

Operating Manual for sprayvalve MKDD-S



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

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1 Introduction

The spray valves of series **MKDD – S** are designed for the application of glues and adhesives. 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 usefull 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 valves **MKDD – S** are pneumatically controlled spray valves. They are suitable for continuously or intermittent use. They are 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 **MKDD – S** is a pneumatically controlled spray valve for application of fluids as f.i. glues, adhesives, fats, colours etc. The extreme short control air distance, reached throw the direct mounted 3/2-way solenoid valve (17.0.0), gives this valve very fast and exact needle (7.0.0) intermission cycles. The needle piston receives to the larger piston surface air pressure from the 3/2-way solenoid valve. This opens the needle. When the air pressure to the larger piston is switched off, the constant air pressure on the smaller piston surface closes the needle.

The spring (9.6.3) during the normal use of valve is not in function. Only when the air pressure supply is defective or switched off, this spring closes the needle. This guarantees, that no fluid comes out from the nozzle during working interruptions or when air supply should fail or any other reason.

Set working pressure of atomizing air and fluid pressure according to required droplet sizes. The spray jet can be intermiltend or continously.

Controlled by the 3/2-way solenoid valve (17.0.0), the control air impulses (M5-connection, draw-no. 21.0.0) are led to the piston.

Set the control air according to the speed of intermittents. From 5 intermittents per second on, the control air has to be at least 5 bar.

4 Installation

The spray valve **MKDD – S** can be installed in any position. The distance to the application surface depends on the width of application desired.

Vibrations of the valves caused by fast intermitting cycles require solid and massive installation. Vibrations of the equipped machine to the valves should be limited as far as possible.

4.1 Hose connection

The three hoses have to be assembled as under:

1. atomizing air (blue) to 1/8"-screw (21.1.0)
2. control air (black) to M5-screw (21.0.0)
3. material (transparent) to 1/8"-screw (21.2.0)

4.2 Operating instructions



CAUTION !

Never point the sprayjet 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 combustibile and noxious spraying material. Safety instructions on fluid can and material data of fluid manufacturer must definitely be observed.

The spray valve **MKDD – S** is working with a control air pressure of 5 – 6 bar. The atomizing air pressure must be less than the material pressure. This avoids flow back of material. If high material pressures are required, please observe in any case the safety regulations of the employee's compensation departments.

The travel of needle is giving way to fluid as adjusted by regulating knob (9.1.3). Turning this knob in:

anticlockwise turn : more fluid
clockwise turn : less fluid

One revolution of regulating knob (9.1.3) gives 0,5mm more stroke.



IMPORTANT !

The maximum fluid outlet is already reached, when no further ratchets are noticeable. Do not turn the regulating knob (9.1.3) in anti-clockwise turn any further.



IMPORTANT !

To avoid damages to nozzle and needle, adjust decrease of fluid flow (turning regulating knob 9.1.3 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 damages. This applies especially to valves where needle regulation is execute by hexagon key (special design, not shown in sectional drawing).

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.

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. 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.

5.2 Possible case of failure: Needle sticks

- Check, if current on solenoid valve (slight click noise)
- Check, if sufficient control / operating air is supplied (5 - 6 bar).
- Check, if o-ring (6.2.0), o-ring (7.4.0) or o-ring (7.5.0) are in proper order.
- Check, if needle (7.0.0) is dirtied by f.i. glue residues or sticks within retainer.
- Check, if minimum of travel of needle is set.

5.3 Replacing needle (7.0.0) and nozzle (2.1.0)

Screw out ratchet assembly, complete (9.0.3). Take off collar ring (3.1.0) and air cap (1.1.0). Screw out nozzle (2.1.0). Carefully push out needle (7.0.0) from the nozzle side to the rear. Re-assemble new parts in reverse order slightly greased. It is not recommended to use old needles because even slightly damaged needle shafts would immediately cause leakage in shaped gasket (5.1.0)

