

OPTIMA USER MANUAL

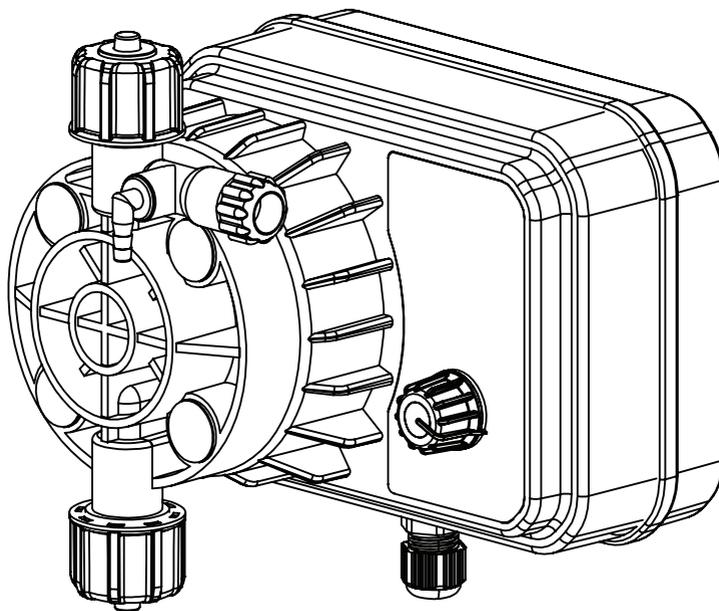


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2 Introduction

Please read the following information carefully and completely. This information will help you get the most out of the user guide.

These instructions describe the technical data of the appliance.

2.1 Explanations of Security Warnings

These use instructions provide information on the technical data and functions of the product and detailed safety information.

Safety warnings and notes are categorized as follows. Here, different, case-adapted pictograms were used. The pictograms mentioned here are only examples.



DANGER!

Type and source of danger

Result: Death or severe injury.

Measures to be taken to prevent this danger.

Identifies the direct threat. Death or serious injury can occur if not avoided.



WARNING!

Type and source of danger

Possible result: Death or severe injury.

Measures to be taken to prevent this danger.

Identifies a potentially danger situation.
Death or serious injury can occur if not avoided.



ATTENTION!

Type and source of danger

Possible result: Slight or minor injuries.

Material damage.

Measures to be taken to prevent this danger.

Identifies a potentially danger situation.
Slight or minor injuries can occur if not avoided.
It can also be used for material damage warning.



NOTE!

Type and source of danger

Possible result: Damage of product or its surroundings.

Measures to be taken to prevent this danger.

Identifies a potentially damaging situation. If not avoided, the product or its surroundings may be damaged.



INFORMATION!

Tips for use and additional information.
Information source. Additional measures.

Describes usage tips and other useful information.
Not for a dangerous or harmful situation.

Introduction

2.2 User competencies



WARNING!

Danger of injury due to insufficient competencies of staff!

The operator of the plant / appliance is responsible for observing competencies. Dangers such as serious injury and property damage may occur if unprofessional personnel work with the unit or if the unit is in a dangerous area.

- All activities must be performed by competent personnel
- Keep unauthorized personnel away from danger zones

Training	Description
Informed person	The person who has been informed of the dangers and the obligations of improper conduct and who has been trained in the necessary cases and informed of the necessary protective appliances and measures is referred to as an informed person.
Trained user	Persons who meet the requirements of the informed person and have received training from the manufacturer or another authorized distributor are referred to as trained users.
Trained expert	The person who can assess the tasks assigned to him and identify potential hazards is defined as an expert on the basis of his or her knowledge of training, knowledge and experience and the associated rules. An expert is defined as the person who is capable of assessing the tasks entrusted to him and recognizing possible dangers based on his knowledge, experience and knowledge of the relevant rules When evaluating expert training, long-term activities in the relevant business area can be taken into account.
Electrician	The person who is able to work in electrical installations and recognize and prevent possible dangers based on their knowledge, experience and knowledge of applicable standards and regulations is defined as an electrician. Electricians are particularly trained in their field of work and have knowledge of important standards and regulations. The electrician must comply with the provisions of the applicable legal regulations on accident prevention.
Customer Services	Service technicians who are trained and certified by the manufacturer for the work on the plant are identified as customer service.

3 Safety and Responsibility

3.1 General Safety Warnings

The following warnings are intended to help you avoid dangers that may occur when using the product. Risk prevention measures always apply regardless of any specific action.

Safety instructions that alert you to risks from certain activities or situations can be found in the relevant sub-sections.



DANGER

Life threatening due to electric shock

Incorrectly connected, idle or damaged cables can injure you.

