APV
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Operating Manual

DELTA SDU4

Double Seal Change - Over Valve

Read and understand this manual prior to operating or servicing this product.

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Declaration of Conformity for Valves and Valve Manifolds

APV Rosista GmbH, Zechenstr. 49, D-59425 Unna-Königsborn
as manufacturer with sole responsibility declares that the

double seat valves of the series D2, SD4, SDT4, SDM4, SWcip4, DSV, DA3, DE3, DEU3, DET3, DKR2, DKRT2, DKRH2
in the nominal diameters DN 25 - 150, 1" – 6" and 1 Sh5 - 6 Sh5

butterfly valves of the series SV1 and SVS 1 F
in the nominal diameters DN 25 - 100, DN 125 - 250 and 1" – 4"

ball cocks of the series KH, KHV
in the nominal diameters DN 15 - 100

single seat, diaphragm and spring loaded valves of the series S2, SW4, SWmini4, SWT4, M3, MF3, M4, MF4, MP4, MS4, AP1, APT1, CPV, RG4, RGM4, RGE4, RGEM4, PR2, PR3, PR4, SI2, UF3, VRA,VRAH
in the nominal diameters DN 10 - 150, 1/2" – 4" and 1 Sh5 - 6 Sh5

and the valve manifolds installed thereof

meet the requirements of the Directives 89/392/EEC (amendment 93/44/EEC), replaced by 98/37/EC and GSG - 9.GSGV.

For official inspections, APV Rosista GmbH presents a technical documentation according to appendix V of the Machinery Directive, this documentation consisting of documents of the development and construction, description of measures taken to meet the conformity and to correspond with the basic requirements on safety and health, incl. an analysis of the remaining risks as well as an operating manual with safety instructions.

The conformity of the valves and valve manifolds is guaranteed.

D-59425 Unna-Königsborn, June 04, 2008
APV Rosista GmbH

ppa. Baumbach

Manager Research and Development

UK

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Double Seal Change-Over Valves
SDU 4

DN design	RN	01.054.64
Tube design	RN	01.054.64-1
Actuator	RN	01.054.86
Leakage valve	RN	01.054.67

1. General Terms

This operating manual has to be read carefully and observed by the competent operating and maintenance personnel.

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

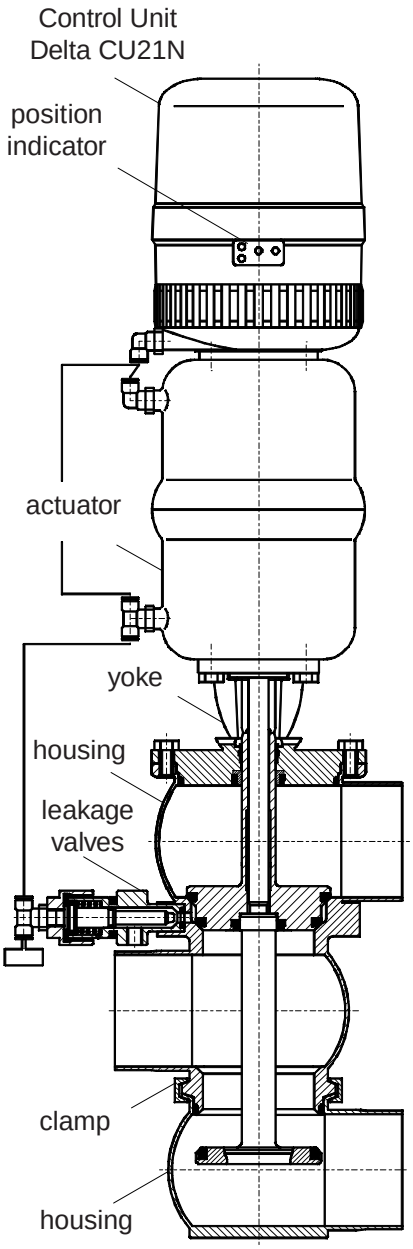
Descriptions and data given herein are subject to technical changes.

2. Safety Instructions

- Danger !

- The technical safety symbol draws your attention to important directions for operating safety. You will find it wherever the activities described are bearing risks of personal injury.
- Electric and pneumatic connections must be separated.
- Before any maintenance of the valve, the line system must be **depressurized**.
- **Do not reach into the open valve.**
- Risk of injury by suddenly operating valve. In dismantled state there is the risk of bruising at movable parts of the valve.
- Observe service instructions to ensure safe maintenance of the valve.
- **Attention!**
  With valve design NC (normally closed): Before releasing the housing screws, the valve insert must be relieved by controlling the actuator.
- The welded actuator is under spring load, do **not** open it by force.

3. Mode of Operation



Double seal change-over valves DELTA SDU4 have been developed for the use in the brewing and beverage industries, in dairy and food applications as well as for the chemical and pharmaceutical industries.

The field of application of the DELTA SDU4 comprises the safe shut-off and change-over of line sections. The upper and middle housing are separated from one another by two seat seals.
A leakage chamber is arranged between the seals; the leakage chamber being forcible closed by the two leakage valves or opened to the atmosphere.

Leakage at the seat seals of the upper valve shaft is discharged via the leakage valves to the atmosphere and indicated.

- Operation by pneumatic actuator with air connection.
  The actuator is generally mounted normally closed **(NC)**.
- The inner parts of the actuator are maitenance-free.
- To avoid pressure hammers, the valve is to be closed against the flow direction of the fluid.
- As standard design a control unit DELTA CU21N with NOT element is installed on top of the actuator for the pneumatic control of the valve. The NOT element fulfills the task to increase the closing forces of the closed valve.
- 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.

4. Auxiliary Equipment

- **Valve position indication**
  A proximity switch holder for the valve position indication can be installed direct on the actuator.
  With SDU4 valves being equipped with valve position indication it must be observed that the max. closing pressure is reduced compared with the valve design being equipped with the control unit DELTA CU21N.
  (see table item 8)
  Proximity switches to signal the limit position of the valve seat can be installed at the proximity switch holder if requested.
  We recommend to use one of our APV standard types:
  operating distance: 5 mm / diameter: 11 mm.
  If the customer decides for a valve position indication other than APV type, we cannot take over any guarantee for a faultless function.

- **Control Unit**
  The Control Unit CU2 can be installed on the SDU4 valve.

  The following different designs are possible:

	1 solenoid valve	1 solenoid valve with NOT element
standard CU ref.-No.:	CU 21 322 000 804 432	CU 21 N 322 000 804 440
Valve Net Profibus ref.-No.:	CU 21 V 322 000 804 437	CU 21 VN 322 000 804 442
AS – Interface ref.-No.:	CU 21 AS - Interface 322 000 804 578	CU 21 N AS - Interface 322 000 804 579

- An adapter is required to install the control unit on the SD4 valve.

adapter	
designation : ref.-No.:	CU 2 adapter -SW 4 /SD4 /M4 322 000 801 192

5. Cleaning

For the cleaning of SDU4 valves distinction is made between two areas.

- **The flow chambers**
  The passages of the valve are cleaned by the cleaning liquid during the cleaning of the connected pipelines.

- **The leakage chamber**
  The cleaning of the leakage chamber is undertaken via the leakage valves.The cleaning liquid is supplied via one leakage valve and discharged to the atmosphere via the second leakage valve.

  The restraint passage of the cleaning liquid provides for a perfect cleaning of the whole leakage chamber.

  Under normal conditions, **15 valves DN 25/1T - 100/4T** can be cleaned **by one spray distribution line DN 25.**

Recommendation for cleaning times with common operating conditions and CIP liquids.

