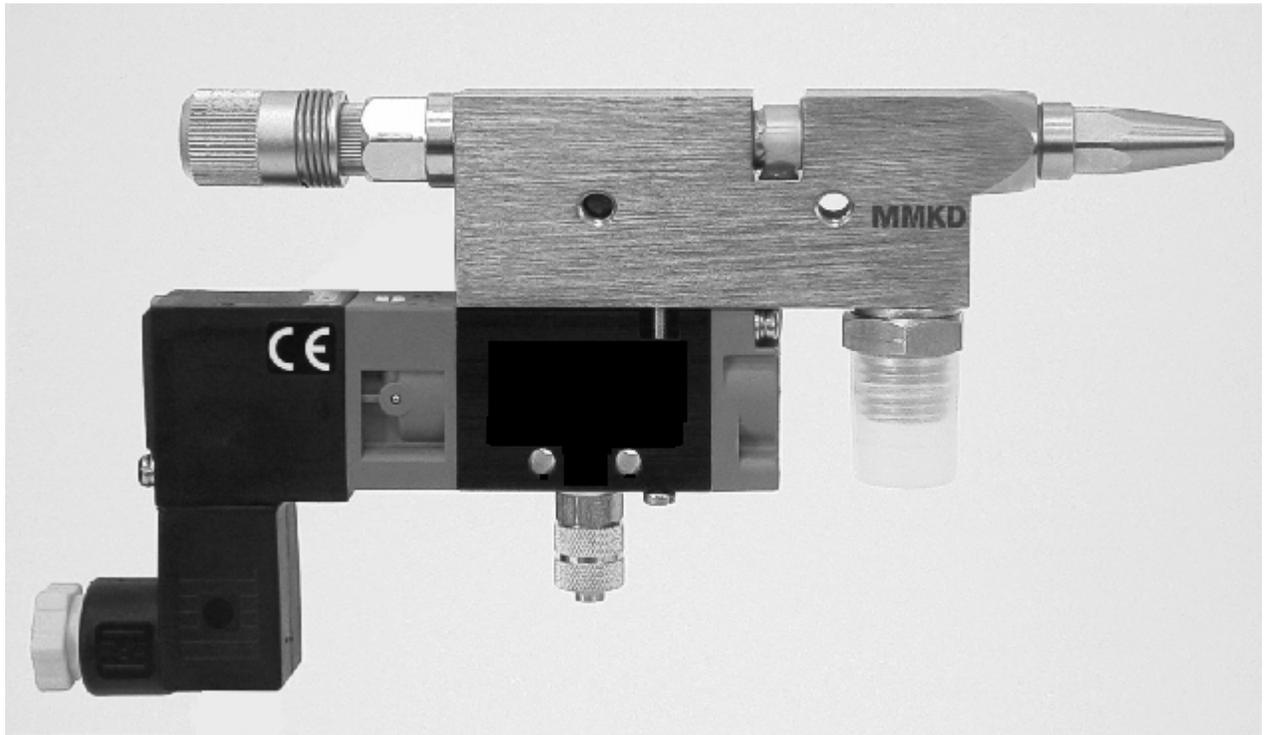


Operating Manual for extrusion valve MMKD-40 KV/LV/LVP



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

ALFRED SCHÜTZE Apparatebau GmbH
- Spritztechnik – Spraytechnology -
Hannoversche Straße 69-71, 28309 Bremen – Germany;
Postfach 44 86 48, 28286 Bremen - Germany
Tel.: 0049 (0)421 / 43510-0; Fax: 0049 (0)421 / 43510-43
Internet: <http://www.schuetze-gmbh.de>
E-Mail: info@schuetze-gmbh.de

1 Introduction

The extrusion valves of series **MMKD-40 KV/LV/LVP** are very fast acting valves for continuous or intermitted use. They are suitable for the application of glues, adhesives, oils and sealing compounds. The extreme short control air distance, reached through the directly mounted solenoid valve, gives this valve very fast and exact needle intermission cycles.

