PARTS, SYSTEMS AND AUTOMATIONS FOR FLUID DISPENSING

USE AND MAINTENANCE MANUAL

DA-500 NEEDLE DOSING VALVE

COD.: **DTVI_DA500_2419**
REV.: **01**
DATE: **02/12/2025**

TRANSLATED FROM ORIGINAL
Read carefully before use!

EN

Summary

1 GENERAL INFORMATION

This manual contains information regarding the installation, use, maintenance and end of life of the component and provides indications for the most appropriate behavior for correct operation. This manual has been designed to be simple and as immediate as possible, with a subdivision between chapters and sub-chapters that allows any desired information to be found quickly. Furthermore, the manual begins by giving a general description of the content, then an overview of the component, to arrive at aspects of safety, transport, installation and use and finally the end of life. In case of doubts about the interpretation or reading of this document, please contact the manufacturer.

DAV Tech disclaims all responsibility relating to improper use of the component. Comply with what is specified in this manual.

Read this manual before handling the component or performing any action on it

The manual constitutes an essential safety requirement and must accompany the component throughout its entire life cycle.

It is the responsibility of the end user to optimize the functionality of the component, always keeping in consideration the purpose for which it was built.

This manual must be kept, together with the attached documentation, in good condition, readable and complete. Furthermore, it must be stored near the component or, in any case, in a place accessible and known to all personnel who use the component itself or who must carry out maintenance or inspection interventions. In the event that the manual deteriorates or is no longer complete, a copy must be requested from the manufacturer, indicating the manual code and revision.

The manual is intended for personnel who use the component (operators), who perform maintenance on it (maintenance technicians), and personnel who must carry out checks or inspections. The manufacturer is not liable for damage to the component caused by personnel who have not followed the indications contained within the manual itself.

In case of doubts about the correct interpretation of the information contained in this manual, please contact the manufacturer.

GUARANTEE

During the design phase, materials and components were carefully selected for implementation in the project and subjected to routine inspection prior to delivery. All elements, from fastening assemblies to control mechanisms, have been engineered and manufactured with an appropriate safety factor to withstand loads exceeding those encountered during normal operating conditions.

For additional notes regarding equipment warranty provisions, please refer to Section 7 of the "GENERAL CONDITIONS OF SALE AND WARRANTY" form issued during either the quotation or order confirmation phase.

1.1 Symbology

The following symbols are used to give greater impact to the importance of the concept to be conveyed.

ATTENTION!
Refers to a warning that could lead to minor damage (minor injuries, damage to the component requiring maintenance technician intervention).

DANGER!
Refers to a major event that could cause significant damage (death, permanent injury, irreversible component failure).

NOTE. Indicates relevant information or elaboration.

OBLIGATION. Indicates an activity that must be performed, related to both the component and the manual.

REFERENCE. Refers to an external document that is important to view.

Furthermore, the symbol list is integrated with that of personnel authorized to use the component and their function, together with other symbols used within the manual.

Operator
Qualified person capable of operating on the component, performing adjustment, cleaning, start-up or restart operations. The operator is not authorized to perform maintenance.

Mechanical maintenance technician
Qualified technician capable of performing mechanical interventions, adjustment, maintenance and ordinary repair described in this manual. Not qualified to perform interventions on electrical systems in the presence of voltage.

Electrical maintenance technician
Qualified technician capable of performing electrical interventions, adjustment, maintenance and ordinary repair described in this manual. Capable of working in the presence of voltage on electrical cabinets and junction boxes. Not qualified to perform interventions on the mechanical side.

Manufacturer's technician
Qualified technician made available by the manufacturer to perform complex operations in particular situations, or in any case according to what has been agreed with the customer.

1.2 Reference standards

The normative and directive references for this manual are as follows:

Directives

- 2006/42/EC – Machinery Directive;

1.3 Declaration of incorporation (Annex II B DIR. 2006/42/EC)

Manufacturer's name: **DAV Tech Srl**
Address: Via G. Ravizza, 30, .36075, Montecchio Maggiore (VI)

DECLARES THAT THE PARTLY COMPLETED MACHINERY

Component: DA 500 Valve
Model: Pressure-time dosing valve
Year: 2024
Intended use: High flow rate fluid dosing at any viscosity

COMPLIES WITH THE INCORPORATION PROVISIONS DICTATED BY DIRECTIVE 2006/42/EC

The technical documentation has been drawn up in compliance with Annex VII B, as required by the following:

- Machinery Directive 2006/42/EC of the European Parliament and Council of 17 May 2006

FURTHER DECLARES THAT:

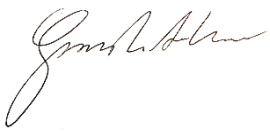
- We undertake to transmit, in response to an adequately motivated request from national authorities, relevant information on this partly completed machinery;
- The technical file has been constituted by Andrea Grazioli, via Ravizza, 30, Montecchio Maggiore (VI), IT.

This partly completed machinery cannot be used until the machinery on which it will be used is declared compliant with standard 2006/42/EC.

Montecchio Maggiore, 19 January 2024

The legal representative

Andrea Grazioli



1.4 Glossary

The following are the most used terms within this manual with their meanings.