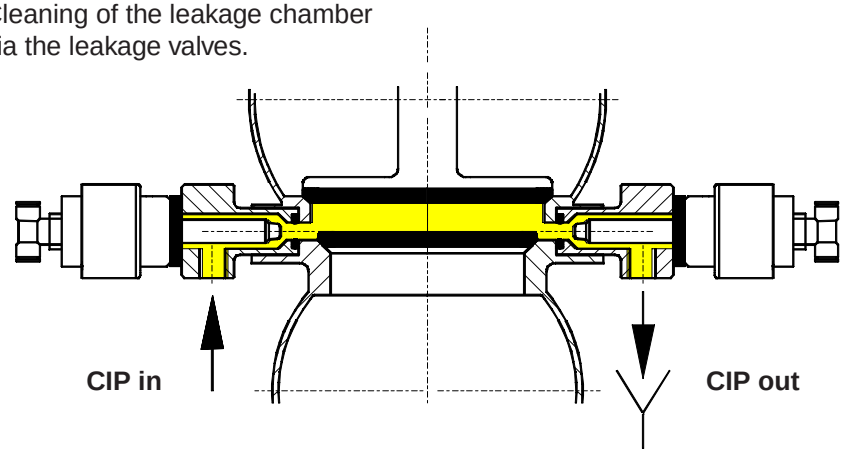
cleaning step	CIP spraying
pre-flushing	3 x 10 sec.
caustic flushing 80 ^{o} C	3 x 10 sec.
intermediate flushing	2 x 10 sec.
acid flushing	3 x 10 sec.
subsequent flushing	2 x 10 sec.

- Depending on the pressure ratio, cleaning temperatures and degree of soiling, different times have to be adjusted.

- Flushing quantity per CIP spraying **about 1,2ltr/10s**

- Cleaning pressure at CIP cleaning connection **min. 2 bar.**
  max. 5 bar.

Cleaning of the leakage chamber
via the leakage valves.



6. Installation

- Installation has to be done in such a way that fluids can drain off the valve housing and is preferably to be realized in vertical position.

- To provide for the dismantling of the valve insert, the valve housing ports of the upper and middle housing balls must be connected in a detachable manner by a flange or clamp connection.

- **Attention:** Observe welding instructions.

6.1 Welding Instructions

SDU 4

- Before welding of the valve, the valve insert must be dismantled from the housing. Moreover, the lower housing seal must be removed. For this purpose, detachable connections (flanges, clamps, etc.) are to be used in the pipelines to provide for the dismantling of the two housings and to have access to the lower seal. See to a careful handling to avoid damage to the parts.

- Welding may only be carried out by certified welders (EN 287-1).(Seam quality EN 25817 "B").

- The welding of the valve housings must be effected in such a way that deformation strain cannot be transfered from the outside to the valve body.

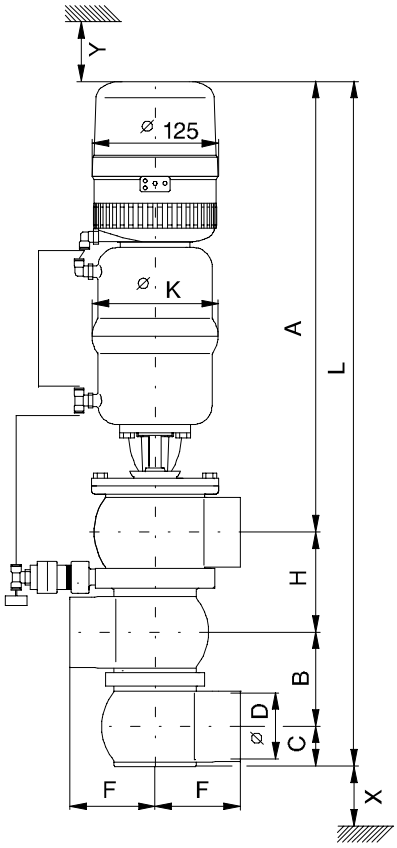
- The preparation of the weld seam up to 3 mm thickness must be carried out in butt manner as a square butt joint without air. (Consider shrinkage!)

- TIG orbital welding should be aimed at!

- 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 nonobservance of these welding instructions is not subject to our guarantee.

7. Dimensions / Weights



dimensions in mm												
DN	A	B	C	Ø D	F	H	L	Ø K	stroke in mm	installation dimensions in mm Y	X	weight in Kg SDU 4
25	397	54,0	18,0	26	50	60	529	86	12	100	200	
40	403	66,0	24,0	38	67	72	567	86	22	100	200	
50	440	78,0	32,0	50	72	84	634	126	25	100	200	
65	448	94,0	40,0	66	85	100	682	126	25	100	200	
80	501	109,0	47,5	81	98	115	772,5	189	25	100	200	
100	511	128,0	57,0	100	111	134	830	189	25	100	200	
Tube												
1T	395	50,6	16,3	22,6	50	56,6	518,5	86	12	100	200	
1,5T	401	62,9	22,5	34,9	67	68,9	557,3	86	22	100	200	
2T	439	75,6	30,8	47,6	72	81,6	627	126	25	100	200	
2,5T	445	88,3	37,2	60,3	85	94,3	664,8	126	25	100	200	
3T	496	100,9	43,5	72,9	90	106,9	747,3	189	25	100	200	
4T	509	125,6	55,8	97,6	111	131,6	822	189	25	100	200	

8. Technical Data

Product-wetted parts : **316 L, 1.4404**

Other parts : **1.4301**

Seals :
Standard : **EPDM**
Options : **FPM, VMQ, HNBR**

Actuators : **1.4301**

Max. operating temperature : **140 °C EPDM**
135 °C VMQ, FPM, HNBR
Sterilization temperature : **150 °C EPDM**
(short-term) **140 °C VMQ, FPM, HNBR**

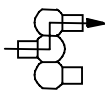
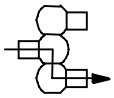
Air connection (for hose) **:** **6x1mm**

Max. pneumatic air pressure : **8 bar**
Min. pneumatic air pressure : **6 bar**

(Use dry and clean pneumatic air, only.)

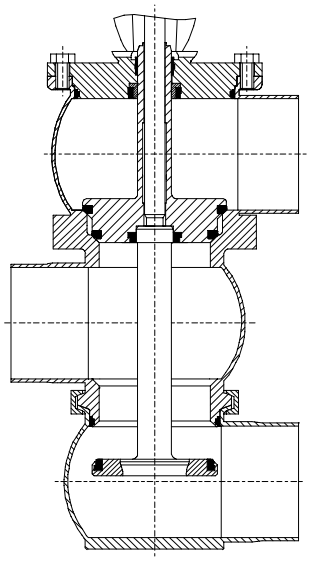
Closing times for double seal change-over valves SDU4
The opening and closing times can be fixed by adjustment of the throttling screw at the solenoid valve.

kvs values for SDU 4 valves in (m 3/h)

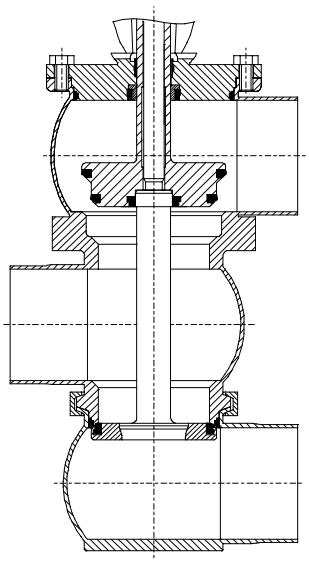
	SDU 45, SDU 46	SDU 45, SDU 46
DN		
25	19	14
40	42	33
50	88	58
65	145	100
80	175	160
100	220	245
Tube		
1T	15	10
1,5T	39	30
2T	79	54
2,5T	124	87
3T	155	137
4T	215	225

8. Technical Data

Operating position: A / NC (normally closed)



Operating position: B / valve controlled



Note: The max. product pressure in case of compressed air failure as indicated in **tab. 1** has to be considered for the design of the valves.