Replace damaged cables without delay.

Do not use an extension cord.

Do not bury cables.

Secure the cables to prevent damage to other equipment.



DANGER

Never use the product in explosive areas.



WARNING

Caustic burns or other burns caused by dosing!

After connecting the mains supply, the dosing process starts.

Connect the dosing lines before connecting the main supply.

Ensure that all screw connections are correctly tightened and proofed.



WARNING

When working on the dosing head, valves and connections, you can contact dosing fluid.

Use adequate personal protective equipment.

Rinse the product with a liquid (eg. water) that has no risk. Make sure the liquid is compatible with the dosing agent. Never look at the open ends of installed hose lines and valves without protective goggles.



WARNING

The materials of the product and the hydraulic parts of the system must be suitable for the dosing fluid used. Make sure that the materials that are used are suitable for the dosing agent.



ATTENTION

Increased risk of accident because of insufficient qualification of staff!

Products and accessories must only be installed, operated and maintained by qualified personnel. Ensure that all actions are taken by qualified and qualified personnel only.

Prevent access to the system for unauthorized persons.



ATTENTION

Risk of personal injury and damage to property!

Changing the dosing fluid can lead to unpredictable reactions.

Thoroughly clean the dosing pump and hoses to prevent chemical reactions.

Safety and Responsibility

3.2 Dangerous due non-observance of safety instructions.

Failure to observe the safety instructions may pose a risk not only to the personnel but also to the environment and the unit.

Results may be as following:

Failure of the vital functions of the product and the system,

Failure of necessary maintenance and repair methods,

Danger for individuals due to dangerous dosing

Danger to the environment due to substances leaking from the system.

3.3 Safe operation

In addition to the safety instructions, more safety regulations that must applied and observed:

Safety and operating provisions of accident prevention regulations,

Safety measures for the use of dangerous substances,

Environmental protection provisions,

Applicable standards and legislation,

3.4 Personal protective equipment

You may be exposed to contact with the dosing fluid. Depending on the degree of risk and the type of work you do, you should use the appropriate protective equipment.

The following protective equipment is recommended as a minimum:



Protective clothing



Protective gloves



Protective goggles

During these tasks, the responsible person must use protective equipment:

To take into service,

During the work of the product,

Disassembly, maintenance works, destruction.

3.5 Qualification of staff

Any personnel working on the product must have appropriate special knowledge and skills.

Anyone who works with the product must meet the following conditions:

- Participation in all training courses offered,
- Personal appropriateness for the relevant work,
- Qualification required for the relevant job,
- Training in the use of the product,
- Information about safety of the equipment and work of the equipment,
- the knowledge of these Operating Instructions, in particular the relevant safety instructions and parts of the work,
- Knowledge of basic regulations related to health, safety and accident prevention.

All persons should generally have the following minimum qualifications:

- To be trained as a specialist in order to work on uncontrolled products,
- Adequate training to be able to work under the guidance of a trained expert.

This Instruction manual differentiate user groups: (see User Competencies Page 3)

4 Suitable and desired use

4.1 Notes on product warranty

Any unspecified use of the product may endanger its function or intended protection. This will invalidate any warranty claims!

Please note that the user is under the obligation in case of the following situations:

- Use of the product in a way that is not consistent with the instructions for use named 'suitable and desired use', especially safety
- Unauthorized changes in the appliance by the user
- Use of dosing agent different from those specified in the order
- The user does not use dosing fluid under conditions agreed with the manufacturer, such as modified concentration, density, temperature, contamination etc.

4.2 Production purpose

Precise dosing devices to be used where chemicals such as acid, chlorine, liquid fertilizers etc. should be supplied subject to dosing (in places like pools, potable water or agricultural irrigation, etc.).

4.3 Principles

- Prior to delivery, the manufacturer controlled and operated the product under specific conditions (with a specific dosing agent at a given density and temperature, specific hose sizes, etc.).
- Information on use and the environment (see [Technical Data](#)).
- The materials of the hydraulic parts of the product and the system must be suitable for the dosing agent used. Note that in this context, the resistance of the components may vary depending on the temperature of the dosing agent and the working pressure.
- The product is not intended for outdoor use unless proper protective measures are taken.
- Avoid liquid and dust leakage into the product and avoid direct exposure to sunlight.

- Never operate the product in a potentially explosive atmosphere unless there is an appropriate EC Declaration of Conformity for potentially explosive atmospheres.

4.4 Prohibited dosing substance

The product should not be used for:

- Gaseous substances,
- Flammable substances,
- Radioactive substances,
- Solids.

