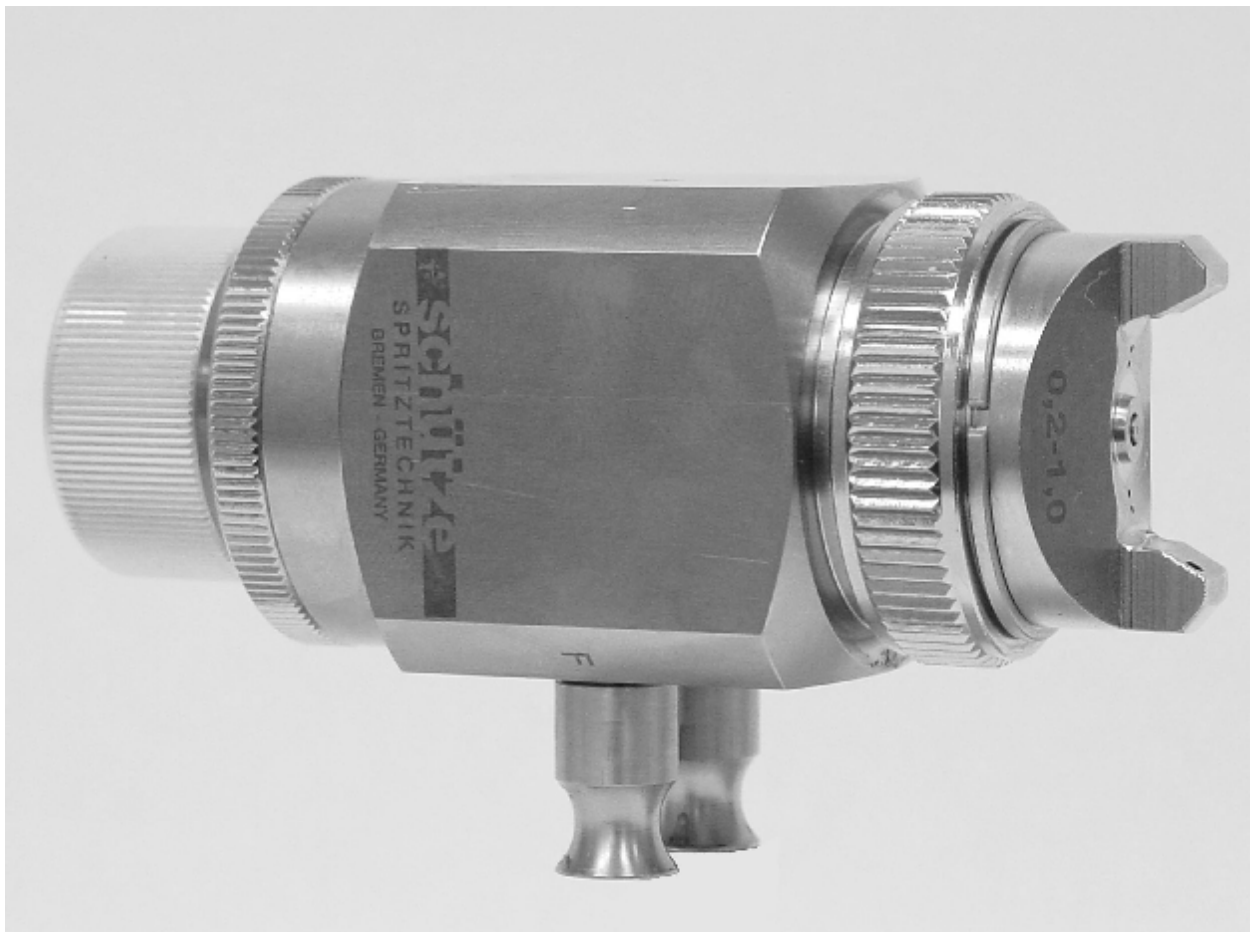


# Operating manual for automatic - spray valves GF / 5 and GF / 5 HVLP



Read this manual carefully before installing, operating or servicing this equipment.  
Keep always handy for further use.