- Due to the seal technology, the max. product pressure is limited to **17,6 bar.**

Table 1

DELTA SDU 4 max. product pressure in (bar) valve normally closed without NOT element or with compressed air failure

		actuator Ø 74 mm		actuator Ø 110 mm		actuator Ø 165 mm	
Valve position		A	B	A	B	A	B
DN	Tube						
25	1T	6,4	14,5	16,0			
40	1,5T	3,6	6,8	9,6	14,4		
50	2T			6,0	8,3	11,2	17,6
	2,5T			4,7		11,6	
65				3,5	5,4	9,3	13,3
	3T					8,0	
80						6,0	9,4
100	4T					4,4	5,3

Table 2

DELTA SDU 4 max. product pressure in (bar) valve normally closed and NOT element

		actuator Ø 74 mm		actuator Ø 110 mm		actuator Ø 165 mm	
Valve position		A	B	A	B	A	B
DN	Tube						
25	1T	16,0	14,5	16,8			
40	1,5T	12,4	6,8	17,6	14,4		
50	2T			17,6	8,3	17,6	17,6
	2,5T			14,0		16,0	
65				10,5	5,4	17,6	13,3
	3T					17,6	
80						17,2	9,4
100	4T					12,8	5,3

9. Maintenance

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

- Required tools:

- 1 x spanner SW13
- 1 x spanner SW17
- 1 x spanner SW19
- 1 x hexagon socket screw key 6 mm.

- Exchange of seals is done according to service instructions.

- **Provide all seals with a thin layer of grease before their installation.**

  Recommendation:
  APV food-grade-grease for EPDM and HNBR
  (0,75 kg/tin - ref.-No. 000 70-01-019/93)
  (60 g/tube - ref.-No. 000 70-01-018/93)

! **No matter what type of application, use only those greases being suited for the respective seal material !**

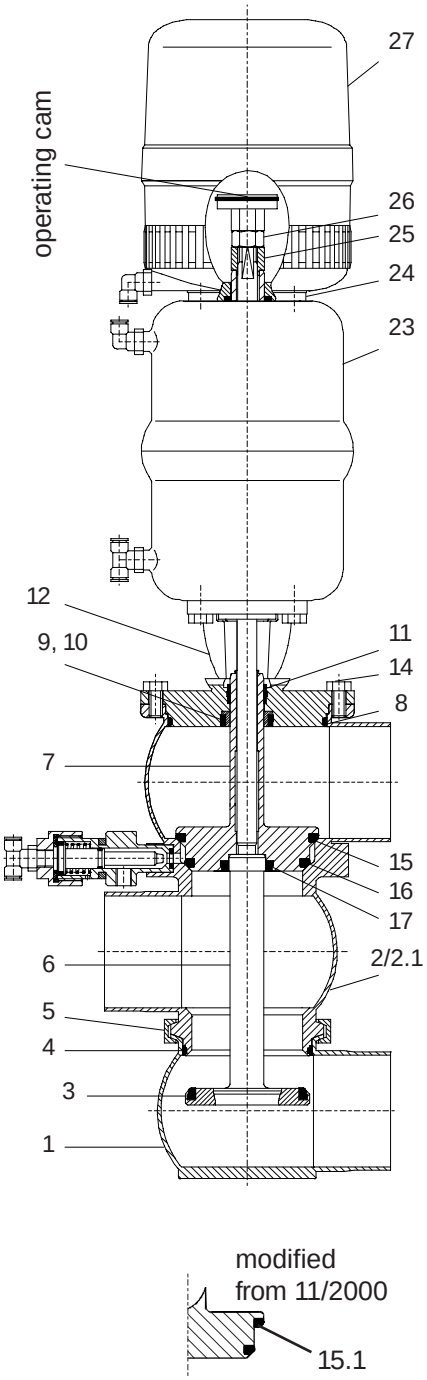
Assembly tool for upper seat seal
(Do not use the assembly tool but for the new valve design produced from Nov. 2000).

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

Assembly tool for lower Seat seal (item 3)		
DN	Tube	ref.-No.:
40	1,5T	000-51-13-111/17
50	2T	000-51-13-112/17
65		000-51-13-113/17
	2,5T	000-51-13-120/17
	3T	000-51-13-121/17
80		000-51-13-114/17
100	4T	000-51-13-115/17

Assembly tool for upper Seat seal (15.1)		
DN	Tube	ref.-No.:
25	1T	000 51-13-200/17
40	1,5T	000 51-13-201/17
50	2T	000 51-13-202/17
	2,5T	000 51-13-203/17
65		000 51-13-204/17
	3T	000 51-13-205/17
80		000 51-13-206/17
100	4T	000 51-13-207/17

10. Service Instructions



Delta SDU 4
The item numbers refer to the corresponding spare parts lists
DN: RN 01.054.64 / Tube: RN 01.054.064-1

I. Dismantling from the line system

a. Shut off line pressure and discharge lines if possible.

b. Remove the control unit **(27)** from the actuator **(23)**.
(Turn the ring in anticlockwise direction and remove the cover.)

c. Detach the separating connection in the line system (continuing from the side valve housing port at the upper valve housing).

d. Shut off and discharge the CIP supply line.

e. Remove the CIP supply and drain from the leakage valves.

f. Remove the link joint **(5)** at the lower housing **(1)**.

g. Dismantle the complete valve (actuator, valve insert and upper valve housing) from the line system.

II. Dismantling of product-wetted seals (service)

a. Remove the lower housing seal **(4)**.

b. Screw off the operating cam.

c. Unscrew the hexagon nut **(26)** by holding against the centering disk **(25)**. Remove the centering disk.

d. Pull the lower valve shaft **(6)** out of the actuator **(23)**. Remove the seat seals **(3)**.
(assembly see 10.IV.i.)

e. Control the actuator with air. For this purpose, remove the connecting hose from the control unit to the T-piece.
Control the actuator with compressed air at the T-piece.

Do not reach for movable parts.
Risk of injury.

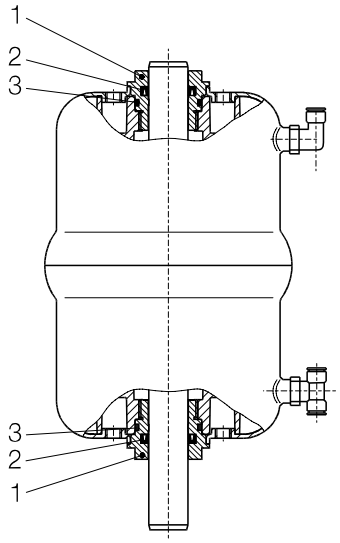
f. Remove the housing flange screws **(14)**.

g. Shut off compressed air and compressed air supply. Remove the connecting hoses to the leakage valves. Lift the valve insert out of the upper housing **(2/2.1)**.

h. Take the upper valve shaft **(7)** out of the yoke **(12)**. Remove the seat seals **(15 / 15.1, 16)** and **(17)**.

i. Unscrew the yoke **(12)** from the actuator **(23)**.
Remove the housing seal **(8)**. Take off the seat seal **(9)**, shaft seal **(10)** and guide bush **(11)**.

10. Service Instructions



III. Actuator

Spare parts list RN: 01.054.86

a. Remove the air hoses from the actuator.

b. Take the inner hexagon screws out of the adapter **(24)** of the control unit.

c. Screw off the two seal screws **(1)** by holding against the actuator by a strap wrench. Remove the O-rings **(3)** as well as the V-seals **(2)**.

