

Operating Manual

DELTA DA3+

Double Seat Mixproof Valve













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 $1^{\circ}-4^{\circ}$

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







	Content	Page
1.	General Terms	2
2.	Safety Instructions	2
3.	Mode of Operation	3 - 4
3.1.	Valve in "closed" position	3 - 4
3.1.	Valve in "closed" position Valve in "open" position	
		5
4. 4.1.	Auxiliary Equipment Valve position indication (proximity switches)	3
4.1.	Control Unit	
4.2.	Adapter for Control Unit	
5.	·	6 - 7
5.1.	Cleaning Flow areas	0 - 7
5.2.	Seal surfaces	
5.3.	Leakage chamber	
5.4.	Cleaning recommendation	
5.5.	Flushing quantity	
5.6.	Cleaning of upper area	
5.7.	Cleaning of lower area	
6.	Installation	8
6.1.	Welding instructions	-
7.	Dimensions/Weights	9
8.	Technical Data	10 - 12
8.1.	General data	
8.2.	Compressed air quality	
8.3.	kvs values	
8.4.	Air consumption/closing times	
8.5.	Valve stroke open/closed	
9.	Maintenance	13
10.	Service Instructions	14 - 18
10.1.	Dismantling from pipe system	
10.2.	Disassembly of wear parts (product-wetted parts)	
10.3.	Actuator / main cylinder (maintenance)	
10.3.1.	Dismantling of seals and disassembly of	
40.00	seat lift actuator and main cylinder	
10.3.2.	Installation of seals and assembly of	
10.4.	seat lift actuator and main cylinder Installation of seals and assembly of valve	
10.4.	Installation of valve insert	
10.5. 11.	Disassembly and Assembly Tool	19
11.1.	Installation of upper shaft seal	10
11.1.1.	Installation of PTFE seal	
11.1.2.	Installation of elastomer seal	
12.	Assembly Tool for Middle Seal	20
13.	Trouble Shooting	21
14.	Spare Parts Lists and Lubrication Chart	22
	(see annex)	
	DA3 DN40 - 150 RN 01.053.73	
	DA3 Inch 1,5" - 4" RN 01.053.73 - 1	
	DA3 1,5 - 4 Sh5 RN 01.053.73 - 2	
	DA3 Lubrication chart RN 260.064 - 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!

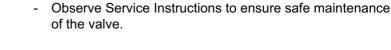
- The technical safety symbol draws your attention to important directions for operating safety. You will find it wherever the activities described are bearing risks of personal injury.



- Disconnect electrical and pneumatic connections.



- Depressurize the line and cleaning system and discharge the lines, if possible, before any maintenance work.





- Connections which are not used must be sealed by a plug.



- A safe discharge of the cleaning liquids must be ensured.
- The valve must be assembled, disassembled and reassembled only by persons who have been trained in APV valves or by APV service team members. If necessary, contact your local APV representative.





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.

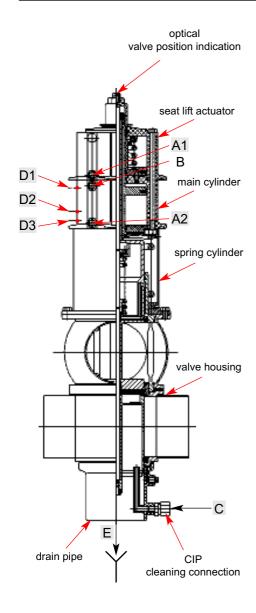
Defective actuators must be returned to your APV Solutions & Services company for their professional disposal and free of charge for you.

Please address to your local APV representative.





3. Mode of Operation



Due to its construction and mode of operation as well as to the use of high quality stainless steel and adequate seal materials, the double-seat mixproof valve DELTA DA3 is suited for applications in the food and beverage industries as well as in the pharmaceutical and chemical industries.

- The valve opens from the top to the bottom in low leakage operation (unpressurized drain of fluid residues via the annular cleaning gaps in the seat area).
- Separation of two line passages by two balanced and independently operating valve slides with intervening leakage chamber.
- Arising leakages at the seat seals are discharged at (E) in depressurized state.
- Proximity switches can be installed as valve position indicators.
 - **D1** = valve position "closed"
 - **D2** = valve position "open" (DN 40 50 , 1,5" 2" only)
 - **D3** = valve position "open" (DN 65 to 150, 2,5" 4")
- An optical indication of the valve position is installed in the upper area.
- Operation by pneumatic actuator with air connection at (B).
 Reset by spring force into the safety limit position "closed".



- Maintainable actuator (see 11.3.).
- Cleaning of the leakage chamber is undertaken via the cleaning connection **(C)**.
- Cleaning of the seat and shaft seal areas is realized by operation of the air connections:

A1 = lifting of lower shaft



A2 = lifting of upper shaft



Reset by spring force.

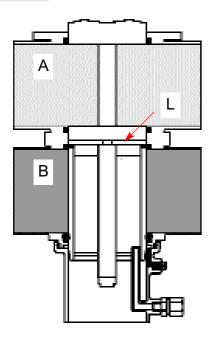




3. Mode of Operation

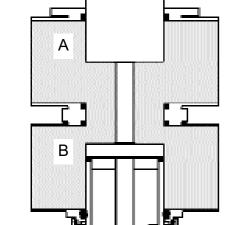
fig. 3.1.

fig. 3.2.



3.1. Valve in "closed" position

The lower and upper valve shafts are closed by spring force and safely separate the different fluids **A** and **B**. The leakage chamber **L** which is situated between the two valve shafts, provides for a free and absolutely depressurized discharge to the bottom. The valve shafts are balanced and, thus, safe against pressure hammers.



3.2. Valve in "open" postion

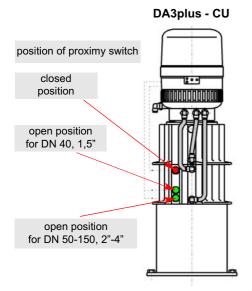
By control of the actuator, the upper valve shaft is pressed against the seal of the lower valve shaft. Thus, the leakage chamber ${\bf L}$ is closed against the product chamber.

Then the two valve shafts move downwards into the open position. A connection between the two pipelines **A** and **B** is produced.



4. Auxiliary Equipment

fig. 4.1.



4.1. Valve position indication

Proximity switches to signal the limit position of the valve shafts can be installed at the actuator if requested (fig. 4.1.).

We recommend to use our APV standard types:

three-wire proximity switch

operating distance: 5mm / diameter: 11mm. operating voltage 10 - 30 V DC pnp pulse-shifting, closing function

installation "non-flush"

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

4.2. CONTROL UNIT

The installation of a control unit of the DA3+ valve is possible.

The following different designs are available:

CU3 Control Unit



CU4 Control Unit



- 3 solenoid valves **CU43-M-Direct Connect Direct Connect** 08 - 45 - 105/93 reference number: H320465 **CU33-DA3 Profibus Profibus** 08 - 45 - 004/93 reference number: H315498 **CU33 - Device Net Device Net** reference number: 16 - 31 - 242/93 H209425 CU33 - AS-interface **ASinterface** 16 - 31 - 247/93 reference number: H209429
- For the installation of the control unit on the DA3+ valve an adapter is required:

4.3. Adapter for CONTROL UNIT

CU33 Profibus, CU33 Device Net, CU33 ASinterface 2.1 CU21 - Adapter DA3 / DE3

reference number: 000 08 - 48 - 425/93, H209440

 Adapter for CONTROL UNIT CU43 M - Direct Connect

reference number: 000 08 - 48 - 602/93, H320476





5. Cleaning

With the cleaning of the DELTA DA3+ valve, one has to distinguish between three areas:

5.1 The flow areas

The upper and lower passages are cleaned by the passing cleaning liquid during the cleaning of the connected pipelines.

5.2 The seal surfaces

The seal surfaces of the **upper area** (upper shaft and seat seal) and the lower area (lower shaft and seat seal) are flushed and cleaned by cleaning liquid during the lifting of the individual valve shafts during the cleaning of the respective passage.

5.3 The lekage chamber

The cleaning of the leakage chamber is undertaken by CIP spraying. CIP cleaning connection (C).

The valve shafts being lifted, the CIP liquid also cleans the leakage chamber.

The spraying does not produce pressure build-up in the leakage chamber and can be carried out in closed and in open valve position. The conduct of the cleaning liquid provides for a biologically perfect cleaning of the whole leakage chamber.

Under normal conditions

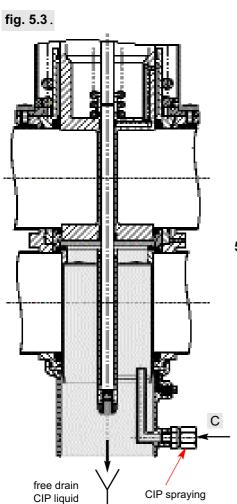
15 valves DN 40 - 100 / 1,5" - 4"

10 valves DN 125 - 150 can be cleaned

via one spray distribution line DN 25.