With the long nozzles (LV) the valves can be sloped to each other such to achieve narrow nozzle distances. Depending on nozzle dimension and material pressure, fluids of different viscosities can be applied. Extrusion 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 extrusion valve **MMKD-40 KV/LV/LVP** is a pneumatically controlled needle valve. It is suitable for application of fluids, especially glues and adhesives, continuously or intermittent use. They are not suitable for spraying aggressive fluids, like acids, alkaline solutions, cleaning agents, chemicals. When you are not sure, if your fluid is suitable for spraying 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 danger 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 Functional description

The extrusion valve **MMKD-40 KV/LV/LVP** is a pneumatically controlled valve for application of fluids as f.i. glues, adhesives, fats, colours, oils etc. The supply of fluid is to be obtained via pressure tank or pump. The MMKD-40 has an extrusion jet (without atomizing air). The extreme short control air distance, reached throw the direct mounted solenoid valve (10.0), gives this valve very fast and exact needle intermission cycles. The piston receives alternately air pressure. When control air is switched off, a spring close the needle into the nozzle.

4 Installation and opening operations

The MMKD-40 valve can be installed in any position. Vibrations of the valve caused by fast intermitting cycles require solid and massive installation. For solid attachment the valve body (2.0) is equipped with two drill-holes (M 5 thread). Vibration of the equipped machine to the valve should be limited as far as possible.

4.1 Hose connection

Connect hoses (not included) for control air and material as follows:

1. Hose for control air to connection M5 (draw.-no.: 11.0)
2. Hose for material to connection 1/4" (13.0)

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 combustibile and noxious spraying material. Safety instructions on fluid pot and material data of fluid manufacturer must definitely be observed.

The extrusion valve **MMKD-40 KV/LV/LVP** is working with a control air pressure of 5-6 bar and material pressures up to 30 bar. If high material pressures are required, please observe in any case the safety regulations of the employee´s compensation departments.

The valve can apply the fluid in contact as well as in non-contact to the surface. Intermittend use as well as continuous use is possible.

The travel of needle is giving way to fluid as adjusted by the regulating knob (7.1). Turning this knob in
anticlockwise turn : more fluid
clockwise turn : less fluid

One revolution of regulating knob (7.1) gives 0,5 mm more or less stroke. Maximum stroke is 6 mm. Do not over-tight the regulating knob. In this case the o-ring (7.3) can´t seal the lock (7.2).



IMPORTANT !

The maximum fluid outlet is already reached, when no further ratchets are noticeable. Do not Turn the regulating knob (7.1) in anticlockwise turn any further.



IMPORTANT !

To avoid damages to nozzle and needle, adjust decrease of fluid flow (turning regulating knob 7.1 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 extrusion valves of series **MMKD-40 KV/LV/LVP** 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 fluids only. Control air should be slightly oiled.

5.1 Cleaning

To clean valve, spray solvent until pure solvent leaves the nozzle. Do not submerge entire valve in solvent. At longer working interruptions it is advisable to clean needle (5.0), retainer (4.0) and nozzle (1.0) by putting these parts only into solvent. If necessary use soft brush. Moving parts and threads should always be greased slightly. The 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

- 1) Check, if current on solenoid valve (slight click noise).
- 2) Check, if sufficient control air pressure is supplied (5 - 6 bar).
- 3) Check, if o-ring (4.2) or o-ring (5.1) are defect.
- 4) Check, if needle (5.0) is stucked together within retainer (4.0).
- 5) Check, if minimum of travel of needle is set.

5.3 Changing needle (5.0) and nozzle (1.0)

Unscrew ratchet assembly (7.0). Unscrew nozzle (1.0) with wrench SW 10. Take out needle spring (6.0) and pull out needle (5.0) on back side of needle piston by using a flat tong. Re-assemble new parts in reverse order slightly greased. It is not recommended to use old needles and nozzles because even slightly damaged needle shafts would immediately cause leakage in gaskets.

5.4 Changing retainer (4.0)



IMPORTANT !

Do not use metalical aid to remove and insert gaskets and gasket seats !
Gaskets and gaskets seats can be damaged.

Unscrew ratchet assembly (7.0). Unscrew nozzle (1.0) with wrench SW 10. Take out needle spring (6.0) and pull out needle (5.0) on back side of needle piston by using a flat tong. Then using a screwdriver loosen retainer (4.0) till end of thread. As retainer can not go through the thread of valve body by itself because of o-ring (3.1), it has to be carefully pushed through be means of a thin metal sheet of 0,5 - 1,0 mm placed between gun body recess and retainer. After passing thread retainer is accessible for taking out of housing.

5.5 Replacing new gaskets



IMPORTANT !