IV. Installation of seals and assembly of actuator

a. Install the slightly greased O-ring **(3)** and the V-seal **(2)** in the seal screw **(1)**.
See to the correct direction of installation of the V-seal.

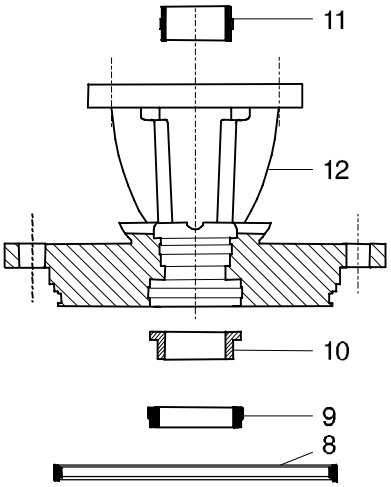
b. Push the seal screws over the piston rod at both sides of the actuator and tighten them.

c. Fasten the adapter for the control unit and the yoke at the actuator.
Attention: Observe the position of the adapter.

d. Install the air hoses.

10. Service Instructions

fig. for 10.V.a.



V. Installation of seals and assembly of valve
The item numbers refer to the corresponding spare parts lists
RN: 01.054.65 DN / 01.054.64-1 Tube

a. Slightly grease the housing seal **(8)** and insert it into the groove of the yoke flange. Place the guide bush **(11)** in the yoke **(12)**. Then insert the shaft seal **(10)** and press in the slightly greased seat seal **(9)**.
See to the correct direction of installation.

b. Install the yoke **(12)** on the actuator **(23)**.

c. Slightly grease the seat seal **(3)** and insert it into the upper shaft **(7)**. Insert the two seat seals **(15 / 15.1, 16)** into the upper shaft **(7)**. Slightly grease the seat seals before their installation. During the installation in the seal groove, the seal groove is to be vented between the seal ring and the groove wall by means of a thin object. See to a correct fit of the seals.
With modified design of the seat seal 15.1, use the assembly tool to install the seat seal (see page 16).

d. Insert the seat seal **(3)** into the lower valve shaft **(6)**. Use the APV assembly tool **(see 11.)** to insert the seat seal. Provide the seat seal with a thin layer of grease before its installation. When installed manually, vent the seal groove between the seal and the groove wall by means of a thin object.

e. Control the actuator with compressed air.

f. Push the upper valve shaft **(7)** through the yoke **(12)** until it stops.

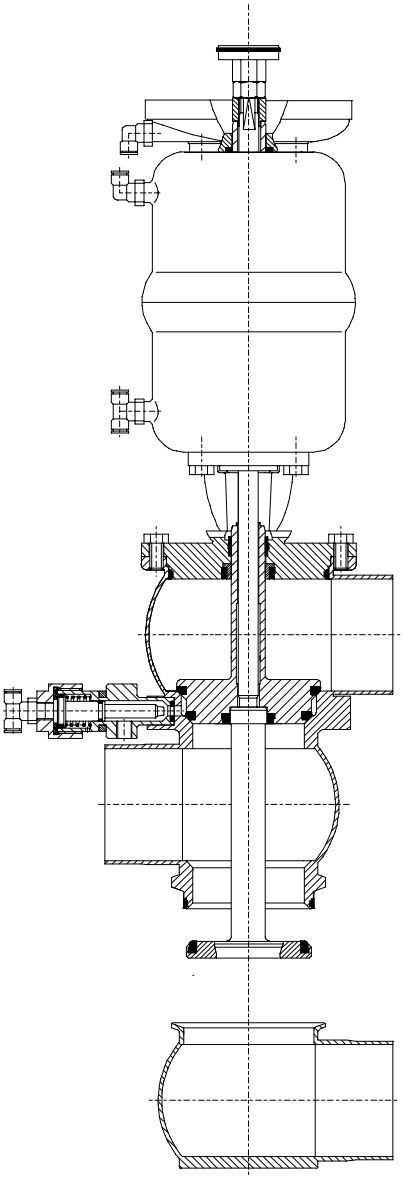
g. Place the actuator with yoke and upper valve shaft in the upper valve housing **(2 / 2.1).** Fix the yoke flange at the valve housing by means of the hexagon screws **(14)**.

h. Shut off the compressed air and remove the compressed air supply.

i. Push in the lower valve shaft **(3)** through the upper valve shaft **(7)** until it stops. Place the centering disk **(25)** and tighten the safety nut **(26)**.
For this purpose, hold against the centering disk.
Tightening torque 40 Nm.
Tighten the operating cam.

j. Slightly grease the lower housing seal **(3)** and insert it into the groove of the valve housing **(1)**.

10. Service Instructions



VI. Assembly of the valve

a. Place the complete valve insert (actuator, yoke, upper valve shaft and upper valve housing) in the lower valve housing **(1)** and tighten it with the link clamp **(5)**. Reconnect the valve housing with the line system. Reconnect the leakage valves.

b. Place the control unit **(27)** on the adapter **(24)** and secure it by the fastening ring.

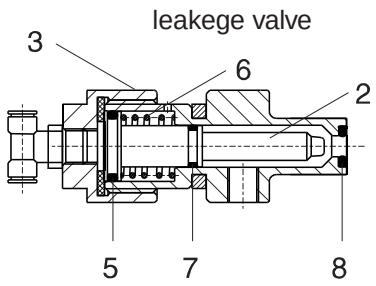
c. Connect the compressed air supply.

d. **Check the basic adjustment of the valve position indication.**

- By turning the positioning screw in the control unit, the shift points can be adjusted.

VII. Maintenance of the leakage valves

The item numbers refer to the spare parts lists
leakage valves: RN 01.054.67.



a. Pull off pneumatic air hoses at the two leakage valves.

b. Shut off CIP supply line and discharge it.

c. Remove CIP supply and outlet line from the leakage valves.

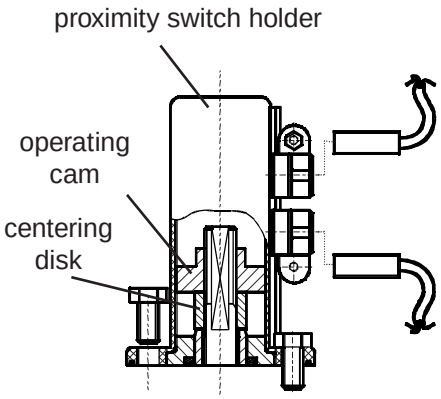
d. Release inner hex. screw and remove bracket.

e. Turn off cover **(3)** and pull off piston **(2)** and spring **(6)**.

f. Dismantle all seals **(5, 7, 8)**.

g. Installation is done in reverse order.

10. Service Instructions



VIII. Proximity switch holder (valve design without control unit)

If the valve is equipped with a proximity switch holder, the following steps have to be observed during the dismantling of the valve:

a. Remove pneumatic air lines.

b. Take the proximity switches off the holder.

