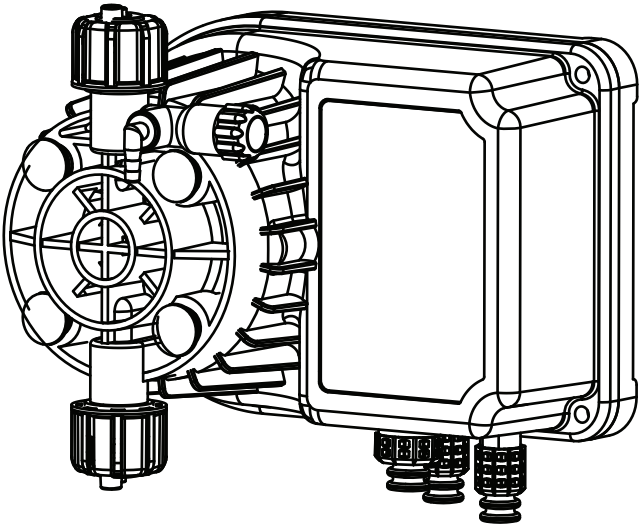
DIGITAL DOSING PUMP USER MANUAL



1 Contents

1.1 List of Pictures

2 Introduction

Please read following information carefully and completely. This information shall ensure that you benefit from operating instructions at optimum level.

These instructions define the functions of technical data.

2.1 Explanation of Safety Warnings

These operating instructions give information about the technical data and functions of the product. And provide detailed safety information.

Safety warnings and notes are categorized as below. Pictographs are used here as adapted for different circumstances. These pictographs are only for example.

DANGER!
Type and source of danger
Result: Death or severe injury.
Measures to be taken to prevent such danger.

Defines the danger that creates the threat directly. Causes death or severe injury unless prevented.

WARNING!
Type and source of danger
Possible Result: Death or severe injury.
Measures to be taken to prevent such danger.

Defines a possible dangerous situation. Causes death or grave injury unless prevented.

CAUTION!
Type and source of danger
Possible Result: Light or insignificant injuries. Material damage.
Measures to be taken to prevent such danger.

Defines a possible dangerous situation. Causes light or insignificant injury unless prevented. Can also be used for material damage warning.

NOTE!
Type and source of danger
Result: Causing damage to the product or individuals.
Measures to be taken to prevent such danger.

Defines a possible damaging action. Causes damage to the product or individuals unless prevented.

INFORMATION!

Operational tips and additional information
Source of information. Additional measures.

Defines operational tips and other useful information. Not given for a dangerous or harmful situation.

2.2 User Competence

WARNING!
Danger of injury in case of personnel incompetence!
Operator of device/facility is responsible for complying with competencies.
Incompetent personnel working with the device or keeping the device in danger zone might cause severe injuries or material losses.
- All operations should be handled by competent personnel
- Keep away incompetent personnel from danger zones

Training	Description
Informed Person	Defines a person that has been informed about possible hazards in case of unruly behaviors contrary to duties assigned, and informed about relevant situations and informed about necessary protection equipment and measures.
Trained User	Defines a person that meets the standards of an informed person and plus trained by the manufacturer or another authorized sales partner
Trained Expert	Defines a person that can recognize possible hazards and evaluate the duties assigned thanks to his/her knowledge of rules in addition to the training, information and experience in that field. The activities based on years of experience in that field can be taken into consideration while assessing someone as an expert.
Electricity Expert	Defines a person that can work in electrical facilities, and recognize and prevent possible dangers thanks to his/her knowledge of regulations and standards in place in addition to the training, information and experience. Electricity experts should have received training on the field of work and have knowledge on important standards and regulations. Electricity expert should fulfill the provisions of legal regulations for preventing accidents.
Customer Services	The service technicians that are trained and authorized for operations in the facility by the manufacturer are described as customer services.

3 Safety and Responsibility

3.1 General Safety Warnings

Following warnings are given for assisting you to eliminate possible dangers that might arise while using the product. Risk prevention measures are always valid independent of any special action.
Safety instructions that give warning against certain activities or situations are given in relevant sub-sections.

DANGER

Life-threatening danger due to electric shock
Falsely wired, exposed or damaged cables might injure you.
Replace damaged cables immediately.
Do not use extension cables.
Do not bury cables.
Fix cables to prevent damage to other equipment.

DANGER

Do not use the product in explosive environments.

WARNING

Caustic burns due to dosage material or other types of burns!

Dosage starts after connection to the mains power.

Connect dosage lines before connecting to mains power.

Make sure that all screws are tightened and sealed properly.

WARNING

While working on dosage head, valves and connections, you might get in touch with dosage liquid.
Use sufficient personal protective equipment.
Rinse the product with a liquid that doesn't bear any risk (e.g. water). Make sure that the liquid is in line with the dosage material.
Do not look at the exposed ends of attached pipe lines and valves without protective goggles.

WARNING

Product materials and system hydraulic parts should be compliant to dosage liquid. Make sure that the materials are suitable for the dosage material.

CAUTION

Increased accident risk due to lack of qualification on personnel side!
Product and accessories can only be mounted, operated and maintained by staff with sufficient qualifications.
Make sure that all actions are taken by personnel with sufficient and appropriate qualifications.
Prevent access to system by unauthorized persons.

CAUTION

Personal injury and material damage hazard!
Changing the dosage liquid might cause unforeseeable reactions.
In order to prevent chemical reactions, clean dosage pumps and hoses thoroughly.

3.2 Hazards arising from non-compliance with safety instructions

Non-compliance with safety instructions will bring risks not only for the staff but also for environment and the unit.
Here are some specific consequences:
Failure of vital functions in product and system,
Failure of necessary maintenance and repair methods,
Danger for individuals due to dangerous dosage material,
Environmental hazard due to leaking materials.

3.3 Safe operation

There are more safety rules in addition to the safety instructions stated in this operating manual and they should be followed:
Accident prevention regulations safety and operating provisions
Safety measures for using dangerous items
Environmental protection provisions,
Applicable standards and legislation.

3.4 Personal protective equipment

You might be exposed to dosage liquid. You should use relevant protective equipment depending on the type of work and degree of risk.

As minimum, following protective equipment is provided:


Protective Clothing


Protective Gloves


Protective Goggles

The operator should use protective equipment during these tasks:
Assigning,
When device is working,
Demounting, maintenance works, disposal.

