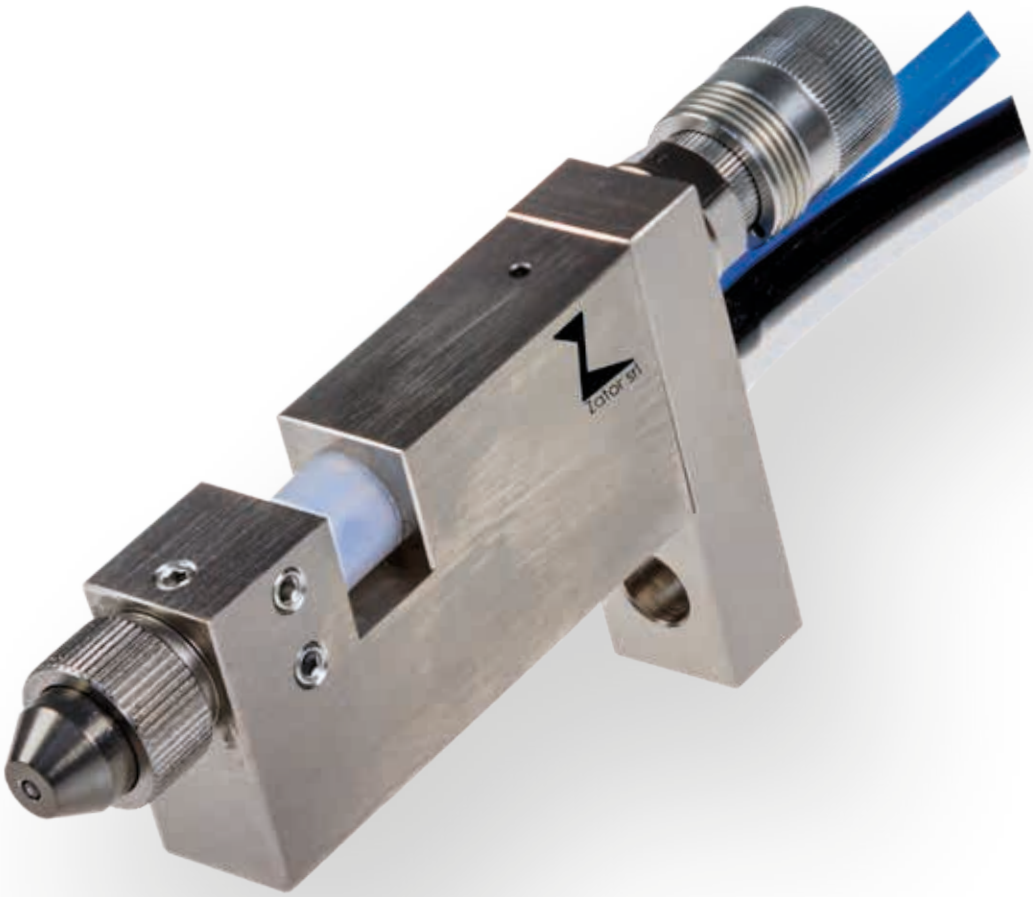
MMZF

pneumatic spray valve



Zator
gluing solutions

USER AND MAINTENANCE MANUAL

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USER AND MAINTENANCE MANUAL
MMZF_v03

MAY 2023

UE Declaration of Conformity CE

Manufacturer:
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DECLARES
Under its responsibility that the pneumatic spray valve:

Model	MMZF	Year of manufacture	

Is in compliance with UE directives, with relation to the following ones and/or parts of them applicable to this product:

- Directive 2006/42/CE of European Parliament and Council of the 17th of May 2006 regarding to machines and that modify directive 95/16/CE (recasting)
- Directive 2014/35/UE of European Parliament and Council of the 26th of February 2014 regarding the harmonization of the UE Countries laws about the the making available on the market of electrical equipment intended to be used within certain voltage limits (recasting)
- Directive 2014/30/UE of European Parliament and Council of the 26th February 2014 regarding the harmonization of the UE Countries laws about the electromagnetic compatibility (recasting)

Cusano Milanino **Legal Representative**

ZATOR S.r.l.

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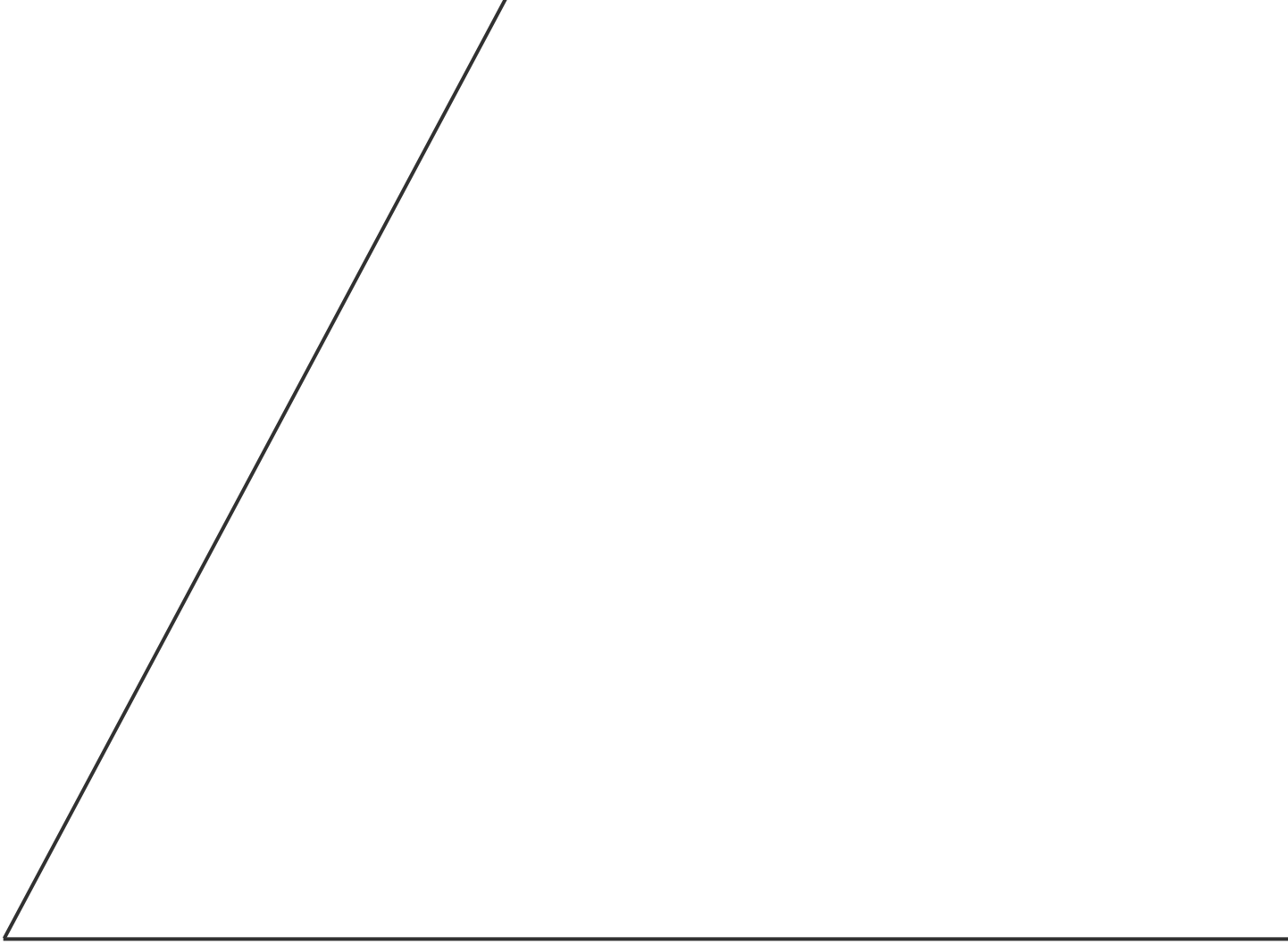


USER AND MAINTENANCE MANUAL

pneumatic spray valve MMZF

1 GENERAL INFORMATION

1.1 Introduction

This manual is an essential part of the pneumatic valve and is destined to trained and well-informed personnel, which is aware of the machine performance at the risk conditions to which it may be exposed.
This document supposes that in the plants where the valve is destined, are complied the present norms of safety and hygiene of the work.
Zator Srl won't be liable for actions or improper connections made by unqualified and unformed personnel.
Instructions, drawings and documentation contained in this manual are of reserved technical disposition, only for Zator Srl property and may be not reproduced in any way, neither in full or partially reproduction; not translated into another language, or transmitted in any electronic or mechanical means or form, without written permission of Zator Srl.
The data and values expressed in the manual are approximate and variable depending on fluids, applications and methods of use.
Zator Srl doesn't assume any responsibility regarding the accuracy of the contents of this manual.
The drawings and technical data in this document is updated to the date of their publication and Zator Srl reserves the right to change, without notice, the contents of this manual.
It is therefore forbidden for Technician and Operators of the maintenance to use this manual for different purposes from those relatives to the care and maintenance of equipment in question.
This manual includes the installation, use and maintenance norms of the pneumatic valve in safety.

Test in production workshop

The manufacturer guarantees the valve, that this document refers, has been inspected and tested by his production workshop.

1.2 Warranty

This warranty is valid for 12 months from the actual delivery.
During the warranty period Zator Srl is undertakes to remove in the necessary time the obvious faults and flaws of material and/or production, on condition that machine or equipment has been used properly, according to the best rules of behaviour and maintenance provided in this manual.
The flawed parts under warranty are fixed or replaced free from Zator Srl in the time compatibly necessary, understood that the Zator Srl is exempted from each responsibility for any title, while the buyer give up to ask damages or costs, including those resulting from the temporary not use of the purchased machinery for all the time is necessary to put it back in efficiency; The transport and/or the forwarding costs, the outward and the return trip costs relative to the operation by the Zator's technicians in the Buyer address are always on charge of the buyer.
The labor costs relative to the operation of the Zator's technicians in the Buyer address for the removal of flawed parts under warranty, are on charge of Zator Srl, except these cases when the nature of the flaw can be easily removed on place by the Buyer.
This commitment of Zator Srl excludes each other warranty effects provided by the law.
The warranty for the replaced or repaired spare parts of the pneumatic valve finishes the same day of the warranty expiration date of the pneumatic valve, the replaced part warranty however doesn't has lifetime less than three months after its installation.
Replaced parts during the warranty period by the seller are free acquired in the same place with new parts.
Are excluded from the warranty all the tools and consumable materials, possibly supplied by Zator Srl with the machine.
It are excluded and renounced by the buyer every pretensions of items/people damages reimbursement on charge to Zator Srl, for any titles, even if the damages were depending from manufacture or material flaws. It's of equal excluded and given up any reimbursement for people and/or items damages depending on the practise of the pneumatic valve. Parts replaced free remain of Zator Srl property.
Elapsed the warranty period every operation will be on charge to the buyer.

