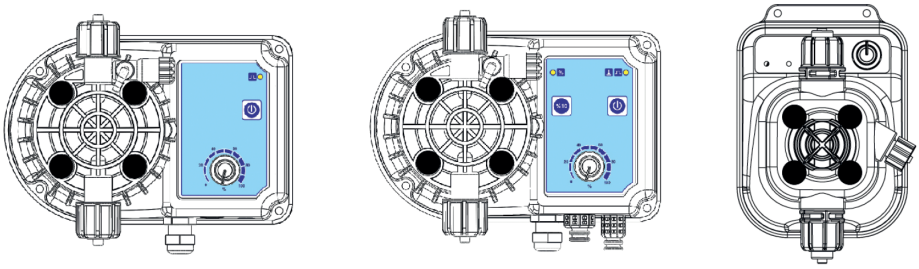
DOSING PUMP
USER MANUAL



1 İndex

2 General User Information

Please read the information below completely and thoroughly. This information will help you exploit the using instructions to the best.

	**WARNING** This symbol is used for potential risky situations. Ignoring this symbol may lead to fatal risk or serious injuries.
	**ATTENTION** This symbol is used for potential hazardous situations. Ignoring this symbol may lead to serious injuries or damage to the product.
	IMPORTANT This symbol is used for potential damage situations. Ignoring this symbol may lead to damage to the product.

SAFETY DATA

	**ATTENTION** <u>Use of toxic or hazardous agents:</u> • All requirements for mitigating the risks caused by composition of hazardous and toxic agents are provided in this manual. • Refer to the manuals provided by the manufacturers of the dosage fluid. • Examine the hydraulic components of the pump, and use only if they are in proper condition. • Use only appropriate materials for piping, sleeve, suction and discharge valves. PVC pipes can be more proper. • Read the notes 1, 2 and 3 on this page to remove the pump. Refer to the “MAINTENANCE” section to relive pressure and vent the pump head.
	**WARNING** <u>Prior to performing any service operations on the pump:</u> • Unplug the electrical cable of the pump, • Remove the part under pressure from the pump head and discharge line, • Discharge the dosage liquid from the pump head.

GENERAL WARNINGS

	**ATTENTION** • The air in the pump head must be vented prior to commissioning of the pump. • Securely fit the air vent sleeve after completion of the air venting operation. It is not necessary to remove the air vent hose. If the air vent sleeve is left loose, the chemical shall not move through the discharge line.
	• Install the pump at a dry place away from any heat source where the ambient temperature does not exceed 40 ºC. • Perform the electrical connections in line with the electrical rules (3.1). • Place the pump as shown in Figure 9. The liquid distance below and above the pump should not exceed 1.5 m. Keep the pump above the liquid level and close the tank cover securely.
	**NOTE** • Pay due attention not to cause any breakage on the pipes.

!	**IMPORTANT** • Screw plugs on the pump head should not be removed.

3 Description and Specifications

3.1 Description

Dosage 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.).

3.2 General Features

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

3.3 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:

CE

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

3.4 Technical Characteristics

3.4.1 Technical Features of the Dosage Pump

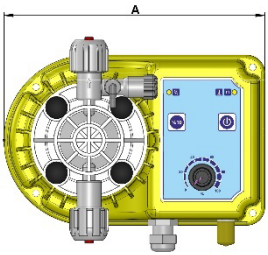
Supply	AC 230V 50-60Hz DC 12V *	
Suction line Max. Height	1.5 m	
Discharge Line Max. Distance	4 m	
Body	IP64, IP65	
Working Ambient Temperature	0–45°C	
Chemical Heat	0–40°C	
Weight	**LARA Series** 2.2 Kg	**NANO Series** 1.7 Kg

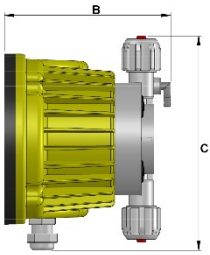
3.4.2 Raw Materials Used for Construction of Components of the Dosage Pump

