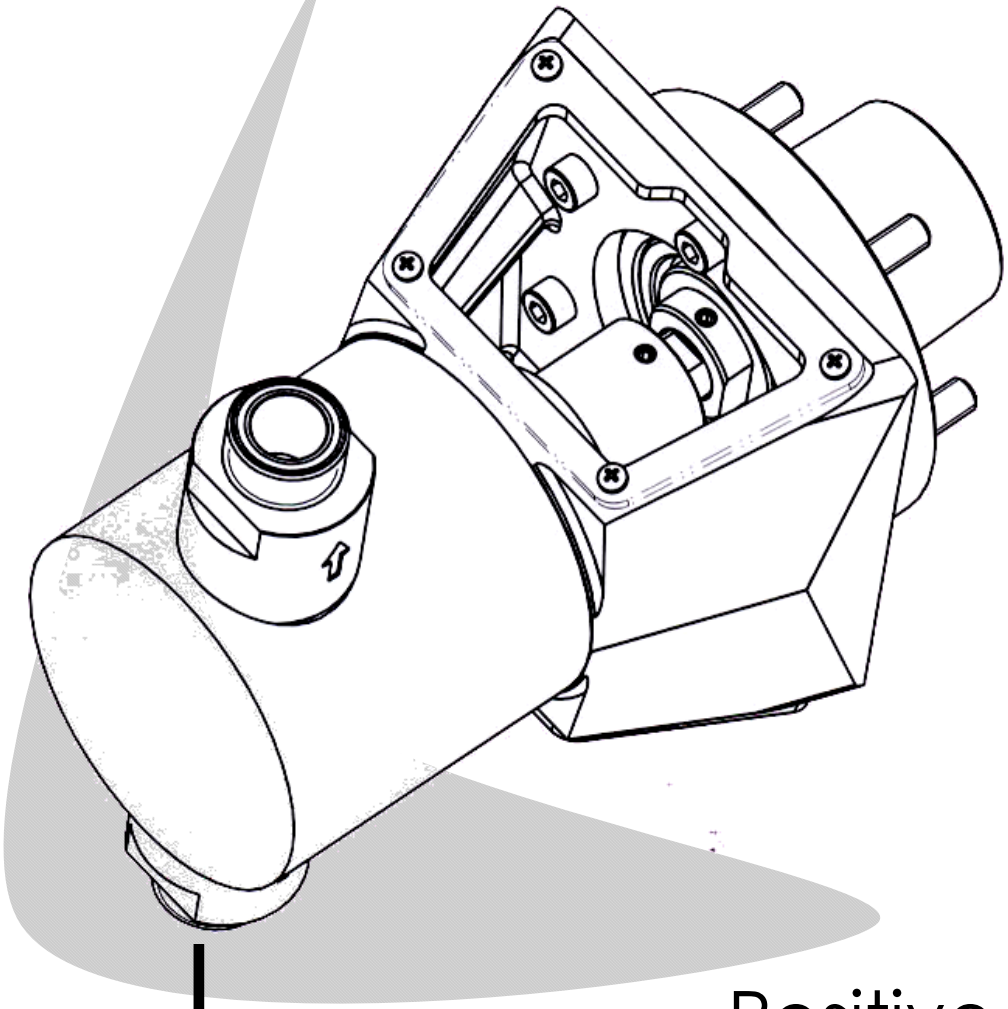
Head with piston Use and Maintenance Manual



UK

Positive displacement dosing pump

PDP Series	
Type	**A-I 175**
	A-I 250
	A-I 350

General instructions

We thank you for choosing this product and recommend you read this manual carefully before starting installing the dosing pump. Please pay particular attention to the safety warnings marked with pictographs.
Complying with the rules and prescriptions herein ensures safe use and proper maintenance.
The Use and Maintenance Manual is an integral part of the machinery and must be easily accessible by the operators and maintenance staff, so it should be stored intact in a safe place.

Technical assistance

Standard and extra maintenance must be carried out according to the instructions contained in this manual. For technical assistance and spare parts, please contact DOSEURO® main office, your dealer or installer, and report the data on the plate attached to the pump:

- ✓ **Pump type**
- ✓ **Id number**
- ✓ **Year of construction**

If repairs to the pump are not carried out according to the instructions herein, or are done in a way that which affects integrity or modifies its characteristics, the manufacturer shall be incur no liability for people's safety and faulty operation of the pump.