Application fields

- Packaging machines
- Paper converting industry
- Printing machines
- Tobacco industry
- Assembly industry
- Food industry

Condemnation of conformity flaw - Goods reception

The original configuration of the pneumatic valve never must be changed.
On goods reception, check that:

- The packaging is intact
- The exact correspondence of the commissioned material

In case of damages or wrong delivery contact immediately Zator Srl.
The buyer, on penalty of warranty decadence, must report in writing the flaw conformity or fault of the pneumatic valve to the seller, specifying in detail the nature, within eight days from their discovery.
In no case the condemnation of conformity flaw or fault may be validly made after the expiration date of the warranty terms.
Also the buyer decays from the warranty if doesn't allow each reasonable control that the seller requires.
It's excluded from this warranty the most damage caused to the machine by the failure timely condemnation to the seller of a conformity flaw or fault of the pneumatic valve.

1.3 Warranty restrictions

This warranty is only valid for products of new construction.
This warranty is limited to the reparation or replacement, by the seller, of each parts of the machine or supplied material that results flawed, after checking the existence of the flaw.
In no case the seller will be liable for every consequential or indirect flaws or otherwise derived from production cycle interruption or machine stoppage.
The seller is not liable for flaws of the pneumatic valve derived from the use of devices, equipments, etc. that are enquired and provided by the customer and installed on the machine to change its use compared to the original design.
The seller is not liable for every conformity flaws of the pneumatic valve or faults owed for the normal wear of those parts that, by their nature, are subject to rapid and continuous wear.
The seller also is not liable for damages resulting from improper use of the equipment and from the non-observance of the norms expected for the execution of the ordinary periodic maintenance.
The seller is not liable for conformity flaws of the pneumatic valve or faults that depends on changes, reparations, alterations or tampering attributed to the buyer and however non-authorized personnel of the buyer.
The costs relative to the wear materials necessary for test and restart the pneumatic valve are on charge of the buyer.

1.4 Maintenance service request

Contact:

Technical office of Zator S.R.L.

Via Galvani 11 - 20095 Cusano Milanino (MI) - Italy
e-mail: info@zator.it www.zator.it
Tel.: +39-0266403235 Fax.: +39-0266403215

Always forward the request in writing (fax or email) and give all the information to identify the machine object of the request:

- **Model**
- **Serial number**

Please refers to the frontispiece of this manual or directly to the nameplate on-board to the machine or to the serial number of the pneumatic valve.

1.5 Spare parts request

The customer is responsible to purchase original spare parts that guarantee him to keep efficient and safe the pneumatic valve.
The disassembly and assembly operations must be performed according to the manufacturer's instructions.
Contact the Technical Office of Zator Srl which will give to you the specifications to do the request of the parts and will provide the information about their replacement.
To order the spare parts is necessary to report completely all identification data of the pneumatic valve and those of spare part to be replaced.

The illustrations in this document are for example.

2 SAFETY RULES AND REGULATIONS

The pneumatic valve MMZF is designed and manufactured in compliance with the current safety standard. Only trained personnel is authorized to install and use the valve. For the pneumatic valve MMZF are provided only and exclusively the application fields describe in this manual. All data and parameters indicated in this manual must be respected. Any other use is considered improper.

All operations performed with the pneumatic valve MMZF must be carry out in compliance with the following current safety rules and regulations written in part:

1. Rules of fire prevention
2. Directive 2006/42/CE of European Parliament and Council of the 17th of May 2006 regarding to machines and that modify directive 95/16/CE (recasting)
3. Rule 2016/425/UE of the 9th of March 2016, about the personal protection equipment and that abrogates the directive 89/686/CEE of the Council

2.1 Safety and environment general informations

Before the start-up of the pneumatic valve the personnel must be adequately informed and trained on its use, direction and start-up process, as well as the safety norms to be performed and also observe how it is prescribed in this document and in other documents possibly attached to the microprocessor control. The employer must provide to instruct the personnel on the risks of injury, on safety devices and accident prevention general rules provided by the community directives and the legislation of the country where the microprocessor control is installed.

CAUTION: Always disconnect the power supply before proceed to carry out any maintenance or adjustment operations. Discharge the fluid pressure before to proceed to carry out any maintenance or adjustment operations.

2.2 P.P.E. Personal protective equipment

For personnel who will work on the pneumatic valve, for any functions (installation, assembly, demolition, maintenance and operation) they will be provided with appropriate P.P.E. - Personal protective equipment of type approved and certificate by C.E.:

- **anti-solvent gloves**
- **cut resistant gloves**
- **masks**
- **coverall (no floating coverall)**

CAUTION: The clothes of who will operate on the pneumatic valve for any functions must be in compliance with the essential safety requirements defined by the regulation 2016/425/UE of 9th of May 2016 and by the actual laws in the country of use.

2.3 Risks, protections, warnings and cautions

2.3.1 General safety

In accordance with the Machine Directive it means for:

DANGER ZONE = area within or near the pneumatic valve where the presence of an exposed person make a risk to the safety and health of himself.

EXPOSED PERSON = any person that is placed entirely or partially inside a danger zone.

OPERATOR = person who is appointed to install, operate, adjust, perform ordinary maintenance and clean the machine.

All risk areas of the pneumatic valve have been checked and consequently have been taken the necessary precautions to avoid risks to people and damage to the components of the electropneumatic valve.

Safety glossary

Intended purposes
By this term it refers to the use of the machine as described by the manufacturer.
For “intended purposes” also refers to the use of the unit through its design, its construction and function.

Secondary risks
Secondary risk are unavoidable despite all the preventive measures that are taken.

Competent personnel
A person is competent when it acquired sufficient knowledge in a specific field both through the professional instruction and with the experience. A competent person must get to know with the specific norms for the safety on work and for the accident prevention and generally with the technical knowledge rules.

Trained personnel
A person is trained when it is informed by a competent person about the activities it must perform and the risks relative to improper behaviour and, if necessary, it has received the required training. Also a trained person must be informed about the safety devices and protective measures.

Skilled personnel
A skilled person is a competent one or sufficiently trained.
The operator must be informed of the position and operation of all commands and features of the valve.
The maintenance and start-up operations must be performed by qualified technicians after properly setting up the valve.
The unauthorized tampering or replacement of one or more valve parts, the adoption of accessories that modify the original use of the valve and the purpose of different consumer product from those recommended in this manual, can become a cause of injury risks.
The protective devices must not be removed or tampered for the risk to reduce the accident prevention features of our products.

To highlight particular situations for the safety of the instrument, are used the following graphic symbols:

CAUTION and/or DANGER – Accident prevention rules for the operator

R. R. – RESIDUAL RISKS

WARNING - There is the possibility to damage the machine and/or its components
PRECAUTION - Further information about the operation in progress
NOTE - Provides useful information

2.3.2 Unavoidable dangers and risks unavoidable

On the electromagnetic valve also equipped with protection systems remain the following **R. R. RESIDUAL RISKS**:

A - Danger due to electricity in general

B - Danger due to inhalation of dangerous vapours to health and fire danger

C - Danger due to problems/malfunctions of the electromagnetic valve
This can lead an excessive increase of dispensing of glue as well as a fire danger or dangers due to inhalation of dangerous vapours to health.

D - Risk due to the projection of fluids under pressure
In case of improper maintenance of the hydraulic system parts.

E - Risk of fire
Prohibition of smoking and/or high temperature objects near the pneumatic valve.

2.3.3 Safety devices adopted

In order to safeguard the health and security of the exposed people, the machine is equipped with:

- Fixed guards: removable only by tools
- Mobile guards: depending on the model of pneumatic valve

The valve can be equipped with area delimiters that prevent operator access to dangerous areas (see **R.R.**).

2.3.4 More general safety precautions

CAUTION: The maintenance operations must be peremptorily carry out by qualified and authorized personnel.
Make sure the passages around the machine is not hindered by misplaced cables and dangerous for personnel.
The user must always put available to the operators, in the areas that require it, safety googles, gloves, and any other necessary protections; it must also make sure that these safeguards are being used.
The areas that require the use of protective clothing must be marked with warning signs and pictograms indicating the residual risk

CAUTION: is ABSOLUTELY FORBIDDEN to tamper or remove the plates and the protections on the pneumatic valve.
The manufacturer declines all responsibility for the safety of the pneumatic valve in case of omitted observance of the prohibition.

CE norms signage: examples of danger symbols


Danger


High voltage


Flammable


P
Toxic


C
Corrosive


O
Combustive agent

2.4 Environmental condition

Operating environmental conditions
The electropneumatic valve is designed to operate in a closed local, protected from the atmospheric agents, with all the safety requirements resulting from the laws in force.

Waste disposal
The buyer is responsible to follow the correct process and the norms in force in the country for the disposal of waste and residual material.

Disposal
The pick up of special and/or toxic-noxious waste must be committed with contract to specifically authorized companies and who do the transport materially must be in ownership of the required authorizations and must be turn out to be registered in the haulers register.
It's absolutely forbidden to throw waste in the environment.
For the disposal of the packaging, the user must follow the laws in force in the country of plant installation.

Fire material
There is no fire dangers by the operation of the pneumatic valve.

CAUTION: The customer must provide an appropriate fire-fighting system, evaluating its internal situation and respecting the laws in force. In case of fire, disconnect immediately the power switch to interrupt the power supply.

CAUTION: explosive atmosphere
The electropneumatic valve is not designed to operate in explosive atmosphere. It is forbidden to use the machine in an explosive atmosphere, even if only partially explosive.

Lighting
The customer is responsible for ensuring an appropriate lighting of the local where the valve is installed, according to the laws in force in your country and the EU directives.

Vibrations
The pneumatic valve doesn't make vibrations.

2.5 Installation - General instructions

Zator's products are manufactured in compliance with the laws in force during its construction.
The personnel will be trained and qualified to take advantage of the installed valve requirements.
The personnel must operate in a comfortable space that could be guarantee safety and hygiene for the operator.
In case of a different destination or necessity of use of the valve, it's appropriate to refer to the technical offices of the Zator Srl.

Goods in packaging
Outside the package are indicated all the information about the content identification and the safety movement:

- address of the sender and the addressee
- dimensions: length – width – height
- gross – net – tare weight
- annotations and pictograms (ex. brittle, handle with care, high)

CAUTION: The customer must check the condition of the goods upon its arrival.

Predispositions: choose the installation space
Without prejudice to specific dispositions, the customer will be provide to:
- Appropriate logistic arrangement for the placement and conduction of the pneumatic valve
- Power supply, including the protective conductor usually called "GROUNDED"
- Electrical equipment arrangement and possible pneumatic system
- Wear materials

For the electrical connection it is necessary to have a preferential line of power supply with the features listed in "technical features".

