PARTS, SYSTEMS AND AUTOMATIONS FOR FLUID DISPENSING

# USE AND MAINTENANCE MANUAL

## PRESSURE TANK PT


COD.: **DTVI_PT_2447**
REV.: **00**
DATE: **18/11/2024**

**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 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 is able to 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

- 2014/68/EU – Pressure Equipment Directive

# DANGER!

These tanks are designed to comply with the PED Directive, Article 4 paragraph 3 and **Group 2 fluids**, which have a P*V ratio ≤ 50. This means that fluids (or mixtures) that fall into the following cases:

- Unstable explosives, or explosives of divisions 1.1, 1.2, 1.3, 1.4 and 1.5;
- Flammable gases, categories 1 and 2;
- Oxidizing gases, category 1;
- Flammable liquids, category 1 and 2;
- Category 3 flammable liquids, when the maximum permissible temperature is above the flash point;
- Self-reactive substances or mixtures of types A to F;
- Pyrophoric liquids, category 1;
- Substances and mixtures that, in contact with water, release flammable gases, categories 1, 2 and 3;
- Oxidizing liquids, categories 1, 2 and 3;
- Organic peroxides of types A to F;
- Acute oral toxicity, categories 1 and 2;
- Acute dermal toxicity, categories 1 and 2;
- Acute inhalation toxicity, categories 1, 2 and 3;
- Specific target organ toxicity – single exposure, category 1.

And the solids of the following cases:

- Flammable solids, categories 1 and 2;
- Pyrophoric solids, category 1;
- Oxidizing solids, categories 1, 2 and 3.

And all substances and mixtures whose maximum permissible temperature is higher than the flash point of the fluid have a different management parameter, i.e. the P*V value **must be** ≤ 25. If you use any of the above fluids, you must inform the manufacturer.

**Failure to comply with this notice will void the CE certification of the tank.**

## 1.3 EU Declaration of Conformity

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

**DECLARES UNDER HIS/HER OWN RESPONSIBILITY THAT THE PRESSURIZED COMPONENT**

**Component:** PT Tank
**Model:** PT-2; PT-5, PT-10, PT-16
**Year:** 2024
**Intended use:** Pressurized fluid containment

**COMPLIES WITH THE PROVISIONS OF DIRECTIVE 2014/68/EU (PED), ARTICLE IV PARAGRAPH 3 FLUIDS GROUP II**

| | PT – 2 | PT – 5 | PT – 10 | PT – 16 |
|---|---|---|---|---|
| **Max pressure (bar)** | 5 | 5 | 5 | 3 |
| **Volume (l)** | 2 | 5 | 10 | 16 |
| **Cat. Fluidic unit** | II | II | II | II |
| **Pressure x Volume** | 10 | 25 | 50 | 48 |
| **Range temperature (°C)** | 10 ÷ 60 | 10 ÷ 60 | 10 ÷ 60 | 10 ÷ 60 |

The technical documentation has been prepared in accordance with the following:

- Pressure Equipment Directive 2014/68/EU of 15 May 2014

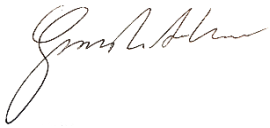
**IT ALSO DECLARES THAT:**

- 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.

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 that 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 the PT component, which is a pressure tank which, based on the volume of the tank itself, has different maximum pressures. This type of tank can contain various types of fluids, as specified in chapter 2.2. In addition, it is also able to contain the original container directly, bringing it under pressure, in case there are fluids that should not be in contact with the walls of the tank. In addition, these types of tanks are highly customizable, as shown below.

In other words, the function of this component is:

**CONTAINMENT AND PRESSURIZATION OF LOW AND MEDIUM VISCOSITY FLUIDS**

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.

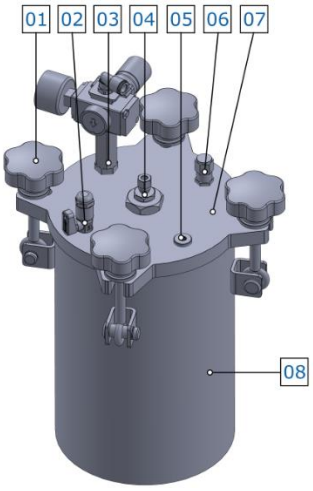



Figure 01 – Tank detail

| No. | DESCRIPTION |
|---|---|
| 01 | Fixing Cockerels |
| 02 | Left slot |
| 03 | Upper slot |
| 04 | Central slot |
| 05 | Low Slot |
| 06 | Right Slot |
| 07 | Cover |
| 08 | Main body |

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 tank;
- 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 tank, it must be cleaned thoroughly to prevent residues from the previous processing from affecting the work to be performed.