Doseuro®**s.r.l. Via G. Carducci, 141 - I20093 Cologno Monzese (Mi) - Italy**

Sales office: **Ph. +39 - 0227301324 – Fax +39 - 0226700883**
Web site: **www.doseuro.com**
E-mail: **info@doseuro.com**

Liability

Non-compliance with the instructions contained in this Use and Maintenance Manual shall release the manufacturer from all responsibilities.
For any information which is not included in or cannot be inferred from the following pages, contact DOSEURO® directly.

Via G. Carducci, 141
I-20093 Cologno Monzese (Mi) Italy
Ph. +39 0227301324
Fax +39 0226700883

doseuro® S.r.l.
The Right Dosing Choice

CE

DECLARATION OF COMPLIANCE

DOSEURO® S.r.l. With main office in:
Via G. Carducci, 141 - I-20093 Cologno Monzese (Mi) Italy

Declares under our sole rsponsibility that the products belonging to the indication commercial:

POSITIVE DISPLACEMENT METERING PUMPS
PDP Series Model: **I 175** - **I 250** - **I 350**

2006/42 EEC	Machinery Directive (and any subsequent modifications).
2004/108 EEC	Directive Electromagnetic Compatibility.
2006/95 EEC	Electric material low voltage end.

As well as with the following harmonised rules for Safety:

UNI EN 12100-1:2009	Safety of machinery
UNI EN 12100-2:2009	Design principles part 2.
CEI EN 60204 -1 – 98	Electrical equipment of machinery.

The technical documentation is available in our office.

PLACE AND DATA:

UP TECHNICAL FILE

CDA President

MICCICHE' TULLIO
Via G. Carducci, 141
I-20093 Cologno Monzese (Mi)

Cologno Monzese - January 2010

EDITORIAL STANTEMENT OF COMPLIANCE

Technical Direction

MICCICHE' TULLIO

Table of contents

Chapter 1 *SIGNS USED*

It is important to draw attention to the symbols used in this document to highlight the residual risks associated with the suitable use of the pump.

The following pictographs use different shapes and colours to indicate general warnings and the behaviour required for the operator to carry out all of the activities in full safety according to specific symbol indications.

Features of safety signs			
Colour	***Shape***	***Meaning***	***Indications and details***
Yellow **Orange yellow**		**Warning**	Warns you to be careful, pay attention to mechanical risks or potential dangers of various kinds in the working environment.
Light blue		**Instruction**	Inform workers about personal protection devices to be used and specific behaviour required.

1.1 *Symbols*

ATTENTION!
The non-compliance with safety rules can cause minor personal injury or damage to property.

DANGER!
The non-compliance with safety rules can cause personal injury or damage to property.

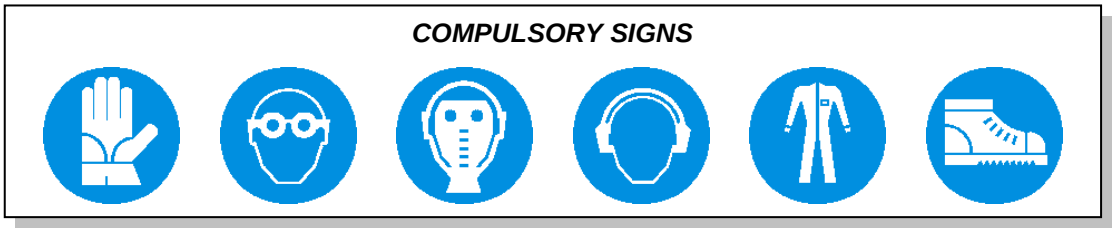
DANGER OF SERIOUS INJURY!
The non-compliance with safety rules can cause serious injury or serious damage to property.

These general instructions are valid only in combination with specific instructions of use of dosing pumps and hydraulic accessories.