Pneumatic connections

CAUTION: The compressed air must be free of humidity. It is necessary to assemble on the compressor one or more automatic condensation outlet; the air must be filtered and dried out. Make sure that in the pneumatic circuit is not inserted any type of substances (ex. lubrificants or other substances).

2.6 Use of adhesives, glues or other fluids

The use of the valve with adhesives, glues or general fluids must be respect the following basic rules.

Before use a specific type of fluid check that:

- The fluid viscosity is compatible with the features of the valve
- The characteristics of the fluid meet the desired requirements
- The datasheet of the fluid provided by the manufacturer includes all the informations about the fluid such as: viscosity, applications, gluing time (for glues or adhesives) and storage
- The storage time of the fluid has not been exceeded
- The fluid has not been exposed to temperatures near or below than zero therefore it has deteriorated
- The packaging of the fluid are sealed

For the use of **special adhesives, glues or fluids** we recommend to contact the Zator company to verify the compatibility of the application.

Before use a different type of fluid clean accurately the valve to avoid possible contamination of the new fluid.

When used water-based adhesives of glues they are easily removable with water in their liquid state. However, when they harden is more difficult to remove it. For this reason, before long stop it is recommended to wash accurately the valve. Please refer to the maintenance program shown in this manual.

3 TECHNICAL DESCRIPTION

3.1 Valve functions

The *spray valve MMZF* has been planned and realized for being used on different types of machines.
Compact size spray valve for low viscosity glues, adhesives and fluids. Its design and versatility make it suitable for every application requiring the use of micro-spray valves. The valve is pneumatically controlled by two external solenoid valves, one for the control of the valve and one for the nebulization of the fluid. It's strength and compact size. It has the particularity to have nozzle and cap with anti-stick coating and a self-cleaning needle which ensure the long operation time of the valve. The micrometric adjustment allows a fine control of the glue quantity.

3.2 Technical data

Available nozzle diameters	from 0,5 to 1,5 mm
Air pressure control	min. 5 bar
Drive type	simple action
Maximum working pressure	6 bar
Nebulization pressure	from 0,5 to 2,5 bar
Weight	270 g

Spray

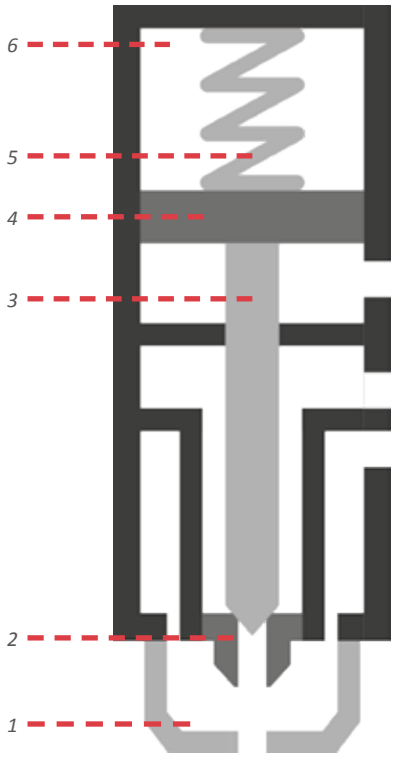
fluid types

- adhesives and glues
- inks
- paints
- lubrificants
- low viscosity fluids

3.3 Functioning description

The valve [3A] is composed mainly of:

1. Air cap
2. Nozzle
3. Needle
4. Air piston
5. Spring
6. Valve body

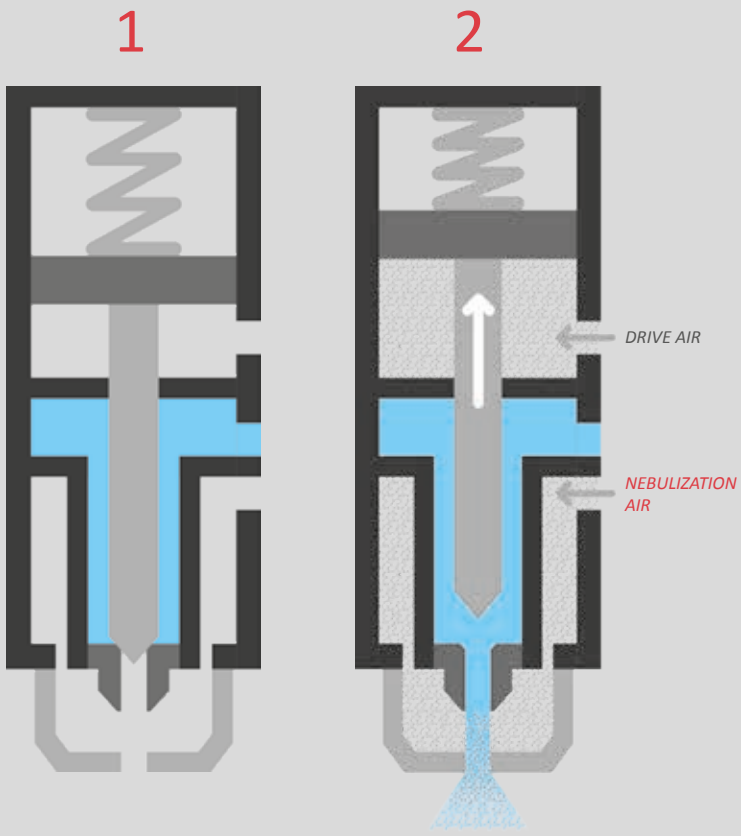


3A. Internal section diagram of the main components (for illustration only)

Functioning diagram

1 When the valve is not activated, the needle closes the nozzle seat, pushed by a spring, and stops the fluid under pressure to flow out from the nozzle hole.

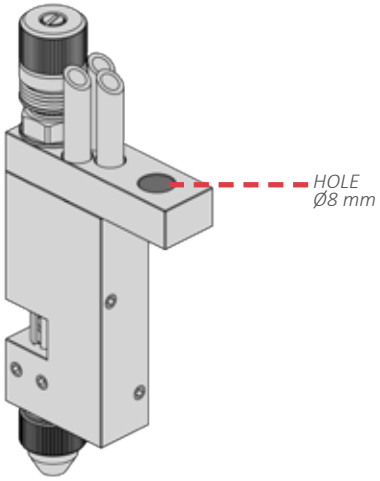
2 When the external solenoid valve that allow the drive air to flow inside the piston chamber is activated, this action activated the valve. Then the piston moves back together with the needle, allowing the fluid flow to come out from the nozzle. At the same time, the activation of the second external solenoid valve allows the nebulization air to flow inside the air cap where it mixes with the fluid and comes out from the air cap in spray form.



4 INSTALLATION

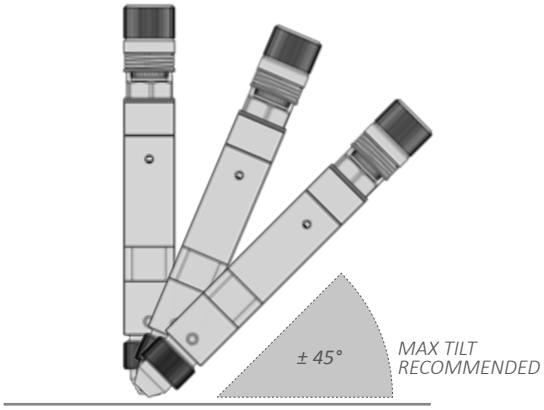
4.1 Fixing and placement of the valve

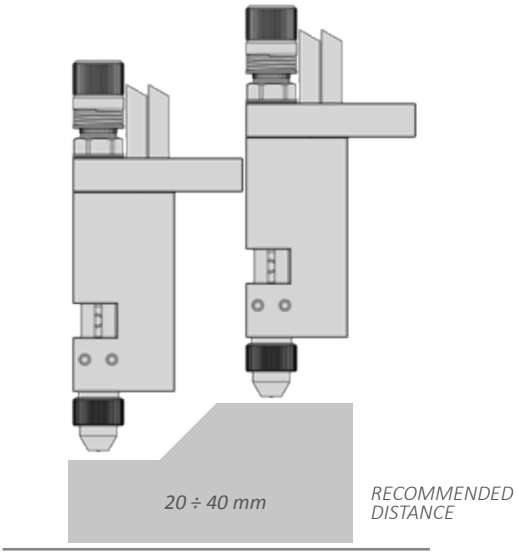
The MMZF valve must be fixed on a proper bracket through the **fixing plate** of the valve.
A vibration-free environment and a good accessibility for regulation, cleaning and maintenance and a good fixing of the valve to the support/bracket and of the latter to the machine must be guaranteed.



The **ideal working position** of the valve is vertical, with the nozzle facing downwards. It's possible to tilt the valve of ±45° degrees.
The **recommended distance** between the nozzle and the surface to be glue is between 20 and 40 mm.
Note that this distance defines the size of the application area of the nebulized fluid.
Increasing the distance between the valve and the surface to be glue/coat you will obtain a bigger area with a little quantity of applied fluid. Conversely, decreasing the distance between the valve and the surface, you will obtain a smaller area with a big quantity of applied fluid (for details see *section 5.3 - Nebulization adjustment*).

Other different positions are possible upon approval of the Zator.