# 1 Introduction

The automatic spray valves **GF/5** resp. **GF/5 HVLP** (in connection with quick release adapter) are designed and constructed for application of release agents, oils, colours, paints, glues and other fluids. Depending on position of regulation of spray jet, this spray valve sprays from roundspray to flat- spray. Depending on viscosity of fluid, the application can be adjusted individually via nozzle dimension, atomizing air pressure, material pressure and the continuously adjustable spray jet regulation. The supply of atomizing air (2x), control air and material has to be done via the quick release adapter (**obligatory, not included in delivery**). Spray valves are precision tools. Always keep clean and observe minimum instructions to maintain a long useful life of the valve.

## 2 Safety

### 2.1 Duties of the user

- The user must read this service manual carefully before performing any operations.
- Application and service operations should not be carried out if the user is not absolutely sure of the purpose and consequence of the operations.

### 2.2 Definitive Use

The automatic spray valve **GF/5** resp. **GF/5 HVLP** is a pneumatically controlled needle valve. It is suitable for continuously or intermittent use. It is not suitable for spraying aggressive fluids like acid, alkaline solutions, cleaning agents, chemicals etc.. In case of doubt, please contact the manufacturer.

### 2.3 Warning against danger

This operating manual warns users of operations which may put their health at risk. The warnings are indicated by combinations of text and symbols corresponding to the different danger classes.

#### **WARNING!**

Signs a possible dangerous situation.  
If you don't avoid, *death or severe injuries* can follow.

#### **CAUTION!**

Indicates a situation which may be dangerous.  
Failure to heed the caution may result in *personal injury*. This indication is also used where material damage is possible.

#### **IMPORTANT!**

Indicates tips for usage and other helpful information.

## 3 Function Description

The automatic spray valve **GF/5** resp. **GF/5 HVLP** is pneumatically controlled: air open; spring return. The spraying material is to be fed via the quick release adapter to the spray valve via pressure tank or pump. The separate controlled atomizing air atomizes the material to a spray jet. Depending on position of continuously adjustable spray jet regulation, the valve sprays from a roundspray up to a flatspray.

## 4 Installation

The automatic spray valve **GF/5** resp. **GF/5 HVLP** can be installed in any position. For solid attachment a thread (M10) within the quick release adapter is available. Vibration of the equipped machine to the valve should be limited as far as possible. Vibrations of the valve caused by fast intermitting cycles require solid and massive installation.

## 4.1 Hose connection and assembly

Insert the automatic spray valve **GF / 5** resp. **GF / 5 HVLP** in the quick release adapter and fix it by the locking device. The four hoses (not included in delivery) have to connect to the quick release adapter as follows:

- Atomizing air (blue hose)  
1 x connection "R" (middle hole, roundspray):      è      to 2/2 way solenoid  
1 x connection "F" (cone holes, flatspray):      è      to 2/2 way solenoid
- control air (black hose)  
connection "S":      è      to 3/2 way solenoid
- fluid (transparent hose)  
connection "M":      è      to feeding device (tank or pump)

## 4.2 Operating instructions



### CAUTION !

Never point the spray jet against persons. Wearing eye protection is strongly recommended. Spraying procedures cause noises depending on the used pressure. If necessary, wearing of ear protection is recommend.



### WARNING !

Danger caused by combustible and noxious spraying material. Safety instructions on fluid can and material data of fluid manufacturer must definitely be observed.

The automatic spray valves of series **GF/5** and **GF/5 HVLP** need 3 – 6 bar control air pressure. Atomizing air pressure and material pressure should be as low as possible. In any case, please observe the regulations of the professional/trade association having liability for industrial safety and insurance.

When you are certain, that fluid pressure stands up to the nozzle, actuate 2/2 way solenoid for atomizing air. After that actuate 3/2 way solenoid for control air. This way you receive so called "pre-air" prior to opening fluid flow. After each cycle solenoids are to actuate in reverse order, so you will still have "purging-air" after needle has closed nozzle and fluid flow was stopped. This prevents fluid to form out drops instead of being atomized.