3.5 Personnel competence

Any staff member working on the device should have specific knowledge and skills.
Anyone working on the device should meet following conditions:
- Participation in all training courses,
- Personal fitness to the specific task,
- Personal competence for the specific task,
- Training for the use of device,
- Safety equipment data and mode of operation
- This Operating Manual and especially the safety instructions relevant to this work with sub-sections,
- Knowledge on basic arrangements relevant to health, safety and accident-prevention.

All persons should have following qualifications as minimum:
-Receive training as expert to work on the product independently,
-Receive sufficient training to work on the product under the guidance and surveillance of a trained expert.
This user's manual differentiates between user groups
(see User Competence Page 4)

4 Appropriate and Desired Use

4.1 Notes about product warranty

Undefined use of the product in any way might risk the function or desired protection of the product. This shall invalidate warranty claims!

Please remember that responsibility lies with the user in following cases:

- Use of the product in an inconsistent way with the section titled "appropriate and desired use" especially with regards to safety
- Unauthorized changes on the device by the user
- User's choice of a dosage material different than the one stated in the order.
- Failure of user to use dosage liquid under predetermined conditions with the manufacturer such as changed concentration, density, temperature, pollution, etc.

4.2 Purpose of production

Dosage pumps are precision dosage devices designed for dosage release of acid, chlorine, liquid fertilizer, etc. chemicals (pool, potable water, agricultural irrigation, etc.)

4.3 Principles

- The manufacturer has checked and operated the device under specific conditions before delivery (in a specific density and temperature with a specific dosage material, under specific pipe dimensions, etc.).
- Since such conditions may vary on site under different usages, the capacity of the product should be measured during installation by the operator company.
- Information on usage and environment (see Technical Data page 9).
- Product materials and system hydraulic parts should be compliant to dosage material. Please remember that resistance of components shall vary depending on dosage material temperature and operating pressure.
- Product is not designed for outdoors unless appropriate protective measures are taken.
- Avoid liquid and dust leakage into product and also direct sunlight exposure.
- Do not operate the product in a potentially explosive environment unless there is EC Certificate of Conformity for potentially explosive atmospheres.

4.4 Prohibited dosage media

Product **should not** be used for following materials and ingredients:

- Gaseous substances,
- Flammable materials,
- Radioactive substances,
- Solid materials.

4.5 Foreseeable wrong use

You can find below information about unaccepted product practices or relevant equipment practices. This section has been designed to detect and prevent possible wrong uses beforehand.
Foreseeable wrong use will affect product life:

4.5.1 Wrong assembly

Wrong or loose screwing.

4.5.2 Wrong installation

Wrong installation of suction and stroke lines.
Wrong connection of pipes due to wrong material or improper connections.
Damage in pipe lines due to twisting or excessive tightening.
Use of damaged parts or exceeding the permitted pressure on suction and discharge sides.

4.6 Wrong electrical wiring

Unsafe mains or mains voltage that do not comply with standards.
Wrong connection cables for mains voltage.
Installation where it is not possible to cut off power supply immediately or easily.

5 Product Description

5.1 Product Data

Dosage pumps are precision dosage devices designed for dosage release of acid, chlorine, liquid fertilizer, etc. chemicals (pool, potable water, agricultural irrigation, etc.)

5.2 General Specifications

This operating manual is applicable to analogue dosage pumps. Installation, operation and service of all these pumping devices are different from each other (certain differences in technical data, malfunctions and repair).

5.3 Electrical Features

Device fulfills control duty by respecting user settings.
Device complies with electrical devices regulations.
Device complies with 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

5.4 Scope of delivery

Dosage pump
User's Manual
Hose Set
S. Level sensor suction set 4x6
Stroke set 4x6-1/2
Assembly Set

6 Technical Data

6.1 Operating Conditions and Limits

Ambient Temperature	0-45°C
Chemical temperature	0-45°C
Suction Line Max. Height	1,5 mt
Stroke Line Max. Distance	4 mt

6.2 Electrical Data

LARA SERIES	AC	DC
Supply Voltage	AC 230V 50-60Hz	DC 12-28V
Power	17 W	25 W
Current RMS	0,5 A	2,1A
Fuse Current	2A	10A

6.3 Other Information

Product Weight	2,2 kg
Box Weight	3,1 kg
Protection Class	IP65

6.3.1 Raw Materials Based on Parts Used in Dosage Pump

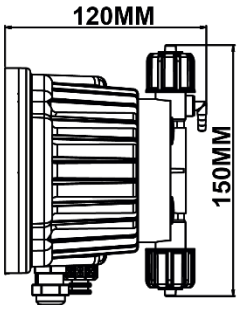
Parts Used		
Pump Body		PP
Check valves**	Suction Set	PP, Zirconium Ceramic Ball, Viton-EPDM* Oring
	Stroke Set	PP, Zirconium Ceramic Ball, Viton-EPDM* Oring
	Head Set	PVDF, Zirconium Ceramic Ball, Viton-EPDM* Oring
Diaphragm		PTFE
Pump Head		PVDF
O-rings		VİTON, EPDM
Suction Pipe		PVC
Stroke pipe		PE
Priming Pipe		PVC

**,* may vary in different models.

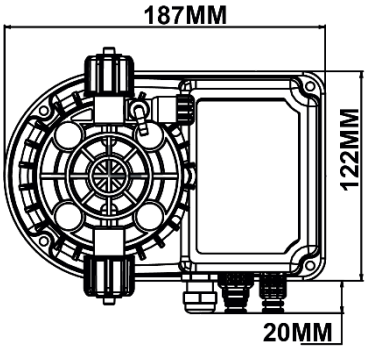
7 Dimensions

Assembly holes are shown in following images.
Mark the surface on which the pump is to be installed in accordance with the template before starting assembly.
Make sure that the surface for pump installation is dry and clean.