4.5 Predictable Misuses

Information about product applications not intended for use or related equipment applications are given below. This section is intended to detect and prevent possible misuse.

The presumed misuse affects the life of the product:

4.5.1 Improper montage

Incorrect or loose screwing of the product.

4.5.2 Improper installation

Incorrect installation of suction and compression lines.

Incorrect connection of hoses due to incorrect material or improper connections.

Damage to hose lines due to bending or tightening too much.

Use of damaged parts, exceeding the permissible pressure on the suction and discharge sides.

4.6 Improper electrical installation

Unsafe mains or mains voltage that does not comply with standards.

Incorrect connection cables for mains voltage.

Installation in which it is not possible to cut the power supply immediately or easily.

Product Description

5 Product Description

5.1 Product Definition

Dosing pumps are precise dosing devices to be used where chemicals such as acid, chlorine, liquid fertilizers etc. should be supplied subject to dosing (in places like pools, potable water or agricultural irrigation, etc.).

5.2 General Features

This operation manual can be used for all of our dosing pumps. Installation, operation and maintenance of all pumps are similar, but there are some minor differences in operation, technical information, troubleshooting and reparation.

5.3 Electrical Design

The device performs dosing action considering user's customized settings.

The device complies with the requirements for electrically operated devices. In this regard, it complies with the following standards:

 TS EN 61000-6-1
TS EN 61000-6-3
IEC 60335-2-41
IEC 60335-1
EN 60332-41
EN 60335-1

5.4 Scope of delivery

Dosing pump
User Manual
Hose set Suction set 4x6
Injection set 4x6-1/2
Mounting Set
Hose PE 4x6 2MT
Hose PVC 4x6 2MT 2 pcs

6 Technical Data

6.1 Run conditions and limits

Working Temperature	Ambient	0-45°C
Chemical Heat		0-45°C
Suction line Max. Height		1,5 meters
Discharge Line Distance	Max.	4 meters

6.2 Electrical information

Supply voltage	230V AC 50-60 Hz
Power	20 W
Current RMS	0.6 A
Fuse Current	2 A

6.3 Other Information

Weight	2,135 kg
Protection Class	IP65

6.3.1 Raw Materials Used for Construction of Components of the Dosing Pump

Used Components		
Pump Body	PP	
Check Valves **	Suction Kit	PP, Zirconium Ceramic Ball Bearing, Viton-EPDM* O-ring
	Discharge Kit	PP, Zirconium Ceramic Ball Bearing, Viton-EPDM* O-ring
	Head Kit	PVDF, Zirconium Ceramic Ball Bearing, Viton-EPDM* O-ring
Diaphragm	PTFE	
Pump Head	PVDF	
O-Rings	VITON, EPDM	
Suction Pipe	PVC	
Discharge Pipe	PE	
Air Vent Pipe	PVC	

** , * may various according to models.

Dimensions

7 Dimensions

The following figures show the mounting holes of the appliances. Before starting the pump installation, the surface on which the pump will be mounted is marked according to the pattern. Make sure that the surface on which the pump is to be installed is dry and clean.

7.1 Head Kit 50

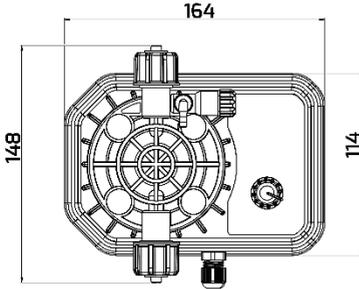


Figure 1 50's head size

7.2 Head Kit 40

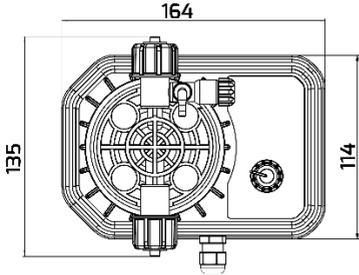


Figure 2 40's head size

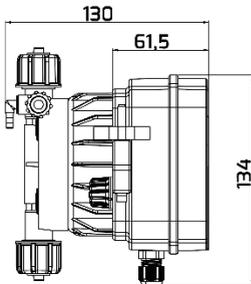


Figure 3 Pump side size

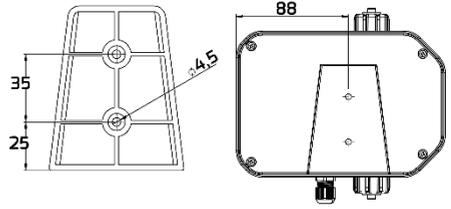


Figure 4 Pump hanging device size

The above figures show the pump mounting holes for the dosing pump. Before starting the pump installation, the surface on which the pump will be mounted is marked according to the pattern. Make sure that the surface on which the pump is to be installed is dry and clean.