Used Components		LARA Series	NANO Series
Sleeves		PP-PVDF**	
Pump Body		PP	
Check Valves **	Suction Kit	EPDM, Viton, Silicon, Neoprene, Zirconium Ball Bearing	
	Discharge Kit	EPDM, Viton, Silicon, Neoprene, Zirconium Ball Bearing	
	Head Kit	Zirconium Ball Bearing	
Diaphragm		PTFE	
Pump Head		PP-PVDF**	
O-Rings		VITON, EPDM	
Suction Pipe		PVC	
Discharge Pipe		PE	
Air Vent Pipe		PVC	

3.4.3 Dimensions of the Dosage Pump

LARA SERIES DOSAGE PUMPS

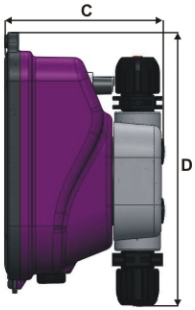




Dimensions

A 187 mm
B 119 mm
C 154 mm

NANO SERIES DOSAGE PUMPS



Dimensions

A 115 mm
B 120 mm
C 101 mm
D 173 mm

4 Installation

SAFETY DATA

WARNING

- The device should not be humid or wet. The device should not be used in an open area without any protection (external box, cover for protection against rain etc.)

ATTENTION

- General safety precautions must be implemented for the installation.
- Read the whole of this manual thoroughly before performing the installation!
- Electrical connections must be performed only by specifically trained or qualified persons!
- The electricity data provided on the device must be compatible with the values of the power source.

ATTENTION

- The point to perform the electrical connections must be chosen by taking the distance for being not affected by liquids and chemicals into consideration.

4.1 Electrical Connection

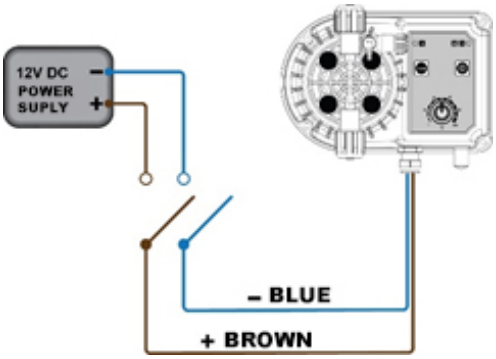
WARNING

- Electrical connection SHOULD NOT be performed before assembly of the pump.
- The electrical connections must be unplugged before removing the pump.
- Electrical Connection of the pumps requiring a earthing line must be performed by choosing a safe socket with earthing line.

WARNING

- KEEP the cover CLOSED while the device is in operation.

4.1.1 Electrical Connection for DC Models

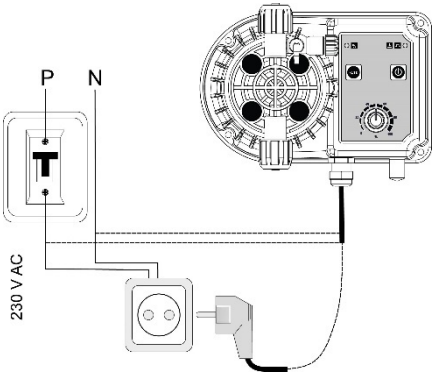


Electrical connection of 12 V DC dosage pump is as shown in this figure.

The brown cable must be connected to the + end of the power source and the blue cable to the - end.

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 1.5 mm^2.

4.1.2 Electrical Connection for AC Models



Electrical Connection of LARA and NANO model dosage pumps must be performed as shown in the figure.

