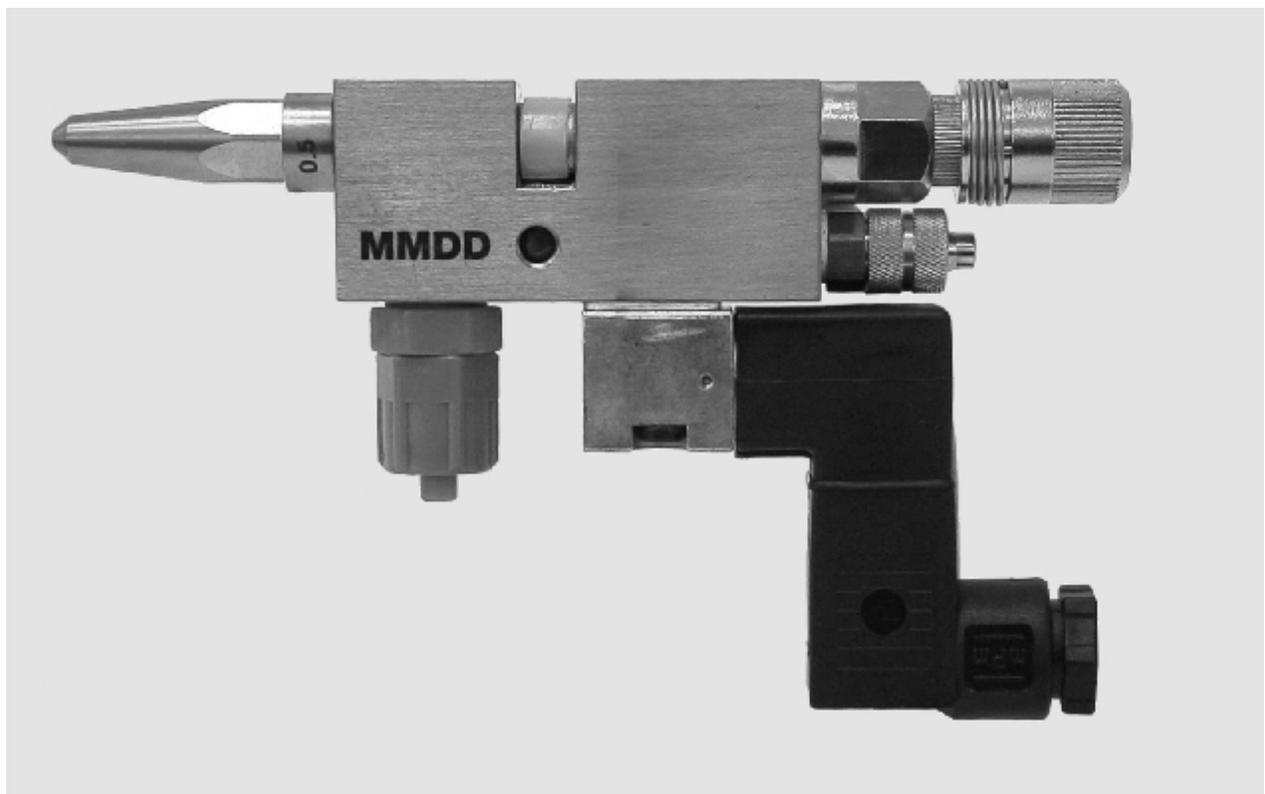


Operating manual for extrusion valve MMDD-LV



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

1 Introduction

The extrusion valves of series **MMDD** are designed and constructed for application of glues, adhesives, oils and other fluids. 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 **MMDD** 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 extrusion valve **MMDD** is a pneumatically controlled valve for the application of fluids as f.i. glues, adhesives, oils, fats, colours. The supply of fluid is to be obtained via pressure tank or pump. The **MMDD** has an extrusion jet (without atomizing air). The extreme short control air distance, reached through the direct mounted 3/2-way solenoid valve (draw.-no: 12.0.0) gives this valve very fast and exact needle intermission cycles. The needle piston receives to the larger piston surface control air pressure via the 3/2- way solenoid valve. This operation opens the needle. When control air pressure is switched off, the control air pressure, which gives constantly air pressure to the smaller piston surface, close the needle.