TERM	DEFINITION
Enable	Term that defines the act of preparing (enabling) an action. The action will be activated as soon as criteria are satisfied which, as a consequence, lead to the activation of the enabled action.
Activate	The action that is performed instantaneously upon command actuation.
Hold-to-run Commands	Commands that, used for manual operations, must be kept activated for the action to be completed. When the command is released, the action stops.
Two-hand Commands	Hold-to-run commands that require simultaneous actuation of two manual commands to perform an action.
PPE	Personal Protective Equipment. Includes all objects necessary to ensure personnel protection from possible accidental damage (safety shoes, gloves, helmet, and others).
Display	Used to display information. Can be in any form and size, including touch screen.
Manufacturer	Natural or legal person who designed and manufactured the component subject to this manual.
HP	High Pressure. Abbreviation indicating high pressure.
Icon	Small image that symbolically represents a command, function or even a document or operating program, which appears on a computer screen. When selected by the user, it starts the function or program it symbolizes.
Joystick	Lever controller used in command panels.
N/A	Not Applicable, indicating a field that does not apply to this particular manual and cannot be integrated into the component.
Operator Panel	Command station where machine control instruments are located.
P.I.	Possible Implementation, currently absent from the component described in this manual, but possible to add and implement.
Screen	Interface system between man and component. Screen images displayed on the operator panel that allow the user to receive and provide information to the management software.
Control Panel	Composition of buttons and selectors that allow direct action on component behavior.
Keyboard	Keyboard only (standalone element) or in addition to a display (keys only, no selectors or other).
Touch Screen	Touch screen that allows the user to interact with a graphical interface using fingers or special objects.

1.5 Service and manufacturer contact details

For any reason relating to use, maintenance or request for spare parts, the customer must contact the manufacturer directly (or the service center if present), specifying the component identification data.

The customer can avail themselves of commercial technical support from area agents or importers, who are in direct contact with DAV Tech Srl.

Company name	**DAV Tech Srl**
Postal address	Via Ravizza, 30, 37065, Montecchio Maggiore (VI) – (IT)
Telephone	+39 0444 574510
Fax	+39 0444 574324
email	davtech@davtech.it
Website	www.davtech.it

2 PRESENTATION AND OPERATION

This dosing valve is a pneumatically controlled component designed for precision dosing of fluids at any viscosity, which can function as a pressure/time valve (if autonomous) or volumetrically, if coupled with a dedicated system. Its rest state is normally closed, meaning without pneumatic power supply the valve does not dispense fluid, as there is a safety spring inside the component. When a supply of at least 6 bar arrives from its lower inlet, the valve begins to release fluid and, therefore, to dose. This output can be modulated both through regulation of the product inlet pressure and by adjusting the needle opening, present on its upper part. In other words, the function of this component is:

PRECISION DOSING OF HIGH FLOW RATE FLUID AT ANY VISCOSITY

Intended use is considered to be that described in the chapter below, while improper use is considered any other use not described within this manual, with products of different material and format from those for which it was built.

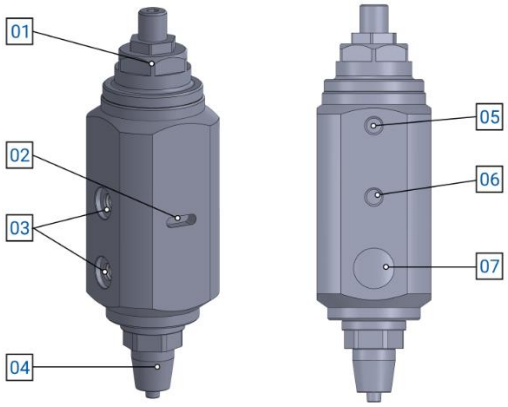


Figure 01 – Detail of the DA 500

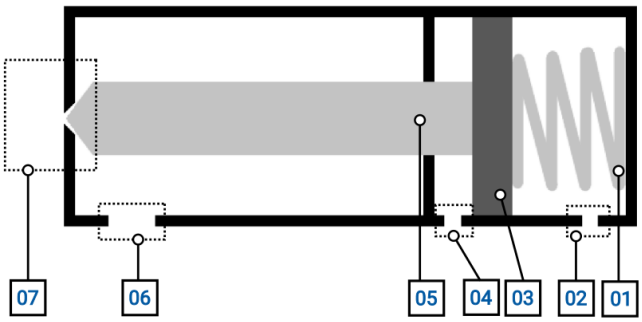
No.	DESCRIPTION
01	Adjustment knob
02	Leakage control slot
03	Fixing holes
04	Product outlet
05	Closing air inlet
06	Opening air inlet
07	Product inlet

Before using a specific type of fluid, it must be verified that:

- The fluid viscosity is compatible with the valve characteristics;
- The fluid characteristics meet the desired requirements;
- The fluid technical data sheet provided by the manufacturer contains all information regarding the product such as viscosity, applications, drying and storage times;
- The fluid storage time has not been exceeded;
- The fluid containers are hermetically sealed.