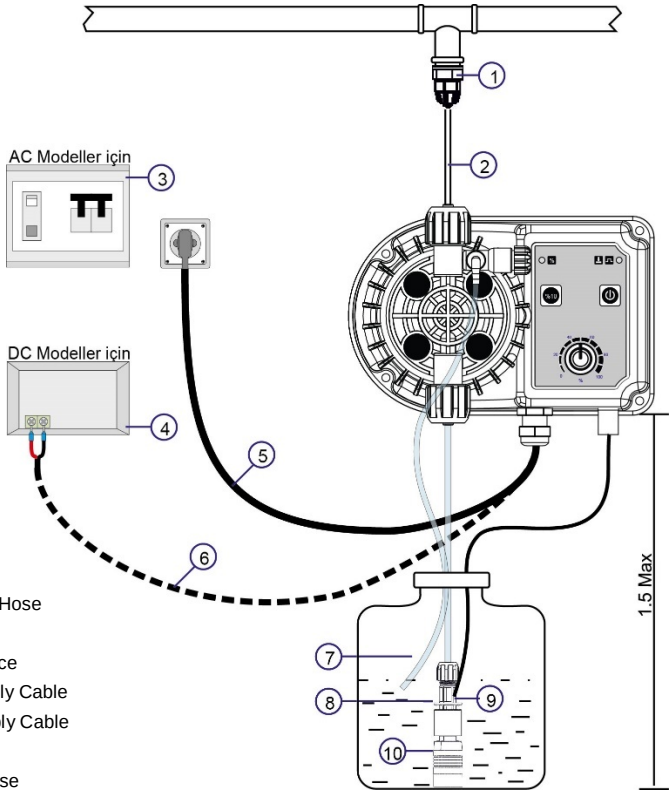
LARA and NANO model dosage pumps do not require a earthing line.

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.

4.2 Assembly

4.2.1 General Configuration

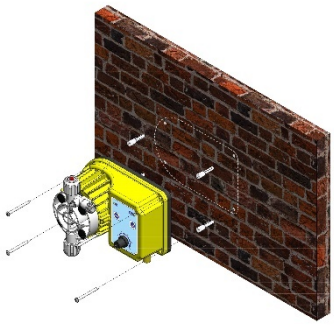


1) Discharge Line
2) Discharge Line Hose
3) Safety Fuse
4) DC Power Source
5) AC Power Supply Cable
6) DC Power Supply Cable
7) Air Vent Hose
8) Suction Line Hose

- 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.
- The connection illustrated with number 5 continuous line, and the connection illustrated with number 6 dashed line are electrical connections for dosage pumps working with 230 V AC voltage and 12 V DC voltage, respectively.

4.2.2 Assembly to the Wall and Plastic Board



- To fit your pump onto the wall, use the holes template suitable for the model of your pump
- (Figure: 11–12–13).
- Mark the surface onto which you wish to install in line with the dimensions provided herein.
- Drill max. 7 mm holes to insert the 8 mm fixing plugs provided in the accessories.
- After inserting the fixing plugs, align the holes on the wall and the pump to place the pump on the wall.

Secure by tightening the screws.

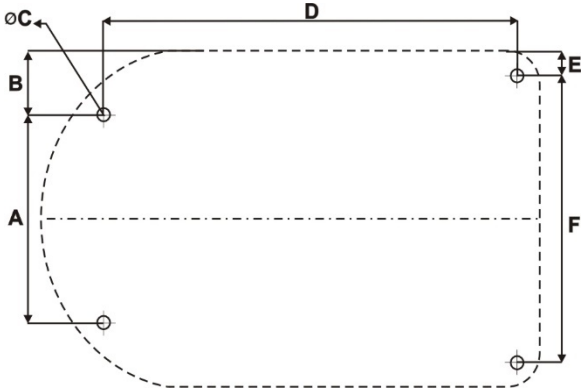
Size of the screws to be used

NANO Series	2 Pieces 4.2x50 YSB Screw
LARA Series	4 Pieces 4.2x50 YSB Screw

4.2.3 Pump Assembly Holes

- Holes for assembly of the dosage pumps are shown in the figures below.
- Before starting to install the pump on the wall, mark the surface on which the pump is to be installed in line with the template.
- Ensure that the installation surface is dry and clean.

