

Operating Manual

DELTA S2 - DN10-20

Single Seat and Change - Over Valve











Declaration of Conformity for Valves and Valve Manifolds

SPX APV, Zechenstr. 49, D-59425 Unna-Königsborn herewith 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 2006/42/EC (superseding 89/392/EEC and 98/37/EC) and GPSG - 9.GPSGV.

For official inspections, APV Rosista GmbH presents a technical documentation according to Appendix VII 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 risks, as well as an operating manual with safety instructions.

The conformity of the valves and valve manifolds is guaranteed.

Authorised person for the documentation: SPX APV, Frank Baumbach, Zechenstr. 49, D-59425 Unna

December 01, 2009

Manager Research and Development







	Table of Contents	Page
1.	General Terms	2
2.	Safety Instructions	2
3.	Mode of Operation	3
4.	Auxiliary Equipment	4
5.	Installation	4
5.1	Welding Instructions	5
6.	Dimensions	6
7.	Technical Data	7
8.	Materials	7
9.	Maintenance	8
10.	Service Instructions (single seat valve S21 - S22)	8 - 10
11.	Service Instructions (actuator)	11
12.	Service Instructions (change-over valve S23 - S24)	12 - 13
13.	Spare Parts Lists	
	Single seat valve S21, S22 - FS - FH Manual actuation S21, S22 - H	RN - 01.054.007.0 RN - 01.054.007.3
	Change - over valve S23, S24 - FS - FH Manual actuation S23, S24 - H	RN - 01.054.007.1 RN - 01.054.007.4
	Actuator	RN - 01.054.007.9
	Manual actuation S2 - DN 10 - 20	RN - 01.054.007.8







1. General Terms

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

We have to point out that we will not accept any liability for damage 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.
- Depressurize the line system before any maintenance of the valve.
- Separate electric and pneumatic connections.
- Do not reach into the open valve.



- Risk of injury by sudden valve operation.
 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.
- Valve design NC: Relieve the shaft via the control air

connection before releasing the housing screws.

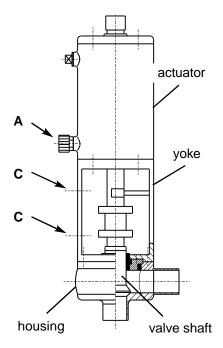
- The welded actuator is under spring load, do not open it.



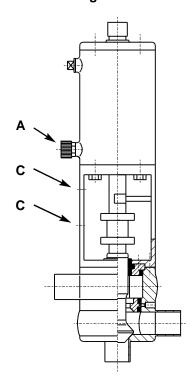


3. Mode of Operation

single seat valve



change-over valve



Single seat and change-over valves DELTA S2 (DN 10 - 20) have been developed for the use in the brewing and beverage industries, dairy and food applications as well as for the chemical and pharmaceutical industries.

The valves are designed for universal applications and stand out for their increased mechanical reliability and absolute ease of handling.

The function of the DELTA S2 (DN 10-20) valve is to shut off and to change over line sections.

- Operation by pneumatic actuator with air connection at (A), reset by spring force.
- By different assembly of the actuator, the following designs can be realized:

NC (FS): actuator spring-to-close / "fail-down": air-to-raise,

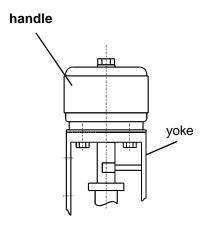
spring-to-lower

NO (FH): actuator spring-to-open / "fail-up": air-to-lower,

spring-to-raise

(illustration shows design NC)

- The inner parts of the actuator are service-free.
- If the valve is equipped with manual actuation, operation is effected by turning of the handle.
- For the valve feedback, proximity switches with luminous diodes can be installed in the yoke area **(C)**.
- The cleaning of the inner area of the valve is carried out during cleaning of the line system.







4. Auxiliary Equipment

Valve position indication

Proximity switches to signal the limit position NC or NO of the valve shaft can be installed in the yoke area if required.

We recommend to use our APV standard proximity switches.

Type: three-wire proximity switch (ref.-No. 08-60-011/93)

Operating distance: 4 mm / Diameter: 11 mm / Length: 30 mm

Feedback complete with holder and proximity switch

(ref.-No. 15-33-023/93) for a limit position.