In case it is necessary to use multiple fluids with the same valve, it must be thoroughly cleaned to prevent residues from previous processing from affecting the processing to be performed.

OPERATION



No.	DESCRIPTION
01	Spring
02	Closing air inlet
03	Piston
04	Opening air inlet
05	Needle
06	Fluid inlet
07	Nozzle fitting / fluid outlet

Figure 02 – DA 500 internal sections

It can be used in two working modes:

- As a single-acting valve, with spring closure;
- As a double-acting valve, with air opening and air and spring closure.

Based on the function to be used, one of the following solenoid valves must be connected:

- To a 3/2 solenoid valve for single acting. In this case, the fluid pressure must not exceed 25 bar;
- To a 5/2 solenoid valve for double acting. In this case, the fluid pressure can exceed 25 bar.

Figure 02 represents the most complete case. For minimum working pressures, refer to chapter 2.2.

The valve cannot operate autonomously. For it to dispense product, it must be connected to a power source, which can be a tank, pump, or other, based on the system and customer requirements.

ATTENTION!
It is recommended to connect the valve to the sources indicated in this manual in chapter 2.2. Connecting it to other sources or products with characteristics not indicated in this manual could damage the valve.

The following explains the operation through a section of the DA 500 valve. Note that blue indicates the inlet/outlet fluid, yellow indicates air, when present.

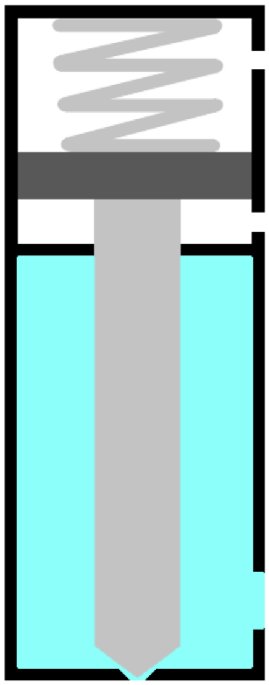


Figure 03 – Single acting rest phase

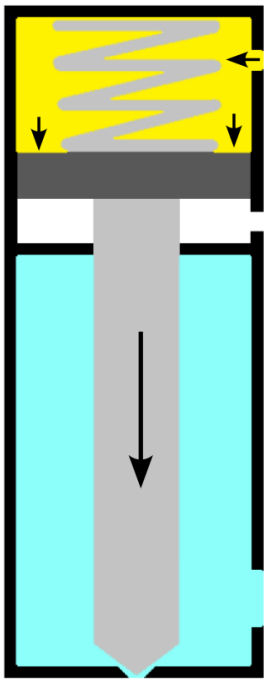


Figure 04 – Double acting rest phase

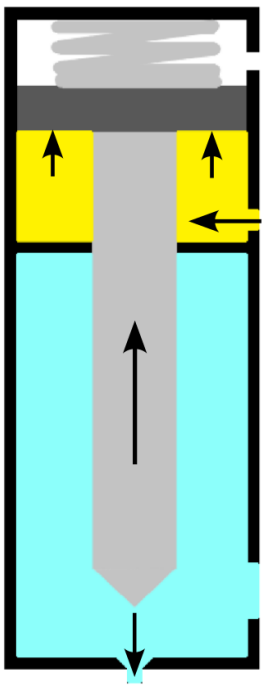


Figure 05 – Single and double acting dosing phase

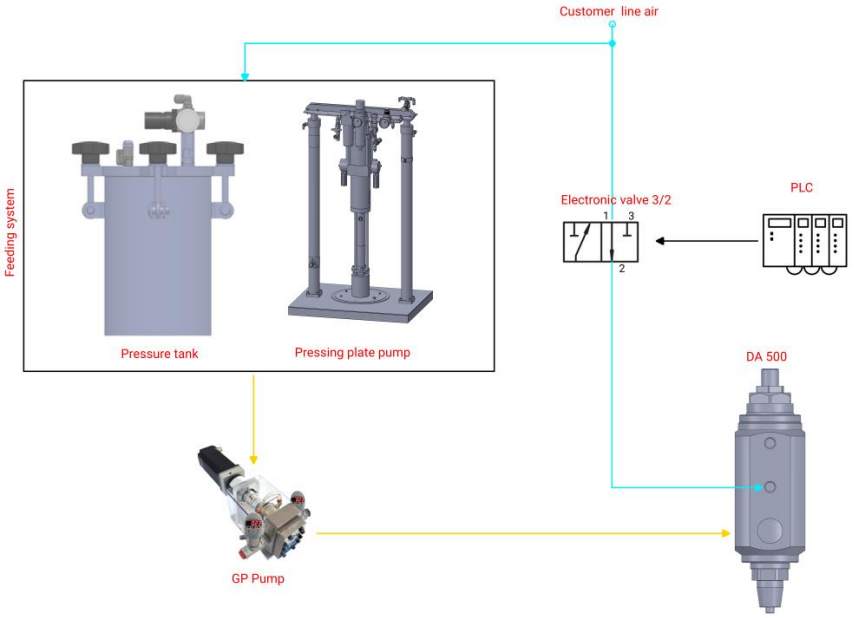
The valve can operate in two modes: single and double acting.