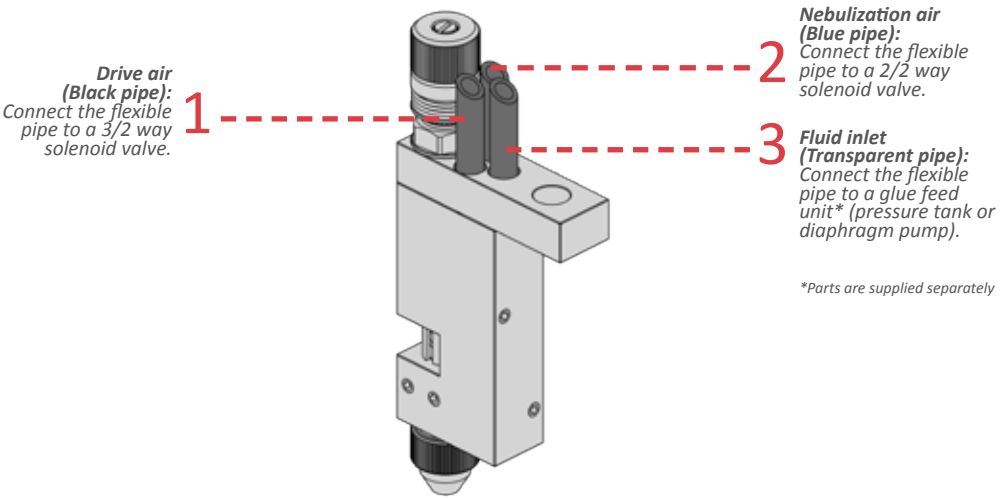


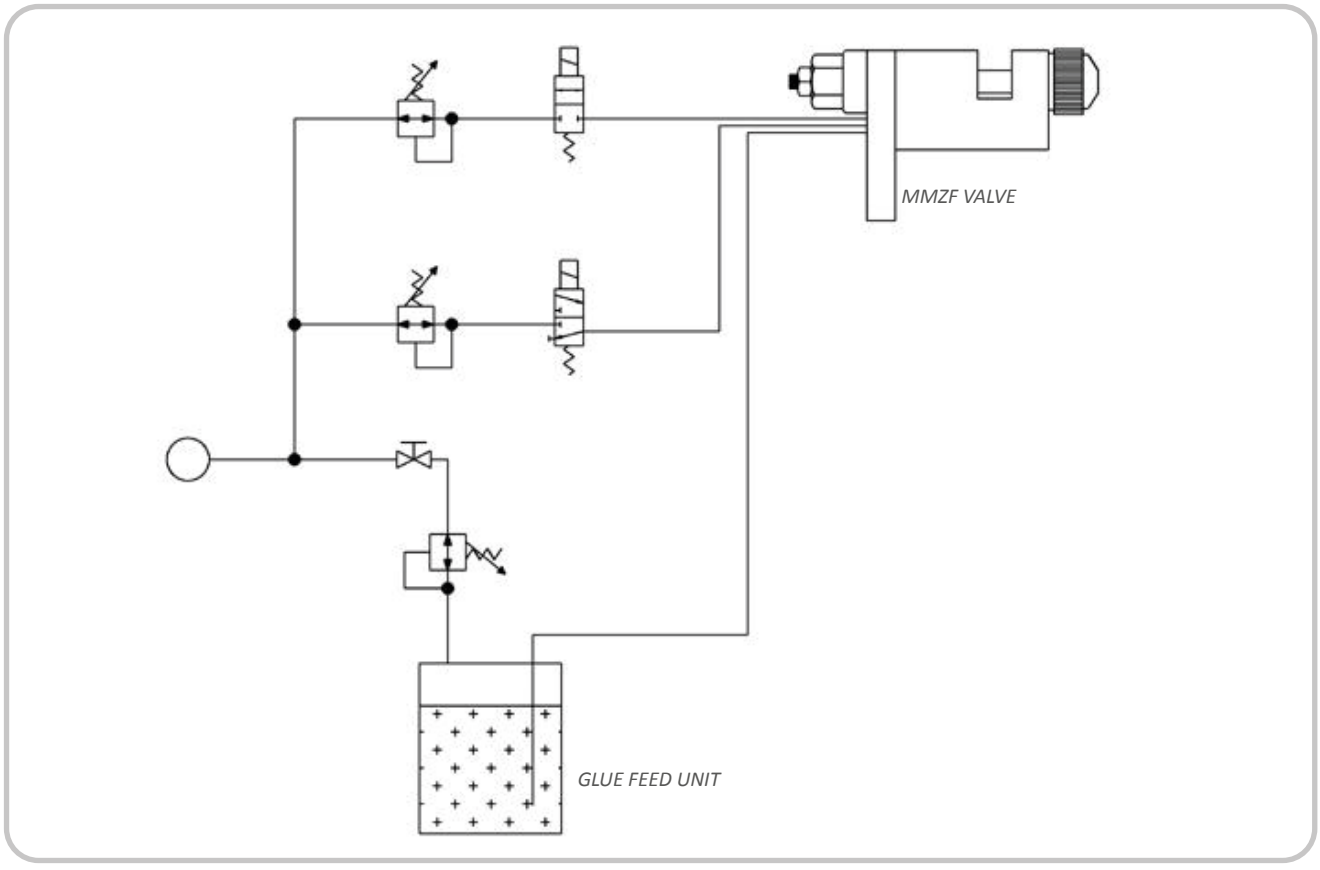


4.2 Installation diagram

Provide for all connections a pipes length such as to ensure a good accessibility to the valve to be able to easily carry out the operations of maintenance and cleaning.

The required connections for the functioning of the MMZF valve are:





4.3 Valve activation

The MMZF valve must be controlled by two independent solenoid valves:

- 3/2 way solenoid valve for the *activation* (black pipe);
- 2/2 way solenoid valve for the *nebulization* (blue pipe).

The drive pressure must be minimum 5 bar.
The nebulization pressure must be between 0,5÷2,5 bar.

The *nebulization air* must be **activated before** and **deactivated after** the *drive air* to avoid that the glue can dirty the nozzle and the air cap.

5 VALVE ADJUSTMENTS

5.1 Fluid quantity adjustment

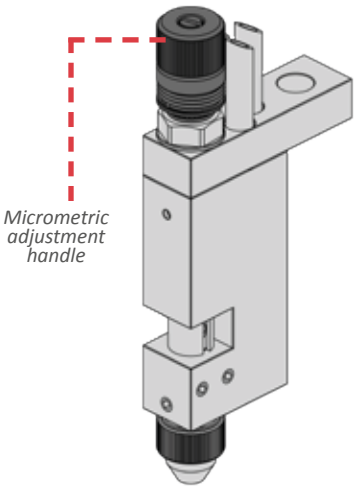
The adjustment of the dispensed fluid quantity (ex. glue) by the valve is determined by:

- The nozzle diameter: ***greater diameter → more fluid quantity***
- The fluid pressure: ***greater pressure → more fluid quantity***
- The needle travel adjustment: ***greater needle travel → more fluid quantity***

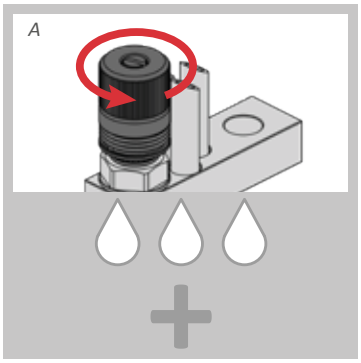
Operating on this points it's possible to adjust the dispensed fluid quantity.

5.2 Needle travel adjustment

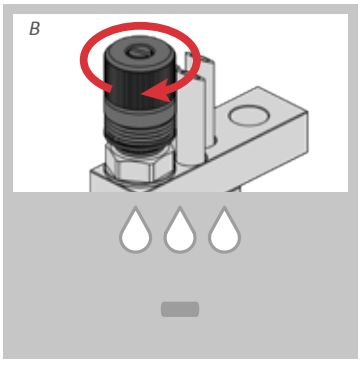
To adjust the needle travel, operate on the *micrometric adjustment handle* placed on the top of the valve. This handle allows to adjust the dispensed fluid quantity with a fine control.



A Turn **counter-clockwise** to **increase** the needle travel therefore the dispensed fluid quantity.



B Turn **clockwise** to **decrease** the needle travel therefore the dispensed fluid quantity. At the **end of the needle travel**, the valve is **completely closed**, therefore it doesn't dispense any fluid.



Don't tighten with excessive force the needle adjustment to avoid damage to the nozzle and needle.

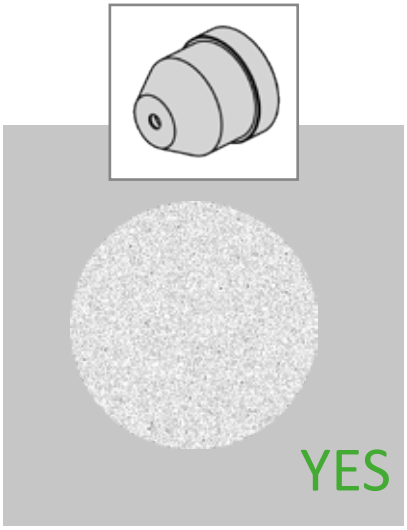
5.3 Nebulization adjustment

The adjustment of the nebulized fluid is determined by:

- Distance between the valve and the surface to be glue: see *section 4.1 - Fixing and placement of the valve*
- Dispensed fluid quantity: see *section 5.1 - Fluid quantity adjustment*
- The pressure of nebulization air

Operating on these points it's possible to adjust the size and geometry relative the application area of the nebulized fluid.

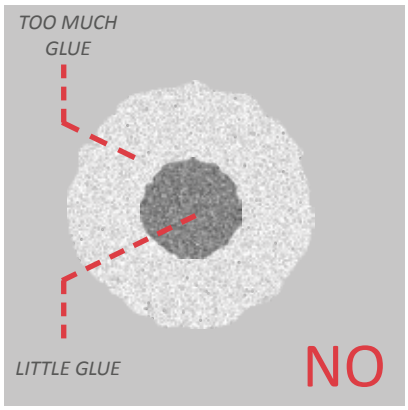
ROUND air cap



RIGHT AND OPTIMAL APPLICATION

LINEAR FAN PROFILE AND UNIFORM APPLICATION OF THE NEBULIZED FLUID

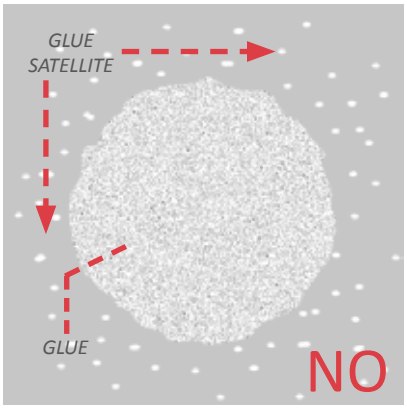
No operations needed



INDENTED FAN PROFILE

DEFECT→ WHAT TO DO

- The glue bounce from the paper dirtying the air cap and the nozzle → Decrease the nebulization air pressure
- Excessive glue quantity → Decrease the fluid pressure



INDENTED FAN PROFILE AND APPLICATION OF THE NEBULIZED FLUID NOT UNIFORM

DEFECT→ WHAT TO DO

- Presence of glue satellite → Increase the nebulization air pressure
- Low quantity of glue → Increase the fluid pressure
- Presence of impurities or lumps inside the glue → Clean the glue filter

6 MAINTENANCE

6.1 General norms

The *pneumatic valve MMZF*, thanks to the construction methods and employed materials, is easy to maintain. A minimal, simple, accurate and constant maintenance allows a long-lasting and regular functioning of the valve, keeping uncharged its performance.

