

Operating Manual

DELTA SDM4

Double Seal Valve with Membrane



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



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



Manager Research and Development

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	DN - design	RN 01.054.63
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	Actuator	RN 01.054.86
	Leakage valve valid until 09.2004	RN 01.054.67
	Leakage valve valid from 09. 2004	RN 01.054.67-1

1. General Terms

This operating manual should be read carefully by the competent 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 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. The valve must only be assembled, disassembled and reassembled by persons who have been trained in APV valves or by APV service team members. If necessary, contact your local APV representative.
- If the membrane is damaged, leakages drain off the leakage bore in the yoke area.
- **Attention!**
Valve design NC (normally closed): Before releasing the housing clamp connection, the valve insert must be relieved by controlling the actuator.



- Attention!

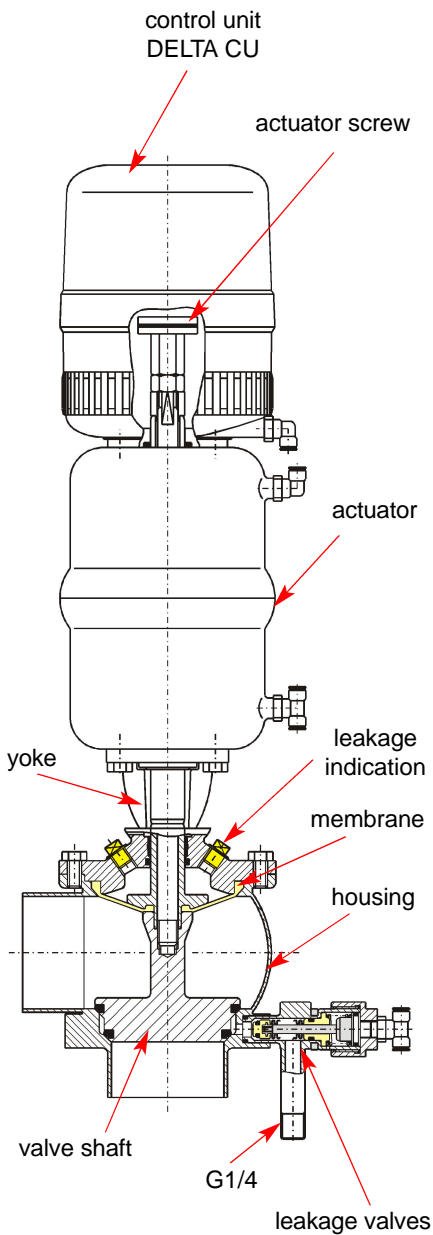
Welded actuators are preloaded by spring force.

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

Actuators which are no longer used and / or defective must be disposed in professional manner.
Defective actuators must be returned to your APV Solutions & Services company for their professional disposal and free of charge for you.
Please address to your local APV representative.

3. Mode of Operation

3.1 General Terms



Double seal valves with membrane DELTA SDM4 were developed for the use in the dairy and food industries, in chemical and pharmaceutical applications as well as in the brewing and beverage industries.

The membrane valves offer optimum protection of the product in hygienic and aseptic applications. Product safety is achieved by the hermetic separation of the product chamber to the outside (atmosphere) by means of a flexible membrane.

- Leakage at the membrane is indicated by a leakage indicator in the yoke area.

The field of application of the DELTA SDM4 comprises the safe shut-off and separation of line sections being separated from one another by two seat seals. A leakage chamber is arranged between the seals, the leakage chamber being forcibly closed by the two leakage valves or opened to the atmosphere.

Leakage at the seat seals 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 maintenance-free.
- To avoid pressure hammers, the valve should be closed against the flow direction of the fluid.
- As standard design a control unit DELTA CU31N 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

4.1 Valve position indication (fig. 4.1)

A proximity switch holder (PSH) for the valve position indication can be installed direct at the actuator. With SDM4 valves being equipped with a PSH it must be observed that the max. closing pressure is reduced compared with the valve design being equipped with the control unit DELTA CU31N.

Proximity switches to signal the limit position of the valve seat can be installed at the proximity switch holder (PSH) if required.

We recommend to use one of our APV standard types:

Operating distance: 5 mm / diameter: 11 mm.

Operating voltage: 10 – 30 VDC

Output: operating current pnp – switching

Connection: moulded cable 5 m length

Protective type: IP 67

ref.-No.: 08 - 60 - 011/93

If the customer decides to use a valve position indicator other than APV type, we cannot take over any liability for any malfunctions.

fig. 4.1

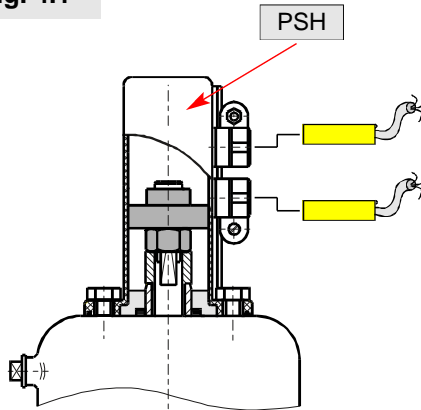
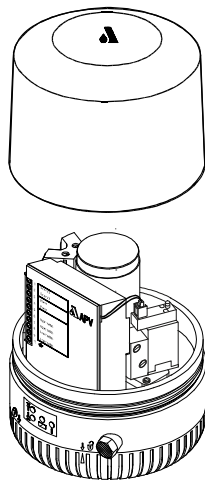


fig. 4.2



4.2 CONTROL UNIT (fig. 4.2)

For the start-up, assembly and disassembly of the control unit in the different designs, please refer to the corresponding manual.

The following different designs are available:

	1 solenoid valve (EMV)	1 solenoid valve (EMV) with NOT element
Direct Connect ref.-No.:	CU31 Direct Connect 16 - 31 - 232/93	CU31N 16 - 31 - 233/93
Profibus ref.-No.:	CU31 Profibus 08 - 45 - 001/93	CU31N Profibus 08 - 45 - 002/93
Device Net ref.-No.:	CU31 Device Net 16 - 31 - 240/93	CU31N Device Net 16 - 31 - 241/93
AS-Interface 2.1 ref.-No.:	CU31 AS-Interface 2.1 08 - 45 - 020/93	CU31N AS-Interface 2.1 08 - 45 - 021/93

- For the assembly of the control unit on the SDM4 valve an adapter is required.

	adapter
designation: ref.-No.:	CU3 adapter - SD4, SDM4 08 - 48 - 415/93

5. Cleaning

For the cleaning of SDM4 valves it is necessary to distinguish between two areas.

5.1 The flow chambers

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

5.2 The leakage chamber

Cleaning of the leakage chamber is done via the leakage valves. The cleaning liquid is supplied by one leakage valve and discharged to the atmosphere by the second leakage valve.

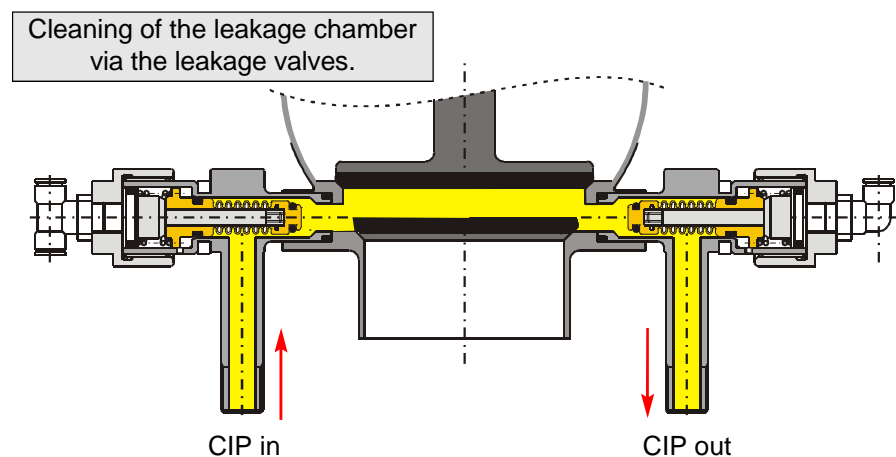
The restraint flow of the cleaning liquid provides for perfect cleaning of the whole leakage chamber.

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

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

cleaning step	CIP spraying
pre - flushing	3 x 10 sec.
caustic flushing 80 °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, times have to be adjusted.
- Flushing quantity per CIP spraying **ca. 1,2ltr/10s**
- Cleaning pressure at CIP cleaning connection: **min. 2 bar.**
max. 5 bar.



6. Installation

- Installation has to be done in such a way that fluids can drain off the valve housing and should preferably be done in vertical position.
- The valve housing can be welded direct into the pipeline (compl. dismantable valve insert).
- **Attention:** Observe welding instructions.