Cleaning steps	lifting cycle	CIP spraying
pre-flushing		3 x 10 sec.
caustic flushing 80 °C	3 x 5 sec.	3 x 10 sec.
intermediate flushing	2 x 5 sec.	2 x 10 sec.
acid flushing	3 x 5 sec.	3 x 10 sec.
subsequent flushing	2 x 5 sec.	2x 10 sec.



- The lifting cycles refer to a cleaning pressure of p = 2 5 bar
- Depending on the pressure ration, cleaning temperatures, cleaning steps and degree of soiling, different cycles must be adjusted.
- Flushing quantities per CIP spraying cycle:

about 1.2ltr/10s DN 40 -100 / 1,5" - 4" about 5ltr/10s DN 125, 150

min. 2 bar. Cleaning pressure at CIP cleaning connection:

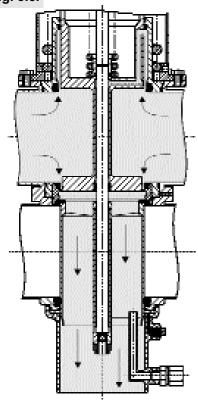
max. 5 bar.



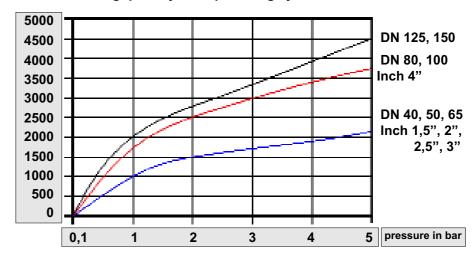


5. Cleaning

fig. 5.6.



5.5. Flushing quantity in ml per lifting cycle / 5 sec.



5.6. Cleaning of upper area (fig. 5.6.)

The upper valve shaft is lifted via the connection

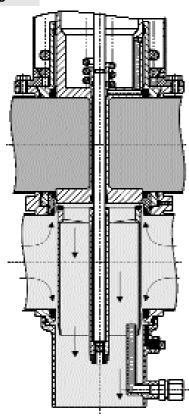


By lifting of the upper valve shaft, the cleaning liquid flushes over the upper seat seal and the upper valve seat into the leakage chamber and cleans this area. The cleaning liquid is drained off to the bottom in depressurized state.

Simultaneously, the upper shaft seal and the outer surface of the upper valve shaft are cleaned. Then the cleaning liquid is drained off at the inner tube of the lower valve shaft to the bottom.

The lifting stroke is limited by a metallic stop.

fig. 5.7.



5.7. Cleaning of lower area (fig. 5.7.)

The lower valve shaft is lifted via the connection

By lifting of the lower valve shaft, the cleaning liquid flushes over the lower seat seal into the leakage chamber and cleans this area. The cleaning liquid is drained off to the bottom in depressurized state.

Simultaneously, the lower shaft seal and the outer surfaces of the lower valve shaft are cleaned. The cleaning liquid flushes the spray connection and is then drained off to the bottom in depressurized state.

The lifting stroke is limited by a metallic stop.





6. Installation

- The valve must be installed in vertical position. Fluids are, therefore, freely drainable from the valve housing and the leakage chamber.
- Valve housings can be welded direct into the pipelines (completely dismantable valve insert).
- Attention: Observe welding instructions.
- Heights of installation and dismantling (see section 7).

6.1 Welding Instructions

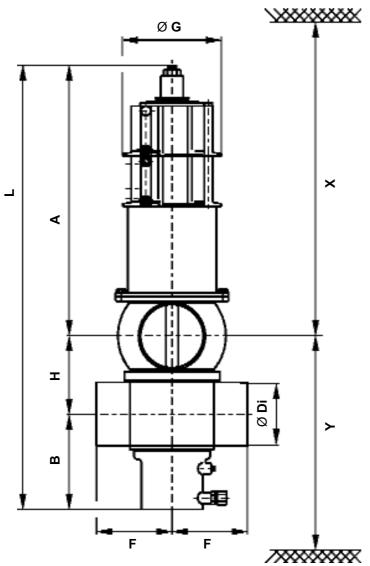
DA3+

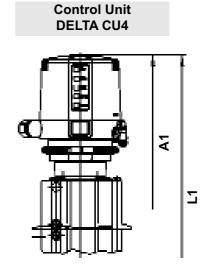
- Before welding of the valve, the valve insert must be dismantled from the housing. Careful handling to avoid damage to the parts is necessary (see 11.1).
 It is not necessary to remove the lower shaft seal as it can be
 - It is not necessary to remove the lower shaft seal as it can be destroyed during dismantling.
- 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 as a square butt joint without air. (Consider shrinkage!)
- TIG orbital welding is best!
- After welding of the valve housing or of the mating flanges and after work at the pipelines, the corresponding parts of the installation and pipelines must be cleaned from welding residues and soiling before operation of the valves to avoid damage to the valves and seals.
 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





dime	ensions	in mm								dimer	lation nsions	weight
DN	Α	A1	В	Ø Di	F	ØG	Н	L	L1	Min. i	n mm Y	in kg
40	378	502	120	38	100	163	63	561	715	660	200	13,7
50	384	508	126	50	100	163	75	585	739	680	218	13,8
65	392	516	134	66	100	163	91	617	771	700	242	14,0
80	419	543	146	81	120	188	106	671	825	790	274	19,2
100	429	553	156	100	120	188	125	710	864	820	303	20,3
125	507	631	176	125	150	236	150	833	987	950	342	46,6
150	519	643	189	150	150	236	175	883	1037	1010	392	47,5
Inch												
1,5"	379	503	119	34,9	100	163	63	561	715	660	197	13,7
2"	385	509	125	47,6	100	163	75	585	739	680	216	13,8
2,5"	389	513	131	60,3	100	163	85	605	759	700	233	14,0
3"	395	519	137	72,9	100	163	97	629	783	730	251	14,2
4"	430	554	155	97,6	120	188	125	710	864	820	301	20,3





8. **Technical Data**

8.1. General data

product-wetted parts: 1.4571, 1.4404

other parts: 1.4301

seals:

EPDM/PTFE standard design:

HNBR/PTFE option: FPM/ PTFE

VMQ/ PTFE

actuator: PA 12 GF 30

spray connection: PP

max. line pressure 10 bar

135°C EPDM, HNBR max. operating temperature:

*VMQ, *FPM

140°C EPDM. HNBR

*VMQ, *FPM * (no steam)

Tightening torque for

short-term load:

stop screw (11): 15Nm

Tightening torque for safety nuts (42, 16) at lower and upper

valve shaft: 40Nm

cleaning connection (for hose)

DN 40 - 100 / 1,5" - 4": 8x1mm DN 125 - 150: 10x1mm

air connection (for hose): 6x1mm max. pneumatic air pressure: 10 bar min. pneumatic air pressure: 6 bar

8.2. Compressed air quality: Quality class acc. to DIN/ISO 8573-1

content of solid particles: quality class 3

max. size of solid particles per m³ $10000 \text{ of } 0.5 \mu \text{m} < d < 1.0 \mu \text{m}$ 500 of 1,0μm <d<5,0μm

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. 0,01mg/m³

(The oil applied must be compatible with Polyurethane elastomer materials.)





8. Technical Data

8.3.		kvs values in m	³ / h	
	→	-	→	→
DN				
40	57	46	23	25
50	120	95	42	45
65	219	148	69	78
80	296	200	120	130
100	505	320	164	170
125	800*	500*	300	330
150	1200*	700*	360	380
Inch				
1,5"	47	40	21	24
2"	100	73	43	46
2,5"	170	122	59	66
3"	213	160	71	80
4"	490	294	150	160

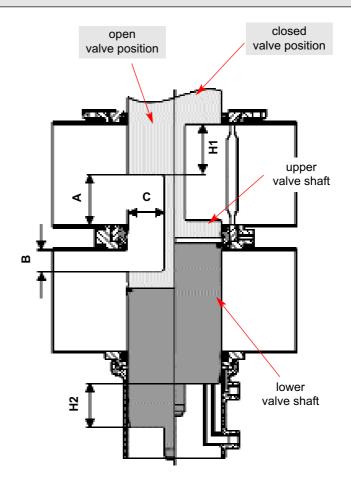
^{*} no measuring value

8.4.		air consumption spring cylinder	air cons seat lift	-		g times sec.
DN	Inch	NL / stroke valve open	NL / stroke upper seat lifting	NL / stroke lower seat lifting	1m	10m
40	1,5"	0,9	1,1	0,3	1,5	2,5
50	2"	1,1	1,3	0,3	1,5	2,5
65	2,5"	1,3	1,5	0,3	1,5	2,5
	3"	1,3	1,5	0,3	1,5	2,5
80		2,3	2,6	0,45	3,0	4,0
100	4"	2,3	2,6	0,45	3,0	4,0
125		6,4	7,0	1,1	5,0	6,0
150		6,4	7,0	1,1	8,0	9,0



8. Technical Data

8.5. Valve stroke / Opening cross-section



				for fig. 8.5. sions in mm	
DN	Α	В	С	stroke H1 upper shaft	stroke H2 lower shaft
40	6	3	21,2	32	26
50	11	10	21,2	39	33
65	21	16	21,2	45	39
80	31	21	36,2	50	44
100	50	21	36,2	50	44
125	63	33	55,2	62	56
150	88	33	55,2	62	56
Inch					
1,5"	6	3	21,2	32	26
2"	11	10	21,2	39	33
2,5"	15	16	21,2	45	39
3"	27	16	21,2	45	39
4"	50	21	36,2	50	44





9. Maintenance

- The maintenance intervals are different depending on the application and must be determined by the operator himself carrying out temporary checks.
- For the dismantling of the valve, compressed air is not required.