- For the general cleaning of the valve **don't use** metallic, sharp or pointed objects. Use only soft brushes or cotton rags.
- All the maintenance works on the valve **must be performed by qualified personne**l and after the supply pressure system has been discharged
- For the nozzle cleaning **use only** cleaning needles supplied by the valve manufacturer: if you use other sharp objects the nozzle could be **damaged**
- **Use only** original spare parts
- The valve must be washed **only and exclusively** with water, especially if you need to replace the nozzle or the needle
- Every evening and if you expect a long work break put some grease on the nozzle tip

6.2 Maintenance program

	TIMING*	WHAT TO DO
1	Every day, before the start production	• Do a valve test • Clean the valve externally
2	Every day, at the end of production	• Do a valve test • Clean the valve externally • Put some grease on the nozzle tip
3	Before a production break longer than two weeks	• Drain the fluid from the system and wash it completely with water • Leave the system with water inside
4	After a production break longer than two weeks	Discharge the water from the system and fill it with the adhesive fluid
5	Every month or after 2000 working hours	As point 3 and 4
6	Every year or after 4000 working hours	• As point 3 and 4 • Replace possible worn parts

***Approximate values that can change depending on the type of glue, adhesive or fluid used. For the use of special fluid we recommend to contact the Zator company for any questions.**

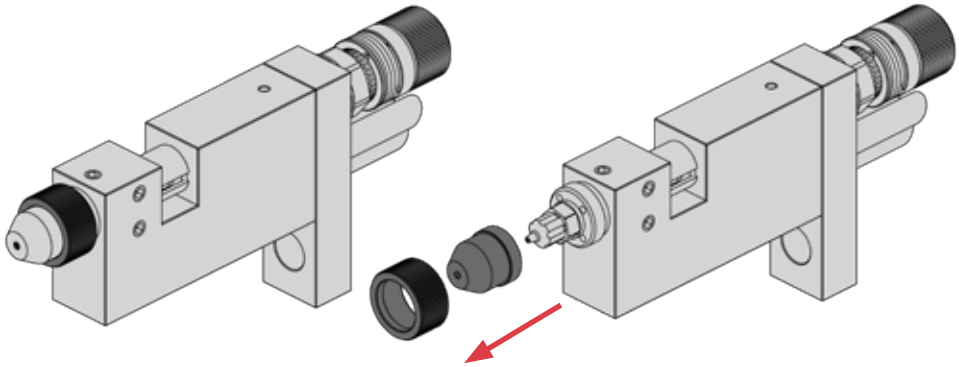
6.3 Cleaning and/or replacement of the nozzle

Before you disassemble and clean or replace the nozzle **must be done** the following steps:

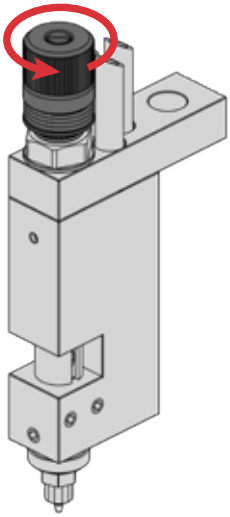
- **Discharge the pressure from the supply system**
- Wash the valve with water

Then proceed as follows:

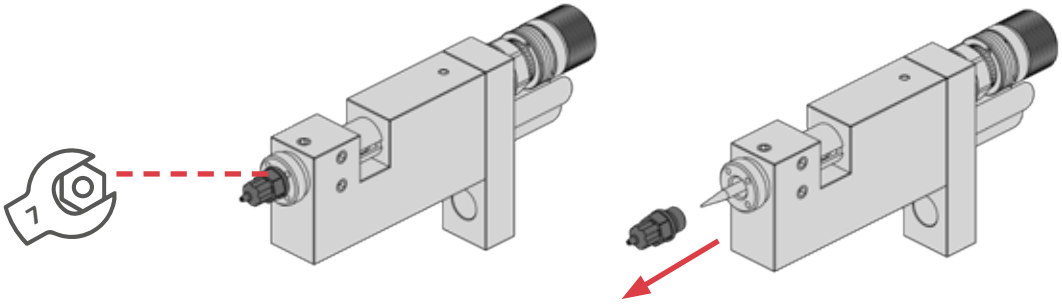
1 Unscrew the *air cap nut* and pull out the *air cap**;



2 Loosen the needle adjustment operating on the *micrometric adjustment handle* (see *section 5.2 - Needle travel adjustment*), by turning it counter-clockwise until it doesn't resist anymore;

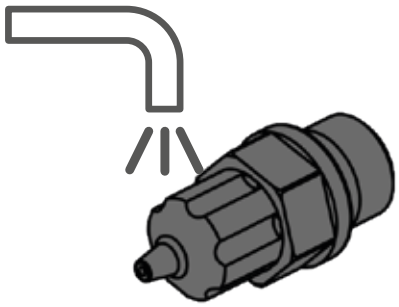


3 Unscrew the *nozzle* with a 7mm wrench;



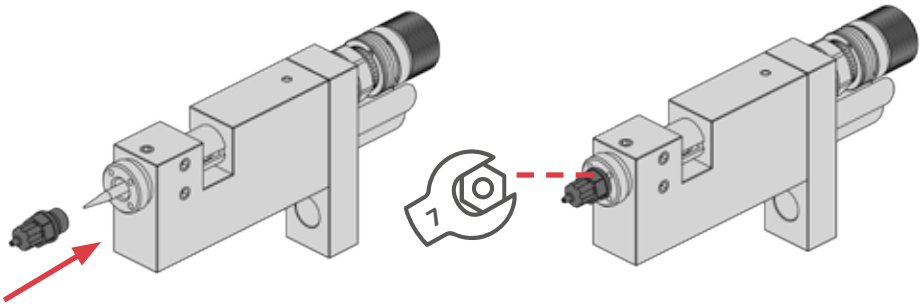
After removing the nozzle, to clean it:

4 Put the *nozzle* under running water then blow it with compressed air and clean the *nozzle* hole with the *cleaning needle*;

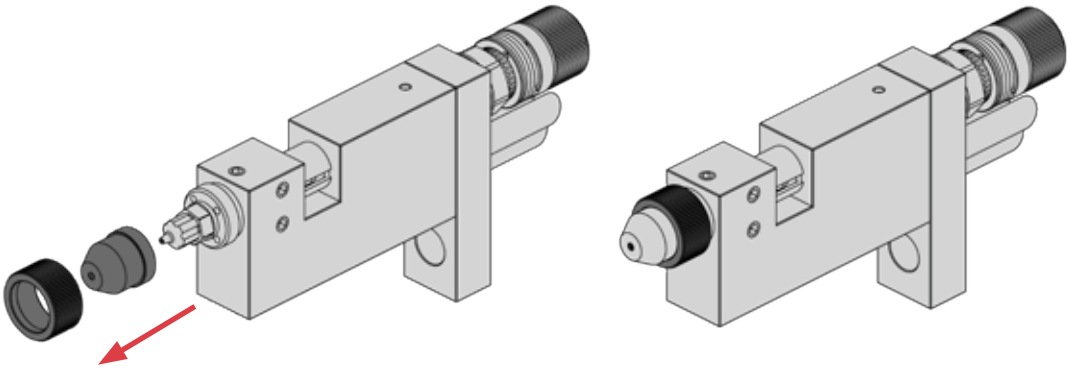


5 Repeat the step until you have removed all the impurities inside and outside the *nozzle*;

6 Screw the *nozzle* with a 7mm wrench;



7 Finally position the *air cap** and screw the *air cap nut*.



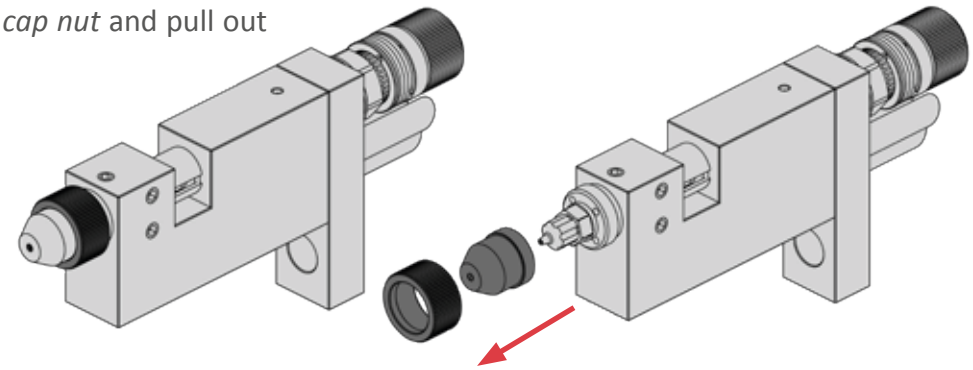
6.4 Valve disassembly

Before you disassembling the valve the following steps **must be done**:

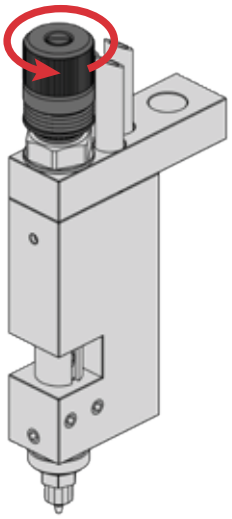
- Wash the valve with water
- **Discharge the pressure from the supply system**

Then proceed as follows:

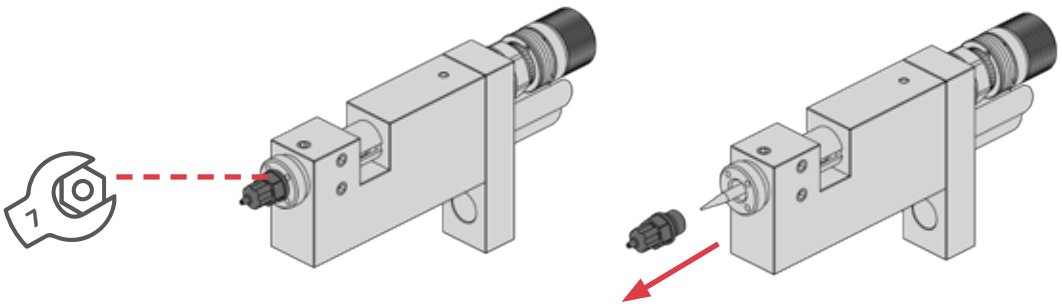
1 Unscrew the *air cap nut* and pull out the *air cap**;



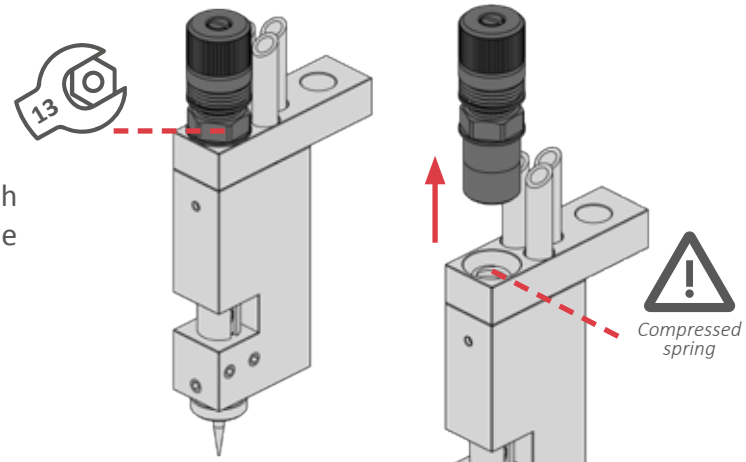
2 Loosen the needle adjustment operating on the *micrometric adjustment handle* (see *section 5.2 - Needle travel adjustment*), by turning it counter-clockwise until it doesn't resist anymore;