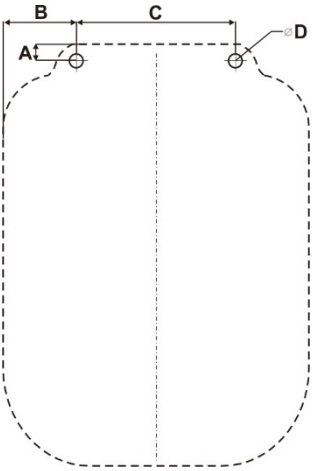
LARA SERIES DOSAGE PUMPS



Dimensions

A	**76mm**
B	**23mm**
C	**Ø 5mm**
D	**155mm**
E	**9mm**
F	**104mm**

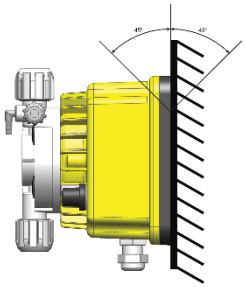
NANO SERIES DOSAGE PUMPS



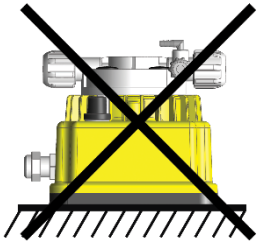
Dimensions

A	**6mm**
B	**21.5mm**
C	**60 mm**
D	**Ø 5mm**

4.2.4 Pump Assembly Position



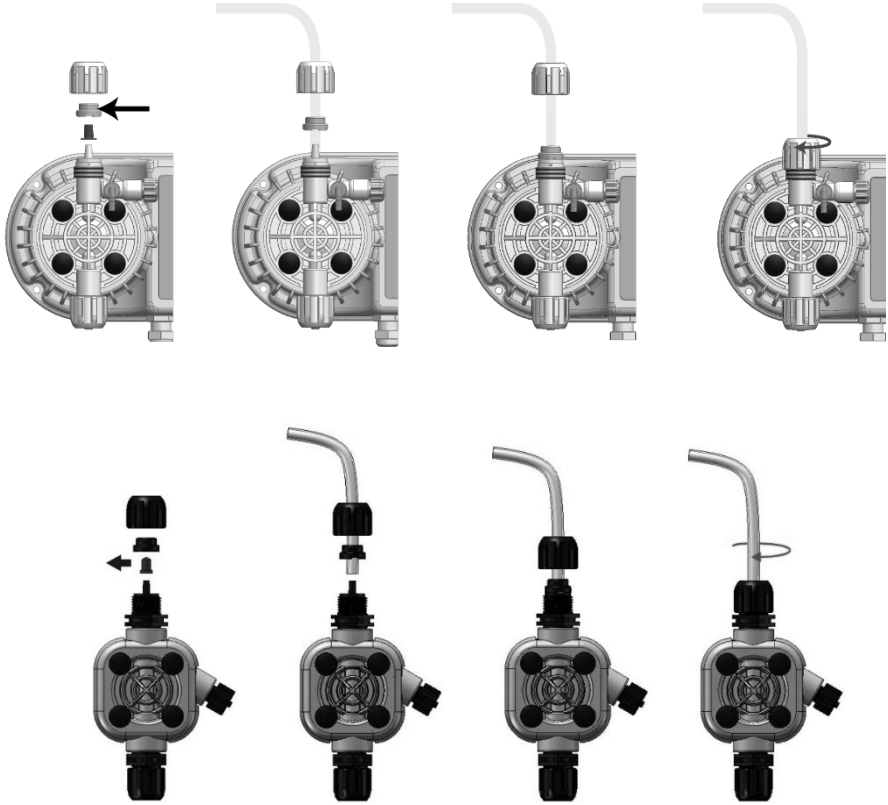
CORRECT ✓



WRONG ✗

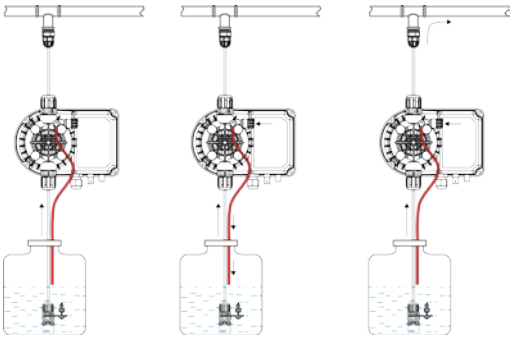
⚠	**NOTE** • Place the dosage pump in vertical position ± 45º . Install the pump onto a wall or a vertical surface through two holes on it.

4.2.5 Installing the Hose to the Pump Head



1. 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.
2. The suction sleeve must always be under the pump.
3. Remove the covers of the sleeves.
4. Remove the safety plugs if any added during production.
5. After inserting the pipes through the sleeve covers, engage them with the conical ends on the sleeves, tighten the sleeve covers securely.