In the case of single acting, what keeps the valve closed is the spring, so the fluid pressure must be below the pressure generated by the spring to keep the valve closed (Figure 03). The fluid is inside the pneumatic chamber, which is closed by the needle that is pushed by the spring. When pneumatic pressure is applied to the opening inlet, the piston rises and, consequently, also the needle, allowing fluid to pass to the nozzle (Figure 05).

In the case of double acting, the working mode is similar to that of single acting, except that, in addition to the spring keeping the valve closed, there is pneumatic pressure from the valve closing inlet (Figure 04). This is used when working with fluid pressures higher than that exerted by the spring.

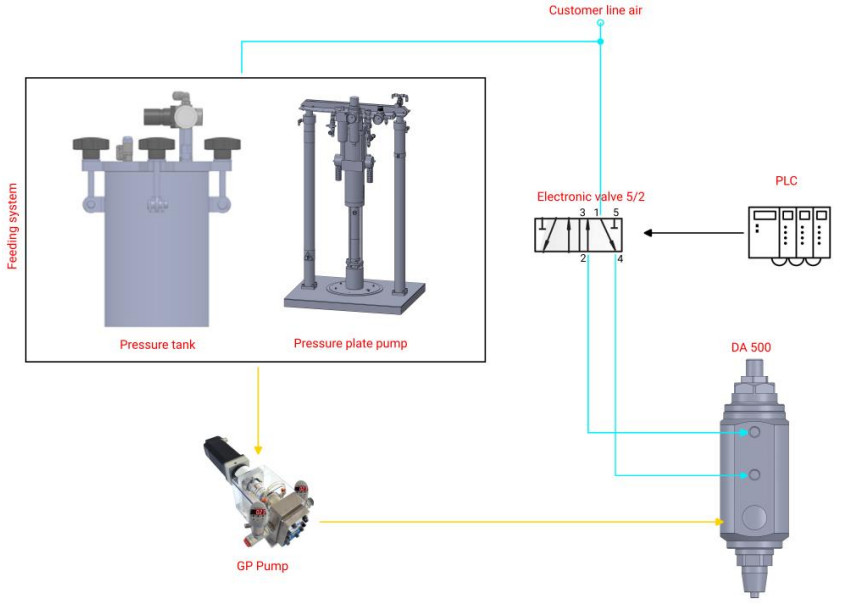
Therefore, in general, the activation/deactivation sequence is as follows:

- The fluid is under pressure in the fluid chamber; in the case of single acting, with only the spring pushing to close the fluid outlet (Figure 03), in the case of double acting, with also pneumatic pressure (Figure 04);
- The PLC commands the solenoid valve (3/2 in the case of single acting, 5/2 in the case of double acting) to perform dosing;
- In the case of double acting, the solenoid valve changes inlet, emptying the closing inlet and opening the opening one; while, in the case of single acting, only opening the appropriate pneumatic inlet;
- The needle lifts, allowing fluid to exit (Figure 05);
- When the PLC commands completed dosing, it returns to the starting condition, with the membrane closing the fluid inlet inside the valve chamber.



SINGLE ACTING

COLOR	MEANING
BLUE	Air
YELLOW	Product
BLACK	Data
RED	Notes



DOUBLE ACTING

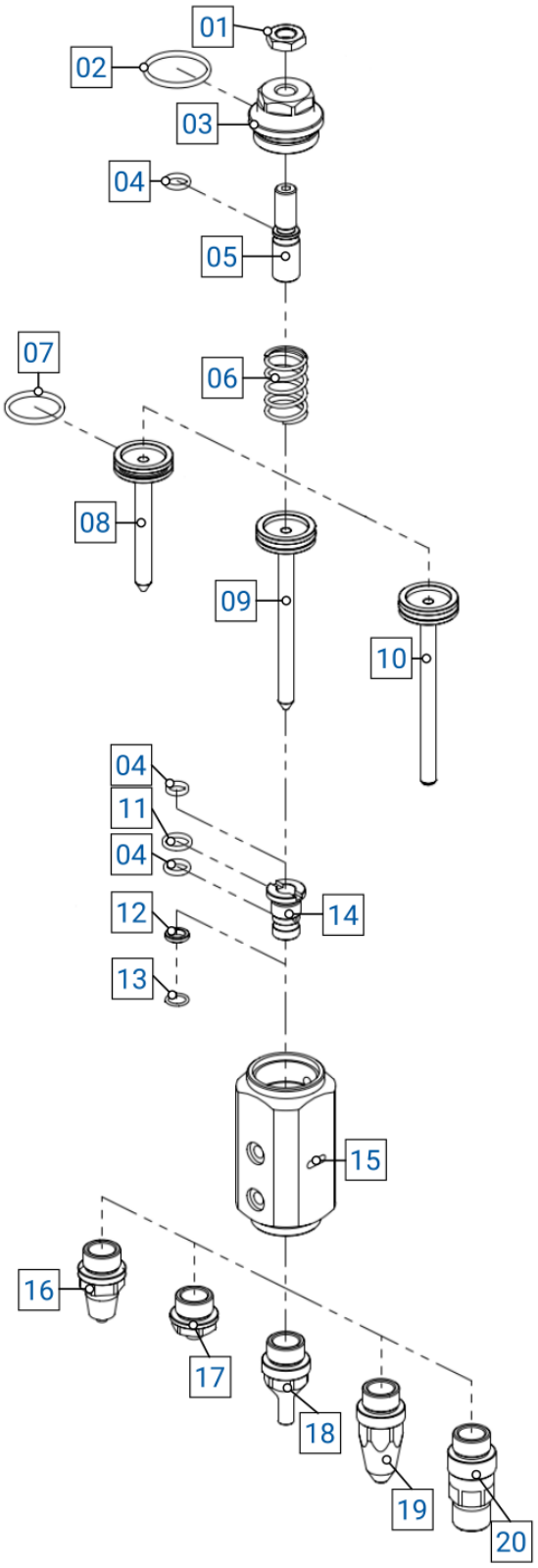
COLOR	MEANING
BLUE	Air
YELLOW	Product
BLACK	Data
RED	Notes