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

5. Installation

- The installation of the valve must be effected in such a manner that liquids can drain off the valve housing and should preferably be undertaken in vertical position.
- The valve housings can be welded direct into the pipeline (valve insert is completely dismantable).
- Attention: Observe welding instructions.





5.1 Welding Instructions

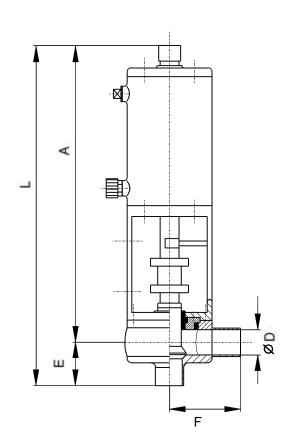
S2 - DN 10-20

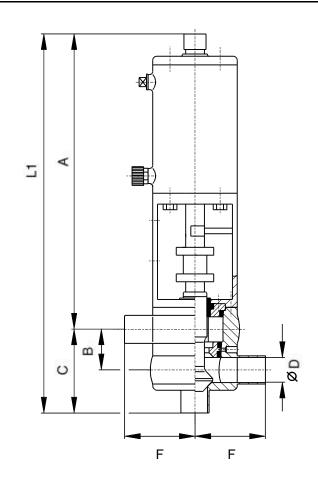
- Before welding of the valve, dismantle the valve insert from the housing. Careful handling to avoid damage to the parts is necessary.
- Welding should only be carried out by certified welders (EN 287-1).
 (seam quality EN 25817 "B")
- The welding of the valve housing must be undertaken in such a way that the valve body is not deformed.
- The preparation of the weld seam up to 3 mm thickness should 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 housing 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 of our guarantee.



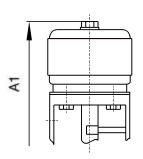


6. Dimensions





manual actuation



dimensions in mm

DN	Α	A1	В	С	Ø D	E	F	L	L1
10	179	129	20	45	10	25	45	204	224
15	182	132	26	53,5	16	27,5	45	209,5	235,5
20	184	134	30	60	20	30	45	214	244





7. Technical Data

Line pressure 5 bar with standard actuator, max. line pressure on request.

Max. operating temperature : 135°C EPDM

*FPM, *VMQ

Sterilization temperature: 140°C EPDM

(short-term) *FPM, *VMQ,

*(no steam)

Air connection (for hose): 6x1mm

Max. control air pressure : 10 bar Min. control air pressure : 6 bar

(Use dry and clean control air, only.)

	stroke in mm for single seat valve S21, S22	stroke in mm for change-over valve S23, S24
DN		
10	6	5
15	7	6
20	8	7

8. Materials

Housing, housing cover, valve seat: 1.4404

Actuator, yoke, operating cam,

spring plug, screws: 1.4301

Valve shaft: 1.4301 / PTFE

O-ring: standard EPDM

option VMQ, FPM

Shaft seal: standard EPDM

option VMQ, FPM

Manual actuation: PA 6 / 1.4301





9. Maintenance

- The maintenance intervals depend on the application of the valve and should be determined by the user carrying out regular checks.
- Replacement of seals according to service instructions.
- Assembly of the valve and change of the valve design NC or NO according to service instructions.
- Slightly grease all seals before their installation!!!

Recommendation:

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

or

APV-food-grade grease for VMQ (Silicone)

(0,6 kg /can - ref. No. 000 70-01-017/93) (60 g /tube - ref. No. 000 70-01-016/93)

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

!!! Do not use Silicone-based grease for VMQ seals !!!

10. Service Instructions

The item numbers refer to the spare parts lists

Single seat valves: S21, S22 - NC-NO **RN 01.054.007.0**

S21, S22 - H (M) RN 01.054.007.3

Change-over valves: S23, S24 - NC-NO RN 01.054.007.1

S21, S22 - H (M) RN 01.054.007.4

- I. Dismantling from the line system
 - a. Shut off line pressure and discharge lines if possible.
 - b. Valve design NC: control actuator with air.



Do not reach for movable parts! Risk of injury by suddenly actuating valve.

- **c.** Release housing flange screws (7) and withdraw the insert from the housing (1).
- d. Cut off compressed air and remove compressed air supply.
- e. Release proximity switches and pull them off.