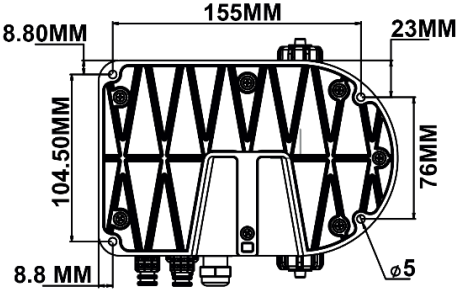
7.1 Pump Sizes



Picture 1 Pump Size Side Part

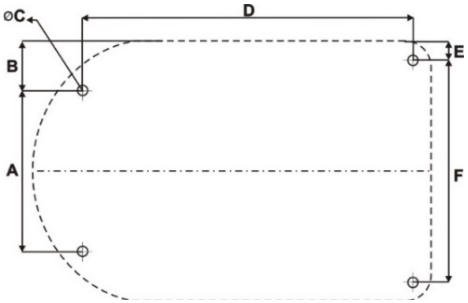


Picture 2 Pump Size Front Part



Picture 4 Pump Size Rear Part

7.1.1 Pump Assembly Hole Sizes



Picture 3 Pump Assembly Hole Sizes

Dimensions

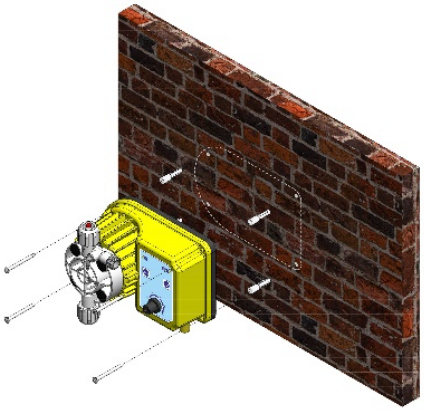
A	76mm
B	23mm
C	Ø 5mm
D	155mm
E	9mm
F	104mm

8 Mechanical Installation

Use the hole template in accordance with your pump's model to fix it to a wall
Mark the surface that you would like to fix the pump based on given sizes.
Drill maximum 7mm hole on the surface to drive in 8mm anchors that you will find among the accessories.
After driving in the anchors, place the pump in such a way that holes overlap.
Fix with screws.

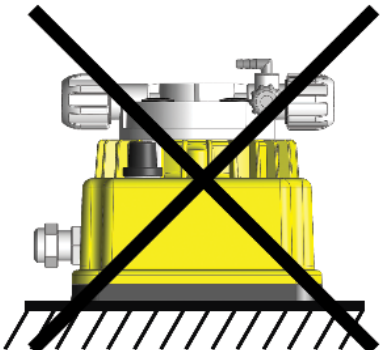
Recommended Screw sizes

Series	4 Screws 4,2x50 (Cross Rec. Pan Head)



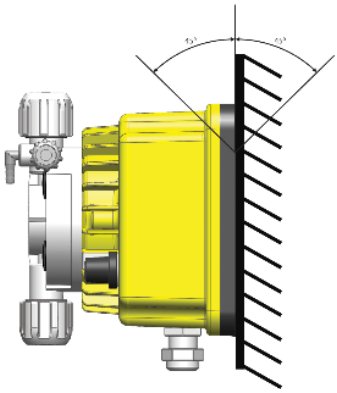
Picture 5 Wall Assembly

8.1 Pump Assembly Position



Picture6 Pump Wrong Assembly Position

WRONG ✗



Picture7 Pump Correct Assembly Position

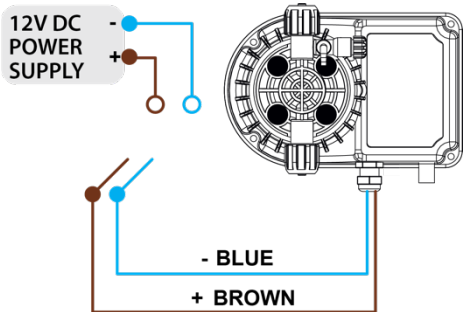
CORRECT ✓

WARNING

Place the dosage pump vertically ± 45º . Fix the pump to a wall or any other vertical surface through two holes on the hanger.

9 Electrical Installation

9.1 Electrical Connection for DC Models



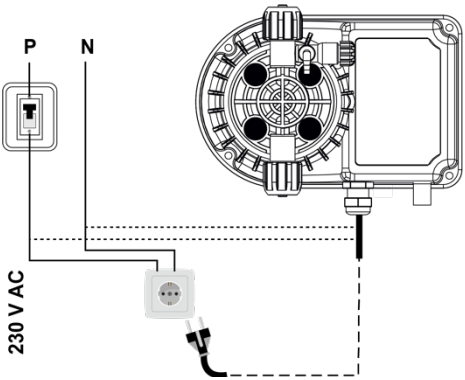
Picture 8 Electrical Connection for DC Models

Electrical connection of 12-28V dosage pump is as seen here.

Brown cable should be connected to **+** end of power supply whereas blue cable should be connected to **-** end.

If the cable length on the pump is short, the additional cable should be selected minimum 2,5mm^2.

9.2 Electrical Connection for AC Models



Picture 9 Electrical Connection for AC Models

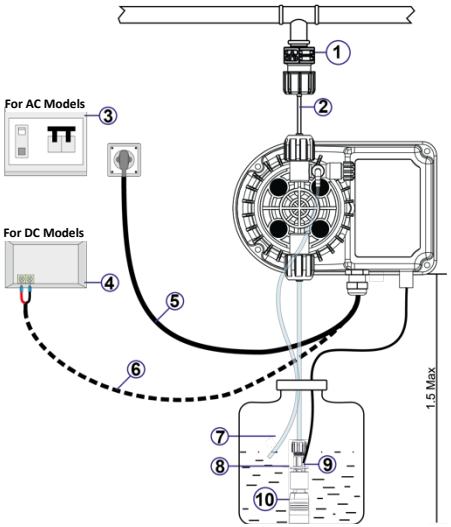
Electrical connection of LARA model dosage pumps should be made as seen here. There is no need for earthing connection.

If the pump is to be powered using the socket electrical cable on it, then you should choose a wall plug protected with security box.

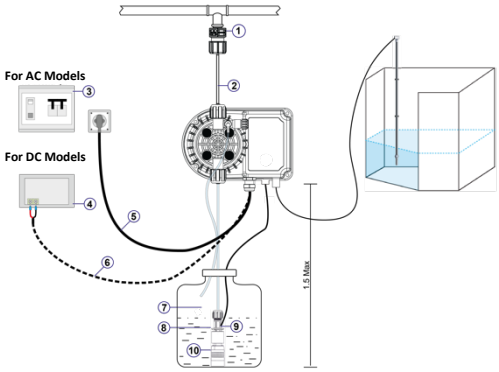
If the cable length on the pump is short, the additional cable should be selected minimum 1mm^2.