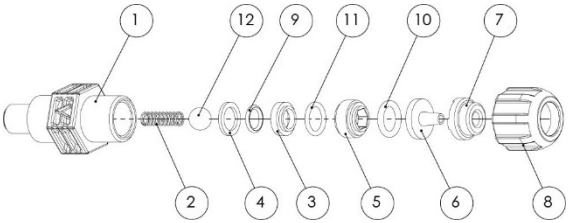
4.2.6 3.2.6 Air Vent Operation



1. The air in the pump head must be vented prior to commissioning of the pump.
2. For this purpose, fit the PVC hose among the accessories to the air vent sleeve on the dosage pump with assembly and electrical connection completed, and place the discharge end of the hose to the chemical tank.
3. Loosen the air vent sleeve.
4. Start the pump.
5. Ensure that the chemical goes back to the tank through the hose connected to the air vent sleeve.
6. So the air vent operation is completed.
7. Tighten the air vent sleeve securely.
8. This operation is not performed manually for the models with automatic air vent.

4.3 Discharge Line with Check-Valve and Ball Bearing

- 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.



No	Description	Quantity
1	DISCHARGE BODY 1 PP	1
2	SPRING 6X28MM	1
3	BEARING HOUSING PP	1
4	BEARING HOUSING WASHER PP	1
5	BEARING HOUSING COVER PP	1
6	HOSE NIPPLE 4X6 PP	1

No	Description	Quantity
7	HOSE DISCHARGE 4X6 PP	1
8	BUSHING COVER 2 PP	1
9	O-RING 8.70x1.78	1
10	O-RING 11.15x2.62	1
11	O-RING 11x2 VITON	1
12	BALL BEARING 10MM CERAMIC	1

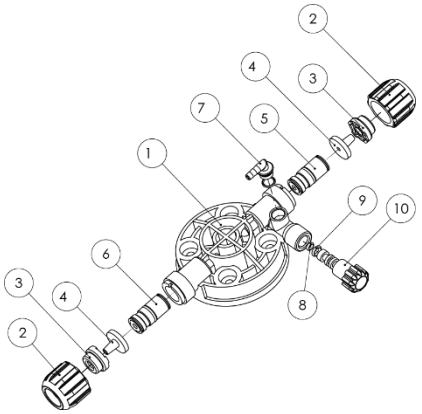
4.4 Suction Line

⚠	• 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.

No	Description	Quantity
1	Bushing Cover 2	1
2	Hose nipple 4x6	1
3	Hose discharge 4x6	1
4	O-ring	1
5	Plastic piston ring	1
6	Sensor Body	1
7	Sensor	1
8	Suction Body	1

4.5 Head Kit 40 - 50

⚠	• 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.

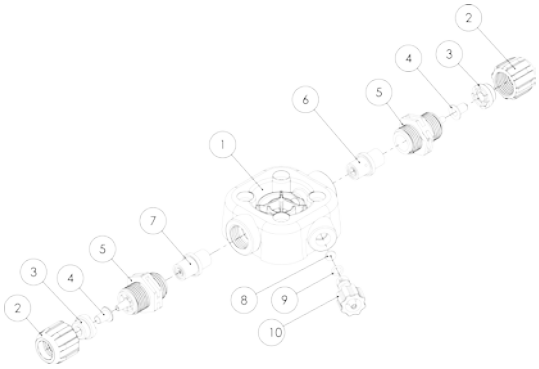


No	Description	Quantity
1	KT Body	2
2	Bushing Cover 2	2
3	Bushing Plug	1
4	Hose discharge	2
5	Cartridge Kit Discharge	5

No	Description	Quantity
6	Cartridge Kit Suction	4
7	Air Vent Bushing	2
8	O-ring 2.5x1.78	1
9	O-ring 4.5x1.78	1

4.6 Head Kit 3

⚠	• The parts of the Head Kit 3 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.