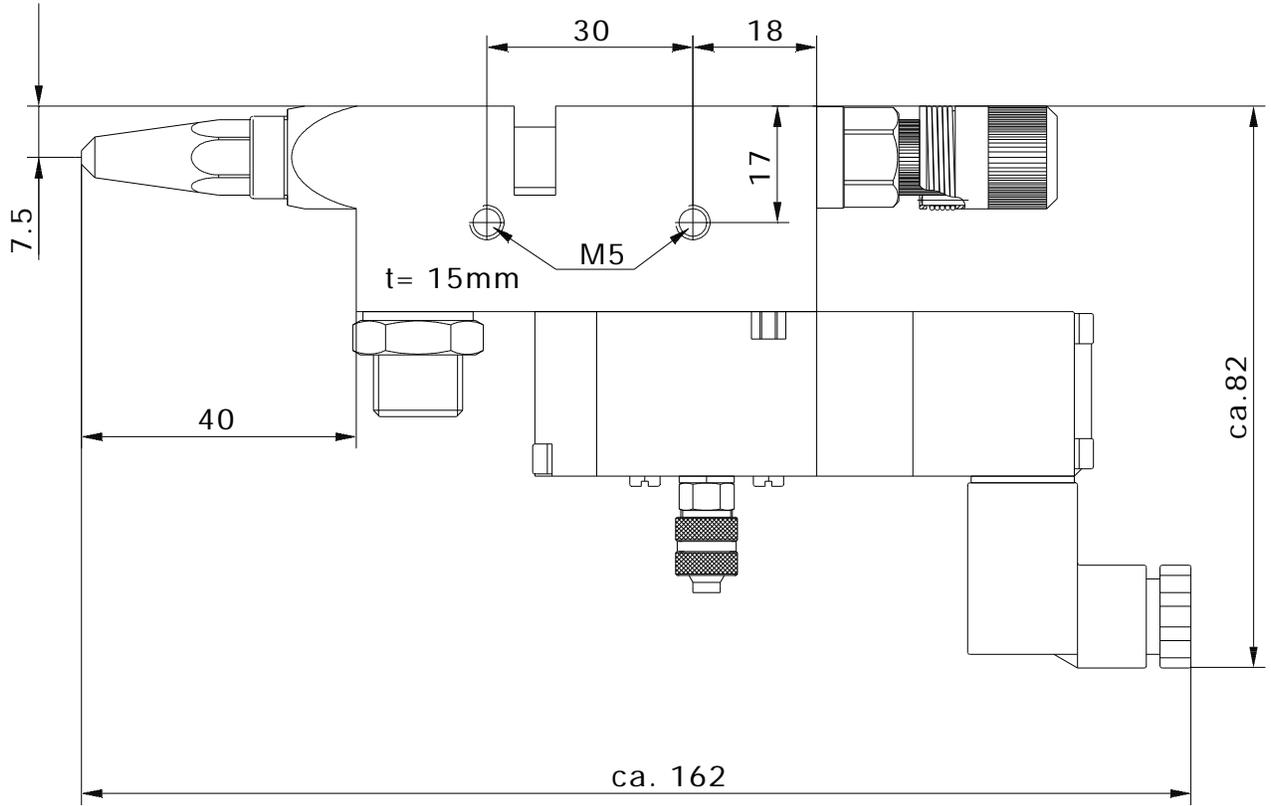
Do not use metallical aid to remove and insert gaskets and gasket seats !
Gaskets and gaskets seats can be damaged.

In case a new retainer (4.0) 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 (4.2) is to be placed first into ground of the rear retainer bore. O-ring (3.1) then into the outer groove. Insert the gasket (3.3) into the front retainer bore. The gasket (3.3) 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 "nozzle". Completed retainer (4.0) slightly greased then is put back into valve body (2.0) and without turning movement by means of a screw driver is to be carefully pushed through valve body thread observing outer o-ring (3.1). Lastly screw retainer into housing thread (tighten only slightly).