10 Hydraulic Installation

10.1 Manual Venting Hydrolic Installation



Picture 10 General Assembly for Digital Models



Picture 11 General Assembly for Digital PR Models

1) Pumping Line
2) Stroke Line Hose
3) Safety Fuse
4) DC Power Supply
5) AC Power Supply Cable
6) DC Power Supply Cable
7) Priming Hose
8) Suction Line Hose
9) Liquid Leve Sensor Cable
10) Suction line

General assembly of the device should be performed as shown above.

Distance between suction line and pump, placed inside the liquid tank, should be maximum 1,5 meters.

Assembly should be completed before electrical connection has been made.

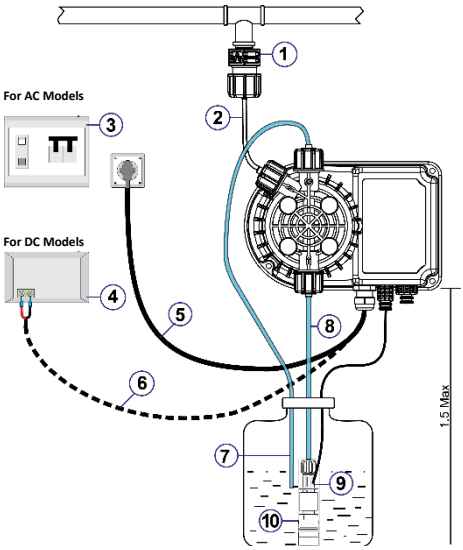
Electrical connection should be in such a distance not to be affected by liquid or chemicals.

Device should be placed in a distance that provides ease of use and reading for user's access.

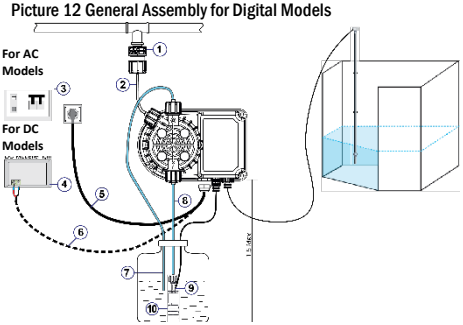
To make your device long lasting and properly operating, assembly site should not be wet or humid.

The connection marked with straight line no. 5 is the electrical connection of dosage pump that operates on 230 V AC voltage while no. 6 is for 12-28V DC powered dosage pump.

10.2 Automatic Venting Hydrolic Installation



Picture 12 General Assembly for Digital Models



Picture 13 General Assembly for Digital PR Models

1) Pumping Line
2) Stroke Line Hose
3) Safety Fuse
4) DC Power Supply
5) AC Power Supply Cable
6) DC Power Supply Cable
7) Priming Hose
8) Suction Line Hose
9) Liquid Leve Sensor Cable
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General assembly of the device should be performed as shown above.
Distance between suction line and pump, placed inside the liquid tank, should be maximum 1,5 meters.
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Device should be placed in a distance that provides ease of use and reading for user's access.
To make your device long lasting and properly operating, assembly site should not be wet or humid.
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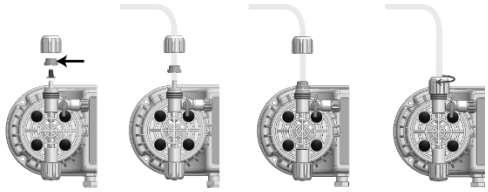
10.3 Attaching Hose to Pump Head



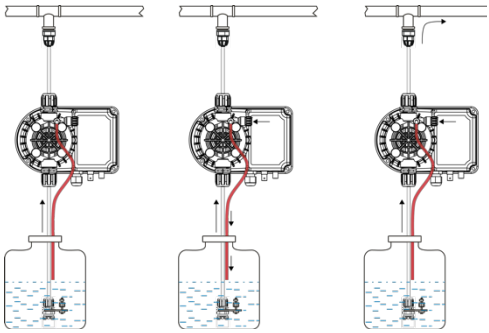
Picture 14 Attaching Hose to Pump Head

Output union (marked with arrow on pump head) should always be on the side of chemical dosing part of the pump head.
Suction union, on the other hand, should be on lower side of the pump.
Remove Union covers.
Remove safety plugs that have been added at production stage.
After passing pipes through union covers, place them on conical tips on unions and tighten the union covers and lock.

CAUTION

Remove red protection plugs before hose connection.

10.4 Priming



Picture15 Priming

Before commissioning the pump, air in the pump head should be bled.

For this, attach the PVC hose that you can find among the accessories to the air bleed union on dosage pump, whose assembly and wiring should be completed beforehand, and then send the output to chemical tank

Loosen the air bleed union.

Start the pump.

Check whether chemical is resupplied to the thank from the hose connected to air bleed union.

Priming is over.

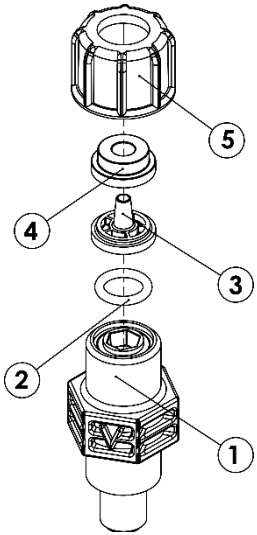
Close tight the priming union.

This cannot be manually done in models equipped with automatic priming feature.

10.5 Check Valve and Ball Stroke Line

WARNING

Stroke line should always be placed on upper part of pump marked with arrow (⬆).
All parts of the stroke line should be attached in the order and direction as shown below.
Your pump will not pump if order or direction of parts is changed.



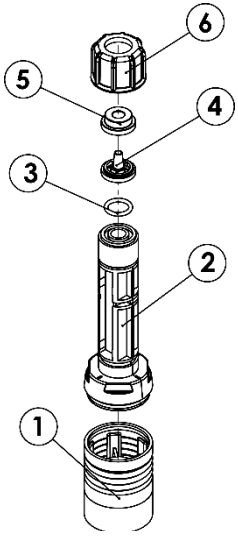
Picture 16 Assembly Order of Check Valve and Ball Stroke Line

No	Description	Unit
1	STROKE BODY 1 PP	1
2	ORING 11,15x2,62	1
3	HOSE TIP 4X6 PP	1
4	HOSE PRESS 4X6 PP	1
5	UNION COVER 2 PP	1

10.6 Suction line

WARNING

Suction line should always be attached to lower part of the pump and dipped into chemical tank
All parts of the suction line should be attached in the order and direction as shown below.
Your pump will not absorb if order or direction of parts is changed.