## SPECIAL VERSIONS

This tank is made in various versions, according to the customer's needs, namely:

- LLS – Indicates that there is a float level sensor;
- AN – Indicates that anaerobic fluids can be inserted;
- CAP – Indicates that there is a digital rod capacitive level sensor;
- ANALOG – Indicates that there is an analog rod capacitive level sensor
- STIR – Indicates that a stirrer is present

PT-2 tanks can be configured in LLS, AN, CAP, and ANALOG only, while PT-5, PT-10, and PT-16 tanks can be of any configuration.

**ATTENTION!**
For the codes present in the exploded view, it must be considered that if it is part of a single special code, or among those indicated above, it is specified in the description; otherwise, the code used for the tank family is indicated by the value in liters of the tank (for example, PT-10 codes are used for all special models of the PT-10).

In addition, it is possible that this type of tank is equipped with a stainless steel dip tube with a non-return valve located at the bottom of the tube itself.

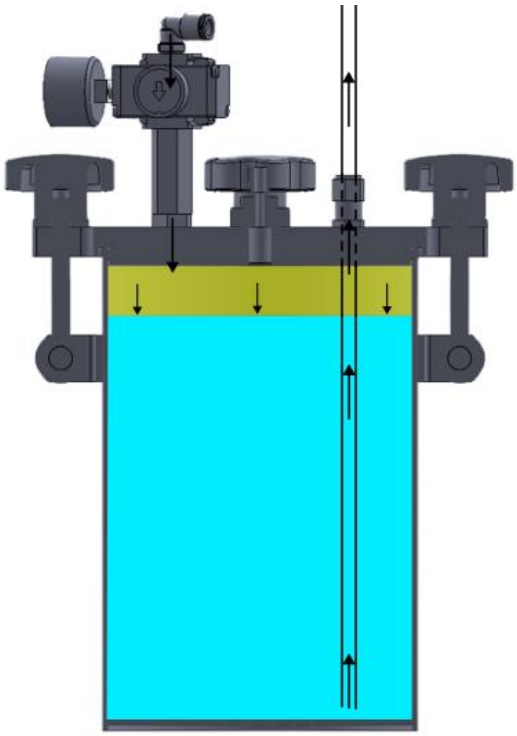
## OPERATION

This tank has been designed to be able to withstand low pressures, depending on the model, as indicated in chapter 2.2. These pressures are used to push the fluid inside the pipe that leads to the dosing system which, depending on the type of tank, can be either through a pipe inserted inside the customer's container or through direct exchange with a pipe inserted on the lid, which passes inside the tank and reaches the bottom of the tank itself. Thanks to the pressure exerted from above, the fluid enters the pipe and arrives at the dosing system in a constant and continuous way, to ensure a continuous supply of fluid. The peculiarity of this component is that the pressure is regulated by a pneumatic pressure regulator at the inlet, with any level sensors to communicate the status of the fluid to the control system (based on the type of sensor).

For working values, please refer to chapter 2.2.

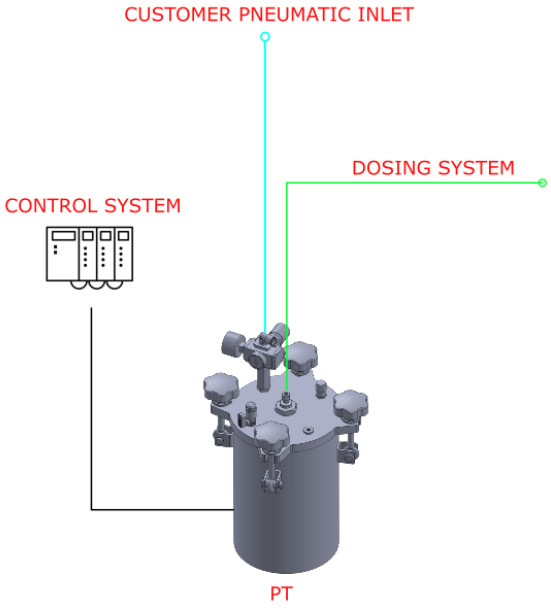
The tanks cannot operate autonomously. To have a complete dosing system, they must be connected to valves or other components that regulate the dosing of the fluid itself.

Below we want to give a graphical representation of the operation of the generic PT tank. Some tanks, as mentioned, contain the original fluid container and cannot have the fluid in direct contact with the tank walls. The operation is the same, except that the tube enters directly inside the container and the container itself is pressurized.