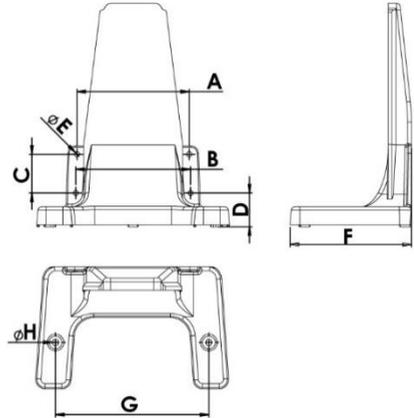


Figure 5 Pump foot size



ATTENTION

Plates are optional Dimensions/mm

A	87	E	∅ 4
B	89	F	94
C	30	G	119
D	26	H	∅ 5

8 Mechanical installation

Use the hanger bracket hole template to mount the product on the Wall. Mark the surface that you intend to install the hanger.

Bole a maximum 7 mm hole on the wall to hammering the 8 mm dowels from the accessories. After mounting the dowels, place the holes of the brackets on each other.

Fasten with screws.

Place the pump on its tabs as shown at the side, from top to bottom.

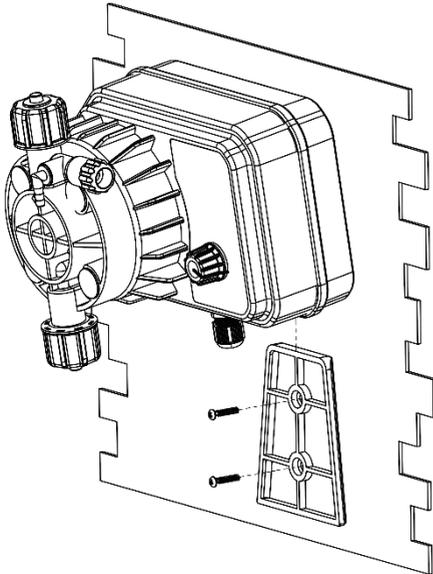


Figure 7 Mechanical installation

8.1 Pump Assembly Position

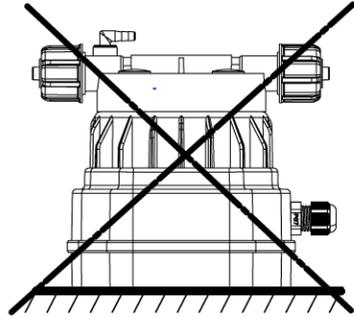


Figure 8 Pump Wrong Assembly Position

WRONG ❌

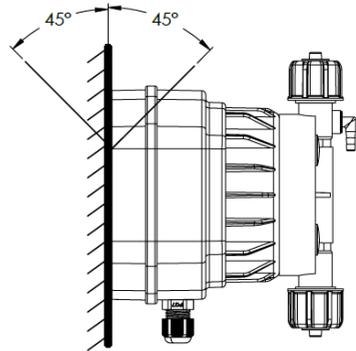


Figure 6 Pump Correct Assembly Position

CORRECT ✓



WARNING

Place the dosing pump in vertical position $\pm 45^\circ$. Install the pump on to a wall or a vertical surface through two holes which ones on the top of mounting apparat.

Electrical Installation

9 Electrical Installation

9.1 Electrical Connection

Electrical Connection of OPTIMA model dosing pumps must be performed as shown in the figure.

OPTIMA model dosing pumps do not require an earthing line.

If the pump is to be directly connected to the socket through the cable on the pump, a socket protected with a safety box should be preferred.

If the length of the cable provided along with the pump is not adequate for the connection, the cable to be joined must be selected as minimum 0.75 mm².