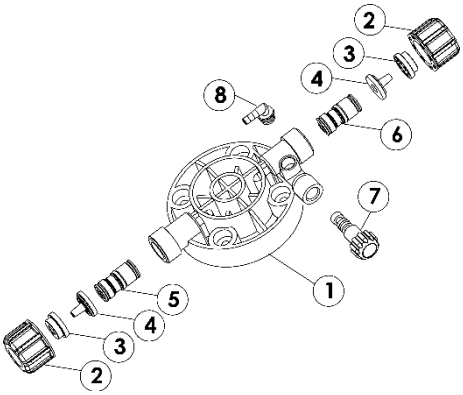
Picture17 Suction Line Assembly Diagram

No	Description	Unit
1	SUCTION FILTER BODY 1 PP	1
2	STROKE BODY 1 PP	1
3	ORING 11x2 VITON	2
4	HOSE TIP 4X6 PP	1
5	HOSE PRESS 4X6 PP	1
6	UNION COVER 2 PP	1

10.7 Head Set 40 - 50

WARNING

All parts of the head set 40 and 50 should be attached in the order and direction as shown below.
Your pump will not release chemical if order or direction of parts is changed.



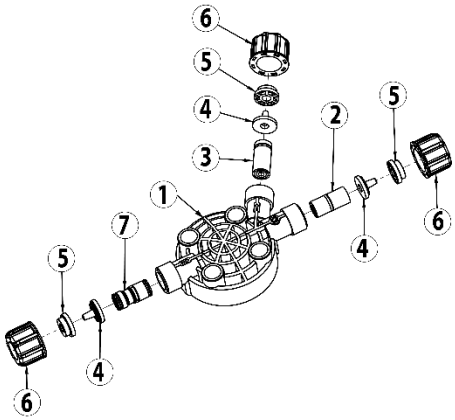
Picture 18 Head Set 40-50 Assembly Order

No	Description	Unit
1	PUMP HEAD	1
2	UNION COVER	2
3	HOSE PRESS	2
4	HOSE END	2
5	CARTRIDGE SET SUCTION	1
6	CARTRIDGE SET STROKE	1
7	PRIMING UNION	1
8	PRIMING HOSE END	1

10.8 Automatic Venting Head Set

WARNING

All parts of the head set 40 and 50 should be attached in the order and direction as shown below.
Your pump will not release chemical if order or direction of parts is changed.



Picture 19 Head Set 40-50 Assembly Order

No	Description	Unit
1	AUTOMATİC VENTİNG PUMP HEAD	1
2	CHECKVALVE SET FOR AUTOMATİC VENTİNG	1
3	CHECKVALVE SET FOR DİSCHARGE	1
4	HOSE END	3
5	HOSE PRESS	3
6	UNION COVER	3
7	CARTRIDGE SET SUCTION	1

11 Operation

Your dosage pump operates with a Teflon (PTFE) diaphragm connected to an electromagnet driven with a direct current. When electromagnet pulls the piston, pressure is generated on pump head and released from dosage liquid output valve in a pressurized manner.

Once electricity pulse is interrupted, a spring brings back the piston and liquid enters through input valve.

Easy to use and no need for pump oiling. Consequently, it's maintenance-free.

Materials in pump body are specially manufactured to protect against toxic and acidic substances.

Pumps have been manufactured in various capacities to operate under max 20 Bar pressure between 0 and 20 lt/hour.

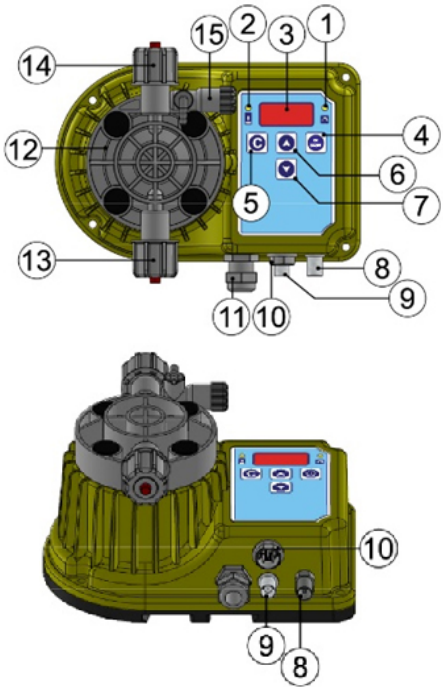
Pump capacities are easily adjustable through capacity control pots on them in analogue models.

11.1 Digital Model Pump Details

You can adjust pump capacities of digital models from the parameters using the buttons on them easily. Parameter settings are given in detail in following pages.

You can mount Liquid Level Sensor to BNC socket if needed. If Liquid Level Sensor has been installed, pump will stop operating once the liquid in the chemical tank is consumed up. If the model has pump alarm output feature, it activates alarm output tips and the warning system.

There is no major difference between analogue and digital models with respect to installation.



