

A159002

glue feed unit



Zator
gluing solutions

**USER AND
MAINTENANCE
MANUAL**





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Declaration of Conformity



(All. IIA DIR. 2006/42/CE)

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DECLARES

Under its responsibility that the glue feed unit:

Model	GLUE FEED UNIT	Code	A159002
Serial Number		Year of manufacture	

It's in compliance with all regulations and conditions of security required by Directive 2006/42/CE concerning the machines as accepted by the national legislation with Legislative Decree of 27 January 2010 - No. 17.

It's in compliance with the conditions of the following other CE Directives:

Directive 2004/108/CE of the European Parliament and the Council of 15 December 2004 concerning the reconciliation of the member States legislations relative to electromagnetic compatibility.

Directive 2006/95/CE of the European Parliament and the Council of 12 December 2006 concerning the reconciliation of the member States legislations relative to electrical equipment designed for use within certain voltage limits.

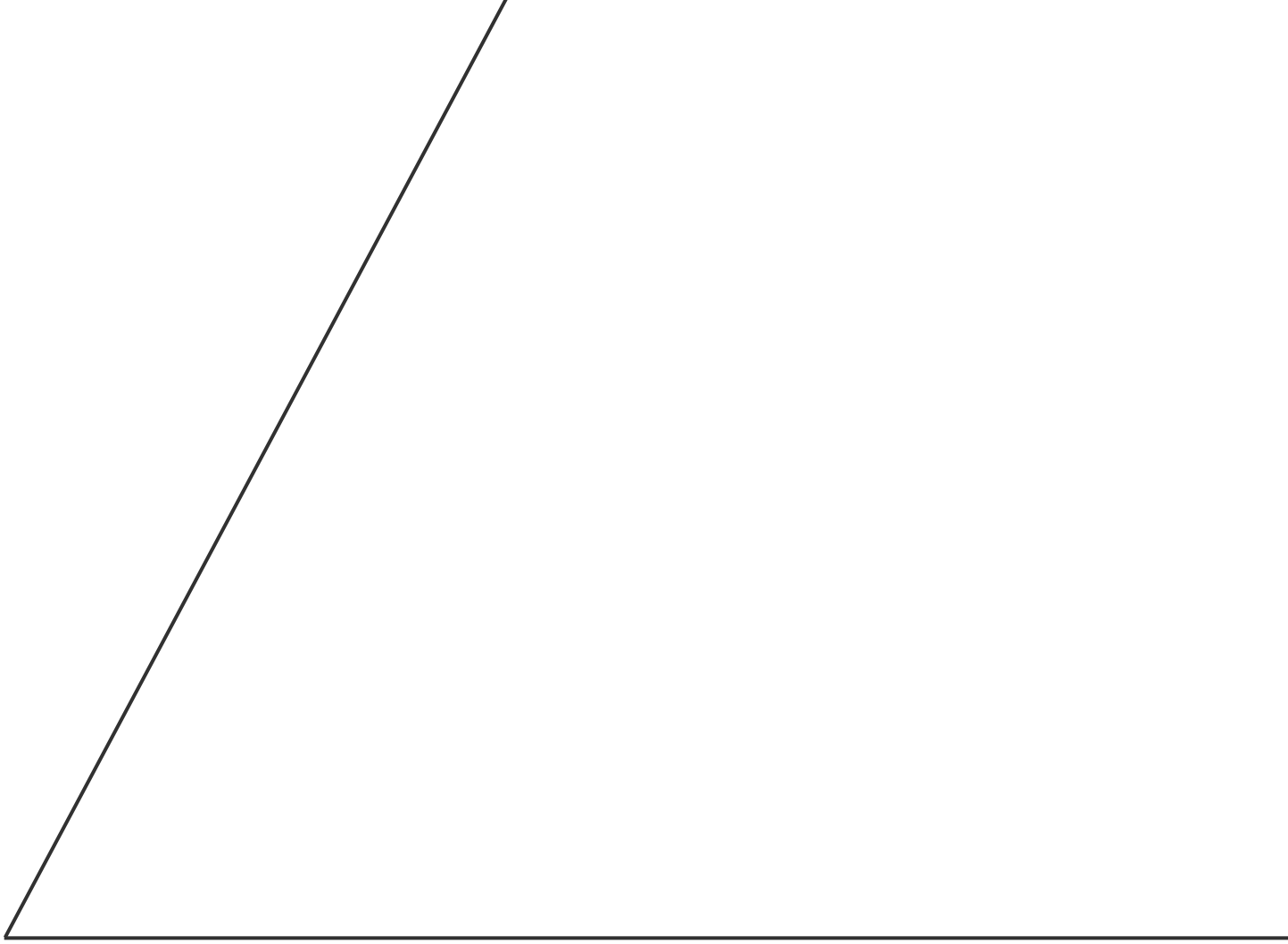
Cusano Milanino

Legal Representative

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USER AND MAINTENANCE MANUAL

glue feed unit
A159002

1 GENERAL INFORMATION

1.1 Introduction

This manual is an essential part of the glue feed unit and is destined to trained and well-informed personnel, which is aware of the machine performance at the risk conditions to which it may be exposed. This document supposes that in the plants where the gun is destined, are complied the present norms of safety and hygiene of the work.

Zator Srl won't be liable for actions or improper connections made by unqualified and unformed personnel.

Instructions, drawings and documentation contained in this manual are of reserved technical disposition, only for Zator Srl property and may be not reproduced in any way, neither in full or partially reproduction; not translated into another language, or transmitted in any electronic or mechanical means or form, without written permission of Zator Srl.

The data and values expressed in the manual are approximate and variable depending on fluids, applications and methods of use.

Zator Srl doesn't assume any responsibility regarding the accuracy of the contents of this manual.

The drawings and technical data in this document is updated to the date of their publication and Zator Srl reserves the right to change, without notice, the contents of this manual.

It is therefore forbidden for Technician and Operators of the maintenance to use this manual for different purposes from those relatives to the care and maintenance of equipment in question.

This manual includes the installation, use and maintenance norms of the glue feed unit in safety.

Test in production workshop

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

"At term of law we reserve the property of the data and technical information with the prohibition of play, communicate to third parties or use them anyway for any other executive purpose and what is shown in this document is the property of the Manufacturer"



1.2 Warranty

This warranty is valid for 12 months from the actual delivery.

During the warranty period Zator Srl undertakes to remove in the necessary time the obvious faults and flaws of material and/or production, on condition that machine or equipment has been used properly, according to the best rules of behaviour and maintenance provided in this manual.

The flawed parts under warranty are fixed or replaced free from Zator Srl in the time compatibly necessary, understood that the Zator Srl is exempted from each responsibility for any title, while the buyer give up to ask damages or costs, including those resulting from the temporary not use of the purchased machinery for all the time is necessary to put it back in efficiency; The transport and/or the forwarding costs, the outward and the return trip costs relative to the operation by the Zator's technicians in the Buyer address are always on charge of the buyer.

The labour costs relative to the operation of the Zator's technicians in the Buyer address for the removal of flawed parts under warranty, are on charge of Zator Srl, except these cases when the nature of the flaw can be easily removed on place by the Buyer.

This commitment of Zator Srl excludes each other warranty effects provided by the law.

The warranty for the replaced or repaired spare parts of the glue feed unit finishes the same day of the warranty expiration date of the glue feed unit, the replaced part warranty however doesn't has lifetime less than three months after its installation.

Replaced parts during the warranty period by the seller are free acquired in the same place with new parts.

Are excluded from the warranty all the tools and consumable materials, possibly supplied by Zator Srl with the machine.

It are excluded and renounced by the buyer every pretensions of items/people damages reimbursement on charge to Zator Srl, for any titles, even if the damages were depending from manufacture or material flaws. It's of equal excluded and given up any reimbursement for people and/or items damages depending on the practise of the glue feed unit. Parts replaced free remain of Zator Srl property.

Elapsed the warranty period every operation will be on charge to the buyer.

Application fields

- Packaging machines
- Automation machines
- Paper converting industry
- Case maker industry
- Printing machine
- Tobacco and wood industry
- Assembly
- Food industry
- Cosmetics

Condemnation of conformity flaw - Goods reception

The original configuration of the glue feed unit never must be changed.

On goods reception, check that:

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

In case of damages or wrong delivery contact immediately Zator Srl.

The buyer, on penalty of warranty decadence, must report in writing the flaw conformity or fault of the glue feed unit to the seller, specifying in detail the nature, within eight days from their discovery.

In no case the condemnation of conformity flaw or fault may be validly made after the expiration date of the warranty terms.

Also the buyer decays from the warranty if doesn't allow each reasonable control that the seller requires. It's excluded from this warranty the most damage caused to the machine by the failure timely condemnation to the seller of a conformity flaw or fault of the the glue feed unit.

1.3 Warranty restrictions

This warranty is only valid for products of new construction.

This warranty is limited to the reparation or replacement, by the seller, of each parts of the machine or supplied material that results flawed, after checking the existence of the flaw.

In no case the seller will be liable for every consequential or indirect flaws or otherwise derived from production cycle interruption or machine stoppage.

The seller is not liable for flaws of the glue feed unit derived from the use of devices, equipments, etc. that are enquired and provided by the customer and installed on the machine to change its use compared to the original design.

The seller is not liable for every conformity flaws of the glue feed unit or faults owed for the normal wear of those parts that, by their nature, are subject to rapid and continuous wear.

The seller also is not liable for damages resulting from improper use of the equipment and from the non-observance of the norms expected for the execution of the ordinary periodic maintenance.

The seller is not liable for conformity flaws of the glue feed unit or faults that depends on changes, reparations, alterations or tampering attributed to the buyer and however non-authorized personnel of the buyer.

The costs relative to the wear materials necessary for test and restart the glue feed unit are on charge of the buyer.



1.4 Maintenance service request

Contact:

Technical office of Zator S.R.L.

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

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

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

Please refers to the frontispiece of this manual or directly to the nameplate on-board to the machine or to the serial number of the glue feed unit.

1.5 Spare parts request

The customer is responsible to purchase original spare parts that guarantee him to keep efficient and safe the glue feed unit.

The disassembly and assembly operations must be performed according to the manufacturer's instructions.

Contact the Technical Office of Zator Srl which will give to you the specifications to do the request of the parts and will provide the information about their replacement.

To order the spare parts is necessary to report completely all identification data of the glue feed unit and those of spare part to be replaced.

The illustrations in this document are for example.

2 SAFETY NORMS - CONFORMY OF USE

The *glue feed unit A159002* is designed and manufactured in compliance with the current safety standard. Only trained personnel is authorized to install and use the machine. For the glue feed unit are provided only and exclusively the application fields describe in this manual. All data and parameters indicated in this manual must be respected. Any other use is considered improper.

All operation with the glue feed unit A159002 must be carry out in compliance with the following current safety norm written in part:

1. DPR 547 of 27th April 1955 “Rules for prevention of work accidents” - DPR 303/56 “General rules for work hygiene”
2. Law No.186 of 1st March 1968 (Regulations concerning the manufacturing of materials, equipments, machinery, installations and electrical and electronic plants);
3. Rules of fire prevention;
4. D.L. No.277/91 Risks of chemical, physical, biological agents (in particular noise, lead and asbestos);
5. D.L. No.476 of 4th December 1992 Actualization Directive No.92/31/CEE – 89/336/CEE on electromagnetic compatibility;
6. DLGS 14th August 1996, No. 493 Safety signs actualization Directive No.92/58/CEE;
7. D.P.R. No.459 of 24th July 1996 Rule for introduction and use of machines and safety components on European Union district;
8. Law No.46 of 5th March 1990 Rules for safety of technical plants;
9. DPR No.447 of 6th December 1991 “Rule of law actualization of 5th March 1990, No.46 for the plants safety”;
10. Legislative Decree of 19th September 1994 No.626 and 242/96 of 19th March 1996 for the improvement of the safety and health of workers in the workplace;
11. Law No.791 of 18th October 1977 - DLGS No.277 of 31th July 1997 - Actualization of the European Communities council Directives of the 73/23/CEE and 93/68/CEE) about the safety guarantees that the electric material must has, designed for use within specific voltage limits;
12. Directives 89/686/CEE about the PPE.

2.1 Safety and environment general informations

Before the start-up of the glue feed unit the personnel must be adequately informed and trained (D.L. 626/94) on its use, direction and start-up process, as well as the safety norms to be performed and also observe how it is prescribed in this document and in other documents possibly attached to the glue feed unit.

The employer must provide to instruct the personnel on the risks of injury, on safety devices and accident prevention general rules provided by the community directives and the legislation of the country where the glue feed unit is installed.



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

Discharge the fluid pressure before to proceed to carry out any maintenance or adjustment operations.

2.2 D.P.I. Dispositivi di protezione individuali

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

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



CAUTION: The clothes of who will operate on the glue feed unit for any functions must be in compliance with the essential safety requirements defined by the community Directives 89/656/CEE and 89/686/CEE and to the actual laws in the country.

2.3 Risks, protections, warnings and cautions

2.3.1 General safety

In accordance with the Machine Directive it means for:

DANGER ZONE = area within or near the glue feed unit where the presence of an exposed person make a risk to the safety and health of himself (Attached I - 1.1.1 Directive 89/392/CEE).

EXPOSED PERSON = any person that is placed entirely or partially inside a danger zone (Attached I - 1.1.1 Directive 89/392/CEE).

OPERATOR = person who is appointed to install, operate, adjust, perform ordinary maintenance and clean the machine (Attached I - 1.1.1 Directive 89/392/CEE).

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

Safety glossary

Intended purposes

By this term it refers to the use of the machine as described by the manufacturer.

For “intended purposes” also refers to the use of the unit through its design, its construction and function.

Secondary risks and/or residual risks

A secondary risk is a danger which is not obvious and results from the use of the machine.

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

Competent personnel

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

Trained personnel

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

Skilled personnel

A skilled person is a competent person or sufficiently trained.

The operator must be informed of the position and operation of all commands and features of the plant. The maintenance and start-up operations must be performed by qualified technicians after properly setting up the machine.

The unauthorized tampering or replacement of one or more glue feed unit parts, the adoption of accessories that modify the original use of the glue feed unit and the purpose of different consumer product from those recommended in this manual, can become a cause of injury risks.

The protective devices must not be removed or tampered for the risk to reduce the accident prevention features of our systems.

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



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



DISCONNECT from the power supply line



R. R. – RESIDUAL RISKS

WARNING - There is the possibility to damage the machine and/or its components

PRECAUTION - Further information about the operation in progress

NOTE - Provides useful information

2.3.2 Dangers and risks unavoidable

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

A - Danger due to electricity in general

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

C - Danger due to problems/malfunctions of the control system

This can lead an excessive increase of dispensing of glue as well as a fire danger or dangers due to inhalation of dangerous vapours to health.

D - Risk due to the projection of fluids under pressure

In case of improper maintenance of the hydraulic system parts.

E - Risk of fire

Prohibition to smoke and/or to be present objects at temperature near the glue feed unit.

2.3.3 Safety devices adopted

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

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

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

2.3.4 More general safety precautions



CAUTION: The maintenance operations must be peremptorily carry out by qualified and authorized personnel, only and exclusively with machine turned off: power switch in “OFF” position. Make sure the passages around the machine is not hindered by misplaced cables and dangerous for personnel.

The user must always put available to the operators, in the areas that require it, safety goggles, gloves, and any other necessary protections; it must also make sure that these safeguards are being used.

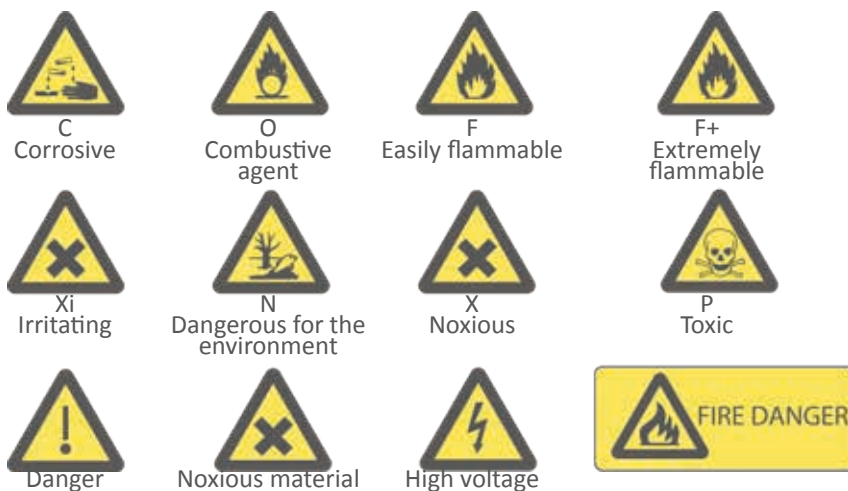
The areas that require the use of protective clothing must be marked with warning signs and pictograms indicating the residual risk.



CAUTION: is ABSOLUTELY FORBIDDEN to tamper or remove the plates and the protections on the electromagnetic valve.

The manufacturer declines all responsibility for the safety of the electromagnetic valve in case of omitted observance of the prohibition.

CE norms signage: examples of danger symbols





2.4 Environmental condition

Operating environmental conditions

The glue feed unit is designed to operate in a closed local, protected from the atmospheric agents, with all the safety requirements resulting from the laws in force.

Waste disposal

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

Waste definition

Waste is any material and object resulting from human activity or natural cycles which is abandoned or destined to be abandoned.