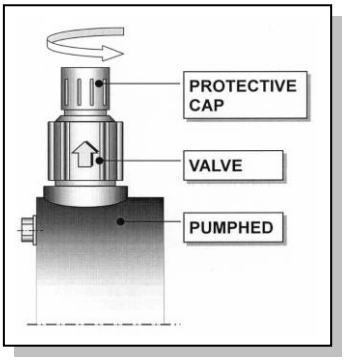
1.2 *Protective clothing*

To carry out any maintenance activities on the pump or plant, the operator must wear personal protection devices according to the law in force (626/94) to avoid skin contact with the pumped liquid, i.e.:

protective gloves and goggles, respiratory masks, protective headphones or earplugs, protective suit, safety shoes.



Chapter 2 *BLOCK REMOVAL*



Before installing the pump, make sure to remove all protective caps located on the suction inlets and the valve delivery system.
Before the installation, if the pump as remaining stock for a long period, we suggest to check the plunger gasket to be sure that they haven't any kind of alterations. In case of any discrepance from the quality standard to replace it to avoid any damage to person or things.

Chapter 3 *SUCTION CIRCUIT CONNECTION*

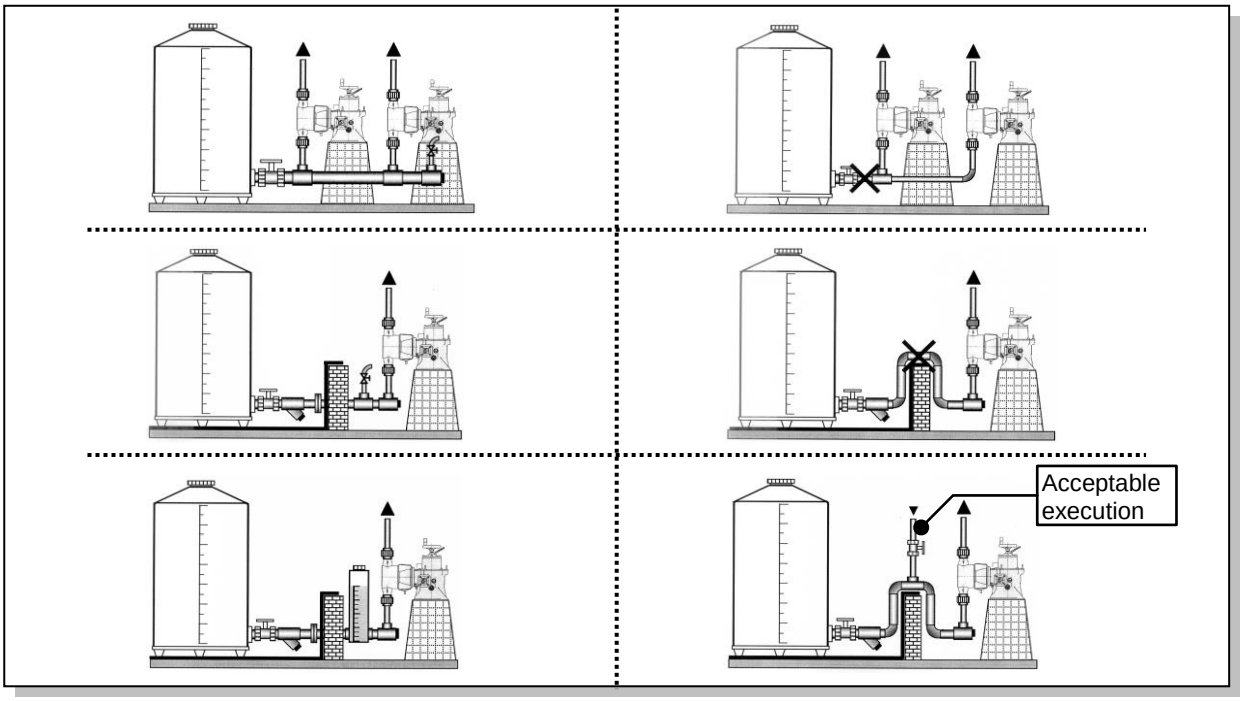
The following is a number of recommendations installers should follow for proper installation.

ATTENTION!