- II. Replacement of wear parts
 Single seat valve S21, S22
 The item numbers refer to the spare parts lists
 RN 01.054.007.0 / RN 01.054.007.3
 - a. Remove the housing seal (2).
 - b. Remove the spring plug (9) and pull out the shaft (5). If the PTFE shaft is worn out, draw it off the metal core. The PTFE shaft is destroyed and must be replaced.
 - c. Screw off the hexagon screw (6) and pull off the housing cover (3).
 - d. Take off the shaft seal (4).
 - **e.** Screw off the hexagon screws **(7)** and separate the yoke **(10)** from the actuator or from the manual actuation.
 - Service damaged O-rings at the actuator. (see 11. Service Instructions Actuator)
- III. Installation of seals and assembly of valve
 Compare spare parts list RN 01.054.007.0 / RN 01.054.007.3
 - **a.** Mount the yoke **(10)** with hexagon screws **(7)** at the actuator or manual actuation.

Attention: Observe the required valve design **NC** or **NO**. (see 11. Service Instructions Actuator)

- b. Slightly grease the inside of the shaft seal (4) and place it in the housing cover (3). Press the housing cover (3) against the yoke flange and turn the hexagon screw (6) manually.
- c. Lock the PTFE shaft on the metal shaft (5).
- **d.** Slide the shaft (compl.) through the shaft seal **(4)** and then through the operating cam **(8)** into the actuator rod.
- e. Fix the shaft (5) with the spring plug (9).
- **f.** Slightly grease the housing seal **(2)** and place it in the groove of the housing cover.





IV. Installation of the valve Compare spare parts list RN 01.054.007.0 / RN 01.054.007.3

a. Valve design NC: control actuator with air.



Do not reach for movable parts of the valve! Risk of injury by suddenly actuating valve.

- **b.** Carefully place the valve insert into the housing (1) and tighten it with the hexagon screws (7).
- c. Tighten the hexagon screw (6).
- **d.** Plug in the proximity switches and fasten them.
- e. Basic adjustment of the valve feedback:

 Place the proximity switches into the base until they stop.

Fine adjustment:

By slight withdrawal of the proximity switches and observation of the luminous diode the shift point can be adjusted more accurately if necessary.





I. Actuator

The item numbers refer to the spare parts list RN 01.054.007.9.

a. Dismantle the screws **(5)** and the cover **(2)**. Remove the O-rings **(3)**.

II. Installation of seals and assembly of actuator

compare spare parts list RN 01.054.007.9

- a. Slightly grease the O-rings (3).
- Place the O-rings via the piston rod into the groove on the face.
- **b.** Screw the venting plug **(6)** on the spring side (short projection of the piston rod) in the actuator.
- **c.** Screw the air connection **(7)** at the air side (larger projection of the piston rod) in the actuator.
- d. Fasten the cover (2) with screws (5).

Attention: Consider the required valve design **NC or NO**

during the installation of the cover (2).

NC (FS) = short projection of piston rod NO (FH) = large projection of piston rod





The item numbers refer to the spare parts lists

Change-over valve: S23, S24 - NC-NO RN 01.054.007.1 S23, S24 - H (M) RN 01.054.007.4

I. Dismantling from the line system (see 10. Service Instructions I. a. - e.)

II. Dismantling of wear parts

- a. Remove the housing seals (2).
- **b.** Control the actuator with air!
- c. Remove the spring plug (9) and pull out the shaft (5).
- d. Screw off the screw (6) and pull off the valve seat (3).
- e. Take off the shaft seal (4).
- **f.** Screw off the hexagon screws **(7)** and separate the yoke **(10)** from the actuator or from the manual actuation.
- Service damaged O-rings at the actuator.
 (see 11. Service Instructions Actuator)
- III. Installation of seals and assembly of valve
 Compare spare parts list RN 01.054.007.1 / RN 01.054.007.4
 - **a.** Mount the yoke **(10)** with hexagon screws **(7)** at the actuator or manual actuation.

Attention: Observe the required valve design **NC** or **NO**. (see 11. Service Instructions Actuator)

- **b.** Slightly grease the inside of the shaft seal (4) and place it in the valve seat (3). Press the valve seat (3) against the yoke flange and turn the hexagon screw (6) manually.
- **c.** Slide the shaft (compl.) through the shaft seal **(4)** and then through the operating cam **(8)** into the actuator rod.
- **d.** Control the actuator with air and fix the shaft **(5)** with the spring plug **(9)**.
- **e.** Slightly grease the housing seals **(2)** and place them in the groove of the valve seat.