Special waste

They are considered special waste:

- Remains from industrial production, agricultural activities, crafts, commercial and service that for quantity are not declared comparable to urban waste;
- Obsolete and deteriorated machinery and equipments;
- Motor vehicles and their parts out of use.

Toxic-noxious waste

Are to be considered toxic-noxious waste all waste containing or contaminated by materials listed in the attached on the DPR 915/52 of actualization of Directives 75/442/CEE, 76/403/CEE and 768/319/CEE.

Temporary storage

Temporary storage of toxic and noxious waste is allowed depending on the expected disposal of the same by treatment and/or final disposal. In each case, must be observed the laws in force in the country of the user in the environmental safeguard field.

Features of containers

The fixed and mobile containers designed to contain toxic and noxious waste must have suitable strength requirements in relation to the chemical-physical properties and the dangerousness features of the waste contained. The containers where the products and the dangerous or noxious materials are stored, must have markings and symbols in order to show the nature of their contents.

Registration obligations

Pursuant to the DPR of 23 August 1982 relative to the implementation of the Directive 75/439/CEE the records of loading/unloading operations must be kept by all companies that generate - special or toxic - noxious waste from industrial and hand-crafted productions.

Disposal

The pick up of special and/or toxic-noxious waste must be committed with contract to specifically authorized companies and who do the transport materially must be in ownership of the required authorizations and must be turn out to be registered in the haulers register.

It's absolutely forbidden to throw waste in the environment.

For the disposal of the packaging, the user must follow the laws in force in the country of plant installation.

Fire material

There is no fire danges by the operation of the glue feed unit.



CAUTION: The customer must provide an appropriate fire-fighting system, evaluating its internal situation and respecting the laws in force.

In case of fire, disconnect immediately the power switch to interrupt the power supply.

**CAUTION: explosive atmosphere**

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

Lighting

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

Vibrations

The glue feed unit doesn't make vibrations.

2.5 Installation - General norms

Zator's products are manufactured in compliance with the laws in force during its construction.

The personnel will be trained and qualified to take advantage of the installed machinery requirements. The personnel must operate in a comfortable space that could be guarantee safety and hygiene for the operator.

In case of a different destination or necessity of use of the glue feed unit, it's appropriate to refer to the technical offices of the Zator Srl.

Goods in packaging

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

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

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

Predispositions: choose the installation space

Without prejudice to specific dispositions, the customer will be provide to:

- Appropriate logistic arrangement for the placement and conduction of the glue feed unit
- Power supply, including the protective conductor usually called "GROUNDED"
- Electrical equipment arrangement and possible pneumatic system
- Wear materials

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

Pneumatic connections



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

2.6 Use of adhesives, glues or other fluids

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

Before use a specific type of fluid check that:

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

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

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

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

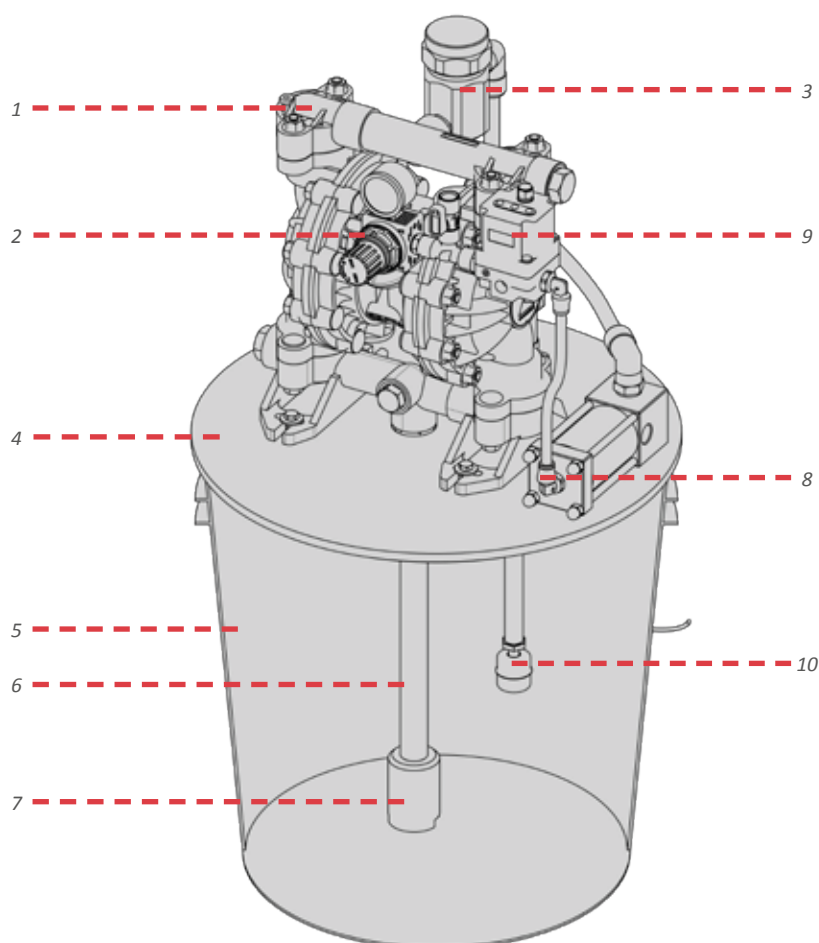


3 TECHNICAL DESCRIPTION

3.1 Functions and components

The *glue feed unit A159002* is indicated to supply low viscosity glues, adhesives and fluids. It is composed mainly of:

1. **Double diaphragm pump** with 1:1 ratio and anti-stall pneumatic control valve;
2. **Air pressure regulator** with manometer (*inlet*);
3. Stainless steel **filter/pulsation dampener**;
4. **Lid** made of PVC fixed to the pump;
5. **Bucket** made of HDPE for the storage of the fluid;
6. **Suction pipe** of the fluid;
7. **Bottom valve** with filter;
8. 1:1 automatic stainless steel **fluid pressure regulator** (*outlet*);
9. **Proportional valve** for automatic control of the fluid flow;
10. **Float Level sensor** (*optional*) to indicate the minimum fluid level into the bucket.



3.2 Technical data

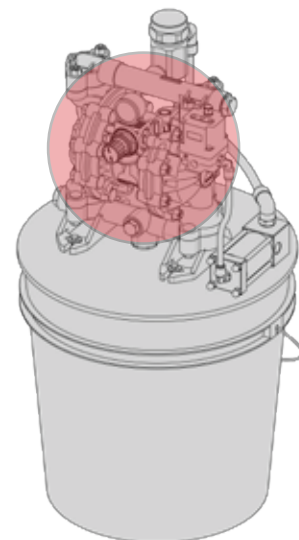
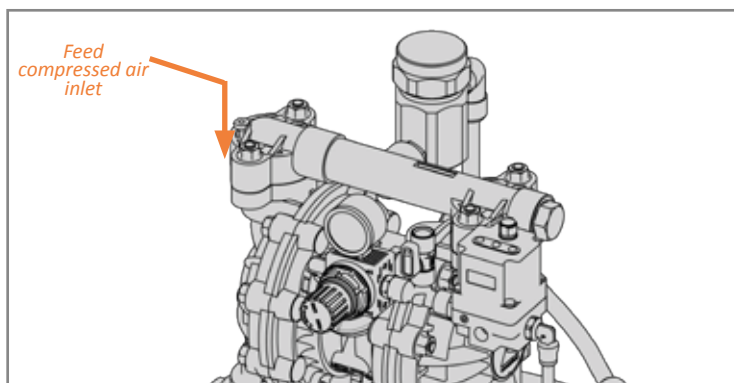
Pump ratio	1:1
Line air supply	max 6 bar
Air inlet connection	G1/4"
Maximum fluid viscosity	~ 1.000 mPa·s
Proportional valve signal	0÷20 mA
Working pressure	from 1 to 6 bar
Fluid outlet connection	G3/8"
Weight (tare)	11 Kg
Bucket capacity	28 liters

fluid types

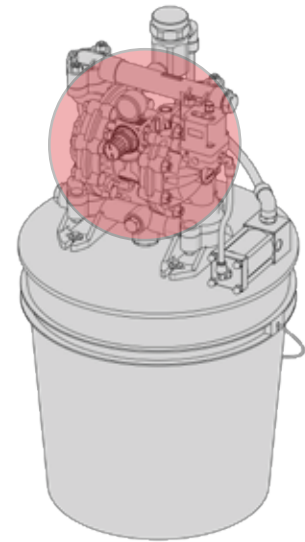
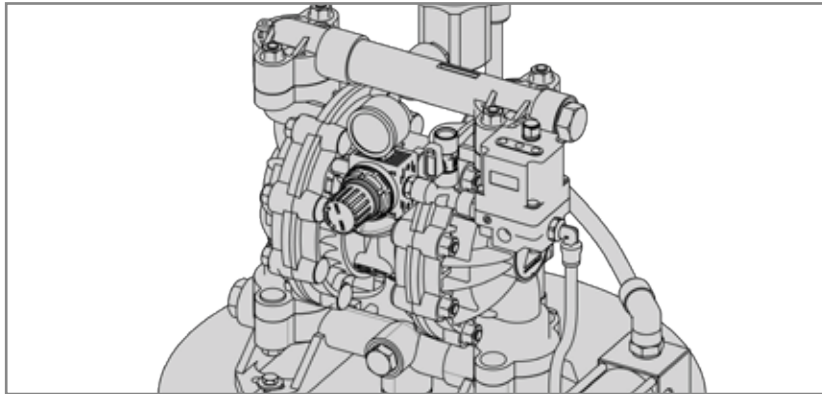
- | adhesives and glues
- | inks
- | paint
- | mastics
- | low viscosity fluids

3.3 Functioning description

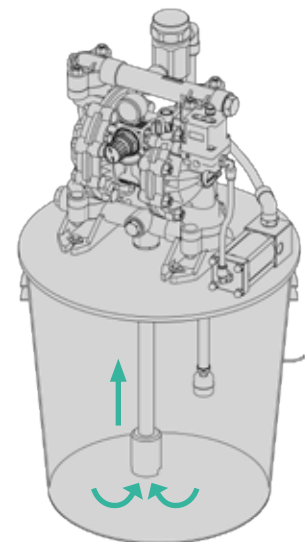
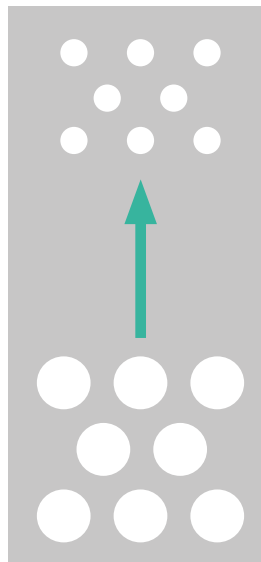
- 1 The feed compressed air of the pump must come from an external plant for air distribution. The air flows through the **air regulator pressure** [pos.2] thanks to the fitting with *ball valve*;



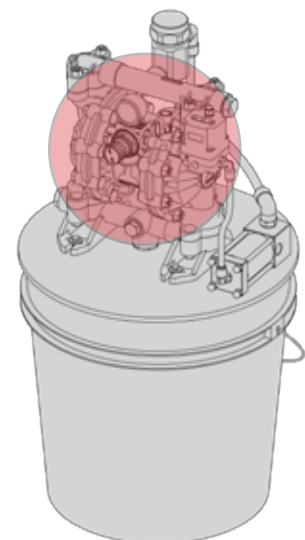
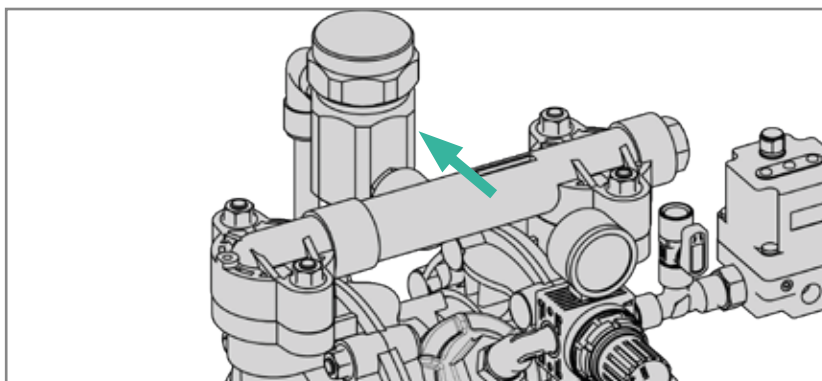
- 2** From the *pressure regulator* the air flows inside the pump, activating the two internal diaphragms. These two diaphragms move together and produce two different actions on the fluid;



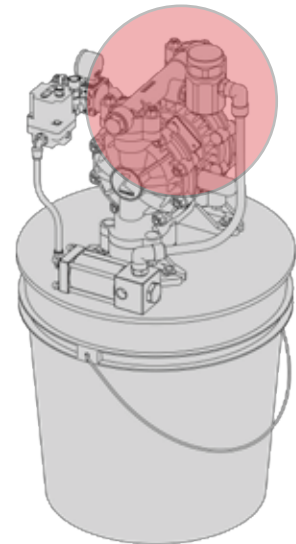
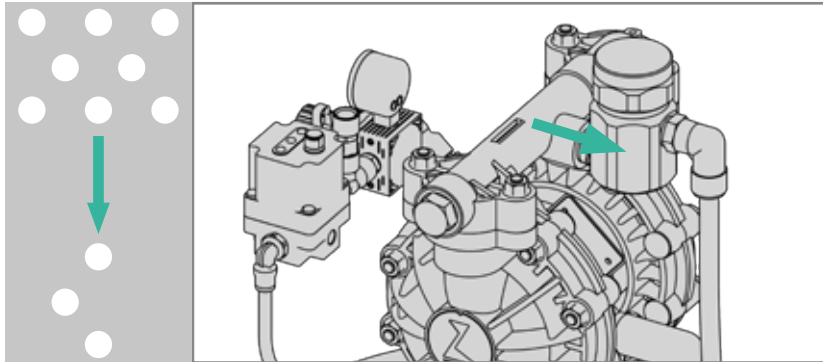
- 3** The movement of one of the two diaphragm cause the *vacuum effect* inside the **suction pipe** [pos.6]. This action allows to the fluid to be extracted from the bucket and goes up through the pipe inside the pump. The mesh filter inside the **bottom valve** [pos.7] prevents the aspiration of any possible lumps and contaminants contained in the fluid;



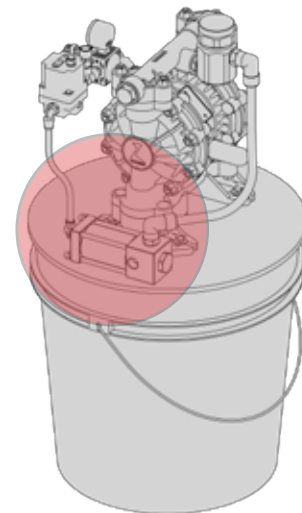
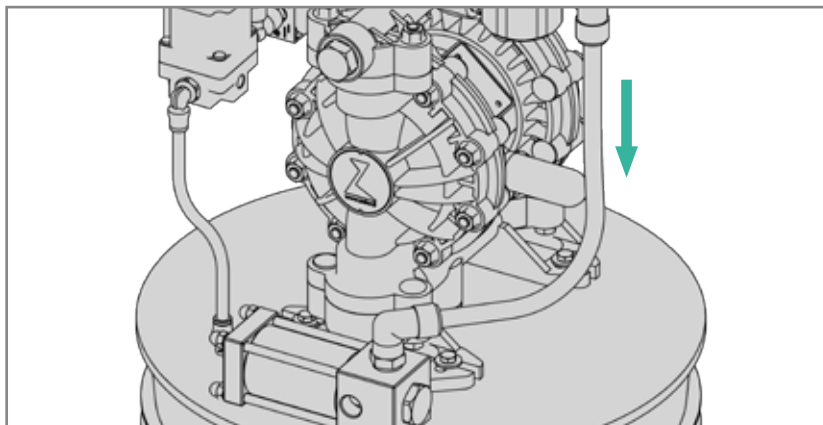
- 4** At the same time with the first, the movement of the second diaphragm *pushes* the fluid inside the pump to flow by the outlet. These two actions are repeated cyclically and alternately by the two diaphragms, producing in this way a continuous flow;



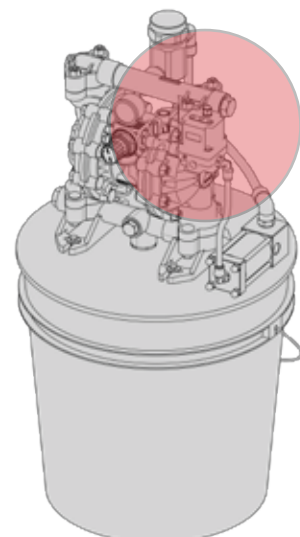
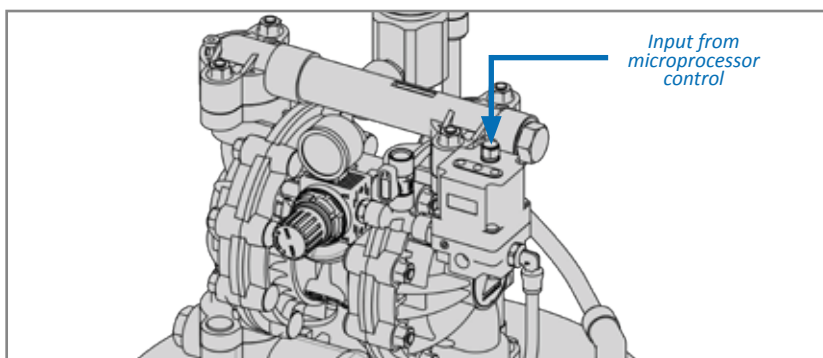
- 5** From the outlet the fluid flows through the **filter/pulsation dampener** [pos.3]: this component allows to drop the pulsations of the fluid made by the alternate motion of the two diaphragms. Moreover, thanks to the fine mesh filter it is also able to micro-filter the fluid in the event which it still has some impurities;



