

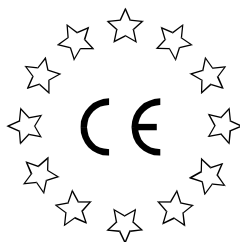
APV DELTA S12

SAFETY VALVE

FORM NO.: H170706 REVISION: UK-5

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





Declaration of Conformity for Valves and Valve Manifolds

SPX FLOW Technology Rosista GmbH, Gottlieb-Daimler-Str. 13, D-59439 Holzwickede
herewith declares that the

**APV double seal and double seat valves of the series
SD4, SDT4, SDU4, SDMS4, SDMSU4, SDTMS4, SWcip4, DSV,
DA3, DA3SLD, DE3, DEU3, DET3, DKR2, DKRT2, DKRH2**
in the nominal diameters DN 25 - 150, ISO 1" – 6" and 1 Sh5 - 6 Sh5

APV butterfly valves of the series SV1 and SVS1F, SVL and SVSL
in the nominal diameters DN 25 - 100, DN 125 - 250 and ISO 1" – 4"

APV ball valves of the series KHI, KHV
in the nominal diameters DN 15 - 100

**APV single seat, diaphragm and spring loaded valves of the series
S2, SW4, SWhp4, SW4DPF, SWmini4, SWT4, SWS4, MF4, MS4, MSP4, AP/T1, CPV,
RG4, RG4DPF, RGMS4, RGE4, RGE4DPF, RGEMS4, PR2, PRD2, SI2, UF/R3, VRA/H**
in the nominal diameters DN 10 - 150, ISO 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 ProdSG (superseding GPSG - 9.GPSGV).

For official inspections, SPX FLOW Technology 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 FLOW Technology Rosista GmbH, Frank Baumbach,
Gottlieb-Daimler-Str. 13, D-59439 Holzwickede

January 2017

ppa. Baumbach

Manager Research and Development

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 SI2 - RN01.016 - 2	

1. General Terms

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

We have to point out that we will not accept any liability for damage or malfunctions resulting from the non-compliance with this operating manual. Descriptions and data given herein are subject to technical changes.

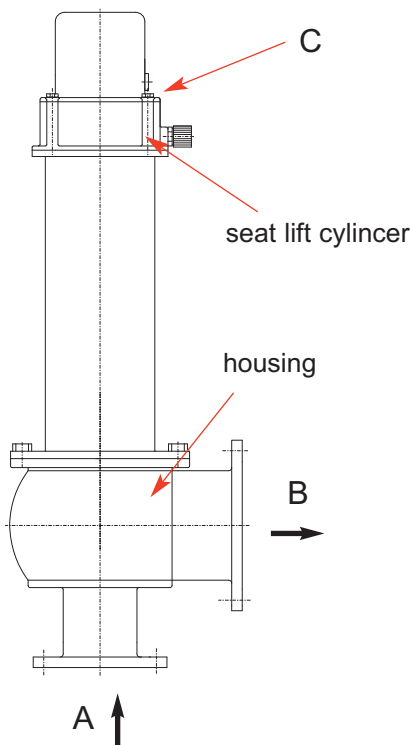
2. Safety Instructions



DANGER!

- The technical safety symbol draws your attention to important directions for operating safety. You will find it wherever the activities described are bearing risks of personal injury.
- Depressurize the line and cleaning system before any maintenance work.
- Risk of injury by sudden valve operation!
- Observe Service Instructions to ensure safe maintenance of the valve.
- Do not remove the lead seal.
(malfunction of valve and loss of guarantee)

3. Intended Use / Mode of Operation



The component-tested SI2 safety valve is used in those plant sections which have to be protected against excessive pressure.

In the beverage and food industry as well as in pharmaceutical applications, the valve protects tanks and other containers against inadmissible excess pressure.

The SI2 safety valve prevents exceeding of the allowed operating pressure by more than 10 %.
If the adjusted response pressure after opening falls below max. 10 % with gases and max. 20 % with liquids, the valve closes.

The flow direction is always from **A** → **B**.

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

4. Auxiliary Equipment

- * The valve can optionally be equipped with manual seat lift or seat lift actuator.
Reconstruction can be undertaken during operation without greater expenditure.

