

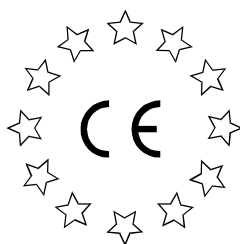
APV DELTA VRA

VACUUM VALVE

FORM NO.: 170792 REVISION: UK-3

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

Content	Page
1. General Terms	2
2. Safety Instructions	2
3. Intended Use	3
4. Mode of Operation	3
5. Auxiliary Equipment	3
6. Cleaning	4
7. Installation	4
8. Maintenance	5
9. Materials	5
10. Dimensions / Weights	6
11. Technical Data	6
12. Service Instructions	7–9
13. Trouble Shooting	10
14. Spare Parts Lists	10
 Spare Parts List	 RN 01.113

1. General Terms

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

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

Descriptions and data given herein are subject to technical changes.

2. Safety Instructions



DANGER!

- The technical safety symbol draws your attention to important directions for operating safety. You will find it wherever the activities described are bearing risks of personal injury.
- Depressurize the line and cleaning system before any maintenance work!

ATTENTION!

- Observe Service Instructions to ensure safe maintenance of the valve. Do not remove the lead seal! Failures can occur! We do not take over any responsibility in this case.

3. Intended Use

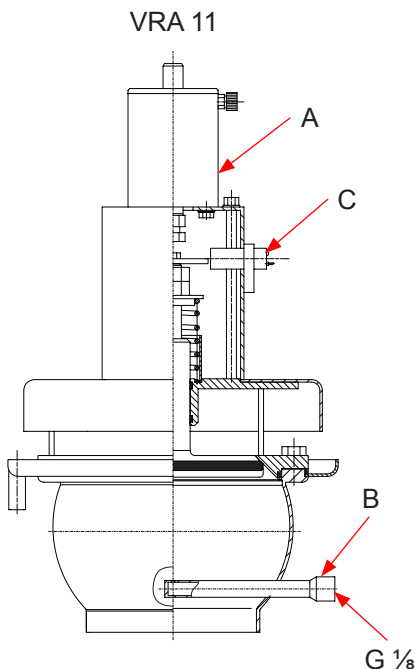
The intended use as field of application of the vacuum valve DELTA VRA is the protection against negative pressure in containers/tanks.

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

4. Mode of Operation

The VRA valve is used in applications in which equipment can be damaged by vacuum (e.g. in tanks or pipelines).

If a vacuum occurs, the valve opens by the valve seat being pulled down against spring force in order to relieve the vacuum in the system. The closing process is only released by the spring force if the vacuum does no longer exist.



5. Auxiliary Equipment

- Seat lift actuator (standard)
The VRA valve is equipped with a seat lift actuator (A) which is used during the cleaning process and / or for remote functional control.
- Valve feedback
A switch to indicate the closed or open position of the valve seat (ON/OFF) can be installed at the valve (C) on request.
- Cleaning device (standard)
The valve is equipped with an integrated cleaning nozzle (B).

6. Cleaning

During the cleaning process, the product-wetted parts of the valve can be cleaned by the cleaning nozzle (B) in the housing. Additionally, the contact surfaces between the seat seal and the seat can be cleaned by lifting the seat. For this purpose, the seat lift actuator (A) is controlled in short intervals during the cleaning process.

7. Installation

The DELTA VRA valve must be installed in upright position as, otherwise, the valve function cannot be guaranteed. Moreover, liquids must be able to drain off the housing and the tray.

The valve housing can be welded in directly as the complete valve insert can be dismantled to the top.

Attention: Observe welding instructions.

7.1. Welding Instructions

VRA

- Before welding of the valve, the valve insert must be dismantled from the housing. Careful handling without damage to the parts must be provided.
- Welding may only be carried out by certified welders (DIN EN ISO 9606-1). (seam quality DIN EN ISO 5817).

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 shall 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. 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.

8. Maintenance

The maintenance intervals depend on the application and should be determined by the user carrying out regular checks.