- 6** Then the filtered fluid flows through a pipe into the **fluid pressure regulator** [pos.8];

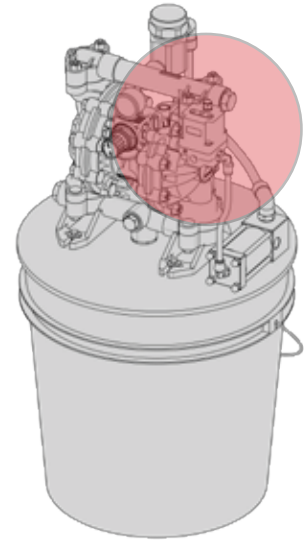
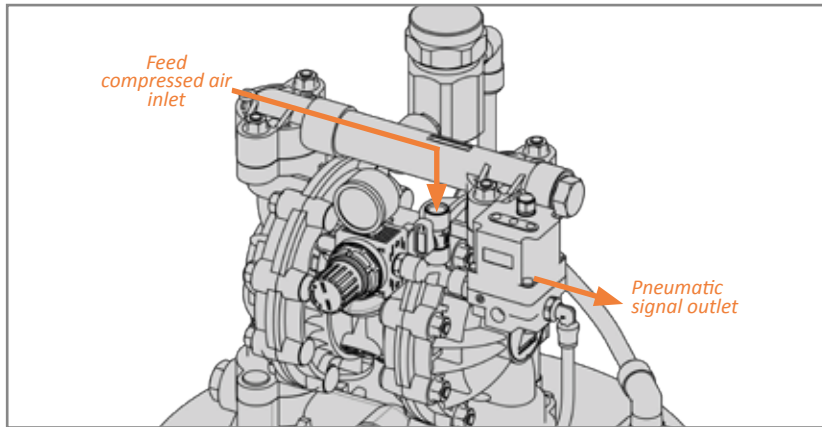


- 7** The **fluid pressure regulator** is controlled automatically by the **proportional valve** [pos.9]. An external microprocessor control detects the speed of the machine by an encoder and sends to the valve a value of current by an electric signal. This value is directly proportional to the machine speed, according to the setted parameters of the microprocessor control;

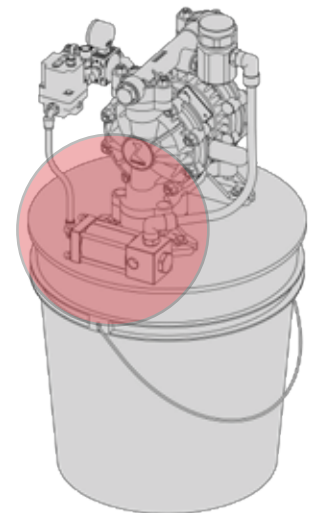
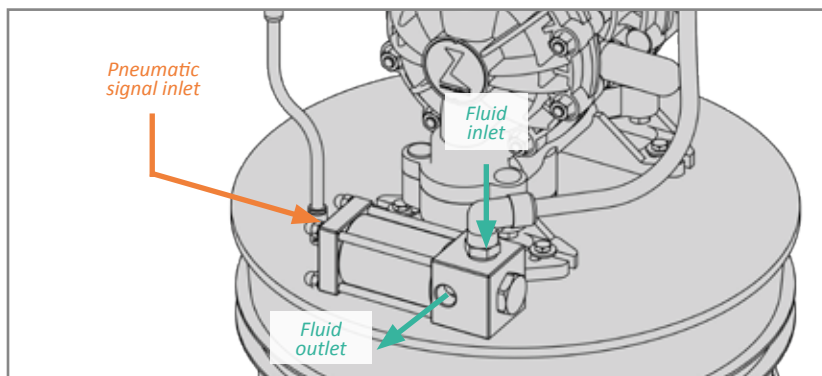


8 This current value is “translated” by the *proportional valves* in a pneumatic signal.

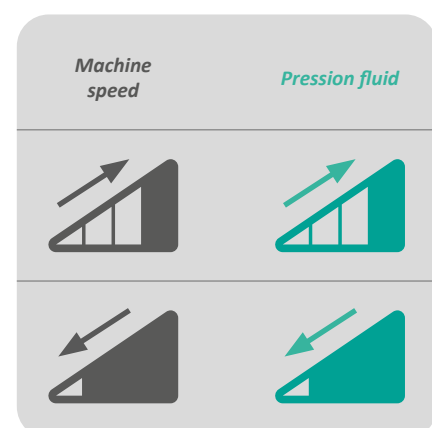
The valve exploiting the feed compressed air of the pump sends to the *regulator pressure* a pneumatic signal with a pressure value which is in turn proportional to the received current value;



9 In this way, depending on the pressure of the pneumatic signal received from the valve, the *regulator pressure* operates in turn on the inlet fluid, regulating the outlet pressure;



10 Depending on the speed of the machine, the *proportional valve* is able to increase or decrease the outlet pressure of the fluid, operating through the *pressure regulator*. This action allow to keep constant the fluid quantity supplied by the pump at each speed of the machine automatically.



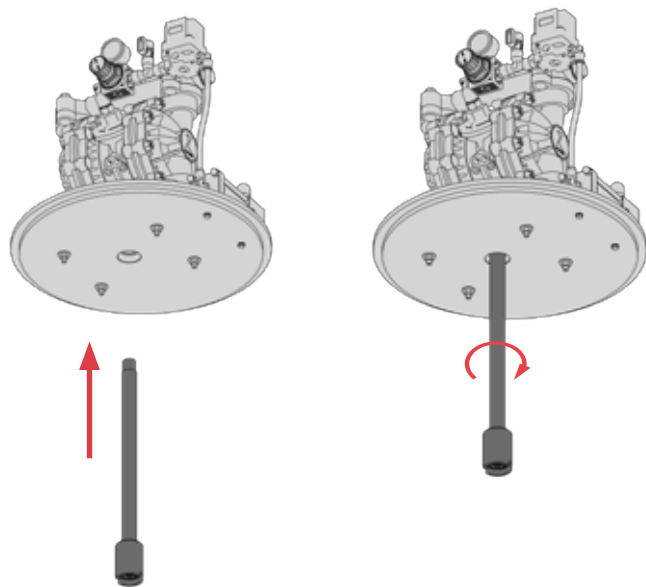
4 INSTALLATIONS

4.1 Pump assembly

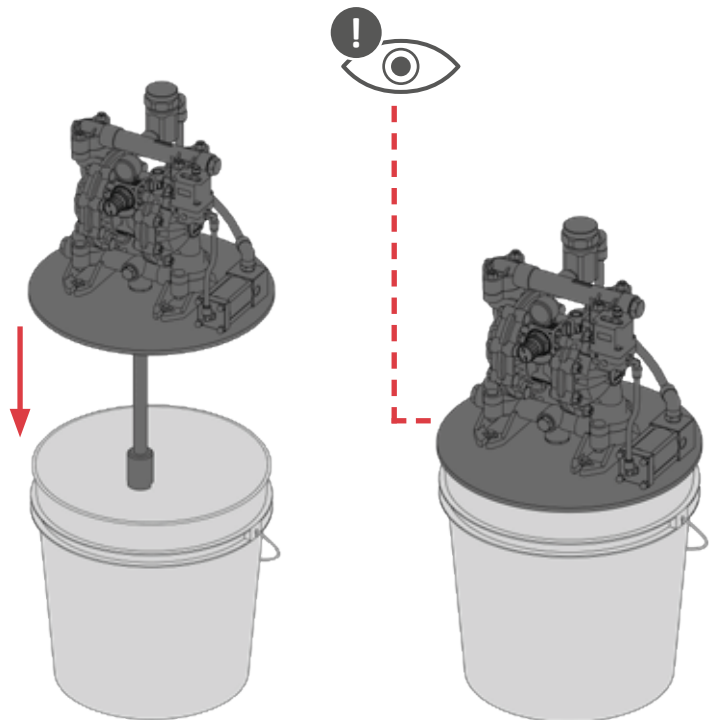
After removing the packaging of the *glue feed unit* to assemble the pump proceed as follows:

1. Screw the *suction pipe** in the pump body;

**Check the presence and integrity of the Teflon wrapped on the pipe thread to prevent that the pump suck air inside during work leading to malfunction in the system.*

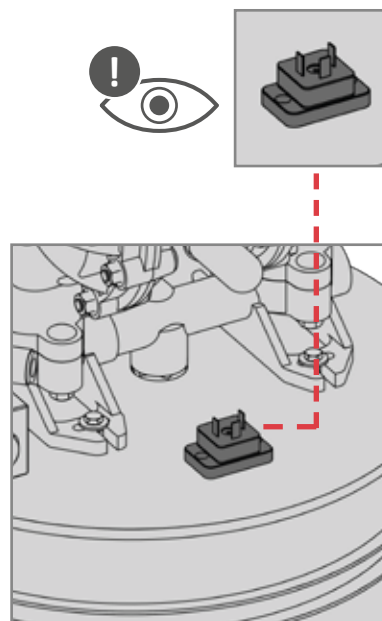
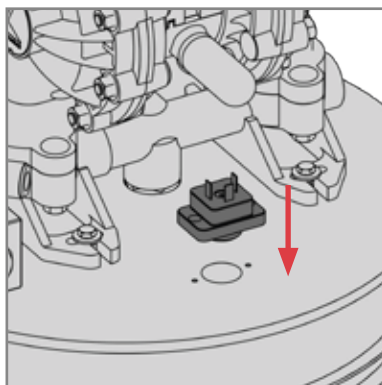


2. Place the *diaphragm pump* and check the correct positioning of the *lid* along the edge of the bucket.

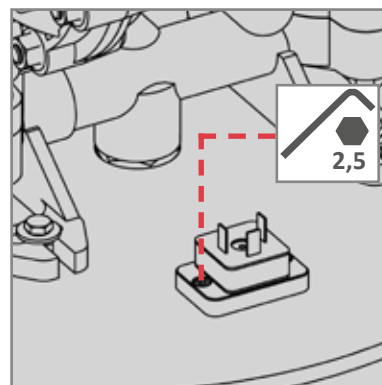
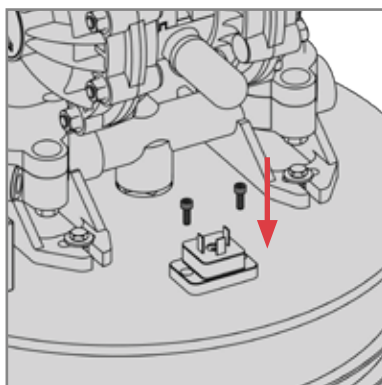


For model equipped with *level sensor*:

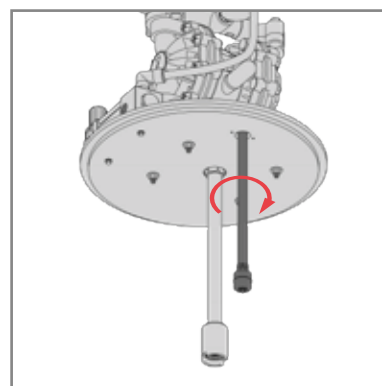
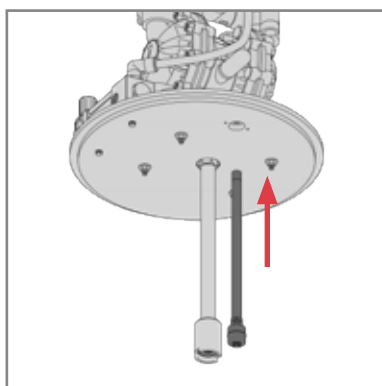
1. Place the *flange* complete with male connector on the relative hole on the lid, aligning the fixing hole. Be careful to the **assembly direction**;



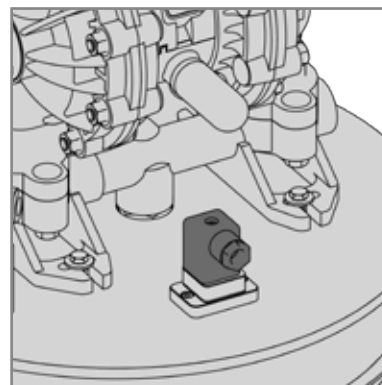
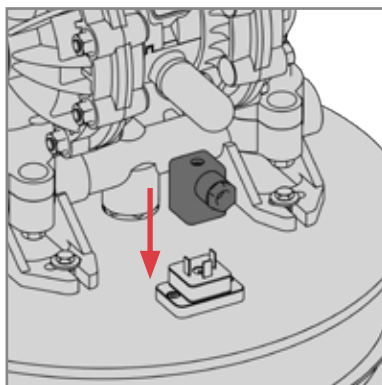
2. Screw the connector *screws*;



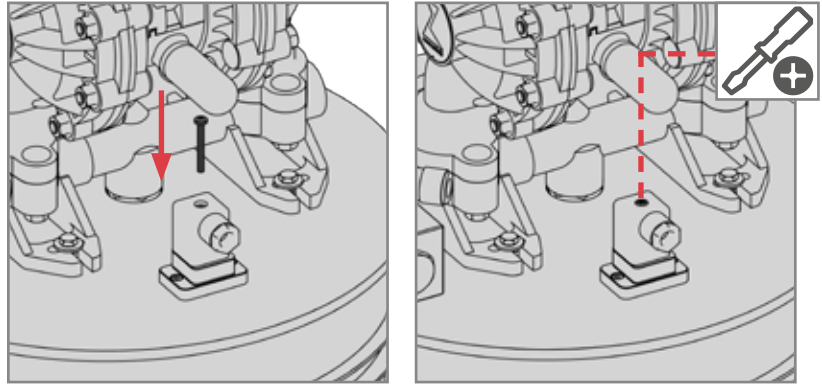
3. Screw the *pipe* of the *level sensor*;



4. Insert the *female connector* of the level sensor;



5. Finally screw the *connector screw*.

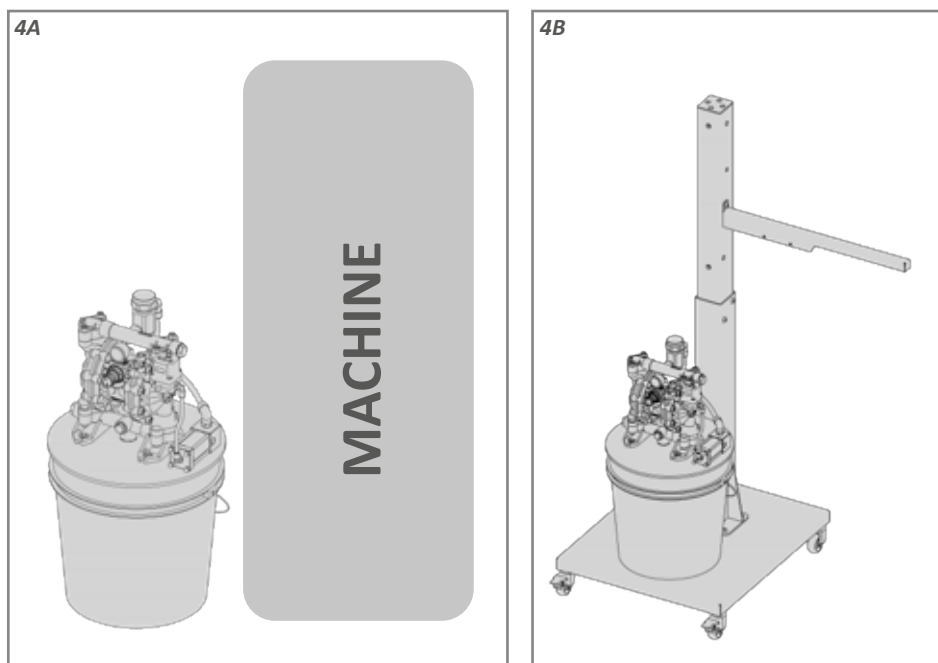


4.2 Unit positioning

The *glue feed unit A159002* can be placed:

- near the machine^{4A};
- on the relative Zator stand wheels^{4B} (supplied separately).

In both cases, it must be ensured a stable and safe position and a good accessibility for the adjustment, the cleaning and the maintenance of the unit.



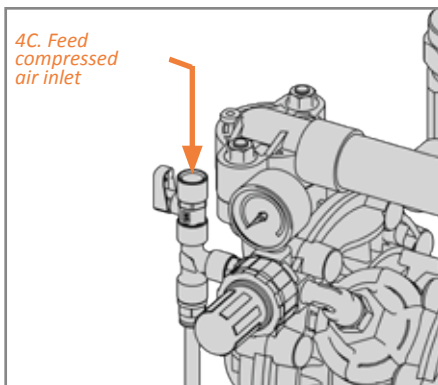
4.3 Connections

4.3.1 Pipes and cables connection

Provide for all connections a cables/pipes length such as to ensure a good accessibility to be able to easily fill and/or replace the bucket containing the fluid and for the operations of maintenance and cleaning of the unit.