- Required tools:
- 1 x wrench SW13
- 2 x wrench SW17
- 2 x wrench SW24
- disassembly and assembly tool for the lower shaft seal, ref.-No. 000 51-13-100/17; H171889
- For the valve maintenance we supply complete seal kits (see spare parts lists).
- Replacement of seals, see Service Instructions.
- To simplify the installation of the middle seal, the following assembly tools are available.

Assembly tool for middle seal (see page 20)

DN	Inch	Designation	Reference number
40 50 65	1,5" 2" 2,5" 3"	DA3 - 62	51 - 13 - 210/17 H207310
80 100	4"	DA3 - 92	51 - 13 - 211/17 H207311
125* 150*		D3 - 138	51 - 13 - 676/17 H151824

- Provide all seals with a thin layer of grease before their installation (see lubrication chart)

Recommendation:

APV food grade grease for EPDM, HNBR and FPM (Viton)

(0,75 kg/ tin - ref.-No. 000 70-01-019/93) (60 g/ tube - ref.-No. 000 70-01-018/93)

APV food grade grease for VMQ (Silikon)

(0,60kg/ tin - ref.-No. 000 70-01-017/93) (60 g/ tube - ref.-No. 000 70-01-016/93)

Recommendation for actuator:

APV pneumatic grease:

(25 ml-tube - ref.-No. 000 70-01-008/93)

Assembly of valve according to Service Instructions.





The item numbers refer to the spare parts drawings

DIN design: RN 01.053.73 Inch design: RN 01.053.73-1

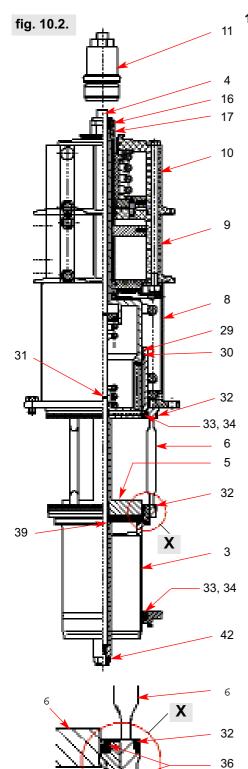
10.1. Dismantling from the line system



- **1.** Shut off the line pressure in the product and cleaning lines, discharge the pipes if possible.
- 2. Remove the pneumatic air line.
- **3.** Release the nut of the proximity switch holder **(13)** and pull off the proximity switch (remove CU if necessary).
- 4. Remove the flange screws (7) at the spring cylinder (8).
- **5.** Screw in one flange screw into the threaded bore of the spring cylinder to lift the complete valve insert. Do **not** remove the screw which will help to re-install the valve insert.
- **6.** Carefully lift the valve insert vertically out of the valve housing.







37 38 3

10.2. Dismantling of product-wetted parts (service, fig. 10.2.)

- 1. Remove the lower and upper housing seal (32) from the valve seat (6).
- 2. Release the lower safety nut (42). Holding the lower shaft (3) with a wrench SW17 prevents it from turning.
- 3. After removal of the nut, draw off the lower shaft.
- 4. Take a pointed tool to stick into the middle seal (38) and to pull it out of the groove. Take the o-ring (39) out of the groove.
- 5. Unscrew the stop screw (11).
- **6.** Lift the guide rod **(4)** out to the top and remove the o-ring **(31)**.
- 7. Remove the safety nut (16). By holding the safety disc (17) with a wrench SW24 it is prevented from turning. Remove the safety disc.
- 8. Lift off the spring cylinder (8) with main cylinder (9) and seat lift cylinder (10). (Service of main and seat lift cylinder, see 10.3).
- 9. Press the upper valve shaft (5) with seat ring (37) to the bottom out of the valve seat (6).
- 10. Slide the seat ring (37) over the compensating piston of the upper valve shaft.
- 11. Remove the seat seals (36) from the groove. (see fig. X)
- 12. Dismantling of upper shaft seal (33, 34) Take a peaked object to stick into the seat seal (33) and pull it out of the valve seat. Afterwards, remove the PTFE seal (34).
- 13. Dismantling of lower shaft seal (33, 34) from the housing Take the metal point of the disassembly tool to stick into the seat seal (33) and pull it off to the top. Afterwards, remove the PTFE seal (34) to the top through the housing by means of the mandril of the assembly tool.
- Remove the seal ring (30) and guide band (29) from the groove of the valve seat (6).





10.3 Actuator / Cylinder (service)

- 1. The actuator (seat lift cylinder (10), main cylinder (9) and spring cylinder (8) must be dismantled from the valve insert as described in 10.2 1.-8.
- Remove the hexagon screws (19). Lift the seat lift cylinder with the main cylinder from the spring cylinder.

10.3.1 Dismantling of seals and disassembly of the seat lift and main cylinder

- 1. Lift the seat lift cylinder (10) from the main cylinder (9). Push the piston rod (20) out of the seat lift cylinder.
- 2. Remove the piston seal (23), quadrings (18, 22), guide band (21) and o-ring (25).
- 3. Clean the seat lift cylinder and the piston rod.
- **4.** Press the piston of the main cylinder **(26)** with cover **(27)** out of the main cylinder. Slide the cover from the piston.
- 5. Remove the quadrings (22), o-ring (25) and piston seal (23).
- 6. Clean the main cylinder, cover and piston.

10.3.2 Installation of seals and assembly of the seat lift and main cylinder

1. Slightly grease all seals.

Attention: See to all seals and bearing surfaces in the seat

lift cylinder and main cylinder being greased

sufficiently!

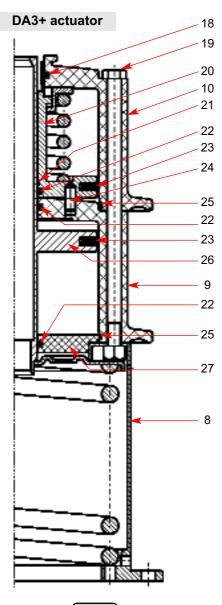
(see lubrication chart: RN 260.064-1)

Use appropriate pneumatic grease.

Recommendation for the actuator (main cylinder):

APV pneumatic grease: (25 ml tube - ref.-No. 000-70-01-008/93)

- 2. Insert the seals into their corresponding grooves.
- 3. Insert the piston rod (20) in the seat lift actuator.
- **4.** Slide the piston of the main cylinder **(26)** into the main cylinder until it stops.
- 5 Slide the cover (27) over the piston (26). Press the cover into the main cylinder.
- **6.** Place the seat lift cylinder on the main cylinder: The cylindrical dowel pin **(24)** must engage in the bore of the housing of the main cylinder.
- 7. Place the main cylinder with the seat lift cylinder on the spring cylinder (8).
- 8. Insert the hexagon screws (19) and tighten them crosswise.





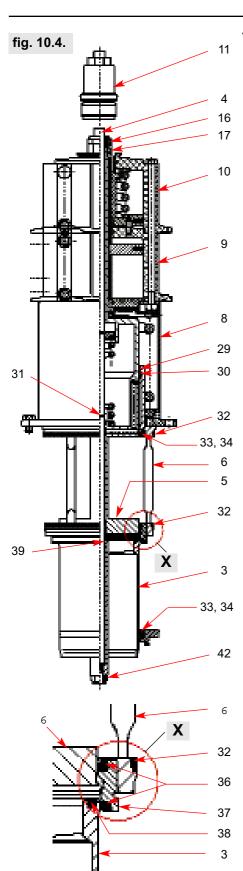
The spring cylinder (8) is preloaded by spring force.

Opening of the spring cylinders is strictly forbidden.

Danger to life!







10.4 Installation of product-wetted seals and assembly of the valve DELTA DA3+

Attention: See to all seals and bearing surfaces in the

product area being slightly greased before

their installation

(see lubrication chart: RN 260.064-1).

 Install the lower shaft seal (33, 34) in the lower housing flange (see page 19).

2. Place the quadring (30) and the guide band (29) in the valve seat (6).

3. Install the upper shaft seal (33, 34) in the valve seat. Insert the PTFE ring (34), at first. Then press the elastomer ring (33), the wide side to the front, into the groove between PTFE seal and valve seat.

4. Install the upper and lower housing seals (32).

Press the upper and lower seat seal (36) into the seat ring (37).
 Attention: The seal shoulder must fit properly into the groove (see fig. X).