- Exchange of seals according to service instructions.
- **All seals must lightly be greased before their installation!**

Recommendation:

APV assembly grease for EPDM, HNBR, NBR und FPM (Viton)

(0,75 kg/ tin - ref.-No. 000 70-01-019/93; H147382)

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

oder

APV assembly grease for VMQ (Silicone)

(0,6 kg/ tin - ref.-No. 000 70-01-017/93; H147380)

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

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

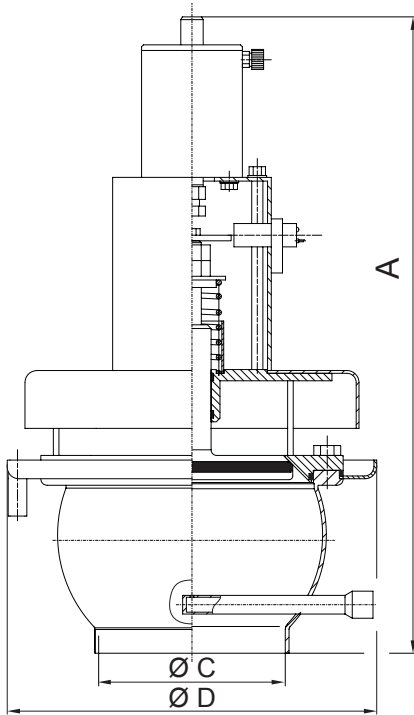
! Do not use Silicone-based grease for Silicone seals.

- Assembly of the valve according to service instructions.

9. Materials

Product-wetted parts:	1.4404/1.4571 (DIN EN 10088)
Other parts:	1.4301 (DIN EN 10088)
Seals:	standard design EPDM / PTFE option VMQ, FPM

10. Dimensions / Weights



DN	dimensions in mm			weight
	A	Ø C	Ø D	kg
50	310	50	127	3,3
100	340	100	198	5,4
150	420	150	277	8,4

11. Technical Data

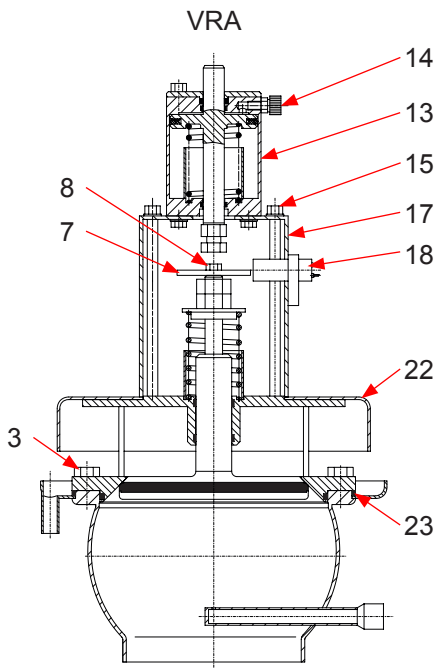
max. line pressure	10 bar
max. operating temperature	135° C EPDM, *VMQ, *FPM
short-term load	140° C EPDM, *VMQ, *FPM *(no steam)
response pressure	40 mm WC standard adjustable from 35 mm WS to 60 mm WC.

(change of response pressure, see chapter 12.5)

	flow rates (m ³ /h) at a negative pressure of	
	100 mm WC	200 mm WC
DN 50	39	80
DN 100	215	317
DN 150	324	943

12. Service Instructions

The item numbers refer to the spare parts drawing RN 01.113.



12.1 Dismantling from the line system

1. Shut off line pressure (product and cleaning line).

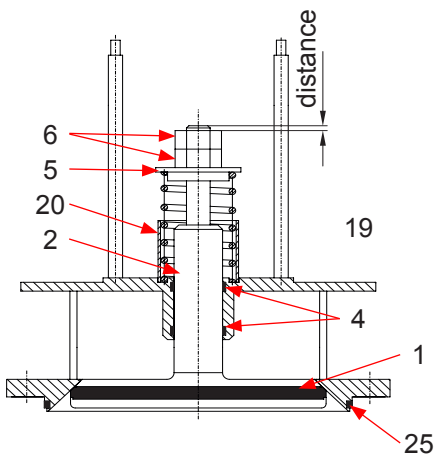
Do not touch movable parts!

Risk of injury due to sudden valve operation.