Figure 06 – Connection examples

ATTENTION!
The air entering the valve must be filtered and water-free (dried), otherwise it risks forming oxide inside the component and wearing it more rapidly.

2.1 Exploded view

The following is a list of the main valve components with spare part codes.



No.	Description	Var.	Code	Variant details
01	NUT	-	0003.0108110	-
02	O-RING	-	0003.000020E	-
03	ADJUSTMENT BLOCK	-	0003.32500014	-
04	O-RING	-	0003.000010E	-
05	ADJUSTMENT SCREW	-	0003.32500013	-
06	SPRING	-	0003.000500	-
07	O-RING	-	0003.000018E	-
08	KV NEEDLE	-	0003.84230420	-
09	LV NEEDLE	-	0003.84230520	-
10	NEEDLE (FOR M 1/4" NOZZLE)	-	0003.84230550	-
11	O-RING	-	0003.000011E	-
12	SCRAPER	-	0003.60890T	-
13	O-RING	-	0003.070X10E	-
14	BUSHING	-	0003.000019	-
15	VALVE BODY	-	0003.000052	-
16	LUER LOCK NOZZLE	-	0003.85100130	-
17	KV NOZZLE	-	-	-
-	-	17.a	0003.85520020	KV NOZZLE Ø2mm
-	-	17.b	0003.85520030	KV NOZZLE Ø3mm
-	-	17.c	0003.85520040	KV NOZZLE Ø4mm
-	-	17.d	0003.85520050	KV NOZZLE Ø5mm
18	KL NOZZLE	-	-	-
-	-	18.a	0003.85520120	KL NOZZLE 10mm, Ø2mm
-	-	18.b	0003.85520130	KL NOZZLE 10mm, Ø3mm
-	-	18.c	0003.85520140	KL NOZZLE 10mm, Ø4mm
-	-	18.d	0003.85520150	KL NOZZLE 10mm, Ø5mm
-	-	18.e	0003.85520220	KL NOZZLE 15mm, Ø2mm
-	-	18.f	0003.85520230	KL NOZZLE 15mm, Ø3mm
-	-	18.g	0003.85520240	KL NOZZLE 15mm, Ø4mm
-	-	18.h	0003.85520250	KL NOZZLE 15mm, Ø5mm
-	-	18.i	0003.85520320	KL NOZZLE 20mm, Ø2mm
-	-	18.j	0003.85520330	KL NOZZLE 20mm, Ø3mm
-	-	18.k	0003.85520340	KL NOZZLE 20mm, Ø4mm
-	-	18.l	0003.85520350	KL NOZZLE 20mm, Ø5mm
19	LV NOZZLE	-	-	-
-	-	19.a	0003.85340020	LV NOZZLE Ø2mm
-	-	19.b	0003.85340030	LV NOZZLE Ø3mm
-	-	19.c	0003.85340040	LV NOZZLE Ø4mm
-	-	19.d	0003.85340050	LV NOZZLE Ø5mm
20	M 1/4" NOZZLE	-	0003.85100140	-
\	COMPLETE GASKET KIT	-	GASKETKIT-DA500	-

2.2 Technical data

All the technical characteristics concerning the component of this manual are indicated below.

SPECIFICATIONS		
Description	**UdM**	**Values**
Model	\	DA 500
Actuation	\	Single or Double acting
Maximum fluid pressure	bar	25 (single acting)
		150 (double acting)
Actuation air pressure	bar	5 ÷ 7
Air inlet thread	\	M5
Fluid inlet thread	\	1/4 GAS
Fluid outlet thread	\	GAS 1/4" threaded nozzle
		MG ring nut nozzle
		Luer lock needle holder
		Steel nozzles of various shapes and sizes
Maximum fluid outlet speed	cycles/min	200
Flow adjustment	\	Stop screw and lock nut
Materials used	\	Stainless steel
		Carbide
		Nickel-plated and PTFE-coated brass

ATTENTION!