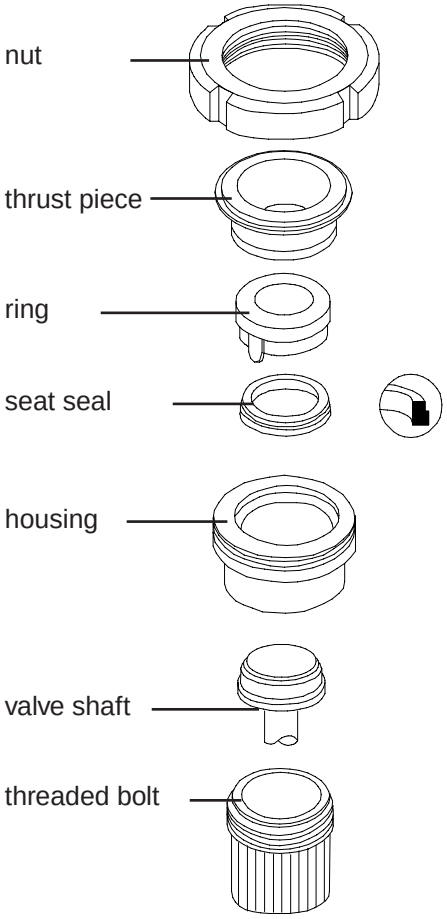
c. Dismantle the valve from the line system.
(see service instructions 10.I.a., c.-f.)

d. Release and remove the proximity switch holder.
The O-ring seal can be replaced.

e. Release the operating cam by holding against the centering disk.
Remove the centering disk.

f. Assembly see chapter 10.II.a., d.-i.
(Installation is done in reverse order.)

11. Assembly tool for seat seal



The assembly tool consists of:

- **nut**
- **thrust piece**
- **ring with venting plug**
- **housing**
- **threaded bolt**

Installation of the seat seal (item 15.1) in the upper valve shaft

1. Insert valve shaft into the housing in such a manner that the seal groove is in the valve housing.
2. Clamp the shaft in the housing by the threaded bolt. Fix the housing in a vise.
3. Lightly grease the seat seal with APV food-grade grease. Pull the seal onto the ring with venting plug until it stops.
4. Insert the ring with the seat seal into the housing and press it down until it stops.
5. Insert the thrust ring into the housing. Screw on the nut and tighten it by a hook spanner until it stops.
6. Release the nut. Pull the ring and the thrust piece out of the housing.
7. Take the housing out of the vise. Open the threaded bolt and pull the shaft out of the housing.

Check the correct fit of the seat seal.

12. Trouble Shooting

The item numbers refer to the respective spare parts drawings

- Valve is untight, leakages via the leakage valves	:	Replace seat seals **(15 / 15.1, 16).** Check line pressure**:** **perm. line pressure see 8.**
- Leakages at the cylinder of the leakage valve	:	Replace O-rings **(5, 7, 8).** Check cleaning liquid supply.
- Leakage between the middle and lower housing	:	Replace housing seal **(4)**.
- Leakages between housing and yoke flange	:	Replace housing seal **(8)**.
- Shaft passage in the yoke is untight	:	Replace seals **(9, 10, 11)**.
- Air escapes from the actuator (see spare parts list **RN 01.054.86**)	:	Dismantle actuator **(23)** from valve, replace seal **(2)** and O-ring **(3)** in the seal screw **(1)**.
- Actuator does not work, air escapes permanently via the venting plug	:	Replace actuator.
- Valve position indication is missing or unprecise	:	Carry out fine adjustment according to service instructions of control unit.

13. Spare Parts Lists

(see annex)

BA SDU4 000002
ID-No.: H 1 7 8 5 0 7

UK

Translation of original manual

rev. 1

WHERE IDEAS MEET INDUSTRY

Your local contact:

APV
Zechenstraße 49
D-59425 Unna

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For more information about our worldwide locations, approvals, certifications, and local representatives, please visit www.apv.com.

Ersatzteilliste: spare parts list:

Ventil SDU4 FS-CU und VSM DN 25-100

Valve SDU4 FS-CU and PSH DN 25-100

Besteht aus 3 Blatt Blatt 1

	Datum	Name
Gezeichnet	9.6.99	Trytko
Geprüft	2.8.99	Spl
Normgepr.	2.8.99	Plümper

Datum	6/99	12/99	02/01	12/02
Name	Trytko	Trytko	Trytko	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

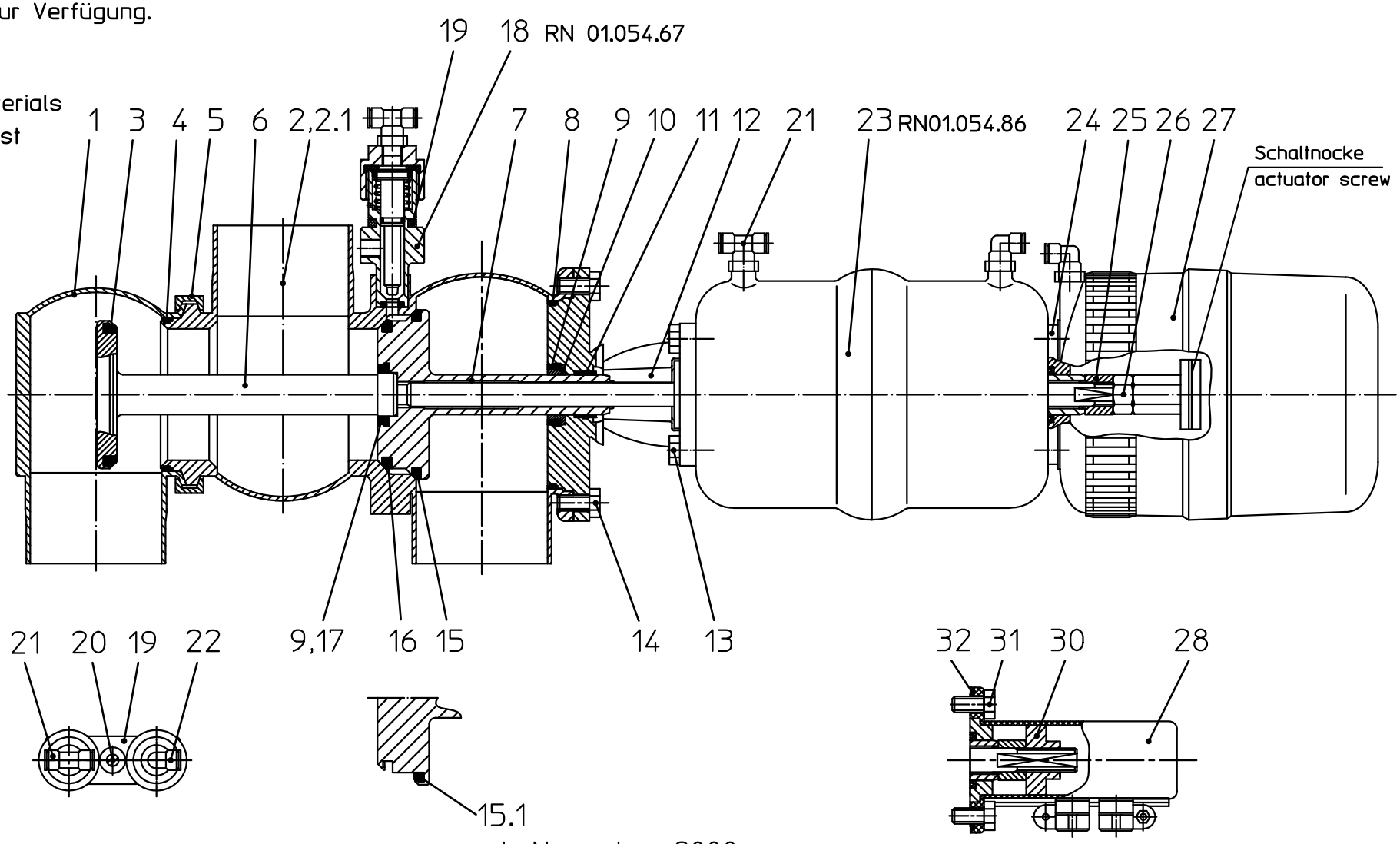
RN 01.054.64

Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.)