6. Slide the seat ring **(37)** from the top over the compensating piston of the upper valve shaft **(5)**.

7. Slide the valve seat (6) over the compensating piston of the upper valve shaft (5) in the same way.

8. Insert the upper valve shaft (5) with seat ring (37) and valve seat (6) through the actuator until it stops.

9. Fasten the valve shaft with safety disc (17) and safety nut (16). Holding the safety disc with a wrench SW24 prevents the safety nut from turning.

Tightenting torque: Md = 40 Nm

10. Insert the middle seal **(38)** into the lower shaft **(3)** by means of the assembly tool (see **page 20**).

Assembly without assembly tool:

Press the slightly greased seal at four spots into the groove. Then press the four loops in by means of an even object. Vent the seal groove at this occasion.

11. Insert the o-ring (39) in the lower valve shaft.

12. Install the o-ring (31) on the guide rod (4).

13. Slide in the guide rod from the top through the actuator until it stops.

14. Slide the lower valve shaft on the guide rod and fasten it with the safety nut **(42)**.

Tightening torque: Md = 40 Nm

Attention: Check the position of the lower seat seal (36) (section X).

15. Screw in the stop screw (11) until it stops. Tightening torque: Md = 15 Nm





10.5 Installation of the valve insert

- 1. Carefully place the valve insert in the valve housing until the screw stops (see 10.1.5.).
- **2.** Remove the stop screw and carefully press the valve insert into the housing.
- 3. Enter screws (7) and tighten them crosswise.
- 4. Install the pneumatic air and cleaning lines.

upper air connection A1 : lifting of lower shaft

medium air connection B : valve open

lower air connection A2 : lifting of upper shaft

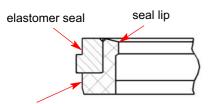
- **5.** Installation of valve position indication. Release nut and push the proximitiy switches into the sleeve until they stop.
- Fix the proximity switches by the nut. (Install CU if necessary.)
- 7. The spray connection (1) can be disassembled from the housing (2) by levering it by means of a wide screw driver.



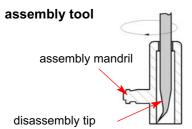


Disassembly and Assembly Tool 11.

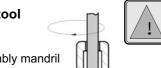
seal 33, 34



PTFE seal







11.1 Assembly of the lower shaft seal pos. 33, 34

For a simple disassembly and assembly of the lower shaft seal a universal tool (ref.-No. 000 51-13-100/17) can be used. The use of this tool is especially recommended for valves of the small series (DN 40-65, 1,5"-3"), as access to the lower shaft seal from the top is impossible as a result of the narrow seat.

Attention:

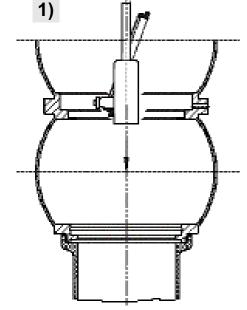
Do not damage the seal lip of the PTFE seal during assembly. To avoid injuries the disassembly tip must be covered by the assembly mandril if not used.

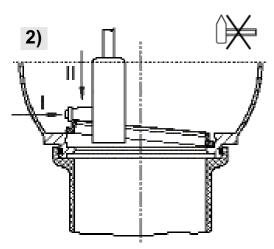
11.1.1 Assembly of the PTFE seal (fig. 1,2)

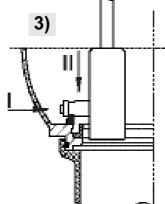
- 1. Press the PTFE ring into an oval shape.
- 2. Introduce the PTFE ring from the top by means of the assembly tool, the wide side to the front, through the intermediate ring of the housing into the lower housing (fig. 1).
- 3. Pull the PTFE into a round shape by means of the assembly mandril (fig. 2/I) and press it into the groove - do not knock or beat (fig. 2/II).

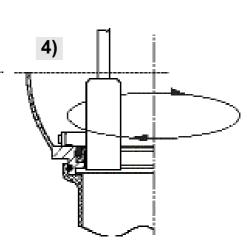
11.1.2. Assembly of the elastomer seal (fig. 1,3,4)

- 1. Slightly grease the seal.
- 2. Insert the elastomer from the top by means of the assembly tool, the wide side to the front, through the intermediate ring of the housing into the lower housing (fig. 1).
- 3. Fix the seal by means of the groove of the assembly mandril (fig. 3/I).
- 4. Press in the elastomer at one spot between the housing flange and the PTFE (fig. 3/II).
- 5. By sliding the assembly mandril around the seal, the seal is inserted completely into the groove (fig. 4). See to an even fit of the elastomer seal in the groove.



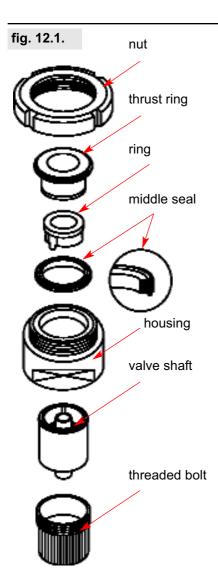








12. Assembly Tool for Middle Seal



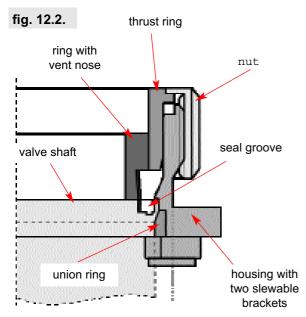
The assembly tool consists of:

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

Installation of the middle seal in the valve shaft (fig. 12.1)

- **1.** Insert the valve shaft into the housing in such a way that the seal groove is in the housing.
- **2.** Clamp the shaft into the housing by means of the threaded bolt. Clamp the housing into a vice.
- **3.** Slightly grease the middle seal with APV food-grade grease. Then install the seal on the ring.
- **4.** Introduce the ring with the installed seat seal into the housing. The vent nose is positioned in the seal groove.
- **5.** Insert the thrust ring around the ring in the housing. Screw on the nut and tighten it with a hook spanner until it stops.
- **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 the valve shaft from the housing.

Check the even fit of the middle seal.



	Asse	embly tool for middle so	eal (fig. 12.1.)
DN	Inch	Designation	Reference number
40 50 65	1,5" 2" 2,5" 3"	DA3 - 62	51 - 13 - 210/17 H207310
80 100	4"	DA3 - 92	51 - 13 - 211/17 H207311
125* 150*		D3 - 138 (fig. 12.2.)	51 - 13 - 676/17 H151824

* For the valves of the series DN 125, 150 the assembly tool in the old design must be used. See fig. 12.2.





13. Trouble Shooting

Failure	Remedy
Leakage at the upper housing flange	Replace upper housing seal (32).
Leakage from the leakage bore between the connecting ports	Replace lower housing seal (32) and seat seals (36).
Leakage from the bore of the spring cylinder (8)	Replace upper shaft seal (33, 34) and seals in flushing chamber (29, 30).
Liquids from the drain pipe	To be able to make a detailed diagnosis, remove the drain pipe (1).
Valve closed and pressure in the upper ho	ousing
Leakage at the inner side of the lower valve shaft (3)	Replace upper seat seal (36).
Leakage at the inner tube of the lower valve shaft (3)	Replace upper shaft seal (33, 34).
Valve closed and pressure in the lower ho	using
Leakage at the inner side of the lower valve shaft (3)	Replace lower seat seal (36).
Leakage at the outer side of the lower valve shaft (3)	Replace lower shaft seal (33, 34).
Open valve position	
Leakage at the inner side of the lower valve shaft (3)	Replace middle seal (38).



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





14. Spare Parts Lists and Lubrication Chart

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.

Data are subject to change

BA DA3 0000002 ID-No.: H179518



Translation of original operating manual

rev. 4





Your local contact:

APV, An SPX Brand Zechenstraße 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.

Copyright © 2008 SPX Corporation

The information contained in this document, including any specifications and other product details, are subject to change without notice. While we have taken care to ensure the information is accurate at the time of going to press, we assume no responsibility for errors or omissions nor for any damages resulting from the use of the information contained herein.

02/94 APV Rosista GmbH APV 0-59425 Uma Germany Gehäusedichtung /housing seal 01.053.73 Gehäusedichtung eingesetzt. For VMO take the HNBR-Bei VMO wird die HNBR-9 Z housing seal rvtko Plümper Name S 22 4 99 12.4.99 Datum Gezeichnet $\overline{\odot}$ ** Werkstoff metallisch+Dichtung: Normgepr Geprüft 26 Trytko 01/05 material metallic+seal /29-HNBR 1,4404 /59-EPDM 1,4404 Blatt 1,4404 14404 Trytka | Trytka | Trytko | Trytko 10/01 03/03 /61-VMQ 169-FPM N P P Blatt 30 29 01/00 4 Besteht aus 04/99 $\frac{1}{2}$ 32 Datum Name 33 * Dichtungswerkstaff: 36 35 34 material seals: /33-HNBR /93-EPDM /73-FPM ./13-VMQ Double seat valve DA3 DN 40-150 32 37 Weitergabe sowie Vervielfätligung dieser Unterlage. Verwerlung und Mitteilung ihres linatis nicht gestaltet, soweit nicht schriftlich zugestanden. Verslaß verplitichtet zum Schadensersatz und kann straffechtliche Falgen haben fronggaph 18 uws. Paragraph 180 Unst. Pa Doppelsitzventil DA3 DN 40-150 38 Dichtungswerkstoffe zur Verfügung. 9 34 Ersatzteilliste: spare parts list: \mathbb{C} The following seal materials Es stehen verschiedene are available (fill in last Bitte WS-Nr. ergänzen two digits of ref.-no.)