2. Remove pneumatic air for the seat lift actuator (13) at the connection (14).
3. Loosen clamp of feedback support and pull off proximity switch (18).
4. Loosen hexagon nuts (15) by means of a wrench SW 8 and lift the protective cover (17) with the seat lift actuator and the spray sheet (22).
5. Loosen the hexagon screws (3) by means of a wrench SW 13 or 17 and lift the valve insert.

12.2 Dismantling of wear parts

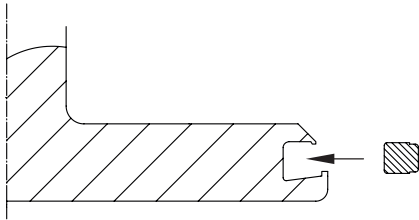
1. Pull off O-ring (25).
2. Remove O-ring (23).
3. Loosen hexagon screw (8) by means of a wrench SW 8 and remove the disc (7).
4. Before loosening the hexagon nuts (6) by means of two wrenches SW 17, the exact distance from the upper edge of the shaft to the nut must be measured. This distance must be kept exactly during the installation in order not to change the preset response pressure.
5. Remove spring plate (5), spring (19) and bush (20).
6. Push off shaft (2).
7. Stick into the seat seal (1) with a peaked object and pull it off.
8. Dismantle guide bands (4).



12. Service Instructions

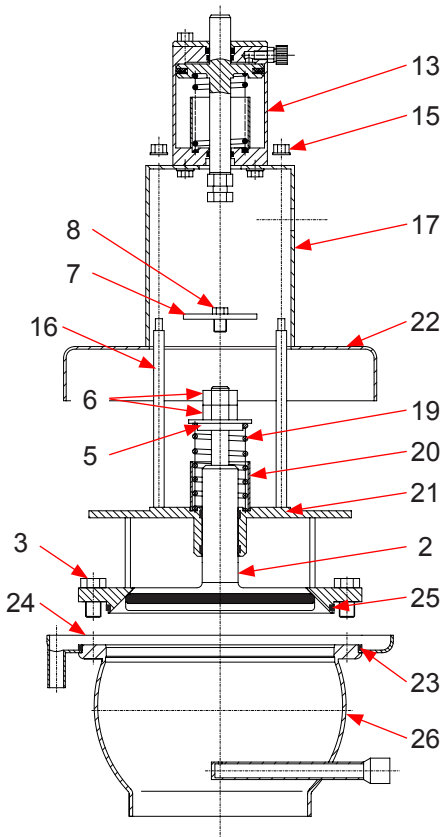
12.3. Installation of seals and assembly of valve

1. Press the guide bands (4) into the yoke.
2. Before assembly of the valve shaft (2), the seat seal (1) must be inserted.



Press the slightly greased seal at four spots, the wide side to the front, into the groove. At the four loops sticking out, the seal must be inserted into the groove, e.g. by means of a thin blunt screwdriver and strongly pressed into the groove by thumb. To ensure a uniform fit, the four loops are to be worked upon alternatively. Finally, the seal is smoothed by exerting strong pressure, e.g. by the handle of a screwdriver. The groove is vented by sticking between the groove edge and the seal inside down to the groove base by means of a thin blade. The correct fit of the seal must be checked after the installation.

3. Push the shaft (2) through the yoke (21).
4. Insert spring (19), bush (20) and spring plate (5).
5. Screw on hexagon nuts (8) and tighten them against one another.
6. Observe distance of installation (see 12.2.4).
7. Fix the disc (7) with the hexagon screw (8) at the shaft.
8. Place the spray sheet (22) and protective cover (17) together with the seat lift actuator (13) on the spacer (16) and tighten the parts by the discs (12) and hexagon nuts (15).
9. Insert O-ring (23) in the outlet (24) and the O-ring (25) in the yoke groove.



12.4. Installation of valve

1. Place the complete valve insert into the valve housing (26) and tighten it by the screws (3).
2. Install the pneumatic air line and the valve feedback.

12. Service Instructions

12.5. Change of response pressure

- The standard adjustment of the set pressure amounts to 40 mm WC.
- 1. Loosen the hexagon nut (15) and dismantle the protective cover (17) together with the seat lift actuator (13).
- 2. Loosen the hexagon nuts (6):
 - By turning the lower nut (6) to the right, the response pressure can be reduced to max. 65 mm WC.
 - By turning the lower nut (6) to the left, the response pressure can be reduced to min. 35 mm WC.
- 3. After re-adjustment, tighten the nuts (6) against one another and install the protective cover with the seat lift actuator.