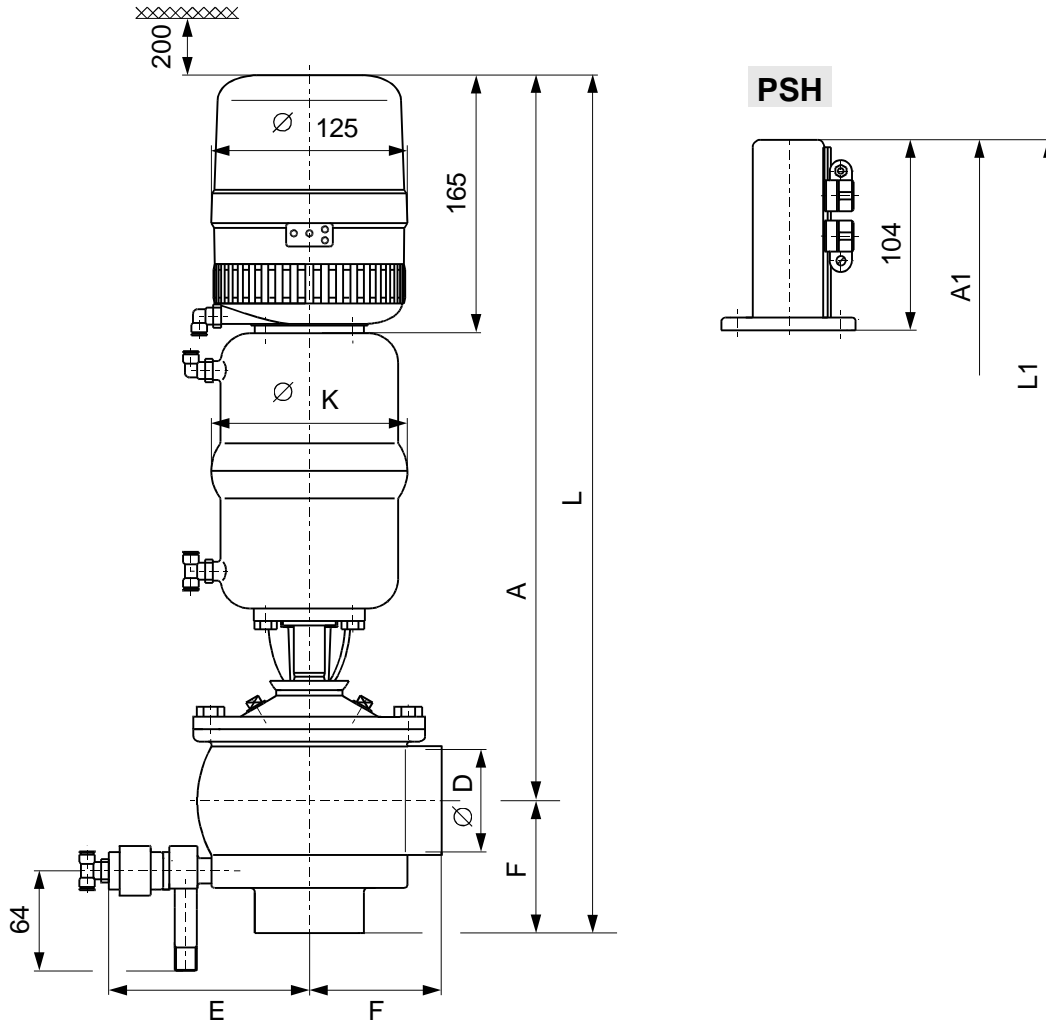
6.1 Welding Instructions

SDM4

- Before welding of the valve, the valve insert and the leakage valves must be dismantled from the housing. Careful handling to avoid damage to the parts is necessary.
- Welding should only be carried out by certified welders (EN 287-1). (seam quality EN 25817 "B")
- 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 in butt manner 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.

7. Dimensions / Weights

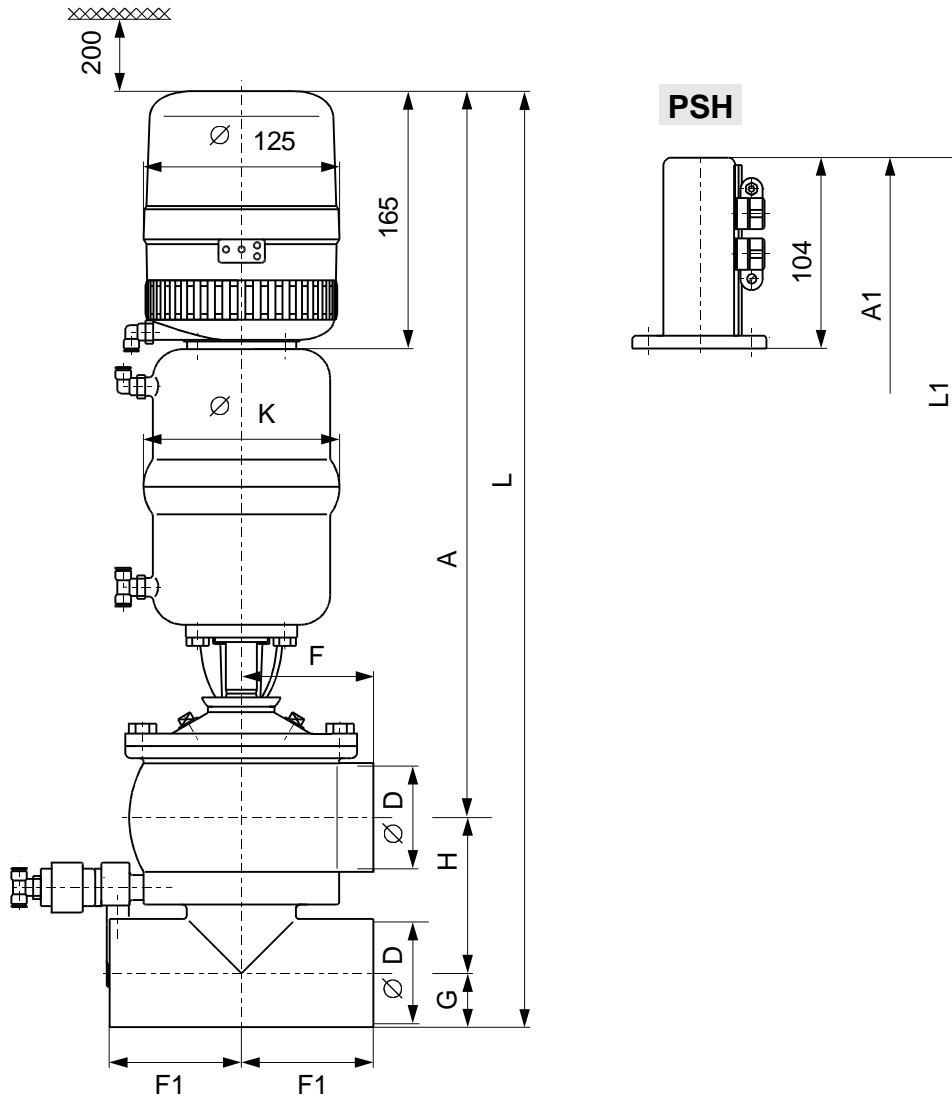
7.1 SDM 4



DN	$\varnothing D$	E	F	$\varnothing K$	A	L	A1	L1	weight in kg
25	26	110	68	126	440	508	379	449	5
40	38	115	67	126	446	513,2	385,2	452,2	5
50	50	117	72	126	464	535,5	392,5	474,5	7
65	66	127	85	189	511	595,7	449,3	534,7	7
80	81	140	98	189	521	618,7	459,7	557,7	13
100	100	140	111	189	530	641	469	580	15
Inch									
1"	21,8	110	68	126	438	506	377	445	5
1,5"	34,9	115	67	126	444,8	511,8	383,3	450,8	5
2"	47,6	117	72	126	452,4	524,4	390,9	463,4	7
2,5"	60,3	127	85	189	507,3	592,3	446,3	531,3	7
3"	72,9	127	90	189	514	604	453	543	13
4"	97,6	140	111	189	528	639	466	578	15

7. Dimensions / Weights

7.2 SDME 4



DN	$\varnothing D$	F	F1	G	H	$\varnothing K$	A	L	A1	L1	weight in kg
25	26	68	50	14,5	60	126	440	514,5	379	438	5
40	38	67	67	20,5	72	126	446	538,5	385,2	444,2	5
50	50	72	72	26,5	84	126	464	574,5	392,5	451,5	7
65	66	85	85	35	100	189	511	646	449,3	508,3	7
80	81	98	98	42,5	115	189	521	678,5	459,7	518,7	13
100	100	111	111	52	134	189	530	716	469	528	15
Inch											
1"	21,8	68	50	12,7	55,8	126	438	506,5	377	436	5
1,5"	34,9	67	67	19	68,9	126	444,8	532,7	383,3	442,3	5
2"	47,6	72	72	23,8	81,6	126	452,4	557,8	390,9	449,9	7
2,5"	60,3	85	85	31,7	94,3	189	507,3	633,3	446,3	505,3	7
3"	72,9	90	90	38	107,0	189	514	659	453	512	13
4"	97,6	111				189	528		466		15

8 Technical Data

8.1 General Terms

Product-wetted parts:	316 L, 1.4404
Other parts :	1.4301
Seals : standard design :	EPDM /PTFE
option :	HNBR /PTFE
actuators :	304, 1.4301
max. product pressure : (standard)	5 bar
valve design with NOT element :	max. 10 bar under the valve seat in closed position
max. operating temperature :	135°C EPDM, HNBR
short-term load :	140°C EPDM, 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.)	

8.2 For valves equipped with a control unit DELTA CU, the opening and closing times can be increased by adjustment of the throttling screw at the solenoid valve.

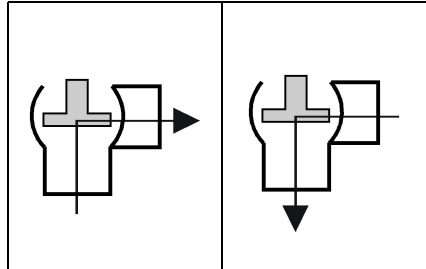
closing times in sec.
air pressure 6 bar
hose length 1m u. 10m.