IV. Installation of the valve

a. Valve design NC: control actuator with air.



Do not reach for movable parts of the valve! Risk of injury by suddenly actuating valve.

- **b.** Carefully place the valve seat into the housing **(1)** and tighten it with the screws **(7)**.
- c. Tighten the hexagon screw (6).
- **d.** Plug in the proximity switches and fasten them.
- e. Basic adjustment of the valve feedback:

 Place the proximity switches into the base until they stop.

Fine adjustment:

By slight withdrawal of the proximity switches and observation of the luminous diode the shift point can be adjusted more accurately if necessary.

13. Spare Parts Lists

(see annex)



BA S2 1020 0002 ID-No.: H 1 7 0 7 6 9



Translation of original manual

rev. 2





Your local contact:

APV 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.

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Ersatzteilliste: spare parts list:

Ventil S21, S22-FS-FH und L/L DN 10,15,20

APV Roelsta GmbH
PV D-59425 Uma
Germany

29.11.90Schulz/WB

Trytko Name

20.11.90 Datum

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Name

RN 01.054.007.0

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Valve S21, S22-FS-FH and L/L DN 10,15,20 patum 11/90

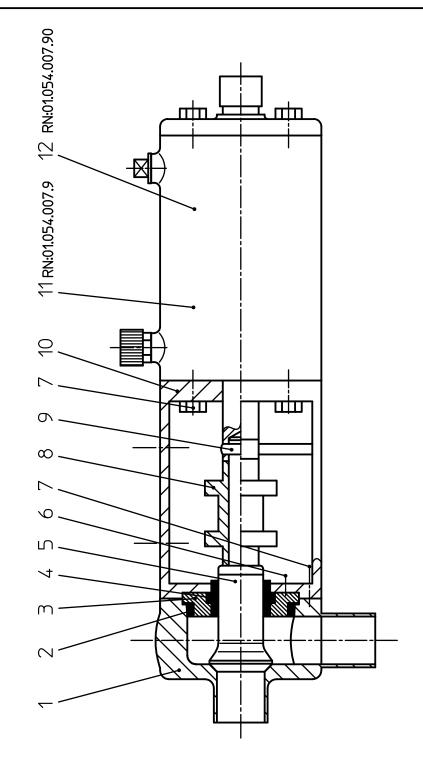
Dichtungswerkstoffe zur Verfügung. Es stehen verschiedene Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.) * Dichtungswerkstoff: material seals: ../13-Silikon/Silicone ../73-FPM

../93-EPDM

"/53-Silikon/Silicone 0-Ring:

../64-EPDM ../73-FPM





Ersatzteilliste: spare parts list:

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DN 10,15,20 Ersatzteilliste: spare parts list: Ventil S21, S22-H

APV Roeista GmbH PV D-59425 Uma Germany

Schulz Trytko Name

5.11.91

20.11.90

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RN 01.054.007.3

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DN 10,15,20 Valve S21, S22-H

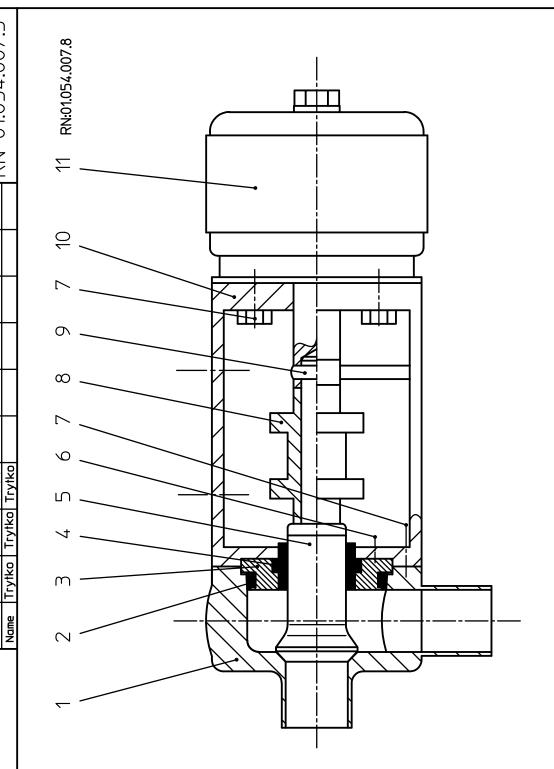
Dichtungswerkstoffe zur Verfügung. Es stehen verschiedene Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.) * Dichtungswerkstoff: material seals: ../13-Silikon/Silicone ../93-EPDM ../73-FPM