No	Description	Quantity
1	Pump Head 3	1
2	Bushing Cover 2	2
3	Hose discharge	2
4	Plug Safety	2
5	Bushing 2	2
6	Cartridge Kit Discharge	4
7	Cartridge Kit Suction	4
8	O-ring 6x1.5	2
9	O-ring 3x1.5	2
10	Air Vent Bushing	1

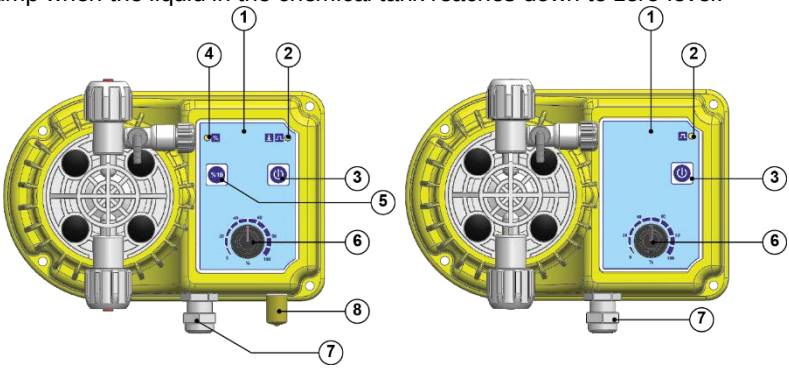
5 Operation

The dosage 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 dosage 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.
- Pumps are designed to be operated with max 20 Bar pressure and 0 to 20l/h flow rate.
- Pump capacities can be easily adjusted by means of the capacity control pots on the analog models.

5.1 Description of the Analog Model Pumps

Pump capacities of the analog models can be easily adjusted by means of the potentiometer on the pump. A liquid level sensor can be installed in order to cease operation of the pump when the liquid in the chemical tank reaches down to zero level.



No	Description
1	Panel Label
2	Pulse and Level Led
3	Start Stop Button
4	10% Mode Indicator Led

No	Description
5	10% Mode Start Stop Button
6	Capacity Control Pot
7	Electrical Connection Bushing
8	Liquid Level Sensor Inlet

5.1.1 LARA APS Function Settings

In LARA APS models, the pump can easily be operated with 10% of the total capacity by pushing number 5 10% button. Number 4 led turns on when the pump starts operation with 10% capacity.

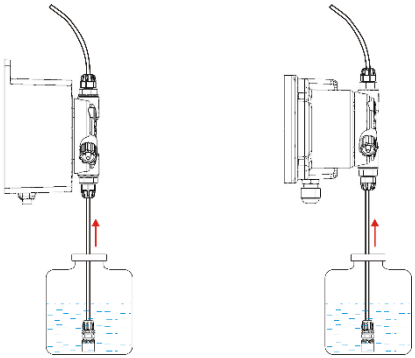
In LARA APS models, Liquid level sensor, Flow Rate Sensor operation mode parameter can be selected as default on - default off. Push number 5 10% button until the level led starts flashing rapidly in order to adjust the sensor operation mode. The sensor operation mode is default on when the level led is on, it is default off when the led is off. Push number 5 10% button to switch between on and off modes. Push Power (Enter) button to confirm and save the parameter, the pump returns to normal operation mode.

6 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.

6.1 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.

NOTE

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

7 Faults

7.1 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 dosage 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.

7.2 Electrical Faults

Analog Models

If any of the leds is not on

- 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, and DC 12 V if the pump operates as connected to DC power supply source.
- Check the fuse of the pump. If it is not in proper condition, replace it with 1A glass fuse if it works with AC voltage, and with 10A glass fuse if it works with DC voltage. If the new fuse blows too, contact the company from which you purchased the pump.

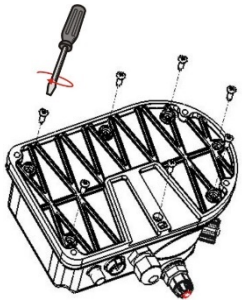
	**Selection of Fuses according to the Supply Voltage**	12V DC	10 A 5x20 glass fuse
		LARA 230V AC	2 A 5x20 glass fuse
		NANO 230V AC	1 A 5x20 glass fuse

NOTE

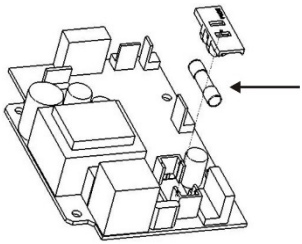
- If the problem is not caused by these, or there is another problem, contact the company from which you purchased the pump.

