DAVtech

PARTS, SYSTEMS AND AUTOMATIONS FOR FLUID DISPENSING

USE AND MAINTENANCE MANUAL

DAS-30 SPRAY DOSING VALVE

COD.: **DTVI_DAS30_2404**
REV.: **00**
DATE: **31/01/2024**

TRANSLATED FROM ORIGINAL
Read carefully before use!

EN

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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 suitable behavior for correct operation. This manual has been designed to be simple and as straightforward as possible, with a subdivision into chapters and sub-chapters that allows you to find any information you need quickly. In addition, the manual begins by giving a general description of the contents, then an overview of the component, to arrive at aspects of safety, transport, installation and use and finally to the end of life. If you have any doubts about the interpretation or reading of this document, please contact the manufacturer.

DAV Tech declines any responsibility relating to improper use of the component. Observe the specifications in this manual.

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

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

It is the task of the end user to optimize the functionality of the component, always considering the purpose for which it was built.

You are asked to keep this manual, together with the attached documentation, in good condition, legible and complete. In addition, it must be stored in the vicinity of the component or, in any case, in a place accessible and known to all personnel who use the component itself or who must perform maintenance or inspection interventions. If the manual deteriorates or is no longer complete, a copy must be requested from the manufacturer, indicating the code of the manual and the revision.

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

If you have any doubts about the correct interpretation of the information contained in this manual, please contact the manufacturer.

GUARANTEE

During the design phase, a careful choice of materials and components to be used in the project was made and they were subjected to regular testing before delivery. All elements have been designed and manufactured with an adequate degree of safety, such as to be able to withstand stresses greater than those of normal use.

The warranty is valid for a period of 12 months from the date of commissioning and in any case no longer than 15 months from the date of delivery. Work carried out during the warranty period does not extend the warranty period in any way.

The manufacturer is not liable for defects due to normal wear and tear of parts which, by their nature, decay.

1.1 Symbology

Below are the symbols that are used to give a greater impact to the importance of the concept you want to give.

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

DANGER!
It refers to a major event that could cause major damage (death, permanent injury, irreversible breakage of the component).

NOTE. Indicate relevant information or insight.

OBLIGATION. It indicates a task that must be performed, related to both the component and the manual.

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

In addition, the list of symbols is integrated with that of the personnel responsible for using the component and its function, together with other symbols used within the manual.

Operator
A (qualified) person capable of operating the component, adjusting, cleaning, starting or resetting the component. The operator is not authorized to perform maintenance.

Mechanical maintenance technician
Qualified technician able to carry out mechanical, adjustment, maintenance and routine repair work described in this manual. He is not authorized to carry out interventions on electrical systems in the presence of voltage.

Electrical maintenance technician
Qualified technician able to carry out electrical, adjustment, maintenance and routine repair work described in this manual. It can work in the presence of voltage on electrical cabinets and junction boxes. He is not authorized to carry out interventions on the mechanical side.

Manufacturer's technician
Qualified technician made available by the manufacturer to carry out operations of a complex nature in particular situations, or in any case as agreed with the customer.

1.2 Reference standards

The reference standards and directives of this manual are the following:

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 ALMOST MACHINE

Component: DAS-30 Valve
Model: Spray dosing valve
Year: 2024
Intended use: Time/pressure pray dosing valve

COMPLIES WITH THE INCORPORATION PROVISIONS OF DIRECTIVE 2006/42/EC

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

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

IT ALSO DECLARES THAT:

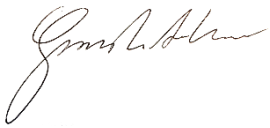
- Undertakings are undertaken to provide, in response to a properly substantiated request from the national authorities, relevant information on this partly completed machine;
- The technical file was prepared by Andrea Grazioli, via Ravizza, 30, Montecchio Maggiore (VI), IT.

This quasi-machine cannot be used until the machinery on which it will be used is declared compliant with regulation 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 triggered as soon as the criteria are met, which consequently leads to the activation of the enabled action.
Active	The action that is performed instantaneously when the control is activated.
Human controls	This defines those commands that, used for manual operations, must be kept activated for the action to be performed. When the command is released, the action stops.
Two-hand controls	Human-controlled controls require two manual controls to be operated simultaneously to perform an action.
P.P.E.	Personal protective equipment. They include all the items necessary to ensure the protection of personnel from possible accidental damage (safety shoes, gloves, helmet, and more).
Display	It is used to display information. It can be in any shape and size, even touch screen.
Manufacturer	Natural or legal person who designed and manufactured the component covered by this manual.
HP	High Pressure. An acronym that indicates high pressure.
Icon	A small image that represents a command, a function or even a document or an operating program, which appears on a computer screen. When selected by the user, it initiates the function or program it symbolizes.
Joystick	Lever manipulator used in control panels.
N.A.	Not Applicable, i.e. it indicates that it is a field that does not apply to this manual and that it cannot be integrated into the component.
Operator panel	A control station where the machine control instruments are located
P.I.	Possible Implementation, i.e. it is currently absent from the component described in this manual, but it is possible to make an addition and implement it.
Screen	Interface system between man and component. Screenshots are the images displayed on the operator panel that allow the user to receive and provide information to the management software.
Push-button panel	Composition of buttons and selectors that allow you to act directly on the behavior of the component.
Keyboard	Keyboard only (stand-alone 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 graphic interface using their fingers or objects.

1.5 Service and manufacturer contact details

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

The customer can make use of the technical and commercial support of local agents or importers, who are in direct contact with the company 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

In this manual we want to deepen the operation of a micro-spray valve, which has been designed to be able to adapt to any type of space, given its very small dimensions. This type of valve can also work with various types of fluids, as described in chapter 2.2. To work at its best, this valve must be connected to two 3/2 solenoid valves.

In other words, the function of this component is:

SPRAY DISPENSING OF VARIOUS FLUID TYPES

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

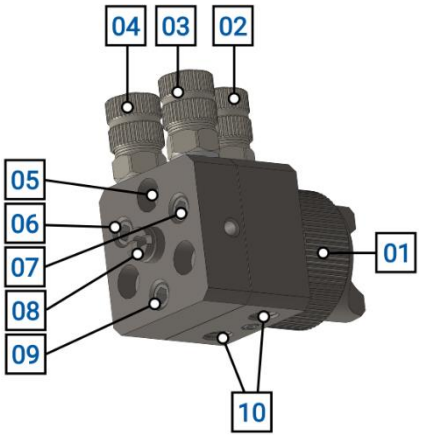


Figure 01 – DAS 30 detail

No.	DESCRIPTION
01	Product Output
02	Fluid Inlet (M)
03	Main Air Inlet (S)
04	Spray air inlet (Z)
05	Body closing screws
06	Alternative air mist inlet (Z)
07	Alternate main air inlet (S)
08	Needle adjustment screw
09	Fluid alternative inlet (M)
10	Screw entry fixing on support

Before using a certain type of fluid, it is necessary to check that:

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

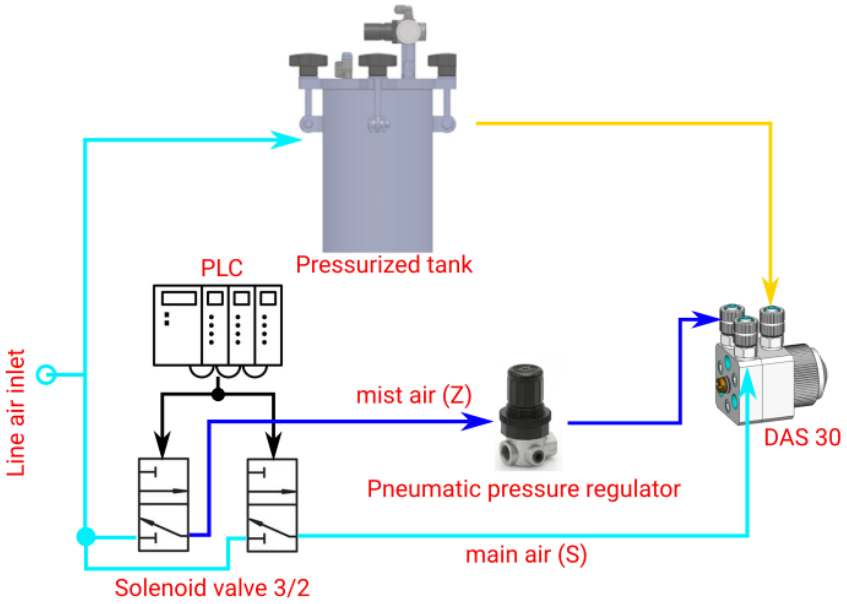
If it is necessary to use several fluids with the same valve, it must be cleaned thoroughly to prevent residues from the previous processing from affecting the processing to be performed.

SPECIAL VERSIONS

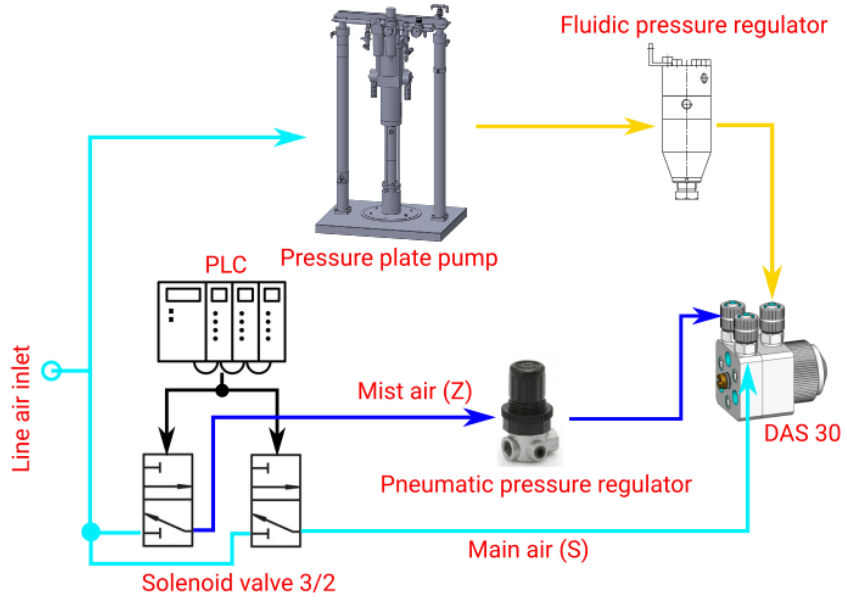
This valve exists in various versions:

1. PEEK version, for aggressive or reactive products;
2. Version with extension for radial spraying (100, 150, 200 or 300 mm long and, on request, also custom lengths) and allow low and medium viscosity products such as oils and greases to be dispensed inside holes and cylinders;
3. Version with sensor for objectification of valve opening;
4. Versions with special and custom materials, subject to technical evaluation.

OPERATION



COLOR	MEANING
CYAN	Main Air
BLUE	Air Mist
YELLOW	Product
BLACK	Data
RED	Notes



CYAN	Main Air
BLUE	Air Mist
YELLOW	Product
BLACK	Data
RED	Notes

Figure 02 – Connection Example (Both LP and HP)

ATTENTION!
The air entering the valve must be filtered and without water (dried), otherwise it risks forming oxide inside the component and wearing it out more quickly.

This valve must be connected to two 3/2 valves, one that manages the main air supply part (indicated on the valve with "S") and another that manages the nebulization part of the product (indicated on the valve with "Z"). The needle inside the valve can have two settings, depending on the configuration chosen:

- Either by adjusting screw, then manually;
- Or via internal sensor, then automatically.

In the latter case, the sensor detects if the needle has rested on it, sending the signal to the control unit (PLC) that the valve is open.

For minimum working pressures, please refer to Chapter 2.2.

The valves cannot operate autonomously. To ensure that it dispenses product, they must be connected to a power source, which can be a tank, a pump or other, depending on the system and the customer's needs.

ATTENTION!
It is recommended to connect the valves to the sources indicated in this manual in chapter 2.2. Connecting them to other sources or products with features not listed in this manual may break them.

The valves are also equipped with an adjustment screw, which is used to determine how much product to dose. In practice, the adjustment of the pin determines, together with the pressure of the material and the opening time, the quantity of product dispensed. To use the screw, you can turn clockwise to decrease the stroke of the needle and, therefore, the amount of fluid dispensed (until it is completely closed); Turning in the other direction increases the amount of fluid delivered.

The following is intended to explain how the DAS 30 valves work.

Figure 04 – Resting phase

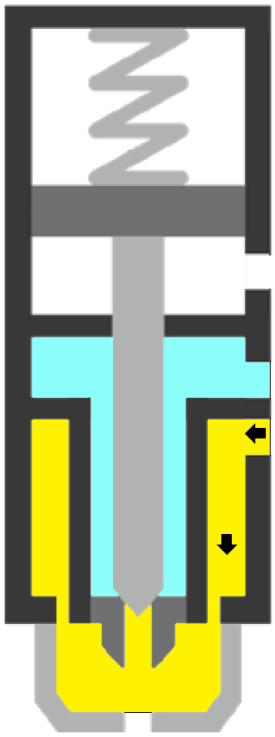


Figure 05 – Nebulization phase

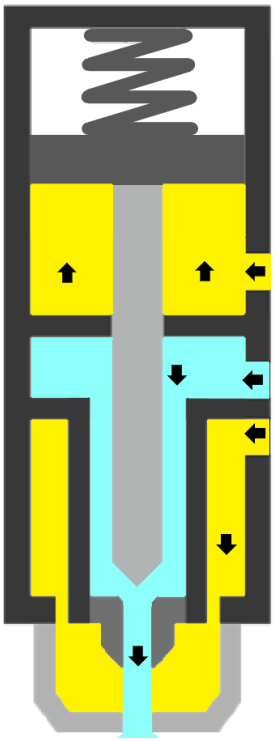


Figure 06 – Dosing phase

The fluid is pushed into the valve via the fluid inlet (M). To prevent it from coming out, the valve is equipped with a needle that is normally closed and that is pushed by a spring into its position. This way, the fluid chamber is always full and ready to dispense. Regarding the pneumatic part, however, there are two inlets: one for the main air supply, which is used to control the opening and closing of the valve (S) and which, as soon as it is controlled by a sufficiently high pressure (5÷6 bar), opens the needle and the product exits; the second, on the other hand, is used to spray the outgoing product (Z) (depending on the product nebulization mode, the pressure can be adjusted 0.1 ÷ 6 bar). The latter is used to give the spray effect to the outgoing product since the air channels are directly connected with the outlet nozzle and, with the output of the product, the nebulized effect is obtained. So, in general, the toggle sequence is as follows:

- The fluid is ready to exit into its special chamber (Figure 04);
- The needle is closed by the spring that keeps it resting on the outlet nozzle;
- The nebulization command is given, then air is sent inside the inlet "Z" by means of a 3/2 solenoid valve (Figure 05);
- The opening command is given, then air is sent inside the "S" inlet by means of a 3/2 solenoid valve;
- The needle is opened, and liquid nebulized fluid begins to flow out (Figure 06);
- Dosing is carried out for the expected time;
- When you want to stop dosing, remove the control at the "S" input; therefore, the valve closes the needle and no longer comes out fluid (Figure 05);
- Shortly after, the control at the "Z" inlet is removed, to stop nebulizing (Figure 04).