13. Trouble Shooting

The item numbers refer to the spare parts drawing RN 01.113
Removal of failures see chapter 12. Service Instructions.

Failure	Remedy
Leakage between housing and mating flange (below drain channel)	Replace o-ring (25).
Leakage at drain channel	Replace o-ring (23).
Leakage at the valve seat	Replace seat seal (1).
Seat lifting not possible	Check function of seat lift actuator or replace it completely.
Valve does not work	Check smooth running of the shaft, replace damaged parts.

14. Spare Parts List

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.

subject to change

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

Ersatzteilliste: spare parts list

**Vakuumventil VRA11-IHP2
mit Anlüftzylinder und Ventilstellungsmeldung
Vacuum valve VRA11-IHP2
with lifting device and proximity switch**

Datum: 20.7.92 10.7.17

Name: Trytko Keil

Geprüft: GOE/WB GOE

Blatt 1 von 4

RN 01.113

Datum:

Name:

Geprüft:

Datum:

Name:

Geprüft:

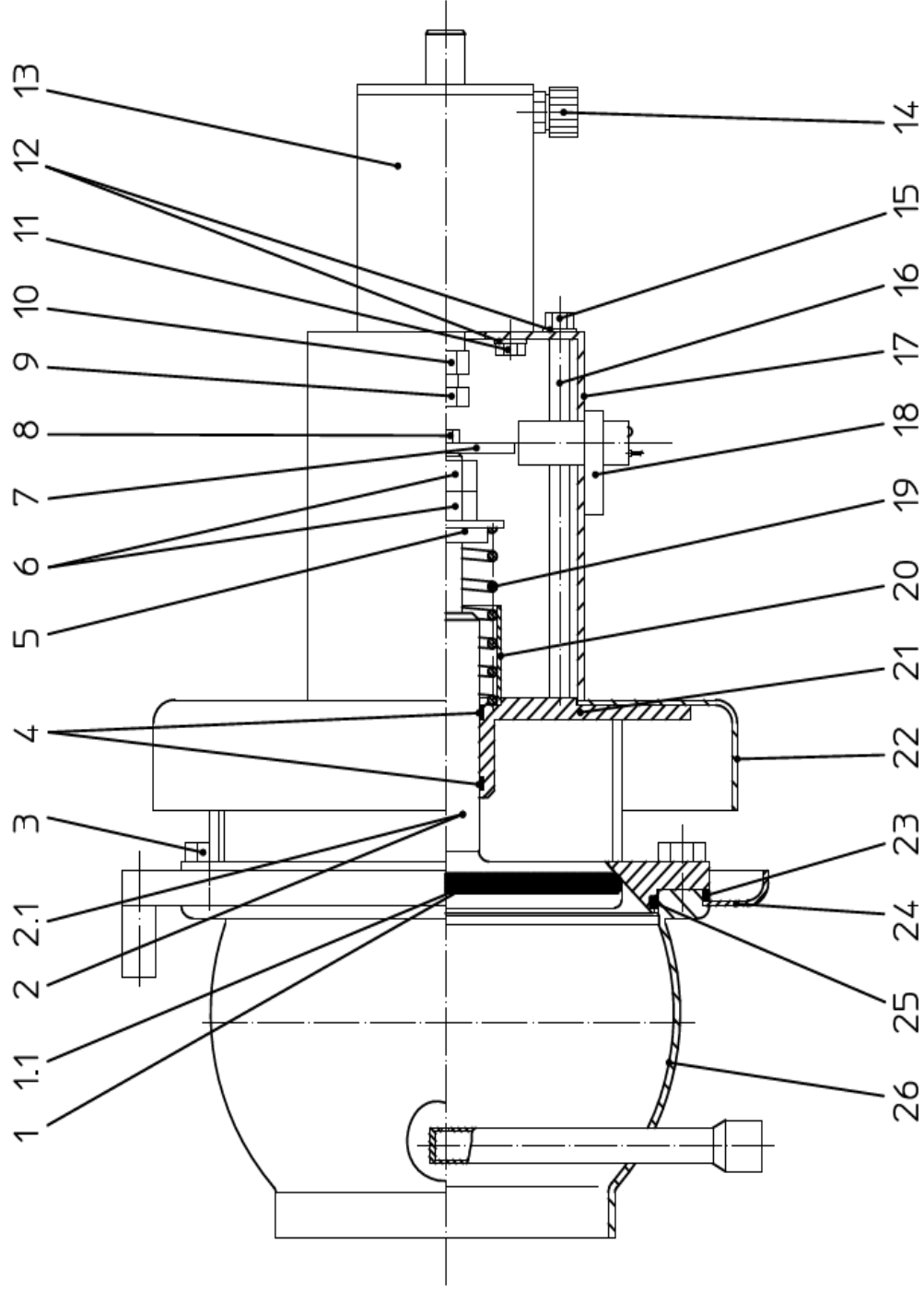
Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