DN	Inch	1m	10m
25	1"	1	2
	1,5"	2	3
40		2	3
50	2"	2	3
65	2,5"	3	4
80	3"	5	6
100	4"	5	6

8. Technical Data

8.3

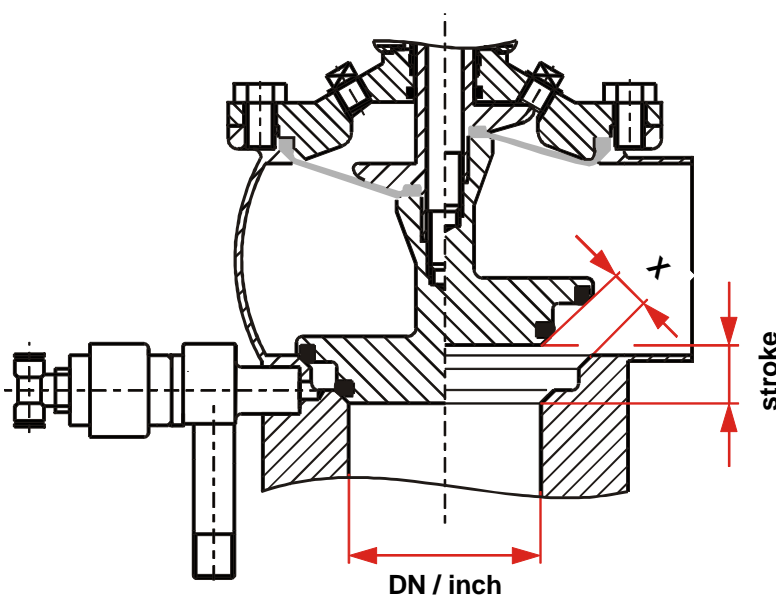
DELTA SDM4
kvs values in m³ / h



DN	Inch		
25	1"		
40	1,5"	38	42
50	2"	70	73
65	2,5"		
	3"		
80			
100	4"		

8.4

DELTA SDM4
valve stroke / opening cross section



dimensions in mm		
DN	stroke	X
25	13	7,5
40	13	7,5
50	16	8,0
65	21	15,0
80	25	19,0
100	25	19,0
Inch		
1"	13	7,5
1,5"	13	7,5
2"	16	8,0
2,5"	21	15,0
3"	21	12,0
4"	25	19,0

9. Maintenance



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

- Required tools :
- 1 x wrench SW13
- 1 x wrench SW17
- 1 x wrench SW19
- 1 x hexagon socket screw key 6 mm

- Exchange of seals is done according to Service Instructions.

- Installation of seat seal see page 18.

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

- ***The membrane must be provided with a thin layer of grease at the product- averted side.***

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 !

Recommendation for screw retention

Typ:

Loctite 243 semi-solid

(5ml - ref.-No.00070-01-110/93)

(50ml - ref.-No.00070-01-111/93)

9.1 Assembly tool for seat seal

Assembly tool to be used for new valve design produced from April 2001 only.

! The assembly tool is suited only for the installation of the upper seat seal 12.1 (see chapter 13).

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

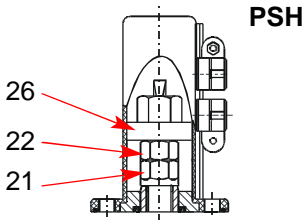
assembly tool SDM4		
DN	Inch	reference No.
25	1"	000 51 - 13 - 226/17
40	1,5"	000 51 - 13 - 227/17
50	2"	000 51 - 13 - 228/17
65	2,5"	000 51 - 13 - 229/17
	3"	000 51 - 13 - 230/17
80,100	4"	000 51 - 13 - 225/17

10. Service Instructions

10.1 Dismantling from the line system DELTA SDM4, SDEM4

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

b. **NC version: control the actuator with air.**



Do not reach for movable parts!
Risk of injury.

c. Remove the housing screws (11) and lift the complete insert including actuator off the housing.

d. **NC version: shut off compressed air.**

e. **CU design:**

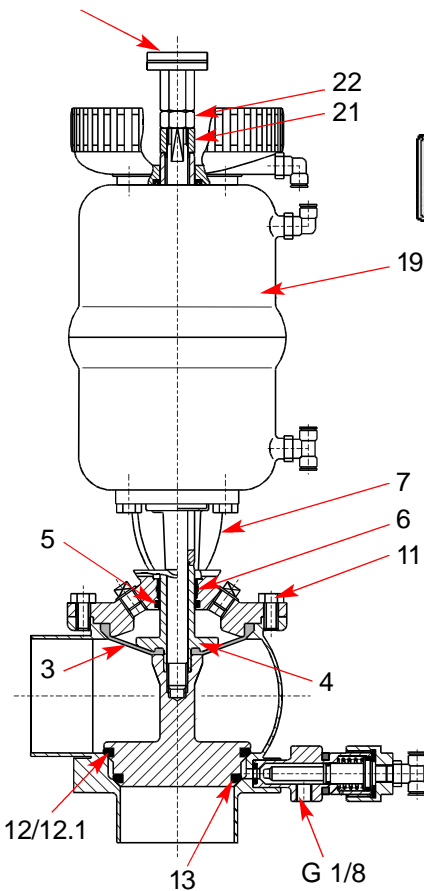
Remove the compressed air supply and detach the control unit by turning the safety ring.

The actuator is loaded with compressed air via the NOT element.

PSH design:

Remove the proximity switches. Detach the PSH housing (proximity switch holder) from the actuator.

actuator screw



10.2 Dismantling of product-wetted parts

The item numbers refer to the spare parts drawings

SDM4, SDEM4	DN design	RN 01.054.63
	Inch design	RN 01.054.63-1

a. **CU and PSH design:**

Screw off the actuator screw. Remove the safety nut (22) while holding up the centering washer (21) and detach the centering washer.

b. Pull the lower valve shaft (2) off the actuator (19), remove the seat seals (12 / 12.1, 13).

Attention: Valve shaft modified from 04.2001.

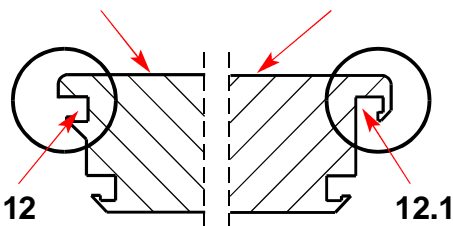
c. Remove the membrane (3) and the upper valve shaft (4).

d. Remove the yoke (7) from the actuator (19).

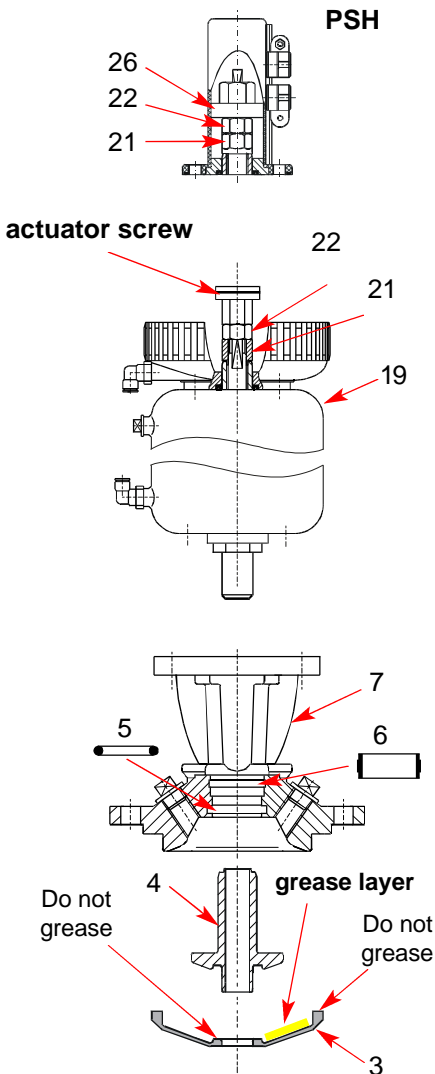
e. Detach the o-ring (5) and the guide bush (6) from the yoke (7).

valve shaft
until 3.2001

valve shaft
modified from
4.2001



10. Service Instructions



10.3 Installation of seals and assembly of the valve

The item numbers refer to the corresponding spare parts lists

SDM4, SDEM4

DN: RN 01.054.63

Inch: RN 01.054.63-1

- Insert the guide bush (6) and the o-ring (5) in the yoke (7).
- Install the yoke (7) on the actuator (19).
- Insert the two seat seals (12 / 12.1, 13) into the lower shaft (2) (see page 18).

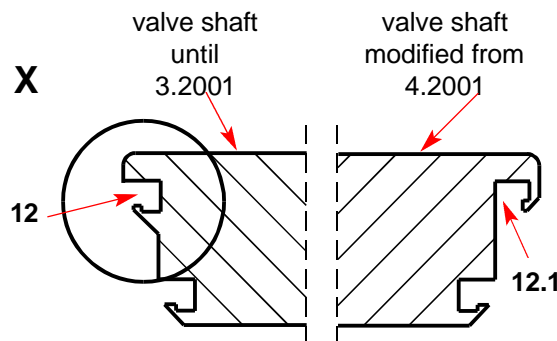
Attention:

**Modified design of seat seal 12.1
(from 04.2001)**

- Provide the membrane (3) at the product-averted side with a thin layer of grease and place it on the upper valve shaft (4). Place the upper valve shaft with the membrane on the guide rod (8).
- Insert the lower valve shaft (2) with guide rod (8), membrane (3) and upper valve shaft (4) through the yoke (7) and actuator (19).
- Place the centering washer (21). Provide the thread of the guide rod with a drop of a screw locker (e.g. type: Loctite - semi-solid). Screw on the safety nut (22) and fasten it with a **tightening torque of $M_d = 40 \text{ Nm}$** . Hold up the centering washer during this process.

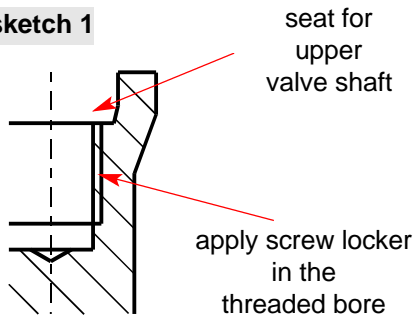
CU design: Tighten the plastic actuator screw.

PSH design: Fasten the metallic actuator screw as safety nut.



10. Service Instructions

sketch 1



Instructions to replace the guide rod:

for valve dimensions DN 40 - 100 / 1,5" - 4"

Unscrew the guide rod (8) from the lower valve shaft (2).

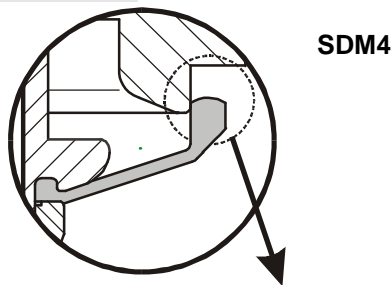
Clean the valve shaft (remove grease and impurities). Apply a drop of a screw locker (e.g. type: Loctite - semi-solid) in the area of the threaded bore of the lower valve shaft (see sketch 1).