Set atomizing air pressure and fluid pressure according to required spray droplet sizes. Two separate pressure reducers must be available. Intermittend use as well as continuous use is possible. Maximal 30 cycles per second are possible (under optimal working conditions).



### IMPORTANT !

The quantity of fluid flow can be adjusted by the regulating knob (draw.-no.: 9.0).  
Turning this knob in anti-clockwise turn      = more fluid flow  
Turning this knob in clockwise turn      = less fluid flow  
Do not over-tight the regulating knob.



### IMPORTANT !

To avoid damages to nozzle and needle adjust decrease of fluid flow (turning regulating knob 9.0 clockwise) only when fluid is emitted from the nozzle. This is the only way to observe the steady reduction of fluid flow until an absolute stop of fluid. Going on to turn the regulating knob clockwise would at once push the needle into the nozzle to such an extent that both parts could be damaged.

It is harmless to leave fluid within the valve (no connection to outside air), if system stays under pressure.

## 5 Repair and Maintenance

Before starting maintenance or repair work, ensure that all air operated tools are disconnected from the air supply.



### **WARNING !**

Danger caused by combustible and noxious spraying material. Safety instructions on fluid can and material data of fluid manufacturer must definitely be observed.



### **WARNING !**

Before opening the spray valve it has to be disconnected from the air and fluid supply. Otherwise ejected elements can cause danger.

The automatic spray valve **GF/5** resp. **GF/5 HVLP** is a high precision tool. Always keep clean and observe minimum instructions to maintain a long and useful life of valve. We recommend lubricating moveable parts regularly, and greasing threads, especially the nozzle threads, when replacing or cleaning the nozzle. It is recommended to use clean and filtered application fluid only. Also atomizing air should be clean. Control air should be slightly oiled.

### 5.1 Cleaning

To clean valve, spray solvent until pure solvent leaves nozzle. Do not submerge entire valve in solvent. At longer working interruptions it is advisable to clean air cap and nozzle by putting these parts only into solvent. If necessary use a soft brush. Moving parts and threads should always be greased slightly. The spray valve should be cleaned using an appropriate thinner. To clean small drill holes, use our special nozzle cleaning needles.

These spray valves are high precision tools. Always keep clean and observe minimum instructions to maintain a long and useful life of valve.

We recommend lubricating moveable parts regularly, and greasing threads, especially the nozzle threads, when replacing or cleaning the nozzle.

### 5.2 Possible case of failure: Needle sticks

- Check, if sufficient control / operating air is supplied (3 - 6 bar).
- Check, if o-ring (6.1) is in proper order.
- Check, if needle is dirtied by f.i. glue residues or sticks within needle gasket (5.1 / 5.4) or within nozzle.
- Check, if minimum of travel of needle is set.

### Trouble shooting.

- If drops form on the nozzle, either needle or nozzle is worn out and should be replaced. Or needle is not closing properly f.i. because particle residues within nozzle.
- If there is an uneven or not steady spray jet, make sure that nozzle is screwed in tight. Other reason could also be dirt residue within air cap.

### 5.3 Changing the nozzle set



### **IMPORTANT!**

Nozzles, gaskets and gasket seats can be damaged. Do not use metalical aid to remove and insert those parts.

A nozzle set includes needle (6.0), nozzle (2.0) and air cap (1.0).

If nozzle size is to be changed, always change all these three parts. Change the complete set also when only one of the parts is defect.

Disconnect all air operated tools from the air supply.

- Screw out closing screw (8.0).
- Pull out needle spring (7.0) and needle (6.0).
- Take off air cap (1.0).
- Screw out nozzle (2.0), please observe that needle is never under spring pressure.

Re-assemble in reverse order.

To prevent damage to the needle seat during replacement, the needle (6.0) must only be inserted into firmly installed nozzle.

