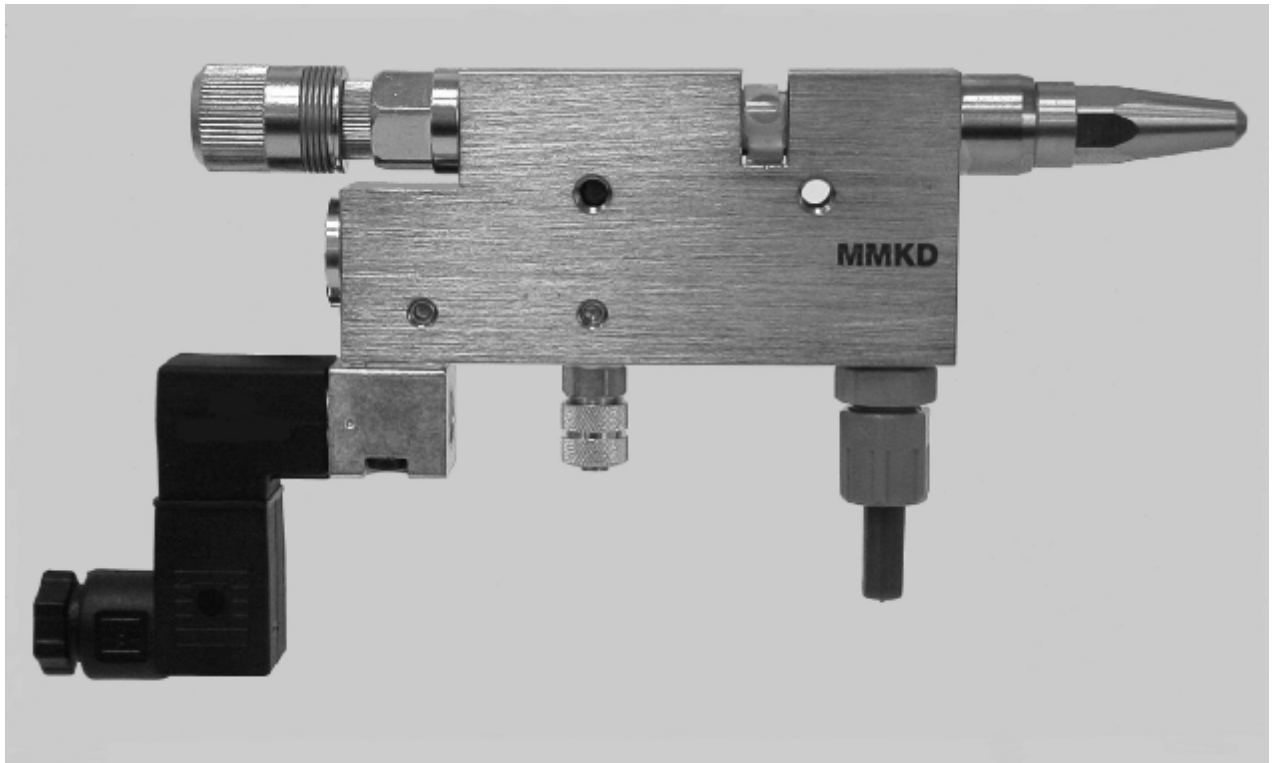


Operating Manual for extrusion valve MMKD-30 KV/LV



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

1 Introduction

The extrusion valves of series **MMKD 30 KV/LV** 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 3/2 way solenoid valve and the integrated control bold, 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-30 KV/LV** 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-30** 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-30 has an extrusion jet (without atomizing air). The extreme short control air distance, reached throw the direct mounted 3/2-way solenoid valve (15.0.0), gives this valve very fast and exact needle intermission cycles up to 40 - 50 cycles per second. The piston receives alternately air pressure. When control air is switched off, a spring close the needle into the nozzle. This spring is designed for material pressures up to 35 bar. For material pressures more than 35 bar a stronger spring is needed. Operation of control air throw the direct mounted 3/2-way solenoid valve (15.0.0).