The last two points are performed in this way to give time to the fluid to come out of the chamber, atomize it all and then clean the exit nozzle, like the cap. Below is a diagram of the switching on and off of the two solenoid valves and, therefore, of opening and closing the pneumatic circuits.

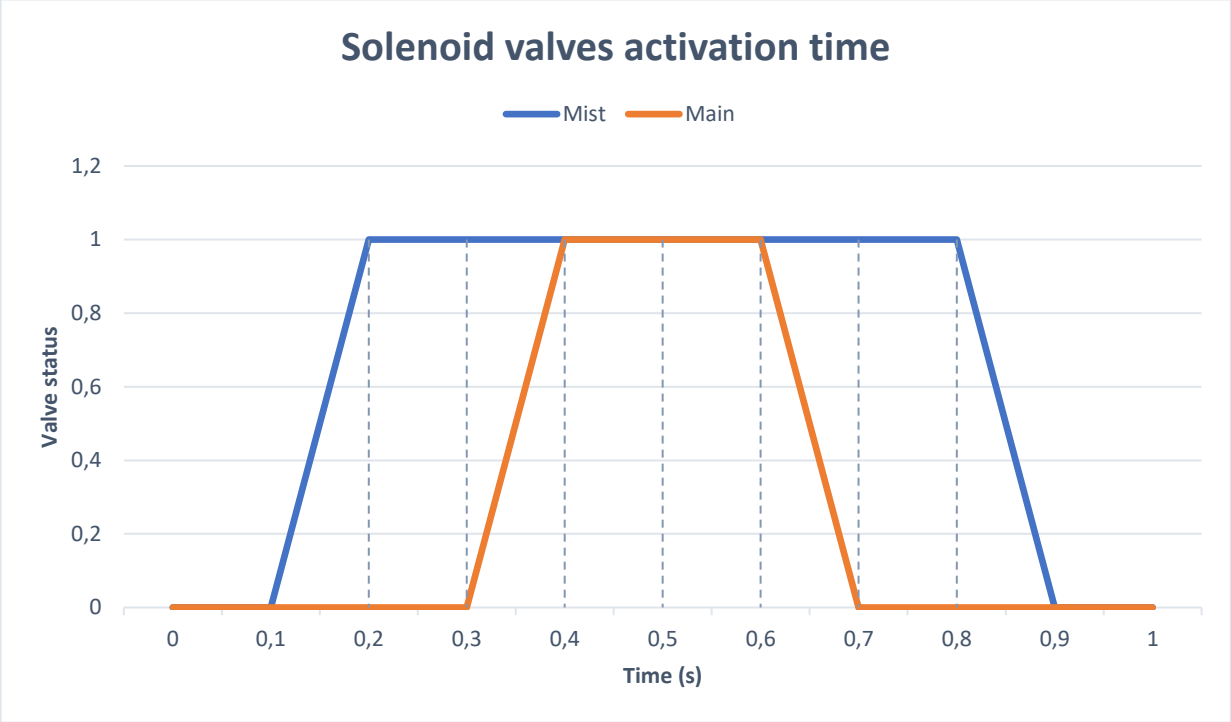


Figure 07 – Valve activation graph in one second of work

Figure 07 shows an example graph of the activation and deactivation times of the respective valves, i.e. typically there is a difference of about 0.1-0.2 seconds between the activation and deactivation of the valves. This figure is indicative as it depends on the viscosity of the fluid and the use of the valve itself.

In summary, the valve can work in both continuous and intermittent use. Below we want to give advice for optimal use, to increase the life of the valve itself and reduce the need for any maintenance. It should be noted that, under optimal operating conditions (calibrating the material pressure and the control air pressure, needle stroke and having short lines), it is possible to have up to 30 cycles per second.

- The operating air pressure (S) must be 6 bar;
- The additional air (Z) must be adjusted so that it is switched on before the needle retracts and is only switched off after the nozzle has been closed;
- If the material is kept under pressure and contact with the outside air can be avoided, the fluid can remain in the valve for long periods, even without being used;
- Only clean and filtered fluid should be used;
- The pressure of the atomizing air must not be greater than the pressure of the material, otherwise a back pressure may develop that pushes the material into the nozzle.

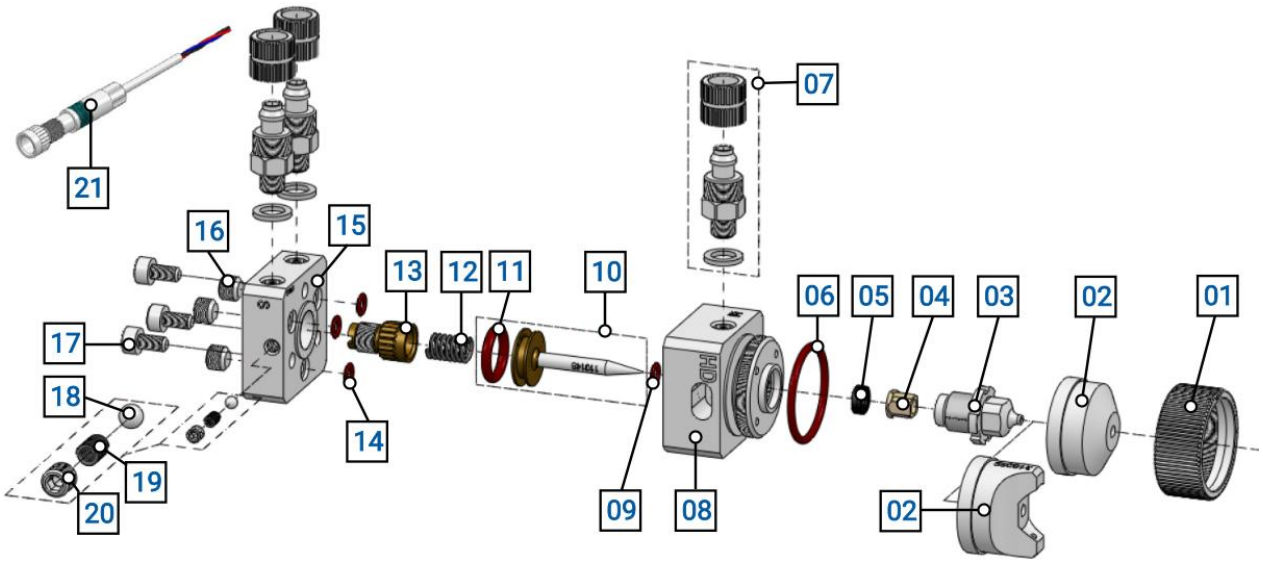
USEFUL TIPS

ATTENTION!
The parameters shown are indicative, as the valve also has special applications. Always ask for advice from technicians during the design phase to have an application suitable for your use