*Dichtungswerkstoff:
material seals:

../33-HNBR
../73-FPM
../93-EPDM



ab November 2000

Ersatzteilliste: spare parts list:

Ventil SDU4 FS-CU und VSM DN 25-100

Valve SDU4 FS-CU and PSH DN 25-100

Blatt 2

	Datum	Name
Gezeichnet	9.6.99	Trytko
Geprüft	2.8.99	Spl
Normgepr.	2.8.99	Plümper

Datum	6/99	12/99	02/01	12/02	02/03	08/07			
Name	Trytko	Trytko	Trytko	Trytko	Trytko	Trytko			

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.054.64

Pos. item	Menge quantity	Benennung description		DN 25	40	50	65	80	100	125	150
				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 Unterteil Housing lower part	SWE41	15-60-100/47	15-60-101/47	15-60-102/47	15-60-103/47	15-60-104/47	15-60-105/47		
2	1	Gehäuse Oberteil Housing upper part	SDU45	15-62-087/44	15-62-088/44	15-62-089/44	15-62-090/44	15-62-091/44	15-62-092/44		
2.1	1	Gehäuse Oberteil Housing upper part	SDU46	15-63-087/44	15-63-088/44	15-63-089/44	15-63-090/44	15-63-091/44	15-63-092/44		
3	1	Tellerdichtung Seat seal	*	58-33-293/	58-33-393/	58-33-443/	58-33-493/	58-33-543/	58-33-643/		
4	1	Gehäusedichtung Housing seal	*	58-33-267/	58-33-292/	58-33-124/	58-33-442/	58-33-492/	58-33-127/		
5	1	Gelenkklemme Clamp		42-40-287/17	42-40-387/17	42-40-437/17	42-40-487/17	42-40-537/17	42-40-637/17		
6	1	Schaft Valve shaft		15-25-292/42	15-25-392/42	15-25-442/42	15-25-492/42	15-25-542/42	15-25-642/42		
7	1	Schaft oben Upper valve shaft		15-26-295/42	15-26-395/42	15-26-445/42	15-26-495/42	15-26-545/42	15-26-645/42		
8	1	Gehäusedichtung Housing seal	*	58-33-292/	58-33-392/	58-33-442/	58-33-492/	58-33-542/	58-33-642/		
9		Tellerdichtung Seat seal	*	1x 58-33-293/	2x =	2x =	2x =	2x =	2x =		
10	1	Schaftdichtung Shaft seal		58-33-150/26	=	=	=	=	=		
11	1	Führungsbuchse Bushing		08-01-178/23	=	=	=	=	=		
12	1	Laterne Yoke		15-40-287/47	15-40-387/47	15-40-437/47	15-40-487/47	15-40-537/47	15-40-637/47		
13	4	Skt. Schraube Hex. screw		DIN EN 24017-M8x16-A2-70				DIN EN 24017-M8x20-A2-70			
14	4	Skt. Schraube Hex. screw		DIN EN 24017-M8x16-A2-70				DIN EN 24017-M10x16-A2-70			
15	1	Tellerdichtung Seat seal	*	58-33-394/	58-33-444/	58-33-194/	58-33-569/	58-33-544/	58-33-644/	bis November 2000	
15.1	1	Tellerdichtung Seat seal	*	58-33-393/	58-33-443/	58-33-109/	58-33-571/	58-33-546/	58-33-646/	ab November 2000	
16	1	Tellerdichtung Seat seal	*	58-33-294/	58-33-394/	58-33-444/	58-33-494/	58-33-544/	58-33-644/		
17	1	O-Ring O-ring	19-1,8	58-06-070/83							
18	2	Leckageventil Leakage valve		20-37-068/	=	=	=	=	=		

Ersatzteilliste: spare parts list:

Ventil SDU4 FS-CU und VSM DN 25-100

Valve SDU4 FS-CU and PSH DN 25-100

Blatt 3

	Datum	Name
Gezeichnet	9.6.99	Trytko
Geprüft	2.8.99	Spl
Normgepr.	2.8.99	Plümper

Datum	6/99	12/99	02/01	12/02	11/03	04/05			
Name	Trytko	Trytko	Trytko	Trytko	Trytko	Trytko			

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.054.64

Pos. item	Menge quantity	Benennung description	DN 25	40	50	65	80	100	125	150
			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.
19	1	Lasche Bracket	08-17-002/12	=	=	=	=	=		
20	1	Zyl. Schraube Cyl. screw	DIN ISO 4262-M8x32-A2-70				DIN ISO 4262-M8x32-A2-70			
21	2	T-Verschraubung G 1/8 Tee connector	08-63-370/93	=	=	=	=	=		
22	1	W-Verschraubung G 1/8 Angular union	08-63-350/93	=	=	=	=	=		
23	1	Steuerkopf Actuator	ø74 15-32-050/17	=	ø110 15-32-051/17	=	ø165 15-32-052/17	=		
24	1	CU2-Adapter CU2-adapter	08-48-415/93	=	=	=	=	=		
25	2	Zentrierscheibe Centering nut	15-28-940/12	=	=	=	=	=		
26	1	Skt. Mutter M12 Hex. nut	65-50-101/15	=	=	=	=	=		
27	1	Control-Unit CU31 Direct-Connect Control-Unit	16-31-232/93	=	=	=	=	=		
28	1	VSM Gehäuse-SW4 Proximity switch holder housing-SW4	15-33-932/93	=	=	=	=	=		
29										
30	1	Schaltnocke Operating cam	08-52-290/97	08-52-291/97	=	=	=	=		
31	4	Skt. Schraube Hex. screw	DIN EN 24017-M8x16-A2-70							
32	1	O-Ring O-ring	OR 66x2 NBR 70 Shore A							
		Pos. 3, 4, 8, 9, 10, 15, 15.1, 16, 17 sowie Pos. 4, 5, 7, 8 vom Leckageventil RN01.054.67 sind nur im komletten Dichtungssatz erhältlich Item 3, 4, 8, 9, 10, 15, 15.1, 16, 17 and item 4, 5, 7, 8 of leakage valve RN01.054.67 are available as complete seal kits only								
	1	Dichtungssatz EPDM Seal kit	58-34-760/01	58-34-761/01	58-34-762/01	58-34-764/01	58-34-766/01	58-34-767/01		
	1	Dichtungssatz FPM Seal kit	58-34-760/00	58-34-761/00	58-34-762/00	58-34-764/00	58-34-766/00	58-34-767/00		
	1	Dichtungssatz HNBR Seal kit	58-34-760/06	58-34-761/06	58-34-762/06	58-34-764/06	58-34-766/06	58-34-767/06		

Ersatzteilliste: spare parts list:

Ventil SDU4 FS-CU und VSM 1-4 zoll

Valve SDU4 FS-CU and PSH 1-4 inch

Besteht aus 3 Blatt Blatt 1

	Datum	Name
Gezeichnet	21.6.99	Trytko
Geprüft	2.8.99	Spl
Normgepr.	2.8.99	Plümper

Datum	6/99	12/99	02/01	12/02
Name	Trytko	Trytko	Trytko	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

