehäusedichtung Housing seal	EPDM	58-33-692/93 H77608	----- -----	58-33-742/93 H77625	----- -----				
10	1	Tellerdichtung Seat seal	EPDM	58-33-693/93 H77611	----- -----	58-33-743/93 H77628	----- -----				
11	1	Tellerdichtung Seat seal	EPDM	58-33-744/93 H323217	----- -----	58-33-794/93 H323218	----- -----				
12	1	Leckageventil kpl. Leakage valve	EP-1.4404	20-37-068/59 H173482	----- -----	20-37-068/59 H173482	----- -----				
13	1	W-Verschraubung Angular union		08-60-350/93 H175300	----- -----	08-60-350/93 H175300	----- -----				
14	1	Lasche Bracket	1.4301	08-17-200/12 H315382	----- -----	08-17-200/12 H315382	----- -----				
15	2	Zyl. Schraube Cyl. screw	1.4301	65-05-128/13 M8x55 H79018	----- -----	65-05-128/13 M8x55 H79018	----- -----				







Ersatzteilliste: spare parts list

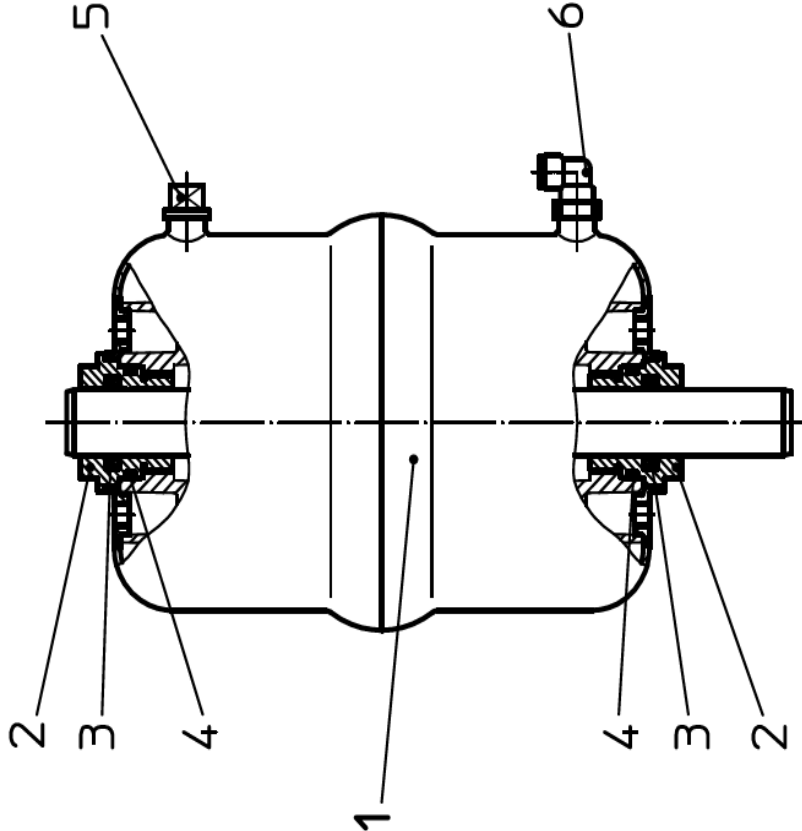
**Steuerkopf SW4  
Actuator SW4**

Datum:	11/08	12/09	27.01.15	10.7.17
Name:	Peters	Peters	Trytko	Keil
Geprüft:				

**APV**  
SPX FLOW  
Germany

Blatt	1	von	1
<b>RN 01.054.86</b>			

pos.	Menge quantity	Beschreibung description	Ø 74	Ø 110	Ø 165
			WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
1	1	Steuerkopf kpl. Feder/Luft - matt glänzend Actuator cpl. Spring/air satin finish	15-32-050/17 H171378	15-32-051/17 H171379	15-32-052/17 H171380
	1	Steuerkopf kpl. Feder/Luft - 3A-blank Actuator cpl. Spring/air 3A bright	3A0 15-32-059/13 H208693	3A0 15-32-060/13 H173538	3A0 15-32-061/13 H173524
	1	Steuerkopf kpl. Luft/Luft - matt glänzend Actuator cpl. air/air satin finish	15-32-085/17 H209592	15-32-086/17 H209203	15-32-087/17 H208733
	1	Steuerkopf kpl. Luft/Luft - 3A-blank Actuator cpl. air/air 3A bright	3A0 15-32-057/13 H208690	3A0 15-32-065/13 H208772	3A0 15-32-066/13 H208773
2	2	Schraube Dichtung Seal screw	15-28-840/93 H170200		
3	2	V-Dichtung V-seal	58-32-010/83 H171060		
4	2	O-Ring O-ring	58-06-124/83 H171059		
5	1	Entlüftungstopfen G-1/8" Venting Plug G-1/8"	08-60-005/93 H16218		
6	1	W-Verschraubung G-1/8" 6Ømm schwenkbar W-Union G-1/8" / 6Ømm slewable	08-60-750/93 H208825		
6	1	W-Verschraubung G-1/8"1/4" OD 6Ømm sch. W-Union G-1/8" / 1/4" OD 6Ømm slewable	08-60-811/93 H312732		