- **Seat lift actuator**

The SI2 valve can be equipped with a seat lift actuator if necessary for reasons of cleanability and / or remote function control. (see chapter 5)

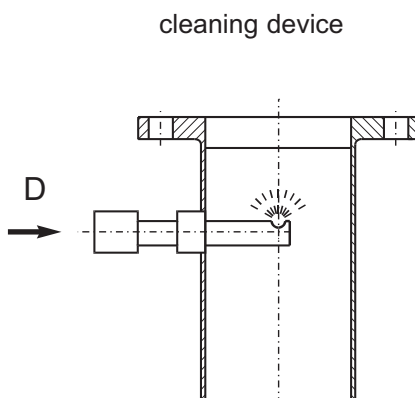
- **Valve feedback**

A proximity switch to signal the closed or open position of the valve seat (**ON/OFF**) can be mounted on the seat lift actuator (**C**) if required.

We recommend to use one of our APV standard types.
Operating distance: 5 mm / diameter: 1 mm / length: 30 mm.
If the customer decides to use a valve feedback other than APV type, we cannot take over any liability for a faultless function.

- **Cleaning device**

An adapter with an integrated cleaning nozzle (**D**) can be flanged below the valve.



5. Cleaning

Lifting of the valve seat during the cleaning process

Rinsing of the contact surface between seat seal and seat and of the housing with the valve outlet port through the cleaning liquid is possible.

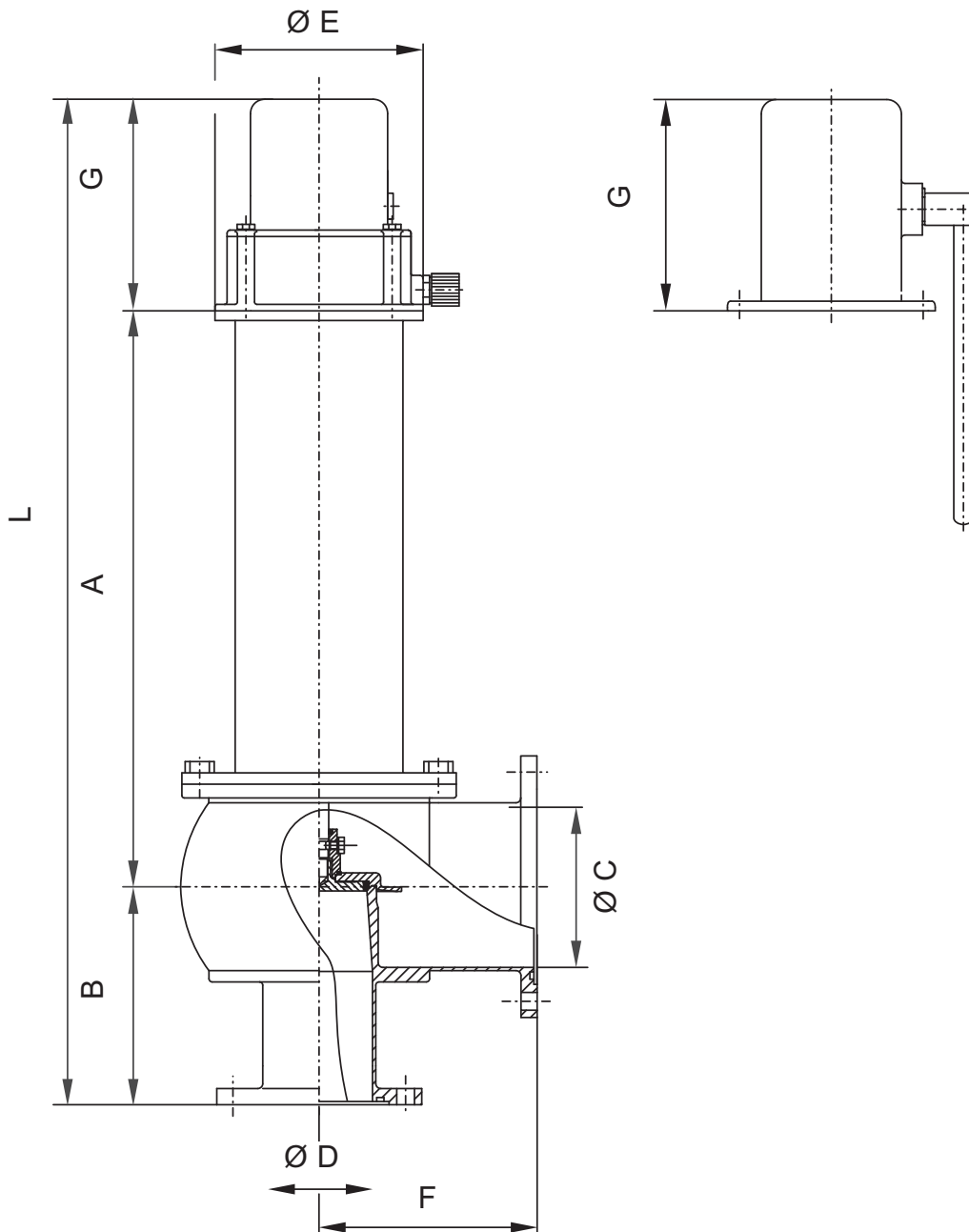
Spraying device below the valve seat

Through an adapter with spraying device the product-wetted part of the valve to the valve seat is cleaned.