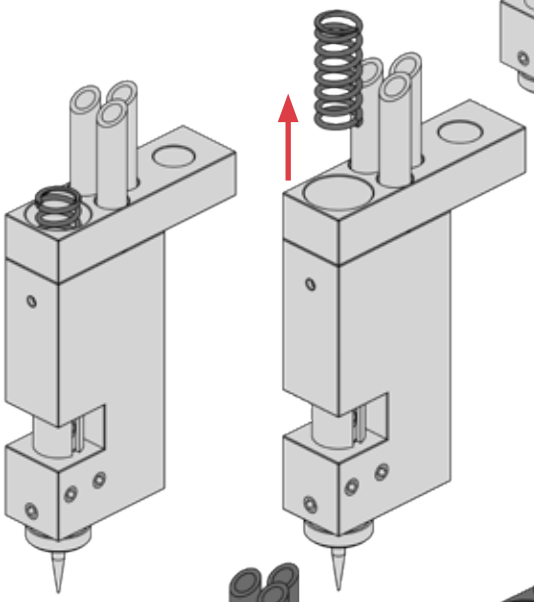
3 Unscrew the *nozzle* with a 7mm wrench;



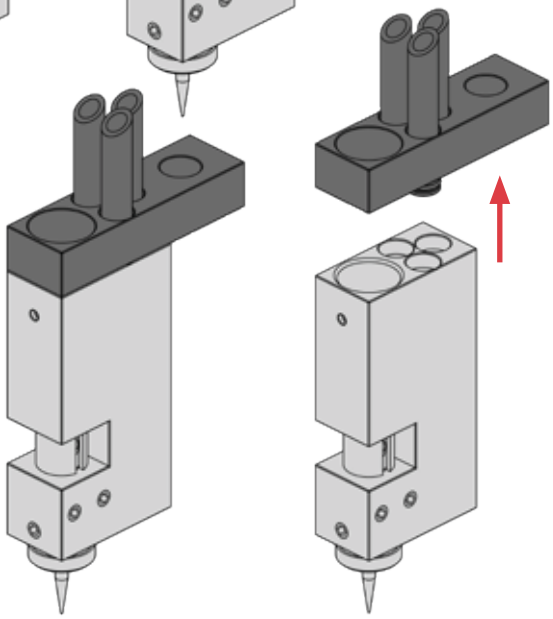
4 Unscrew the *adjustment block* with a 13mm wrench, **being careful** to the inner compressed spring;



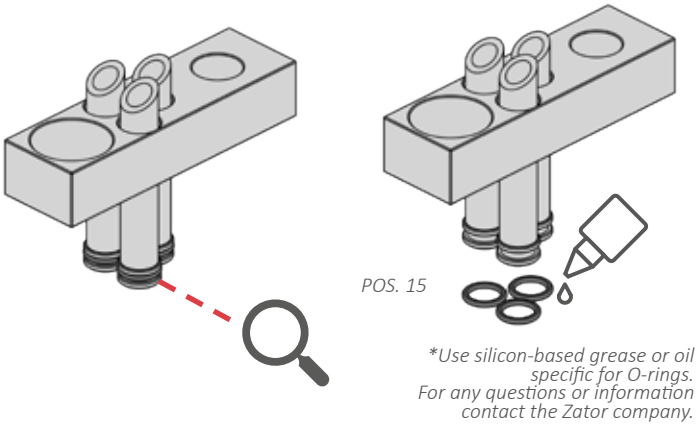
5 Extract the *spring*;



6 Carefully remove the *fixing plate* together with *pipes* and *pipe fittings*;

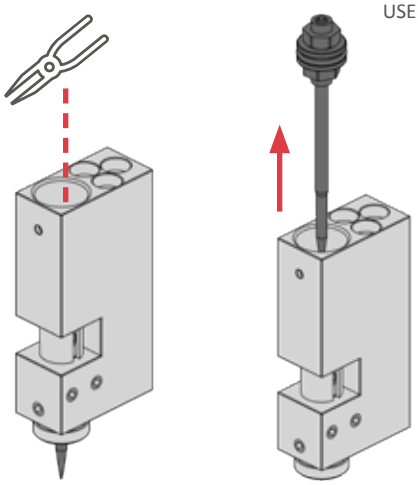


7 Check the wear of the pipe fitting *O-rings* (*POS. 15*) and if it is necessary, replace it. Always grease* the new O-rings before assembling them;

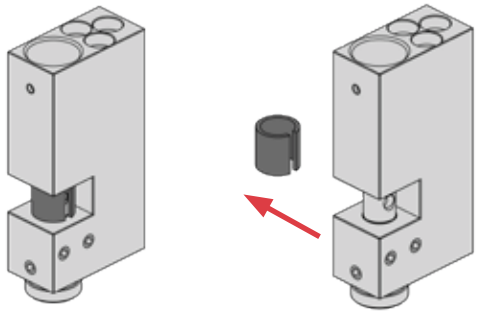


*Use silicon-based grease or oil specific for O-rings. For any questions or information contact the Zator company.

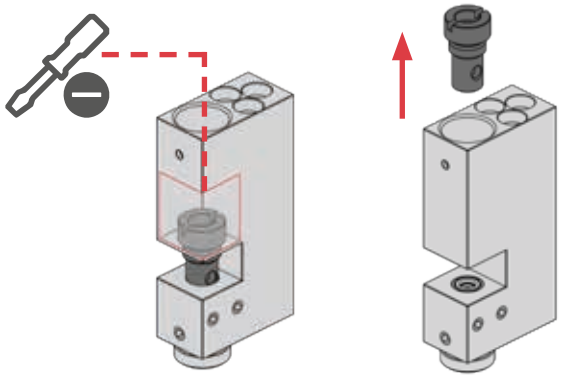
8 Pull out the *needle* with the help of a smooth plier;



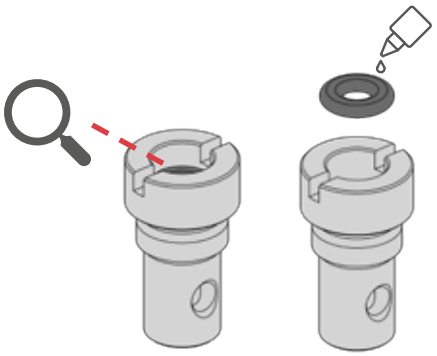
9 Pull out the plastic *protection* from the lock bush;



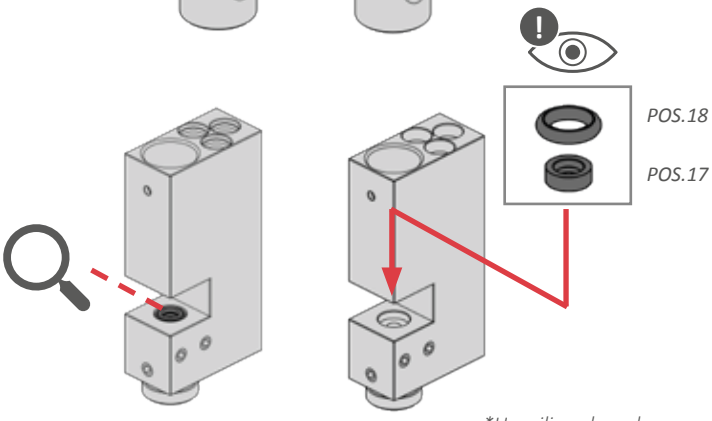
10 Unscrew the *lock bush* with tubular spanner, then remove it from the valve body;



11 Check the wear of the lock bush *O-ring* (*POS. 19*) and if it is necessary, replace it. Always grease* the new O-rings before assembling them;



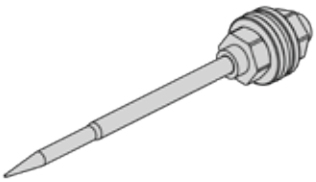
12 Check the wear of the *O-rings* (*POS.18*) inside the valve body and if it is necessary, replace it. Be careful to the **assembly direction** of the *gasket* (*POS.17*). Always grease* the new O-rings before assembling them;



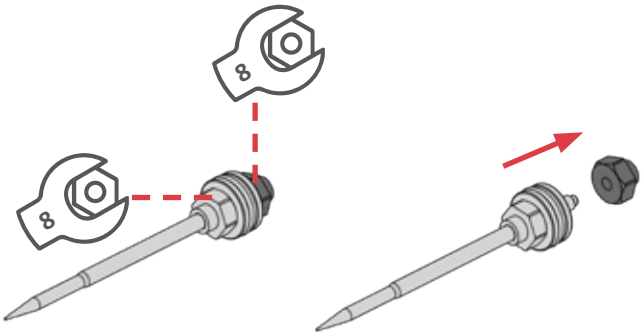
**Use silicon-based grease or oil specific for O-rings. For any questions or information contact the Zator company.*

6.5 Needle disassembly

To disassemble the *needle* and/or replace the gasket kit, proceed as follows:



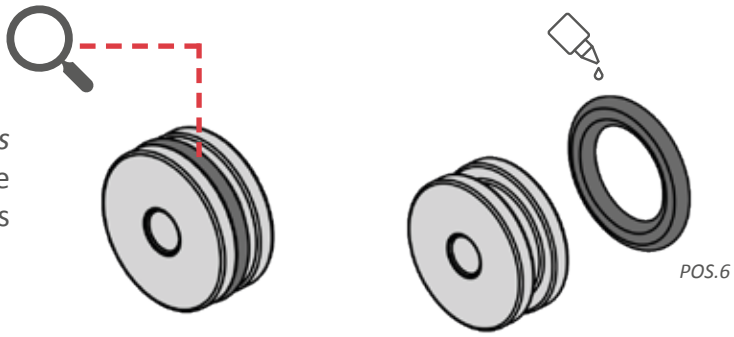
1 Unscrew the *needle nut* with two 8mm wrenches;



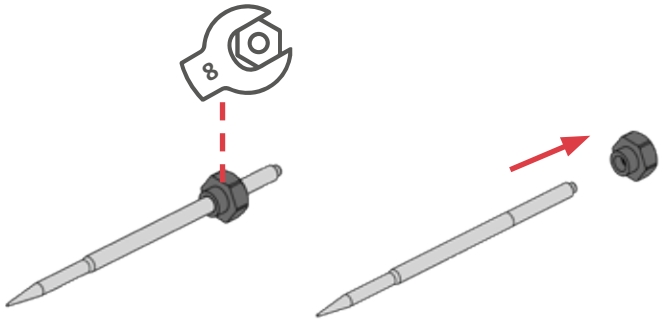
Pay attention to not scratch and/or bend the needle with the wrenches.