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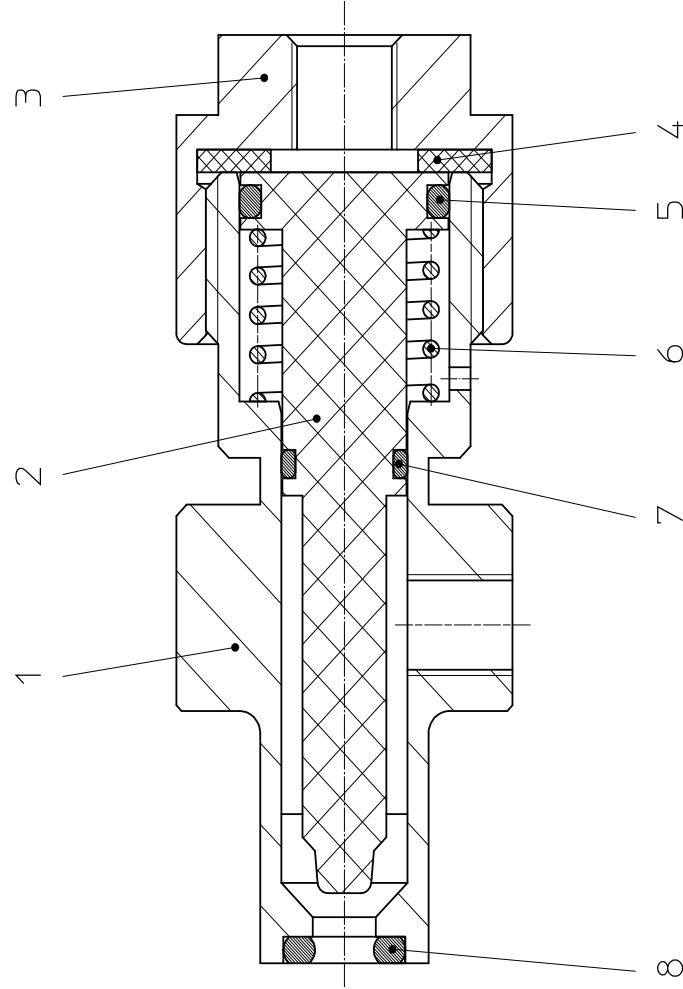
Ersatzteilliste: spare parts list

**Leckageventil SD4**  
**Leakage valve SD4**

Datum:	11/08
Name:	Peters
Geprüft:	
Datum:	
Name:	
Geprüft:	

Blatt	1	von	1
<b>RN 01.054.67</b>			

pos. item	Menge quantity	Beschreibung description	Material	WS-Nr. ref.-no.
		Leckageventil kpl. mit EPDM Leakage valve cpl. with EPDM	1.4404/EPDM	20-37-068/59 H173482
		Leckageventil kpl. mit HNBR Leakage valve cpl. with HNBR	1.4404/HNBR	20-37-068/29 H176614
		Leckageventil kpl. mit FPM Leakage valve cpl. with FPM	1.4404/FPM	20-37-068/69 H203844
1	1	Gehäusedeckel Leckageventil Housing leakage valve	1.4404	21-08-002/47 H172510
2	1	Kolben Piston	1.4404	15-29-102/93 H173074
3	1	Deckel Leckageventil Cover leakage valve	1.4404	21-20-002/17 H172511
4	1	Dichtung Seal	EPDM	58-01-085/63 H173069
5	1	O-Ring 15,3 x 2,4 O-ring 15,3 x 2,4	EPDM	58-06-052/64 H206007
6	1	Feder leckageventil Spring leakage valve	1.4310	60-07-002/13 H173068
7	1	O-Ring 8,5 x 1,8 O-ring 8,5 x 1,8	HNBR	58-06-025/33 H176616
	1	O-Ring 8,5 x 1,8 O-ring 8,5 x 1,8	EPDM	58-06-025/64 H173459
	1	O-Ring 8,5 x 1,8 O-ring 8,5 x 1,8	FPM	58-06-025/73 H202836
8	1	O-Ring 6,0 x 3,0 O-ring 6,0 x 3,0	HNBR	58-06-016/33 H176615
	1	O-Ring 6,0 x 3,0 O-ring 6,0 x 3,0	EPDM	58-06-016/64 H173458
	1	O-Ring 6,0 x 3,0 O-ring 6,0 x 3,0	FPM	58-06-016/73 H202835



# APV DELTA SWcip4

DOUBLE SEAL VALVE

# SPXFLOW

## SPX FLOW

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