Screw in the guide rod and tighten it. In case of **non-observance** of these instructions, the two valve shafts can paste up.

10.4 Assembly of the valve

SDM 4, SDEM 4

fig. 10.4-1



- a. **CU design:** place the control unit (23) on the adapter (20) and secure it with the fastening ring.

PSH design: fasten the PSH housing (24).

- b. **Valve design NC: observe the following instructions for the assembly of the valve insert:**

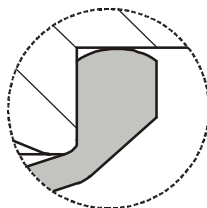
Place the pre-assembled valve insert (see fig. 10.4-1) carefully in the valve housing.

The membrane (M4) must not be damaged during the installation of the valve insert in the housing.

NC version: control actuator with air (see fig. 10.4-2).

Through the control with air, the yoke lowers on the housing flange. Screw the hexagon screws in the housing flange and tighten them crosswise.

fig. 10.4-2



Do not touch movable parts!
Risk of injury.

- ! **NC version:** cut off air.

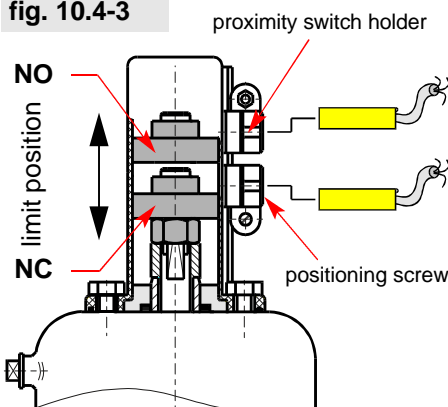
- c. **Check the basic adjustment of the valve position indication.**

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

- d. **PSH design:** plug in the proximity switches and fasten them.

- Adjust the proximity switches if necessary.

fig. 10.4-3



- e. **Adjustment of proximity switches (fig. 10.4-3):**

- Drive the actuator into the limit position.

- Drive the corresponding proximity switch into the corresponding position. For this purpose release the positioning screw and move the holder until the corresponding signal is indicated. Then, continue to slide the holder by 2 to 3 mm in order to secure the indication. Fasten the positioning screw.

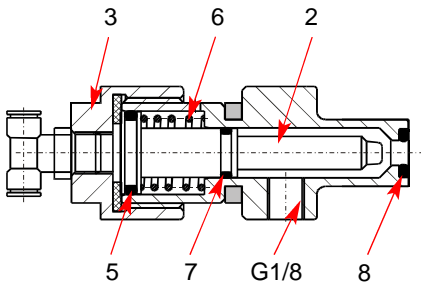
- Position the actuator in the other limit position and carry out the positioning of the second proximity switch.

- Upper valve position indication: valve NO "normally open" (air-to-lower, spring-to-raise)

- Lower valve position indication: valve NC "normally closed" (air-to-raise, spring-to-lower)

11. Service Instructions

fig. 1



leakage valve valid until 09.2004

11.1 Maintenance of the leakage valves

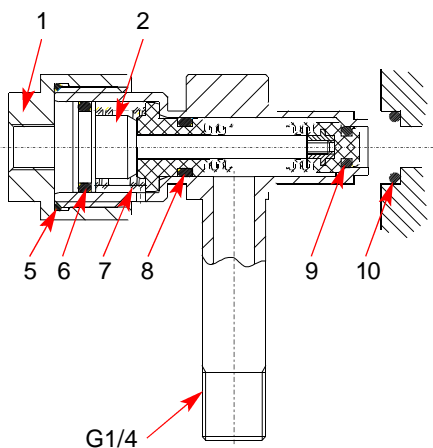
The item numbers refer to the corresponding spare parts lists

- leakage valves SD4: RN 01.054.67

valid until September 2004 (see fig. 1).

- a. Pull off the pneumatic air hoses at the two leakage valves.
- b. Shut off the CIP supply line and discharge it.
- c. Remove the CIP supply and outlet lines from the leakage valves.
- d. Release the inner hexagon screw and remove the bracket. Pull the leakage valves off the housing flange.
- e. Turn off the cover (3) and pull off the piston (2) and the spring (6).
- f. Dismantle all seals (5, 7, 8).
- g. Installation is made in reverse order.

fig. 2



leakage valve modified from 10. 2004

11.2 Maintenance of the leakage valves

The item numbers refer to the corresponding spare parts lists

- leakage valves SDMF4: RN 01.054.67-1

valid from October 2004 (see fig. 2).

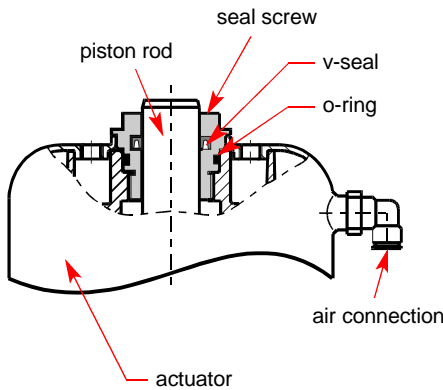
- a. Pull off the pneumatic air hoses at the two leakage valves.
- b. Shut off the CIP supply line and discharge it.
- c. Remove the CIP supply and outlet line from the leakage valves.
- d. Release the inner hexagon screw and remove the bracket. Pull the leakage valves off the housing flange.
- e. Turn off the cover (1) and pull off the piston (2) with bellow unit (3) and the spring (7).
- f. Turn off the piston (2) from the bellow unit (3).
- g. Dismantle all seals (5, 6, 8, 9 and 10).
- h. Installation is made in reverse order.

- ! At first, place the housing o-ring (10) into the housing bore.
Then install the leakage valve.

12. Service Instructions - Actuator

12.1 Actuator Service

- a. Remove the air hoses from the actuator.
- b. Remove the inner hexagon screws from the adapter of the control unit.
- c. Undo the two seal screws with a spanner SW30 while holding up the actuator with a strap wrench.



12.2 Installation of seals and assembly of actuator

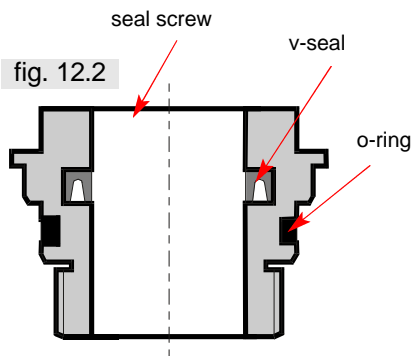
- a. Install the slightly greased o-rings and v-seals in the seal screws (fig. 12.2).
See to the right direction of installation of the seal.
- b. Push the seal screws over the piston rod at both sides of the actuator and tighten them.
- c. Fasten the adapter of the control unit and the yoke on the actuator.

Attention: Observe the position of the adapter.

Attention: Consider the required valve design NC or NO during the installation of the adapter and of the yoke.

NC	=	normally closed (air-to-raise, spring-to-lower)
NO	=	normally open (air-to-lower, spring-to-raise).

- d. Fix the air hoses.

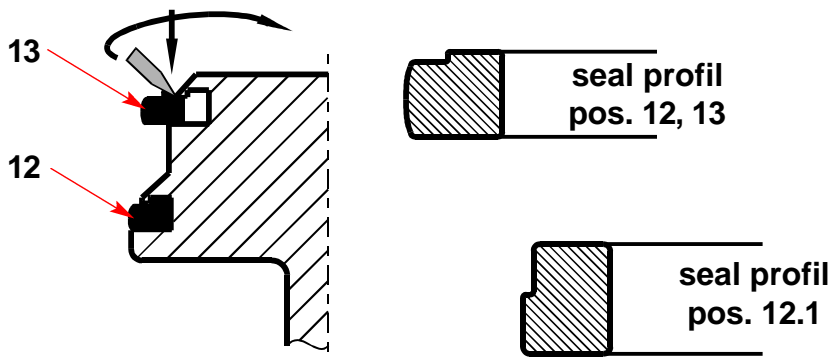


13. Installation of Seat Seal

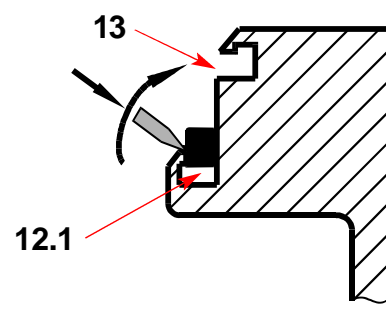
Before the installation of the seat seal, check the design of the valve shaft to verify design 1 until 03.2001 or design 2 from 04.2001 (modification of seal from item 12 to 12.1).

1. Provide the seat seal with a thin layer of grease before its installation.
The groove for the seat seal must not be greased.

Design 1
Valve shaft valid until 3.2001

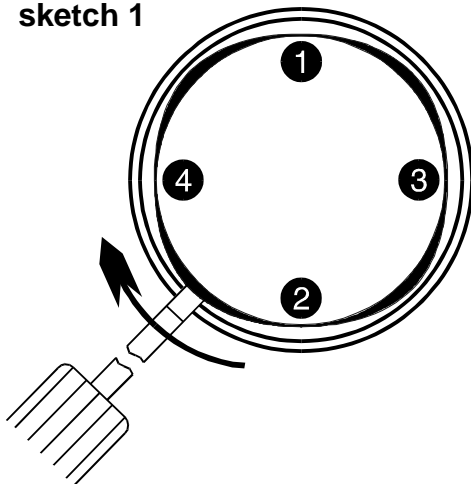


Design 2
Valve shaft valid from 4.2001
(For the seat seal 12.1 an assembly tool is available, see chapter 14.)