## USEFUL TIPS

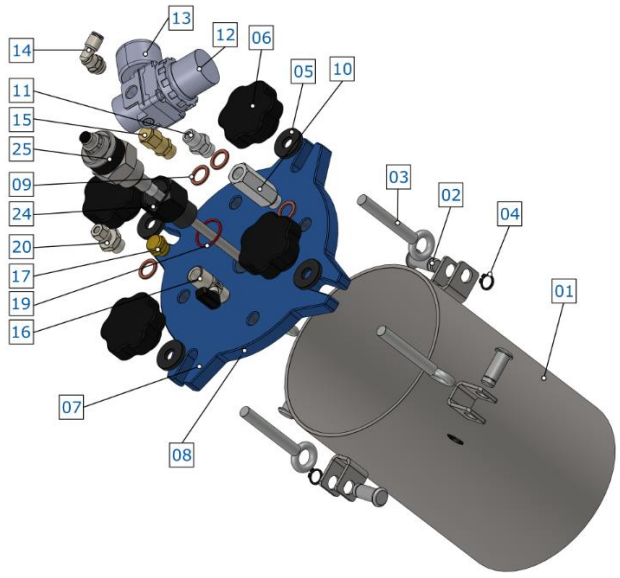
- It is advisable to cut the suction pipe at 45° at the bottom, to prevent the pipe from sticking to the bottom itself.



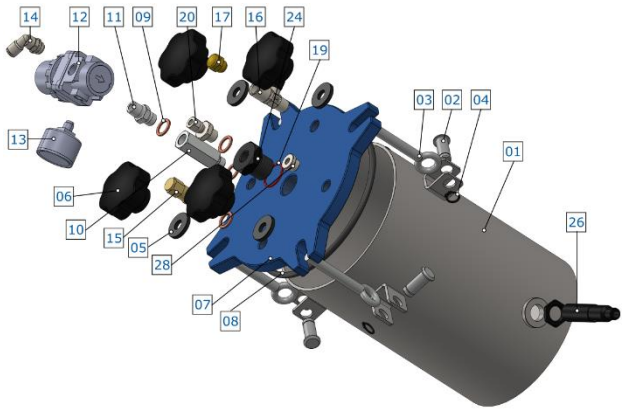

| COLOR | MEANING |
|---|---|
| CYAN | Main Air |
| GREEN | Product |
| BLACK | Data |
| RED | Notes |

## 2.1 Exploded

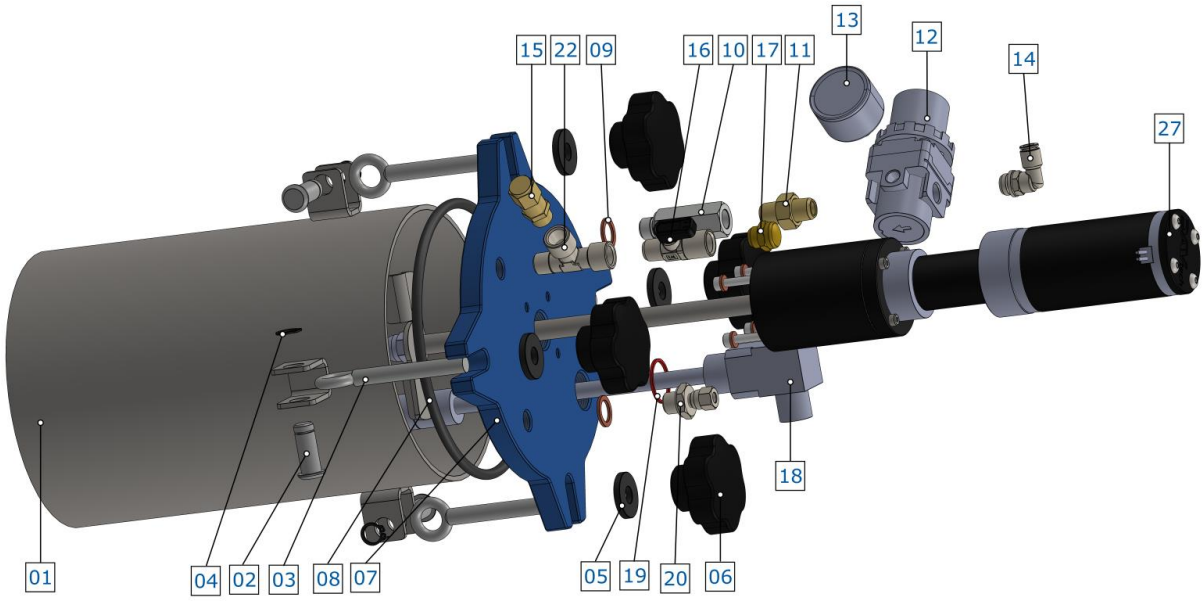
The following is a list of the main valve components with spare part numbers.