- Before connecting the lines to attack the pump should run a wash cycle in the pipes to remove any foreign body, weld spatter, seal cuttings, etc.
- The suction pipe should be as short and straightforward as possible, using large-radius curves, not to exceed 3 feet of pressure drop, it is preferable to install the pump suction head.
- If the pump is located above the tank, you should install the foot valve.
- Avoid counterslopes to facilitate the evacuation of any air bubbles and ensure that there is a perfect sealing particularly in suction.
- The pipes and fittings in the inlet, must be sized to a nominal diameter equal to that of the valves of the pump or greater if in the presence of viscous liquids.
- The maximum speed of the fluid in the pipes, **must not exceed 0.7 m/s** for liquids contained in a range of viscosity up to 100 mPa - (cPs).

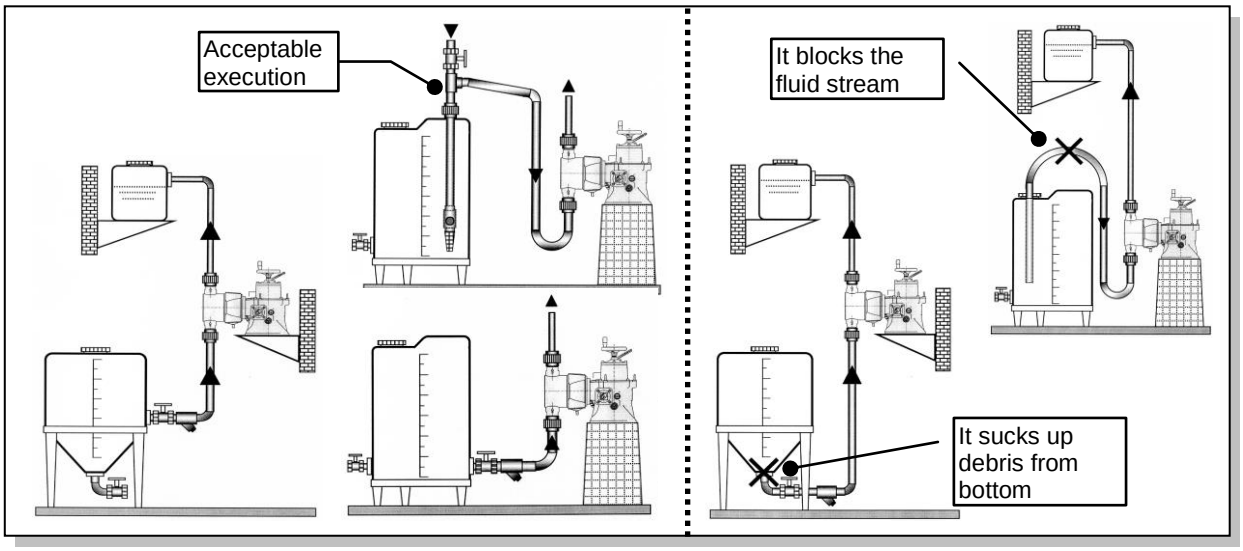
CONNECTION EXAMPLES

CORRECT APPLICATION ***WRONG APPLICATION***



CONNECTION EXAMPLES

CORRECT APPLICATION ***WRONG APPLICATION***



Chapter 4 *DELIVERY CIRCUIT CONNECTION*

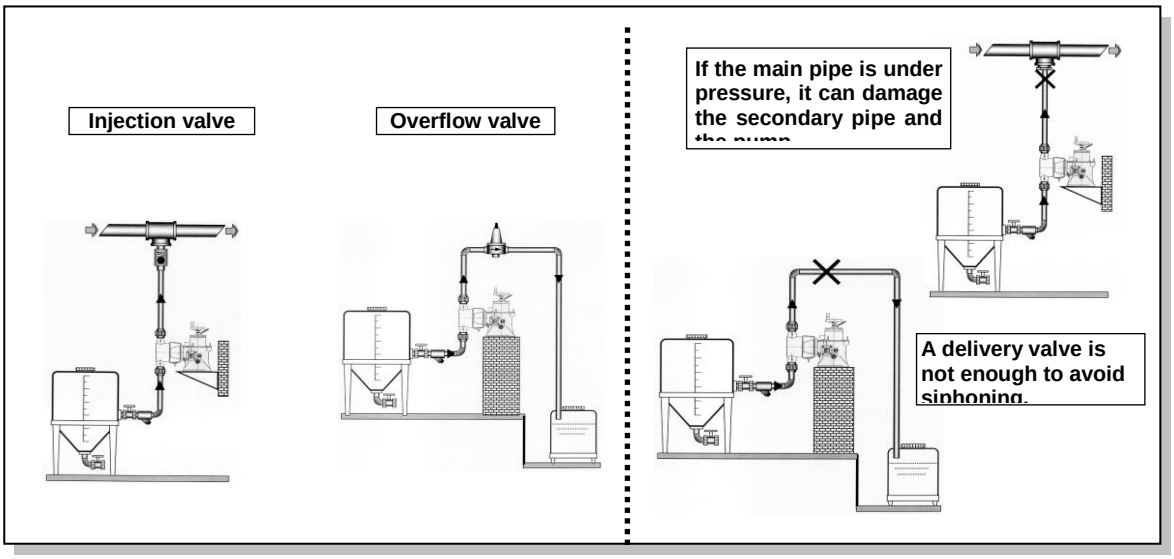
Proper realisation of the delivery pipe path is particular important to ensure the good functioning of the pump. Moreover, careful fixing is required, particularly if the pipe is subject to high strain conditions.
For this purpose, following is a list of indications installers should comply with to build the system properly.

DANGER!