2 Pull out the *piston* from the needle;

3 Check the wear of piston *O-rings* (*POS. 6*) and if it is necessary, replace it. Always grease* the new O-rings before assembling them;



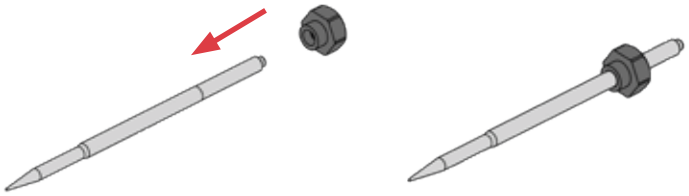
4 Finally manually unscrew the *needle ring nut* with 8mm wrench.



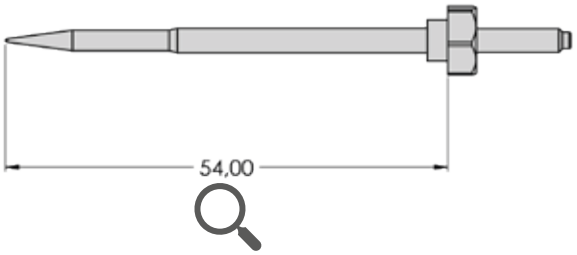
6.6 Needle assembly

To assemble the *needle* proceed as follows:

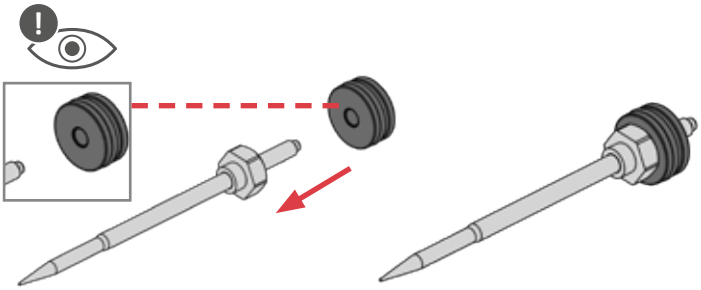
1 Screw the *needle ring nut* leaving it free to rotate;



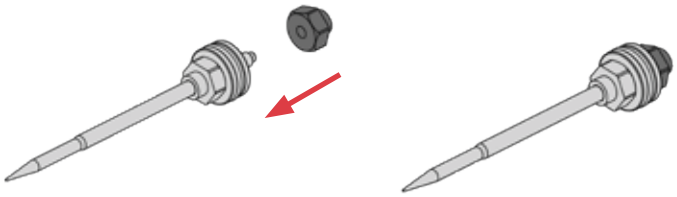
2 With a suitable measuring instrument (e.g. Caliper) measure and check the distance between the *needle ring nut* and the end of the needle is equal to **54 mm**;



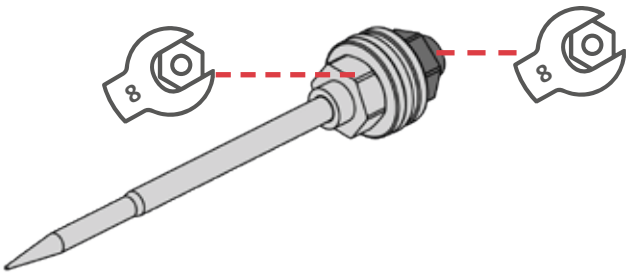
3 Insert the *piston* in the needle being careful to the **assembly direction**;



4 Manually screw the *needle nut* and place it near the *needle ring nut*;



5 Then tighten the *needle nut* with two 8mm wrenches. Check again the distance described on point 3 has been respected;



***Pay attention** to not scratch and/or bend the needle with the wrenches.

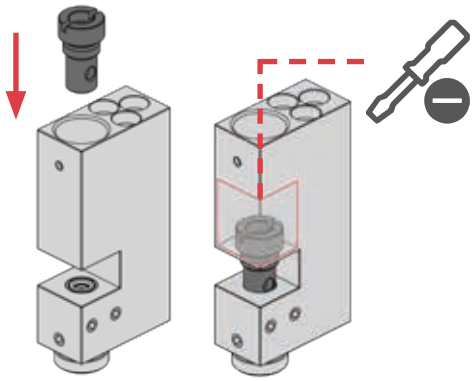
6.7 Valve assembly

Before to assembling the valve the following steps **must be done**:

- Remove the residual glue from the valve using a wet rag or soft brush
- Clean the nozzle and if it is necessary put it under running water then blow it with compressed air and clean the nozzle hole with the cleaning needle
- Check the wear of the O-rings and if it is necessary replace it
- Before the assembly always grease the O-rings

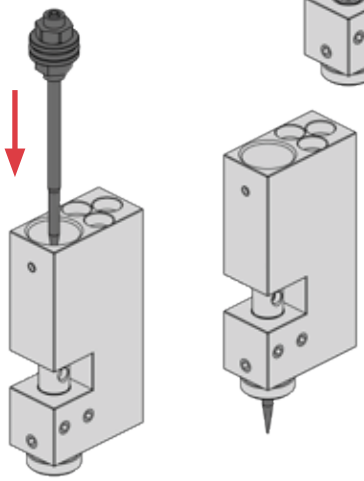
Then proceed as follows:

1 Insert the *lock bush* inside the valve body, then screw it with a tubular spanner;

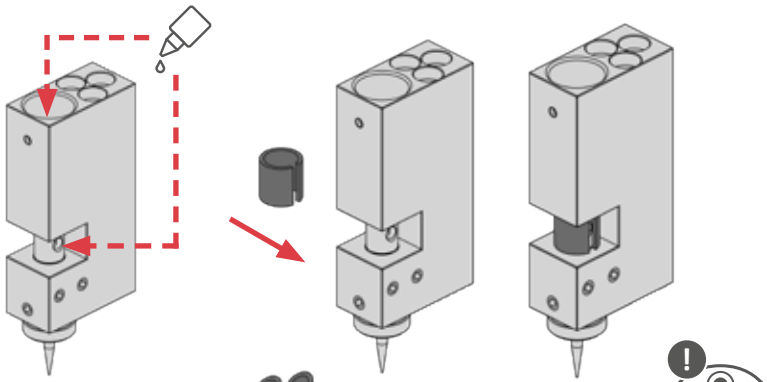


2 Insert the *needle complete** until it stops;

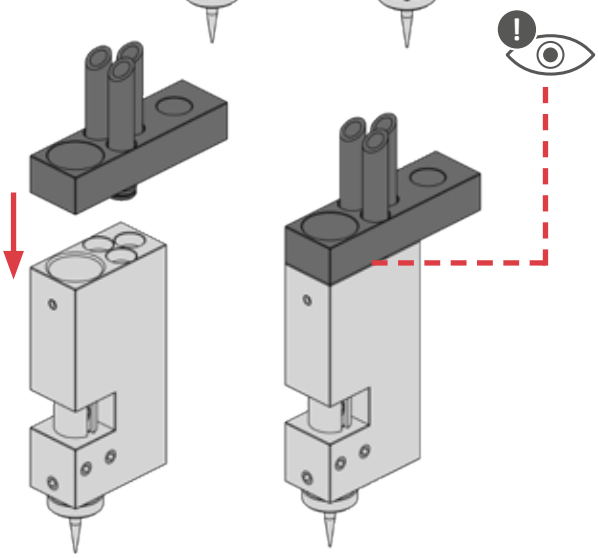
*Check the position of the needle ring nut.
See section 6.6 - Needle assembly*



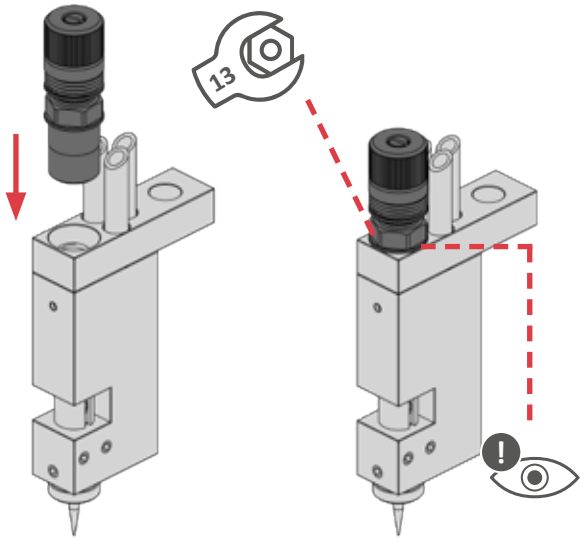
3 Inject some silicon-based grease specific for O-rings inside the hole of the lock bush until it doesn't come out from the hole, then insert the plastic *protection*;



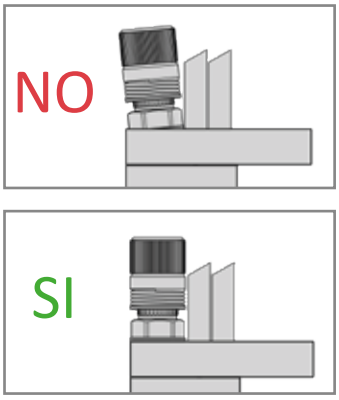
4 Insert the *spring* and carefully insert the *fixing plate* together with *pipes* and *pipe fittings* and check that the fixing plate is accurately in contact with all the surface on the valve body;



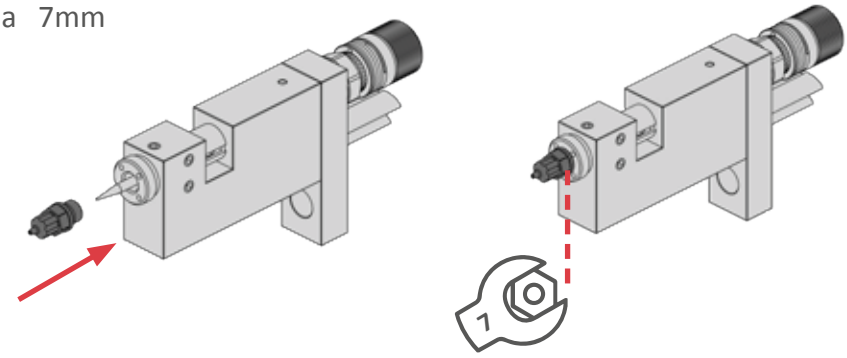
5 Screw* the *adjustment block* in the valve body with a 13mm wrench and check that the adjustment is accurately in contact with the fixing plate;



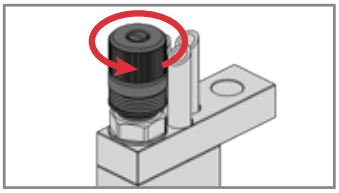
***Pay attention that the adjustment block is not tilted during the screwing to avoid damage to the thread.**



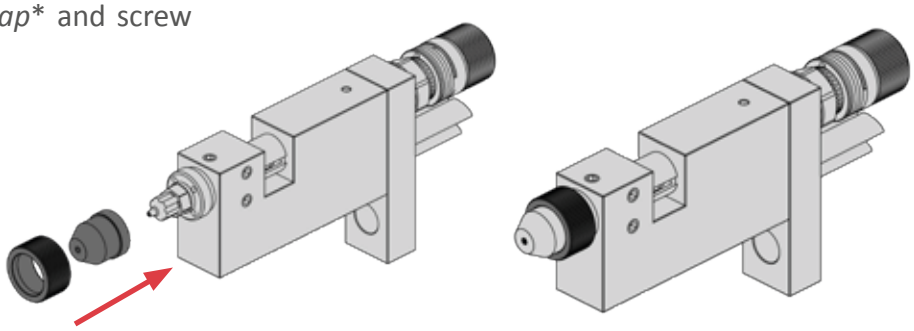
6 Screw** the *nozzle* with a 7mm wrench;



****Before screw the nozzle,** check that the micrometric adjustment handle is completely loosened to avoid damage to the nozzle and needle. To loosen the handle, turn it counter-clockwise until it doesn't resist anymore.