6. Installation

- **Installation must generally be in vertical position.**
For this fitting position the valve has a component mark of the TÜV (German Technical Supervisory Board) and is tested and adjusted accordingly.
- The standard housing is equipped with groove flanges (FN1B - with inspection certificate APZ 3.1).
The appropriate mating flanges FG1B are available.
- The response pressure adjusted in our factory must not be changed (**lead seal protection**).
- The free discharge at the outlet side must always be ensured.
For a possible discharge of the liquid, bends and short pipes of the same dimensions may be fitted.

7. Dimensions / Weights



dimensions in mm

DN	A	B	Ø C	Ø D	Ø E	F	G	L	weights in kg
25	241	96	50	26	129	96	131	468	4,8
40	273	109	66	38	129	109	131	513	6,2
50	312	122	81	50	129	122	131	565	8,7
65	356	135	100	66	129	135	131	622	13,1
80	412	154	125	81	129	157	131	697	20,0
100	424	174	150	100	129	177	131	729	24,7

8. Technical Data

8.1. General data

max. line pressure	: 10 bar
min. operating temperature	: - 10°C
max. operating temperature	: 135° C EPDM, HNBR *VMQ, *FPM
sterilization temperature	: 140°C EPDM, HNBR *VMQ, *FPM *(no steam)
discharge figure	: 0,49 for liquids : 0,44 for steams and gases
air connection (for hose)	: 6x1
pneumatic air pressure for seat lift actuator	: max. 10 bar min. 6 bar

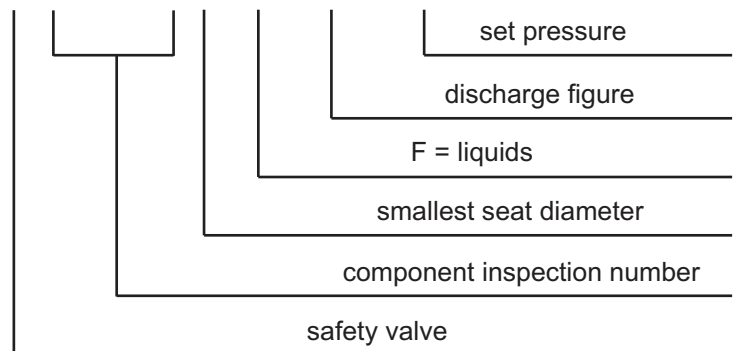


To provide for a faultless function of the SI2 valve, the valve must not freeze.

! Different pressure ranges, please see catalogue.

- Type plate:
e.g.

Type SI2 DN 100
TÜV · SV · 08 - 922 · 92 · F · 0,49 ·



8. Technical Data

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 m ³ 10000 of 0,5 µm < d < 1,0 µm 500 of 1,0 µm < d < 5,0 µm
content of water:	quality class 4 max. dew point temperature + 3°C For installations at lower temperatures or at higher altitudes, additional measures must be considered to reduce the pressure dew point accordingly.
content of oil:	quality class 1 max. 0,01mg/m ³

The oil applied must be compatible with Polyurethane elastomer materials.

9. Materials

housing, housing cover, shafts	: 1.4404 /1.4571 (DIN EN 10088)
complete spring cylinder, screws	: 1.4301 (DIN EN 10088)
seals	
standard	: EPDM / PTFE
option	: VMQ , FPM, HNBR
seat lift actuator, cover	: Vestamid L 1930
air connection	: PA 6.6

10. Maintenance

- The **maintenance intervals depend** on the application and have to be determined by the operator carrying out **regular checks**.
- Dismantling and installation of seals according to Service Instructions. Use complete seal kits according to spare parts list.
- **All seals must be provided with a thin layer of grease before their installation!**

Recommendation:

APV assembly grease for EPDM, FPM and HNBR

(750 g/ tin - ref.-No. 000 70-01-019/93; H147382)