The required connections for the functioning of the *glue feed unit A159002* are:

1. **Feed compressed air inlet**^{4C}
2. **Proportional valve control input**^{4D}
3. **Fluid outlet**^{4E}

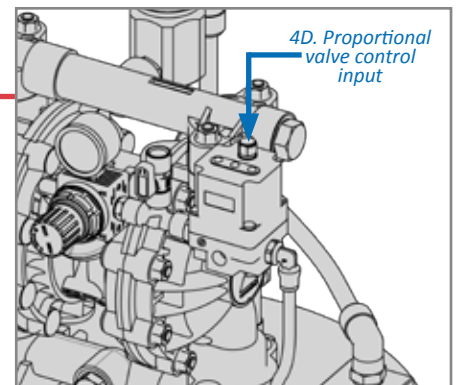
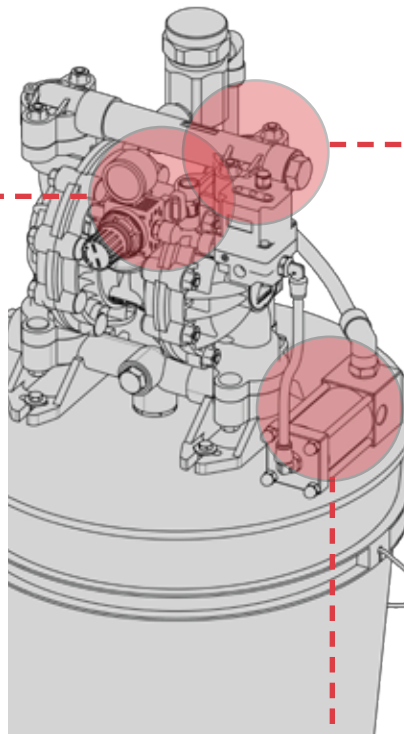


The *double diaphragm pump* for its functioning needs compressed air coming from an external plant for the production and distribution.

A *flexible plastic pipe** Ø8x6mm for use up to 6 bar must be connected to a *G1/4" fitting** to be screwed on the the ball valve inlet connected to the air pressure regulator.

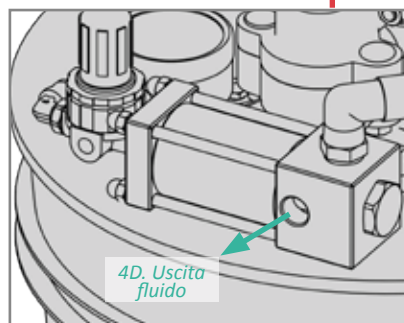


CAUTION:
Feed air pressure:
MAX 6 bar



The *proportional valve* must be controlled electrically by a Zator's microprocessor control or alternately by an instrument tested and approved by Zator.

Connect an *electrical cable** with diameter not less than **0.35mm** to the input connector supplied with the proportional valve.



Connect a *flexible plastic pipe** Ø8x6mm or Ø10x8mm** for use up to 6 bar on the G3/8" fitting outlet of the fluid regulator pressure.



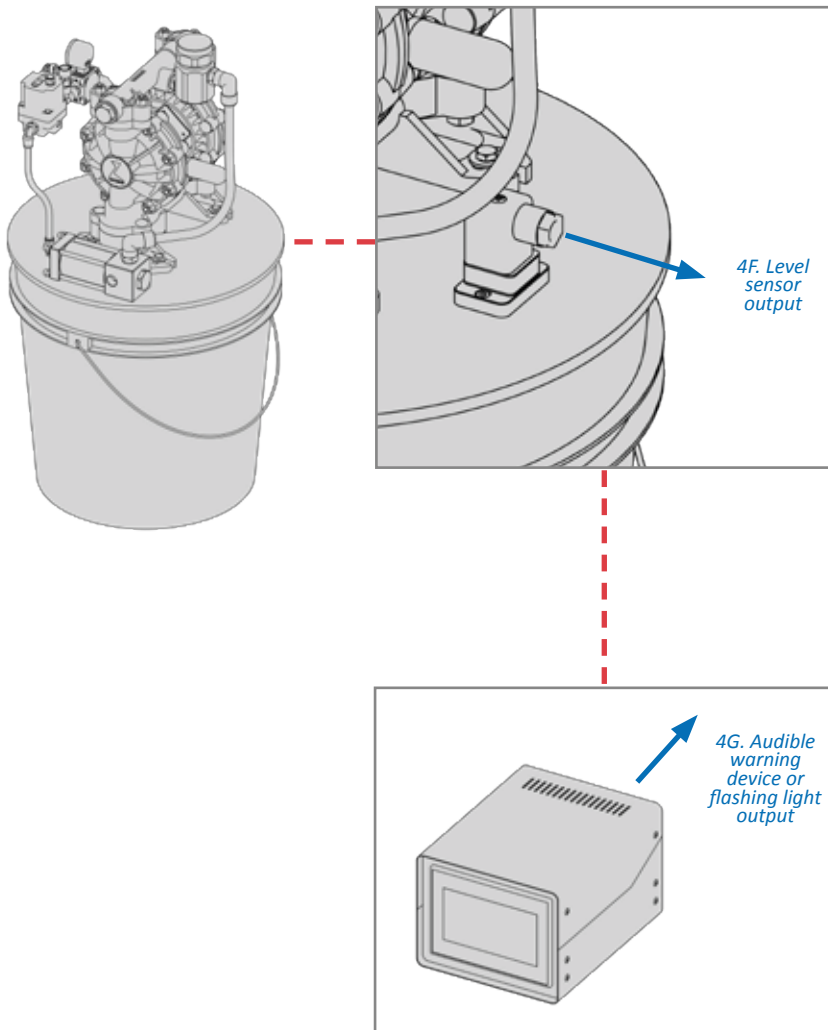
Proportional Valve control input:
0÷20 mA

*Components supplied separately
**According to customer specification

4.3.2 Level sensor connection

The *level sensor (optional)* is a floating device that allows the operator to be warned by an acoustic or luminous signal that the fluid inside the bucket has reached the minimum level. The signal turn on at about **1/4 of the bucket capacity** (6,5 litre). The required connections are:

1. *Level sensor output*^{4F}
2. *Audible warning device or flashing light output*^{4G}



The *level sensor* must be connected by a Zator's microprocessor control or alternately by an instrument tested and approved by Zator.

Connect an *electrical cable** with diameter not less than **0.35mm** to the output connector supplied with the level sensor.



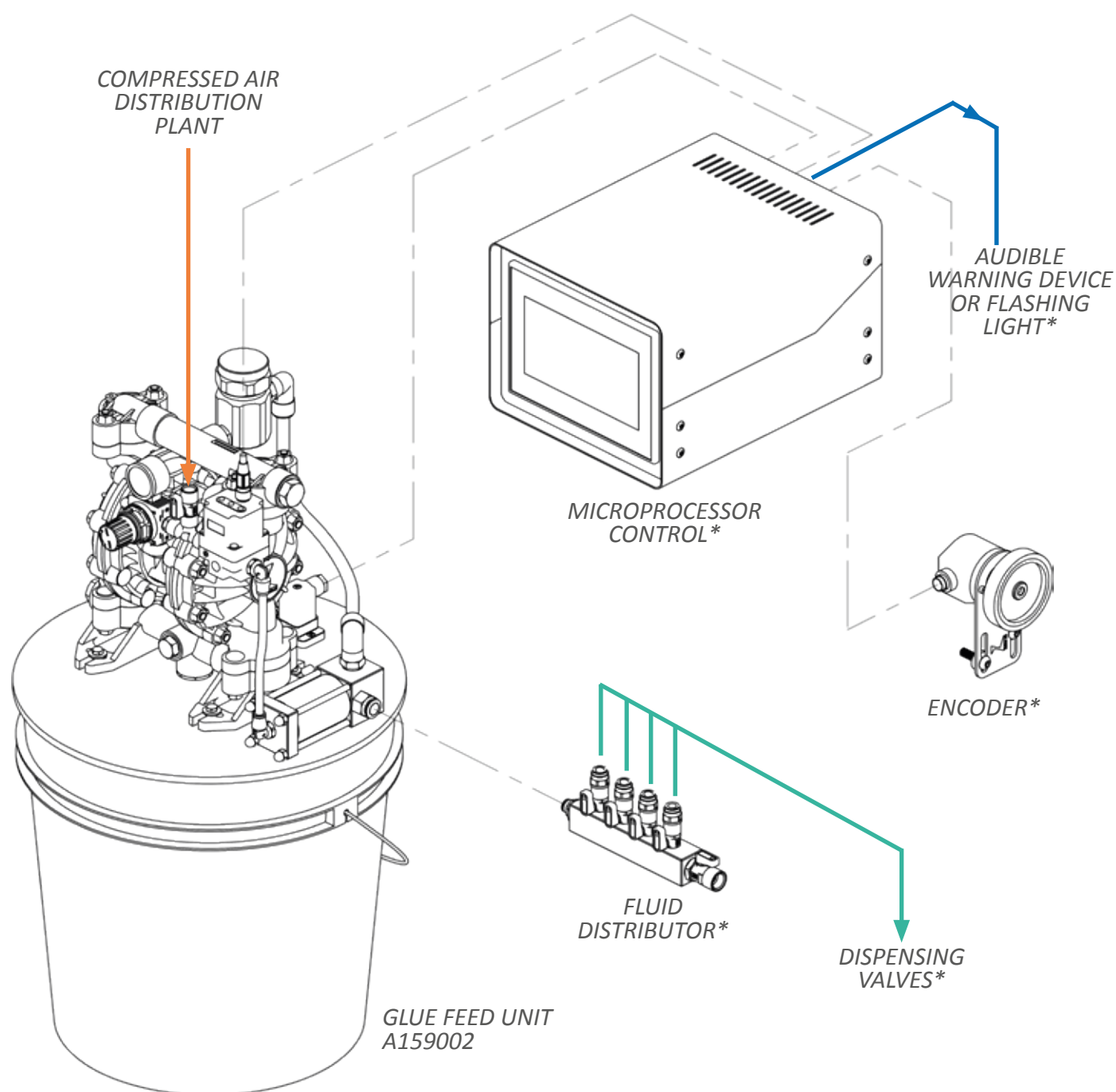
Connect the microprocessor control or different instrument tested and approved by Zator by an audible warning device or flashing light*.

If the Zator microprocessor control is used, the power supply is 24 Volt.

For more information see *section 14.1 - Connections* of the LMZ microprocessor control manual.

4.3.3 Typical diagram of a complete system

The *glue feed unit A159002* is normally embedded within a complete system for glue, adhesive or fluid application. The following example shows a typical diagram of this system with additional components and relative connections. These components are supplied separately by Zator on customer request.

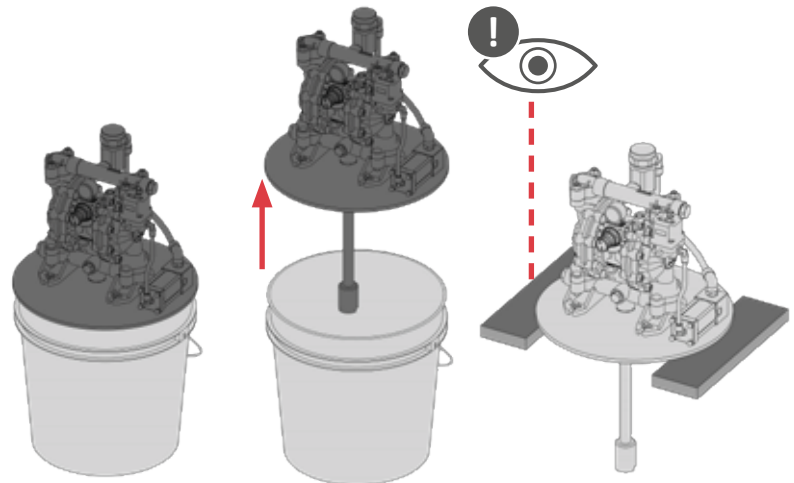


*Components supplied separately

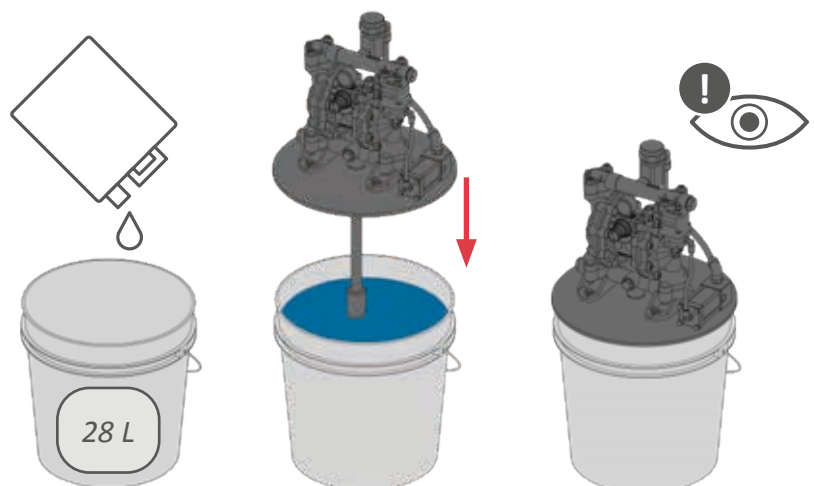
4.4 Start up

After all connections of the glue feed units (see section 4.3 - Connections) you must start up the pump as follows:

- 1 Lift up the *diaphragm pump* together with its connected components. Take care to place the pump on a stable surface that doesn't make hindrance. Alternatively is possible to hang up the pump on a vertical support;



- 2 Fill the bucket with the desired fluid* (max 28 litre), then reposition the *diaphragm pump* and check the correct positioning of the *lid* along the edge of the bucket;



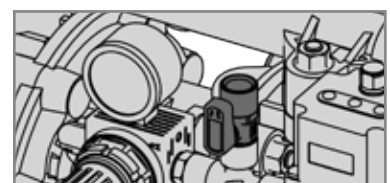
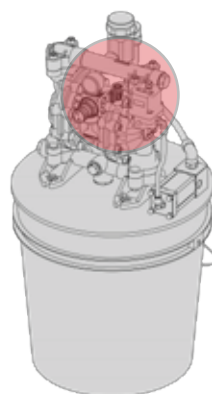
*Check the compatibility of the fluid with the table FLUID TYPES to section 3.2 - Technical data

- 3 Open the *ball valve* of the inlet fitting of air pressure regulator, then open the ball valve of the compressed air distribution plant;



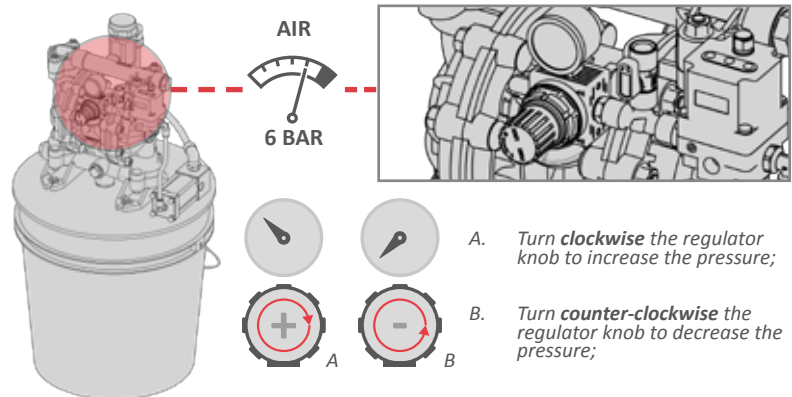
CAUTION:

Feed air pressure:
MAX 6 bar



Turn the lever **counter-clockwise** to open the valve.