5.4 Replacing retainer (6.0.0)

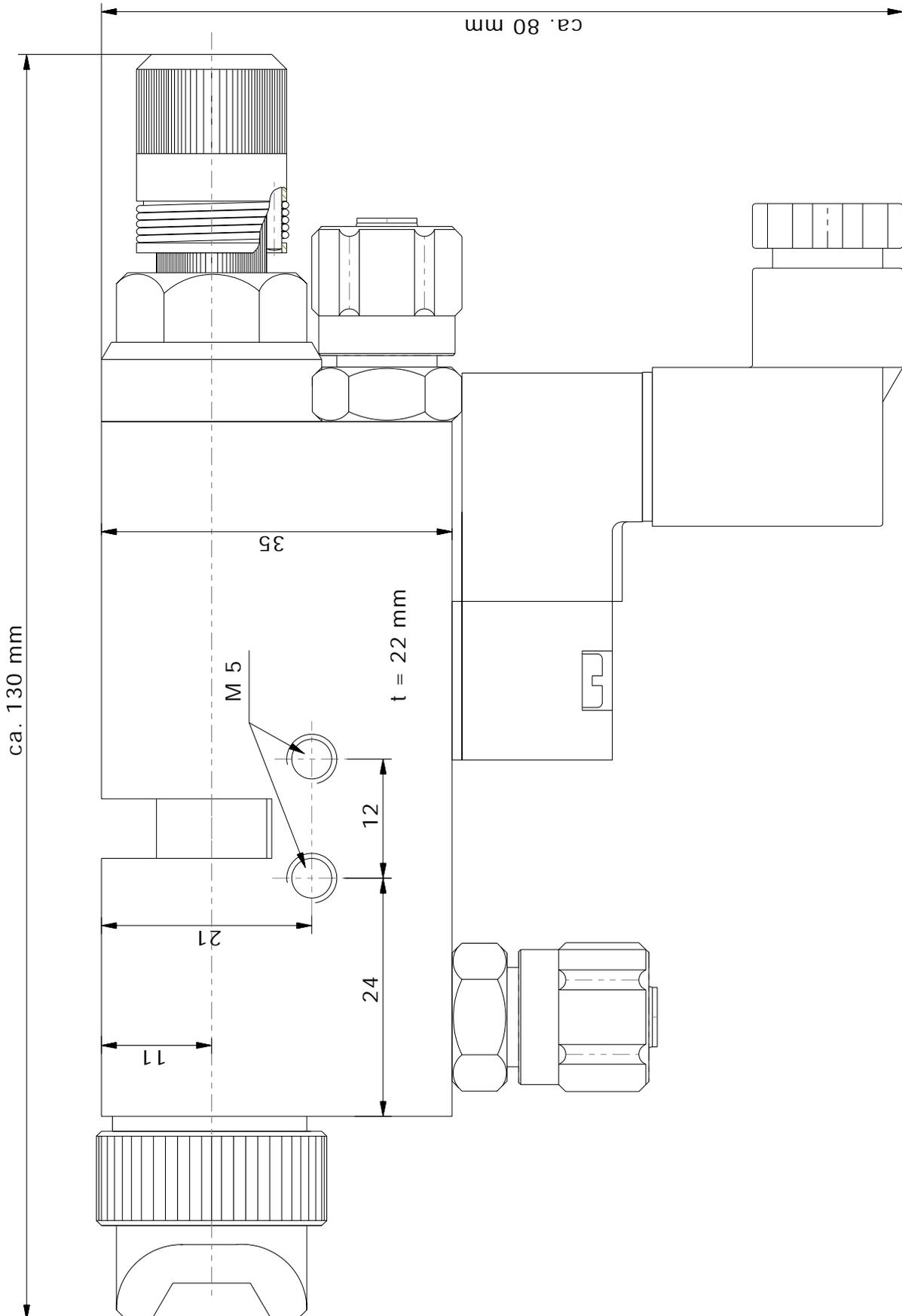
Screw out ratchet assembly, complete (9.0.3). Take off collar ring (3.1.0) and air cap (1.1.0). Screw out nozzle (2.1.0). Carefully push out needle (7.0.0) from the nozzle side to the rear.