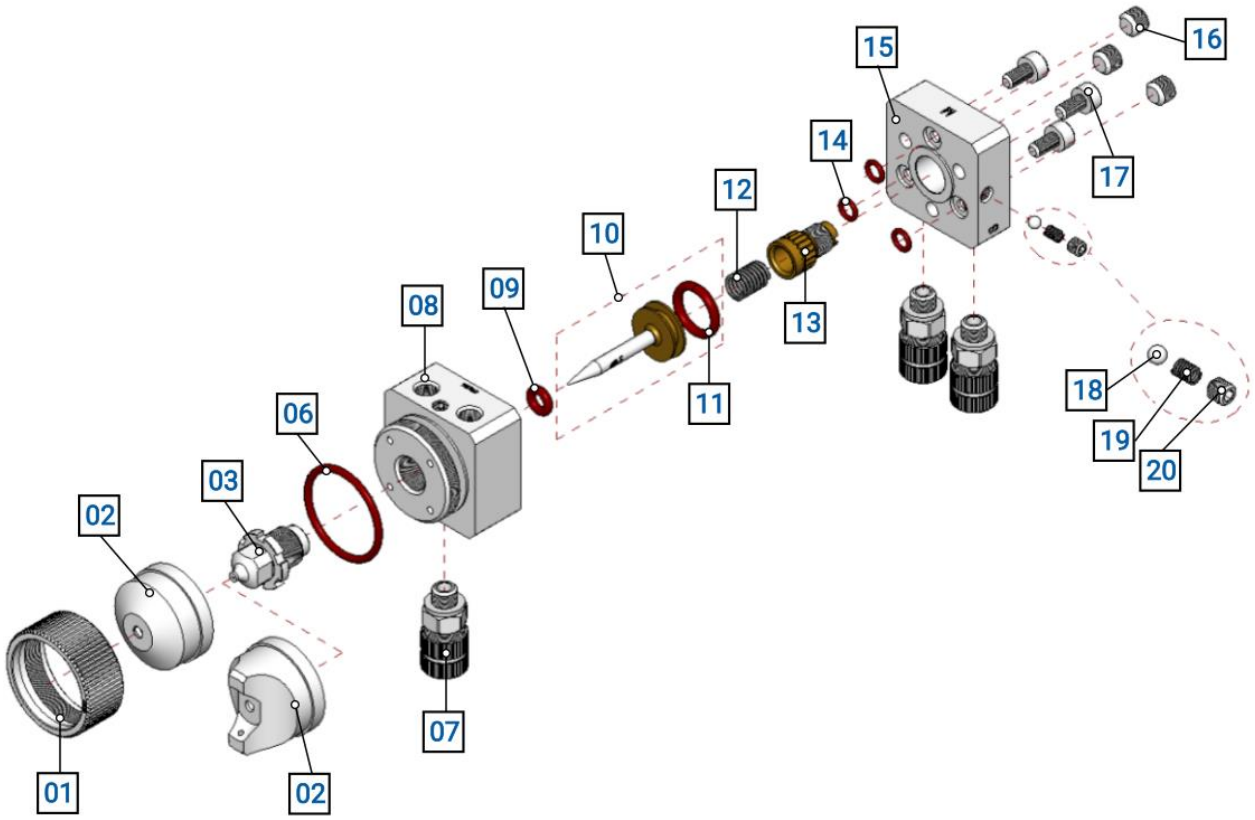
- With low viscosity fluids (less than 100 mPa*s) it is recommended to use a nozzle with a small hole (0.5mm or less) to better control the spray flow;
- To extend the spray radius of a round cap, a spin nozzle must be used. In general, a round cap has a 15° spray arc (angle of the cone opening from the nozzle);
- If you increase the distance between the surface to be sprayed and the nozzle, you will have a change in the size of the spray template. In general, the minimum recommended distance is 5mm, while the maximum distance is 200mm, depending on the application;
- Care should be taken that the air arriving at the spray inlet is properly reduced, including the initial instantaneous air peak of the solenoid valve. Consider the use of quality gearboxes, which can perform correct damping even of the initial peak;
- To obtain a "spot" dispensing (i.e. a very small circle), consider using a front extension;
- The 60° oval cap has a single nebulization exit hole, which allows for an oval with more pronounced ends; while, the 90° one has two nebulization holes, and allows you to have an oval with the most delicate ends;
- The resulting shape of the fluid coming out of any oval cap is perpendicular to the nebulization holes of the head itself;
- The oval cap covers more area (horizontal) than a round cap.

2.1 Exploded

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

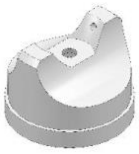


Exploded view DAS 30 HP

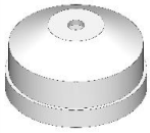


Exploded view DAS 30

02 – AIR HOOD VARIANTS



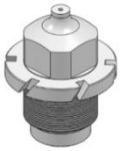
OVAL AIR CAP (STANDARD)