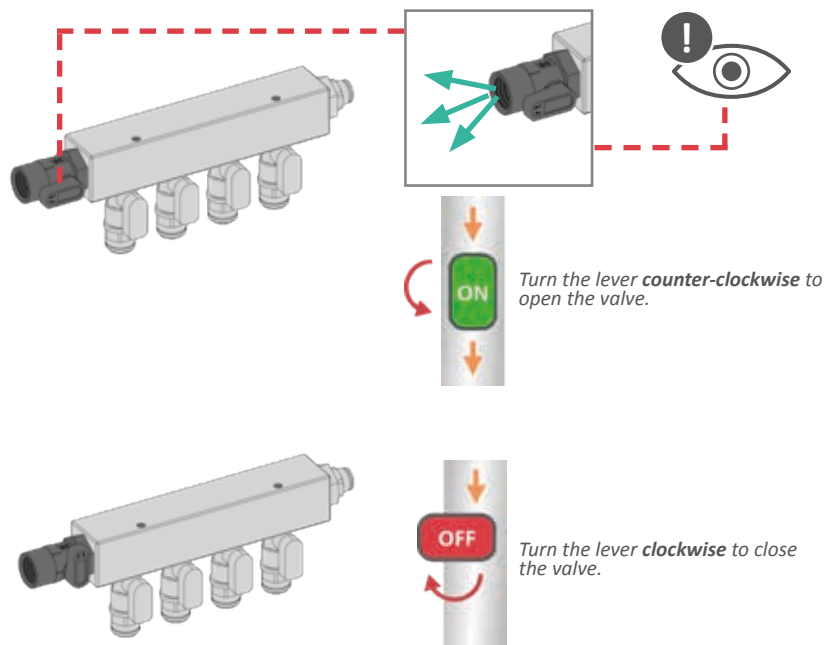
- 4 Increase the inlet air pressure by turning the *air pressure regulator knob*. By the manometer check the pressure is set to **6 bar** (recommended pressure);



- 5 By the *microprocessor control* (or other instrument) run the *TEST mode*. In this way the fluid pressure will increase up to 6 bar. The pressure value is displayed on the proportional valve display (see section 5.2 - *Fluid pressure adjustment*);

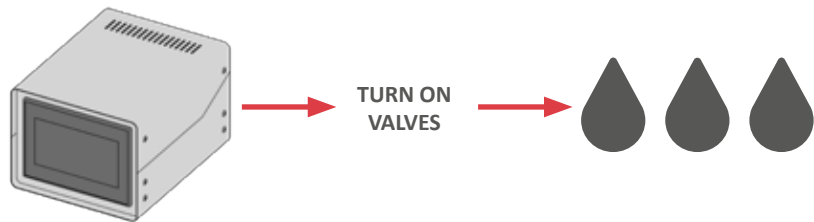


- 6 Open **slowly** the exhaust valve of the fluid distributor (if present) **being CAUTION to the fluid leakage**;

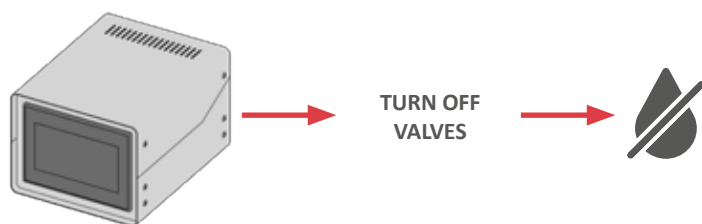


- 7 Keep open the *exhaust valve* until all the air bubbles trapped within the plant have been expelled, then close the exhaust valve;

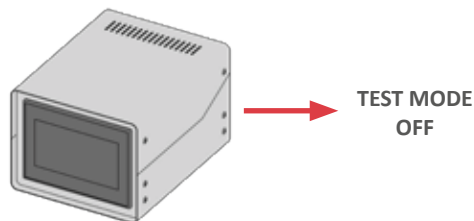
- 8 By the *microprocessor control* (or other instrument) turn on the *dispensing valves* allowing the fluid to come out from the nozzles;



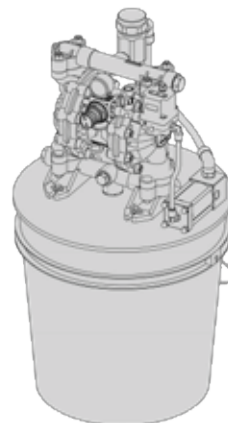
- 9 Keep the *dispensing valves* active until all the air bubbles trapped within the plant have been expelled, then turn them off by the instrument;



- 10 Exit from the *TEST mode* of the instrument;



- 11 The *glue feed unit* is ready to work.



5 UNIT ADJUSTMENTS

5.1 Feed air pressure adjustment

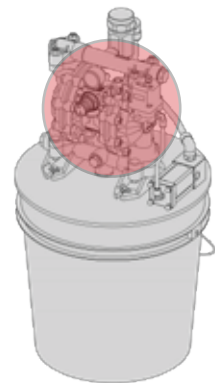
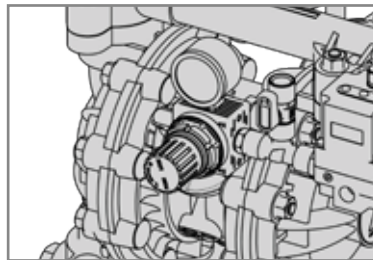
The feed air pressure defines the maximum pressure that the pump can supply to the outlet fluid, independently of how the fluid pressure will be controlled after the outlet of the pump. For the *glue feed unit A159002*:

- Feed air pressure adjustment: **1÷6 bar**
- Compression ratio: **1:1**



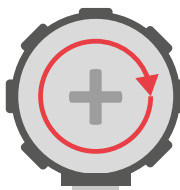
CAUTION: Feed air pressure **MAX 6 bar**

To adjust the feed air pressure of the pump, operate on the *air pressure regulator knob* as follows:

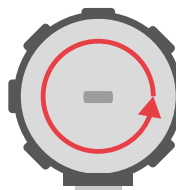
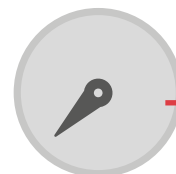


A. Turn **clockwise** the regulator knob to **increase** the pressure;

B. Turn **counter-clockwise** the regulator knob to **decrease** the pressure.



A



B

Manometer

knob

It's recommended to set the feed air pressure to 6 bar.



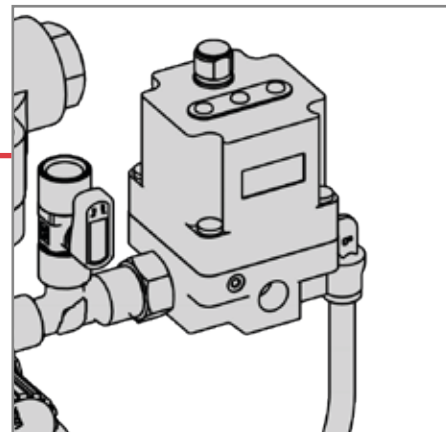
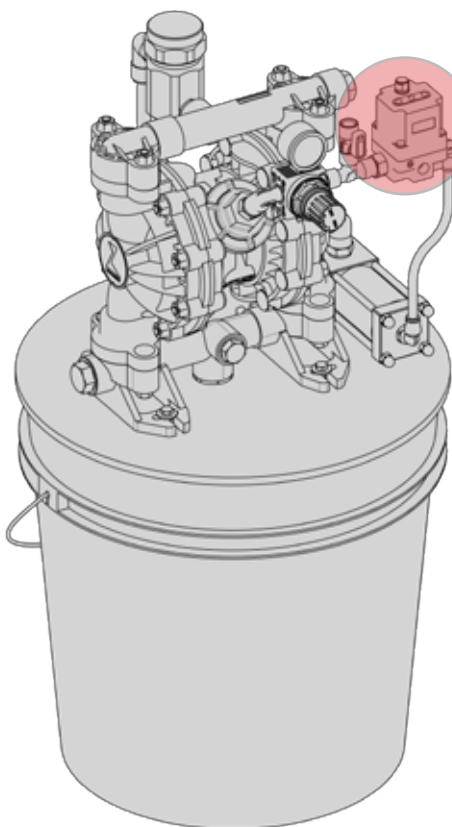
5.2 Fluid pressure adjustment

The fluid pressure adjustment, then the quantity of fluid supplied by the glue feed unit, is automatically controlled by the *automatic fluid pressure regulator*, which is also controlled by the *proportional valve* with the *microprocessor control* (see section 3.3 - *Functioning description*).

For the control of the proportional valve according to the different speed of the machine, see the user and maintenance manual of the *LMZ microprocessor control series* (section 11 - *Pressure menu*) supplied with the instrument.



The proportional valve is normally programmed and tested on technical specifications together with *Zator microprocessor control LMZ series* (supplied separately). If the valve is controlled by a different instrument, is necessary that the customer communicates to the Zator company the technical specifications relative to the instrument.



The pressure value displayed on the *proportional valve* display is **only approximate of the setted pressure on the fluid pressure regulator**. Therefore the actual pressure inside the hydraulic system from the outlet of the regulator can be different.

6 MAINTENANCE

6.1 General norms

The *glue feed unit A159002*, thanks to the construction methods and employed materials, is easy to maintain. A minimal, simple, accurate and constant maintenance allows a long-lasting and regular functioning of the unit, keeping unchanged its performance.



- For the general cleaning of the unit **don't use** metal, sharp or pointed objects. Use only soft brushes or cotton rags.
- All the maintenance works on the unit **must be performed by qualified personnel** and after have discharged the pressure from the supply system
- **Use only** original spare parts
- The unit must be washed **only and exclusively** with water

6.2 Maintenance program

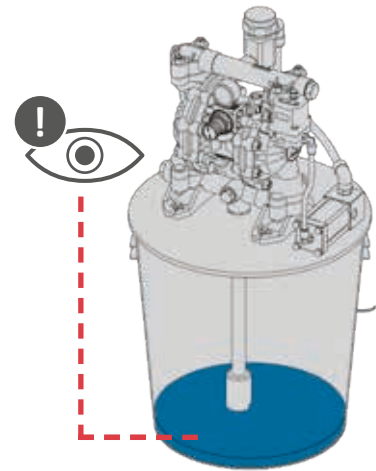
	TIMING*	WHAT TO DO
1	Before a longer production break than two weeks	<ul style="list-style-type: none"> • Drain the fluid from the system and wash it completely with water • Leave the system with water inside
2	After a longer production break than two weeks	<ul style="list-style-type: none"> • Discharge the water from the system and fill it with the desired fluid
3	Every month or after 500 working hours	<ul style="list-style-type: none"> • Check the pump oil level
4	Every month or after 1000 working hours	<ul style="list-style-type: none"> • As point 1 and 2 • Check the filter inside the suction pipe • Check the filter/pulsation dampener
5	Every year or after 2000 working hours	<ul style="list-style-type: none"> • As point 1 and 2 • Clean or replace possible worn parts
<small>*Approximate values that can change depending on the type of glue, adhesive or fluid used. For the use of special fluid we recommend to contact the Zator company for any questions.</small>		

6.3 Filling/replacement of the bucket

It's recommended to do the filling or replacement of the bucket with the stockpile bucket **before the fluid finishes completely** to avoid that the pump sucks air inside the system leading to malfunction.

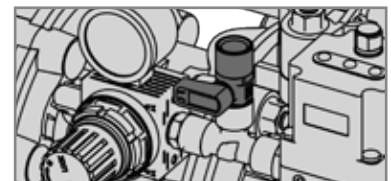
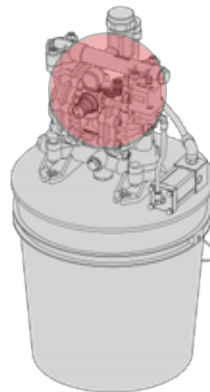
If the glue feed unit is equipped with **level sensor (optional)**, an acoustic or luminous signal warns the operator that the fluid inside the bucket has reached the minimum level.

If air has been introduced inside the fluid plant, is necessary follow the instructions on *section 4.4 - Start up* from operation n°5 of the list.



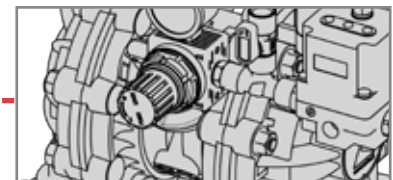
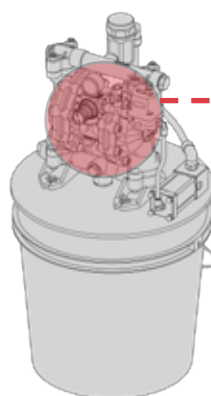
For the filling of the bucket or replacement with the stockpile bucket (supplied on request), proceed as follows:

- 1 Close the *ball valve* of the inlet fitting of air pressure regulator;

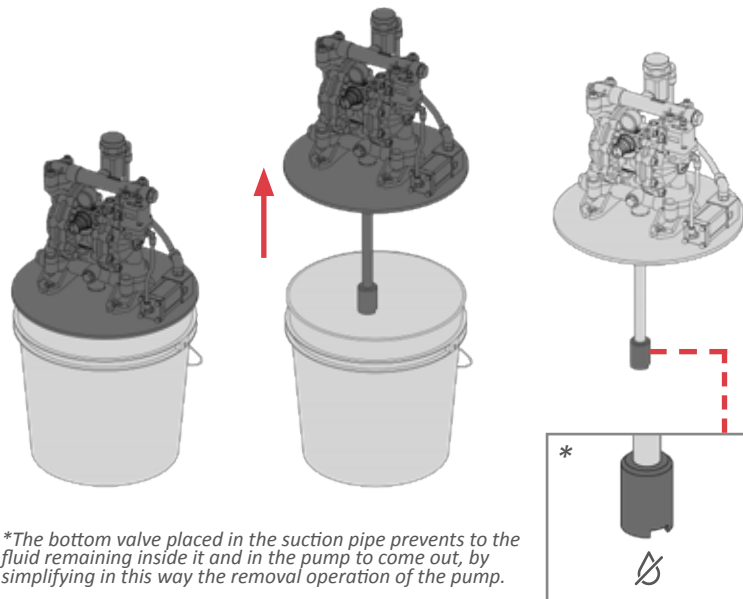


Turn the lever **clockwise** to close the valve.

- 2 By acting on the air pressure regulator knob, set pressure to **0 bar**;

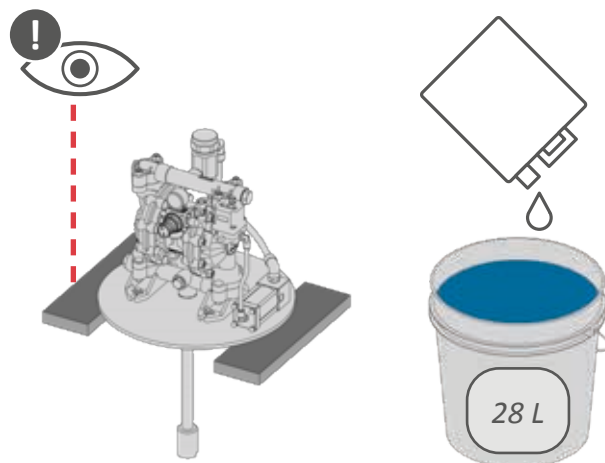


- 3 Lift up the *diaphragm pump** together with its connected components;



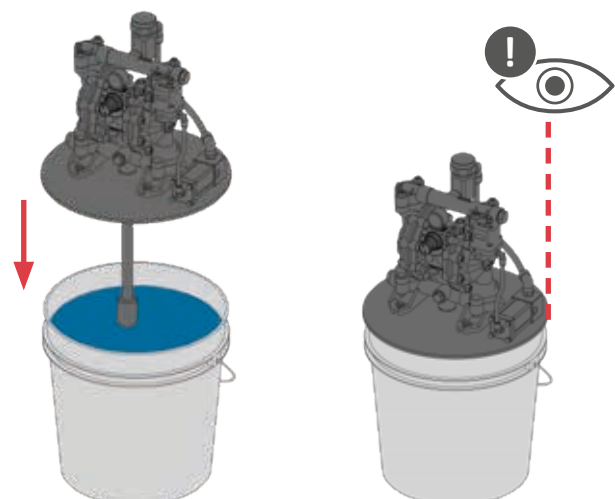
If you have only one bucket:

- 4a Take care to place the pump on a stable surface that doesn't make hindrance. Alternatively is possible to hang up the pump on a vertical support. Fill the bucket with desired fluid** (max 28 litre);



**Check the compatibility of the fluid with the table FLUID TYPES to section 3.2 - Technical data

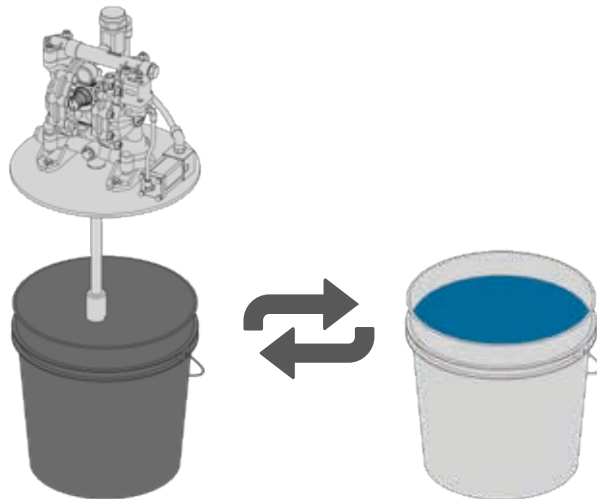
- 5a Then reposition the *diaphragm pump* and check the correct positioning of the lid along the edge of the bucket; (continue to point No.6)



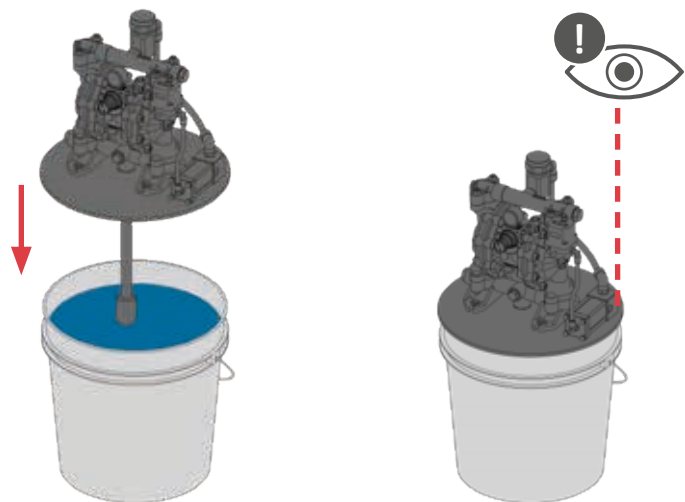
If you have the stockpile bucket:

- 4b Replace the empty bucket with the stockpile bucket previously filled;

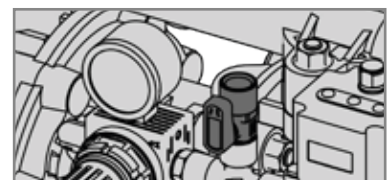
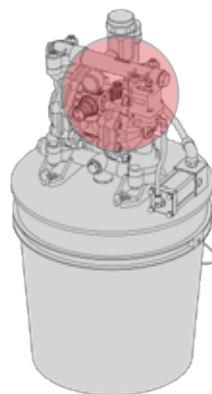
**Check the compatibility of the fluid with the table FLUID TYPES to section 3.2 - Technical data*



- 5a Then reposition the *diaphragm pump* and check the correct positioning of the *lid* along the edge of the bucket;

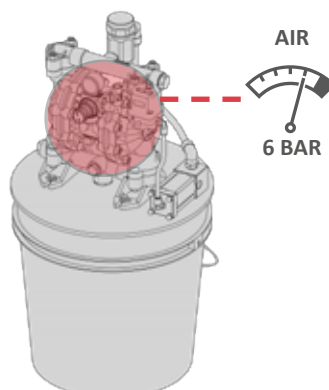


- 6 Open the *ball valve* of the inlet fitting of air pressure regulator;



Turn the lever *counter-clockwise* to open the valve.