## 5.4 Changing needle gasket



### **IMPORTANT!**

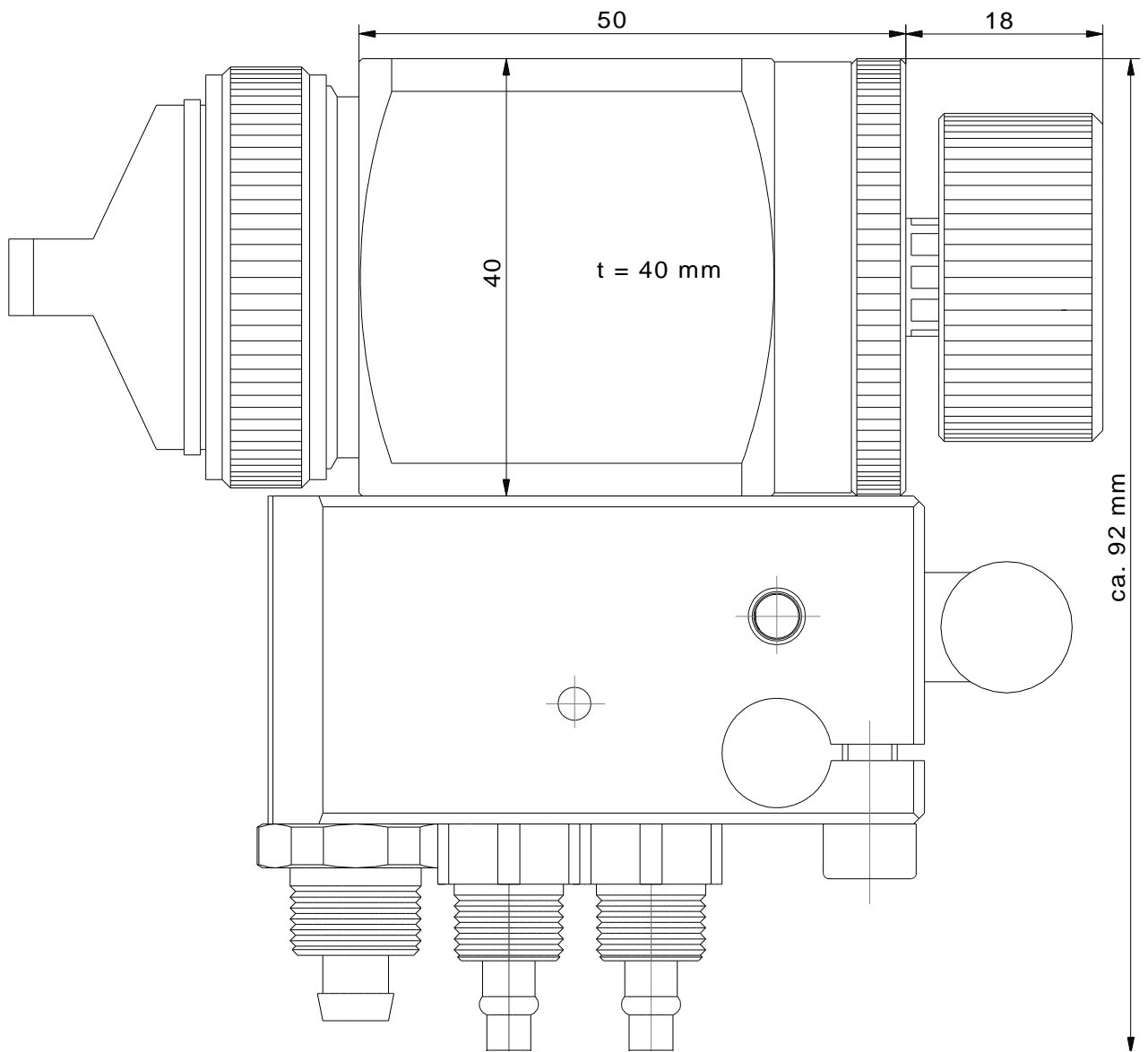
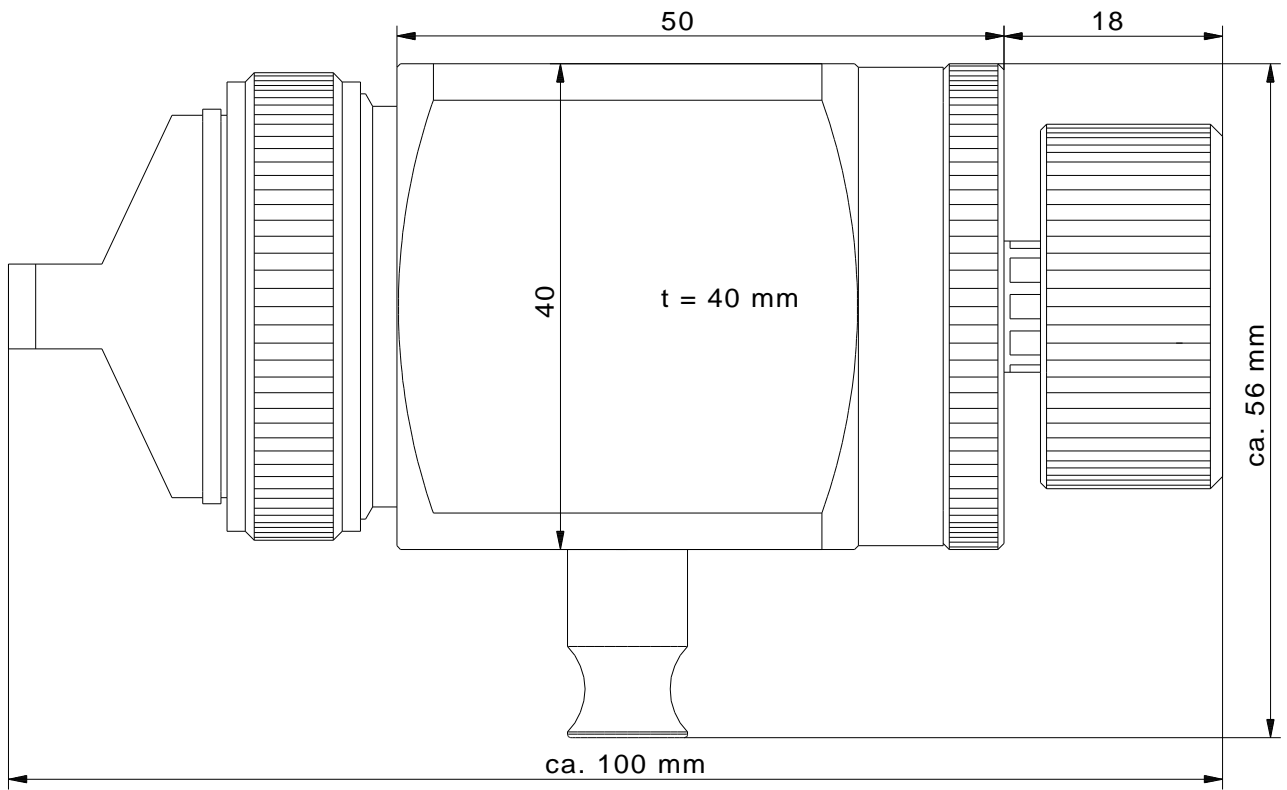
Gaskets and gasket seats can be damaged. Do not use metallical aid to remove and insert those parts.