ROUND AIR CAP

03 – NOZZLE VARIANTS

STANDARD NOZZLE



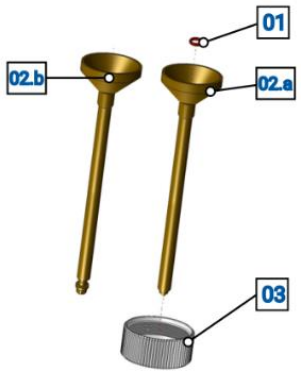
SPIN NOZZLE

10 – NEEDLE VARIANTS

STANDARD NEEDLE

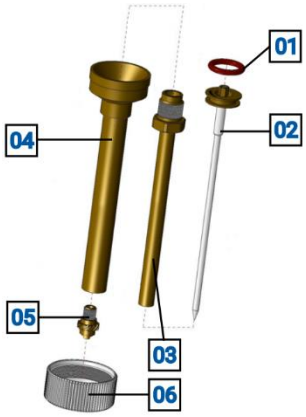
SENSOR NEEDLE

No.	Description	Var.	Code	Variant details
01	RING	-	410028	-
02	AIR HOOD	-		-
		02.a	310034	ROUND 15° FOR NOZZLE 0.2 – 1.0 mm
		02.b	310035	ROUND 15° FOR 1.2 – 1.5 mm NOZZLE
		02.c	310080	ROUND 15° FOR 1.8 – 2.0 mm NOZZLE
		02.d	310091	ROUND 15° FOR 2.5mm NOZZLE
		02.e	310038	OVAL 45° FOR NOZZLE 0.2 – 1.0 mm
		02.f	310039	OVAL 45° FOR NOZZLE 1.2 – 1.5 mm
		02.g	310032	OVAL 60° (STANDARD) FOR NOZZLE 0.2 – 1.0 mm
		02.h	310033	OVAL 60° (STANDARD FOR NOZZLE 1.2 – 1.5 mm
		02.i	310079	OVAL 60° (STANDARD) FOR NOZZLE 1.8 – 2.0 mm
		02.j	310090	OVAL 60° (STANDARD) FOR NOZZLE 2.5 mm
		02.k	310036	OVAL 90° FOR NOZZLE 0.2 – 1.0 mm
		02.l	310037	OVAL 90° FOR NOZZLE 1.2 – 1.5 mm
		02.m	310166	OVAL 90° FOR NOZZLE 1.8 – 2.0 mm
		02.n	310167	OVAL 90° FOR NOZZLE 2.5 mm
03	NOZZLE	-		-
		03.a	210110	STANDARD 0.2 mm
		03.b	210111	STANDARD 0.3 mm
		03.c	210112	STANDARD 0.5 mm
		03.d	210113	STANDARD 0.8 mm
		03.e	210114	STANDARD 1.0 mm
		03.f	210115	STANDARD 1.2 mm
		03.g	210116	STANDARD 1.5 mm
		03.h	210117	STANDARD 2.0 mm
		03.i	210118	STANDARD 2.5 mm
		03.j	210776	SPIN 0.2 mm
		03.k	210777	SPIN 0.3 mm
		03.l	210778	SPIN 0.5 mm
		03.m	210779	SPIN 0.8 mm
		03.n	210780	SPIN 1.0 mm
		03rd	210781	SPIN 1.2 mm
		03.p	210782	SPIN 1.5 mm
		03.q	210783	SPIN 2.0 mm
		03.r	210784	SPIN 2.5 mm
04	NEEDLE GUIDE (HP ONLY)		320564	-
05	QUAD RING (SOLO HP)		640045	
06	O-RING		640006	
07	SLIP-ON FITTING		220089	
08	MAIN BODY			
		08.a	510025	LP MAIN BODY
		08.b	510938	HP MAIN BODY
09	SEAL			
		09.a	640026	LP GASKET
		09.b	640000	HP GASKET
10	PIN			
		10.a	110155	STANDARD 0.2 – 0.3 mm
		10.b	110156	STANDARD 0.5 mm
		10.c	110157	STANDARD 0.8 mm
		10.d	110158	STANDARD 1.0 mm
		10.e	110159	STANDARD 1.2 mm
		10.f	110160	STANDARD 1.5 mm
		10.g	110161	STANDARD 2.0 mm
		10.h	110162	STANDARD 2.5 mm
		10.i	110696	FOR SENSOR 0.2 – 0.3 mm
		10.d	111062	FOR SENSOR 0.5 mm
		10.k	111930	FOR SENSOR 0.8 mm
		10.l	111931	FOR SENSOR 1.0 mm
		10.m	111932	FOR SENSOR 1.2 mm
		10.n	111933	FOR SENSOR 1.5 mm
		Article 10	111934	FOR SENSOR 2.0 mm
		10.p	111935	FOR SENSOR 2.5 mm
11	O-RING		640366	
12	SPRING			
		12.a	820017	SPRING LP
		12.b	820014	SPRING HP
13	ADJUSTMENT BLOCK		610090	
14	O-RING		640000	
15	PNEUMATIC PART BODY		510028	
16	GRUB SCREWS		610021	
17	SCREWS		610008	
18	CONICAL ELEMENT		650004	
19	SPRING		820077	
20	THREADED SCREWS		610017	
21	PIN OPENING/CLOSING SENSOR		320314	
\	COMPLETE GASKET KIT			
		00.a	GASKETKIT-DAS30	LP COMPLETE GASKET KIT
		00.b	GASKETKIT DAS30HP	HP COMPLETE GASKET KIT



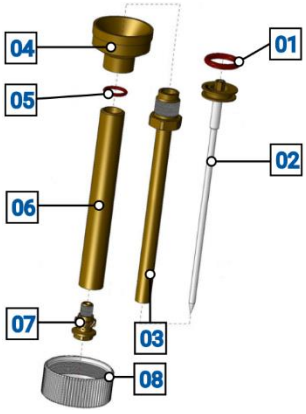
360° RADIAL DISPENSING EXTENSION OR FRONT DISPENSING L:100 mm Ø 4 mm

No.	Description	Code
01	O-RING	640203
02	COMPLETE EXTENSION	\
02.a	FULL FRONT EXTENSION	231515
02.b	COMPLETE RADIAL EXTENSION	230747
03	RING	410028



FRONT DISPENSING EXTENSION L:100/200 mm Ø 8 mm

No.	Description	Code
01	O-RING	640366
02	PIN	\
02.a	NEEDLE STANDARD 100mm	110432
02.b	SENSOR VERSION NEEDLE	112929
02.c	STANDARD NEEDLE 200mm	112601
03	INNER TUBE	\
03.a	STANDARD INNER TUBE 100mm	850129
03.b	HP INNER TUBE 100mm (shown)	851134
03.c	STANDARD INNER TUBE 200mm	850096
03.d	HP INNER TUBE 200mm	854821
04	OUTER TUBE	\
04.a	COMPLETE OUTER TUBE 100mm	850215
04.b	COMPLETE OUTER TUBE 200mm	850669
05	NOZZLE 0.5mm	210348
06	RING	410028



RADIAL DISPENSING EXTENSION 360° L:100/200 mm Ø 8 mm

No.	Description	Code
01	O-RING	640366
02	PIN	\
02.a	STANDARD NEEDLE 100mm	110432
02.b	SENSOR VERSION NEEDLE	112929
02.c	STANDARD NEEDLE 200mm	112601
03	INNER TUBE	\
03.a	STANDARD INNER TUBE 100mm	850129
03.b	HP INNER TUBE 100mm (shown)	851134
03.c	STANDARD INNER TUBE 200mm	850096
03.d	HP INNER TUBE 200mm	854821
04	THREADED BLOCK	220197
05	O-RING	640366
06	OUTER TUBE	\
06.a	COMPLETE OUTER TUBE 100mm	850130
06.b	COMPLETE OUTER TUBE 200mm	850097
07	NOZZLE	\
07.a	0.4mm NOZZLE	211206
07.b	0.6mm NOZZLE	211343
07.c	NOZZLE 0.8mm	211327
08	RING	410028

2.2 Technical data

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

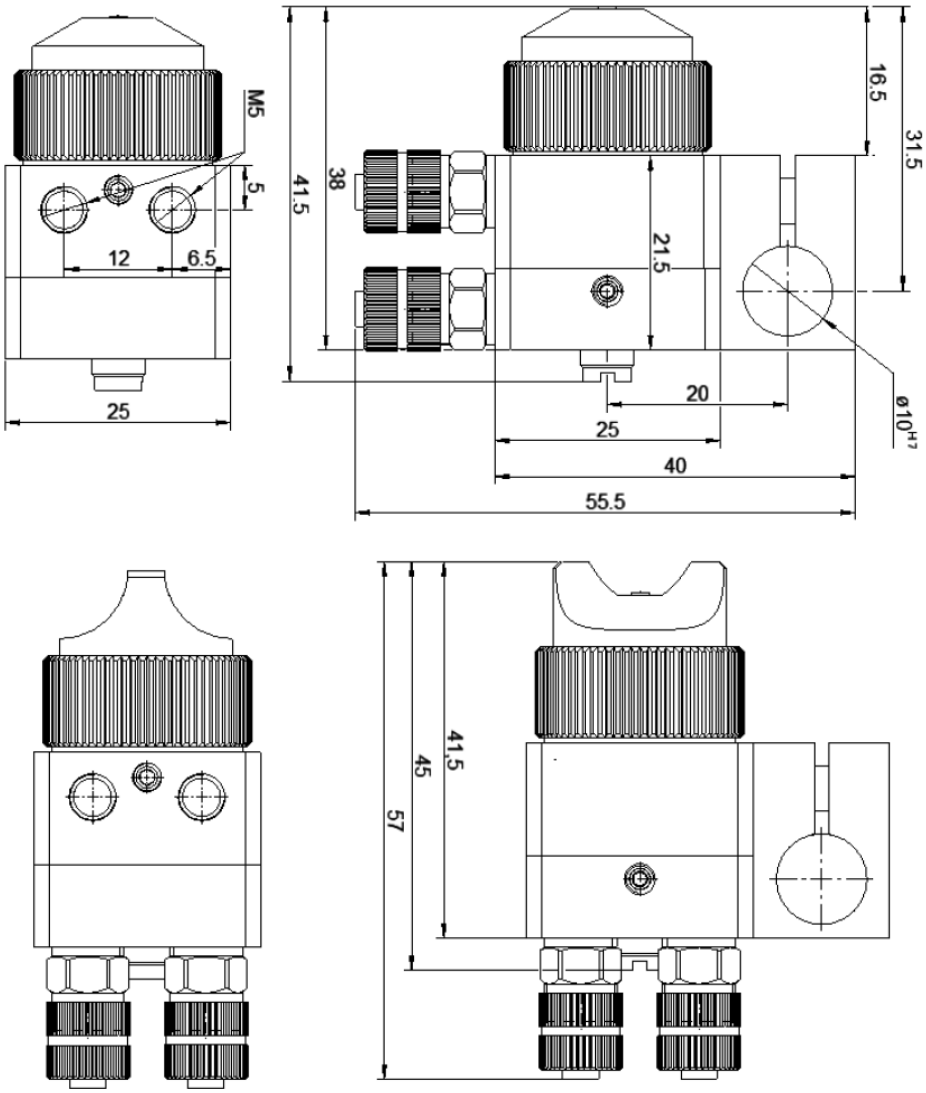
SPECIFICATIONS		
Description	**UdM**	**Values**
Model	\	DAS 30
Activation	\	Single Acting
Maximum fluid pressure	bar	3 (LP)
		30 (HP)
Minimum pneumatic pressure	bar	5 ÷ 6
Air pressure nebulization	bar	0.1 ÷ 6
Air inlet dimensions	mm	6x4
Fluid inlet dimensions	mm	6x4
Fluid outlet type	\	Round
		Oval
		Radial (with extension)
Maximum control frequency	cycles/min	200
Passage adjustment	\	Micrometric
		Sensor (optional)
Materials used	\	Stainless steel