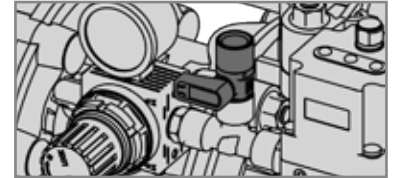
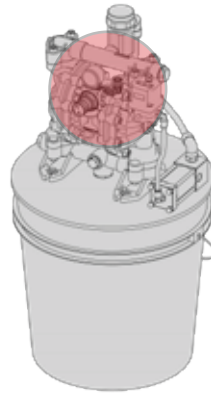
- 7 Finally increase the inlet air pressure by acting on the *air pressure regulator knob*. With the manometer check that the pressure is set to the desired pressure.



6.4 Washing of the unit and system pressure discharge

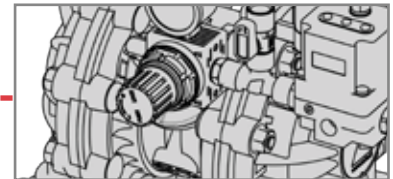
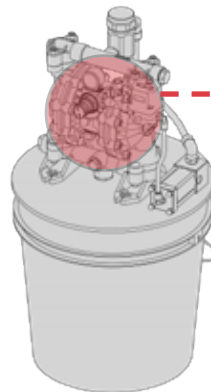
For the complete washing of the unit is necessary to have a *stockpile bucket* (supplied separately).

- 1 Close the *ball valve* of the inlet fitting of air pressure regulator;

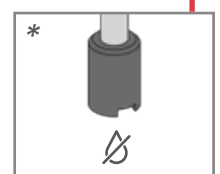
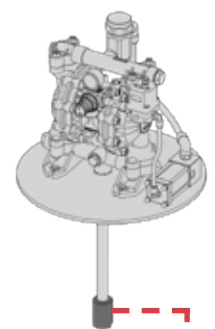
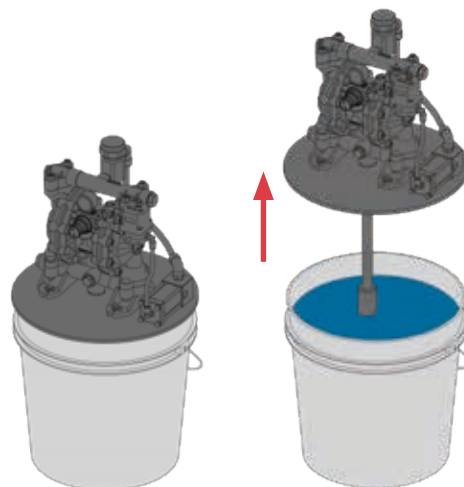


Turn the lever **clockwise** to close the valve.

- 2 By acting on the air pressure regulator knob, set pressure to **0 bar**;

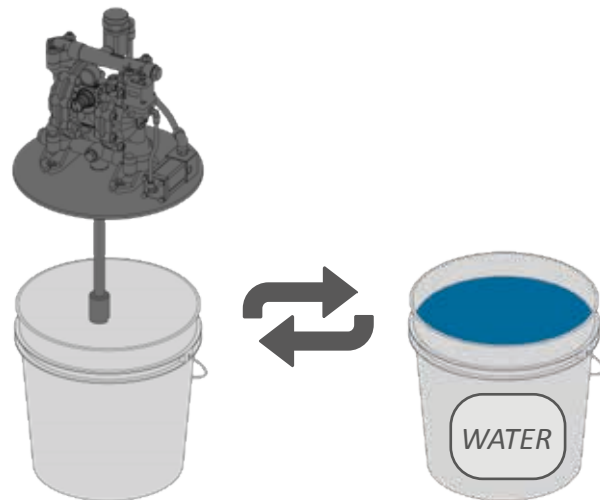


- 3 Lift up the *diaphragm pump** together with its connected components;

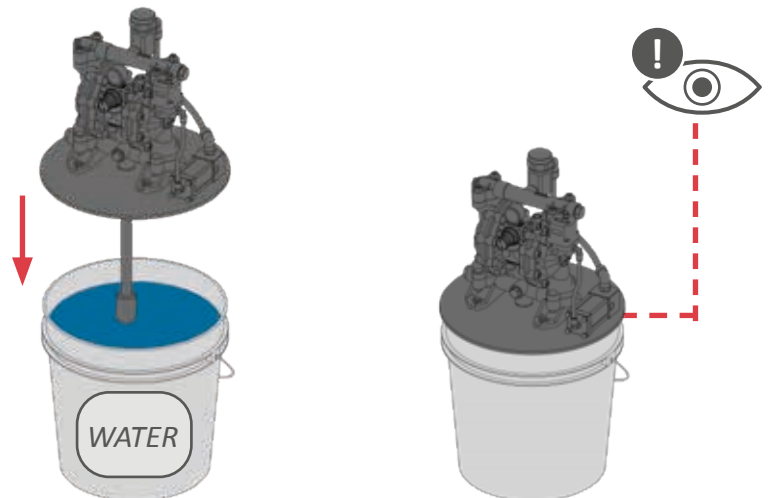


*The bottom valve placed in the suction pipe prevents to the fluid remaining inside it and in the pump to come out, by simplifying in this way the removal operation of the pump.

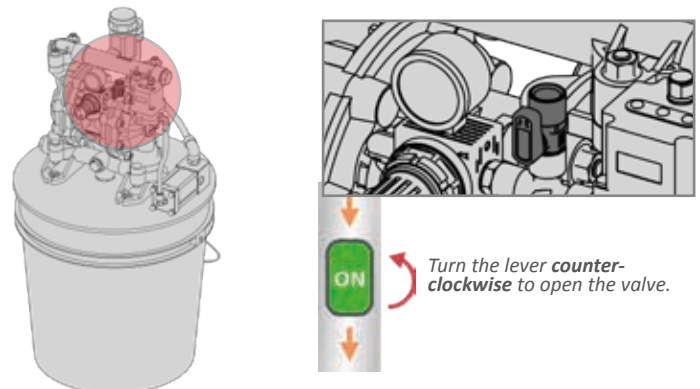
- 4 Replace the bucket with the stockpile bucket previously filled with water;



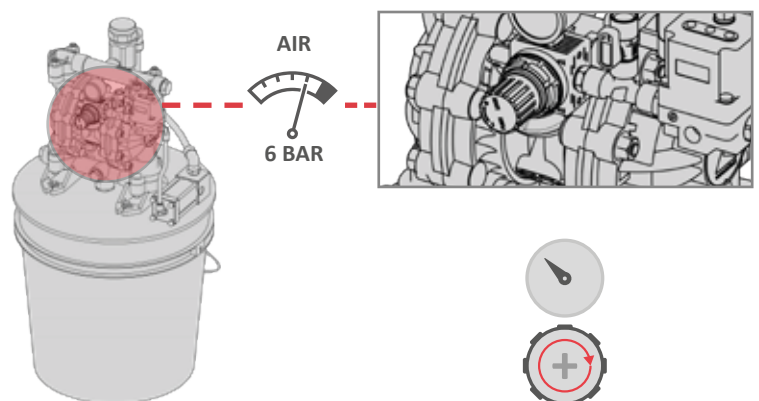
- 5 Then reposition the *diaphragm pump* and check the correct positioning of the *lid* along the edge of the bucket;



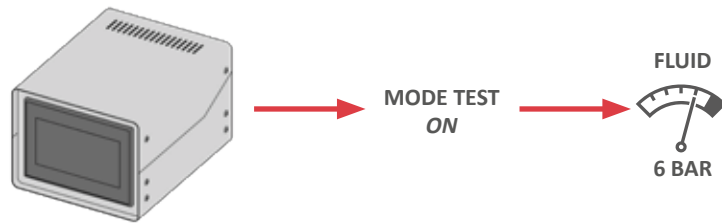
- 6 Open the *ball valve* of the inlet fitting of air pressure regulator;



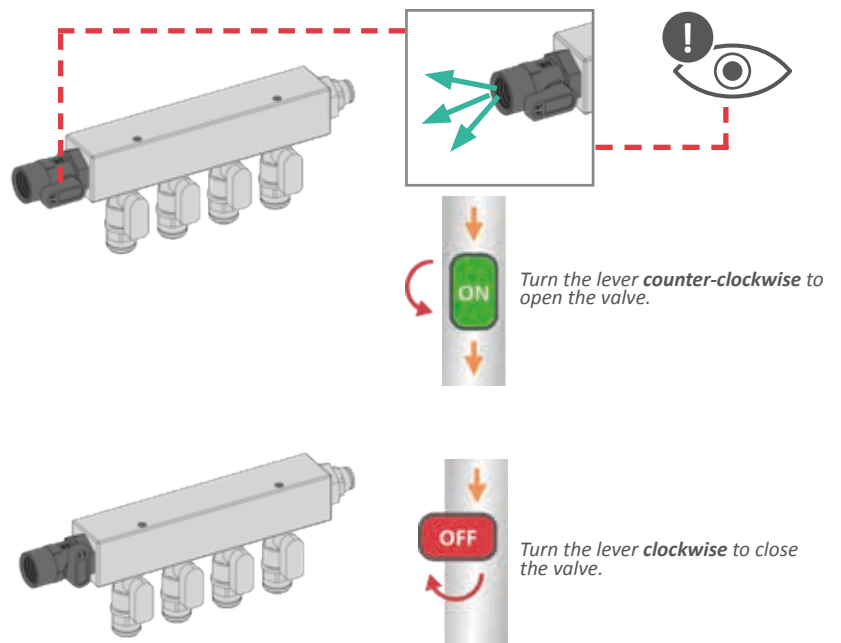
- 7 Increase the inlet air pressure by turning the *air pressure regulator knob*. Then the pump starts and the pressure increases. The pump stops when it reaches the setted pressure value. By the manometer check the pressure is set to the desired pressure;



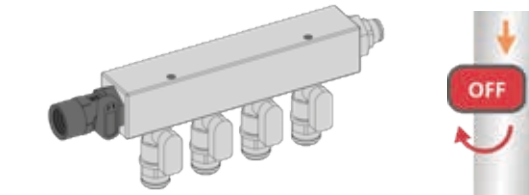
- 8 By the *microprocessor control* (or other instrument) run the *TEST mode*. In this way the fluid pressure will increase up to 6 bar. The pressure value is displayed on the proportional valve display (see *section 5.2 - Fluid pressure adjustment*);



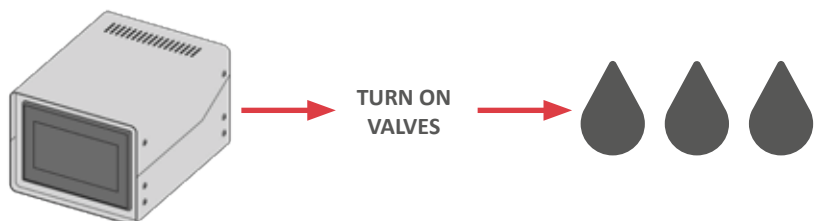
- 9 Open **slowly** the *exhaust valve* of the fluid distributor (if present) **being CAUTION to the fluid leakage**;



- 10 Keep open the *exhaust valve* until comes out only clean water, then close the exhaust valve;



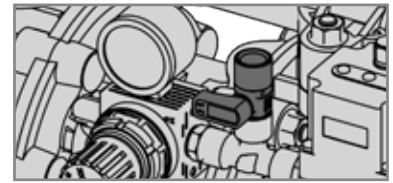
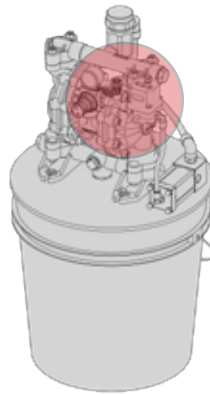
- 11 By the *microprocessor control* (or other instrument) turn on the *dispensing valves* allowing the fluid to come out from the nozzles;



- 12 Keep the dispensing valves active until comes out only clean water from the nozzles;

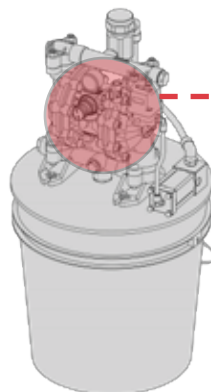


- 13 By keeping the dispensing valves active, close the ball valve of the inlet fitting of air pressure regulator;

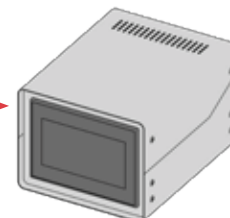


Turn the lever **clockwise** to close the valve.

- 14 By acting on *air pressure regulator knob*, reset pressure to **0 bar**;

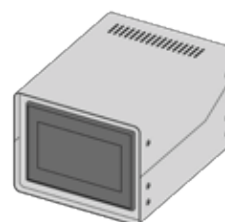


- 15 Once the water no longer comes out from the nozzles of the *dispensing valves*, the fluid inside the system is no longer under pressure. Then is possible turn off the valves by the microprocessor control;



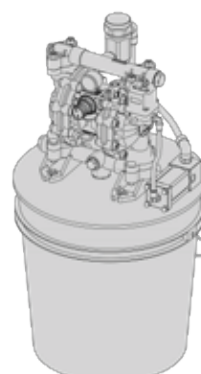
TURN OFF VALVES

- 16 Exit from the *TEST mode* of the instrument;



MODE TEST
OFF

- 17 The washing of the unit and the system pressure discharge is completed.



6.5 Cleaning and/or replacement of the bottom valve filter

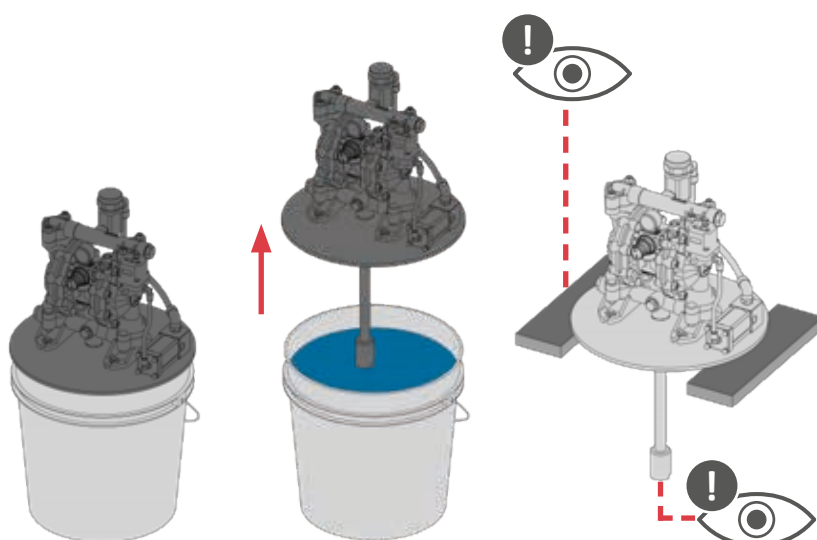
Before you disassemble and clean or replace the *bottom valve filter* **must be done COMPULSORILY** the following steps:

- **Washing of the unit**
- **Discharge the pressure of the system**

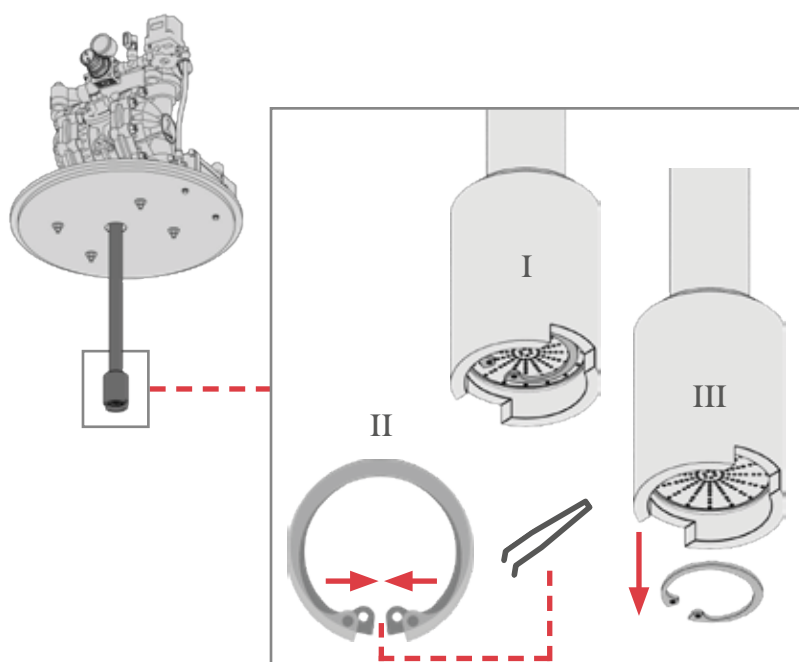
To perform these operations follow the instructions on *section 6.4 - Washing of the unit and system pressure discharge*.