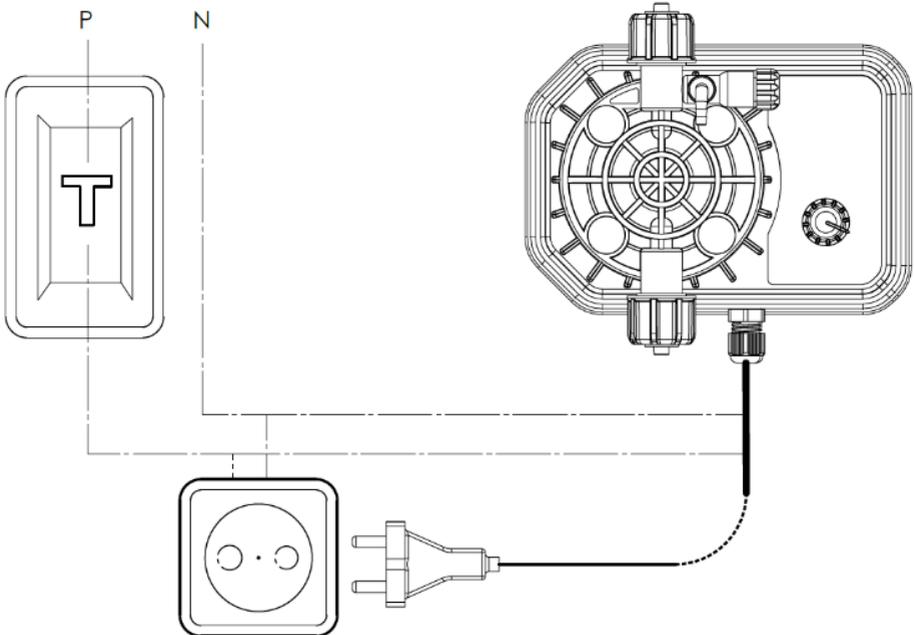


Figure 9 Electrical installation

10 Hydraulic Installation

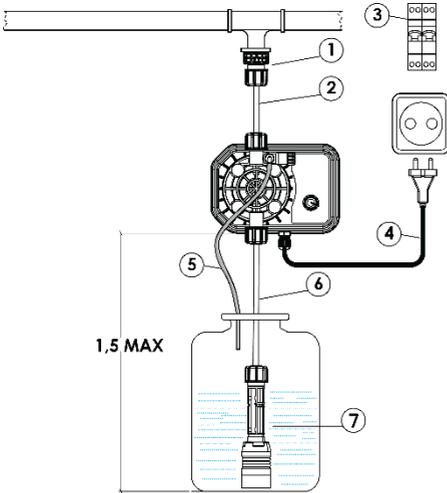


Figure 10 Hydraulic installation

- 1) Injection Line
 - 2) Hose of injection line
 - 3) Safety Fuse
 - 4) AC Power Supply Cable
 - 5) Bleeding Hose
 - 6) Hose of suction line
 - 7) Suction line
- General configuration of the device must be performed as shown in the figure above.
 - The distance between the suction line placed in the liquid tank and the pump must be maximum 1.5 m.
 - Assembly of the device must be completed before performing the electrical connection of the device.
 - The point to perform the electrical connections must be chosen by considering the distance for being not affected by liquids and chemicals.
 - The device must be placed at a place allowing easy access and reading by the operator.
 - The installation environment should not be humid or wet for proper operation and long service life of the device.

10.1 Installing the Hose to the Pump Head

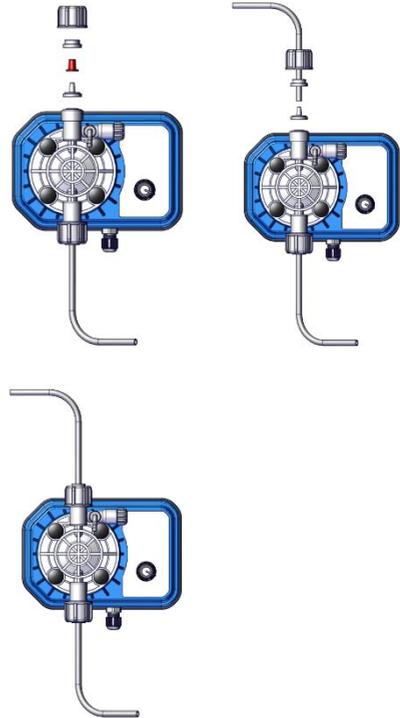


Figure 11 Installing the hose to the pump head

The discharge sleeve (the one marked with arrow on the pump head) must always be on the side of the pump head where the chemical is dosed.

The suction sleeve must always be under the pump.

Remove the covers of the sleeves.

Remove the safety plugs if any added during production.

After inserting the pipes through the sleeve covers, engage them with the conical ends on the sleeves, tighten the sleeve covers securely.



ATTENTION

Remove the red protection plugs before making hose connection.

Hydraulic Installation

10.2 Air Vent Operation

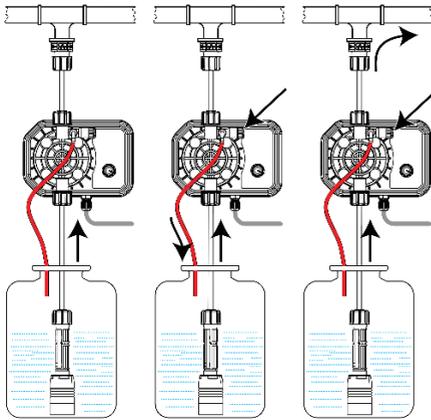


Figure 12 Air vent operation

The air in the pump head must be vented prior to commissioning of the pump.