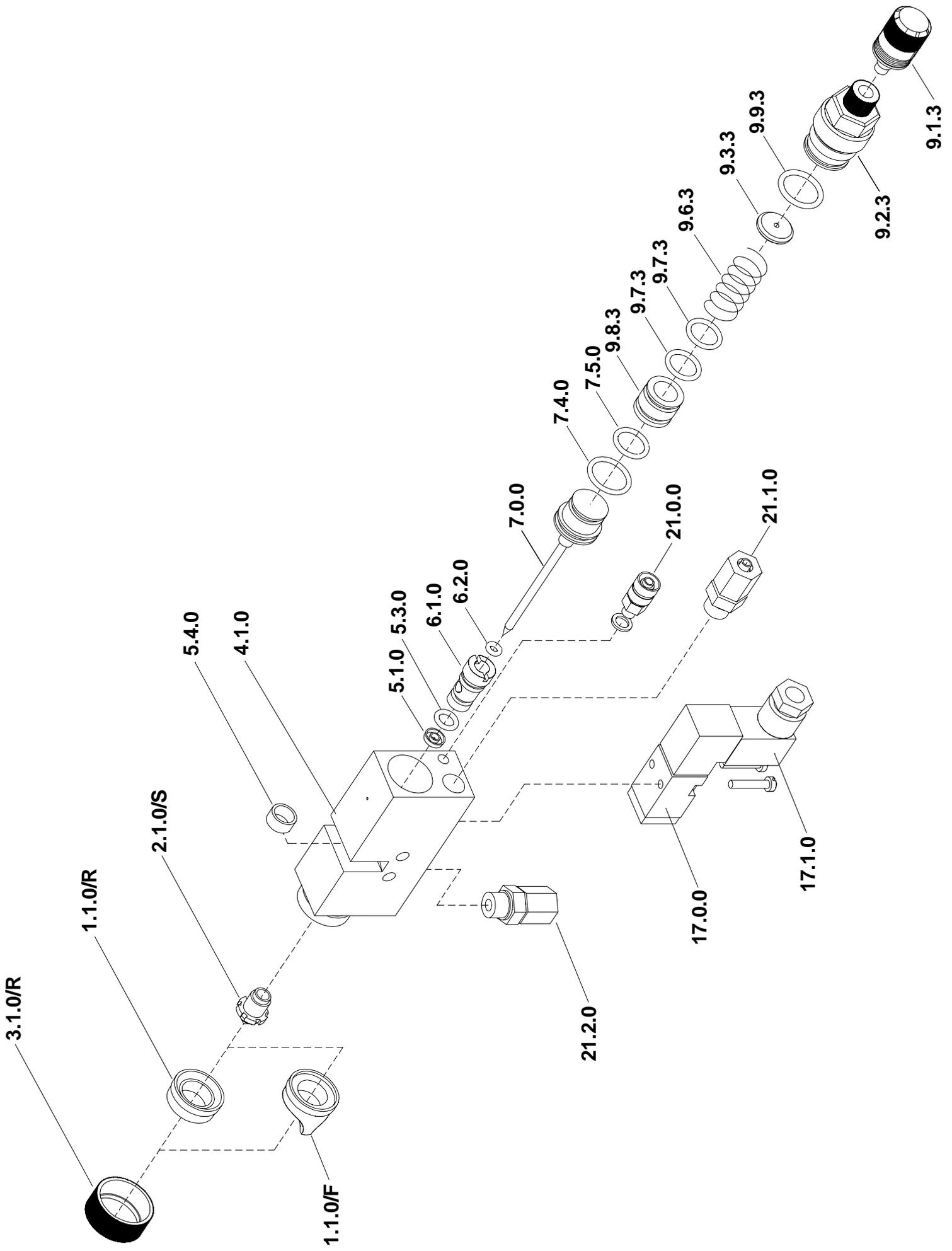
Then using a screwdriver loosen retainer (6.0.0) till end of thread. As retainer can not go through the thread by itself because of o-ring (5.3.0), it has to be carefully pushed through by means of a thin metal sheet of 0,5 – 1,0mm placed between gun body recess and retainer. After passing thread retainer is accessible for taking out of housing.

5.5 Mounting gaskets and o-rings:

In case a new retainer set is not available to be replaced as a complete unit, the used retainer has to be cleaned thoroughly especially the o-ring groove and seats. These should also be greased slightly. O-ring (6.2.0) is to be placed first into ground of the rear retainer bore. O-ring (5.3.0) then into the outer groove. Mounting the gasket on the „fluid side“ first place o-ring (5.2.0) into the front retainer bore. After that insert gasket (5.1.0) into the center of o-ring. The shaped gasket (5.1.0) is not symmetrical. The somewhat wider opening must be positioned to point to the front of spray valve i.e. after assembling

retainer in direction fluid nozzle. When inserting o-rings and gaskets do not use any sharp or pointed metallic implements. Mainly the gasket as a very precise and sensitive component is not able to stand impacts. Completed retainer (6.0.0) slightly greased then is put back into housing an without turning movement by means of a screwdriver is to be carefully pushed through housing thread observing outer o-ring (5.3.0). Lastly screw retainer into housing thread (tighten only slightly). O-rings employed are made from first class viton quality and by no means should be substituted by minor qualities.