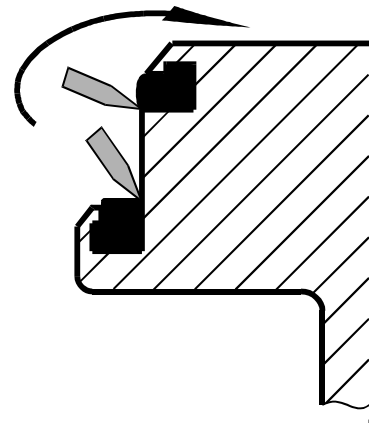


2. Clamp the valve shaft in a vice.
! Do not damage the valve shaft. Use protective covers.
3. Press the seal with an assembly tool (e.g. screw driver with round edges) at four opposing spots 1-2, 3-4 into the groove. **(see sketch 1)**
4. Proceed step-by-step to press the seal into the groove. Press the opposing spots into the groove. Check the even fit of the seat seal.
5. Insert the assembly tool between the seal shoulder and the groove edge around the whole circumferences of the assembly. The groove is vented and the seal shoulder locks into place **(see sketch 2).**

sketch 1

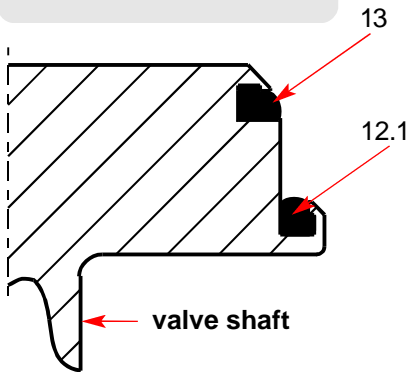


sketch 2



14. Assembly Tool

Attention !
modified from 04.2001



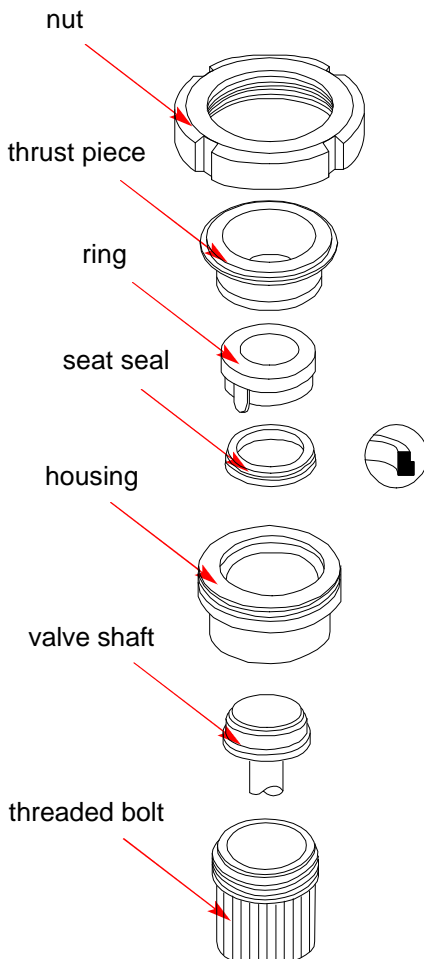
By means of the assembly tool only the seat seal (12.1) can be installed. This seat seal must at first be assembled on the valve shaft.

Afterwards insert the seat seal (13) in the groove. Press the seat seal (13) by means of an assembly tool (use screwdriver with round edges) circumferentially into the groove. After the installation of the seat seal, vent the seal groove between the seal and the groove wall by means of the assembly tool. See to an even fit of the seal.

The assembly tool consists of:

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

Installation of the seat seal in the valve shaft



1. Insert the 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.
3. Lightly grease the seat seal with APV food-grade grease. Then pull the seal onto the ring with venting plug until it stops.
4. Introduce 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, unscrew the threaded bolts. Take the valve shaft out of the housing.

Check the correct fit of the seat seal.

assembly tool SDM4		
DN	inch	reference No.
25	1"	000 - 51 - 13 - 226/17
40	1,5"	000 - 51 - 13 - 227/17
50	2"	000 - 51 - 13 - 228/17
65	2,5"	000 - 51 - 13 - 229/17
	3"	000 - 51 - 13 - 230/17
80,100	4"	000 - 51 - 13 - 225/17

15. Trouble Shooting

<i>Failure</i>	<i>Remedy</i>
Valve is untight, leakages via the leakage valves	Replace seat seals (12, 12.1, 13). Check line pressure: perm. line pressure see 8.
Leakages at the cylinder of the leakage valve	Replace o-rings. (see RN 01.054.67 or RN 01.054.67-1) Check cleaning liquid supply.
Leakage between housing and yoke flange	Replace membrane (3).
Air escapes from the actuator (see spare parts lists RN: 01.054.86)	Dismantle the actuator (19) from the valve, replace the V-seal (2) and o-ring (3) in the seal screw (1).
Actuator does not work air escapes permanently via the venting plug	Replace the actuator.
Valve position indication is missing or unprecise	Carry out fine adjustment according to the service instructions of the control unit.

! ***When damaged seals are changed, generally all seals should be replaced.***
For valve service actions APV supplies complete seal kits
(see spare parts lists).

16. Spare Parts Lists

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:

- required number of parts
- reference number
- designation.

Data are subject to change.

BA SDM4 000002
ID-No.: H 1 7 6 1 0 2
Translation of original manual



rev. 2



Your local contact:



APV
Zeichenstraße 49
D-59425 Unna

Phone: +49(0) 23 03/ 108-0 Fax: +49(0) 23 03 / 108-210

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

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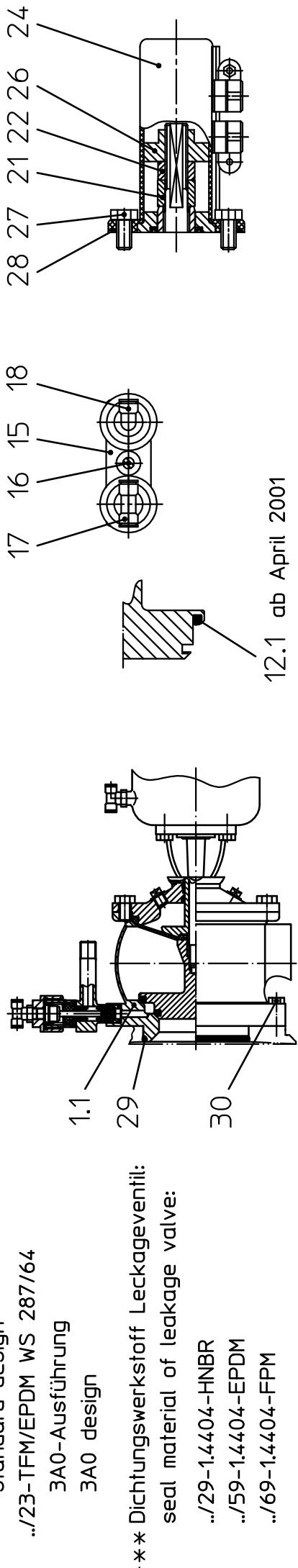
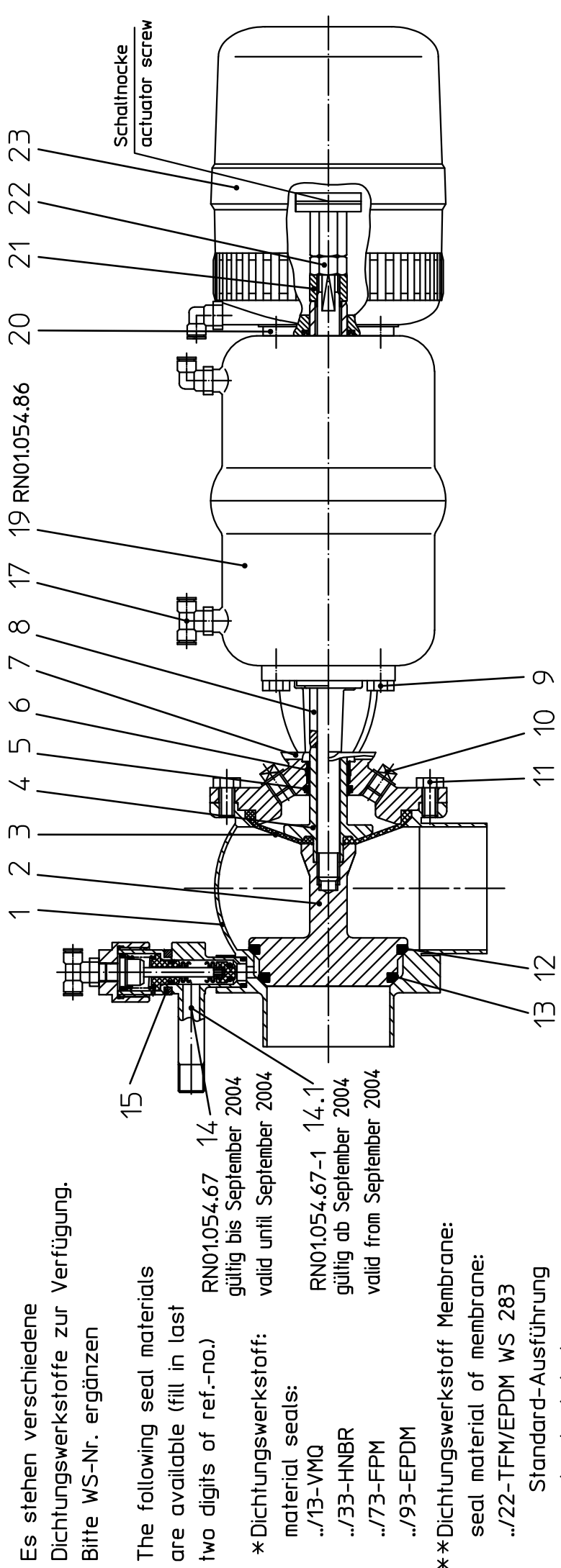
02/194

Ersatzteilliste: spare parts list:
 Ventil SDM4, SDEM4, SDTM4, SDTM4 FS-CU und VSM
 Valve SDM4, SDEM4, SDTM4, SDTM4 FS-CU and PSH
 DN 25-100