Picture 20 Pump Usage Functions

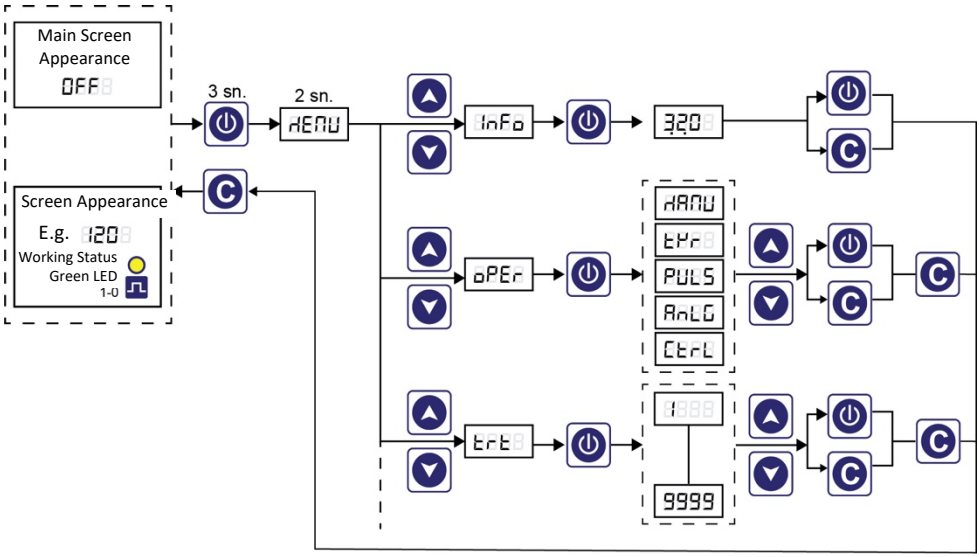
No	Description
1	Stroke Indication LED
2	Liquid Level Indication LED
3	Screen
4	On Off Button / OK Button
5	C (Cancel) Button
6	Up Button
7	Down Button
8	Level Sensor Input1 // Sensor Input*
9	Level Sensor Input2
10	External Cable Connection Socket
11	Power Cable Union
12	Head Set
13	Suction Line Assembly
14	Stroke Line Assembly
15	Priming Union

11.2 LEDS and Their Meanings

Pulse LED	Indicates that pump is powered. If LED is blinking, pump is dosing.
Level LED	Liquid level or flow sensor error indicator. If it is blinking, level is low or there is no flow. Pump will stop dosing.
10% Indication LED	This will light when pump is switched to 10% yield by using % button in LARA AP, APS series.

11.3 Parameter Settings

11.3.1 Parameter Settings General Diagram



Picture 21 Parameter Settings General Diagram

11.3.2 User Interface

11.3.2.1 Menu Enter

Press and hold Enter button more than 3 seconds. Screen will black out for 1 second and then MENU will appear on the screen.
2 seconds later you will see "Info" that is the first step of the menu.

11.3.2.2 Menu Navigation

Use up and down buttons to navigate. Press Enter to process a specific menu step. Use Clear button to exit the Menu.

11.3.2.3 Show

Shows device software details. Use Enter or Clear to exit.

11.3.2.4 Edit

Use up and down buttons to change the value. Press Enter to confirm new values. Use Clear to return previous value and exit.

11.3.2.5 Select

Use up and down buttons to change the selection. Press Enter to confirm new selection. Use Clear to return previous selection and exit.

11.3.2.6 Calibration Function

You will see buffer solvent 1 value for 2 seconds on the screen (e.g. 225 for ORP). Screen will black out for 1 second.
You will see raw sensor value until you press any button or time-out. Press Enter to pass on to next step or press Clear to cancel the calibration. You will see buffer solvent 2 value for 2 seconds on the screen (e.g. 475 for ORP). Screen will black out for 1 second.
You will see raw sensor value until you press any button or time-out. Press Enter to finish calibration or calculate Zero and Span value on Clear button to cancel calibration.
Device will return to main screen.
* Calibration for ORP can be only made with 1st buffer liquid as single point.

11.3.2.7 Reset to Factory Settings

You will see "dFAC" message for 1 second.
Any selection will initiate the process. Select "Yes" or "No" using up and down buttons.
If "Yes" is selected, all device parameters will reset to default settings. If "No" is selected, device will return to menu.

11.3.2.8 Operation Modes

Manual

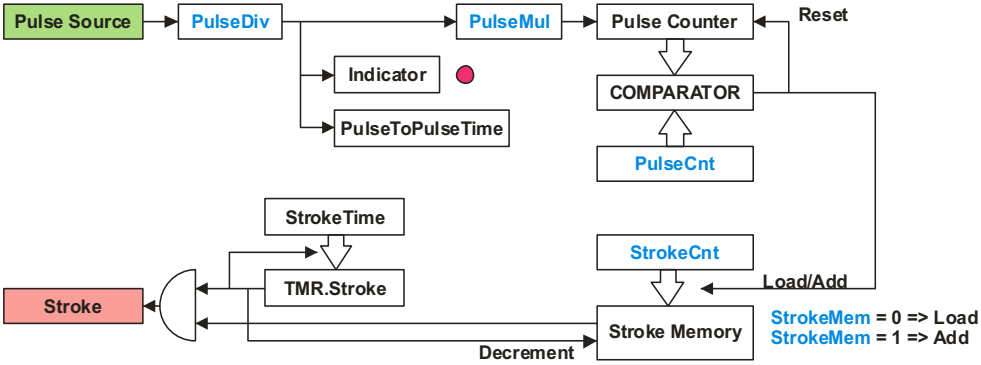
Pump will stroke according to SPM number adjusted with up and down button on main screen. SPM number can be limited using “StrokeValLimLo” and “StrokeValLimHi” parameters. SPM can be directly changed.

Timer

Pump will stroke according to SPM number adjusted with up and down button in main screen however it will be bound to the time adjusted with "TM_RunTime” and “TM_StopTime" parameters.
You can select operation time unit with "TM_RunUnit" parameter and stopping time unit with "TMStopUnit" parameter.

Pulse

Pump will stroke according to pulse input.



EqSpc = 0 => StrokeTime = 60000 / StrokeVal
EqSpc = 1 => StrokeTime = PulseToPulseTime * PulseCnt / PulseMul / StrokeMemory

Picture 22 Operation Modes Table

Divide input pulse with “PM_PulseDiv” parameter to increase pulse counter and multiply with “PM_PulseMul” parameter. When pulse counter is equal to “PM_PulseCnt” parameter, pulse counter will be reset.
If “PM_StrokeMem” is active, “PM_StrokeCnt” value will be added to stroke memory, whereas if “PM_StrokeMem” is passive, “PM_StrokeCnt” value will be added to stroke memory.
If "PM_EqSpc” is active, pump will calculate time from pulse to pulse and automatically adjust the duration from stroke to stroke.

Analogue

Pump will stroke according to 4-20mA analogue input. The % stroke rate for 4 mA can be adjusted from “AM_Set4mAStrokeRate” parameter while % stroke rate for 20 mA can be adjusted from “AM_Set20mAStrokeRate” parameter.
SPM number can be limited using “StrokeValLimLo” and “StrokeValLimHi” parameters.

Control

Pump will stroke according to sensor input.