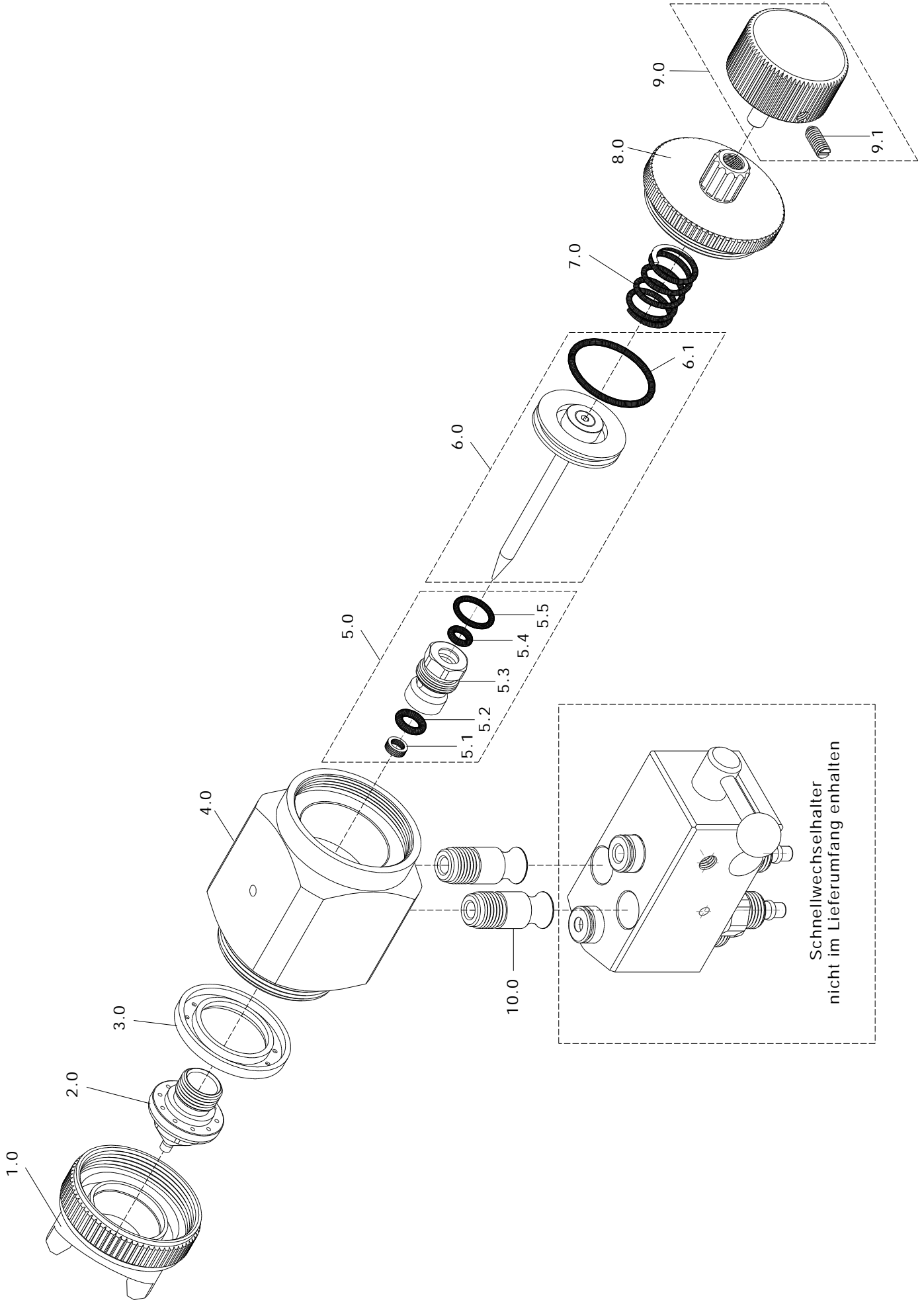
Before starting maintenance or repair work, ensure that all air operated tools are disconnected from the air supply.