The needle spring is during normal working process not in function. This spring closes the needle only when complete air supply is defect or switched off. In this way it is guaranteed, that no fluid leaves the nozzle when air supply is defect.

The material pressure (1/8"-connection) should be as low as possible. Maximum material pressure is 10 bar. Intermittend use as well as continuous use is possible. Depending on application the control air pressure has to be suited to the intermission cycles. From 5 intermission cycles per second, the control air has to be at least 5 bar.

4 Installation

The **MMDD** 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 a drill-hole (thread M5). Vibration of the equipped machine to the valve should be limited as far as possible.

4.1 Hose connection and assembly

The two hoses must be connected as follows:

- control air (we recommend to use black hose) to connection M 5 (drawing no.: 10.0.0)
- fluid (we recommend to use transparent hose) to 1/8"-connection (draw.-no.: 11.0.0).

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

The extrusion valve **MMDD** needs 5 – 6 bar control air pressure. 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.

Intermittend use as well as continuous use is possible. Depending on application the control air pressure has to be suited to the intermission cycles and the material pressure. Under optimal working conditions, up to 40 intermission cycles are possible.

The quantity of fluid flow can be adjusted by the regulating knob (9.1.4). Turning this knob in anticlockwise turn = more fluid. One revolution of regulating knob gives 0,5mm more or less stroke.



IMPORTANT !

The quantity of fluid flow can be adjusted by the regulating knob (draw.-no.: 9.1.4).

Turning this knob in anti-clockwise turn = more fluid flow

Turning this knob in clockwise turn = less fluid flow

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



IMPORTANT !

To avoid damages to nozzle and needle adjust decrease of fluid flow (turning regulating knob 9.1.4 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.

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 and fluid 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 **MMDD** 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. 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 nozzle by putting this part only into solvent. If necessary use a 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

- 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 + 7.5.0) or o-rings (9.7.4) are in proper order.
- Check, if needle (7.0.0) is dirtied by f.i. glue residues or sticks within nozzle or within retainer.
- Check, if minimum of travel of needle is set.

5.3 Changing needle (7.0.0) and nozzle (2.1.0)

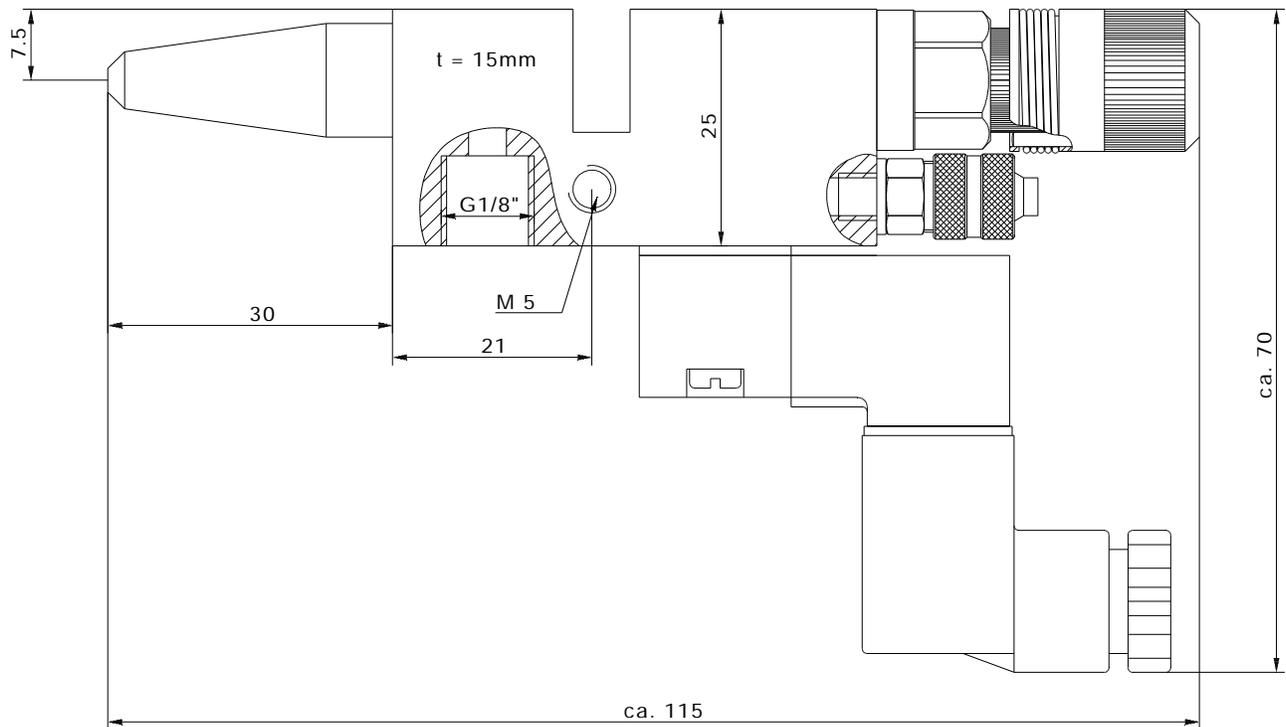
Unscrew ratchet assembly, complete (9.0.4). Unscrew nozzle (2.1.0). Pull out needle (7.0.0) from the front side (nozzle side) carefully to the rear side. Re-assemble new parts in reverse order slightly greased. It is not recommended to use old needles and nozzles because even slightly damaged needle shafts would immediately cause leakage in gaskets, especially gasket (5.5.0).