For this purpose, fit the PVC hose among the accessories to the air vent sleeve on the dosing pump with assembly and electrical connection completed, and place the discharge end of the hose to the chemical tank.

Loosen the air vent sleeve.

Start the pump.

Ensure that the chemical goes back to the tank through the hose connected to the air vent sleeve.

So, the air vent operation is completed.

Tighten the air vent sleeve securely.

This operation is not performed manually for the models with automatic air vent.

10.3 Discharge Line with Check-Valve and Ball Bearing



WARNING

The discharge line must always be connected to the side of the pump indicated with arrow

(↑) sign on the pump.

The parts of the discharge line must be installed in the order and direction shown in the figure below.

The pump will not supply chemicals to the line if you modify the order or direction of the parts.

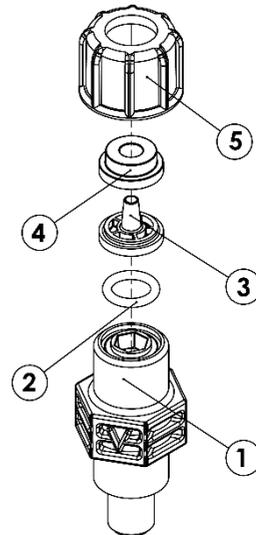


Figure 13 Discharge line with check-valve and ball bearing

No	Description	Quantity
1	Injection Body	1
2	O-ring 11,15x2,62	1
3	Hose end 4X6 PP	1
4	Clamping Ring 4X6 PP	1
5	Union Nut 2 PP	1

10.4 Suction Line



WARNING

Suction line must always be connected to lower side of the pump, and immersed in the chemical tank.

The parts of the suction line must be installed in the order and direction shown in the figure below.

The pump will not suck chemicals from the tank if you modify the order or direction of the parts.

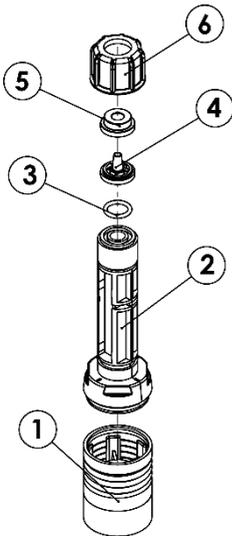


Figure 14 Suction line

No	Description	Quantity
1	Suction filter body 1 PP	1
2	Suction body 1 PP	1
3	O-ring 11x2 Viton	2
4	Hose end 4X6 PP	1
5	Clamping Ring 4X6 PP	1
6	Union Nut 2 PP	1

10.5 Head Kit 40 - 50



WARNING

The parts of the Head Kit 40 and 50 must be installed in the order and direction shown in the figure below.

The pump will not supply chemicals to the line if you modify the order or direction of the parts.

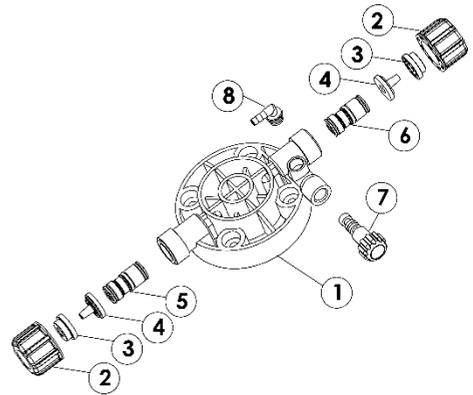


Figure 15 Head kit 40 - 50

No	Description	Quantity
1	Pump head	1
2	Union Nut	2
3	Clamping Ring	2
4	Hose end	2
5	Suction check valve set	1
6	Injection check valve set	1
7	Air intake gland	1
8	Air intake hose end	1

Use

11 Use

The dosing pump operates with a diaphragm (PTFE) connected to an electromagnet driven by direct current. When the electromagnet pulls the piston, an amount of pressure is generated in the pump head, and the pressurized dosing liquid goes through the discharge valve.

When the electrical pulse is interrupted, a spring brings the piston back to the position and the liquid fills through the intake valve.

It is easily operated, does not require lubrication. Therefore, it does not require any maintenance operations.

The materials used in the pump body are specially produced so as to be resistant against toxic and acidic materials.

Pump capacity can be easily adjusted by capacity control pot on the pump.

12 Service



WARNING

The electrical connections must be unplugged prior to performing any service operations on the device.

5x20 mm mini glass fuse must be used.

If the electrical cable of the device malfunctions, it must be replaced only by the authorized service department.