(60 g/ tube - ref.-No. 000 70-01-018/93; H147381)

or

APV assembly grease for VMQ

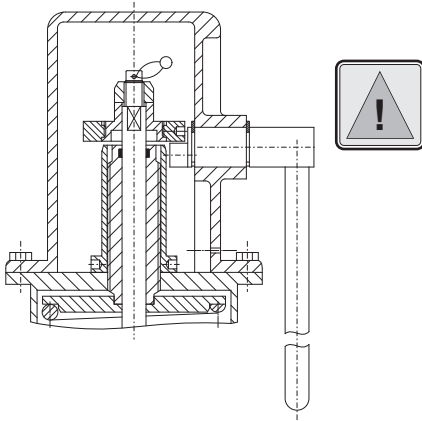
(600 g/ tin - ref.-No. 000 70-01-017/93; H147380)

(60 g/ tube - ref.-No. 000 70-01-016/93; H147379)

- Use only those greases being suited for the respective seal material.
- Assembly of valve according to Service Instructions.

11. Service Instructions

DELTA SI2 - H
with manual seat lifting

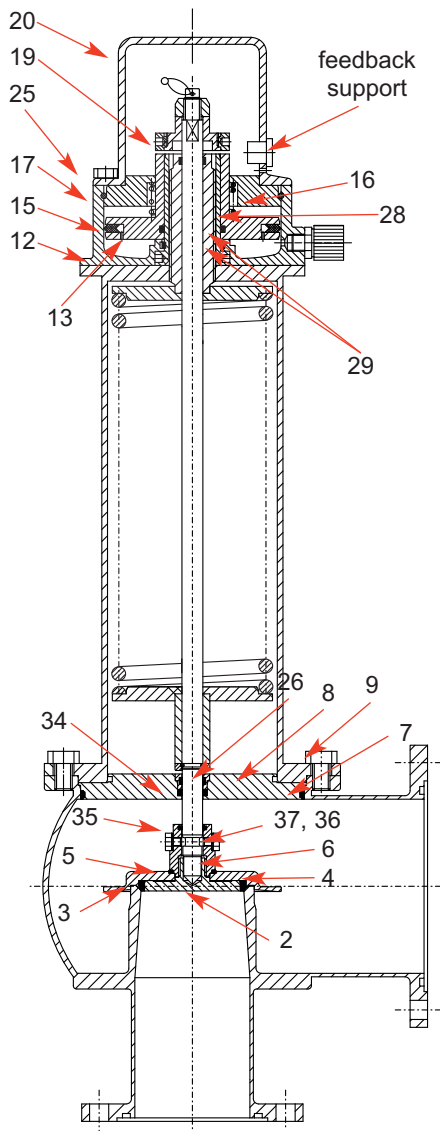


The item numbers refer to the spare parts list **RN 01.16 - 2**.

11.1. Dismantling from the line system

1. Shut off the line pressure in the product - cleaning line and discharge it if possible.
2. Remove the pneumatic air line.
3. Release the clamp screw in the feedback support and pull off proximity switches.
4. Remove the flange screws (9).
5. If the housing cover (8) is stuck, put a screwdriver into the groove and slowly push the insert out.

DELTA SI2 - A
with seat lift cylinder



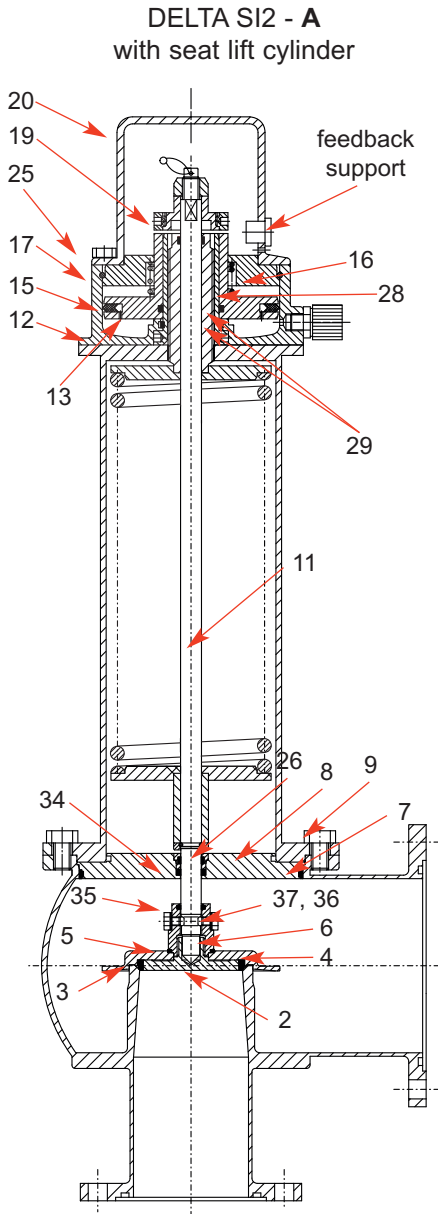
11.2. Dismantling of internal parts

1. Remove the housing seal (7) from the housing cover (8).
2. Release the hexagon screws (37) and the washers (36) at the guide (6) and take out the complete valve seat.
3. Separate the guide (6) from the seat (2).
4. Separate the cap (4) from the seat (2).
5. Seal rings (5, 35) and seat seal (3) are freely accessible.
6. Pull the housing cover (8) from the shaft rod and remove the guide strap (26) and the sliding ring (34).

