

# Operating Manual for automatic sprayvalve KA-2 / KLS



**KA-2, round spray  
with clamp (option)**

**KA-2, flat spray  
with clamp (option)**

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

# 1 Introduction

The automatic spray valve **KA-2 / KLS** is designed and constructed for application of adhesives of low viscosity and other fluids. Depending on air cap this spray valve sprays in flat- or roundspray. Depending on viscosity of fluid, the application can be adjusted individually via nozzle dimension, atomizing air pressure and material pressure. The supply of atomizing air, control air and material should be done via three hoses. 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 **KA-2 / KLS** is a pneumatically controlled spray valve; It is suitable for sprayable materials. It is not suitable for spraying aggressive or heated materials. In case of doubt, 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 spray valve **KA-2 / KLS** is pneumatically controlled: air open; spring return.  
The spraying material is to be fed to the valve via pressure tank or pump. The separate controlled atomizing air atomizes the material to a spray jet. Depending on mounted air cap valve sprays a flat- or roundspray jet.

## 4 Installation

The **KA-2 / KLS** can be installed in any position. The use of clamp (16) is recommended. Distance to spraying surface varies with width of application. Vibrations of the valve caused by fast intermittent cycles require solid and massive installation. Vibration of the equipped machine to the valve should be limited as far as possible.

## 4.1 Hose connection

Connect hoses for atomizing air and control air separately to control valves (pressure reducers and solenoids). Then fluid hose to material pressure tank or other means of feeding as under:

- atomizing air Z (5) (hose blue):  
è to 2/2 way solenoid
- control air S (5) (hose black):  
è to 3/2 way solenoid
- fluid M (5) (hose transparent):  
è to feeding device

Connections (5) can either be mounted alternatively on the upper side or the rear side of the valve. Connection threads not used must be closed by lock screws using f.i. "Loctite no. 221".

### **Before Starting:**

- When connecting the pressure hoses to the spray valve, ensure that all the connection screws are tight.
- Follow the application notes of the spraying material manufacturer.

## 4.2 Operating instructions



### **CAUTION!**

Never point the spray valve 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.

Do not smoke when spraying paints or solvents which have combustible properties. All electrical installations within the spraying area must be explosionproof. Observe working safety regulations in respect of protective clothing (masks, clothing, ear protection, etc.)

The valve **KA-2 / KLS** needs 3 - 6 bar pressure for control air. The atomizing air should be 0,5 - 6 bar. The maximum material pressure is 3 bar. If higher material pressure is necessary, 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 be actuated 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 working pressure of atomizing air and fluid pressure according to required spray droplet sizes. Two separate pressure reducers must be available, if fluid is fed via pressure tank.

Standard version of valve has flat spray air cap. If round spray cone jet is required, install round spray air cap. Flat spray air cap can be positioned for horizontal, vertical or any in between position of jet.

Depending on viscosity of fluid, different nozzle diameters are available in 0,2 / 0,3 / 0,5 / 0,8 / 1,0 / 1,2 / 1,5 / 2,0 and 2,5mm Ø.



### **IMPORTANT!**

Fluid flow can be regulated with regulating screw (9).  
turn right : less fluid flow  
turn left : more fluid flow



### **IMPORTANT!**

Wrong handling can damage nozzle and needle. Reduce fluid flow (clockwise turn of regulating screw) only when fluid flows through nozzle. After fluid flow is nil, never turn regulating screw (9) further right.

For longer working interruptions and if the fluid is under pressure, it can stay in valve.

## 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.

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.

### 5.1 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.

### 5.2 Trouble shooting

- If seal (6) is worn, exchange this gasket removing needle (see "Changing nozzle set" / "Changing needle gasket").
- 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 metallical aid to remove and insert those parts.

A nozzle set includes needle (7), nozzle (2) and air cap (1 or 1.1).

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.