- ❑ Pipe path should be as straight as possible; the pipe should be supported independently to prevent expansion due to heat sources that may affect the pump head.
- ❑ Provide one or more T-couplings after the delivery flange that can be used for installing pressure gauges, safety valves, and pulsation dampers.
- ❑ Always install a safety valve and a drain valve on the delivery system to protect the plant and make maintenance and starting of the pump easier.

CONNECTION EXAMPLES

CORRECT APPLICATION ***WRONG APPLICATION***



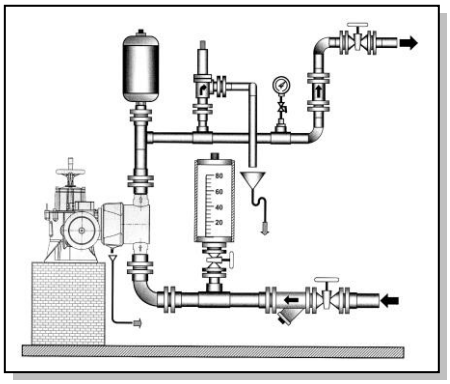
Chapter 5 *LEAKAGE COLLECTION SYSTEMS*

RESIDUAL RISK!

A proper leakage or drip collection system is required for safe discharge of harmful liquids.
Use the pipe holder of the covering under the head-holding lantern, if applicable, to make connection and leakage drainage due to worn out gaskets easier.

Chapter 6 *PLENUM CHAMBER INSTALLATION*

The use of a plenum chamber installed on the delivery system is often required.
Benefits include: more steady flow rate, no vibrations on the line, protection against pressure peaks and water hammering.



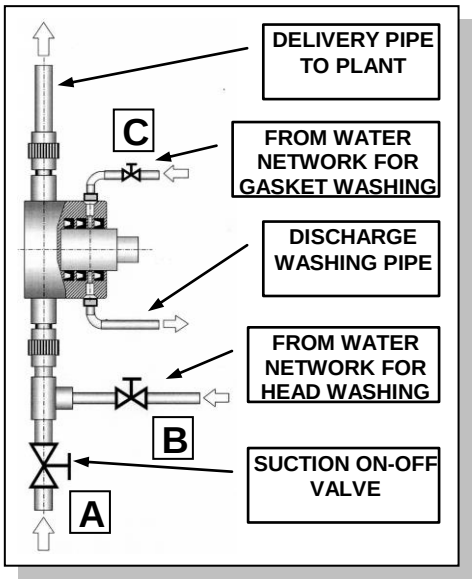
Chapter 7 *HEAD WITH GASKET CLEANING*

This type of head is used with products which may **SEDIMENT** or **CRYSTALLISE.**
Continuously washing the gasket housing helps remove deposits, and prevents the product from hardening and causing abrasion on the piston or damage to the seal gasket profile.