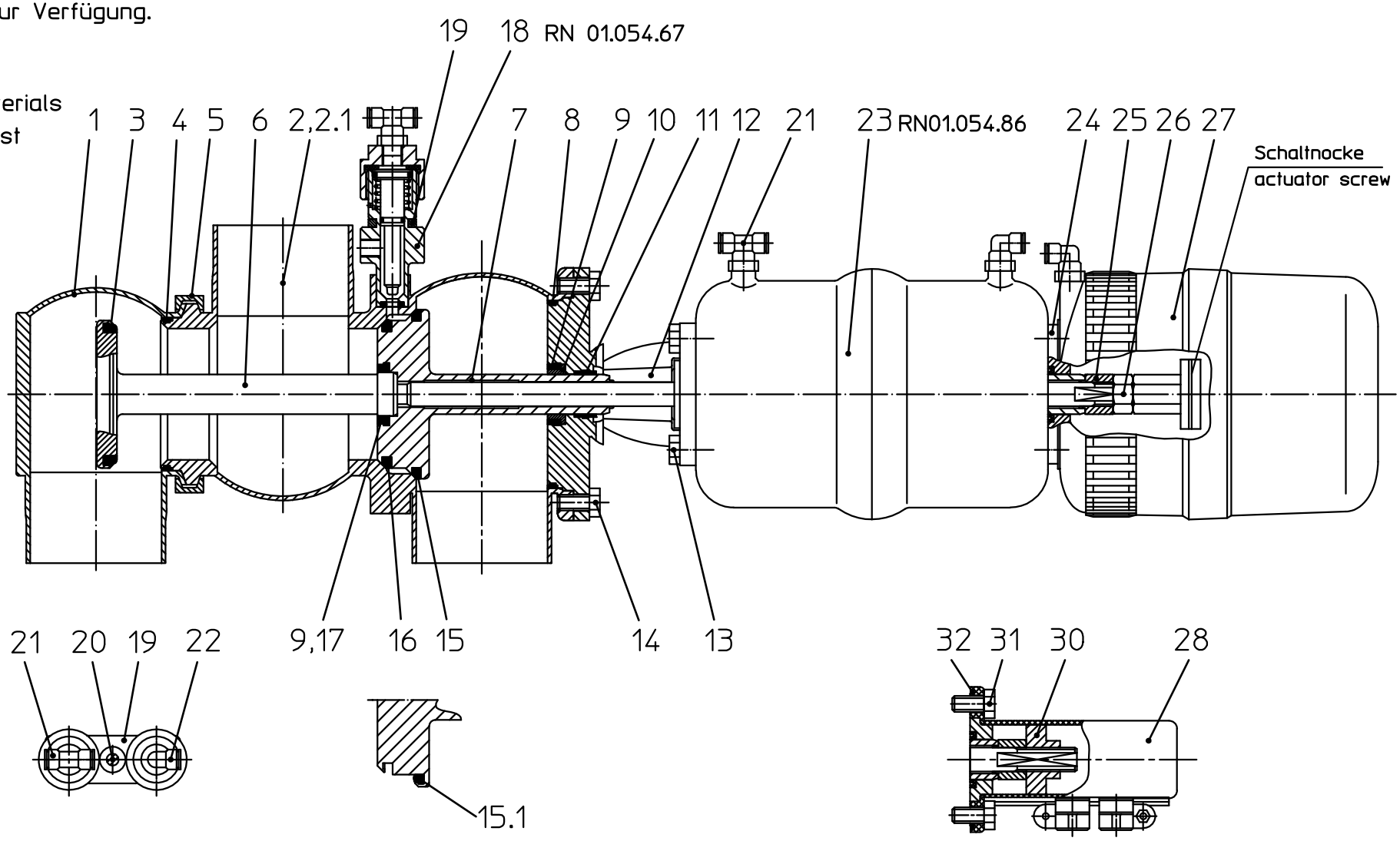
RN 01.054.64-1

Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.)

*Dichtungswerkstoff:
material seals:

../33-HNBR
../73-FPM
../93-EPDM



ab November 2000

Ersatzteilliste: spare parts list:

Ventil SDU4 FS-CU und VSM 1-4 zoll

Valve SDU4 FS-CU and PSH 1-4 inch

Blatt 2

	Datum	Name
Gezeichnet	21.6.99	Trytko
Geprüft	2.8.99	Spl
Normgepr.	2.8.99	Plümper

Datum	6/99	12/99	02/01	12/02	02/03	08/07			
Name	Trytko	Trytko	Trytko	Trytko	Trytko	Trytko			

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.054.64-1

Pos. item	Menge quantity	Benennung description			1"	1,5"	2"	2,5"	3"	4"		
					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 Unterteil Housing lower part	SWE41		15-60-110/47	15-60-111/47	15-60-112/47	15-60-113/47	15-60-114/47	15-60-115/47		
2	1	Gehäuse Oberteil Housing upper part	SDU45		15-62-093/44	15-62-094/44	15-62-095/44	15-62-096/44	15-62-097/44	15-62-098/44		
2.1	1	Gehäuse Oberteil Housing upper part	SDU46		15-63-093/44	15-63-094/44	15-63-095/44	15-63-096/44	15-63-097/44	15-63-098/44		
3	1	Tellerdichtung Seat seal		*	58-33-293/	58-33-393/	58-33-443/	58-33-109/	58-33-568/	58-33-643/		
4	1	Gehäusedichtung Housing seal		*	58-33-267/	58-33-292/	58-33-124/	58-33-125/	58-33-126/	58-33-127/		
5	1	Gelenkklemme Clamp			42-40-287/17	42-40-387/17	42-40-437/17	42-40-487/17	42-40-537/17	42-40-637/17		
6	1	Schaft Valve shaft			15-25-317/42	15-25-417/42	15-25-467/42	15-25-517/42	15-25-567/42	15-25-667/42		
7	1	Schaft oben Upper valve shaft			15-26-320/42	15-26-420/42	15-26-470/42	15-26-520/42	15-26-570/42	15-26-670/42		
8	1	Gehäusedichtung Housing seal		*	58-33-292/	58-33-392/	58-33-442/	58-33-492/	58-33-567/	58-33-642/		
9	1	Tellerdichtung Seat seal		*	1x 58-33-293/	2x =	2x =	2x =	2x =	2x =		
10	1	Schaftdichtung Shaft seal			58-33-150/26	=	=	=	=	=		
11	1	Führungsbuchse Bushing			08-01-178/23	=	=	=	=	=		
12	1	Laterne Yoke			15-40-287/47	15-40-387/47	15-40-437/47	15-40-487/47	15-40-562/47	15-40-637/47		
13	4	Skt. Schraube Hex. screw			DIN EN 24017-M8x16-A2-70				DIN EN 24017-M8x20-A2-70			
14	4	Skt. Schraube Hex. screw			DIN EN 24017-M8x16-A2-70					DIN EN 24017 -M10x16-A2-70		
15	1	Tellerdichtung Seat seal		*	58-33-394/	58-33-444/	58-33-194/	58-33-569/	58-33-544/	58-33-644/	bis November 2000	
15.1	1	Tellerdichtung Seat seal		*	58-33-393/	58-33-443/	58-33-109/	58-33-571/	58-33-546/	58-33-646/	ab November 2000	
16	1	Tellerdichtung Seat seal		*	58-33-294/	58-33-394/	58-33-444/	58-33-194/	58-33-569/	58-33-644/		
17	1	O-Ring O-ring	19-1,8		58-06-070/83							
18	2	Leckageventil Leakage valve			20-37-068/	=	=	=	=	=		

Ersatzteilliste: spare parts list:

Ventil SDU4 FS-CU und VSM 1-4 zoll

Valve SDU4 FS-CU and PSH 1-4 inch

Blatt 3

	Datum	Name
Gezeichnet	21.6.99	Trytko
Geprüft	2.8.99	Spl
Normgepr.	2.8.99	Plümper

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.054.64-1

Datum	6/99	12/99	02/01	12/02	11/03	04/05			
Name	Trytko	Trytko	Trytko	Trytko	Trytko	Trytko			