0-Ring:

"/53-Silikon/Silicone ../64-EPDM

../73-FPM





02/94 APV Rocieta GmbH

APV 0-59425 Urna
Germany RN 01.054.007.3 WS-Nr. ref.-no. WS-Nr. ref.-no. Schulz Trytko Name WS-Nr. ref.-no. 20.11.90 5.11.91 Date Gezeichnet Normgepr. WS-Nr. ref.-no. Geprüft WS-Nr. ref.-no. Trytko Trytko Trytko 15-42-126/47 |15-42-176/47 |15-42-226/47 15-22-259/19 15-41-226/47 WS-Nr. ref.-no. *1611* Blatt 2 20 II Ш Ш Ш Ш II II Datum | 11/90 | 15-22-209/19 15-41-176/47 Name WS-Nr. ref.-no. 冇 П II II П П Ш П 15-41-126/47 15-00-057/42 15-22-134/19 67-03-020/12 15-27-068/93 65-01-031/13 08-60-161/12 16-40-022/17 65-01-016/13 58-33-014/ WS-Nr. ref.-no. 58-06-119/ 9 DN 10,15,20 DN 10,15,20 M5x10 M4x5 28-3 **S22 S21 DIN933 DIN933** Ersatzteilliste: spare parts list: -ederstecker für Schaft Benennung description Ventil S21, S22-H Valve S21, S22-H Shaft -complete Skt. Schraube Schaft -komplet Housing cover Schaftdichtung Shaft seal Yoke Handbetätigung sehäusedecke Hex. screw Skt. Schraube Operating cam Plua for shafi Hex. screw Schalfnocke sehäuse Gehäuse Housing 0-Ring 0-ring Housing _aterne Handle G #= 0 = Menge Ytitnbup $\overline{}$ 7 9 2 m ப 9 _ ω σ



Ventil S23, S24-FS-FH

Ersatzteilliste: spare parts list:

APV Rocista GmbH
PV D-59425 Urna
Germany

Schulz/WB Trytko Name

20.11.90

> Gezeichnet Geprüft Normgepr.

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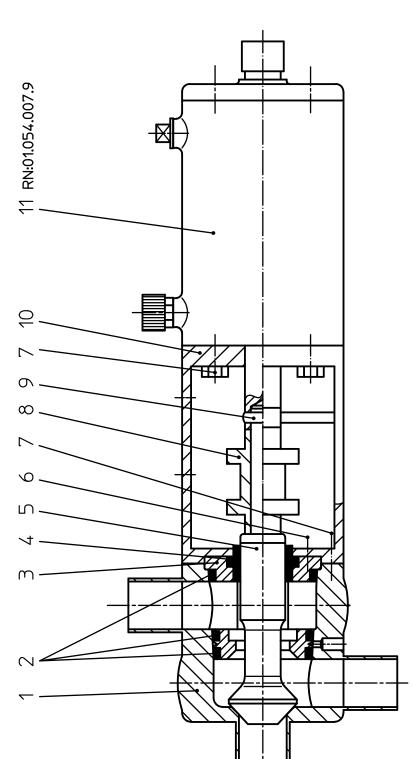
DN 10,15,20 DN 10,15,20

Valve S23, S24-FS-FH Dichtungswerkstoffe zur Verfügung. Es stehen verschiedene Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.) * Dichtungswerkstoff: material seals: ../13-Silikon/Silicone ../93-EPDM ../73-FPM

../53-Silikon/Silicone ../64-EPDM 0-Ring:

../73-FPM







S24-H DN 10,15,20 Ersatzteilliste: spare parts list: Valve S23, S24-H Ventil S23,