7.2.1 Replacement of the Fuse

	WARNING • The electrical connections must be unplugged prior to performing any service operations on the device.
	• Use 1A glass fuse for AC Dosage Pumps. • Use 10A glass fuse for DC Dosage Pumps.



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



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.

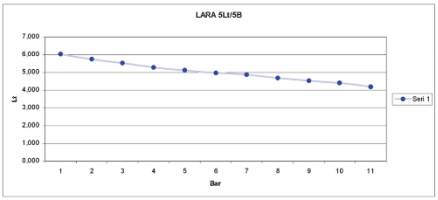
8 Chemical Resistance List

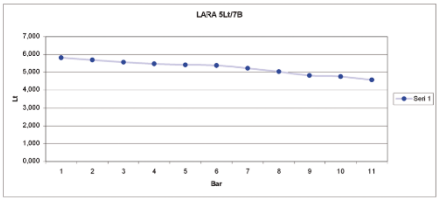
Chemical	Formula	Glass	PVDF	PP	PVC	SS316	PMMA	Hastelloy	PTFE	FPM	EPDM	NBR	PE	Neoprene	Silicone
Acetic Acid, Max 75%	CH_3COOH	2	1	1	1	1	3	1	1	3	1	3	1	3	1
Aluminum Sulphate	$Al_2(SO_4)_3$	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Amines	$R\text{-}NH_2$	1	2	1	3	1	---	1	1	3	2	4	1	---	---
Calcium Hydroxide	$Ca(OH)_2$	1	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_2O_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_3PO_4	1	1	1	1	2	1	1	1	1	1	3	1	2	1
Potassium Permangate 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_2CO_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

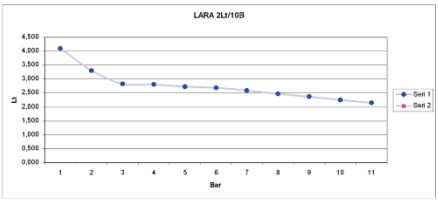
Sodium Hypochlorite 12,5%	NaOCl+NaCl	1	1	2	1	3	1	1	1	1	1	2	1	1	2
Sulphuric Acid -85%	H_2SO_4	1	1	1	1	2	3	1	1	1	3	3	1	3	3
Sulphuric Acid -98,5%	H_2SO_4	1	1	3	3	3	3	1	1	1	3	3	3	3	3

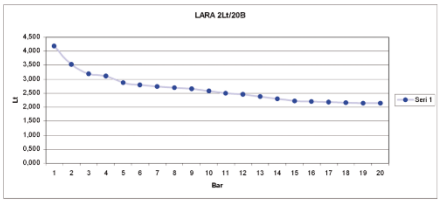
1 : Resistant **2 : Satisfactory** **3 : Weak**

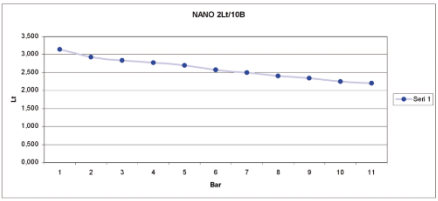
9 Pump Flow Rate Pressure Graphics

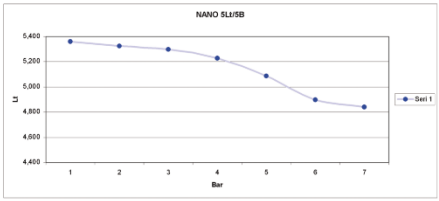












10 List of Models

MODEL	Max/Lt	Max/P	Strokes/min	ml/Strokes	Supply Voltage	Watt	Weight	Body	Maximum Ambient Temperature	Maximum Chemical Temperature
	L/h	Bar	Stroke	ml	Volt	W	kg	IP	°C	°C
LARA A LARA APS	2	10	120	0.278	12VDC	25	2.2	65	0-45	0-40
	2	10	150	0.222	230 V AC					
	5	7		0.555						
	5	5	120	0.694	12VDC					
	10	5	150	1.111	230 V AC					
	2	20		0.222						
NANO	2	10	180	0.185			1.7			
	5	5		0.463						
	0.5	5		0.046						

11 Warranty

11.1 Warranty

- **Dosage 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)**.

NOTE

- 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.

12 Standards

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