12.1 Maintenance

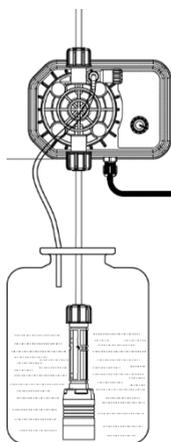


Figure 16 Maintenance

Before decommissioning the device at the end of the season;
Disengage the discharge line pipe from the discharge line.

Remove the suction pipe with the strainer from the liquid tank, and put them in clean water. Operate the pump for 5–10 minutes.

When using sodium hypochlorite, before decommissioning the device at the end of the season, if the cleaning operation is not completed a petrified layer of calcium may occur on the surfaces of the pump in contact with the said chemical agent as shown

To Clean;

Disengage the discharge line pipe from the discharge line.

Remove the suction pipe with the strainer from the liquid tank, and put them in clean water.

Operate the pump for 5–10 minutes.

Stop the pump, immerse it in hydrochloric acid and wait until the acid cleaning is completed.

Restart the pump, and operate for 5 minutes as the suction filter and the discharge sleeve being in the same tank.

Repeat this operation with water.

Install the pump back to the place.



ATTENTION

Check the liquid level in the chemical tank periodically in order to avoid operating the pump without dosing liquid.

Check operation of the pump with at least 5 hours' intervals.

Hydraulic parts should be cleaned periodically, but how often the cleaning should be performed depends on the type of implementation.

Faults

13 Faults

13.1 Mechanical Faults

If the system is in complete silence (Stopped) there is likely to be an electrical or electronic fault rather than mechanical.

If there is loss in the dosing liquid with fixed intervals, sleeve covers may be loose; there may be cracks on the discharge pipe; there may, rarely, be breakages or cracks on the diaphragm or 4 screws securing the pump head may be loose.

If the pump lets air in when it is not in operation; sealing of all check-valves in the system must be checked and replaced if necessary.

13.2 Electrical Faults

If led is off;

Check the electrical plug.

Only authorized persons or service departments can intervene any faults of the electrical cable.

The switch must be on.

Check that the electrical values are AC 220 V 50-60Hz if the pump operates as connected to AC power supply source.

Check the fuse of the pump. If it is not in proper condition, replace it with 2A glass fuse if it works with AC voltage, If the new fuse blows too, contact the company from which you purchased the pump.



ATTENTION

Selection of Fuses according to the Supply Voltage

OPTIMA 230V AC 2A 5x20 glass fuse



ATTENTION

If the problem is not caused by these, or there is another problem, contact the company from which you purchased the pump.

13.2.1 Replacement of the Fuse



WARNING

The electrical connections must be unplugged prior to performing any service operations on the device.



WARNING

Use 2A glass fuse for AC Dosing Pumps.

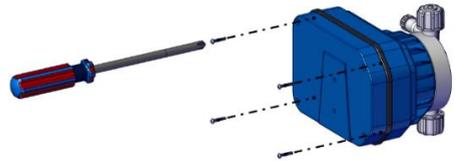


Figure 17 Replacing the fuse

First, unscrew the screws on the back cover by means of a proper screwdriver to replace the fuse of the pump.

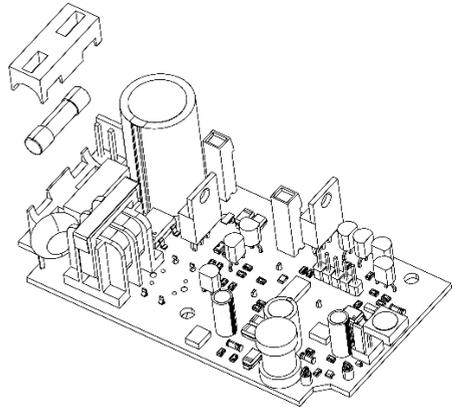


Figure 18 Fuse location on the electronic board

Replace the glass fuse shown in the figure, on the electronic board.

Pay due attention not to cause any damage to the electronic board. The pump does not operate if the electronic board is damaged.

Any faults on the electronic board caused by the user is excluded from the warranty.

Then close the back cover of the pump.