4 Installation and opening operations

The MMKD-30 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 (4.1.0) 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.: 21.0.0)
2. Hose for material to connection 1/4" (22.2.0)

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-30 KV/LV** is working with a control air pressure of 6 bar (up to material pressures of 50 bar). When using more than 50 bar material pressure, a control air pressure of 8 bar is required. The material pressure should be between 1 - 100 bar (maximum). For material pressures more than 35 bar a stronger spring is needed. 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 (9.1.2). Turning this knob in

- anticlockwise turn : more fluid
- clockwise turn : less fluid

One revolution of regulating knob (9.1.2) 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 (9.3.2) can't seal the lock (9.2.2).



IMPORTANT !

The maximum fluid outlet is already reached, when no further ratchets are noticeable. Do not Turn the regulating knob (9.1.2) in anticlockwise turn any further.



IMPORTANT !

To avoid damages to nozzle and needle, adjust decrease of fluid flow (turning regulating knob 9.1.2 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. 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.

The extrusion valves of series **MMKD-30 KV/LV** 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 and nozzle 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 (at least 6 bar).
- 3) Check, if bolt (12.0.0) moves. Air-release holes on under-side of valve must give off air alternately. Noise control: metallic click noise of rear piston (12.1.0) on lock screw (11.1.0).
- 4) Check, if o-ring (6.2.0) or o-ring (7.4.0) are defect.
- 5) Check, if needle (7.0.0) is stucked together within retainer (6.0.0).
- 6) Check, if minimum of travel of needle is set.

5.3 Changing bolt (12.0.0)

Disconnect all connections from air pressure and material pressure supply. Open lock screw (11.1.0). Spring pressure of spring (10.1.0) brings the bolt (12.0.0) out of the valve body. Replace bolt (12.0.0) only with new gaskets and o-rings.

Re-assemble: First put the spring (10.1.0) in valve body. After this put front bolt (12.4.0), rear piston (12.1.0) and lock screw (11.1.0) in valve body in this order and fix all parts tight.

5.4 Changing needle (7.0.0) and nozzle (2.1.0)

Unscrew ratchet assembly (9.0.2). Take out needle spring (8.1.0) and pull out needle (7.0.0) on back side of needle piston by using a flat tong. Unscrew nozzle (2.1.0) with wrench SW 10. 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.

5.5 Changing retainer (6.0.0)



IMPORTANT !

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

Unscrew ratchet assembly (9.0.2). Take out needle spring (8.1.0) and pull out needle (7.0.0) on back side of needle piston by using a flat tong. Then using a screwdriver loosen retainer (6.0.0) till end of thread. As retainer can not go through the thread of valve body by itself because of o-ring (5.3.0), 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.