Besteht aus 4 Blatt		Blatt 1	
Gezeichnet	13.7.98	Trytko	Trytko
Geprüft	19.8.98	Schulz	Schulz
Normgepr.	20.8.98	Plümpel	Plümpel
Datum	7/98	03/01	11/01
Name	Trytko	Trytko	Trytko
	02/02	02/03	02/03
	Trytko	Trytko	Trytko

APV Rosista GmbH
 D-59425 Urra
 Germany

RN 01.054.63



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:
 - ../13-VMQ RN01.054.67 14.1 gültig bis September 2004 valid until September 2004
 - ../33-HNBR RN01.054.67-1 14.1 gültig ab September 2004 valid from September 2004
 - ../73-FPM
 - ../93-EPDM

**Dichtungswerkstoff Membrane:

- seal material of membrane:
 - ../22-TFM/EPDM WS 283 Standard-Ausführung standard design
 - ../23-TFM/EPDM WS 287/64 3A0-Ausführung 3A0 design

*** Dichtungswerkstoff Leckageventil:

- seal material of leakage valve:
 - ../29-1.4404-HNBR
 - ../59-1.4404-EPDM
 - ../69-1.4404-FPM

12.1 ab April 2001

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Ersatzteilliste: spare parts list:
 Ventil SDM4, SDEM4, SDTM4 FS-CU und VSM
 Valve SDM4, SDEM4, SDTM4 FS-CU and PSH
 DN 25-100

Blatt 2

Gezeichnet	13.7.98	Trytko	Name	
Geprüft	20.8.98	Schulz		
Normgepr.	20.8.98	Pföpfer		

Datum	7/98	03/03	10/03	08/05	09/07
Name	Trytko	Trytko	Trytko	Trytko	Trytko

RN 01.054.63



APV Rosista GmbH
 D-58425 Urra
 Germany

Pos. item	Benennung description	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	Gehäuse Housing	15-64-287/47	15-64-387/47	15-64-437/47	15-64-487/47	15-64-537/47	15-64-637/47		
1	Gehäuse Housing	15-65-287/47	15-65-387/47	15-65-437/47	15-65-487/47	15-65-537/47	15-65-637/47		
1	Gehäuse Housing					15-74-530/47			
1	Gehäuse Housing								
1	Gehäuse Housing		15-77-390/47	15-77-440/47	15-77-490/47	15-77-540/47			
1	Gehäuse Housing	15-78-290/47	15-78-390/47	15-78-440/47	15-78-490/47	15-78-540/47	15-78-640/47		
1.1	Gehäuse Housing								
1	Gehäuse Housing			15-55-437/47	15-55-487/47				
2	Schaft unten Lower valve shaft	15-25-290/42	15-25-390/42	15-25-440/42	15-25-490/42	15-25-540/42	15-25-640/42		
3	Membrane (Standard)	58-23-395/22		58-23-495/22	58-23-545/22	58-23-645/22	58-23-645/22		
3	Diaphragm	58-23-395/23		58-23-495/23	58-23-545/23	58-23-645/23	58-23-645/23		
4	Schaft oben Upper valve shaft	39-22-396/42		39-22-496/42	39-22-546/42	39-22-646/42	39-22-646/42		
5	O-Ring	20.2-3							
5	O-ring	58-06-078/64							
6	Führungsbuchse Bushing	08-01-178/23							
7	Laternen Yoke	39-40-395/47		39-40-495/47	39-40-545/47	39-40-645/47	39-40-645/47		
8	Zugstange Guide rod	39-23-081/12			39-23-083/12				
9	Skt. Schraube Hex. screw	DIN EN 24017-M8x16-A2-70			DIN EN 24017-M8x20-A2-70				
10	Entlüftungsstopfen Venting plug	08-60-005/94							
11	Skt. Schraube Hex. screw	DIN EN 24017-M8x16-A2-70	4x	4x	8x	8x	8x		
12	Tellerdichtung Seal seal		58-33-194/	58-33-494/	58-33-544/	58-33-644/			bis April 2001

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Ersatzteilliste: spare parts list:
 Ventil SDM4, SDEM4, SDEM4, SDTM4 FS-CU und VSM
 Valve SDM4, SDEM4, SDEM4, SDTM4 FS-CU and PSH
 DN 25-100

Blatt 3

Datum	7/98	09/04	08/05	09/07	
Name	Trytko	Trytko	Trytko	Trytko	Trytko

Gezeichnet	13.7.98	Name	Trytko
Gepprüft	20.8.98		Schulz
Normgepr.	20.8.98		Pfümper

RN 01.054.63



APV Rosista GmbH
 D-58425 Urra
 Germany

Pos. item	Benennung description	DN												
		25	40	50	65	80	100	125	150	WS-Nr. ref.-no.	WS-Nr. ref.-no.			
12.1	Tellerdichtung Seat seal	WS-Nr. ref.-no.	58-33-443/	58-33-193/	58-33-493/	58-33-546/	58-33-646/	58-33-646/	58-33-646/	58-33-646/	58-33-646/	58-33-646/	ab April 2001	
13	Tellerdichtung Seat seal	WS-Nr. ref.-no.	58-33-294/	58-33-394/	58-33-444/	58-33-494/	58-33-544/	58-33-544/	58-33-544/	58-33-544/	58-33-544/	58-33-544/		
14	Leckageventil Leakage valve	WS-Nr. ref.-no.	20-37-068/	=	=	=	=	=	=	=	=	=		
14.1	Leckageventil Leakage valve	WS-Nr. ref.-no.	32-40-615/	=	=	=	=	=	=	=	=	=		
15	Lasche Bracket	WS-Nr. ref.-no.	08-17-002/12	=	=	=	=	=	=	=	=	=		
16	Zyl. Schraube Cyl. screw	DIN EN ISO 4762-M8x35-A2-70												
17	T-Verschraubung Tee connector	WS-Nr. ref.-no.	08-63-370/93	=	=	=	=	=	=	=	=	=		
18	W-Verschraubung Angular union	WS-Nr. ref.-no.	08-63-350/93	=	=	=	=	=	=	=	=	=		
19	Steuerkopf Actuator	WS-Nr. ref.-no.	ø110 15-32-051/17	=	=	ø165 15-32-052/17	=	=	=	=	=	=		
20	CU-Adapter CU-adapter	WS-Nr. ref.-no.	08-48-415/93	=	=	=	=	=	=	=	=	=		
21	Zentrierscheibe Centering nut	WS-Nr. ref.-no.	15-28-940/12	=	=	=	=	=	=	=	=	=		
22	Skt. Mutter Hex. nut	DIN EN ISO 10511-M12-A2												
23	Control-Unit Control-Unit	WS-Nr. ref.-no.	16-31-232/93	=	=	=	=	=	=	=	=	=		
24	VSM Gehäuse-SW4 Proximity switch holder housing SW4	WS-Nr. ref.-no.	15-33-932/93	=	=	=	=	=	=	=	=	=		
26	Schaltnocke Operating cam	WS-Nr. ref.-no.	08-52-291/97	=	=	=	=	=	=	=	=	=		
27	Skt. Schraube Hex. screw	DIN EN 24017-M8x16-A2-70												
28	O-Ring O-ring	OR 66x2 NBR 70-75 Shore A												
29	Gehäusedichtung Housing seal	WS-Nr. ref.-no.	58-33-392/	58-33-442/	58-33-492/	58-33-542/	58-33-642/	58-33-642/	58-33-642/	58-33-642/	58-33-642/	58-33-642/		
30	Skt. Schraube Hex. screw	DIN EN 24017-M8x28-A2-70												
30	Skt. Schraube Hex. screw	DIN EN 24017-M10x30-A2-70												

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Ersatzteilliste: spare parts list:		Blatt <u>4</u>	
Ventil SDM4, SDEM4, SDTM4 FS-CU und VSM		APV Rosista GmbH D-58425 Urrna Germany	
Valve SDM4, SDEM4, SDTM4 FS-CU and PSH		RN 01.054.63	
DN 25-100			

Pos. item	Benennung description	DN			
		25	40	50	65
		WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.

Pos. item	Benennung description	DN			
		25	40	50	65
		WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.

Pos. item	Benennung description	DN			
		25	40	50	65
		WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.

Pos. item	Benennung description	DN			
		25	40	50	65
		WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.