- Screw out closing screw (8.0).
- Pull out needle spring (7.0) and needle (6.0).  
Then unscrew retainer (5.0).

After unscrewing retainer (5.0) all o-rings and gaskets (5.1 / 5.2 / 5.4) can be changed. The o-ring (6.1) can be changed from the needle piston.

Reassemble in reverse order.





Schnellwechselhalter  
 nicht im Lieferumfang enthalten

## 6. Spareparts

draw.-no.	part-no.	qty	description
1.0	*	1	aircap (standard) and aircap (HVLP)
2.0	*	1	nozzle, stainless steel, 21 x 25,5mm, SW13
3.0	310052	1	air distribution plate, ø 33 x 3mm
4.0	510535	1	valve body GF 5, 52 x 40 x 40mm
4.0	510536	1	valve body GF 5 HVLP, 52 x 40 x 40mm
5.0	810063	1	retainer, complete, SW 11 x 16mm
5.1	640323	1	gasket (Variseal 4,0 x 6,9 x 2,4)
5.2	640035	1	o-ring 8 x 1 / Viton®
5.3	810062	1	retainer, SW 11 x 16mm
5.4	640032	1	o-ring 3,68 x 1,78 / Viton®
5.5	640046	1	o-ring 9 x 1,5 / Viton®
6.0	*	1	needle, complete, stainless steel
6.1	640241	1	o-ring 21,95 x 1,78 / Viton®
7.0	820078	1	spring 1,5 x 20,5mm
8.0	320322	1	closing screw, 40 x 20,5mm
9.0	800052	1	ratchet assembly, complete, ø 30 x 29mm
9.1	820003	1	elastic thrust piece M4 x 9mm
10.0	220544	2	air connection, 1/8", Ø 9,9 x 24,5mm
without	910221	1	quick release adapter, type GF / 5, complete