5.6 Replacing new gaskets

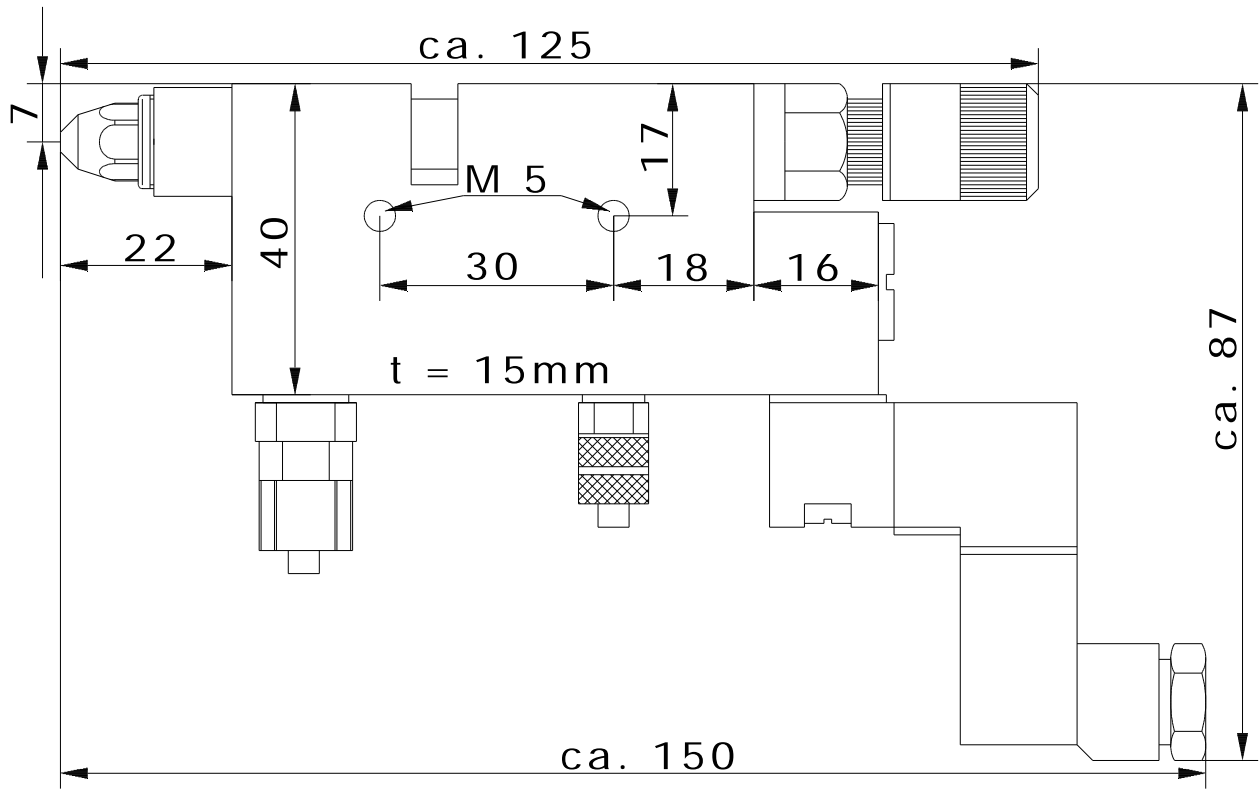


IMPORTANT !

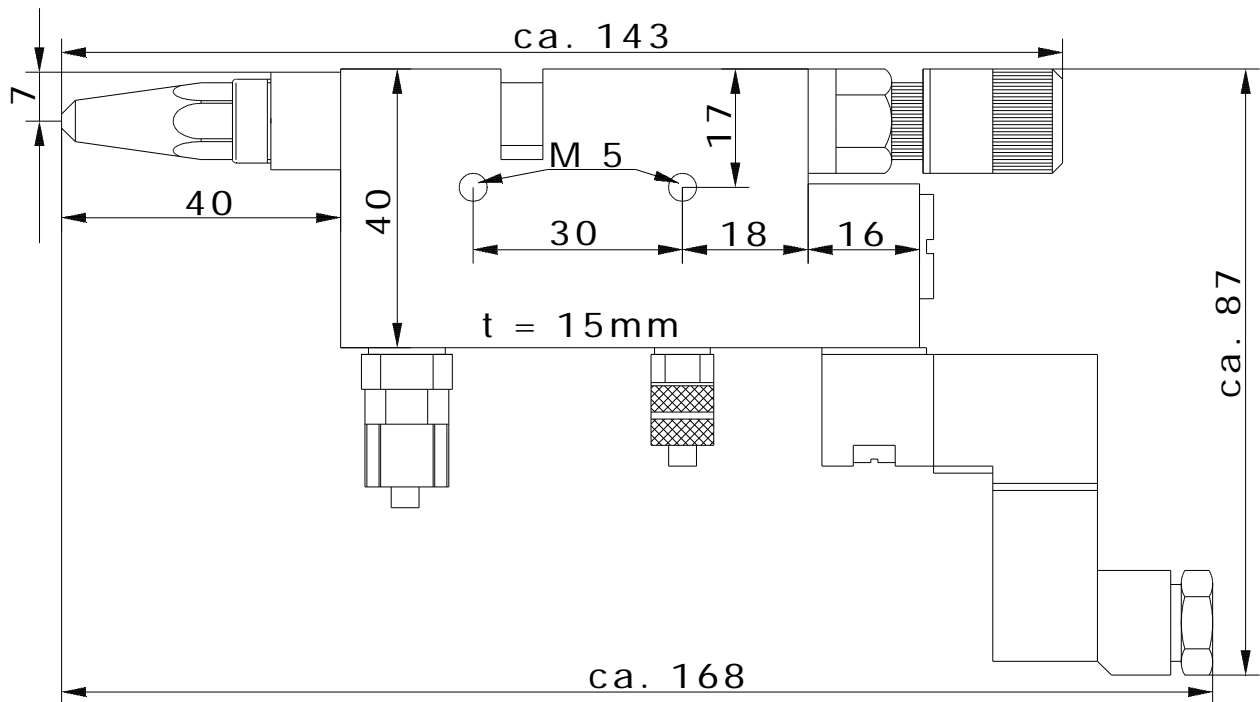
Do not use metallical aid to remove and insert gaskets and gasket seats !
Gaskets and gaskets seats can be damaged.