gültig bis April 2001
valid until April 2001

gültig ab April 2001
valid from April 2001

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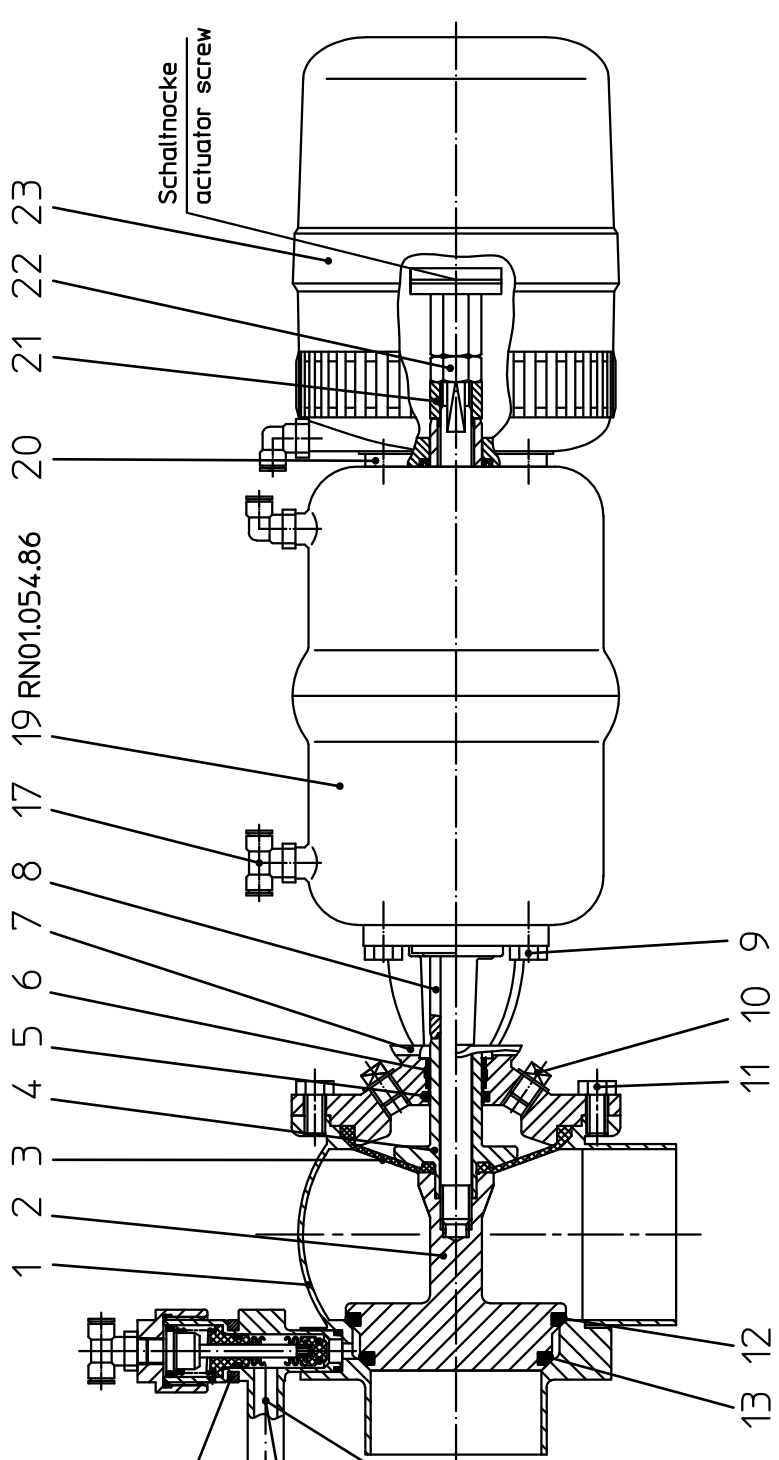
02/194

Ersatzteilliste: spare parts list:
 Ventil SDM4, SDEM4, SDTM4 FS-CU und VSM
 Valve SDM4, SDEM4, SDTM4 FS-CU and PSH
 1-4 Zoll / inch

Besteht aus 4 Blatt		Blatt 1	
Gezeichnet	19.8.98	Trytko	Trytko
Geprüft	19.8.98	Schulz	Schulz
Normgepr.	20.8.98	Plümper	Plümper
Datum	8/98	03/01	11/01
Name	Trytko	Trytko	Trytko
Datum	02/02	02/03	02/03
Name	Trytko	Trytko	Trytko



APV Rosista GmbH
 D-58425 Urra
 Germany
 RN 01.054.63-1



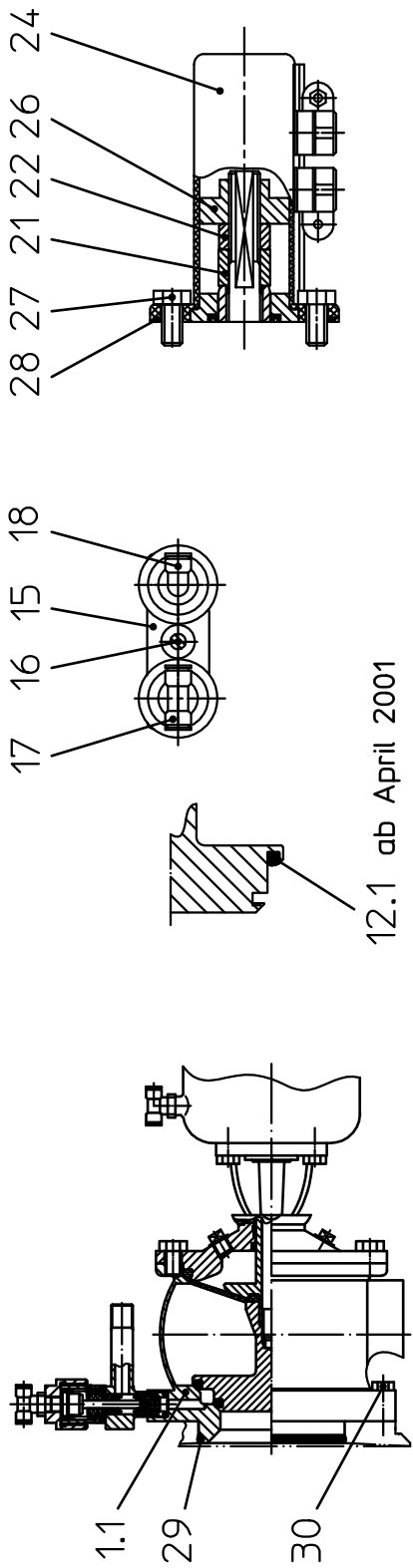
Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

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

*Dichtungswerkstoff: material seals:
 ../13-VMQ
 ../33-HNBR
 ../73-FPM
 ../93-EPDM

**Dichtungswerkstoff Membrane: seal material of membrane:
 ../22-TFM/EPDM WS 283 Standard-Ausführung
 standard design
 ../23-TFM/EPDM WS 287/64 3A0-Ausführung
 3A0 design

***Dichtungswerkstoff Leckageventil: seal material of leakage valve:
 ../29-1.4404-HNBR
 ../59-1.4404-EPDM
 ../69-1.4404-FPM



12.1 ab April 2001

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RN 01.054.63-1

Blatt <u>3</u>		Datum		Name	
Gezeichnet	19.8.98	Trytko	Trytko	09/05	09/07
Geprüft	20.8.98	Schulz	Trytko	Trytko	Trytko
Normgepr.	20.8.98	Pfumpfer			

Ersatzteilliste: spare parts list:
 Ventil SDM4, SDEM4, SDTM4 FS-CU und VSM
 Valve SDM4, SDEM4, SDTM4 FS-CU and PSH
 1-4 Zoll / inch

Pos. item	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.			
12.1	Tellerdichtung Seat seal	58-33-443/	*	58-33-193/		58-33-493/		58-33-546/		58-33-546/		58-33-646/			ab April 2001
13	Tellerdichtung Seat seal	58-33-294/	*	58-33-394/		58-33-444/		58-33-494/		58-33-569/		58-33-544/			
14	Leckageventil Leakage valve	20-37-068/	**	=		=		=		=		=			
14.1	Leckageventil Leakage valve	32-40-615/	**	=		=		=		=		=			
15	Lasche Bracket	08-17-002/12		=		=		=		=		=			
16	Zyl. Schraube Cyl. screw	DIN EN ISO 4762-M8x35-A2-70													
17	T-Verschraubung Tee connector	08-63-370/93		=		=		=		=		=			
18	W-Verschraubung Angular union	08-63-350/93		=		=		=		=		=			
19	Steuerkopf Actuator	ø110 15-32-051/17		=		=		ø165 15-32-052/17		=		=			
20	CU-Adapter CU-adapter	08-48-415/93		=		=		=		=		=			
21	Zentrierscheibe Centering nut	15-28-940/12		=		=		=		=		=			
22	Skt. Mutter Hex. nut	DIN EN ISO 10511-M12-A2													
23	Control-Unit Control-Unit	16-31-232/93		=		=		=		=		=			
24	VSM Gehäuse-SW4 Proximity switch holder housing SW4	15-33-932/93		=		=		=		=		=			
25															
26	Schaltlocke Operating cam	08-52-291/97		=		=		=		=		=			
27	Skt. Schraube Hex. screw	DIN EN 24017-M8x16-A2-70													
28	O-Ring O-ring	OR 66x2 NBR 70-75 Shore A													
29	Gehäusedichtung Housing seal	58-33-392/	*	58-33-442/		58-33-492/		58-33-542/		=		58-33-692/			
30	Skt. Schraube Hex. screw	DIN EN 24017-M8x28-A2-70													
		DIN EN 24017-M10x30-A2-70													

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Ersatzteilliste: spare parts list:

Ventil SDM4, SDEM4, SDTM4 FS-CU und VSM
 Valve SDM4, SDEM4, SDTM4 FS-CU and PSH

1-4 Zoll / inch

Blatt 4

Gezeichnet	02.09.05	Trytko	
Geprüft	02.09.05	Schulz	
Normgepr.			
Datum	09/05	08/06	09/07
Name	Trytko	Trytko	Trytko

RN 01.054.63-1



APV Rosista GmbH
 D-58425 Urra
 Germany

Pos. item	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.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	

Dichtungssatz / seal kit	SDM4, SDEM4	Pos. 3, 5, 12, 13, 22 und Dichtungen Pos. 14 nur im kompletten Dichtungssatz erhältlich											
Dichtungssatz / seal kit	SDTM4	Item. 3, 5, 12, 13, 22 and seal item. 14 available as complete seal kits only											
1	Dichtungssatz FPM	58-34-350/00	58-34-351/00	58-34-352/00	58-34-353/00	58-34-357/00	58-34-355/00						
1	Dichtungssatz EPDM	58-34-350/01	58-34-351/01	58-34-352/01	58-34-353/01	58-34-357/01	58-34-355/01						
1	Dichtungssatz VMQ	58-34-350/02	58-34-351/02	58-34-352/02	58-34-353/02	58-34-357/02	58-34-355/02						
1	Dichtungssatz HNBR	58-34-350/06	58-34-351/06	58-34-352/06	58-34-353/06	58-34-357/06	58-34-355/06						

Dichtungssatz / seal kit	SDM4, SDEM4	Pos. 3, 5, 12, 13, 22 und Dichtungen Pos. 14.1 nur im kompletten Dichtungssatz erhältlich											
Dichtungssatz / seal kit	SDTM4	Item. 3, 5, 12, 13, 22 and seal item. 14.1 available as complete seal kits only											
1	Dichtungssatz FPM	58-34-950/00	58-34-951/00	58-34-952/00	58-34-953/00	58-34-957/00	58-34-955/00						
1	Dichtungssatz EPDM	58-34-950/01	58-34-951/01	58-34-952/01	58-34-953/01	58-34-957/01	58-34-955/01						
1	Dichtungssatz VMQ	58-34-950/02	58-34-951/02	58-34-952/02	58-34-953/02	58-34-957/02	58-34-955/02						
1	Dichtungssatz HNBR	58-34-950/06	58-34-951/06	58-34-952/06	58-34-953/06	58-34-957/06	58-34-955/06						