Control mode low set point value is adjusted from “CM_SetLow” parameter while stroke rate for low set point is adjusted from “CM_SetLowStrokeRate” parameter. Moreover, high set point value is adjusted from “CM_SetHigh” parameter while high set point is adjusted from “CM_SetHighStrokeRate” parameter.

"CM_StartupDelay" parameter is used to make sensor values to stop for a while when the device is powered.

"MeasSensorType" is used to select "pH" or "ORP" sensor.

"MeasCalType" is used to select "Single Point" or "Double Point" calibration type. Buffer solution values can be adjusted from "MeasCalBuf1" and "MeasCalBuf2".

SPM number can be limited using “StrokeValLimLo” and “StrokeValLimHi” parameters.

11.3.2.9 Level

Use "LevelFlowSensType1,2,3" to adjust level sensor types.

You cannot use Level/Flow 2 in PR models.

Level/Flow2 input uses pulse input on MIC connector.

You cannot use "LevelFlowSensType3" in pulse mode.

	D series	PR series	PR series (Pulse Mode)
Level/Flow 1	BNC connector	BNC connector	BNC connector
Level/Flow 2	BNC connector	X	X
Level/Flow 3	MIC connector	MIC connector	X

11.3.2.10 Priming

If you press "C" button for more than 2 seconds in main screen, pump will stroke at highest speed to prime. This will last as long as the time stated in "PrimingTime". Press "C" again to stop priming.

11.3.2.11 Factory Settings

Use this to reset all parameters to factory settings.

11.3.2.12 Password Reset

Press and hold "C" and "Down" button for more than 20 seconds while the pump is not operational. When you see "rPAS" message, press Enter to cancel the password.

11.3.3 Parameter List

No	Screen	See	Parameter Name	Description	Process	Detail	Default	Min	Max
1	Info	0	Info	Software Version	Show				
2	OPER	0	OperatingMode	Operating Mode	Select	MANU: Manual Tmr : Timer PULS: Pulse AnIG: Analogue Ctrl: Control *	Manual		
3	TRT	1	TM_RunTime	Timer Mode Operation Time	Edit		60	1	9999
4	TRU	1	TM_RunUnit	Timer Mode Operation Time Unit	Select	Sec : Second min : Minute	Minute		
5	TST	1	TM_StopTime	Timer Mode Stopping Time	Edit		60	1	9999
6	TSU	1	TM_StopUnit	Timer Mode Stopping Time Unit	Select	Sec : Second min : Minute	Minute		
7	PDIV	2	PM_PulseDiv	Pulse Mode Pulse Divider	Edit		1	1	9999
8	PMUL	2	PM_PulseMul	Pulse Mode Pulse Multiplier	Edit		1	1	100
9	PCNT	2	PM_PulseCnt	Pulse Mode Pulse Number	Edit		1	1	999
10	PSTC	2	PM_StrokeCnt	Pulse Mode Stroke Number	Edit		10	1	999
11	PSTM	2	PM_StrokeMem	Pulse Mode Stroke Memory	Select	disA: Passive EnAb: Active	Disabled		
12	PEQS	2	PM_EqSpc	Pulse Mode Equal Interval	Select	disA: Passive EnAb: Active	Disabled		
13	AN 4	3	AM_Set4mA StrokeRate	Analogue Mode 4mA Stroke Rate	Edit	%	0	0	100
14	AN20	3	AM_Set20mA StrokeRate	Analogue Mode 20mA Stroke Rate	Edit	%	100	0	100
15	CSL	4*	CM_SetL	Control Mode Low Set	Edit		500	0	CM_ Set High
16	CSH	4*	CM_SetH	Control Mode High Set	Edit		700	CM_ Set Low	2000
17	CSLR	4*	CM_SetLow StrokeRate	Control Mode Low Set Stroke Rate	Edit	%	0	0	100
18	CSHR	4*	CM_SetHigh StrokeRate	Control Mode High Set Stroke Rate	Edit	%	100	0	100

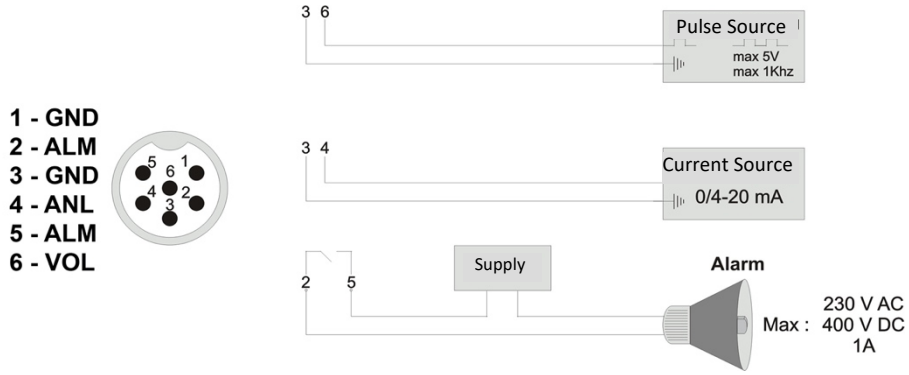
19	CSDL	4*	CM_Startup Delay	Control Mode Start Delay	Edit	Minute	5	0	3600
20	STYP	4*	MeasSensor Type	Sensor type	Select	pH : pH Sensor orp : ORP Sensor	ORP		
21	CTYP	4*	MeasCalType	Calibration Type	Select	SnGl : Single Point Dual : Double Point	Dual Point		
22	BUF1	4*	MeasCalBuf1	Buffer Solution 1 Value	Edit		225	0	2000
23	BUF2	4*	MeasCalBuf2	Buffer Solution 2 Value	Edit		475	0	2000
24	SCAL	4*	Calibration	Sensor Calibration Function	Function	Sensor Calibration			
25	SLL		StrokeValLimLo	SPM Minimum Limit	Edit		0.0	0.0	Max SPM
26	SLH		StrokeValLimHi	SPM Maximum Limit	Edit		Max SPM	0.0	Max SPM
27	LFIT		LevelFlowSensType1	1st Level / Flow Sensor Type	Select	Pas : Passive no : Normally Open nc: Normally Closed Puls: Pulse Type	No		
28	LF2T		LevelFlowSensType2	2nd Level / Flow Sensor Type	Select		No		
29	LF3T		LevelFlowSensType3	3rd Level / Flow Sensor Type	Select		No		
30	PRIT		PrimingTime	Priming time	Edit	Second	30	0	600
31	FACT		Factory Default	Reset to Factory Settings	Function	Reset all parameters to factory settings			
32	PASS		Password	User Password	Edit		0	0	9999

SPM :Stroke per Minute

Numbers in "see" column show in which mode the relevant parameters will be shown. In other modes, such parameters will be hidden. (:1:Timer, 2:Pulse, 3:Analogue, 4:Control)

*: Only for PR model pumps.