Pos. item	Menge quantity	Benennung description	1"	1,5"	2"	2,5"	3"	4"		
			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.
19	1	Lasche Bracket	08-17-002/12	=	=	=	=	=		
20	1	Zyl. Schraube Cyl. screw	DIN ISO 4262-M8x32-A2-70			DIN ISO 4262-M8x35-A2-70				
21	2	T-Verschraubung G 1/8 Tee connector	08-63-370/93	=	=	=	=	=		
22	1	W-Verschraubung G 1/8 Angular union	08-63-350/93	=	=	=	=	=		
23	1	Steuerkopf Actuator	ø74 15-32-050/17	=	ø110 15-32-051/17	=	ø165 15-32-052-17	=		
24	1	CU2-Adapter CU2-adapter	08-48-415/93	=	=	=	=	=		
25	2	Zentrierscheibe Centering nut	15-28-940/12	=	=	=	=	=		
26	1	Skt. Mutter M12 Hex. nut	65-50-101/15	=	=	=	=	=		
27	1	Control-Unit CU31 Direct-Connect Control-Unit	16-31-232/93	=	=	=	=	=		
28	1	VSM Gehäuse-SW4 Proximity switch holder housing-SW4	15-33-932/93	=	=	=	=	=		
29										
30	1	Schaltnocke Operating cam	08-52-290/97	08-52-291/97	=	=	=	=		
31	4	Skt. Schraube Hex. screw	DIN EN 24017-M8x16-A2-70							
32	1	O-Ring O-ring	OR 66x2 NBR 70 Shore A							
		Pos. 3, 4, 8, 9, 10, 15, 15.1, 16, 17 sowie Pos. 4, 5, 7, 8 vom Leckageventil RN01.054.67 sind nur im komletten Dichtungssatz erhältlich Item 3, 4, 8, 9, 10, 15, 15.1, 16, 17 and item 4, 5, 7, 8 of leakage valve RN01.054.67 are available as complete seal kits only								
	1	Dichtungssatz EPDM Seal kit	58-34-760/01	58-34-761/01	58-34-762/01	58-34-763/01	58-34-765/01	58-34-767/01		
	1	Dichtungssatz FPM Seal kit	58-34-760/00	58-34-761/00	58-34-762/00	58-34-763/00	58-34-765/00	58-34-767/00		
	1	Dichtungssatz HNBR Seal kit	58-34-760/06	58-34-761/06	58-34-762/06	58-34-763/06	58-34-765/06	58-34-767/06		

Ersatzteilliste: spare parts list:

Steuerkopf SW4
Actuator SW4

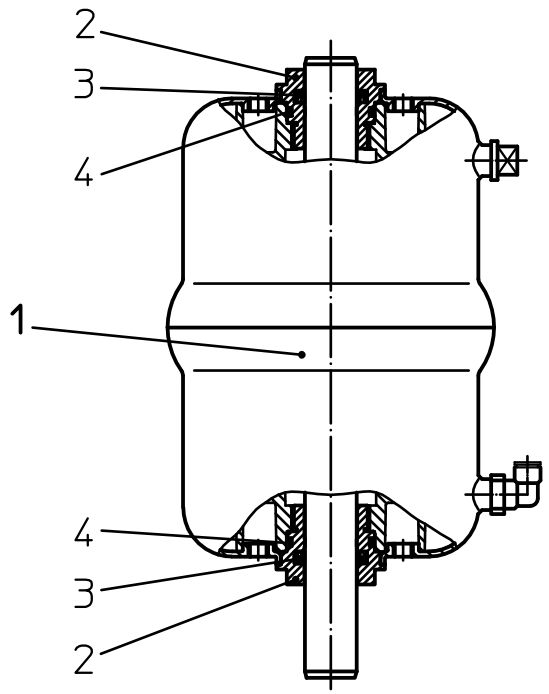
Besteht aus 1 Blatt Blatt 1

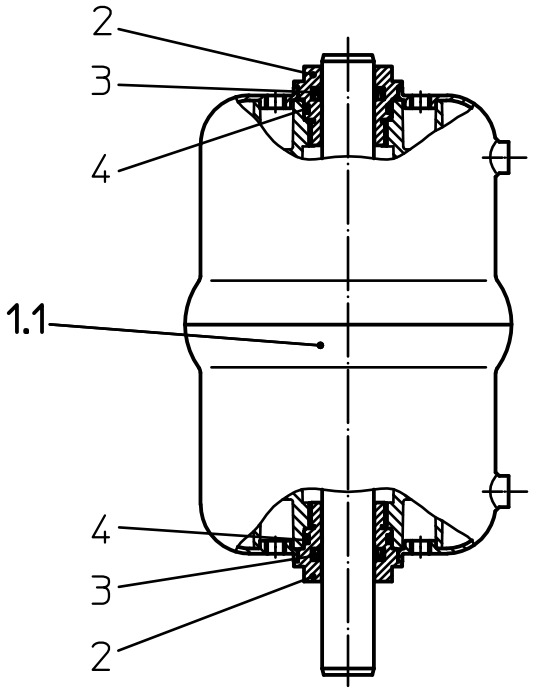
	Datum	Name
Gezeichnet	15.1.98	Trytko
Geprüft	15.1.98	Spliethoff
Normgepr.	19.1.98	Plümper

Datum	1/98	12/03	01/06	06/08					
Name	Trytko	Trytko	Trytko	Trytko					

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.054.86





Pos. item	Menge quantity	Benennung description	ø74 WS-Nr. ref.-no.	ø110 WS-Nr. ref.-no.	ø165 WS-Nr. ref.-no.
1		Steuerkopf kpl Feder/Luft Actuator complete spring/air Ausf. matt-gl. design satin fin.	15-32-050/17	15-32-051/17	15-32-052/17
		Steuerkopf kpl Luft/Luft Actuator complete air/air Ausf. matt-gl. design satin fin.	15-32-085/17	15-32-086/17	15-32-087/17
1.1		Steuerkopf kpl Feder/Luft Actuator complete spring/air Ausf. 3A-blank design 3A-bright fin.	3A0 15-32-059/13	3A0 15-32-060/13	3A0 15-32-061/13
		Steuerkopf kpl Luft/Luft Actuator complete air/air Ausf. 3A-blank design 3A-bright fin.	3A0 15-32-057/13	3A0 15-32-065/13	3A0 15-32-066/13
2	2	Dichtungsschraube Seal screw	15-28-840/93	=	=
3	2	V-Dichtung V-seal 20x28x4	58-32-010/83	=	=
4	2	O-Ring O-ring 29-2,5	58-06-124/83	=	=

02/94

Ersatzteilliste: spare parts list:

Leckageventil SD4

Leakage valve SD4

Besteht aus 1 Blatt Blatt 1

	Datum	Name
Gezeichnet	14.7.98	Trytko
Geprüft	21.7.98	Spliethoff
Normgepr.	17.8.98	Plümper

Datum	7/98	10/02	10/03	09/04
Name	Trytko	Trytko	Trytko	Trytko

APV Rosista GmbH
D-59425 Unna
Germany

RN 01.054.67

Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.)

*Dichtungswerkstoff: material seals:
../33-HNBR
../64-EPDM
../73-FPM

**Werkstoff metallisch+Dichtung:
material metallic+seal:
../29-HNBR-1.4404
../59-EPDM-1.4404
../69-FPM -1.4404

Pos. item	Menge quantity	Benennung description		WS-Nr. ref.-no.
	1	Leckageventil Leakage valve	**	20-37-068/
1	1	Gehäuse Leckageventil Housing leakage valve		21-08-002/47
2	1	Kolben Piston		15-29-102/93
3	1	Deckel Leckageventil Cover for leakage valve		21-20-002/17
4	1	Dichtung Seal		58-01-085/63
5	1	O-Ring 15,3-2,4 O-ring		58-06-052/64
6	1	Feder Leckageventil Spring leakage valve		60-07-002/13
7	1	O-Ring 8,5-1,8 O-ring	*	58-06-025/
8	1	O-Ring 6,0-3,0 O-ring	*	58-06-016/