Weltergabe sowie Vervielfättigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestaltet, soweit nicht schriftlich zugeständen. Verstalt verpflichtet zum Schadensersatz und kann straffrechtliche Folgen haben (Paragraph 166 Urhö); Eigentum und alle Rechte, auch für Patenterfeilung und Gebrauchsmustereintragung, vorbehalten, APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.

Para Fir Po	raph 1 tenter Zeichn	(Paragraph 18 UWG, Paragraph 106 UrhS). Eigentum und alle Rächte, auch Liir Patenterfeitigu and Gebrauchsmusterenifragung, vorbeholten. APV Rosista GmbH. Diese Zeichnum wirde mit (AD ersjell und daff nicht von Hand aeändert weden.	mbH, en.							02/94
	sat	Ersatzteilliste: spare parts list:					tandrioton	Datum Name	•	APV Rosista GmbH
	0	Doppelsitzventil DA3 DN 40-150			Blait		Geprüft	10,10	NAPV	D-59425 Urna Germany
		Double seat valve DA3 DN 40-150	150	Datum 0 Name Ti	04/99 01/00 0 Trytko Trytko T	07/00 03/03 05 Trytko Trytko Tr	05/04 12/08 Trytko Trytko	7.4.37	N N	01.053.73
	əб		25	07	20	Q 59	08 Z_	100	125	150
ros. item	Men	description	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS−Nr. refno.
<u></u>	1-	Spritzanschluß Cip connection		09-40-114/93	II	=	09-40-115/93	1	09-40-118/93	11
7	_	Gehäuse Housing DA31 1+2S	i and a second	16-61-382/47	16-61-432/47	16-61-482/47	16-61-532/47	16-61-632/47	16-61-682/47	16-61-732/47
	_	Gehäuse DA32 1+2+3S		16-62-382/47	16-62-432/47	16-62-482/47	16-62-532/47	16-62-632/47	16-62-682/47	16-62-732/47
	_	Gehäuse Housing DA33 1+2+3S		16-63-382/47	16-63-432/47	16-63-482/47	16-63-532/47	16-63-632/47	16-63-682/47	16-63-732/47
	_	Gehäuse DA34 1+2+3+4S		16-64-382/47	16-64-432/47	16-64-482/47	16-64-532/47	16-64-632/47	16-64-682/47	16-64-732/47
m	-	Schaff unter Lower valve shaft		16-22-393/42	16-22-443/42	16-22-493/42	16-22-543/42	16-22-668/42	16-22-965/42	16-22-966/42
7	_	l l		16-24-392/42	16-24-442/42	16-24-492/42	16-24-542/42	16-24-642/42	16-24-692/42	16-24-742/42
ம	_	Schaft oben Unner valve shaft		16-22-210/42	16-22-211/42	16-22-213/42	16-22-215/42	16-22-216/42	16-22-217/42	16-22-218/42
9	-	Seat w	~~*************************************	16-37-394/43	16-37-444/43	16-37-494/43	16-37-544/43	16-37-644/43	16-37-080/43	16-37-081/43
	4		1 1000	DIN EN 24017-	M8x14-A2-70		entrone la	e e e e e e e e e e e e e e e e e e e	DIN EN 24017-	24017-M10×16-A2-70
ω	_	Federzylinder Spring artuator		16-30-500/17	11	*******	16-30-095/17		16-30-108/17	
0	₹	Hauptzytinder Main actuator		15-31-239/93			15-31-240/93		15-31-241/93	lì .
9	_	Anluftzylinder Seat lífting device	Thomas	16-30-225/93		American Ame	16-30-226/93		16-30-235/93	
=		Anschlagschraube stop steeve		16-28-260/93	9		anna.		16-28-262/32	
12	m			08-60-750/93	1	[-		-	-
1	2	Initiatorhalterung Mounting block		15-33-918/93			11	V CORP.		[:] :
14				08-60-005/93			II AND THE STATE OF THE STATE O	i I	[]	ļ1
允	~			08-05-066/93	1					
9			ALTONOMIA	65-50-137/15	-	tl				
17	_			67-03-001/15	Ш	II	WT	}	ll .	Ì



Weltergabe sowie Vervielfättigung dieser Unterlage, Verwertung und Mittellung ihres fichalts nicht gestattet, sowieit nicht schriftlich zugestanden. Verstaß verpflichtet zum Schodensersatz und kann strafrechtliche Folgen haben (Braggrapph 18 UMG, Paragraph 100 UMG). Eigentum und alle Rechte, auch für Patienterteitung und Gebrauchsmustereinfragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.

02/94 APV Rosista GmbH
D-59425 Unra
Germany Shore A WS-Nr. ref.-no. 150 RN 01.053.73 П П П П П 11 1 H П H 11 |1 11 П II ļį П Н 70-75 PKK-152 58-01-763/83 08-39-185/93 OR 154x3 NBR 58-33-018/23 16-00-193/42 16-29-067/17 16-29-072/12 58-01-791/63 M10×204 65-01-157/15 16-00-211/93 58-33-046/ 58-33-743/ 58-33-742/ WS-Nr. 125 П H П П Trytko Plümpe Name 70-75 Shore A WS-Nr. 100 22.4.99 H П 11 II H 1 11 11 11 П 11 Ш H И 11 11 11 Ш 12.4.99 Datum Trytko 01/06 OR 101,27x2,62 NBR 08-39-188/93 58-01-238/63 58-33-017/23 PKK-102 58-01-761/83 Gezeichnet 16-29-066/17 16-00-208/93 | 16-00-207/93 | 16-00-210/93 16-00-191/42 16-29-071/12 65-01-114/15 Normgepr, 58-33-643/ 58-33-045/ 58-33-642/ WS-Nr. ref.-no. Geprüft Trytko 12/05 48×168 80 П Įį. 11 11 11 Trytko 03/03 Trytko | Trytko 10/01 WS-Nr. ref.-no. Π 11 H H II 11 П П 11 11 H ΙĘ В 11 11 11 П ⋖ Shore 11/00 NBR 70-75 Trytko Trytko 01/00 WS-Nr. M| U П \parallel $\|$ П li П П ij I 11 В П 11 11 П Blatt 66/70 OR 82,22×2,62 16-00-209/93 58-01-237/83 08-39-187/93 58-01-236/83 58-01-760/83 08-39-083/13 08-39-198/93 58-01-329/63 58-33-016/23 16-00-190/42 16-29-065/17 67-15-055/12 58-06-029/64 <u>-</u>6/080-6E-80 16-29-070/12 65-01-114/15 Datum 58-33-044/ 58-33-542/ 58-33-493/ Name WS-Nr. ref.-no. 07 WS-Nr. ref.-no. seat valve DA3 DN 40-150 Doppelsitzventil DA3 DN 40-150 device ** Q4230-E7502 Q4216-N7004 Q4221-N7004 OR-9,25×1,78 Kolbenstange AZyl. kpl Piston shaft for seat lifting DIN 933 6×14,8 actuator Cover for main actuator Ersatzteilliste: spare parts list: Benennung description PTFE driving band PTFE driving band Gehäusedichfung Piston for main Schaftdichtung Shaft seal -ührungsband Führungsband **Tellerdichtung** Skt.Schraube -ührungsring Deckel HZyl. Sprengring Retainer ring Housina seal Piston seal Zyl.Kerbstift Sitzdichtung Kolben HZy K-Dichtung Quide ring Hex.screw Seat seal <u>Quadring</u> Quadring Seat seal Sitzring Seat ring Quadring **Juadring** Quadring Quadrina 0-Ring 0-Ring 0-ring Cyl.pin 0-ring Double (titabup 4 \sim абиад SO. E E 29 26 27 28 24 25 36 37 30 35 $\frac{1}{2}$ $\overline{\infty}$ $\overleftarrow{\varphi}$