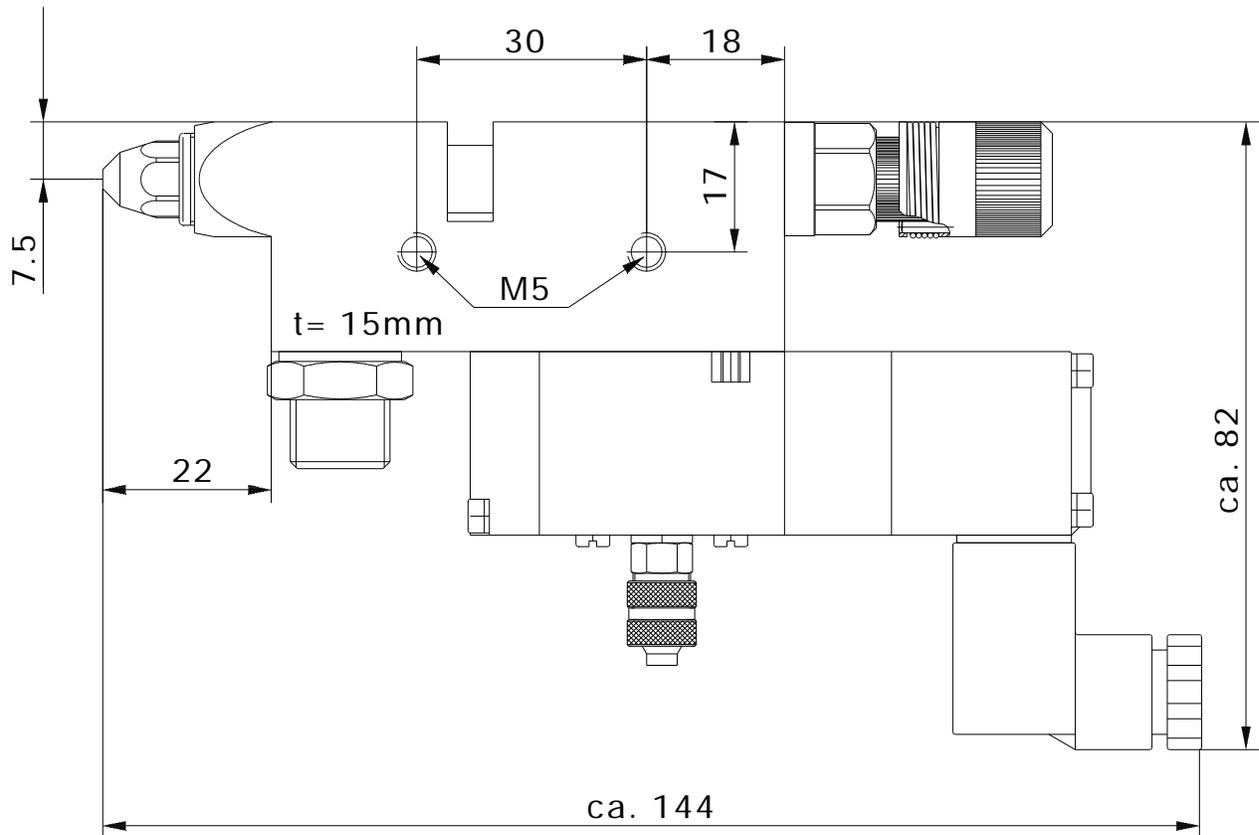
When inserting o-rings and gaskets, do not use any sharp or pointed matallic implements. Mainly the gasket as a very precise and sensitive component is not able to stand impacts.