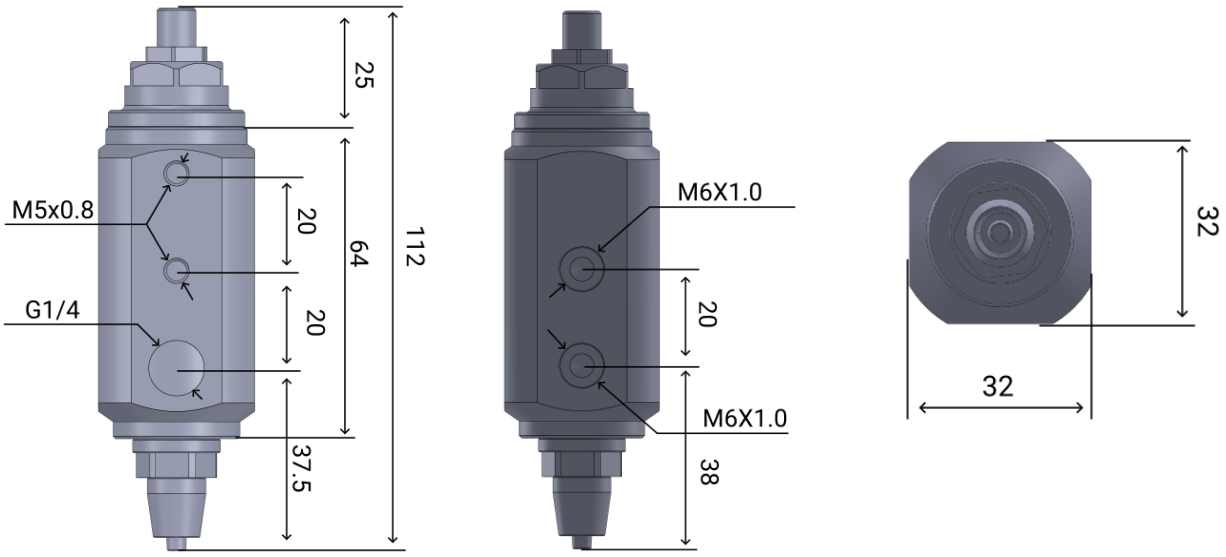
When working with fluids having pressures equal to or higher than 8 bar, fittings and tubes suitable for high pressures must be used, otherwise (for pressures below 8 bar) flexible tubes can be used.

ENVIRONMENTAL CHARACTERISTICS		
Description	**UdM**	**Values**
Working Ambient Temperature	°C	5 ÷ 45
Storage Ambient Temperature	°C	-20 ÷ 55
Permissible non-condensing humidity	%	5 ÷ 90

USABLE FLUIDS
Silicones
Liquid gaskets
Greases
Resins
Various medium-high viscosity products (contact manufacturer for more information)

DIMENSIONAL AND WEIGHT CHARACTERISTICS		
Description	**UdM**	**Value**
Component length (min ÷ max)	mm	116
Component depth (min ÷ max)	mm	32
Component height (min ÷ max)	mm	32
Component weight	kg	0.49

Component



It is possible to request the component 3D from the manufacturer in the desired version without any commitment.

3 SAFETY

The following presents the list of warnings regarding the component subject to this manual. Please read carefully before proceeding with the next chapters.

DANGER!
Before putting the component into operation or performing any action on it, carefully read this manual.

DANGER!
Do not use the component under the influence of drugs or other substances that may alter attention and reaction capacity.

DANGER!
Operators must perform only operations or interventions that are within the competence of their assigned role and qualification.

FIRE/EXPLOSION HAZARD!
This component is not designed to work in ATEX environments.

DANGER!
Pay close attention during the component maintenance phase, especially when disassembling components that contain pressurized springs.

ATTENTION!
No modifications must be made to the component in order to obtain performance different from that for which it was designed and built, unless authorized by the manufacturer.

ATTENTION!
Avoid introducing foreign bodies into the pneumatic system, even small ones, which could cause system malfunction and compromise machine safety.

The component can only be used by trained and authorized operators and only for the purpose for which it was designed and built.

The component is built in compliance with the technical safety standards in force at the time of its construction.

3.1 Component safety devices

N.A.

3.2 Free useful spaces

N.A.

3.3 Risk areas and residual risk

N.A.

4 TRANSPORT AND HANDLING

Once the goods are received, it must be verified that the packaging is intact and that there is exact correspondence with the ordered material.

ATTENTION!
The original configuration of the component must not be modified. The manufacturer is not responsible for damage caused by inappropriate use of the component.

ATTENTION!
If the packaging is not intact, immediately contact the manufacturer, also sending photos of the packaging condition. Do not open it before notifying the manufacturer.

5 INSTALLATION

Component installation is performed by the customer. If necessary, they can contact the manufacturer to have a specialized technician assist them.

The valve has been designed to be used in the following cases:

- Autonomous operation as a fluid doser on a pressure/time basis;
- Operation in combination with a volumetric pump to dose fluid volumetrically.

It is also equipped with two M6 threaded holes (number 03, figure 01, chapter 2) to have perfect centering both during installation and post-maintenance. It is also recommended to secure it well to the support, as vibrations caused by the machinery in operation could move the valve off-center, resulting in suboptimal dosing.