APV Roeista GmbH PV D-59425 Uma Germany

Schulz Trytko Name

5.11.91 20.11.90

Gezeichnet

Blatt

Blatt

7

Besteht aus

11/90 Trytko

Datum Name

Normgepr. Geprüff

RN 01.054.007.4

11 RN:01.054.007.8

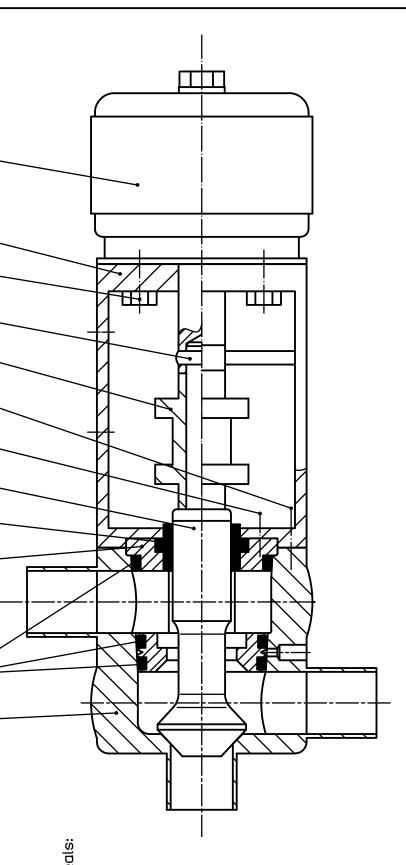
02/94

DN 10,15,20 Dichtungswerkstoffe zur Verfügung. Es stehen verschiedene

The following seal materials are available (fill in last Bitte WS-Nr. ergänzen two digits of ref.-no.) * Dichtungswerkstoff: material seals: ../13-Silikon/Silicone ../93-EPDM ../73-FPM

../53-Silikon/Silicone ../64-EPDM 0-Ring:

../73-FPM





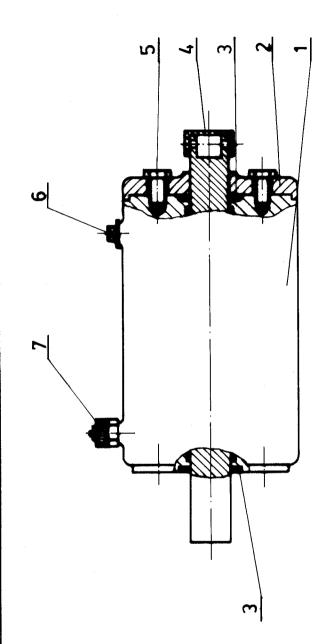
02/94 APV Rocieta GmbH

APV 0-59425 Urna
Germany RN 01.054.007.4 WS-Nr. ref.-no. WS-Nr. ref.-no. 29.11.90 Schulz Trytko Name WS-Nr. ref.-no. 20.11.90 Date Gezeichnet Normgepr. WS-Nr. ref.-no. Geprüft WS-Nr. ref.-no. 2/00 Trytko | Trytko | Trytko 15-44-126/47 15-44-176/47 15-44-226/47 16-36-126/43 |16-36-176/43 |16-36-226/43 15-43-176/47 15-43-226/47 15-22-260/19 WS-Nr. ref.-no. 2/6/ Blatt 2 20 Ш Ш II II 11/90 15-22-184/19 Datum Name WS-Nr. ref.-no. 冇 П П Ш Ш Ш 15-43-126/47 67-03-020/12 15-27-068/93 15-22-135/19 65-01-031/13 16-40-022/17 65-01-016/13 08-60-161/12 58-33-014/ WS-Nr. ref.-no. 58-06-119/ 9 DN 10,15,20 DN 10,15,20 M5x10 M4x5 28-3 **DIN933 DIN933** Ersatzteilliste: spare parts list: -ederstecker für Schaft Benennung description Ventil S23, S24-H Valve S23, S24-H Shaft -complete Skt. Schraube Yoke Handbetätigung Handle Schaft -komplet Schaftdichtung Hex. screw Skt. Schraube Operating cam Plua for shafi Hex. screw Schalfnocke Valve seat Shaft seal Housing 0-Ring 0-ring Ventilsitz sehäuse Gehäuse Housing _aterne G #= 0 = Menge Ytitnbup 7 9 2 m ப 9 _ ω σ



Ersatzteilliste: Spare Parts List: Steuerkopf-komplett.Au Actuator complete. Design

usführung S50 für S2	Besteht aus	ent aus 1 Blatt	Blatt 1	Sezentheri Sezentheri Myregen	22.11.90 V	Name Auglis	APV ROSISTA GMAN D-59425 Unna Germany
	11/30 1/95	36/8					RN 01.054.007.9