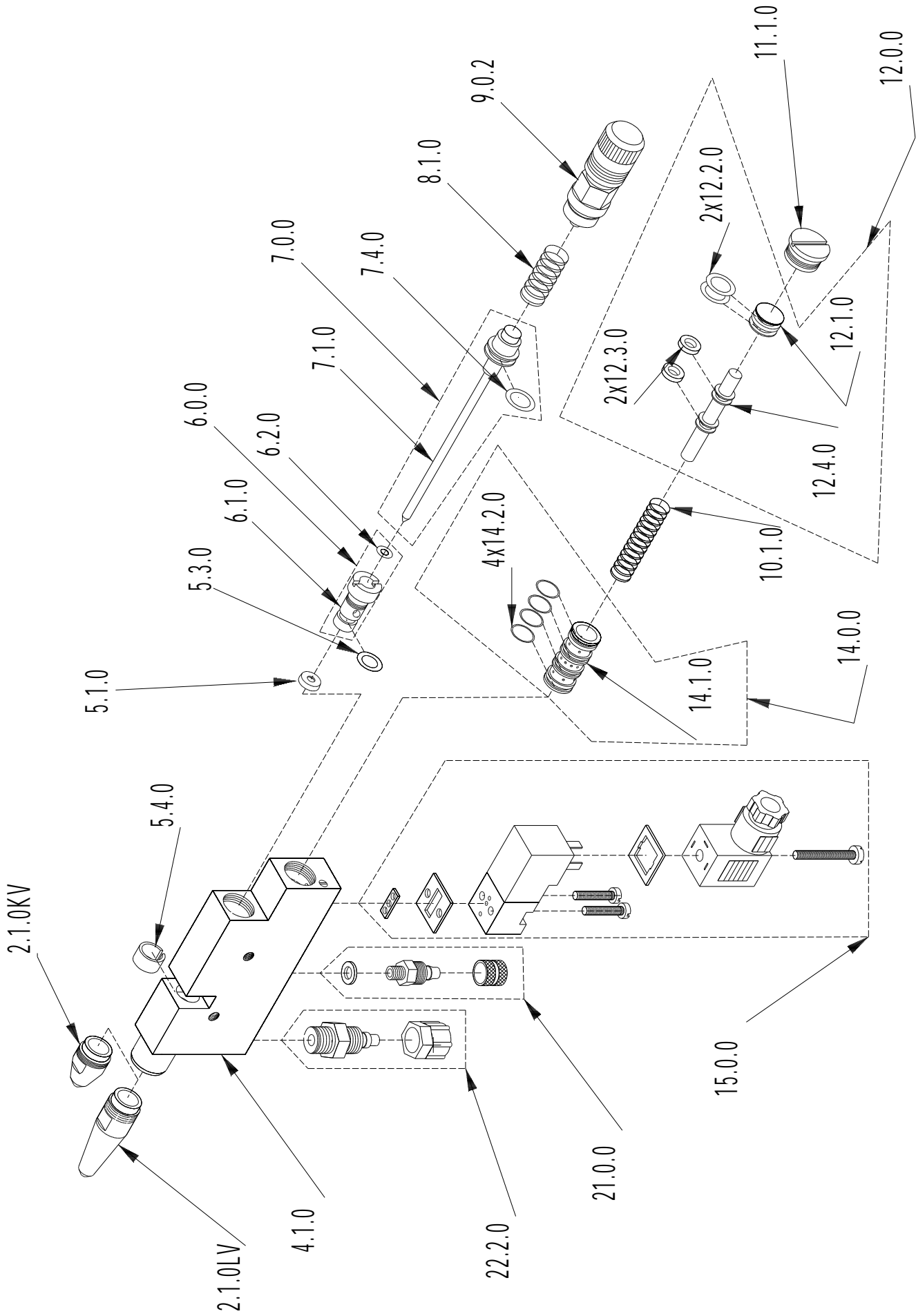
In case a new retainer (6.0.0) is not available to be replaced as a complete unit, the used retainer has to be cleaned thoroughly especially the o-ring groove and seats. These should also be greased slightly. O-ring (6.2.0) is to be placed first into ground of the rear retainer bore. O-ring (5.3.0) then 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 "nozzle". 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. Completed retainer (6.0.0) slightly greased then is put back into housing and without turning movement by means of a screw driver is to be carefully pushed through housing thread observing outer o-ring (5.3.0). Lastly screw retainer into housing thread (tighten only slightly).