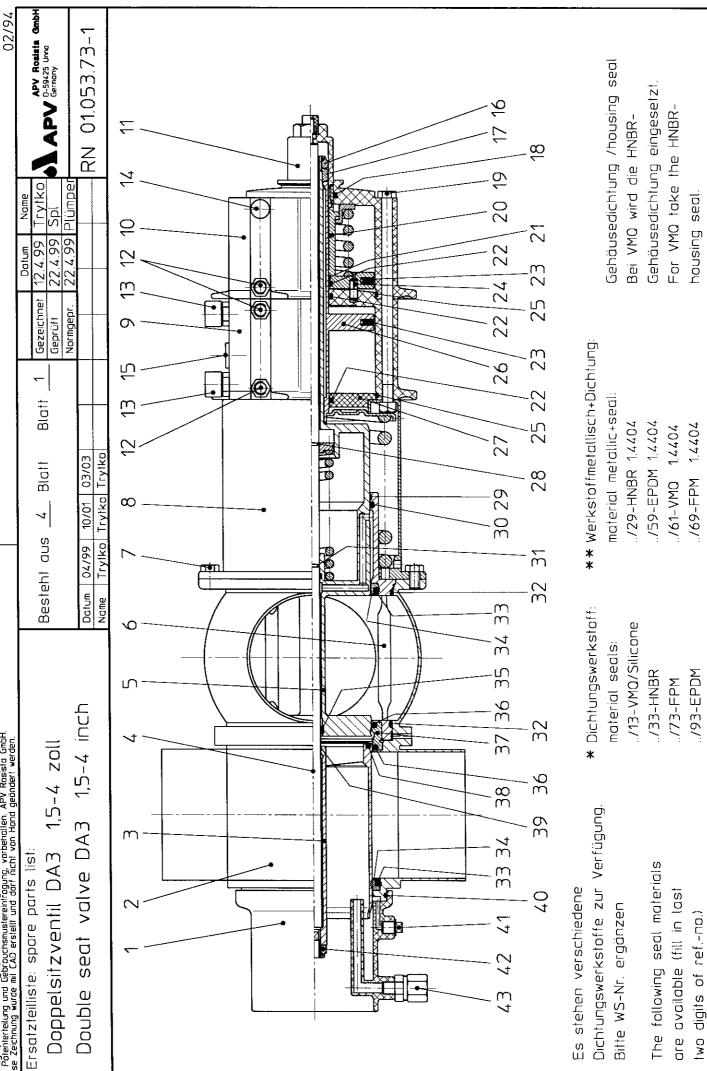


Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mittellung ihres Inhalts nicht gestattet, soweit nicht schriftlich zugestanden. Verstaß vergingen zum Schadensersatz und kann straffecthilder Folgen haben (Paragraph 168 UMG, Paragraph 166 Umb. Eigenfund und alle Rechte, auch (Paragraph 166 Umb. Eigenfund und alle Rechte, auch (In Patenterleitung und Gebrauchsmustereinfragung, vorbehalten APV Rosista Gabt.) Presenten in de App Rosista in App Rosista Gabt.

für Patenterfellung und Diese Zeichnung wurde i	für Patenterreitung und Gebrauchsmustereinfrägung, vorbehötlen. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.	a GmbH. erden.							02/94
Ersatzteillist	Ersatzteilliste: spare parts list:) 11= Q		favarianet	Datum Name		APV Rosista GmbH
Doppelsi	Doppelsitzventil DA3 DN 40-150	0		# Blail		Geprüft			D-59425 Urna Germany
Double s	seat valve DA3 DN 40-150	-150	Datum Name	04/99 01/00 1 Trytko Trytko T	10/01 03/03 0 Trytko Trytko Ti	01/05 09/06 Trytko Trytko		N.	01.053.73
o o epr ytitr	Велена	52	07	20] 65 J	08 N	100	125	150
ner Igub	description	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.
38 1 Mittelo	Mitteldichtung *		58-33-047/	14	=	58-33-048/	=	58-33-049/	11
39 2 0-Ring	12×1		58-06-040/6	=	Il	11	II	11	II
40 1 0-Ring	ان ا		69x3 58-06-295/63	3	II	100x3 58-06-490/63	11	135x3 58-06-655/63	II
41 1 Verso	Verschluß-Stopfen Locking plug		08-74-014/93	3 =	11	11	!1	08-60-007/93	I I
42 1 Siche	Sicherüngsmutter Self-locking nut		65-50-087/15	5 =	H	П	I I	11	II
43 1 G-Ver	G-Verschräubung Straiaht union		08-63-003/13	=	11	I I	II	08-63-006/13	IJ
44 1 Stop	Anschlagring Stop ring							08-39-001/93	ţţ
Ventil 1 Valve	Ventileinsatz ** Valve insert		16-36-394/	16-36-444/	16-36-494/	16-36-544/	16-36-644/	16-36-694/	16-36-744/
Pos.	30, 31, 32, 33, 34, 36, 38,		ompletten Dic	satz	erhältlich				
item. 2	29, 30, 31, 32, 33, 34, 36, 38, 3	39 available	as complete	seal kits only	,				
1 Dichte Seal I	Dichtungssatz Seal Kit		58-34-686/00	ı	ll	58-34-689/00	44	58-34-692/00	II
Dichtung	Dichtungssatz Seal kit		58-34-686/01	FF	II	58-34-689/01	11	58-34-692/01	ĘĒ.
Dicht. Seal	Dichtungssatz Seal kit		58-34-686/02	= =	II	58-34-689/02	ŧŧ	58-34-692/02	13
Dichto Seal	Dichtungssatz Seal. kit		58-34-686/06	11	11	58-34-689/06	II .	58-34-692/06	II
			:						
				_					



Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung hres inhals nicht gestattet, soweit nicht schriftlich zugestanden. Verstaß verpflichtet zum Schodensersatz und kann strafrechtliche Falgen haben Kanngapah 160 Wis. Paragraph 106 Urb. Eigentum und alle Rechte, auch für Palenterteilung und Gebrachsweitereinfagung, vorbehallen, APV Rasista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geöndert werden.





Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres ihalts nicht gestattel, soweit nicht schriftlich zugestanden. Verstaß verpflichtet zum Schadensersatz und kann strafrechliiche Folgen haben haben Peragraph 18 UWG, prangarph 166 Urhöß, Eigentum und alte Rechte, auch für Patentierteilung und Gebrauchsmustereintragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.

02/94 APV Rosista GmbH
D-59425 Urna
Germany RN 01.053.73-1 WS-Nr. ref.-no. WS-Nr. ref.-no. Trytko Umbe 16-22-393/42 | 16-22-443/42 | 16-22-518/42 | 16-22-568/42 | 16-22-668/42 16-24-392/42 | 16-24-442/42 | 16-24-517/42 | 16-24-567/42 | 16-24-642/42 16-37-569/43 16-37-644/43 16-30-226/93 16-30-095/17 16-62-507/47 |16-62-557/47 |16-62-657/47 16-63-507/47 | 16-63-557/47 | 16-63-657/47 6-64-407/47 |16-64-457/47 |16-64-507/47 |16-64-557/47 |16-64-657/47 15-31-240/93 16-22-214/42 |16-22-216/42 09-40-115/93 16-61-657/47 Spl ā WS-Nr. ref.-no. 12.4.99 22.4.99 22.4.99 , and Į. 1 П П 1 7 Dafum Gezeichnet 16-61-557/47 Normgepr WS-Nr. ref.-no. Trytka Gebrüft 12/08 П 11 П 11 11 П П ţ H П II $\tilde{\gamma}_{0}$ Trytka 05/05 16-22-212/42 | 6-37-394/43 | 16-37-444/43 | 16-37-519/43 16-61-507/47 Trytko] 05/04 WS-Nr. ref.-no. 2,5 Ił П П 1 П П H R ΙĮ 11 03/03 Trytko (6-62-407/47 | 16-62-457/47 | 6-63-407/47 16-63-457/47 16-61-457/47 16-22-211/42 JIN EN 24017-M8×14-A2-70 Trytko Trytko 00//0 | 66/70 WS-Nr. ref.-na. \sim П || \parallel 11 ļ П [] П Į 13 Ш $\tilde{\zeta}_{\lambda}$ Blatt 08-60-005/93 08-05-066/93 08-60-750/93 16-22-210/42 67-03-001/15 16-30-225/93 16-28-260/93 16-61-407/47 15-33-918/93 65-50-137/15 19-40-114/93 16-30-500/17 15-31-239/93 Datum Name WS-Nr. ref.-no. WS-Nr. seat valve DA3 1,5-4 inch Doppelsitzventil DA3 1,5-4 zoll 1+2+3+45 DA32 1+2+3S 1+2+35 alve seat with rinse chamber EG6×1 G1/8 11,1X5 DA31 1+2S G1/8 DA34 DA33 entilsitz mit Spülkammer Ersatzteilliste: spare parts list: Benennung description :ntluftungsstopfen Sicherungsscheibe Anschlagschraube pper valve shaft Seat lifting device ower valve shaft Cap Sicherungsmutter Stop nut <u>intiatorhallerung</u> /erschlunkappe Spring actuator erschraubung Mounting block pritzanschluß SKI. Schraube connection Main actuator ederzylinder Hauptzylinder Anlüftzylinder Puld plud ock washer chaft oben Schaft unter stop steeve Hex. SCrew ugstange Juide rod <u> Jehäuse</u> **sehause** Jehause Jehäuse forising Housing Housing Housing Double __ Thantity \sim әбиәд E I Pos 9 \underline{m} Ō (\) mப Ó ∞ ÖΛ. 9 27 **V** _ \subseteq



02/94

Weitergabe sowie Vervielfältgung dieser Unterlage. Verwertung und Mitteilung ihres inhalts nicht gestatteit, soweit nicht schriftlich zugestanden. Verstoff verpflichtet zum Schadensersatz und kann strafrechtliche Folgen haben Paragraph 18 UWG, Paragraph 10 Urhlä. Eigentum und alle Rechte, auch für Patenterfeilung und Gebrauchsmustereintragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.