Then proceed as follows:

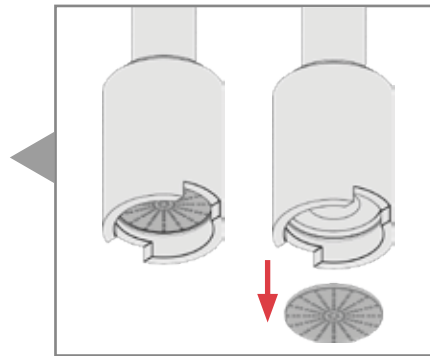
- 1 Lift up the *diaphragm pump* together with its connected components; Take care to place the pump on a stable surface that doesn't make hindrance. Alternatively is possible to hang up the pump on a vertical support. In both cases be sure to be able to easily access to the underside of the suction pipe where the bottom valve filter is placed;



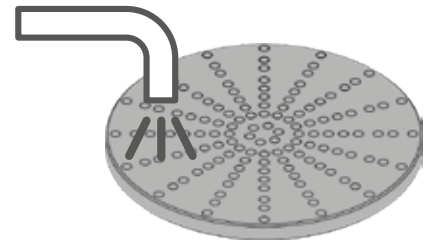
- 2 With the help of a pair of tweezers extract the *snap ring* from its internal seat inside the bottom valve body;



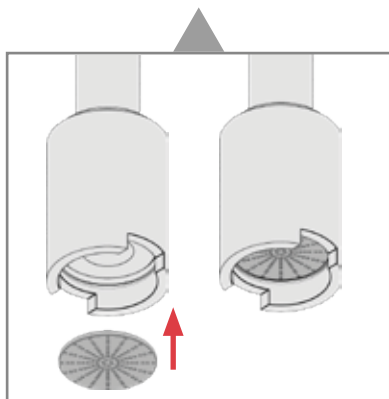
- 3 Then pull out the *filter* from the bottom valve;



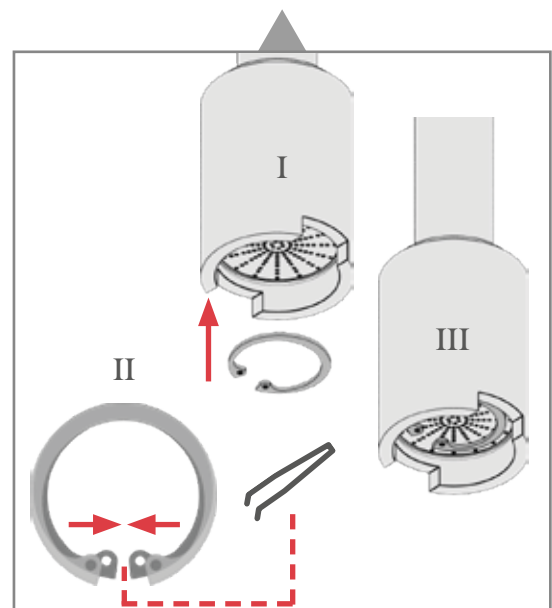
- 4 Put the *filter* under running water to remove any lumps and sedimentation. Then blow with compressed air to clear the meshes from any impurities still present. If these operations become difficult or ineffective, is necessary to replace the component;



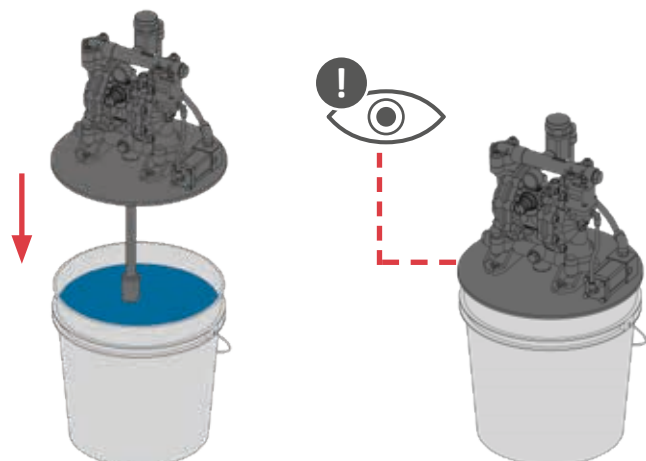
- 5 Once the *filter* is clean or replaced, insert it inside the bottom valve;



- 6 With the help of a pair of tweezers insert the *snap ring* in the internal seat;



- 7 Finally reposition the *lid* and check it the correct positioning along the edge of the bucket.



6.6 Cleaning and/or replacement of the filter/pulsation dampener cartridge

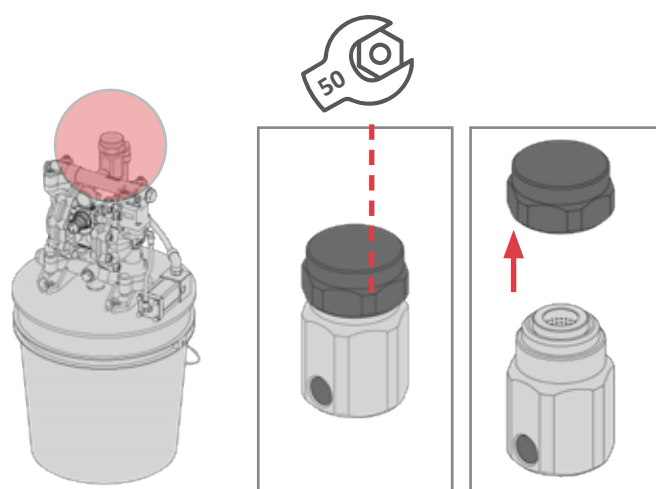
Before you disassemble and clean or replace the *filter/pulsation dampener cartridge* **must be done COMPULSORILY** the following steps:

- **Washing of the unit**
- **Discharge the pressure of the system**

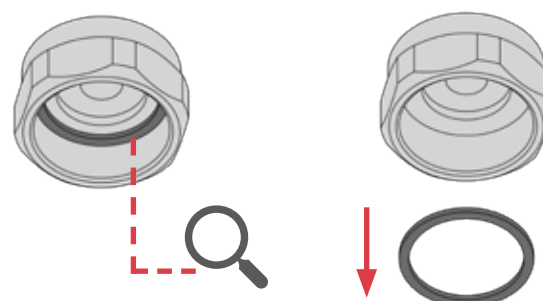
To perform these operations follow the instructions on *section 6.4 - Washing of the unit and system pressure discharge*.

Then proceed as follows:

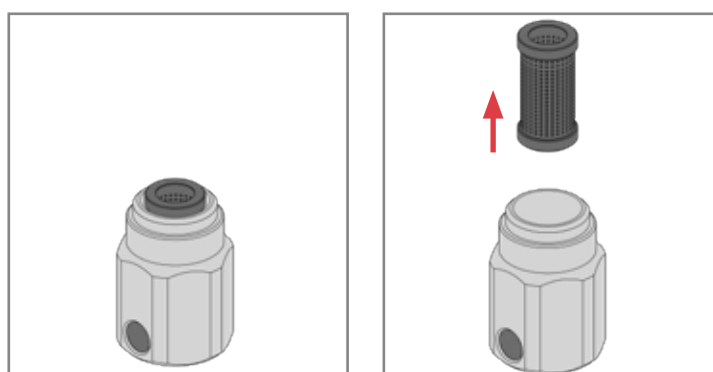
- 1 Unscrew the *cap* of the filter/pulsation dampener with a 50mm wrench or adjustable pliers **by holding** the pump;



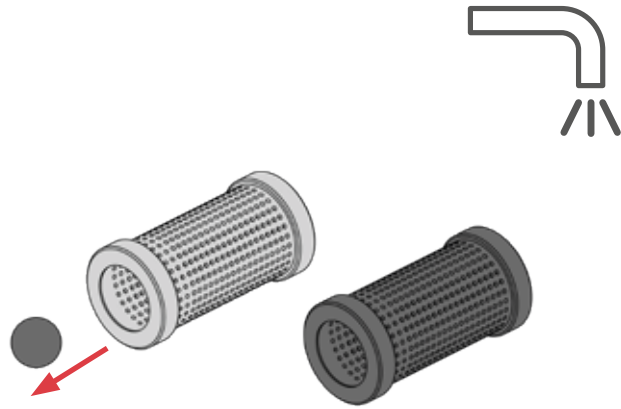
- 2 Look inside the *cap* to check the wear of the *gasket* and if it is necessary, replace it;



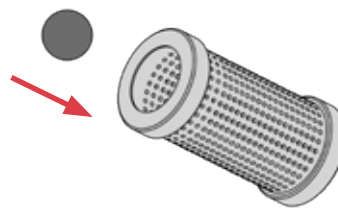
- 3 Pull out the *cartridge* of the filter/pulsation dampener **being careful** not to drop the ball placed inside it because it is free to move;



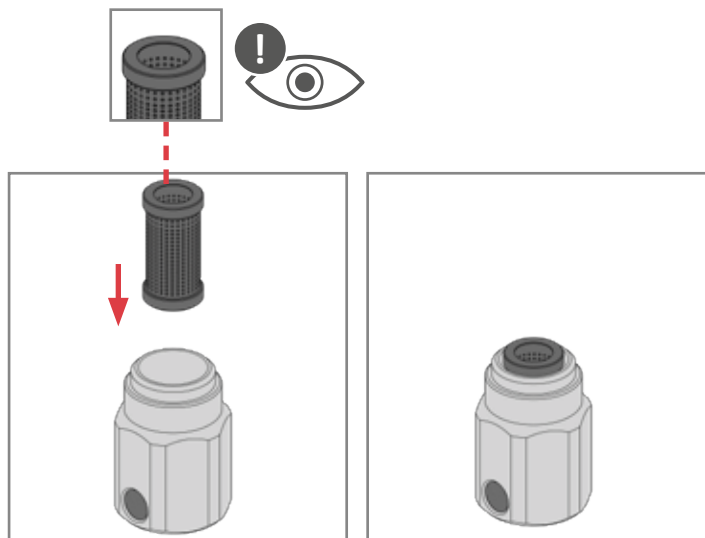
- 4 Pull out the *ball* and rinse with water. Put the *filter cartridge* under running water to remove any lumps and sedimentation. Then blow with compressed air to clear the meshes from any impurities still present. If these operations become difficult or ineffective, is necessary to replace the component;



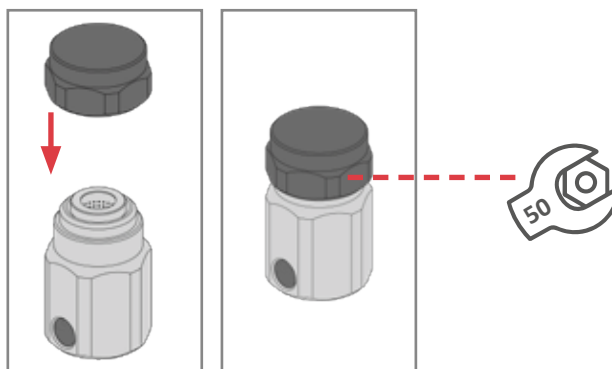
- 5 Once the *cartridge* is clean or replaced, insert the *ball* inside it;



- 6 Then insert the *cartridge* in the filter/pulsation dampener body being careful to the **assembly direction**;



- 7 Finally screw* the *cap* with a 50mm wrench or adjustable pliers **by holding** the pump.



*Be careful to tighten correctly the filter cap to prevent leakage of fluid under pressure during functioning of the pump.

7 TROUBLE SHOOTING



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

TROUBLE	POSSIBLE CAUSE	WHAT TO DO
No or little quantity of dispensed fluid	No or weak fluid pressure	Check and increase the feed air pressure of the pump
	The filter/pulsation dampener is dirty	Wash or replace the cartridge of the filter/pulsation dampener
	The bottom valve filter is dirty	Wash or replace the filter of the bottom valve
	Bent pipe	Check the condition of the supply pipe
	Lumps or sedimentation in the system	Wash the complete system
Leakage of fluid from the filter/pulsation dampener	Filter cap partially screwed	Tighten correctly the filter cap
	Gasket of the filter cap is damage	Replace the gasket of the cap
Presence of air bubbles inside the system	The fluid inside the bucket is below the minimum level	Fill the bucket with some fluid or replace it with a full stockpile bucket
	Suction pipe partially screwed	Tighten correctly the suction pipe in the pump body
	Teflon on the thread of the suction pipe is damage	Wrap some new Teflon around the thread

8 MODELS

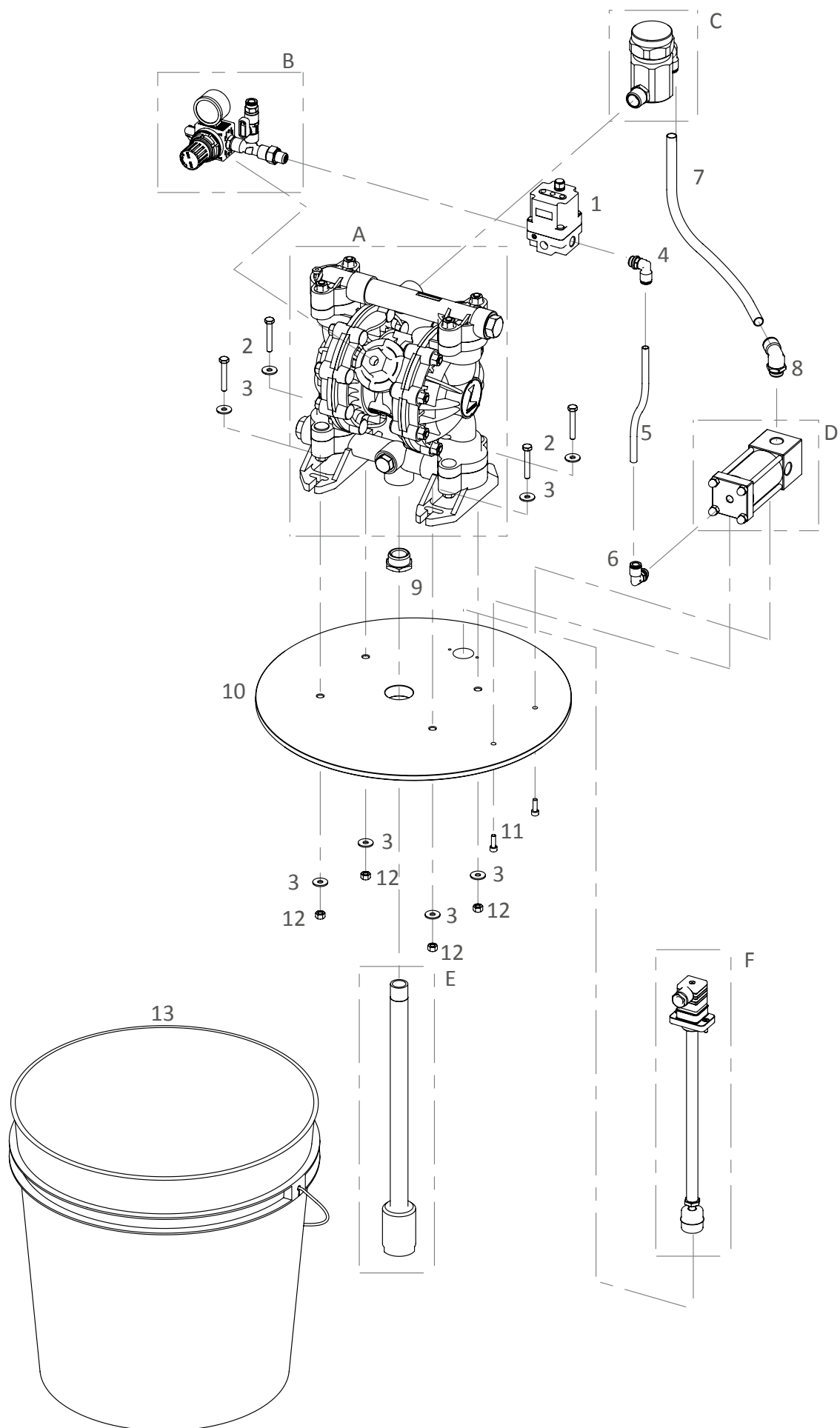
code	description
A159002	Diaphragm pump feed unit: double diaphragm polypropylene pump, polypropylene seats, santoprene diaphragms and balls. Bucket with lid, suction pipe with filter, bottom valve, proportional valve, stainless steel filter/pulsation dampener and automatic stainless steel pressure regulator.