It is recommended to perform a component check before starting installation. If it shows evident damage, please contact the manufacturer.

ATTENTION!
Please remove packaging with maximum care. In case damage is caused to the component, the manufacturer is not responsible.

Dispose of packaging correctly, considering the different nature of components and following the regulations in force in the country.

5.1 Positioning

N.A.

5.2 Connections

This chapter explains the connection method to be used for the component. The following types of connections are provided:

- Pneumatic connection;

5.2.1 Electric

N.A.

5.2.2 Pneumatic

Authorized personnel		**PPE to wear**	    
Component status	Component installed		
Supply Values	See chapter 2.2		
Necessary Preparations	Functioning pneumatic air system		
Required Material	Fixing screws (for centering holes)		
Required Tools	Wrench or screwdriver		

Pneumatic connection is the customer's responsibility.

Before performing valve assembly, it is recommended to perform valve calibration, so as to perform it precisely and, once performed, you can proceed with assembly and possible fixing with screws through the centering bushings. For connections, it is recommended to first connect the pneumatic tube (or both in case of double-acting operation) and then proceed with connecting the product tube (using the data reported in chapter 2.2).

5.3 Commissioning

Component commissioning is performed once positioning and connection operations are completed. Before performing component commissioning, the following checks must be performed:

- Verify that connections have been made correctly;
- Verify that the component is free of dirt or residues of various types;

ATTENTION!
If even one of the points listed above is not compliant, commissioning must not proceed. Commissioning should only proceed when all points are successfully completed.

6 SOFTWARE

N.A.

7 PROCEDURE

This chapter explains the main configurations that can be used on the component that is the subject of this manual. In particular, it explains in detail:

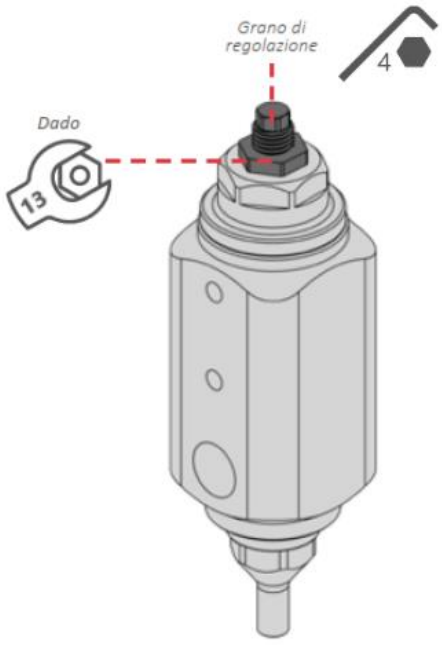
- How to perform needle adjustment through screw adjustment;

Note that the output fluid flow depends on the following factors:

- **Nozzle diameter:** the larger the nozzle diameter, the greater the output fluid flow rate;
- **Fluid pressure:** the higher the fluid pressure, the greater its output flow rate;
- **Needle stroke adjustment:** the greater the needle stroke, the greater the output flow rate.

7.1 Screw adjustment

To perform needle adjustment through screw, you must act on the screw itself. In particular, you must:



1) Unscrew the nut with a 13mm wrench while holding the screw with a 4mm hex key;
2) While holding the nut steady, you must:
   a) Rotate the screw counterclockwise to increase needle stroke. By doing so, you increase fluid output;
   b) Rotate the screw clockwise to decrease needle stroke. By doing so, you decrease fluid output.
3) Finally, you must close the nut while holding the adjustment screw steady, so as to lock the screw and prevent it from going out of calibration.

ATTENTION!
Do not tighten the needle adjustment too forcefully to avoid damaging the nozzle and needle.

8 MAINTENANCE

Maintenance interventions are all those activities to be performed on the component that, if performed correctly, allow it to have a longer life. In general, maintenance is divided into two groups:

- **Ordinary maintenance**, which are interventions at regular intervals or that can be performed by customer personnel, are the most important activities as they allow maintaining the component in good operating conditions;

ATTENTION!
Ordinary maintenance interventions must be performed with the methods and timing indicated in the following chapters.

- **Extraordinary maintenance**, i.e., all those interventions that are not at regular intervals or that were not planned, or interventions that cannot be performed by the customer. They may also result from the lack of ordinary maintenance interventions.

ATTENTION!
Extraordinary maintenance interventions must be performed together with the manufacturer's specialized technicians.

Regarding frequency, it should be considered that:

- **When necessary:** Operation to be performed when the need to perform it is seen;
- **Every machine start or end of work:** Indicates a daily time period, in general. This can imply every 24 hours (therefore at the beginning of every day's shift, or end of every day's shift), or even more frequently, based on applications;
- **Long pause:** Indicates a time period greater than approximately one hour;
- **Every drum change:** Indicates every time the feeding system is changed (tank, drum, cartridge, or other);
- **Every mixer disassembly:** Indicates that every time mixer replacement is performed, a specific operation must be performed;
- **Weekly:** Indicates a time span equal to seven calendar days;
- **Monthly:** Indicates a time span equal to one calendar month;
- **Semi-annual:** Indicates a time span equal to six calendar months;
- **Annual:** Indicates a time span equal to one calendar year.