**PT-5**




**PT-5LLS-AN**




**PT-5LLS-STIR**

| No. | Description | Var. | Code | Variant details |
|---|---|---|---|---|
| 01 | CYLINDRICAL ASSEMBLY | - | - | - |
| - | - | 01.a | 200012124D | PT-2 Cylinder Assembly |
| - | - | 01.b | 200022124D | PT2-LLS-AN Cylinder Assembly |
| - | - | 01.c | 200032124D | PT-5 Cylinder Assembly |
| - | - | 01.d | 200042124D | PT-5-LLS-AN Cylinder Assembly |
| - | - | 01.e | 200052124D | PT-10 Cylinder Assembly |
| - | - | 01.f | 200062124D | PT-16 Cylinder Assembly |
| 02 | PIN WITH HEAD Ø12x30mm | - | 2235PKS12 | - |
| 03 | EYELET FOR RIGHT TENSIONER M10 | - | 01351610 | - |
| 04 | SEEGER DIN 471 – 12X1 | - | 47112 | - |
| 05 | TURNED WASHER | - | - | - |
| - | - | 05.a | 012037000010 | Turned washer 10.5 x 22 x 4 mm for PT-2 |
| - | - | 05.b | 012039000010 | 10.5 x 28 x 4 mm turned washer for PT-5, PT-10 and PT-16 |
| 06 | 6 LOBES KNOB | - | - | - |
| - | - | 06.a | 6114035 | 6 lobes knob VB/40/FP M10 per PT-2 |
| - | - | 06.b | 6113070 | 6 lobes knob VB/60 M10 |
| 07 | COVER | - | - | - |
| - | - | 07.a | 170222012124D | PT2 Cover |
| - | - | 07.b | 170222022124D | PT5 Cover |
| - | - | 07.c | Item no. 350012124D | PT5-STIR Cover |
| - | - | 07.d | 170222032124D | PT10 Cover |
| - | - | 07.e | Item no. 350022124D | PT10-STIR Cover |
| - | - | 07.f | 170222042124D | PT16 Cover |
| - | - | 07.g | Item no. 350032124D | PT16-STIR Cover |
| 08 | O-RING NB70 | - | - | - |
| - | - | 08.a | PT-2-GASKET | o-rings NB70 120 x 6 mm per PT-2 |
| - | - | 08.b | PT-5-GASKET | o-rings NB70 159 x 6 mm per PT-5 |
| - | - | 08.c | PT-10-GASKET | o-rings NB70 198 x 6 mm per PT-10 |
| - | - | 08.d | PT-16-GASKET | o-rings NB70 247 x 6 mm per PT-16 |
| 09 | RONDELLA IN RAME 1/4GAS | - | RR1_4 | - |
| 10 | PROLUNGA M-F 55mm 1/4" GAS | - | APMFG0455 | - |
| 11 | NIPPLO M – M | - | - | - |
| - | - | 11.a | ANGK0404 | M Cylindrical Nipple - M Tapered 1/4"G for PT-2 |
| - | - | 11.b | 02060 00 002 | 3-piece swivel nipple M-M 1/4"G for STIR versions PT-5, PT-10 and PT-16 |
| 12 | 1/4" GAS PRESSURE REGULATOR | - | AR20-F02-A | - |
| 13 | PRESSURE GAUGE 1/8" GAS 0-6 bar | - | 9083715 | - |
| 14 | QUICK COUPLING Ø6 1/4" GAS 90° | - | MA16 06 14 | - |
| 15 | SAFETY VALVE | - | - | - |
| - | - | 15.a | VS1405PED4 | Safety valve 5 bar 1/4"G for PT-2, PT-5 and PT-10 |
| - | - | 15.b | VS1403PED4 | Safety Valve 3 bar 1/4"G for PT-16 |
| 16 | VALVE M. CONICAL – F. CYLINDRICAL 1/4" GAS | - | 06310 00 003 | - |
| 17 | 1/4" GAS SILENCER | - | 07020 00 003 | - |
| 18 | FLOAT LEVEL SWITCH | - | - | - |
| - | - | 18.b | LLS-PT2 | Float level switch 180 mm for PT-2LLS |
| - | - | 18.c | LLS-PT5 | Float level switch 230 mm for PT-5LLS and PT-5LLS-STIR |
| - | - | 18.d | LLS-PT10 | Float level switch 270 mm for PT-10LLS and PT-10LLS-STIR |
| - | - | 18.e | LLS-PT16 | 330 mm float level switch for PT-16LLS and PT-16LLS-STIR |
| 19 | PAPER GASKET 24x27x1.5 | - | 221004 | - |
| 20 | OGIVE FITTING M Ø6 1/4" GAS | - | B20004 | - |
| 21 | OGIVE FITTING M Ø8 1/4" GAS | - | B20005 | Supplied as an addition in case of replacement of the Ø6mm |
| 22 | LEVEL SWITCH | - | - | - |
| - | - | 22.b | LEVELCAPACITIVE-PT2 | 185mm Digital Pole Capacitive Sensor for PT-2LLS-CAP |
| - | - | 22.c | LEVELANALOG-PT2 | 185 mm Analog Capacitive Rod Sensor for PT-2LLS_ANALOG |
| - | - | 22.d | LEVELCAPACITIVE-PT5 | 235mm Digital Capacitive Rod Sensor for PT-5LLS-CAP |
| - | - | 22.e | LEVELANALOG-PT5 | 235mm Analog Capacitive Rod Sensor for PT-5LLS-ANALOG |
| - | - | 22.g | LEVELCAPACITIVE-PT10 | 275mm Digital Pole Capacitive Sensor for PT-10LLS-CAP |
| - | - | 22.h | LEVELANALOG-PT10 | 275mm Analog Capacitive Rod Sensor for PT-10LLS-ANALOG |
| - | - | 22.j | LEVELCAPACITIVE-PT16 | 335mm Digital Capacitive Rod Sensor for PT-16LLS-CAP |
| - | - | 22.k | LEVELANALOG-PT16 | 335mm Analog Capacitive Rod Sensor for PT-16LLS-ANALOG |
| 23 | T-PIECE | - | RA25 14 14 | M-F-F 1/4"G T-Fitting for PT-5LLS-STIR, PT-10LLS-STIR and PT-16LLS-STIR |
| 24 | COMPASS FIT [1] | - | - | - |
| - | - | 24.a | 081021012124D | Sleeve 1_4G adapter for ogive fitting (central hole) |
| - | - | 24.b | 240920010000 | 3_4G adapter sleeve for capacitive level switches (DIG or ANALOG) |
| 25 | CAPACITIVE ROD SENSOR [1] | - | See note 1 | - |
| 26 | CAPACITIVE SENSOR | - | LLS-AN | Sensore capacitivo M18 PNP NO per PT-2LLS-AN e PT-5LLS-AN |
| 27 | MIXER | - | - | - |
| - | - | 27.a | STIRRER-PT5 | PT5 Tank Mixer |
| - | - | 27.b | STIRRER-PT10 | PT10 Tank Mixer |
| - | - | 27.c | STIRRER-PT16 | PT16 Tank Mixer |
| 28 | 1/4" GAS MALE CAP FOR PT-2 | - | RA46 00 14 | - |