Gasket washing:
Using the needle valve **"C",** adjust the flow rate at 40-50 l/h for at least 10-15 minutes after stopping the pump. Dirty fluxing water must be drained.

Head and valve washing:
Once dosing is complete, before stopping the pump close the "**A**" valve, simultaneously open the "**B**" valve and let washing water circulate for about 3/4 minutes.
After this time, stop the pump and let water flow till it becomes clear.
When washing is complete, close the "**B**" valve and open the "**A**" valve.
Pump is now ready for dosing.

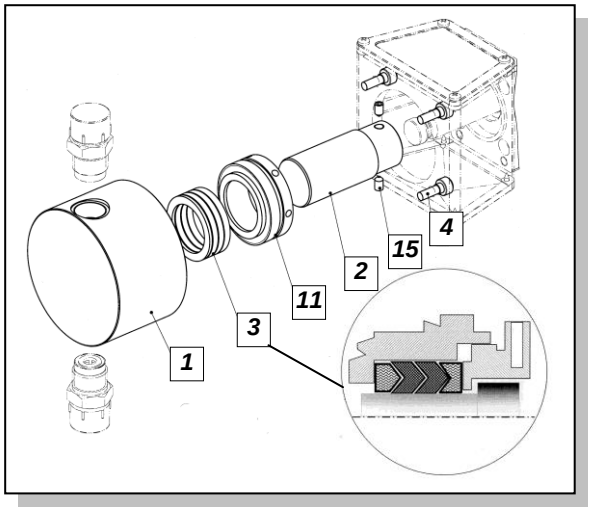
Note: This procedure should be also carried out after a work process if the pump is being stopped for a long time.



Chapter 8 *"PTFE" GASKET PACK REPLACEMENT*

After the depressurisation procedure is completed, proceed as follows:

- ✓ Disconnect the pumping head pos.1 from the system and the lantern of the dosing pump.
- ✓ Clean the pumping head to ensure the operator can safely handle the component.
- ✓ Loosen the ring nut pos.**11** and remove it.
- ✓ Check if the piston (pos.**2**) is worn out. If it is scored or cut, replacement is recommended. In this case, loosen the dowels pos.**15.**
- ✓ Remove the gasket pack pos.**3** and place the new pack into the pumping head paying attention to the gasket orientation.
- ✓ Tighten the clamping ring nut pos.**11** till it touches the gaskets.
- ✓ Place the pumping head pos.**1** on the piston pos.**2**, push it against the lantern, then fix it with screws pos.**4**.



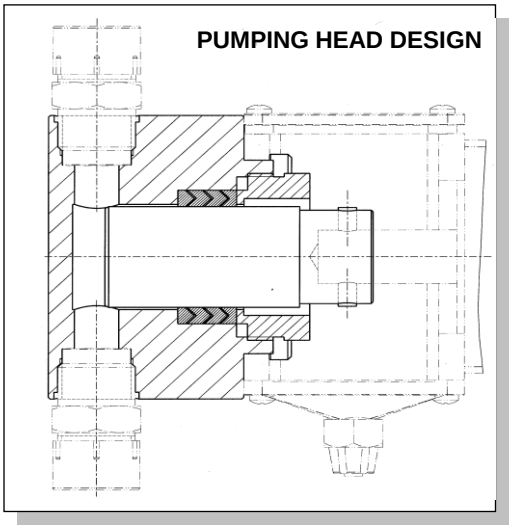
8.1 *"PTFE" gaskets adjustment and compression*

ATTENTION!

To ensure this type of gaskets is water-tight, they need adjusting.

If you replace the gaskets, follow the steps as indicated hereunder.

- Connect the dosing pump and possibly use a harmless liquid; tighten the ring nut one-fourth of a turn to apply light pressure on the gaskets.
- The upper part of the head will drip.
- Let the pump run for 4/5 hours before tightening the ring nut again.
- After this time, tighten another fourth of a turn.
- Let the pump run 2 to 3 hours before tightening the ring nut again; verify that it drips less.
- This tightening and checking procedure should be carried out till the dripping stops.



ATTENTION!