Dichtungssatz / seal kit	SDTM4	Pos. 3, 5, 12, 13, 22, 29 und Dichtungen Pos. 14.1 nur im kompletten Dichtungssatz erhältlich											
Dichtungssatz / seal kit	SDTM4	Item. 3, 5, 12, 13, 22, 29 and seal item. 14.1 available as complete seal kits only											
1	Dichtungssatz FPM	58-36-870/00	58-36-871/00	58-36-872/00	58-36-873/00	58-36-875/00	58-36-876/00						
1	Dichtungssatz EPDM	58-36-870/01	58-36-871/01	58-36-872/01	58-36-873/01	58-36-875/01	58-36-876/01						
1	Dichtungssatz VMQ	58-36-870/02	58-36-871/02	58-36-872/02	58-36-873/02	58-36-875/02	58-36-876/02						
1	Dichtungssatz HNBR	58-36-870/06	58-36-871/06	58-36-872/06	58-36-873/06	58-36-875/06	58-36-876/06						

gültig ab April 2001
 valid from April 2001

gültig bis April 2001
 valid until April 2001

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02/194

Ersatzteilliste: spare parts list:

Steuerkopf SW4

Actuator SW4

Besteht aus 1 Blatt Blatt 1

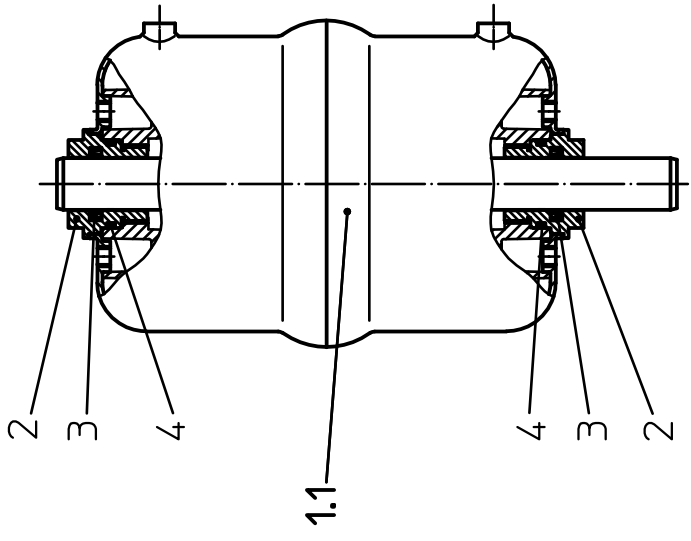
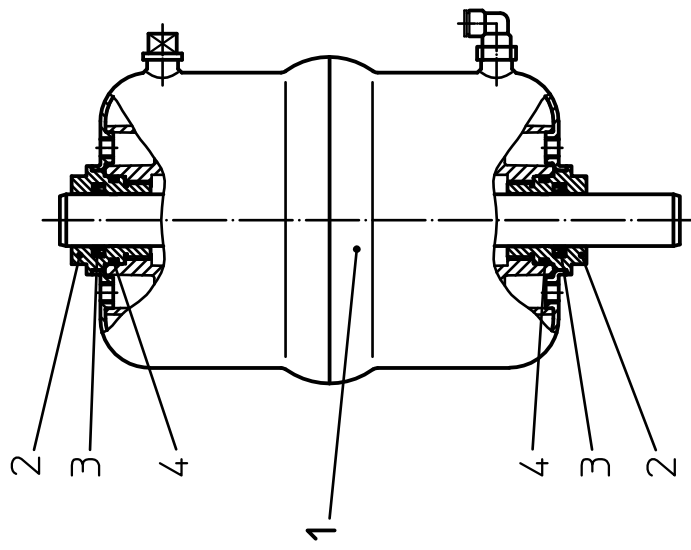
Datum	1/98	12/03	01/06	06/08
Name	Trytko	Trytko	Trytko	Trytko

Gezeichnet	15.1.98	Name	Trytko
Geprüft	15.1.98		Spliethoff
Normgepr.	19.1.98		Pümper



APV Rosista GmbH
D-58425 Unna
Germany

RN 01.054.86



Pos. item	Quantität Menge	Benennung description	Ø74 WS-Nr. ref.-no.	Ø110 WS-Nr. ref.-no.	Ø165 WS-Nr. ref.-no.
1		Steuerkopf kpl Feder/Luft Ausf. matt-gl. Actuator complete spring/air design satin fin.	15-32-050/17	15-32-051/17	15-32-052/17
		Steuerkopf kpl Luft/Luft Ausf. matt-gl. Actuator complete air/air design satin fin.	15-32-085/17	15-32-086/17	15-32-087/17
1.1		Steuerkopf kpl Feder/Luft Ausf. 3A-blank Actuator complete spring/air design 3A-bright fin.	3A0 15-32-059/13	3A0 15-32-060/13	3A0 15-32-061/13
		Steuerkopf kpl Luft/Luft Ausf. 3A-blank Actuator complete air/air 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	58-32-010/83	=	=
4	2	O-Ring O-ring	58-06-124/83	=	=

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Ersatzteilliste: spare parts list:		Besteht aus <u>1</u> Blatt		Blatt <u>1</u>		
Leckageventil SD4		Gezeichnet	14.7.98	Name	Trytko	
Leakage valve SD4		Geprüft	21.7.98	Name	Spielthoff	
		Normgepr.	17.8.98	Name	Plümper	
		Datum	7/98	10/02	10/03	09/04
		Name	Trytko	Trytko	Trytko	Trytko
		APV Rosista GmbH D-59425 Urra Germany				
		RN 01.054.67				

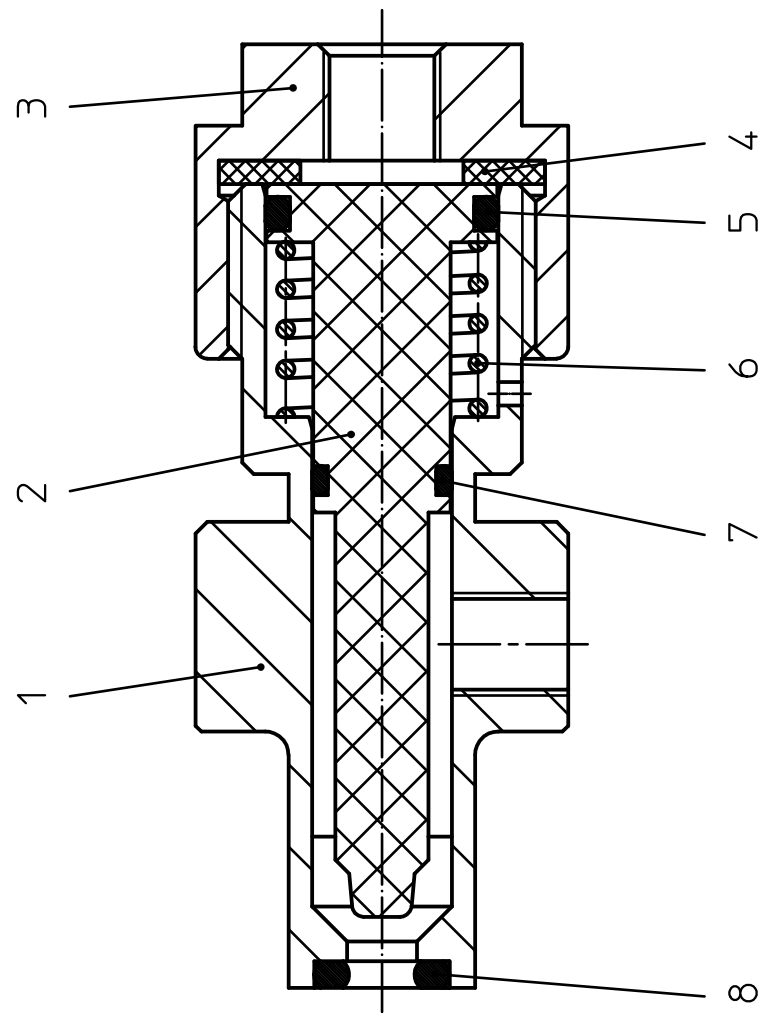
Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

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



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02/94

Besteht aus		1	Blatt	1	Blatt	1
Datum	10/03	09/04				
Name	Tryiko	Tryiko				
Gezeichnet	30.10.03					
Geprüft	04.11.03					
Normgepr.						
Name	Tryiko					

APV Rosista GmbH
D-59425 Urra
Germany

RN 01.054.67-1

Ersatzteilliste: spare parts list:
Leckageventil SDMF4
Leakage valve SDMF4

Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen
The following seal materials are available (fill in last two digits of ref.-no.)

- * Werkstoff metallisch+Dichtung material metallic+seal
- .. /29-HNBR-1.4404
- .. /59-EPDM-1.4404
- .. /69-FPM -1.4404
- ** O-Ring / O-ring
- .. /33-HNBR
- .. /73-FPM
- .. /93-EPDM

Pos. / Item	Benennung / description	WS-Nr. / ref.-no.
1	Leckageventil / Leakage valve	* 32-40-615/
1	Deckel Leckageventil / Cover for leakage valve	21-20-002/17
2	Kalben / Piston	15-29-010/42
3	Balgeinheit SDMF4 / Bellow unit SDMF4	42-06-010/92
4	Gehäuse Leckageventil / Housing leakage valve	21-08-170/47
5	O-Ring 22,0-2,5	58-06-091/64
6	O-Ring 15,3-2,4	58-06-052/64
7	Feder Leckageventil / Spring leakage valve	60-07-002/13
8	O-Ring 9-2,5	** 58-06-035/
9	O-Ring 5-2,5	** 58-06-008/
10	O-Ring 12-2,5	** 58-06-045/