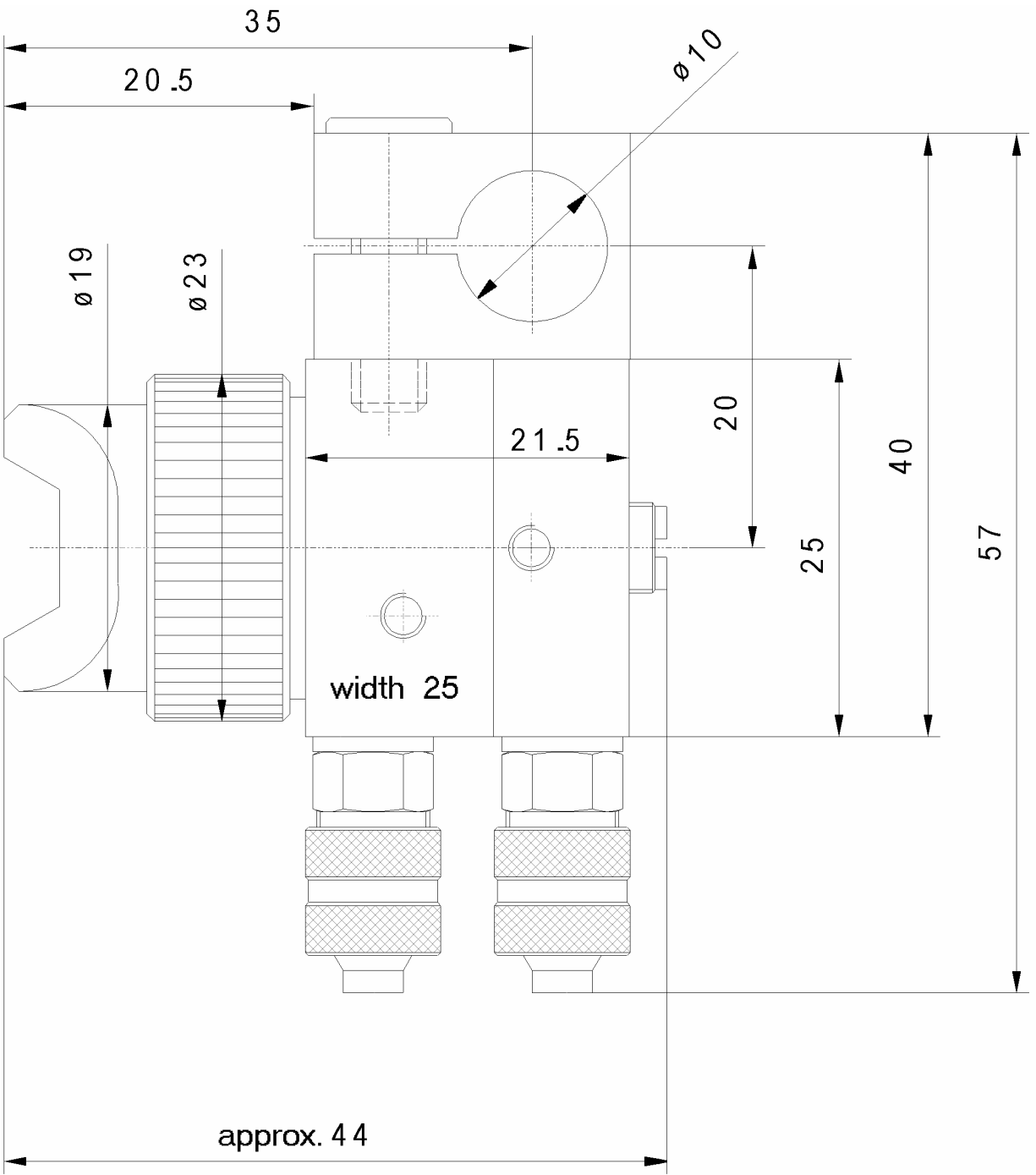
- Take off closing plate (11) by unscrewing screws (13).
- Pull out needle (7) and needle spring (8).
- Take off air cap (1.0 or 1.1) after unscrewing collar ring (3).
- Screw out nozzle (2) with wrench, size SW 6. Before unscrewing nozzle, please observe that needle is never under spring pressure.

Reassemble in reverse order.