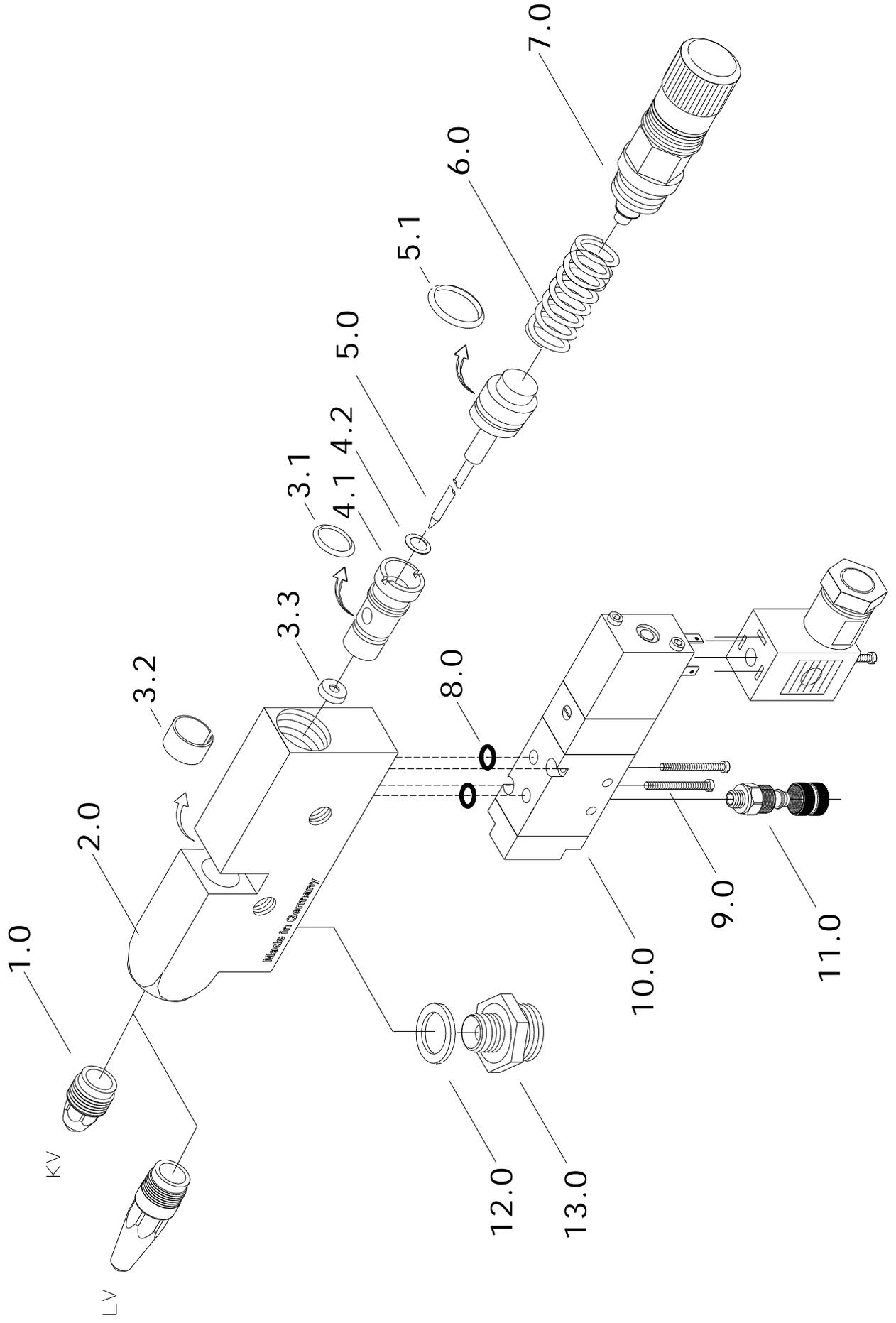
Technical alterations reserved. February 2003.

MMKD-40 LV/LVP



MMKD-40 KV





6. Sparepartslist

draw.-no.	part-no.	Qty.	description
1.0	*	1	nozzle, stainless steel
2.0	510064	1	valve body MMKD 400, complete
3.0	640102	1	gasket set
3.1	640021	1	o-ring 6,07 x 1,78mm / Viton
3.2	640101	1	protecting cover, ø 10 x 6mm
3.3	640004	1	Variseal 2,65 x 2,0 x 2,8mm
4.0	810018	1	retainer, complete, 11 x 21mm
4.1	810017	1	retainer, 11 x 21mm
4.2	640026	1	o-ring 2,90 x 1,78mm
5.0	*	1	needle, complete
5.1	640007	1	o-ring 7,65 x 1,78mm / Viton
6.0	820020	1	spring 1,1 x 22mm (0 - 30 bar Materialdruck)
6.0	820024	1	spring 1,2 x 21,5mm (30 - 100 bar Materialdruck)
7.0	900008	1	ratchet assembly, ø 15 x 45mm, complete
7.1	610093	1	regulating knob, ø 15 x 45mm
7.2	220104	1	lock screw, wrench size 13 x 26mm
7.3	640027	1	o-ring 4,47 x 1,78mm / Viton
7.4	320022	1	straight pin DIN 6325 1,5 x 8
7.5	820000	1	spring 0,8 x 8,5mm
7.6	610017	1	screw DIN 913 M3 x 3
7.7	320098	1	stop unit core, 6,6 x 4 x 5mm
8.0	640077	2	o-ring 5 x 1 / Viton
9.0	610004	2	screw M2,5 x 30
10.0	*	1	solenoid valve, with plug
11.0	220089	1	pipe fitting, straight, wrench size 8 x 19mm
12.0	640058	1	copper gasket, 10x16x1,5mm
13.0	220114	1	double nipple, stainless steel, 1/4"AG-1/8"AG

* Please find part-numbers on next pages.

When ordering needles and nozzles, please specify dimension.