ATTENTION!
The times indicated below are indicative as they depend on how the component is used. Follow variations suggested by technicians.

Assigned	Description	Frequency	Chapter
	Perform a valve function test	Every machine start or end of work	\
	Perform superficial valve cleaning	Every machine start or end of work	\
	Put a drop of grease on the outlet nozzle	Every end of work	\
	Cleaning and/or nozzle replacement	Semi-annual	8.1, points 1, 2 and 3
	Valve disassembly and reassembly	Annual	8.1

ATTENTION!
Apply the drop of grease every end of work and every prolonged system pause, so as to preserve the fluid inside the system and the functionality of the valve itself.

ATTENTION!
For valve cleaning, use only soft brushes or cotton cloths

8.1 Valve disassembly and reassembly

Assigned	Periodicity	Materials and equipment
	Annual	• 19mm, 15mm, 13mm wrenches; • 4mm hex key; • Narrow-nose pliers; • Flathead screwdriver.

PPE to wear

ATTENTION!
Before performing this procedure, it is necessary to discharge pressure from the system and disconnect the air connection.

01

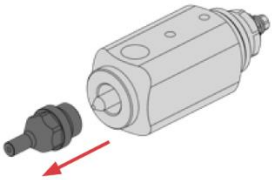
Unscrew the needle adjustment through the appropriate adjustment nut until it no longer offers resistance. Use the tools indicated in chapter 7.1.

02

Unscrew the adjustment block with a 19mm wrench.

ATTENTION!
Under this block there is a spring that is under compression. Unscrew it with maximum care.

03



Unscrew the nozzle using the 15mm wrench.

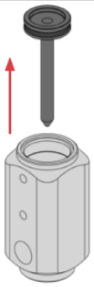
Once the nozzle is disassembled, to clean it you can blow it with compressed air. If it is deemed necessary to use a tool to perform cleaning, the appropriate cleaning needle must be used.

Points 01, 02, and 03 are used to disassemble only the outlet nozzle. To reassemble it, follow the reverse procedure.

04

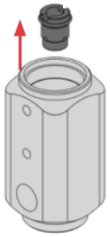
Extract the spring.

05



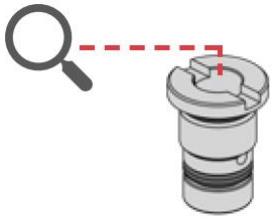
Remove the needle using narrow-nose pliers.

06



Unscrew the bushing with a flathead screwdriver and remove it from the valve body.

07



Check the wear and condition of components in positions 04, 11, and 12 of chapter 2.1 and, if necessary, perform replacement. In any case, always lubricate components before reassembling them with grease or silicone-based oil specific for o-rings.

To reassemble the valve, follow the same steps just seen but in reverse.

ATTENTION!
The scraper must be mounted with the lip towards the nozzle.

ATTENTION!
The adjustment block must not be tilted during screwing, otherwise the thread will be damaged. Furthermore, completely loosen the adjustment nut to avoid damage to the nozzle and needle.

9 TROUBLESHOOTING

This chapter addresses the most common problems that could arise when using the component in this manual.

ATTENTION!
Once the operator has found a problem or suspects there is a problem, they must call the technician responsible for maintenance. Maintenance must always be performed by a specialized and qualified technician

DEFECT	CAUSE	SOLUTION
Little or no fluid	The valve does not receive the command	Verify the valve command (solenoid valve). Perform a manual test
	The fluid pressure is too low or absent	Check the fluid supply group pressure and increase it if necessary
	The nozzle is clogged	Unscrew and clean the nozzle
	The filter is dirty (if present)	Wash or replace the filter
	A tube is bent	Check the condition of fluid supply tubes
	Insufficient actuation pressure	Verify actuation pressure (chap. 2.2)
	Fluid residues present in the system	Disassemble and clean any solid particles
Fluid leakage from bushing	Damaged scraper	Replace the scraper
	Damaged needle	Replace the needle
The nozzle drips even when the valve is not controlled	Presence of dirt in the nozzle	Clean or replace the nozzle
	Insufficient actuation pressure	Verify actuation pressure (chap. 2.2)
The valve opens with delay	Damaged O-Ring on pneumatic piston	Replace O-Ring on pneumatic piston

10 END OF LIFE

End of life means all those activities that put the component out of service. End-of-life activities can be:

- **Storage**, i.e., when the component is temporarily placed in the warehouse for future use;
- **Stocking**, i.e., when the component is placed in the warehouse for an unspecified period waiting for a third party to purchase the component;
- **Dismantling**, i.e., when the component has reached the end of working period, whether due to age, obsolescence, or failures that cannot be repaired, or that can be repaired but it is more convenient to buy a new component.

If installation is not planned in the short term, the component can remain packaged and must be stored in a sheltered and preferably closed place. The ambient temperatures to be respected are reported in chapter 2.2.

Instead, for dismantling and consequent scrapping of the component or its parts, the different nature of the various components must be considered and differentiated scrapping must be performed. It is recommended to entrust specialized companies for this purpose and the laws in force regarding waste disposal must always be observed.