[1] This component is replaced by component No.18, float level switch, on request. To be able to put it on, you need the adapter sleeve and the respective rod sensor, which can be capacitive or analogue, of the relative length for the various types of tanks (see point 21 for the various lengths and codes.

## 2.2 Technical data

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

| SPECIFICATIONS | | |
|---|---|---|
| **Description** | **UdM** | **Values** |
| **General** | | |
| Model | \ | PT |
| Materials in contact with the fluid | \ | Stainless steel |
| **Tire** | | |
| Design pressure (PT-2, PT-5, PT-10) | bar | 5 |
| Permissible operating pressure (PT-2, PT-5, PT-10) | bar | 0 ÷ 5 |
| Design Pressure (PT-16) | bar | 3 |
| Permissible Operating Pressure (PT-16) | bar | 0 ÷ 3 |
| Safety valve adjustment pressure (PT-2, PT-5, PT-10) | bar | 5 |
| Safety Valve Pressure Adjustment (PT-16) | bar | 3 |
| **Temperature** | | |
| Minimum operating temperature | °C | 5 |
| Maximum Operating Temperature | °C | 60 |
| **Volume** | | |
| Maximum volume PT-2 (1) | l | 2 |
| Maximum volume PT-5 (1) | l | 5 |
| Maximum Volume PT-10 (1) | l | 10 |
| Maximum Volume PT-16 (1) | l | 16 |