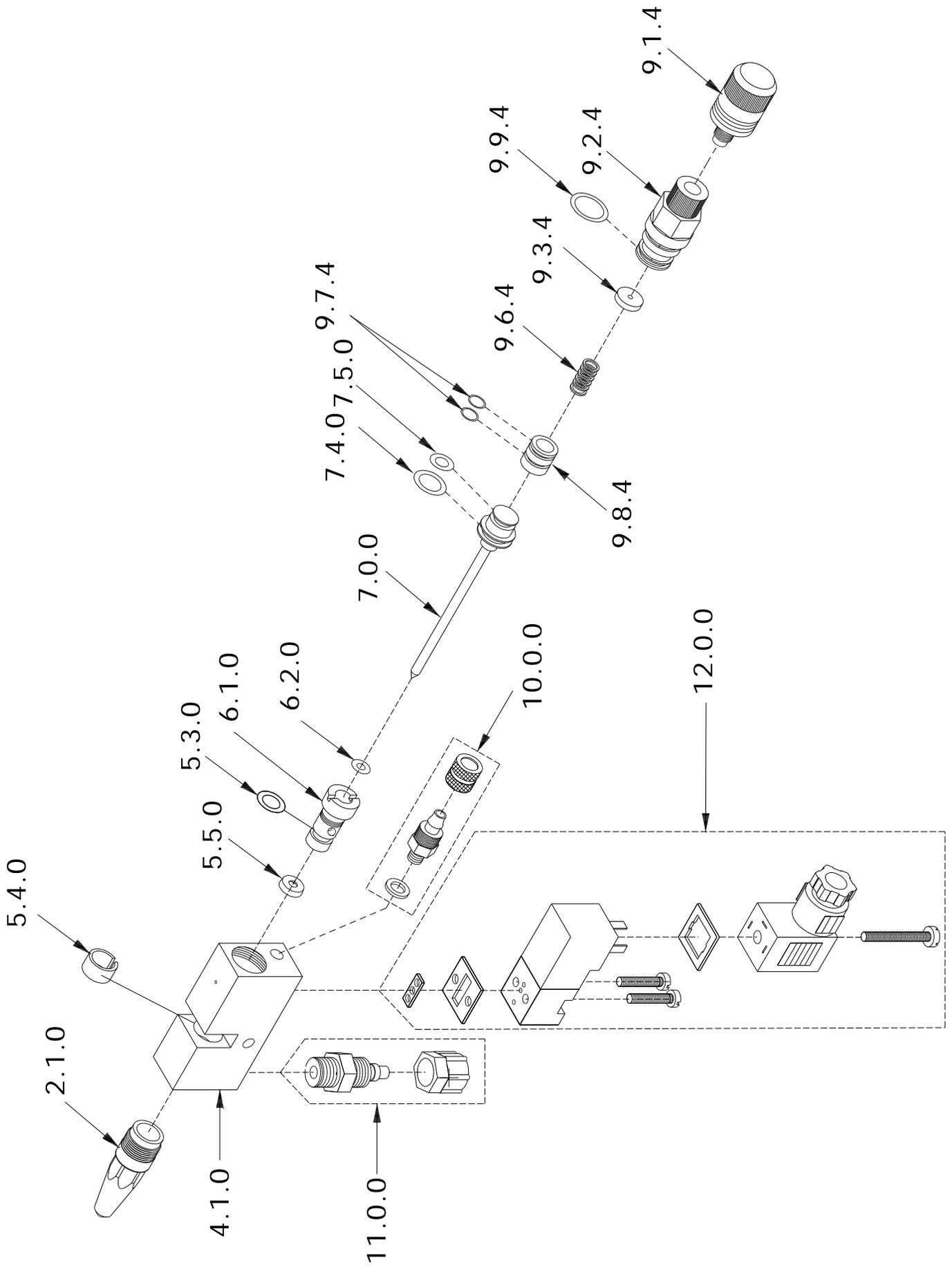
5.4 Changing retainer (6.0.0)