6. Sparepartslist

draw no.	part no.	Qty	Description
1.1.0	*	1	air cap, flatspray, KLS, Ø 20 x 14,5mm
1.1.0	*	1	air cap, roundspray, KLS, Ø 20 x 11mm
2.1.0	*	1	nozzle, KLS, stainless steel, Ø 12 x 15,2mm
3.1.0	410028	1	collar ring, Ø 23 x 10mm
4.1.0	510085	1	gun body MKDD-S, complete
5.0.0	640102	1	packing set
5.1.0	640004	1	shaped gasket 2,65 x 2,0 x 2,8
5.3.0	640021	1	o-ring 6,07 x 1,78mm / Viton
5.4.0	640101	1	plastic protection cover, Ø 10 x 6mm
6.0.0	810014	1	retainer, complete, 11 x 21mm
6.1.0	810013	1	retainer, 11 x 21mm
6.2.0	640026	1	o-ring 2,90 x 1,78mm
7.0.0	*	1	needle KLS, stainless steel, complete, Ø 4x73mm
7.4.0	640007	1	o-ring 14,00 x 1,78mm
7.5.0	640005	1	o-ring 10,82 x 1,78mm
9.0.3	900004	1	ratchet assembly, Ø 21,3 x 49mm
9.1.3	610092	1	regulating knob, Ø 15 x 29,5mm
9.2.3	220092	1	needle lock SW 17 x 37mm
9.3.3	930000	1	disc, 14,5 x 3mm
9.6.3	820020	1	spring 1,1 x 22mm
9.7.3	640005	2	o-ring 10,82 x 1,78mm / Viton
9.8.3	710005	1	pson, Ø 14,5 x 14mm
9.9.3	640043	1	o-ring 15 x 1 / Viton
17.0.0	*	1	3/2-way solenoid valve
21.0.0	220089	1	screw M5, complete, SW 8 x 19mm
21.1.0	220022	1	screw 1/8" / SW 13 x 28mm
21.2.0	220022	1	screw 1/8" / SW 13 x 28mm

* part-no. see the following pages.

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

In standard version all o-rings are made from viton.

Measurements of o-rings = inner diameter x thickness

6.1 Part-numbers for needles, nozzles and air caps

*needle KLS, complete

draw-no.	part no.	description
7.0.0	110187	needle KLS complete, 0,2/0,3mm
7.0.0	110188	needle KLS complete, 0,5mm
7.0.0	110189	needle KLS complete, 0,8/1,0mm
7.0.0	110190	needle KLS complete, 1,2mm
7.0.0	110191	needle KLS complete, 1,5mm
7.0.0	110192	needle KLS complete, 2,0mm

*nozzle KLS

draw-no.	part no.	description
2.1.0	210119	nozzle KLS, 0,2mm
2.1.0	210120	nozzle KLS, 0,3mm
2.1.0	210121	nozzle KLS, 0,5mm
2.1.0	210122	nozzle KLS, 0,8mm
2.1.0	210123	nozzle KLS, 1,0mm
2.1.0	210124	nozzle KLS, 1,2mm
2.1.0	210125	nozzle KLS, 1,5mm
2.1.0	210126	nozzle KLS, 2,0mm

* air cap / flatspray 60° KLS (standard version)

draw-no.	part no.	description
1.1.0	310081	aircap, flatspray 60° KLS, for nozzle 0,2 - 1,0mm
1.1.0	310082	aircap, flatspray 60° KLS, for nozzle 1,2 - 1,5mm
1.1.0	310083	aircap, flatspray 60° KLS, for nozzle 2,0mm

* air cap / roundspray 15° KLS

draw-no.	part no.	description
1.1.0	310084	aircap, roundspray 15° KLS, for nozzle 0,2 - 1,0mm
1.1.0	310085	aircap, roundspray 15° KLS, for nozzle 1,2 - 1,5mm
1.1.0	310086	aircap, roundspray 15° KLS, for nozzle 2,0mm

* 3/2-way solenoid valve

draw-no.	part no.	description
17.0.0	150018	solenoid valve 24V / DC / 1,8W with plug
17.0.0	150019	solenoid valve 110V / 50Hz / 1,8W with plug
17.0.0	150020	solenoid valve 220V / 50Hz / 1,8W with plug

7. Technical data

Measurements:

with air cap flatspray = 130mm x 22mm x 80mm

with air cap roundspray = 127mm x 22mm x 80mm

Weight = approx. 510g

Control air pressure = 5 – 6 bar

Atomizing air pressure = as required, but at least 0,5 bar less then control air pressure

Material Pressure = max. 35 bar

Special designs on request. Technical alterations reserved. October 2005

8. Manufacturer declaration

The spray valves **MKDD – S** 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
13.10.2005

Signature of manufacturer