Available dimensions: 0,2 / 0,3 / 0,4 / 0,5 / 0,6 / 0,7 / 0,8 / 1,0 / 1,2 / 1,5 / 2,0 mm Ø

6.1 part-numbers for nozzles, needles and solenoid valves

*nozzle, LV, stainless steel

draw.-no.	part-no.	description
1.0	210132	nozzle, LV, 0,2 mm, stainless steel
1.0	210133	nozzle, LV, 0,3 mm, stainless steel
1.0	210134	nozzle, LV, 0,4 mm, stainless steel
1.0	210102	nozzle, LV, 0,5 mm, stainless steel
1.0	210136	nozzle, LV, 0,6 mm, stainless steel
1.0	210137	nozzle, LV, 0,7 mm, stainless steel
1.0	210138	nozzle, LV, 0,8 mm, stainless steel
1.0	210139	nozzle, LV, 1,0 mm, stainless steel
1.0	210140	nozzle, LV, 1,2 mm, stainless steel
1.0	210141	nozzle, LV, 1,5 mm, stainless steel

*nozzle, KV, stainless steel

draw.-no.	part-no.	description
1.0	210143	nozzle, KV, 0,2 mm, stainless steel
1.0	210144	nozzle, KV, 0,3 mm, stainless steel
1.0	210145	nozzle, KV, 0,4 mm, stainless steel
1.0	210146	nozzle, KV, 0,5 mm, stainless steel
1.0	210147	nozzle, KV, 0,6 mm, stainless steel
1.0	210148	nozzle, KV, 0,7 mm, stainless steel
1.0	210149	nozzle, KV, 0,8 mm, stainless steel
1.0	210150	nozzle, KV, 1,0 mm, stainless steel
1.0	210151	nozzle, KV, 1,2 mm, stainless steel
1.0	210152	nozzle, KV, 1,5 mm, stainless steel

*nozzle, LVP, stainless steel

draw.-no.	part-no.	description
1.0	210177	nozzle, LVP, 0,3 mm, stainless steel
1.0	210178	nozzle, LVP, 0,4 mm, stainless steel
1.0	210179	nozzle, LVP, 0,5 mm, stainless steel
1.0	210180	nozzle, LVP, 0,6 mm, stainless steel
1.0	210181	nozzle, LVP, 0,8 mm, stainless steel
1.0	210182	nozzle, LVP, 1,0 mm, stainless steel
1.0	210183	nozzle, LVP, 1,2 mm, stainless steel

*needle, LV / LVP, tungsten carbide

draw.-no.	part-no.	description
5.0	110222	needle, LV 0,4mm, complete, for nozzle 0,2mm
5.0	110223	needle, LV 0,5mm, complete, for nozzle 0,3mm
5.0	110224	needle, LV 0,6/0,7mm, complete, for nozzle 0,4mm
5.0	110225	needle, LV 0,8/1,0mm, complete, for nozzle 0,5/0,6/0,7mm
5.0	110349	needle, LV 1,0mm, complete, for nozzle 0,8mm
5.0	110227	needle, LV 1,2mm, complete, for nozzle 1,0mm
5.0	110228	needle, LV 1,5mm, complete, for nozzle 1,2mm
5.0	110229	needle, LV 2,0mm, complete, for nozzle 1,5mm

*needle, KV, tungsten carbide

draw.-no.	part-no.	description
5.0	110231	needle, KV 0,4mm, complete, for nozzle 0,2mm
5.0	110232	needle, KV 0,5mm, complete, for nozzle 0,3mm
5.0	110233	needle, KV 0,6/0,7mm, needle, for nozzle 0,4mm
5.0	110234	needle, KV 0,8/1,0mm, complete, for nozzle 0,5/0,6/0,7mm
5.0	110347	needle, KV 1,0mm, complete, for nozzle 0,8mm
5.0	110235	needle, KV 1,2mm, complete, for nozzle 1,0mm
5.0	110236	needle, KV 1,5mm, complete, for nozzle 1,2mm
5.0	110237	needle, KV 2,0mm, complete, for nozzle 1,5mm

*solenoid valve 3/2-way

draw.-no.	part-no.	description
10.0	150012	solenoid valve 24V / DC / 1,6W
10.0	150021	solenoid valve 220V / 50Hz / 1,5W

7. Technical data

measurements:

LV-version = approx. 162mm x 15mm x 82mm

KV-version = approx. 144mm x 15mm x 82mm

weight = approx. 375 g

control air pressure = 5 - 6 bar

material pressure = max. 100 bar

gaskets = Viton

Special design on request. Technical alterations reserved. February 2003.

8. Manufacturer Declaration

The extrusion valves **MMKD-40 KV/LV/LVP** are 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

03.02.2003