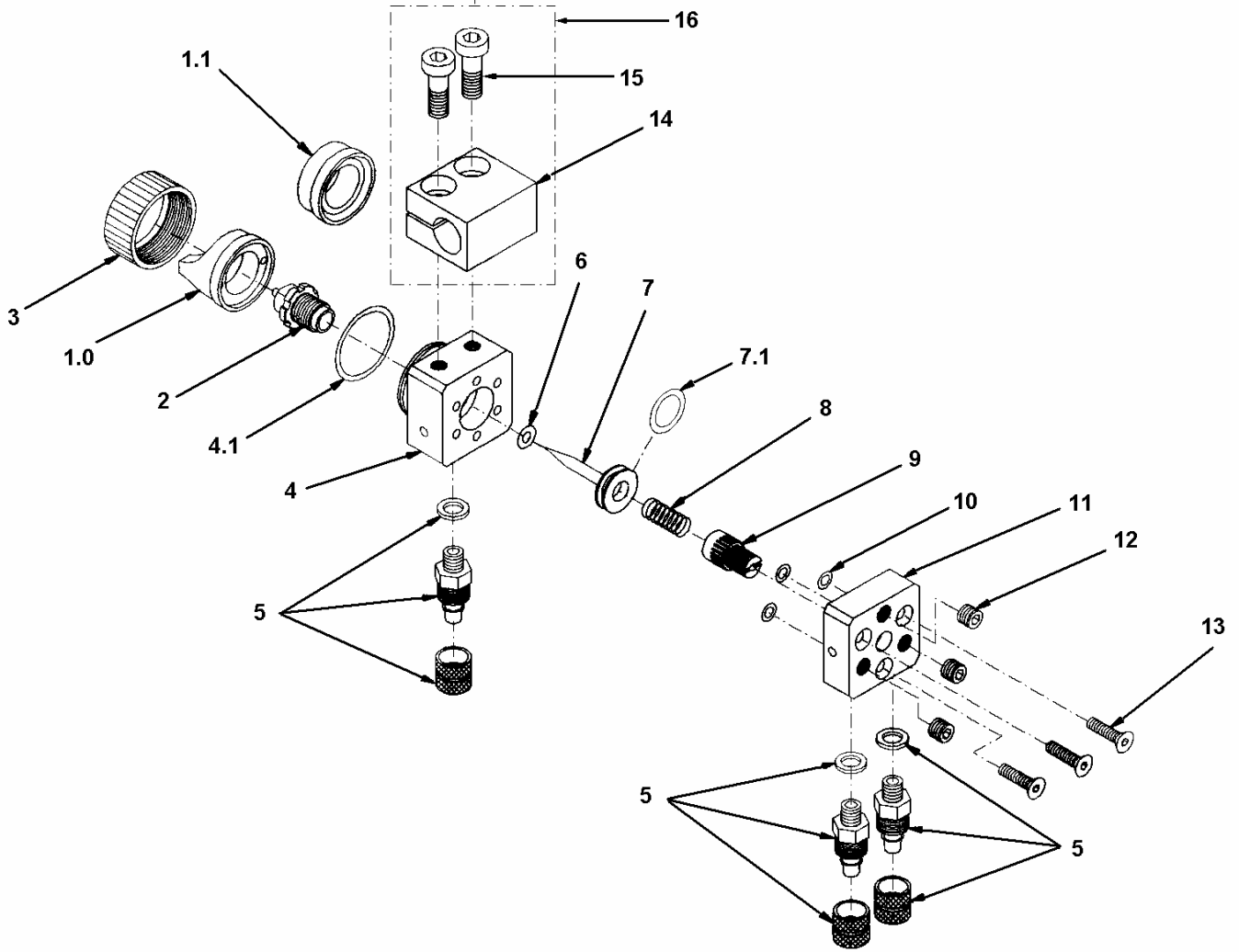
To prevent damage to the needle seat during replacement, the needle (7) must only be inserted into firmly installed nozzle.