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

* Dichtungswerkstoff: material seals:

- ../13-VMQ
- ../33-HNBR
- ../73-FPM
- ../93-EPDM


- Pos. 1 und 2 nur bei DN 150 gültig bis Juli 2007
- Item. 1 and 2 only with DN 150 valid until July 2007
- Pos. 1,1 und 2,1 nur bei DN 150 gültig ab Juli 2007
- item. 1,1 and 2,1 only with DN 150 valid from July 2007



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

Ersatzteilliste: spare parts list

**Vakuumventil VRA11-IHP2
mit Anlüftzylinder und Ventilstellungsmeldung
Vacuum valve VRA11-IHP2
with lifting device and proximity switch**

Datum:	20.7.92	10.7.17	 SPX Flow Technology Rosista GmbH D-59425 Umma Germany	
Name:	Trytko	Keil		
Geprüft:	GOE/WB	GOE		
Datum:			Blatt	2 von 4
Name:			RN 01.113	
Geprüft:				

pos. item	Menge quantity	Beschreibung description	Material	DN 50	DN 100	DN 150	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
				WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.			
1	1	Sitzdichtung Seatseal *		58-01-420/ 58-01-619/	DN 150	58-01-582/			
1.1	1	Teilerdichtung Seat seal *		15-22-447/ H30268		58-33-776/			
2	1	Schaft		15-22-647/42 H137097		15-22-732/42 H320726			
2.1	1	Schaft		15-22-447/ H30268		15-22-919/42			
3	4	SKT. Schraube Hex. Screw	A2-70	65-01-079/15 H78768	65-01-081/15 H78772	65-01-132/15 H78809			WS-Nr. ref.-no.
4	2	Führungsband PTFE driving band	Turcite	08-39-079/93 H14879					
5	1	Federeller Spring plate	1.4301	21-55-384/12 H5335		22-55-684/13 H54806			
6	2	Skt. Mutter Hex. Nut	A2-70	65-50-080/15 H79287		65-50-101/15 H79298			
7	1	Scheibe Wascher	1.4301	08-48-046/12 H15362					
8	1	Skt. Schraube Hex. Screw	A2-70	65-01-033/15 H78737					
9	1	Skt. Schraube Hex. screw	A2-70	65-01-085/15 H78778					
10	1	Skt. Mutter Hex. Nut	A2	65-50-060/15 H79281					
11	3	Skt. Schraube Hex. screw	A2-70	65-01-032/13 H78735					
12	5	Scheibe Wascher	1.4301	67-01-014/13 H79587					
13	1	Steuerkopf Actuator	1.4301	15-31-854/17 H32501					
14	1	Verschraubung Union	MS58	08-63-007/93 H16391					

APV DELTA VRA

VACUUM VALVE

SPXFLOW

SPX FLOW

Design Center

Gottlieb-Daimler-Straße 13
D-59439 Holzwickede, Germany
P: (+49) (0) 2301-9186-0
F: (+49) (0) 2301-9186-300

SPX FLOW

Production

Stefana Rolbieskiego 2
PL- Bydgoszcz 85-862, Poland
P: (+48) 52 566 76 00
F: (+48) 52 525 99 09

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.

ISSUED 03/2017 - Translation of Original Manual

COPYRIGHT ©2017 SPX FLOW, Inc.