ENVIRONMENTAL CHARACTERISTICS		
Description	**UdM**	**Values**
Working Ambient Temperature	°C	5 ÷ 45
Storage Ambient Temperature	°C	-20 ÷ 40
Permissible non-condensing humidity	%	5 ÷ 90

USABLE FLUIDS
Oil
Lubricants
Primer
Greases (HP version only)
Anaerobic fluids (PEEK version)

DIMENSIONAL AND WEIGHT CHARACTERISTICS		
Description	**UdM**	**Value**
Component length (min ÷ max)	mm	41.5 ÷ 57
Component depth (min ÷ max)	mm	25
Component height (min ÷ max)	mm	25
Component weight	kg	0.14

Component



You can request the 3D of the component in the desired version from the manufacturer without any obligation.

3 SAFETY

The following is a list of warnings regarding the component covered by this manual. Please read carefully before proceeding to the next chapters.

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

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

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

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

DANGER!
Be very careful when servicing the component, especially when disassembling components that have pressure springs inside.

ATTENTION!
Modifications to the component must not be made to achieve performance other than that for which it was designed and built, unless authorized by the manufacturer.

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

The component may only be used by trained and authorized operators and for the sole purpose for which it was designed and manufactured.

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

3.1 Machine safety devices

N.A.

3.2 Free useful spaces

N.A.

3.3 Risk areas and residual risk

There are the following residual risks on the component:

- **Dangers due to electricity:** the passage of pressurized fluid generates static electricity which, if touched by personnel who are not properly isolated, can be dangerous;
- **Hazards due to inhalation of hazardous vapors:** The component is not designed to have insulation from any toxic and/or hazardous vapors; personnel working with this device should be aware of this during its use;
- **Fire hazard due to vapors:** Personnel working near this component must absolutely not have any heat sources that could start a fire;
- **Risk due to fluid projection under pressure:** Due to incorrect maintenance of the component, it can lead to the expulsion of some parts of the component and consequent expulsion of fluid.

4 TRANSPORT AND HANDLING

Once you have received the goods, you must check that the packaging is intact and that there is an exact correspondence with the material ordered.

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

ATTENTION!
If the packaging is not intact, contact the manufacturer immediately, also sending photos of the condition of the packaging. Do not open it until you have notified the manufacturer.

5 INSTALLATION

The installation of the component is carried out by the customer. If necessary, you can contact the manufacturer to have a specialist technician help you.

This type of valve can be installed in any orientation, using the M5 holes on its body. Obviously, an important factor is the distance between the valve and the place you want to work , as the distance produces different dispensing effects. In addition, the peculiarity of this valve is the possibility of changing the position of the fluid inlet and air inlet holes. To perform the configuration change procedure, please refer to chapter 7.2.

It is recommended that you perform a component check before beginning the installation. If it is evidently damaged, please contact the manufacturer.

ATTENTION!
Please remove the packaging with the utmost care. If damage is caused to the component, the manufacturer is not liable.

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

ATTENTION!
If the valve inputs change position, remember to put the grub screws back in the positions where the connections were present, otherwise the circuit will not work properly.

5.1 Positioning

N.A.

5.2 Connections

In this chapter, we want to explain the connection method that must be used for the component. The following types of connection are provided:

- Electrical connection (only with sensor, see chapter 7.3 for installation);
- Pneumatic connection;

5.2.1 Electric

N.A.

5.2.2 Pneumatic

Authorized personnel	 **PPE to wear**     
Component status	Component installed and turned off
Power Values	See chapter 2.2
Necessary preparations	Working pneumatic air system
Materials needed	Fixing screws (for centering holes)
Equipment needed	Wrench or screwdriver

The pneumatic connection is the responsibility of the customer.

Before assembling the valve, it is recommended to calibrate the valve, so as to carry it out precisely and, once carried out, you can proceed with the assembly and possible fixing by screws on the appropriate seats. For connections, it is recommended to connect the pneumatic hoses first and then proceed with the product hose (using the data given in chapter 2.2).

5.3 Commissioning

The commissioning of the component is carried out once the positioning and connection of the connections has been completed. Before commissioning the component, the following checks must be carried out:

- Check that the connections have been connected correctly;
- Check that the component is free of dirt or residues of various kinds;

ATTENTION!
If even one of the above points does not comply, commissioning must not be carried out. Commissioning should only be carried out when all points have been successfully completed.

6 SOFTWARE

N.A.

7 PROCEDURE

In this chapter we want to explain the main configurations that can be used on the component covered by this manual. In particular, we want to explain in detail:

- How to perform needle adjustment by screw adjustment;
- How to change the configuration of the inputs;
- How to mount the sensor instead of the screw adjustment

It should be noted that the output fluid does not depend only on the needle adjustment, but also on other factors, namely:

- **Nozzle diameter:** the larger the nozzle diameter, the higher the flow rate of fluid at the outlet;
- **Fluid pressure:** the higher the fluid pressure, the higher its outlet flow rate;
- **Needle stroke adjustment:** The larger the needle stroke, the higher the flow rate.

7.1 Needle Adjustment

The needle stroke can be adjusted by acting on the micrometric screw located on the back of the valve body. Each click of the screw corresponds to a movement equal to 0.025mm of the pin stop block. To adjust the screw, you must:

- Turn clockwise to decrease the amount of fluid dispensed;
- Turn counterclockwise to increase the amount of fluid dispensed.

ATTENTION!
The passage must not be reduced excessively by forcing the stop lock, otherwise there is a risk of damaging the needle and nozzle.