Valve with seat lift actuator

- Release the screws (25) and lift off the cover (20).
- Unscrew the ring (19) and lift off the seat lift actuator (12).
- Press down the cover (16) and take out the retaining ring (17).
- Remove the pressure spring (28).
- Take the piston (13) out of the cylinder.
- Seal rings (15, 29) are freely accessible.

11. Service Instructions

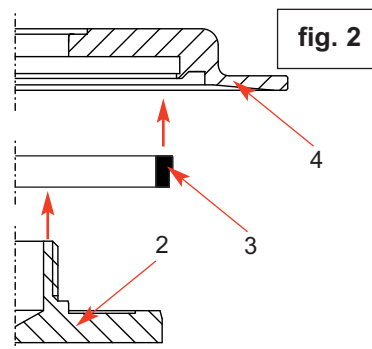
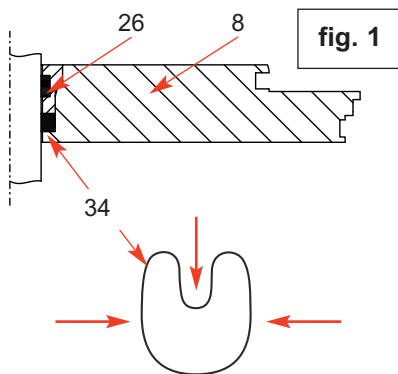


11.3. Assembly of seat lift actuator

1. Insert the slightly greased seal rings (15, 29).
2. Push the piston (13) into the cylinder (12).
3. Insert the pressure spring (28) and fix the cover (16) with the retaining ring (17).
4. Push the complete seat lift cylinder on the valve and tighten the ring (19) until it stops.
5. Fix the cover (20) with the screws (25).

11.4. Installation of seals and assembly of valve

1. Place the guide strap (26) and the o-ring of the sliding ring (35) in the housing cover (8).
2. Press the sliding ring (34) into reniform shape and put it into the groove of the housing cover onto the o-ring (fig. 1).
3. Slide the housing cover (8) onto the pressure rod (11).
4. Before mounting the complete valve seat, insert the seat seal (3) (fig. 2).
5. Place the seat seal (3) in the cap (4) and press it into the seat (2).
6. Insert the seal ring (5, 35) into the guide (6).
7. Screw guide (6) and seat (2) firmly together.
8. Put the complete valve seat onto the pressure rod (11) and fix it with the hexagon screws (37) and washers (36).
9. Install the slightly greased housing seal (7) in the housing cover (8).



11. Service Instructions

11.5. Installation of valve

1. Put the complete valve insert carefully in the valve housing (1).
2. Turn in the screws (9) and tighten them crosswise.
3. Connect the pneumatic air line at the SI2 with seat lift actuator.
4. Installation of valve feedback.

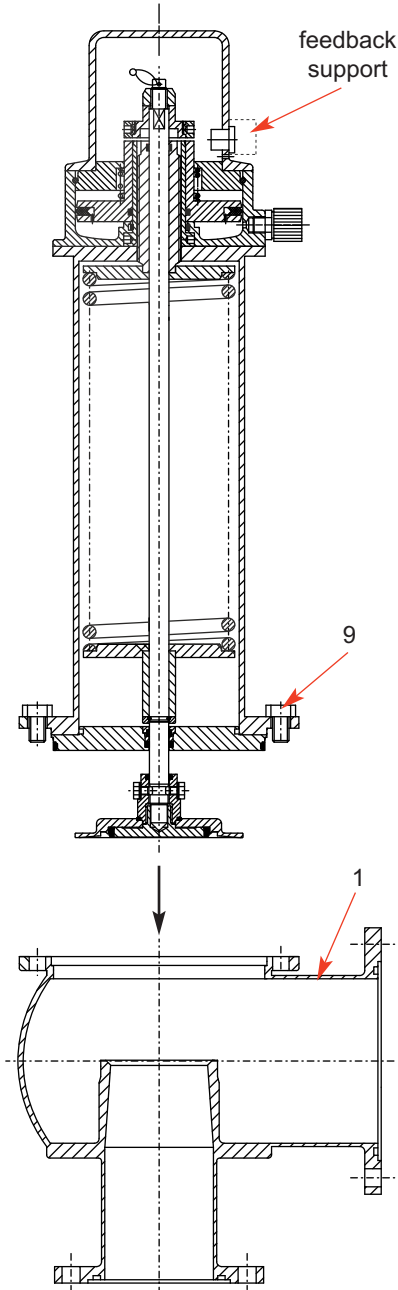
Fine adjustment:

By slight backward movement of the proximity switch the shift point can be adjusted more precisely if necessary. Observe the luminous diodes in the feedback during the adjustment.

Fix the feedback with clamp screws.

11.6. Reconstruction of seat lifting from manual to pneumatic design

1. Release the screws (38) and remove the cover (42) with handle (39).
2. Unscrew the ring (41 / Ø 50 mm).
3. Place the seat lift cylinder (12) and tighten the ring (19 / Ø 42 mm).
4. Tighten the cover (20) of the seat lift cylinder with the screws (25).
5. Mount the air connection and the valve feedback.



12. Trouble Shooting

<i>Failure</i>	<i>Remedy</i>
Operating position: closed Leakage at the discharge side.	Replace seat ring (3) . Check control of seat lift actuator.
Leakage between housing flange and flange of spring cylinder.	Check housing seal (7) and shaft seal (34) , replace damaged seal.
Seat lift cylinder does not work.	Check whether ring (19, 41) is stuck. Replace piston seal (15) .
Valve feedback does not work or is unprecise.	Undertake find adjustment. Check whether ring (19, 41) is stuck.

The item numbers comply with the spare parts lists. The replacement of seals must be carried out according to Service Instructions (see chapter 11).



If damaged seals are replaced, generally all seals should be changed.
Complete seal kits for the valve service are available (see spare parts lists).

13. 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:

- number of required parts
- reference number
- designation.

Data are subject to change.

Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht schriftlich zugestanden. Verstöß verpflichtet zum Schadensersatz und kann strafrechtliche Folgen haben (Paragraf 18 UWG, Paragraf 106 UrtG). Eigentum und alle Rechte, auch für Patenterteilung und Gebrauchsmustererteilung, vorbehalten. SPX Flow Technology Rosista GmbH.

Ersatzteilliste: spare parts list

Sicherheitsventil SI2 TÜV-geprüft 12FN1B

Entlastung pneumatisch / handbetätigt

Safety valve SI2 TÜV-tested 12FN1B pneumatically / manually relieved
DN 25-100

Datum: 29.10.14

Name: Trytko

Geprüft:

Datum:

Name:

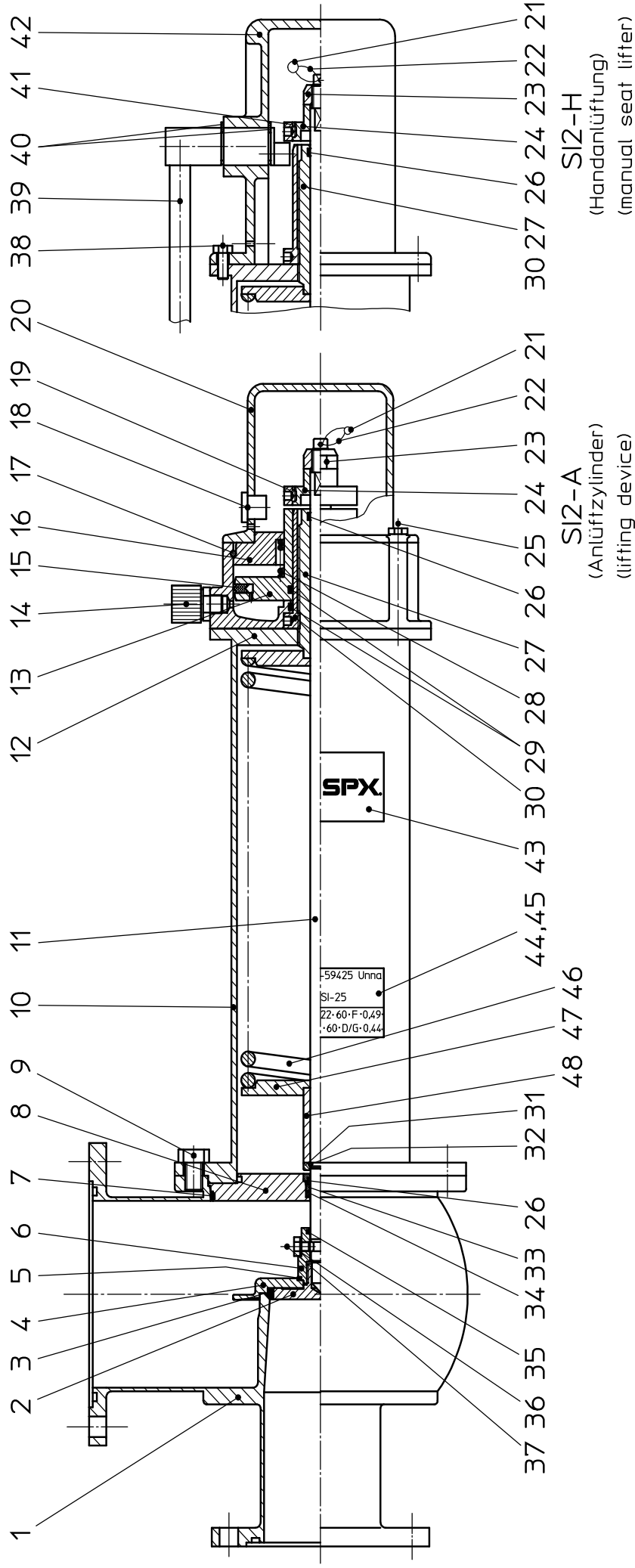
Geprüft:



SPX Flow Technology Rosista GmbH
D-59425 Uenna Germany

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RN 01.16-2



SI2-A

(Anlößtzyylinder)
(lifting device)

SI2-H

(Handanlöftung)
(manual seat lifter)

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Ersatzteilliste: spare parts list

Sicherheitsventil SI2 TÜV-geprüft 12FN1B

Entlastung pneumatisch / handbetätigt

Safety valve SI2 TÜV-tested 12FN1B pneumatically / manually relieved

DN 25-100

Datum:	29.10.14
Name:	Trytko
Geprüft:	
Datum:	
Name:	
Geprüft:	

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												RN 01.16-2			



pos. item	Menge quantity	Beschreibung description	Material	DN25	WS-Nr. ref.-no.	DN40	WS-Nr. ref.-no.	DN50	WS-Nr. ref.-no.	DN65	WS-Nr. ref.-no.	DN80	WS-Nr. ref.-no.	DN100
1	1	Gehäuse Housing SI2 1+2FN1B	1.4404	31B 21-85-278/47 H136789	31B 21-85-378/47 H136790	31B 21-85-428/47 H136791	31B 21-85-478/47 H136792	31B 21-85-528/47 H136793	31B 21-85-628/47 H143241					
2	1	Teller für Hublocke Plate for stroke cover	1.4404	21-87-279/42 H148396	21-87-379/42 H145777	21-87-429/42 H142715	21-87-479/42 H142707	21-87-529/42 H142704	21-87-629/42 H143247					
3	1	Tellerdichtung Seat seal	EPDM FDA-konform	58-33-243/93 H136203	58-33-093/93 H77415	58-33-143/93 H77421	58-33-193/93 H77427	58-33-568/93 H77561	58-33-546/93 H77555					
	1	Tellerdichtung Seat seal	FPM FDA-konform	58-33-243/73 H136204	58-33-093/73 H77414	58-33-143/73 H77420	58-33-193/73 H77426	58-33-568/73 H77560	58-33-546/73 H77554					
	1	Tellerdichtung Seat seal	HNBR FDA-konform	58-33-243/33 H170179	58-33-093/33 H170014	58-33-143/33 H170016	58-33-193/33 H168717	58-33-568/13 H166679	58-33-546/13 H172109					
4	1	Tellerdichtung Seat seal	VMQ FDA-konform	58-33-243/13 H136202	58-33-093/13 H77413	58-33-143/13 H77419	58-33-193/13 H77425	58-33-568/13 H77559	58-33-546/13 H77553					
	1	Hublocke Stroke cover	1.4404	21-87-277/42 H148398	21-87-377/42 H142719	21-87-427/42 H142713	21-87-477/42 H142706	21-87-527/42 H142703	21-87-627/42 H143248					
5	1	O-Ring O-ring	NBR	58-06-070/83 19x1,8 H76939			58-06-079/83 20,3x2,4 H76944							
6	1	Führungsstück für Hublocke Guide for stroke cover	1.4404	21-87-278/42 H148397	21-87-378/42 H145776	21-87-428/42 H142717	21-87-478/42 H142709	21-87-528/42 H142705	21-87-628/42 H143246					
	1	Gehäusedichtung Housing seal	EPDM FDA-konform	58-33-442/93 H77488	58-33-492/93 H77512	58-33-542/93 H77543	58-33-642/93 H77583	58-33-692/93 H77608	58-33-742/93 H77625					
7	1	Gehäusedichtung Housing seal	FPM FDA-konform	58-33-442/73 H77487	58-33-492/73 H77511	58-33-542/73 H77542	58-33-642/73 H77582	58-33-692/73 H77607	58-33-742/73 H77624					
	1	Gehäusedichtung Housing seal	HNBR FDA-konform	58-33-442/33 H168714	58-33-492/33 H168759	58-33-542/33 H170075	58-33-642/33 H170074	58-33-692/33 H172125	58-33-742/33 H172126					
8	1	Gehäusedeckel Housing cover	1.4404	31B 15-00-280/42 H123149	31B 15-00-380/42 H123207	31B 15-00-430/42 H123420	31B 15-00-480/42 H136988	31B 15-00-530/42 H123442	31B 15-00-630/42 H143243					
9		Skt. Schraube Hex. Screw	1.4301	65-01-079/15 4xM8x14 H78768		65-01-130/15 4xM10x16 H78806		65-01-131/15 8xM10x15 H78807						
10	1	Federhaube Spring cover	1.4301	16-30-282/17 H123183	16-30-382/17 H123224	16-30-432/17 H123423	16-30-482/17 H136995	16-30-532/17 H123445	16-30-632/17 H143244					
	1	Druckstange Pressure bar	1.4301	21-87-285/12 H141244	21-87-385/12 H141245	21-87-435/12 H141246	21-87-485/12 H141247	21-87-535/12 H141248	21-87-635/12 H143245					