\* Please find part numbers on page 8.

When ordering nozzle sets please specify dimension.

Available dimensions: 0,3 / 0,5 / 0,8 / 1,0 / 1,2 / 1,3 / 1,4 / 1,5 / 1,7 / 1,8 / 2,0 / 2,5 / 3,0 / 3,5mm Ø  
 nozzle set = needle, nozzle and air cap.

If nozzle size is to be changed, always change all these three parts. Change the complete set also when only one of the parts is defect.

## 7. Technical data

measurements : approx. 56mm x 40mm x 100mm length  
 weight : approx. 400g  
 control air pressure : min. 3 – max. 6 bar  
 atomizing air pressure : as required  
 material pressure : max. 10 bar

Special designs on request. Technical alterations reserved. March 2004.

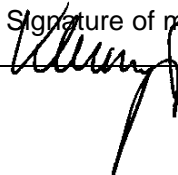
## 8. Manufacturer declaration

The spray valves **GF/5** and **GF/5 HVLP** were constructed and produced by **ALFRED SCHÜTZE Apparatebau GmbH, Hannoversche Straße 69-71, 28309 Bremen-Germany** in accordance with the guidelines and standards of DIN EN 292. This spray valve can be combined with other modules or machines, which comply to DIN EN 292, without limiting the conformity.

Place  
Bremen

Date  
24.03.2004

Signature of manufacturer





## 6.1 part numbers for needles, nozzles and air caps

<b>*needles</b>		
draw.-no.	part-no.	description
6.0	110923	0,3 mm
6.0	110924	0,5 mm
6.0	110925	0,8 mm
6.0	110926	1,0 mm
6.0	110927	1,2 mm
6.0	110928	1,3 mm
6.0	110929	1,4 mm
6.0	110930	1,5 mm
6.0	110931	1,7 mm
6.0	110932	1,8 mm
6.0	110933	2,0 mm
6.0	110934	2,5 mm
6.0	110935	3,0 mm
6.0	110936	3,5 mm

<b>*nozzles</b>		
draw.-no.	part-no.	description
2.0	210155	0,3 mm
2.0	210156	0,5 mm
2.0	210080	0,8 mm
2.0	210081	1,0 mm
2.0	210082	1,2 mm
2.0	210083	1,3 mm
2.0	210084	1,4 mm
2.0	210085	1,5 mm
2.0	210086	1,7 mm
2.0	210087	1,8 mm
2.0	210088	2,0 mm
2.0	210089	2,5 mm
2.0	210090	3,0 mm
2.0	210091	3,5 mm

<b>* aircap (standard)</b>		
draw.-no.	part-no.	description
1.0	310053	for nozzle 0,3 - 1,0 mm
1.0	310054	for nozzle 1,2 - 1,4 mm
1.0	310055	for nozzle 1,5 - 1,8 mm
1.0	310056	for nozzle 2,0 mm
1.0	310057	for nozzle 2,5 mm
1.0	310058	for nozzle 3,0 mm
1.0	310059	for nozzle 3,5 mm

<b>* aircap (HVLP)</b>		
draw.-no.	part-no.	description
1.0	310066	for nozzle 0,3 - 1,0 mm
1.0	310067	for nozzle 1,2 - 1,4 mm
1.0	310068	for nozzle 1,5 - 1,8 mm
1.0	310069	for nozzle 2,0 - 2,5mm
1.0	310070	for nozzle 3,0 mm