(1) The maximum volume refers to the total space inside the tank. Any internal accessories (agitator, level sensor and more) must be removed from this.

| ENVIRONMENTAL CHARACTERISTICS | | |
|---|---|---|
| **Description** | **UdM** | **Values** |
| Working Ambient Temperature | °C | 5 ÷ 60 |
| Storage Ambient Temperature | °C | -20 ÷ 55 |
| Permissible non-condensing humidity | % | 5 ÷ 90 |

| USABLE FLUIDS |
|---|
| Miscellaneous products with low – medium viscosity (20,000 mPas maximum) (contact the manufacturer for more information) |

**DANGER!**

These tanks are designed to remain under the limit imposed by the PED Directive, Article 4(3), fluid group 2. In the case of the use of fluids indicated in group 1 of the directive, the permissible operating pressure value must be lowered by using a safety valve such that the product Pressure * Volume is less than 25 (for example, the PT-16 can hold a maximum of 1.5 bar inside).

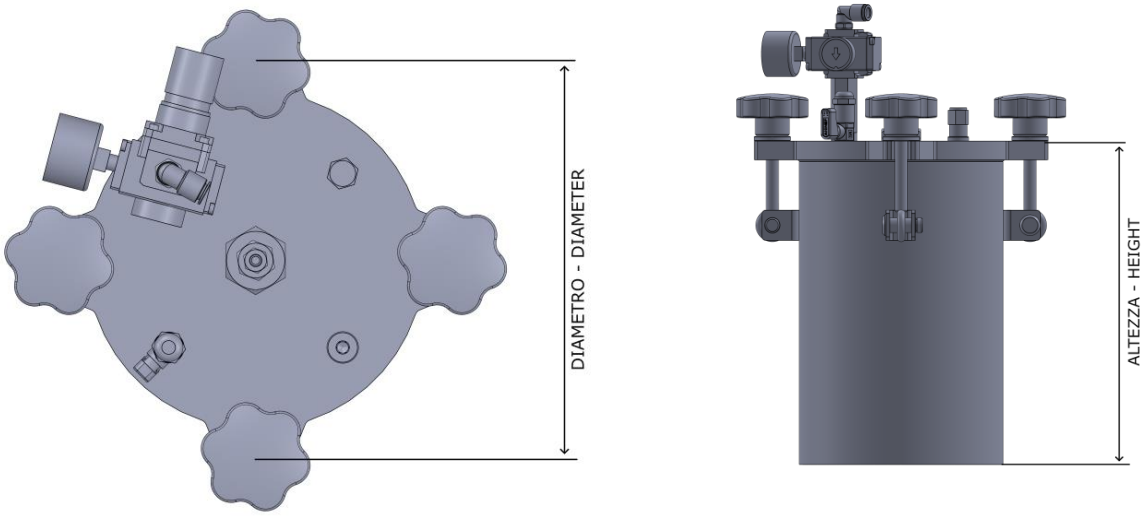
| DIMENSIONAL AND WEIGHT CHARACTERISTICS PT-2 | | |
|---|---|---|
| **Description** | **UdM** | **Value** |
| Component diameter (min ÷ max) | Mm | 19.2 |
| Component height (min ÷ max) | Mm | 22 |
| Component weight | Kg | 4.3 |

| DIMENSIONAL AND WEIGHT CHARACTERISTICS PT-5 | | |
|---|---|---|
| **Description** | **UdM** | **Value** |
| Component diameter (min ÷ max) | Mm | 24.2 |
| Component height (min ÷ max) | Mm | 26.7 |
| Component weight | Kg | 6.5 |

| DIMENSIONAL AND WEIGHT CHARACTERISTICS PT-10 | | |
|---|---|---|
| **Description** | **UdM** | **Value** |
| Component diameter (min ÷ max) | Mm | 27 |
| Component height (min ÷ max) | Mm | 31.4 |
| Component weight | Kg | 9 |

| DIMENSIONAL AND WEIGHT CHARACTERISTICS PT-16 | | |
|---|---|---|
| **Description** | **UdM** | **Value** |
| Component diameter (min ÷ max) | Mm | 32 |
| Component height (min ÷ max) | Mm | 38.2 |
| Component weight | Kg | 13 |

**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.

**DANGER!**
Do not use fluids that react in contact with the materials indicated in chapter 2.2

**ATTENTION!**
Modifications to the component must not be made in order to achieve performance other than that for which it was designed and built, unless authorized by the manufacturer. Before putting the tank back into operation after it has undergone modifications, it is advisable to have it inspected and tested 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

This component has a safety valve that is activated if the internal pressure of the component itself exceeds that of the valve, generally designed to comply with the pressure limits indicated in chapter 2.2.