<u> </u>			S 50 - 21							
2	υ <u>τί</u> Ω Ω	Austumung / Design	16-31-318/17							
阳	Bern Rei qua	Benenning / Description	WS-Nr./ref.no	WS-Nr. /ref:no. WS-Nr./ref:no. WS-Nr. /ref:no.WS-Nr/ref:-no. WS-Nr./ref:-no.WS-Nr./ref:-no.WS-Nr. /ref:na.WS-Nr. /ref:-no.	WS-Nr./ref:no.	WS-Nr/refno.	WS-Nr./refno.	WS-Nr./refno.	WS- Nr. /ref: na	WS-Nr./refno.
<u> </u>	_	Steverkopf - Schweifiteil Welding part of actuator	16-31-319/17							
2	-	Deckel Cover	16-00-160/93							
	2	0-Ring OR 12,3-2,4	58-06-042/83							
7	-	Verschlußkappe Z 12×10 Cap	08-60-152/93							
	2	Skt. Schraube DIN 933 M5×10 Hex. screw	65-01-031/13							
Ψ	٦ 9	Entititungsstopten R 1/8" Venting plug	08 63 010/93						,	
	_	Verschraubung EG6×1 R 1/8"	08-60-005/93							
1										



WS-Nr.fret-no WS-Nr.fret-no. WS-Nr.fret-no. WS-Nr.fret-no. WS-Nr.fret-no. WS-Nr.fret-no. WS-Nr.fret-no. WS-Nr.fret-no. APV BOSISTA D-59425 Unna Germany RN: 01.054.007.90 9 Mame Name Mame Normgeprüft Gezeichnet Name Mame Geprüft Name Blatt Name Besteht aus 1 Blatt - Contract 90º vers. gez 96/8 Actuator S50 - double air for S2 DN 10-20 3/92 S DN 10 - 20 65-01-031/13 16-31-388/17 38-63-010/93 16-00-160/93 58-06-042/83 08-60-152/93 16-31-337/17 250 für S2 EG 6×1-R¹/8" DIN 933 M5 x 10 Z 12 × 10 Benennung / Description 12,3 × 2,4 Steuerkopt - Schweinteil Welding part of actuator Verschraubung EG 6 Union Steuerkopf S 50 - L/L Ausführung / Design Ersatzteilliste: Spare parts list 0-Ring 0-ring Verschlußkappe Skt. Schraube Hex. screw Deckel Cover Wenge Wenge Wenge S

nicht gestatlet, soweit nicht schriftlich zugestanden. Verstoß verpit und kann stratrachtliche Folgen haben (§ 18 UWG, § 106 UrhG), auch für Palainterteifung und Gebrauchemustensinteigung, vorber



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 APV ROBISTA GA D-4750 Uhma West Germany RN: 01.054.007.8 APV 9 Gezeichnet 30.11.90 511.11 Detca Normagerüft Geprüft Z Blatt Blatt 20 11 ū 11 Besteht aus 1 11/90 15 n Ħ 11 11 65-01-053/13 15-22-023/12 15-24-091/93 15-24-090/93 57-01-176/17 10 DN 10 - 20 DN 10 - 20 M6×10 komplett complete **DIN 933** (PA 6-1.4301) Ersatzteilliste: Spare Parts List: **S** 2 Benennung Deskription Handbetätigung Handle S2 Gewinde-Sockel Threaded base Gewindemutter Threaded nut Anlaufscheibe Washer Skt. Schraube Hex. screw Schaft Shaft Handle әбиәм Pos Fem S **寸**

11

11

15-27-068/93

67-09-150/13

B6

DIN 127

Federring

Spring ring Handbetätigung – komplett Handle – complete

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Weitegabe sowie Vervielfälligung dieser Untertage, Verwartung und Mittalierig diese befolgte interpretation und der Bescheinster zugebenden. Verwarde verglichtet zum Behaltennermatz und kann stratechtsicher Cogen haben (§ 18 UWG, § 106 Untd.) Eigenfam und alle Phothesieich für Patenteermatzung und Gebrauchsmustereinfangung, vorberheiten. APV Resiese Grabhi