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Ersatzteilliste: spare parts list

Sicherheitsventil SI2 TÜV-geprüft 12FN1B

Entlastung pneumatisch / handbetätigt

**Safety valve SI2 TÜV-tested 12FN1B pneumatically / manually relieved
DN 25-100**

pos. item	Menge quantity	Beschreibung description	Material	DN25	DN40	DN50	DN65	DN80	DN100
				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	Unterteil für Anlüftzylinder Base for seat lift actuator	Vestamid				15-30-100/93 H140046		
13	1	Kolben Anlüftzylinder Piston for seat lift actuator	Hostaform natur			15-29-100/93 H140047			
14	1	Verschraubung EG 6x1 G1/8"	Kunststoff			08-63-010/93 H16394			
15	1	Kolbendichtung Piston seal	NBR			58-01-761/83 H76869			
16	1	Deckel für Anlüftzylinder Cover for seat lift actuator	Hostaform natur			15-00-250/93 H140048			
17	1	Sprengring Retainer ring	1.4301			08-39-210/12 H140055			
18	1	Verschlussstopfen Lock plug	Kunststoff			08-74-010/93 H16503			
19	1	Hubring für Anlüftzylinder Stroke ring for seat lift actuator	1.4301			08-39-200/12 H140053			
20	1	Haube für Anlüftzylinder Cover for seat lift actuator	Vestamid			21-52-050/93 H140045			
21	1	Bleiplombe Lead seal	Blei			08-29-014/93 H14627			
22	1	Nylon Faser Nylon wire	Nylon			08-29-066/93 H142817			
23	1	Skt. Mutter mit Klemmteil Retainer nut	1.4301			65-50-087/15 M10x1 H118903			
24	1	Gewinde ring Threaded ring	1.4308			21-87-001/12 H140054			
25	4	Skt. Schraube Hex. screw	1.4301			65-01-065/15 M6x60 H142820			
26	2	Führungsband PTFE driving band	Turcite			08-39-096/93 H14907			
27	1	Federeinstellschraube Setting screw for spring	RG7			22-23-031/52 H123152			



SPX Flow Technology Rosista GmbH
D-59425 Umma Germany

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RN 01.16-2

Datum: 29.10.14
Name: Trytko
Geprüft:
Datum:
Name:
Geprüft:

WS-Nr. ref.-no. WS-Nr. ref.-no. WS-Nr. ref.-no. WS-Nr. ref.-no. WS-Nr. ref.-no.

APV DELTA SI2

SAFETY VALVE

SPXFLOW

SPX FLOW

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SPX FLOW reserves the right to incorporate the latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only and should not be relied upon unless confirmed in writing. Please contact your local sales representative for product availability in your region.

For more information visit www.spxflow.com.

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