9 PARTS LIST

9.1 Glue feed unit

pos.	code	q.ty	description
A	PMPM0105000	1	Pump
B	ASM00104	1	Air inlet group
C	ASM00200	1	Filter Group
D	A19515100	1	Stainless steel fluid pressure regulator 1:1
E	TBC00101	1	Suction pipe complete
F	A19910000	1	Level sensor complete
1	K95451200	1	Proportional valve
2	SC43060401	4	Screw
3	WSR0106010	8	Washer
4	RRCS1153	1	Fitting
5	TBP010609	1	Pipe
6	RRCS1053	1	Fitting
7	TBP050913	1	Pipe
8	RRKC1255	1	Fitting
9	RRIQ1413	1	Fitting
10	BLD000102	1	Standard plastic lid
	BLD000104	1	Plastic lid level sensor version
11	SC00050161	2	Screw
12	NT0006010	4	Nut
13	BCK000100	1	Bucket

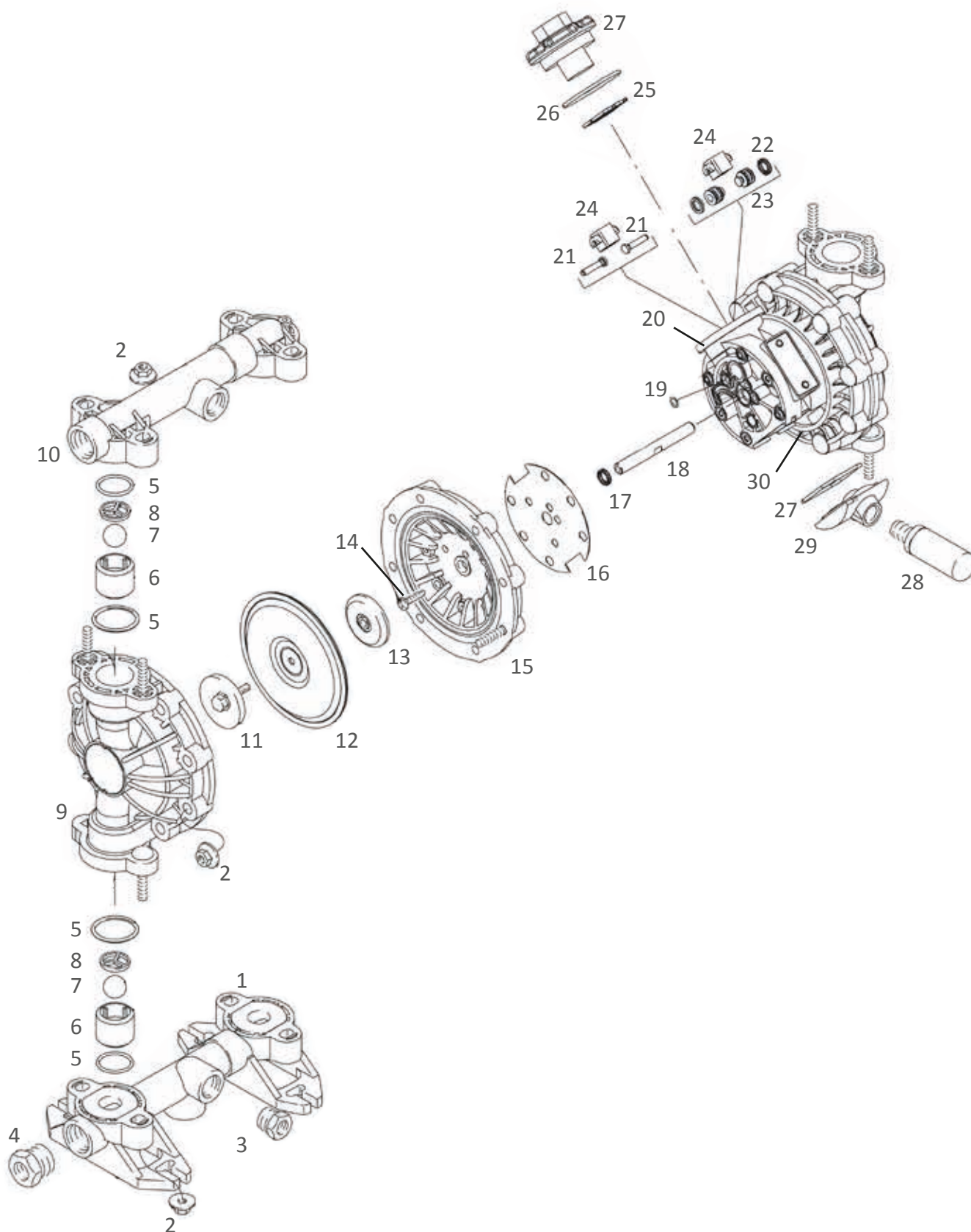


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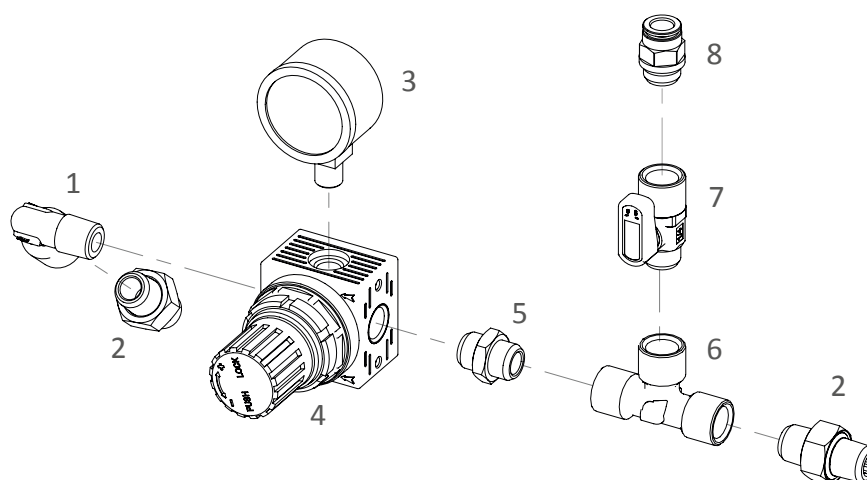
9.2 Group A - Pump

pos.	code	q.ty	description
1	192575	1	Lower manifold
2	114850	24	Nut
3	194364	2	Plug
4	194367	2	Plug
5	114849	8	O-ring
6	186776	4	Guide
7	112946	4	Ball
8	186777	4	Stop
9	192558	2	Pump body
10	192566	1	Upper manifold
11	187712	2	Plate diaphragm fluid
12	189536	2	Diaphragm
13	195025	2	Plate diaphragm air
14	114882	12	Screw
15	192600	1	Left air cover
16	192765	2	Gasket
17	108808	2	Gasket
18	192601	1	Shaft diaphragm
19	114866	2	O-ring
20	192602	1	Housing center
21	192596	2	Pin
22	108808	2	Gasket
23	15Y825	2	Piston
24	192595	2	Carriage
25	194269	1	Valve plate
26	162942	2	O-ring
27	192597	1	Cover valve chamber
28	112933	1	Muffler
29	194247	1	Cover exhaust
30	192599	1	Right air cover



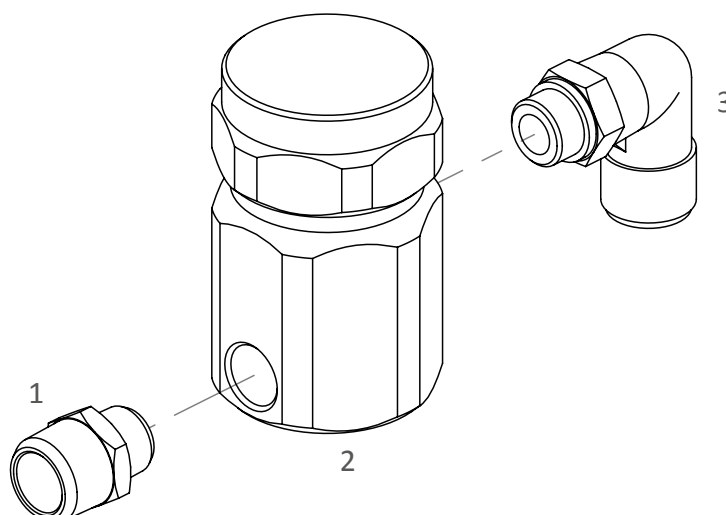
9.3 Group B - Air inlet group

pos.	code	q.ty	description
1	RRFC1100	1	Fitting
2	RRFO1100	2	Fitting
3	PGGR418210	1	Manometer
4	RROA1100	1	Air pressure regulator
5	RRFM1100	1	Fitting
6	RRFF1100	1	Fitting
7	RRMC1100	1	Ball valve
8	RRBZ1153	1	Fitting



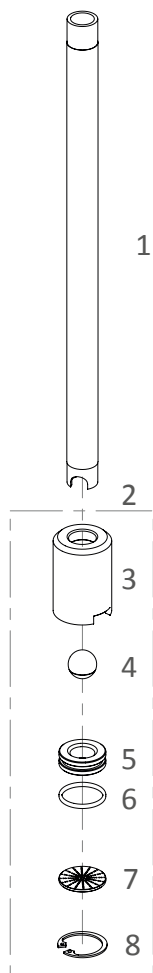
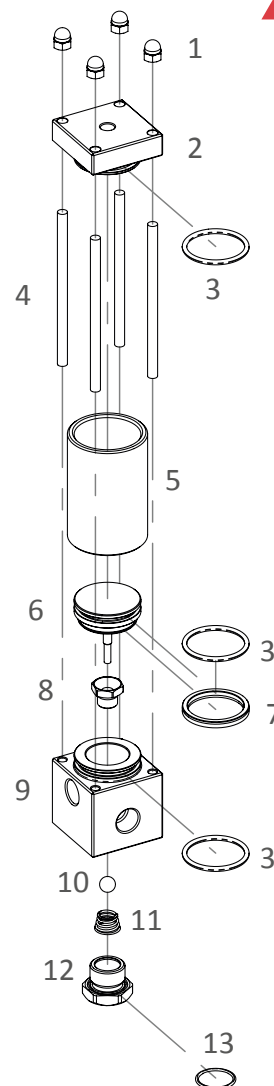
9.4 Group C - Filter group

pos.	code	q.ty	description
1	RRIL1312	1	Fitting
2	MZF1138S	1	Stainless steel filter
3	RRKC1255	1	Fitting



9.5 Group D - Automatic fluid pressure regulator

pos.	code	q.ty	description
1	NT2006010	4	Nut
2	BG000066	1	Upper plug
3	K92013301	3	O-ring
4	SC74061051	4	Threaded rod
5	BG000065	1	Cylinder
6	PST000019	1	Piston
7	K92214001	1	Variseal
8	BST000011	1	Ball seat
9	BG000063	1	Regulation pressure fluid body
10	BLL0950601	1	Ball
11	CCS000008	1	Spring
12	SGR000008	1	Lower plug
13	K92012003	1	O-ring

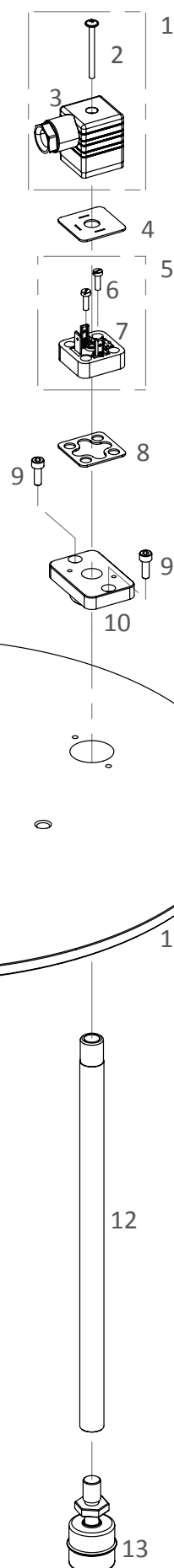


9.6 Group E - Complete suction pipe

pos.	code	q.ty	description
1	TBN00101	1	Pipe
2	BG000096	1	Bottom valve complete
3	BG000062	1	Bottom valve body
4	BLL2000401	1	Ball
5	BST000010	1	Ball seat
6	K92012401	1	O-ring
7	FLT000010	1	Filter
8	SGG000008	1	Seeger

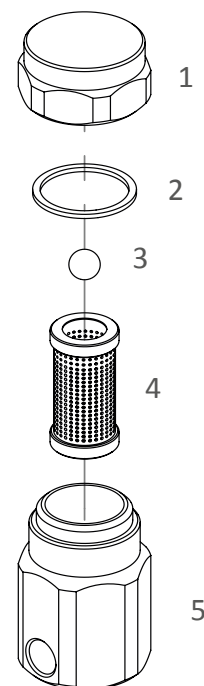
9.6 Group F - Level sensor complete

pos.	code	q.ty	description
1	CNN000038	1	Female connector complete
2	SC84030351	1	Screw
3	CNN000025	1	Female connector
4	GSK000016	1	Gasket
5	CNN000039	1	Male connector complete
6	SC01030101	2	Screw
7	CNN000026	1	Male connector
8	GSK000017	1	Gasket
9	SC00040121	2	Screw
10	BG000068	1	Flange
11	BLD000104	1	Plastic lid level sensor version
12	TBN00200	1	Pipe
13	GLG000002	1	Floating



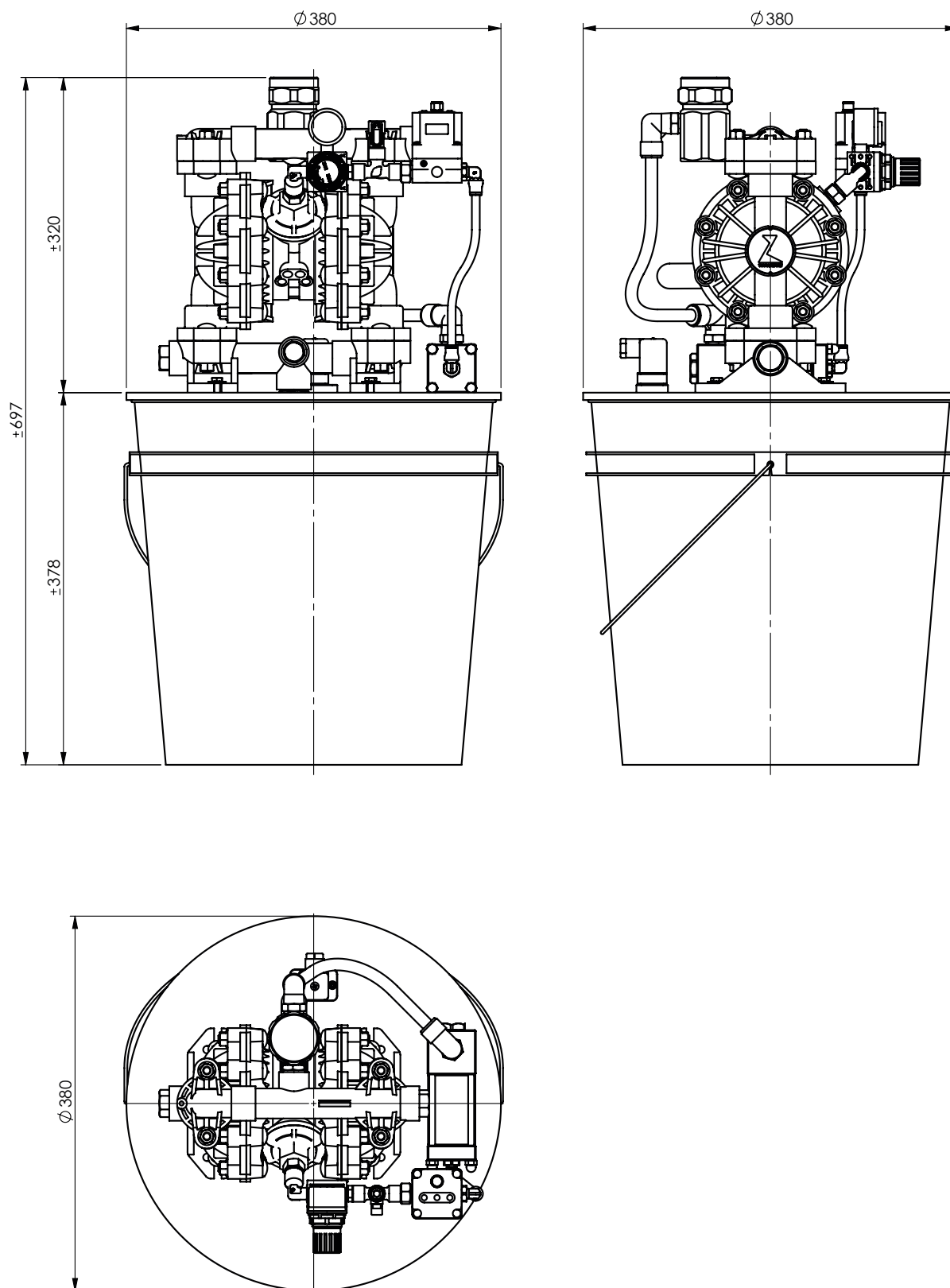
9.8 Filter

pos.	code	q.ty	description
1	BG000070	1	Filter cap
2	GSK000018	1	Gasket
3	BLL1270401	1	Ball
4	FLC01150	1	Filter cartridge
5	BG000072	1	Filter body



10 DIMENSIONS

10.1 Glue feed unit





NOTE

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