7.2 Input configuration change

The valve is supplied with the inlets in the opposite configuration to the position of the fixing holes, as in figure 04. To move from Figure 04 to the configuration in Figure 05, the following steps must be followed:

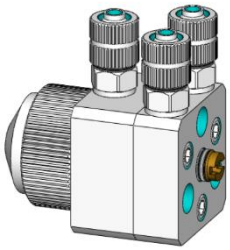


Figure 08 – Standard Configuration

- If already connected, remove the line air and relieve the residual pressures;
- Disconnect the hoses from their valve seats;
- Using a special wrench, unscrew the input nuts;
- Remove the grub screws in position 06, 07 and 09 chap.2;
- Put the appropriate gasket on the fitting;
- Screw the entrances into the spaces provided, each marked with the respective letter;
- Screw the removed grub screws into the respective seats where the entrances were previously located (No. 02, 03 and 04 chapter 2).

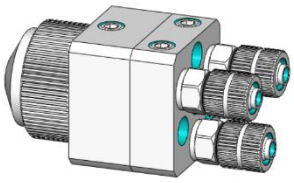


Figure 09 – Linear Configuration

ATTENTION!
Input must respect the initial configuration. To do this, you can move them one at a time, to be sure that you are acting correctly.

ATTENTION!
Before tightening screws and inputs, clean the areas, to prevent various residues from entering the holes.

7.3 Sensor Installation

A sensor can also be installed in the DAS 30 valve to detect the needle position.

ATTENTION!
If you want to install the sensor, you must make sure you have the right pin before proceeding. See chapter 2.1 to make sure you have everything you need.

The sensor should be positioned in place of the needle stroke adjustment screw. To do this, you should follow the following steps:

1. Turn the adjustment screw counterclockwise until it is completely loosened;
2. Disassemble the valve body fixing screws (Chapter 2, Figure 01, No.5) with a 2.5mm Allen key;

ATTENTION!
Inside the body there is a tension spring. Be careful during the disassembly phase

3. Tighten the adjusting screw completely (Chapter 2, Figure 01, No.8) until it falls out of place;
4. Take the sensor and unscrew the head (No.1 Figure 06) from the body (No. 3 Figure 06);
5. Screw the sensor head onto the plate on which the adjustment screw was attached;

ATTENTION!
The sensor head must be screwed clockwise towards the inside of the valve, to connect with the body which is towards the outside

6. Screw the sensor body onto its head, turning the valve body if necessary, and keeping the body lock ring raised (No. 2 Figure 06) (i.e. pulling towards the sensor body and compressing the spring, No. 3 Figure 06), so that the sensor rotates WITHOUT its head;

ATTENTION!
The sensor body must be screwed on as far as it goes, i.e. (with the spring compressed!) until the teeth of the body meet the housing provided and it is no longer possible to turn the body. This is to have a correct reading of the sensor, otherwise it does not work.

7. Turn the sensor body counterclockwise by releasing the ring nut to match the teeth;
8. Place the spring in its housing and close the sensor body.

To disassemble the sensor body, follow the same steps in reverse. The only trick is, once the valve body has been opened, to turn the valve body clockwise holding the sensor body until the sensor head is easily unscrewed.

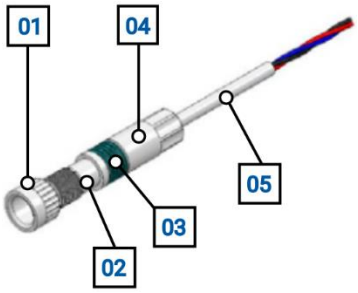


Figure 10 – DAS 30 sensor detail

No.	DESCRIPTION
01	Valve fixing head
02	Body lock ring
03	Body/head fixing spring
04	Sensor body
05	Sensor cable

8 MAINTENANCE

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

- **Ordinary maintenance**, which are interventions on a regular basis or that can be carried out by the customer's staff, are the most important activities as they allow the component to be kept in good working condition;

ATTENTION!
Ordinary maintenance must be carried out in the manner and timing indicated in the following chapters.

- **Extraordinary maintenance**, i.e. all those interventions that are not regularly carried out or that have not been planned, or interventions that cannot be carried out by the Customer. They can also arise from the lack of routine maintenance.

ATTENTION!
Extraordinary maintenance work must be carried out together with the manufacturer's specialized technicians.

Regarding attendance, it must be considered that:

- **When necessary:** Operation to be conducted when the need to be conducted is seen;
- **Every machine start or job end:** Indicates a daily period, in general. This can imply every 24 hours (i.e. at the beginning of the shift of every day, or the end of the shift of every day), or even more frequently, depending on the application;
- **Long pause:** Indicates a period greater than an hour;
- **Each drum change:** Indicates each time the fuel system (tank, drum, cartridge or other) is changed;
- **Each mixer disassembly:** Indicates that each time the mixer is replaced, a certain operation must be performed;
- **Weekly:** Indicates a period equal to seven calendar days;
- **Monthly:** Indicates a period equal to one calendar month;
- **Semi-annual:** Indicates a period equal to six calendar months;
- **Yearly:** Indicates a period equal to one calendar year.

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

Assigned	Description	Frequency	Chapter
	Check the leak of the dosing valve	Every machine start or job end	\
	Check all screw fittings and valves for leaks	Every machine start or job end	\
	Check the seals for damage or wear	Monthly	
	Disassembly and reassembly of the valve	Yearly	8.1

ATTENTION!
Only use soft brushes or cotton cloths to clean the valve. Do not use metal or pointed components.

DANGER!
Remove all pressure from the valve before proceeding with disassembly. Some components are under high pressures, and you risk very serious injuries

8.1 Disassembly and reassembly of the valve

Assigned	Periodicity	Materials and equipment
	Yearly	• Allen key 2.5; • Key of 9 or 10; • Narrow-nose pliers; • Slotted screwdriver.

PPE to wear

DANGER!
Before performing this procedure, you must relieve the pressure from the system and disconnect the air connection.

ATTENTION!
There are compression springs inside the assembly. Be especially careful throughout the disassembly and reassembly of the valve

It is recommended to perform a functional test as soon as the process of disassembling and reassembling the valve has been completed.

ATTENTION!
Always install a new nozzle and a new needle at the same time.

ATTENTION!
Before screwing the nozzle into position, check that the adjusting grub screw is completely loosened to avoid damaging the nozzle and needle. To loosen them, turn counterclockwise until they no longer resist.