**DANGER!**
These tanks are designed to remain under the limit imposed by the PED Directive, Article 4(3), fluid group 2. In the case of the use of fluids indicated in group 1 of the directive, the permissible operating pressure value must be lowered by using a safety valve such that the product Pressure * Volume is less than 25 (for example, the PT-16 can hold a maximum of 1.5 bar inside).

## 3.2 Free useful spaces

N.A.

## 3.3 Risk areas and residual risk

N.A.

# 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.

The tank is not equipped with special locking methods; however, it is recommended to place it on a plane parallel to the ground and with the entire base of the tank itself resting on that plane. If possible, it is advisable to place it inside a specially designed container, so that the upper part of the tank is free for maintenance and refilling, while the lower part remains locked. It must be considered that the tank does not produce mechanical stress, even if it is equipped with an agitator; however, it is still advisable to provide a safe area on which to install it.

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.

## 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;
- Pneumatic connection;
- Fluid connection

### 5.2.1 Electric

For the various electrical connections of the components, you should see the respective manual of what you have chosen, based on the accessories you have decided to install or that have been mounted.

It is recommended that the component be grounded to prevent a build-up of electrical charges.

## 5.2.2 Pneumatic

| **Authorized personnel** |  | **PPE to wear** |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| Component status | Component placed in the work zone | | | | | | |
| Power Values | See chapter 2.2 | | | | | | |
| Necessary preparations | Working pneumatic air system | | | | | | |
| Materials needed | | | | | | | |
| Equipment needed | | | | | | | |

The pneumatic connection is the responsibility of the customer.

To connect the pneumatic system of the component, it is necessary to have a Ø6X4mm hose and connect it to the pressure reducer located on the cover of the component. To connect it, simply apply a little pressure by pushing the hose inside the hole until you hear a connection confirmation sound

**ATTENTION!**
There is a risk of the hose disconnecting from its connection area if it is not properly inserted. Before turning on the air, perform a leak test of the hose by trying to pull slightly.

## 5.2.3 Fluidic

| **Authorized personnel** |  | **PPE to wear** |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| Component status | Component placed in the work zone | | | | | | |
| Power Values | See chapter 2.2 | | | | | | |
| Necessary preparations | N.A. | | | | | | |
| Materials needed | N.A. | | | | | | |
| Equipment needed | N.A. | | | | | | |

The fluidic connection is the responsibility of the customer.

Generally, the fluidic pipe can be either Ø6X4 or Ø8X6, depending on the applications and the type of fluid to be worked with. This hose enters through a special fitting and must reach almost all the way to the bottom of the tank. Once inserted, you must screw on the fitting that tightens the hose and keeps it locked in place. If you are placing a new tube, just unscrew the tighten screw, remove the old one, insert the new one keeping in mind to stay some centimeters from the bottom, cut it at 45° so that the bottom part does not adhere to the tank, and screw the fitting again.

**ATTENTION!**
The tube must not be tightened too much otherwise there is a risk of breaking it or choking it too much, affecting the quality of the dosage

## 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;
- Check that the sealing knobs are secure in place;
- Check that the vent valve is closed;

**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 top up the tank;
- How to change the container inside the tank (anaerobic fluids);
- How to change the dip tube.

## 7.1 Tank Topping Up

This procedure is used to fill the tank when the fluid inside reaches the minimum level, usually signaled by a special sensor that sends a signal to the control system. When you have this event, you should perform the following steps:

1. Relieve pressure at the tank by turning the pressure regulator knob counterclockwise;
2. Open the vent valve, to drain the residual air inside the tank

**ATTENTION!**
If you use products that are toxic or emit harmful gases, this operation must be carried out with the appropriate PPE.

3. Unscrew the four wing nuts and place them on the body of the tank (you don't need to remove the wing nuts from the screw, if they are loose enough to move the screw);
4. Remove the lid and place it on a clean surface, preventing the inside of the lid from getting dirty;
5. Fill up the tank;
6. Once you have finished topping up, put the lid back in place, possibly in the same position in which you removed it;
7. Put the wing nuts back in place and screw them on so that the lid locks in place. It is recommended to screw them in a cross-screwed manner;
8. Close the vent valve, to prevent the incoming air from escaping directly;
9. Turn the pressure reducer clockwise gradually and check for leaks. If so, proceed and bring the reducer to working pressure.

**ATTENTION!**
If there is an agitator or a rod level sensor, use caution when removing the cover and replacing it. The lid must be raised to the necessary length so that these components do not get damaged.