### 5.4 Changing needle gasket

After pulling out needle (7) (see "Changing the nozzle set"), needle gasket (6) can be taken out of the valve body by means of using a pointed object. Re-assemble by laying the new gasket into the provided slot.



optional, not in standard supply



## 6 Sparepartslist

draw.-no.	part no.	Qty.	Description
1.0	*	1	air cap KLS, flat spray (part no. see overleaf)
1.1	*	1	air cap KLS, round spray (part no. see overleaf)
2	*	1	nozzle KLS, stainless steel (part no. see overleaf)
3	410028	1	collar ring
4	510027	1	main body, stainless steel
4.1	640006	1	o-ring
5	220089	3	connection M5
6	640026	1	o-ring
7	*	1	needle KLS, compl. (part no. see overleaf)
7.1	640366	1	o-ring
8	820017	1	needle spring
9	610090	1	regulating screw
10	640000	3	o-ring
11	510028	1	closing plate, stainless steel
12	610021	3	lock screw
13	610052	3	mounting screw
14	910014	1	clamp
15	610042	2	mounting screw
16	910015	1	clamp, complete

\* part. no. see page 8.

When ordering nozzles, needles and air caps, please indicate nozzle dimension.

Available dimensions: 0,2 / 0,3 / 0,5 / 0,8 / 1,0 / 1,2 / 1,5 / 2,0 and 2,5mm Ø

## 7 Technical data

measurements:

with air cap, flat spray = 42mm length x 25mm x 25mm (without connections)

with air cap, round spray = 39mm length x 25mm x 25mm (without connections)

weight = 140g (with clamp 185g)

air consumption = 103 ltr. (at 3 bar, 0,5mm nozzle and 2m hose)

pressure for control air = 3 – 6 bar

pressure for atomizing air = 0,5 – 6 bar

material pressure = max. 3 bar

Special designs on request. Technical alterations reserved. August 2000

## 8 Manufacturer declaration

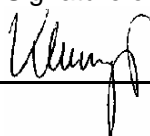
The spray valve **KA-2 / KLS** were constructed and produced by

**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 Date Signature of manufacturer

Bremen 25.08.2000



## 6.1 part no. of needles, nozzles and air caps

<b>*needle, KLS</b>		
draw no.	part no.	description
7	110169	0,2/0,3mm
7	110170	0,5mm
7	110171	0,8/1,0mm
7	110172	1,2mm
7	110173	1,5mm
7	110174	2,0mm

<b>*nozzle, KLS</b>		
draw no.	part no.	description
2	210119	0,2mm
2	210120	0,3mm
2	210121	0,5mm
2	210122	0,8mm
2	210123	1,0mm
2	210124	1,2mm
2	210125	1,5mm
2	210126	2,0mm

<b>*nozzle KLS/B, teflon coated</b>		
draw.-no.	part-no.	description
2	210558	0,3mm
2	210557	0,5mm
2	210560	1,0mm
2	210215	1,5mm
2	210559	2,0mm

<b>* aircap / flatspray, KLS 60° (standard version)</b>		
draw.-no.	part-no.	description
1.0	310081	for nozzle 0,2 - 1,0mm
1.0	310082	for nozzle 1,2 - 1,8mm
1.0	310083	for nozzle 2,0mm

<b>* aircap / roundspray, KLS 15°</b>		
draw.-no.	part-no.	description
1.1	310084	for nozzle 0,2 - 1,0mm
1.1	310085	for nozzle 1,2 - 1,8mm
1.1	310086	for nozzle 2,0mm

<b>*aircap / one cone, KLS 45°</b>		
draw.-no.	part-no.	description
1.0	310087	for nozzle 0,2 - 1,0mm
1.0	310088	for nozzle 1,2 - 1,8mm
1.0	310089	for nozzle 2,0mm

<b>* aircap / flatspray, KLS/B 60°, teflon coated</b>		
draw.-no.	part-no.	description
1.0	310187	for nozzle 0,2 - 1,0mm
1.0	310159	for nozzle 1,2 - 1,8mm

<b>* aircap / roundspray, KLS/B 15°, teflon coated</b>		
draw.-no.	part-no.	description
1.0	310114	for nozzle 0,2 - 1,0mm
1.0	310115	for nozzle 1,2 - 1,8mm
1.0	310233	for nozzle 2,0mm