14 Chemical Resistance List

Chemical	Formula	Glass	PVDF	PP	PVC	SS316	PMMA	Hastelloy	PTFE	FPM	EPDM	NBR	PE	Neoprene	Silicone
Acetic Acid, Max 75%	CH ₃ COOH	2	1	1	1	1	3	1	1	3	1	3	1	3	1
Aluminum Sulphate	Al ₂ (SO ₄) ₃	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Amines	R-NH ₂	1	2	1	3	1	---	1	1	3	2	4	1	---	---
Calcium Hydroxide	Ca(OH) ₂	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Calcium Hypochlorite	Ca(OCl) ₂	1	1	1	1	3	1	1	1	1	1	3	1	2	2
Copper Sulphate	CuSO ₄	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ferric Chloride	FeCl ₃	1	1	1	1	3	1	1	1	1	1	1	1	1	2
Hydrofluoric Acid 40%	HF	3	1	1	2	3	3	2	1	1	3	3	1	3	3
Hydrochloric Acid	HCl	1	1	1	1	3	1	1	1	1	3	3	1	2	2
Hydrogen Peroxide 30%	H ₂ O ₂	1	1	1	1	1	3	1	1	1	2	3	1	2	1
Nitric Acid 65%	HNO ₃	1	1	2	3	2	3	1	1	1	3	3	2	3	3
Phosphoric Acid 50%	H ₃ PO ₄	1	1	1	1	2	1	1	1	1	1	3	1	2	1
Potassium Permanganate 10%	KMnO ₄	1	1	1	1	1	1	1	1	1	1	3	1	---	---
Sodium Bisulphate	NaHSO ₃	1	1	1	1	2	1	1	1	1	1	1	1	1	1
Sodium Carbonate	Na ₂ CO ₃	2	1	1	1	1	1	1	1	2	1	1	1	1	1
Sodium Hydroxide	NaOH	2	1	1	1	1	1	1	1	2	1	2	1	1	2

Chemical Resistance List

Sodium Hypochlorite 12,5%	NaOCl+NaCl	1	1	2	1	3	1	1	1	1	1	2	1	1	2
Sulphuric Acid -85%	H ₂ SO ₄	1	1	1	1	2	3	1	1	1	3	3	1	3	3
Sulphuric Acid -98,5%	H ₂ SO ₄	1	1	3	3	3	3	1	1	1	3	3	3	3	3

1 :Resistant

2 :Satisfactory

3 :Weak

List of Models / Pump Flow Rate Pressure Graphics

15 List of Models / Pump Flow Rate Pressure Graphics

Model	Max/Lt	Max/P	Strokes /min	MI /Strokes	Supply Voltage	Watt	Weight	Body	Maximum Ambient Temperature	Maximum Chemical Temperature
	Lt/h	Bar	Stroke	ml	Volt	W	kg	IP	°C	°C
510	5	10	120	0,694	230V AC	20	2,135	65	0-45°C	0-45°C
	6	6		0,833						
	7,5	3		1,042						
	10,5	1		1,458						
415	2,5	15	150	0,277	230V AC	20	2,130	65	0-45°C	0-45°C
	3	10		0,333						
	4	6		0,444						
	8	1		0,888						

Optima 510

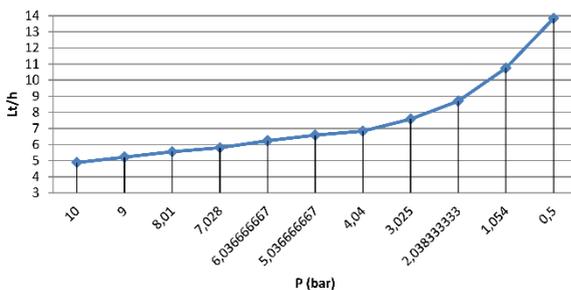


Figure 19 Optima 510 Pump flow rate pressure graphics

Optima 415

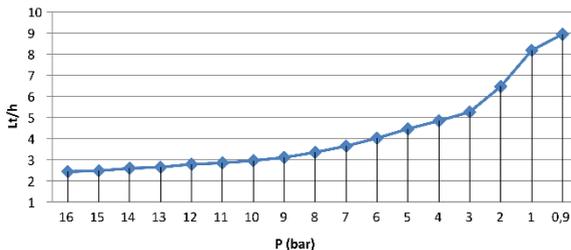


Figure 20 Optima 415 Pump flow rate pressure graphics

Warranty

16 Warranty

16.1 Warranty

Dosing Pump has warranty for 2 years for any faults caused by material and production defects within the framework of legislative provisions.

Faults caused by normal wearing, overloading or improper operation are excluded from the warranty.

Defects caused by material or production faults shall be compensated through replacement or reparation of the defected part or the device.

Claims for warranty shall be accepted only if the device is delivered to the delivery person or authorized service as assembled (without being disassembled).



ATTENTION

The Warranty Certificate must be completed and approved by the dealer from which you purchased the device. Please have the certificate approved, and preserve it.

16.2 Standards



TS EN 61000-6-1
TS EN 61000-6-3
IEC 60335-2-41
IEC 60335-1
EN 60332-41
EN 60335-1