APV Rosista GmbH
D-59425 Uma
Germany 01.053.73-1 WS-Nr. ref.-no. WS-Nr. ref.-no. Z Plümper **Irytko** Name 08-39-188/93 58-01-238/63 58-33-017/23 16-00-210/93 58-01-761/83 OR 101,27×2,62 NBR 70 Shore 16-00-191/42 Sp 16-29-066/17 16-29-071/12 65-01-114/15 58-33-045/ 58-33-642/ 58-33-643/ WS-Nr. M8×168 PXX-102 11 П 12.4.99 22.4.99 99 4 99 Datum Gezeichnet Normgepr WS-Nr. ref.-no. Geprüff Trytko 01/06 П 11 H II (i П П 11 Ħ 1 [1 11 II П II 11 11 П 11 Tr>tko 12/05 16-00-209/93 | 16-00-208/93 | 16-00-207/93 Trytko 03/03 WS-Nr. 2,5" 11 П 11 Н 11 11 Н 11 П 11 II 11 П 11 П ļ П П Trytka 10/01 \triangleleft Shore Trytko 11/00 WS-Nr. ref.-no. 70 [] П H 11 П 11 П 11 П П Ц 11 11 П Ш П П I Ņ NBR Blatt Trytko 04/99 OR 82,22×2,62 58-06-029/64 E6/080-6E-8C 58-01-236/83 58-01-760/83 08-39-083/13 58-01-329/63 58-33-016/23 58-01-237/83 08-39-187/93 67-15-055/12 08-39-198/93 16-00-190/42 16-29-070/12 16-29-065/17 65-01-114/15 Datum 58-33-542/ 58-33-493/ 58-33-044/ Name WS-Nr ref-no. <u>,</u> 48×156 WS-Nr. ref.-no. seat valve DA3 1,5-4 inch ₹-1,5-4 zall lifting device *** Q4230-E7502 Q4216-N7004 Q4221-N7004 DIN 933 Doppelsitzventil DA3 6×14,8 Piston for main actuator Ersatzteilliste: spare parts list: for main actuator Benennung Kolbenstange AZyl. kpl Piston shaft for seat l description Führungsband PTFE driving band Führungsband PTFE driving band **Gehäusedichtung** Schaftdichtung **Fellerdichtung** Skt.Schraube Sprengring Retainer ring -ührungsring Deckel HZyl. Quide ring Sitzdichtung Housing seal Piston seal Zyl.Kerbstift Kolben HZyl **A-Dichtung** Shaft seal Hex.screw Seat seal Sitzring Seat ring Seat seal Quadring 0-Ring Quadring Quadring Quadring Quadrina Quadrinā 0-Ring Cyl.pin Cover 0-ring 0-rina Double Menge quantity \sim 4 \mathbf{m} \sim \sim \sim α Pos ell 26 29 37 27 28 90 3 6 ∞



Weitergabe sowie Vervieltätitigung dieser Unterlage, Verwertung und Mitteilung Ihres Inhalts nicht gestattet, soweit nicht schriftlich zugestanden. Verstaß verpflichtet zum Schaedensersalz und kann sitrafrechliche Folgen haben haben (Paragraph 18 UWG, Paragraph 16 Uhrbi. Eigentum und alle Rechte, auch für Patenterteilung und Gebrauchsmustereinfragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand gedindert werden.

02/94	Rosista GmbH 5 Urna 7	.73-1		WS-Nr. refno.																	
	APV Rosista GmbH D-59425 Urra Germany	RN 01.053.7		WS-Nr. W refno. re																	
	Datum Name 12.4.99 Trytka 22.4.99 Spl		.,7	WS-Nr. refno.	58-33-048/		100x3 58-06-490/63			-		16-36-644/			58-34-689/00	58-34-689/01	58-34-689/02	58-34-689/06			
	Gezeichnet Geprüft Normoen	1	" "	WS-Nr. refno.	[]	II	11		11	=		16-36-569/]						
tur Parenerienung und vebrauchsmusierenningung, vorbendiren. Ary Rosisia under, Disse Zeichnung wurde mit CAD erstellt und daff nicht von Hand geöndert werden.		03/03 09/06 Trytko Trytko	ł .	WS-Nr. refno.		11			I ì	Π		16-36-519/	t)		11		II.	H			
	Blatt 4	04/99 10/01 0. Trytko Trytko Ti	2,"	WS-Nr. refno.	II	-	11		11	<u></u>		16-36-444/	ssatz erhältlich	kits only	- 11	www.	II	H			
		Datum 0.	1,5,"	WS-Nr. refno.	58-33-047/	58-06-040/63	69×3 58-06-295/63	08-74-014/93	65-50-087/15	08-63-003/13		16-36-394/	nur im kompletten Dichtungssatz	complete seal kits	58-34-686/00	58-34-686/01	58-34-686/02	58-34-686/06			
	oll	1,5-4 inch	Ž-	WS-Nr. refno.									ur im komplet	available as c							
	rts list: DA3 1,5-4 zoll		מיומיםם	description	*	12×1		n G1/8	M10×1	8/6 G1/8	•	*	32, 33, 36, 38, 39 11	32, 33, 36, 38, 39 a [,]	FPM	EPDM	VMQ	HNBR			
	Ersatzteilliste: spare parts list: Doppelsitzventil DA3	Double seat valve DA3			Mitteldichtung Seat	0-Ring 0-rina	0-Ring 0-ring	Verschluß-Stopfen Locking plug	Sicherungsmutter Self-locking nut	G-Verschraubung Straight union	li i	Ventileinsatz Valve insert	Pos. 29, 30, 31, 3	Item. 29, 30, 31, 3	Dichtungssatz Seal Kit	Dichtungssatz Seal kit	Díchtungssatz Seal kit	Díchtungssatz Seal Kit			
Zeichnun	satzi Dop	Dol	agı Ytitr	Mer Janp	_	2	_	_	~	_	,,,	~			_	-	-				
Diese -	<u>ш</u>		υ Ο Ω	item item	38	39	07	41	42	43							:				



01.053.73-2 APV Rocieta
APV Cermony Gehäusedichtung /housing seal Gehäusedichtung eingesetzt For VMQ take the HNBR-Bei VMQ wird die HNBR-Z $\frac{2}{2}$ 6 Trvtko Plümpe 20 Name housing seal Sp 22.4.99 2499 Datum 24 Gezeichnet Œ Normgepr Geprüft ** Werkstoff metallisch+Dichtung: 26 Blatt material metallic+seal /59-EPDM 1,4404 /29-HNBR 1,4404 1,4404 761-VMQ 1,4404 300 Trytko 03/03 Blatt 28 //69-FPM 30 29 Trytka 10/01 4 Besteht aus Trytko 66/70 $\frac{\omega}{2}$ Datum Name m * Dichtungswerkstoff: /13-VMQ/Silicone 34 material seals: /33-HNBR /93-EPDM /73-FPM 36 Double seat valve DA3 1,5-4 Sh5 32 Weilergabe sowie Vervielfättigung dieser Unterlage, Verwertung und Mitteilung ihres finalls nicht gestaltet, soweit nicht schriftlich zugestanden. Verstoß verpflichtet zum Schadensersatz und kann strafrechtliche Falgen haben (Panagraph 16 JwG. Paragraph 160 Urf.). Eigentum und alle Rechle, auch für Potenterteilung und Gebrauchsmustereinfragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden. 1,5-4 Sh5 36 Dichtungswerkstoffe zur Verfügung. 33 33 34 Doppelsitzventil DA3 Ersatzteilliste: spare parts list The following seal materials Es stehen verschiedene are available (fill in last Bitte WS-Nr. ergänzen two digits of ref.-na.)

02/94

Gmb



Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestaftet, soweil nicht schriftlich zugestanden. Verstaß verpflichtet zum Schadensersatz und kann strafrechtliche Folgen haben (Paragraph 18 UMG, Paragraph 166 UMG). Eigentum und alle Rechte, auch für Patienterteilung und Gebrauchsmusterenfragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.