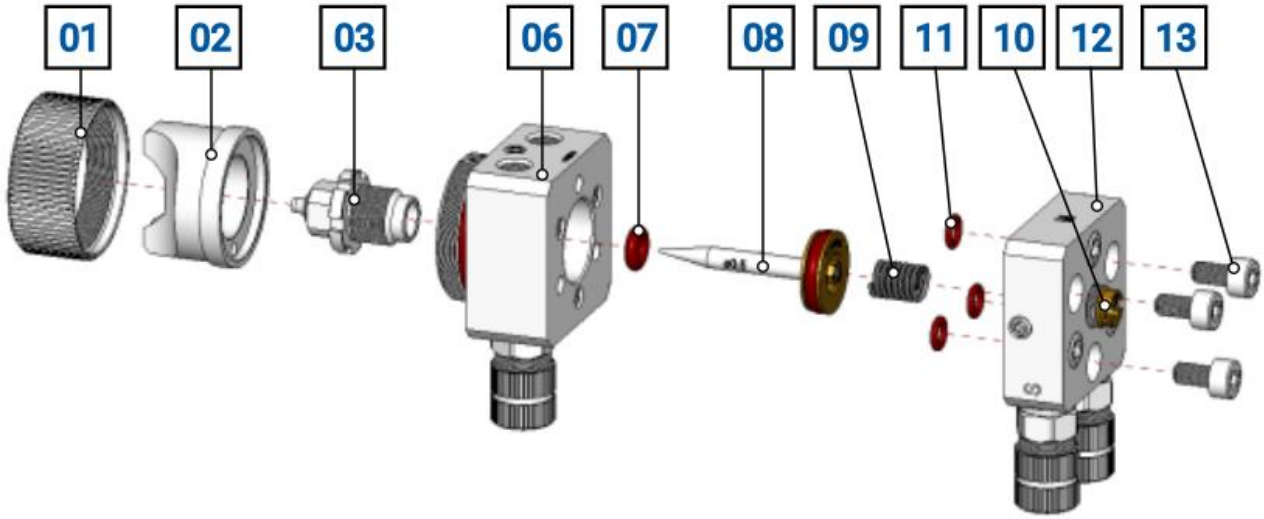


Figure 11 – Exploded view for normal DAS 30 maintenance

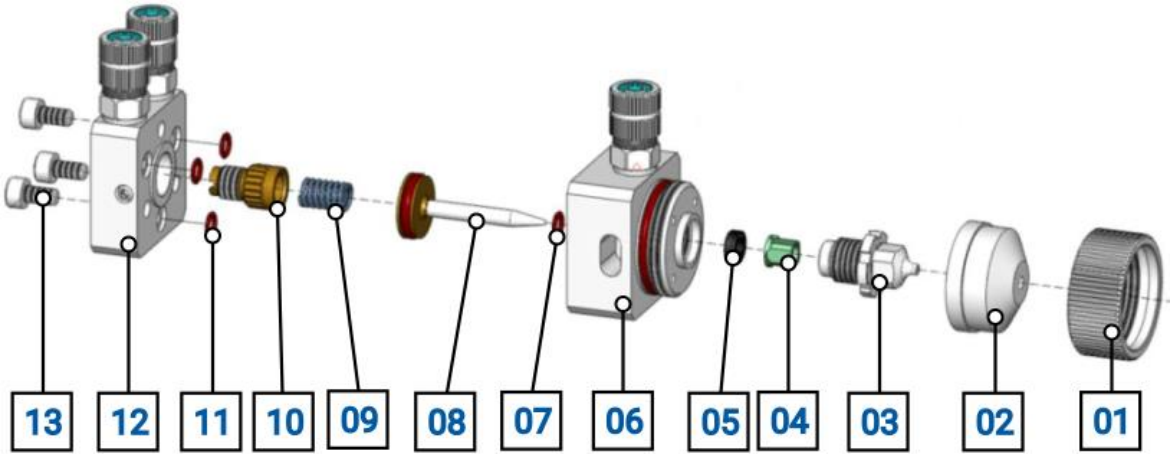


Figure 12 – Exploded view for DAS 30 HP maintenance

1. Unscrew the cap lock ring (01) and remove the cap (02);
2. Remove the end body fixing screws (13) and remove the end body (12) (CAUTION: There are compression screws at this stage)
3. Store the o-rings (11) and spring (09) in a safe place;
4. Unscrew the nozzle (03) and remove the needle (08);
5. Remove the needle guide (04) from the nozzle (03) (this step applies only for HP version);
6. Make sure that the O-ring (07) fits together with the main body (06). It may happen that when the needle is removed, the o-ring itself gets stuck inside the nozzle;
7. Lightly grease the new pin (08) and insert it into the main body (06). Once inserted, remove any remaining grease. If the quad ring (05) comes out of its seat, re-insert it calmly by pushing on the pin. It returns to its original position when the nozzle (03) is completed with the needle guide (04);
8. Place the spring (09) in its position and close the valve body with the end body (12) using the appropriate screws (13). Make sure the o-rings are properly seated in their housings.
9. Close the valve by placing the cap (02) in its seat and securing it with the appropriate lock (01)

9 TROUBLESHOOTING

This chapter deals with the most common problems that may arise when using the component of this manual.

ATTENTION!

Once the operator has found a problem or assumes that there is a problem, they must call the technician in charge of maintenance. Maintenance should always be performed by a specialized and qualified technician.

DEFECT	CAUSE	SOLUTION
Low fluid output or no fluid	The valve does not receive the command	Check the valve control (solenoid valve). Perform a manual test
	Fluid pressure is too low or no	Check the pressure of the fluid supply unit and increase it if necessary
	The nozzle is clogged	Unscrew and clean the nozzle
	The filter is dirty (if any)	Wash or replace the filter
	A tube is kinked	Check the condition of the fluid supply hoses
	Insufficient operating pressure	Check the actuation pressure (chap. 2.2)
	Fluid residues present in the system	Disassemble and clean any solid particles
	Lubricant with too high viscosity	See chapter 2.2 and fluid data sheet
Fluid leaking from slotted hole (HP only)	Damaged scraper or pin	Replace the scraper or pin
Fluid leakage between valve body and fixing plate	O-Ring on the damaged fluid hose holder	Replace hose holder o-ring
Nozzle drips even if valve is not piloted	Dirt in the nozzle	Clean or replace the nozzle
Valve opens late	Insufficient operating pressure	Check the actuation pressure (chap. 2.2)
	O-Ring on Damaged Air Piston	Replace O-Ring on Pneumatic Piston
Irregular spraying	Insufficient spraying pressure	Check the spray pressure (chap.2.2)
	Dirt in the air cap	Clean the air cap
	Partially clogged nozzle	Check for cleanliness of the nozzle or holes
The valve activates, but the fluid is not expelled	The feed pump does not lubricate pump	Observe the operating instructions for the feed pump
	Nozzle blocked by residue	Clean the nozzle
	Fluid pressure too low	Increase the fluid pressure (see chapter 2.2)
Continuous signal from the sensor	Faulty sensor	Replace sensor
No signal from the sensor	Broken cable	Replace the cable
	Faulty sensor	Replace the sensor
Air in the system	Air bubbles in the lubricant container	Vent the system and purge the product via a dosing
	Air bubbles in the pipes	
Non-hermetic valve	Defective gasket	Replace the gasket
The pin does not open	Needle stuck inside the nozzle	Clean the nozzle
	Low control air pressure	Check the line air pressure (chap. 2.2.)
	Pin stroke too short	Increase the stroke of the needle using the special screw
	Faulty O-Ring	Replace O-rings
	Faulty line air pilot valve	Check the line air pilot valve

In addition to these problems, there may also be situations in which the nebulized fluid does not settle correctly, thus creating incorrect dosages. The following are possible problems that can occur:

DRAWING	PROBLEM	CAUSE	SOLUTION
	Standard spray pattern when using the oval head		
	Standard spray pattern when using the round head		
	Higher concentration of fluid at the beginning or end of the model	Dirty hood	Clean nozzle and cap
		Dirty nozzle	
	Banana Shape Pattern	Dirty hood	Clean nozzle and cap
		Dirty nozzle	
	Concentrated center spray model	Too much material	Reduce material pressure
		High material density	Decrease material density
	8 model	Too little material	Increase material pressure
		High spray air pressure	Reduce air mist

10 END OF LIFE

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

- **Storage,** i.e. when the component is placed inside the warehouse for an unspecified period waiting for a third party to buy the component;
- **Dismantling,** i.e. when the component has reached the end of work period, whether it is due to age, obsolescence or faults that cannot be repaired, or that it is possible to repair but it is worth buying a new component.

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

On the other hand, for the dismantling and consequent scraping of the component or its parts, the different nature of the various components must be considered, and a differentiated scrapping must be carried out. We recommend that you commission specialist companies for this purpose and must always observe the applicable laws on waste disposal.