The gasket pack must be checked and adjusted regularly. While carrying out these operations, make sure not to tighten the ring nut too strongly to avoid damaging the gaskets.

Chapter 9 *MAINTENANCE PLAN*

ATTENTION!

The control and maintenance plan depends on the operating conditions for the pump.
Good maintenance allows to improve performance, increase operating life and continuously maintain safety requirements.

9.1 *Scheduled maintenance*

To maintain pump's safety and performance, maintenance should include visual checks.

TIME PERIOD	TYPE OF CONTROL	TYPE OF SERVICE
Once a month	Visual check for any leakage from seals.	Leakage detection, repair
Every 800 hours	Piston seal check	Adjustment or fixing
Every 6 months (or 1.500 hours)	Accurate cleaning of valve assemblies, filters, bottom valve.	Replacement or repair

9.2 *Repair procedure*

Before doing any repairs on your dosing pump and pipes, take all necessary measures to avoid that the pumped product – especially if it is harmful – causes danger to people or nearby objects.

BEFORE DOING ANY REPAIRS, STAFF MUST VERIFY THAT:

- Pump is idle and disconnected from the power line.
- Pump head and plant are depressurised and the liquid has been emptied from the pump.
- Pump temperature allows to handle the pump safely.
- Lifting equipment is suitable for handling heavy or big parts that needs dismounting.

After verifying that none of those above conditions exist, thoroughly clean pipes and pump components.

Chapter 10 *INTERMEDIATE MAINTENANCE*

Not only do steady and thorough checks preserve the pump, but they also prevent faulty operation which can require extra repairs.
The following chapters describe the parts which more likely need repairing as they are subject to additional strain and wear.

FINDING FAULTS:

10.1 *Liquid leakage from the hole under the lantern*

Establish if the collected fluid is mechanical oil or pumped liquid.

- If it is pumped liquid, the seal gasket of the piston is worn or damaged and must be replaced.
- If it is mechanical oil, the seal gasket of the slide is worn or damaged and must be replaced.

10.2 *Valve assembly cleaning*

Make sure to follow the steps as indicated hereunder after seeing the assembly drawings.

- Delivery circuit: unscrew the delivery system container. Remove the valve seat, ball and valve slide, paying attention to the installation order for remounting.
- Clean the threaded parts of the head and valves to remove impurity.
- Clean the valve components. Worn parts must be replaced.

10.3 *Check and replacement of piston seals*

The check and maintenance plan depends on the operating conditions. Should any failure occur involving leakage from the hole under the lantern due to worn out gaskets, these must be immediately replaced.

ATTENTION!

Before doing any repairs on your dosing pump, the maintenance staff must verify that the pump is idle and disconnected from the power supply and the plant is depressurised and empty.

The operations carried out to uninstall the head and piston with autocentering system include:

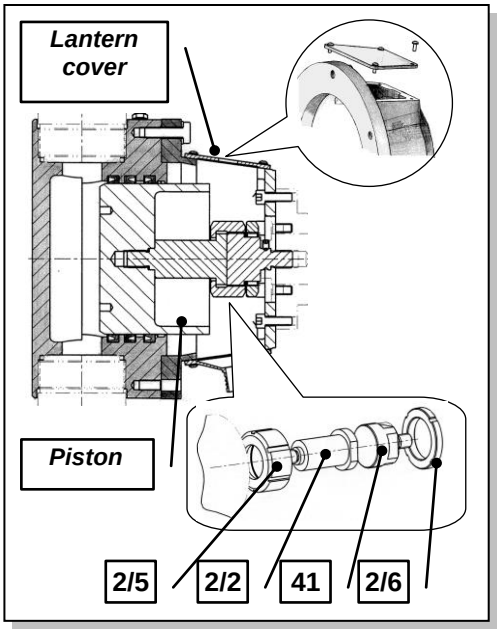
❖ **Uninstalling the pumping head**

- Remove the lantern cover.
- Uninstall the lantern head.
- Remove the head gaskets that are damaged.

❖ **Disassembly for piston replacement**

- Loosen the **counter-clamping ring nut ref. 2/6**
- Completely loosen the **clamping ring nut ref. 2/5** from the **slide coupling ref. 41**
- Completely loosen the piston from the **piston shaft ref. 2/2**
- Check if piston is worn out. If it is scored or cut, replacement is recommended.