02/94 APV Rosista GmbH
D-59425 Uma
Germany 01.053.73-2 WS-Nr. ref.-no. WS-Nr. ref.-no. Z Trytko Plümper Name 16-37-062/43 | 16-37-063/43 16-62-408/47 | 16-62-458/47 | 16-62-508/47 | 16-62-558/47 | 16-62-658/47 6-63-408/47 | 16-63-458/47 | 16-63-508/47 | 16-63-558/47 | 16-63-658/47 16-64-658/47 16-24-016/42 | 16-24-017/42 | 16-24-018/42 | 16-24-019/42 | 16-24-020/42 16-22-195/42 |16-22-196/42 |16-22-197/42 16-61-658/47 16-22-191/42 Spl WS-Nr. 4Sh5 22.4.99 12,4.99 \parallel 6676 \parallel H 11 1 11 11 Н 11 Datum 16-64-408/47 | 16-64-458/47 | 16-64-508/47 | 16-64-558/47 16-22-190/42 16-61-558/47 16-30-226/93 Gezeichnet 09-40-115/93 16-30-095/17 15-31-240/93 Vormgepr WS-Nr. Georuff 3Sh5 j Ħ 11 1 Įį Trytko 12/08 16-37-061/43 16-22-189/42 16-61-508/47 03/03 05/04 Trytko Trytko WS-Nr. ref.-no. 2,5Sh5 [П 11 il. Ħ П E| 1][11 H 16-37-059/43 | 16-37-060/43 | 16-22-194/42 16-22-188/42 16-61-458/47 JIN EN 24017-M8x14-A2-70 Trytko 00//00 WS-Nr. ref.-no. \sim **2Sh5** 11 Ii П 1 П Ш §| П 11 1 1 Blatt Trvtka 66/70 08-60-750/93 08-60-005/93 28-05-066/93 16-22-193/42 16-22-187/42 16-30-225/93 16-28-260/93 67-03-001/15 16-61-408/47 5-31-239/93 15-33-918/93 65-50-137/15 09-40-114/93 16-30-500/17 Datum WS-Nr. ref.-no. Name 1,5Sh5 WS-Nr. ref.-no. 1Sh5 1,5-4 Sh5 Doppelsitzventil DA3 1,5-4 Sh5 DA34 1+2+3+4S DA32 1+2+3S DA33 1+2+3S Valve seat with rinse chamber G1/8 11,1×5 DA31 1+2S G1/8 seat valve DA3 EG6×1 Ersatzteilliste: spare parts list: /entilsitz mit Spulkammei Benennung description Entlüftungsstopfen Anschlagschraube Sicherungsscheibe Seat liffing device Jpper valve shaft ower valve shaft Sicherungsmutter nitiatorhalterung Venting plug Verschlußkappe Spring actuator Verschraubung <u>Younting</u> block ip connection Skt. Schraube Spritzanschluß 1ain actuator Hauptzylinder Anlüffzylinder -ederzylinder Schaft unten ock washer Schaft oben stop sleeve SCLEW Zugstange Suide rod Gehäuse Stop nut <u>jehäuse</u> Jehause sehäuse Hausing Housing Housing Jousing Jnion T X T ap Double <u> Ktitnaup</u> m \sim 4 <u>а</u>биа<u>м</u> Ten. SO $\widetilde{\mathbb{U}}$ $\tilde{\nabla}$ 9 9 17 \sim m \Box Ó ∞ \Diamond 27 7



weitergabe sowie Vervielfältigung dieser Unterlage, Verwerfung und Mittellung ihres inhalts nicht gestattet, soweit nicht schriftlich zugestanden. Verstoß verpflichtet zum Schadensersatz und kann strafrechtliche Falgen haben (Paragraph 160 Uhfa). Eigentum und alle Rechte, auch für Patientieriaung und Gebrauchsmustereinfragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.

APV Rosista GmbH
D-58425 Uma
Germany 76/70 RN 01.053.73-2 WS-Nr. ref.-no. WS-Nr. ref.-no. rytko ümber 밍 OR 101,27x2,62 NBR 70-75 Shore WS-Nr. ref.-no. II 4Sh5 11 Н 11 11 11 П 11 П 11 11 11 П 11 Н H П 11 11 12,4.99 22.4.99 22.4.99 Datem 08-39-188/93 58-33-017/23 58-01-238/63 16-00-191/42 PKK-102 58-01-761/83 16-00-210/93 Gezeichnet 16-29-066/17 16-29-071/12 65-01-114/15 Normgepr. 58-33-643/ 58-33-045/ 58-33-642/ WS-Nr. ref.-no. Geprüft Trytko Trytko 07/09 M8×168 **3Sh5** П 11 II I 01/06 Trytkol Trytko 2,5Sh5 12/05 WS-Nr. ref.-no. П ij II H 11 11 Н H 11 Н 11 11 11 11 11 H П H ◁ Shore 03/03 16-00-208/93 16-00-207/93 OR 82,22×2,62 NBR 70-75 Trytka Trytka 10/01 WS-Nr. ref.-no. **2Sh5** $\boldsymbol{\mathsf{m}}$ П 11 П Ш 11 Ш II Н П 11 П П ij H 11 П Blatt 66/70 08-39-198/93 58-01-329/63 58-33-016/23 08-39-083/13 58-06-029/64 08-39-187/93 58-01-760/83 <u>=</u>6/080-6E-80 16-00-190/42 58-01-236/83 67-15-055/12 16-29-070/12 58-01-237/83 16-29-065/17 65-01-114/15 Datum 58-33-044/ 58-33-493/ 58-33-542/ Name WS-Nr. ref.-no. 1,5Sh5 WS-Nr. ref.-no. 1Sh5 Double seat valve DA3 1,5-4 Sh5 Doppelsitzventil DA3 1,5-4 Sh5 Piston shaff for seat lifting device * * * Q4230-E7509 Q4216-N7004 OR-9,25×1,78 Q4221-N7004 **DIN 933** 6×14,8 Kolben HZyl. Piston for main actuator Ersatzteilliste: spare parts list: Cover for main actuator Benennung Kolbenstange AZyl. kpl description Führungsband PTFE driving band PTFE driving band Gehäusedichtung Schaffdichtung Führungsband **Tellerdichtung** Sprengring Retainer ring Führungsring Skt.Schraube Housing seal Deckel HZyl. Sitzdichtung Zyl.Kerbstiff Cyl.pin 0-Ring K-Dichtung Piston sea Shaft seal Quide ring Hex.screw Seat seal Sitzring Seat ring Seat seal Quadring Quadring Quadring Quadring Quadring Quadring 0-Ring 0-ring 0-110 quantity N ~ (\mathcal{N}) <u>әБиә</u>ผ os. 37 29 36 Ea. 26 27 9 $\frac{1}{2}$ 22 24 23 20 <u>&</u> 6 21



Weitergabe sowie Vervielfältigung dieser Unterlage. Verwertung und Mittellung ihres inhalts nicht gestattet, soweit nicht schriftlich zugestanden. Verstaß verstaß verstaßter Schalensersafz und kann straffechtliche Falgen haben. Peragraph 18 UWG. Peragraph 18 UWG. Peragraph 18 UWG. Peragraph 18 Ligenhum und alle Reichle, auch für Patenterteilung und Gebrauchsmustereintragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf hicht von Hand geändert werden.

02/94	APV Rosista GmbH D-59425 Urvo Germany	73-2		WS-Nr. refno.																
	APV F D-59428 Germany	RN 01.053.73		WS-Nr. W																
	Datum Name 12.4.99 Trytko 22.4.99 Spl		4Sh5	WS-Nr. V	1	II	II	11	II	11	16-37-665/					II	ll .			
		Normgepr.	N 3Sh5	WS-Nr. refno.	58-33-048/	1	100x3 58-06-490/63	1	II	-	16-37-565/ 1			58-34-689/00	58-34-689/01	58-34-689/02	58-34-689/06			
		03/03 09/03 Trytko Trytko		WS-Nr. refno.	<u></u>	=	II	It	II.		16-37-515/	erhältlich		-	<u></u>		II			
	Blatt 4	04/99 10/01 0 Trytko Trytko Tr	Sh5	WS-Nr. refno.	11	dans	=		=	[]	16-37-465/	Dichtungssafz erf	seal kits only	11		II.				
		Datum 0,	1	WS-Nr. refno.	58-33-047/	58-06-040/63	69×3 58-06-295/63	08-74-014/93	65-50-087/15	08-63-003/13	16-37-415/		as complete s	28-34-686/00	58-34-686/01	28-34-686/02	90/989-78-89			
Paragraph 18 UWG, Paragraph 106 Utha. Egentum und alle Rechle, auch für Patenterteilung und Gebrauchsmustereintragung, vorbehalten. APV Rosista GmbH. Diese Zeichnung wurde mit CAD erstellt und darf nicht von Hand geändert werden.	h5	1,5-4 Sh5	1Sh5	WS-Nr. refno.								39 nur im kompletten	39 available c	U I	L3 I	וָט				
	15 list: DA3 1,5-4 Sh5			description	*	12×1		n G1/8	M10×1	8/6 G1/8	*	32, 33, 34, 36, 38, 3	32, 33, 34, 36, 38, 3	МДШ	EPDM	VMQ	HNBR			
	Ersatzteilliste: spare parts list: Doppelsitzventil DA3	Double seat valve DA3	(((((((((((((((((((desci	Mitteldichtung Seal	0-Ring 0-rina	0-Ring 0-ring	Verschluß-Stopfen Locking plug	Sicherungsmutter Self-locking nut	G-Verschraubung Straight union	Ventileinsatz Valve insert	Pos. 29, 30, 31, 3	item. 29, 30, 31, 3	Dichtungssatz Seal kit	Dichtungssatz Seal kit	Dichtungssatz Seal Kit	Dichtungssatz Seal Kit			
aragraph 18 t r Patenterteilt sse Zeichnung	Ersatzt Dop	Dol	әБ	tea Mer Januar	38 1	39 2 (07	41 1	42 1	43 1			_	<u>-</u>	ζ- -	— ()	()			



Blatt

RNGB

von

260.064-1