7 Finally place the *air cap** and screw the *air cap nut*.



7 TROUBLE SHOOTING

CAUTION: the trouble shooting **must be performed only by qualified personnel** observing the safety norms.

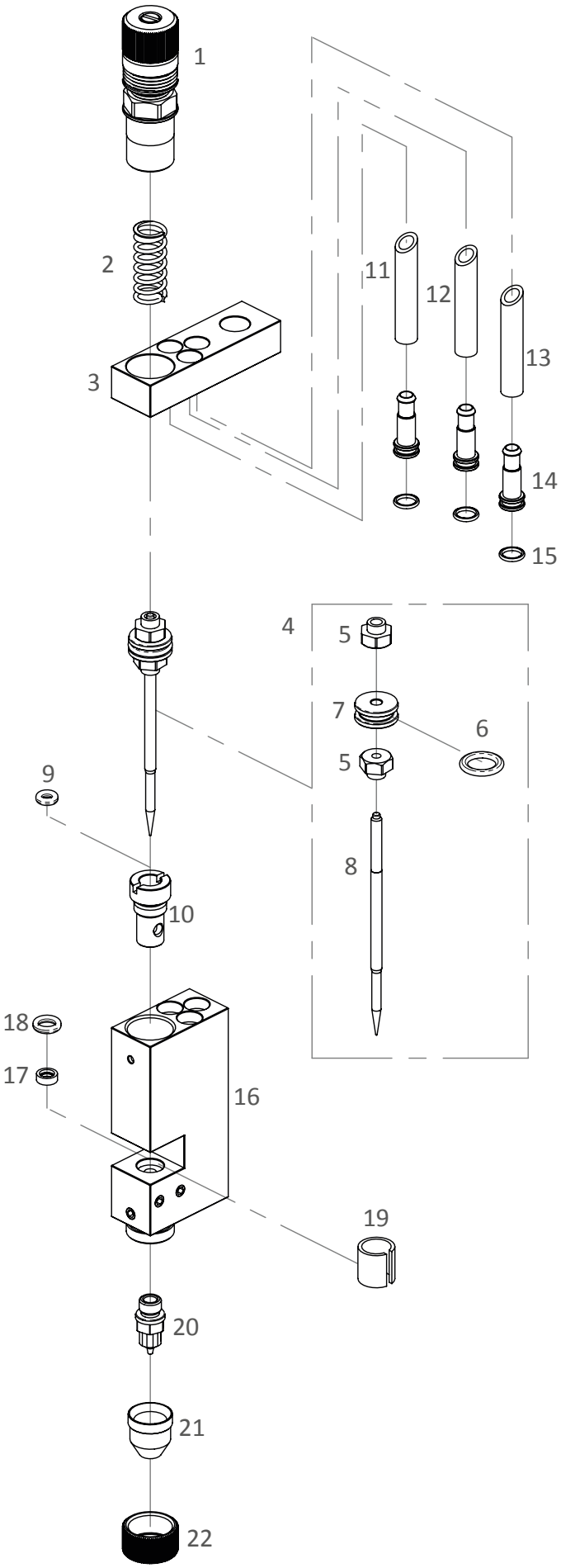
TROUBLE	POSSIBLE CAUSE	WHAT TO DO
No or little quantity of dispensed fluid	No or weak signal to the valve	• Check the drive of the valve (solenoid valve); • Make a manual test
	The pressure of the fluid is low or missing	Check the supply pressure
	The nozzle is clogged	Unscrew and clean the nozzle
	The filter is dirty (If on use)	Wash or replace the filter
	Bent pipe	Check the condition of the supply pipe
	No or weak drive pressure	Check the drive air pressure (min. 5 bar)
	Residual glue into the system	Wash the complete system
Leak of fluid from the lock bush	O-ring or gasket inside the valve body is damaged	Replace the O-ring (POS.18) or the gasket (POS.17)
Leak of fluid between valve body and fixing plate	Pipe fitting O-ring of the fluid inlet (transparent pipe) is damaged	Replace the O-ring (POS.15) of the fluid inlet pipe fitting
Nozzle drips fluid even if the valve is not activated	Presence of grime inside the nozzle	Clean or replace the nozzle
The valve is activated late	No or weak drive pressure	Check the drive air pressure (min. 5 bar)
	Piston O-ring is damaged	Replace the piston O-ring (POS.6)
Irregular fluid nebulization	No or weak nebulization pressure	Check the nebulization air pressure (0,5÷2,5 bar)
	Presence of grime inside the air cap	Clean the air cap

8 MODELS

code	description	€
MMZF01XXRM	Spray valve MMZF XX round cap *Replace XX value with nozzle diameter desired* *Available nozzle diameters from 0,5 - 0,8 - 1,0 - 1,5 mm*	

9 PARTS LIST

pos.	code	q.ty	description
1	MMZF011003	1	Micrometric adjustment complete
2	CCS000400	1	Spring
3	MMZF01910	1	Fixing plate
4	MMZF017XX	1	Needle complete
5	NT0903040	2	Needle nut
6	RNG000011E	1	O-ring[1]
7	MMZF01830	1	Piston
8	MMZF027XX	1	Needle
9	RNG000006E	1	O-ring[1]
10	MMZF01610	1	Lock bush
11	TBP010407	1	Blue hose (atomizing air)
12	TBP050407	1	Colorless hose (fluid)
13	TBP140407	1	Black hole (operating air)
14	MMZF011110	3	Hose fitting
15	RNG050X10E	3	O-ring[1]
16	MMZF01411	1	Valve body
17	SHS30400T	1	Gasket[1-2]
18	RNG000008E	1	O-ring[1-2]
19	C36000029	1	Plastic protection
20	MMZF012XX	1	Nozzle
			Replace XX value with nozzle diameter desired *Available nozzle diameters from 0,5 - 0,8 - 1,0 - 1,5 mm*
21	MMZF01105 MMZF01108 MMZF01115	1 1 1	Air cap 0,5 mm Air cap 0,8 - 1,0 mm Air cap 1,5 mm
22	MMZF01310	1	Air cap nut
	KGN000251	1	Fluid kit[2]
	KGN000250	1	Gasket kit[1]



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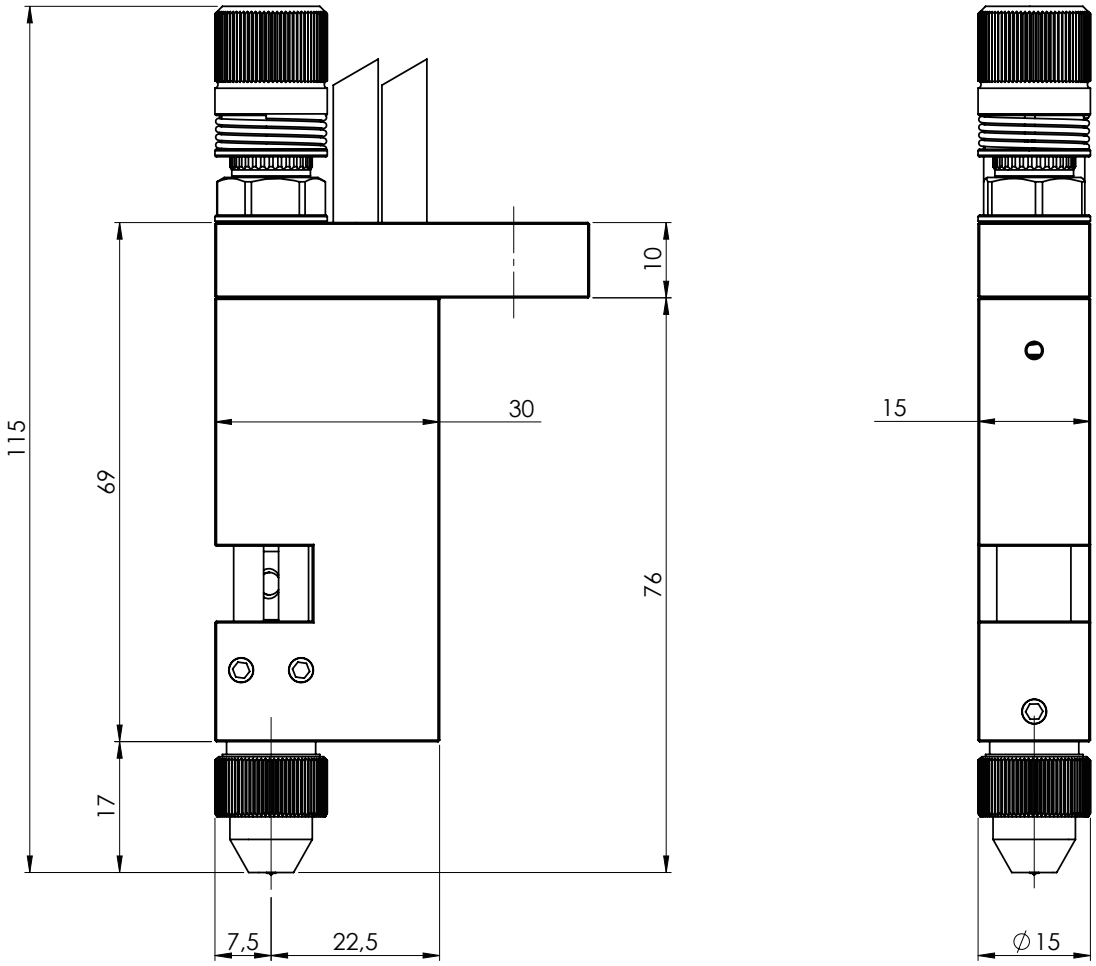
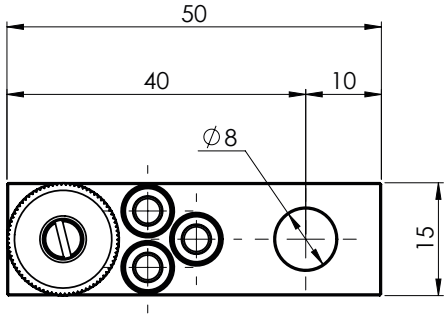
10 DIMENSIONS

MMZF01XXRM





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