## 7.2 Container change in the tank

This procedure is to be followed in case you are using a fluid that cannot come into contact with the material of which the tank is made. In this case, the procedure to be followed is different from the previous one, because attention must also be paid to the container inside the tank, namely:

1. Relieve pressure at the tank by turning the pressure regulator knob counterclockwise;
2. Open the vent valve, to drain the residual air inside the tank

**ATTENTION!**
If you use products that are toxic or emit harmful gases, this operation must be carried out with the appropriate PPE.

3. Unscrew the four wing nuts and place them on the body of the tank (you don't need to remove the wing nuts from the screw, if they are loose enough to move the screw);
4. Remove the lid while holding it up high enough to let the tube into the fluid container come out;
5. Remove the old container and insert the new one;

**ATTENTION!**
This operation must be carried out in the shortest possible time, since there is no non-return valve in the fluidic pipe; thus, the fluid tends to fall by gravity

**ATTENTION!**
Care must be taken not to dirty the tank with the fluid, otherwise you risk damaging it irreparably.

6. Once the container has been replaced, put the lid back in place, possibly in the same position in which it was removed;
7. Put the wing nuts back in place and screw them on so that the lid locks in place. It is recommended to screw them in a cross-screwed manner;
8. Close the vent valve, to prevent the incoming air from escaping directly;
9. Turn the pressure reducer clockwise gradually and check for leaks. If so, proceed and bring the reducer to working pressure.

## 7.3 Changing dip tube

This procedure is used in case you must change the dip tube inside the tanks. To do this, you must:

1. Loosen the screw that holds the dip tube in place;
2. Remove the old dip tube;
3. Insert the new hose and take the correct measurement, leaving 5 centimeters between the end of the hose and the bottom of the tank;
4. Cut the hose at 45°, so that the hose does not stick to the tank;
5. Insert the new tube into its position and pull the screw, so that the dip tube stays in place.

**ATTENTION!**
The tube must not be tightened too much otherwise there is a risk of breaking it or choking it too much, affecting the quality of the dosage

# 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 carried out when the need to be carried out is seen;
- **Each component 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 approximately 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 |
|---|---|---|---|
|  | Perform a surface cleaning of the valve | Each component start or end of work | \ |
| | Perform a leak check from the fluidic system | Each component start or end of work | \ |
| | Perform a leak check from the pneumatic system | Each component start or end of work | \ |
| | Perform a lid gasket leak check | Each component start or end of work | \ |
|  | Safety valve control | Quarterly | \ |
| | Changing the lid gasket | When needed | \ |

It is advisable to keep a table with all the maintenance performed for each tank

**ATTENTION!**
Do not use aggressive products to clean the component, or products that may react with the tank materials or the fluid you are using.

To check the safety valve, the pressure inside the tank must be brought slightly above that indicated in chapter 2.2 and the safety valve must be felt; after that, the pressure inside the tank can be brought back to the working pressure.

To change the gasket, follow the following table, depending on the component purchased:

- PT2 -> PT-2-GASKET
- PT-5 -> PT-5-GASKET
- PT-10 -> PT-10-GASKET
- PT-16 -> PT-16-GASKET

In addition, all gaskets are made of NBR, unless otherwise agreed with the manufacturer. In this case, contact the manufacturer directly.

# 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 |
|---|---|---|
| **Air leaks from the lid contour** | Badly pulled cockerels | Relieve pressure on the component and screw the wing nuts more |
| | Worn gasket | Changing the gasket |
| | Incorrect gasket | Changing the gasket |
| **Air leaks from one of the accessories** | Accessory badly attached | Remove pressure from the component and, on request from the manufacturer, screw the accessory |
| **Cracks on the tank and/or lid** | Improper use and/or defective component | Remove pressure from the component and contact the manufacturer |
| **Weld failure** | Too high a load | Remove pressure from the component and contact the manufacturer |
| **Level sensor detects the end of the product too early** | The sensor has been poorly calibrated | Perform a sensor calibration |
| **The tube has been inserted inside the tank but little fluid reaches the dosing system** | Pressure set too low | Increase the pressure, staying within the range indicated in chapter 2.2 |
| | Hose too choked | Loosen the grip on the fluidic supply hose |
| **Fluid leaks from the fitting** | The hose broke because it tightened too much | Change the inlet tube |
| **Fluid leaks from the bottom of the tank** | Welds do not hold / are defective / Stresses too high | Remove pressure from the component and contact the manufacturer |

# 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 scrapping 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.