Once maintenance is complete and the pump is connected to the plant, screw the ring nut 2/5 with a slight clearance without tightening it, run the pump for a few seconds so the piston is centred properly in the head, then completely tighten the ring nut ref. 2/5 and the counter ring nut ref. 2/6.



Chapter 11 *YEARLY MAINTENANCE*

Yearly check-up (or check-up after 3,000 hours of operation) is a key factor to increase the life of the equipment and ensure product safety and functionality over time.
Verify that the internal and external parts of the pump show no corrosion or no signs of degradation (cracking or breaking), with particular regard to plastic components. If any of these problems occur, damaged parts must be replaced.
It is good practice to use original materials for repairs so to ensure reliability and safety of the pump.

DANGER OF SERIOUS INJURY!

Staff must wear all protective devices which are normally used for these types of operations. Abide by safety procedures set out in the existing law (626/94) and take all necessary care to avoid skin contact with the pumped liquid.

Chapter 12 *REPAIRS AT THE FACTORY*

In most cases, replacing damaged parts does not involve any difficult operations. Before starting, the operator must refer to the drawings in the manual and follow the instructions.
If the failure is difficult to deal with on site, we recommend you send the pump to our factory.

ITEMS ARE ACCEPTED FOR FACTORY REPAIR ONLY AT THE FOLLOWING CONDITIONS:

- ❑ *The head must be emptied of any liquid or deposit, so the equipment can be handled without danger to the operator even without wearing gloves.*
- ❑ *Customer shall state that the parts have been cleaned to ensure safe handling.*
- ❑ *If parts are sent to us without complying with these instructions, they will be returned unrepaired and relevant expenses shall be charged to the sender.*

Chapter 13 *DISABLING THE PUMP*

If you need to disable the pump, make sure the following requirements are met to protect product and staff.

***Before disabling the pump, clean it thoroughly with detergents which are compatible with the liquid pumped, as residual toxic, caustic or acid liquid and sediments can easily crystallise*.**

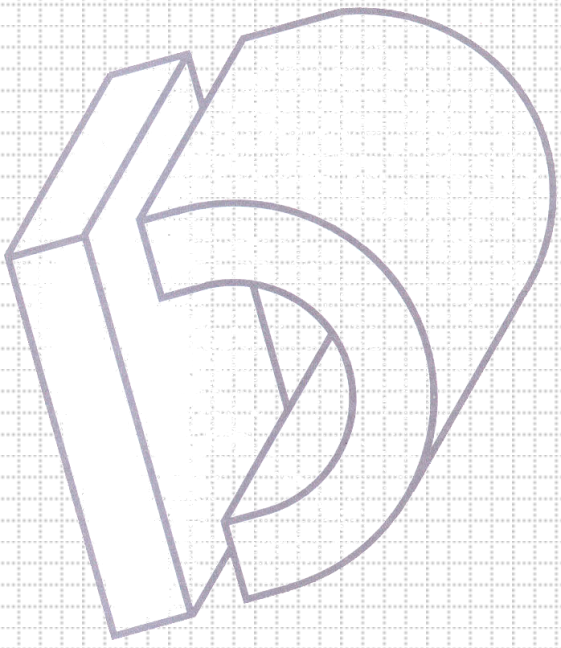
- ➢ Before removing the pump from the plant, verify no liquid is under pressure and intercept the pipe next to the pump.

Chapter 14 *DISPOSAL OF HARMFUL SUBSTANCES AND COMPONENTS*

Please bear in mind that the user is responsible for waste separation and material recycling according to the national and regional laws governing waste disposal and for delivering all waste materials to authorised waste companies, prior to obtaining the authorisation for temporary stocking.

If the materials used in the manufacturing process, with particular regard to lubricants or condensate water, are not collected or disposed of in compliance with national laws, there may be residual risks of environmental pollution.

NOTES:



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I-20093 Cologno Monzese (Mi) - Via G. Carducci, 141
Ph. +39 0227301324 r.a. - Fax. +39 0226700883
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