Unscrew ratchet assembly, complete (9.0.4). Unscrew nozzle (2.1.0). Pull out needle (7.0.0) from the front side (nozzle side) carefully to the rear side. 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 by means of a thin metal sheet of 0,5 - 1,0mm placed between valve body recess and retainer. After passing thread, retainer is accessible for taking out of housing.

5.5 Replacing new gaskets and o-rings:

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. Insert gasket (5.5.0) into the front retainer bore. This gasket is not symmetrical. The somewhat wider opening must be positioned to point to the front of valve i.e. after assembling retainer in direction "nozzle". Completed retainer (6.0.0) slightly greased then is put back into valve body (4.1.0) and 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). When inserting o-rings and gaskets, do not use any sharp or pointed metallic implements. Mainly the gasket (5.5.0) as a very precise and sensitive component is not able to stand impacts.





6.1 part numbers for nozzles, needles and solenoid valves

*nozzle, LV, stainless steel		
draw.-no.	part-no.	description
2.1.0	210132	nozzle, LV, 0,2 mm, stainless steel
2.1.0	210133	nozzle, LV, 0,3 mm, stainless steel
2.1.0	210134	nozzle, LV, 0,4 mm, stainless steel
2.1.0	210102	nozzle, LV, 0,5 mm, stainless steel
2.1.0	210136	nozzle, LV, 0,6 mm, stainless steel
2.1.0	210137	nozzle, LV, 0,7 mm, stainless steel
2.1.0	210138	nozzle, LV, 0,8 mm, stainless steel
2.1.0	210139	nozzle, LV, 1,0 mm, stainless steel
2.1.0	210140	nozzle, LV, 1,2 mm, stainless steel
2.1.0	210141	nozzle, LV, 1,5 mm, stainless steel
2.1.0	210142	nozzle, LV, 2,0 mm, stainless steel

*needle, LV, tungsten carbide		
draw.-no.	part-no.	description
7.0.0	110339	needle, LV 0,2/0,3mm, complete tungsten carbide
7.0.0	110340	needle, LV 0,4mm, complete tungsten carbide
7.0.0	110341	needle, LV 0,5mm, complete tungsten carbide
7.0.0	110342	needle, LV 0,6/0,7mm, complete tungsten carbide
7.0.0	110343	needle, LV 0,8/1,0mm, complete tungsten carbide
7.0.0	110344	needle, LV 1,2mm, complete tungsten carbide
7.0.0	110345	needle, LV 1,5mm, complete tungsten carbide
7.0.0	110346	needle, LV 2,0mm, complete tungsten carbide

* solenoid valve 3/2-way		
draw.-no.	part-no.	description
12.0.0	150018	24V / DC/ 2,5W, with connector
12.0.0	150019	110V / 50Hz / 1,5W, with connector
12.0.0	150020	220V / 50Hz / 1,5W, with connector