MMKD-30 KV



MMKD-30 LV





6. Sparepartslist

draw.-no.:	part-no.	Qty.	Description
2.1.0	*	1	nozzle, stainless steel
4.1.0	510040	1	valve body MMKD 30, complete
5.0.0	640102	1	gasket set
5.1.0	640004	1	Variseal 2,65 x 2,0 x 2,8mm
5.3.0	640021	1	o-ring 6,07 x 1,78mm / viton
5.4.0	640101	1	protecting 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, complete, tungsten carbide
7.4.0	640001	1	o-ring 7,65 x 1,78 / Viton
8.1.0	820020	1	spring 1,1 x 22mm (0 - 30 bar material pressure)
8.1.0	820024	1	spring 1,2 x 21,5mm (30 - 100 bar material pressure)
9.0.2	900008	1	ratchet assembly, complete, ø 15 x 45mm
9.1.2	610093	1	regulating knob, ø 15 x 45mm
9.2.2	220104	1	lock, wrench size 13 x 26mm
9.3.2	640027	1	o-ring 4,47 x 1,78mm / Viton
9.4.2	320022	1	straight pin, DIN 6325 1,5 x 8
9.5.2	620017	1	circlip, DIN 6799 RA 2,3
10.1.0	820037	1	spring 0,9 x 35mm
11.1.0	610097	1	lock screw, Ø 15 x 8mm, with slit
12.0.0	800017	1	bolt, complete
12.1.0	710009	1	rear piston, Ø 10,8 x 8mm
12.2.0	640001	2	o-ring 7,65 x 1,78 / Viton
12.3.0	640028	2	Quad-ring 4,47 x 1,78 / Viton
12.4.0	320099	1	front bolt, brass, Ø 7,8 x 41,5mm
13.1.0	610096	1	screw DIN 417 M3 x 8
14.0.0	320101	1	sleeve, complete
14.1.0	320100	1	sleeve, brass, Ø 10,8 x 25mm
14.2.0	640035	4	o-ring 8 x 1/ Viton
15.0.0	*	1	solenoid valve, with plug
21.0.0	220089	1	connection M5
22.2.0	220022	1	connection 1/4"

* 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
1.0	210142	nozzle, LV, 2,0 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
1.0	210153	nozzle, KV, 2,0 mm, stainless steel

* needle, LV, tungsten carbide		
draw.-no.	part-no.	description
5.0	110221	needle, LV 0,2/0,3mm, complete
5.0	110222	needle, LV 0,4mm, complete
5.0	110223	needle, LV 0,5mm, complete
5.0	110224	needle, LV 0,6/0,7mm, complete
5.0	110225	needle, LV 0,8/1,0mm, complete
5.0	110227	needle, LV 1,2mm, complete
5.0	110228	needle, LV 1,5mm, complete
5.0	110229	needle, LV 2,0mm, complete

***needle, KV, tungsten carbide**

draw.-no	part-no.	description
5.0	110230	needle, KV 0,2/0,3mm, complete
5.0	110231	needle, KV 0,4mm, complete
5.0	110232	needle, KV 0,5mm, complete
5.0	110233	needle, KV 0,6/0,7mm, complete
5.0	110234	needle, KV 0,8/1,0mm, complete
5.0	110235	needle, KV 1,2mm, complete
5.0	110236	needle, KV 1,5mm, complete
5.0	110237	needle, KV 2,0mm, complete

***solenoid valve 3/2-way**

draw.-no.	part-no.	description
10.0	150018	solenoid valve 24V / DC / 2,5W with plug
10.0	150019	solenoid valve 110V / 50Hz / 1,5W with plug
10.0	150020	solenoid valve 220V / 50Hz / 1,5W with plug

7. technical data

measurements:

LV-version = approx. 168mm x 15mm x ca. 87mm

KV-version = approx. 150mm x 15mm x ca. 87mm

weight = approx. 435 g

control air pressure = minimum 6 bar, from 50 bar material pressure = 8 bar

material pressure = max. 100 bar

gaskets = Viton

Special designs on request. Technical alterations reserved. January 2003.