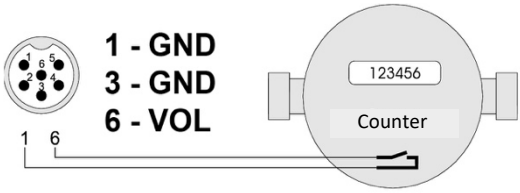
11.4 External Connection Socket Detail



Picture 23 External Connection Socket Detail

11.5 Counter Connection in Volumetric Models

Counter connection in volumetric models should be as follows.



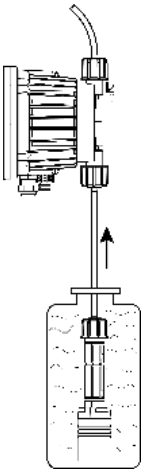
Picture 24 Counter Connection in Volumetric Models

12 Service

WARNING

Disconnect the power before any service action on the device.
Use 5x20 mm mini cartridge fuse.
If there is a failure in power cable, have it replaced by authorized service.

12.1 Maintenance



Picture 25 Pump Maintenance

Before deactivating the device at the end of the season;
Dismantle stroke line pipe from pumping line.
Remove the suction pipe from liquid tank with the drain and place into clean water.
Operate the pump for 5-10 minutes.

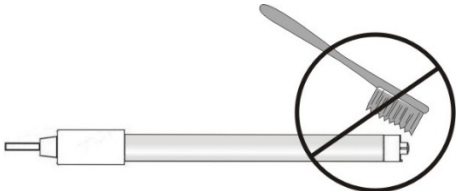
If the cleaning has not been made before deactivating the device at the end of season while using sodium hypochlorite, there might be a solid calcium layer on surfaces of the pump that contacts the chemical.

To clean;
Dismantle stroke line pipe from pumping line.
Remove the suction pipe from liquid tank with the drain and place into clean water.
Operate the pump for 5-10 minutes.
Turn off the pump and dip the filter into hydrochloric acid and wait until acid cleans it.
Restart the pump and operate it for 5 minutes while keeping the suction filter and pumping union in the same tank.
Repeat the process with water.
Reconnect the pump

CAUTION

Check the liquid level in chemical tank periodically so that you are not running the pump without dosage liquid.
Check pump operation with at least 5 hours intervals.
Hydraulic parts should be cleaned periodically however it depends on application type how frequently.

- **Electrode Maintenance**



Picture 26 Electrode Maintenance

- Use soft cloth when cleaning the electrode. Do not use brush or similar hard materials.
- Please keep the electrode inside electrode protection liquid when not in use. Do not leave it dry.

Cleaning with sodium hypochlorite (most frequent):
Dismantle stroke line pipe from pumping line.
Remove the suction pipe from liquid tank with the drain and place into clean water.
Operate the pump for 5-10 minutes.
Turn off the pump and dip the filter into hydrochloric acid and wait until acid cleans it.
Restart the pump and operate it for 5 minutes while keeping the suction filter and pumping union in the same tank.
Repeat the process with water.
Reconnect the pump

13 Malfunction Cases

13.1 Mechanical Malfunctions

If the system is fully silent, probably there is an electrical or electronic failure rather than a mechanical one.

If there is a loss in dosage liquid in fixed interval, then the union covers might be loose or pumping line pipe might be cracked or there might be cracks in diaphragm (although quite rate) or 4 screws holding the pump head might be loose.

If there is air formation when pump is not in use, then check all check valves in the system and replace if necessary.

13.2 Electrical Malfunctions

If LEDS do not light

Check power cable.

Make sure that only authorized staff or service intervenes in all malfunctions in the power cable.

Key should be on.

If your pump is operated on AC power supply, electrical values will be as follows;

AC 230V 50-60Hz

Check pump fuse. If it is faulty and if your pump is on AC voltage, replace it with 2A cartridge fuse. If the new fuse is also blowing, contact the pump dealer.

CAUTION

Selection of Fuse Based on Supply Voltage

12-28V DC	10A 5x20 cartridge fuse
230 V AC	2A 5x20 cartridge fuse

CAUTION

If the problem is none of those or if there is a different problem, contact the pump dealer

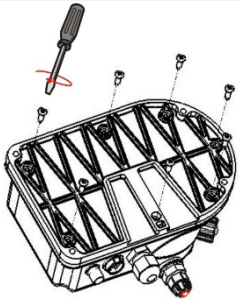
13.3 Replacing the Fuse

WARNING

Disconnect the power before any service action on the device.

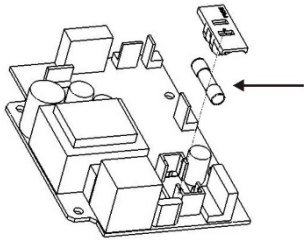
WARNING

Use 2A cartridge fuse in AC Dosage pumps.
Use 10A cartridge fuse in DC Dosage pumps.



Picture 27 Replacing the fuse

Remove the screws on the back cover with appropriate screwdriver to replace the pump fuse.



Replace the cartridge fuse on the electronic card with the new one.

Make sure that electronic card is not damaged. Your pump will not operate if electronic card is damaged.

Failures due to user's fault on the electronic card are not covered by the guarantee.

Then close the pump back cover.

13.4 Alarm Cases

1	ERRF	FlashWriteError	Flash writing error
2	ELF1	LevelFlow1	Level low or no flow
3	ELF2	LevelFlow2	Level low or no flow
4	ELF3	LevelFlow3	Level low or no flow
5	EOSL	MeasRawOverRangeLow	Measured raw value is very low (possible sensor fault)
6	EOSH	MeasRawOverRangeHigh	Measured raw value is very high (possible sensor fault)
7	EORL	MeasValOverRangeLow	Measured value is very low (possible sensor or calibration fault)
8	EORH	MeasValOverRangeLow	Measured value is very high (possible sensor or calibration fault)
9	ESUL	SupplyVoltageLow	Supply Voltage Low
10	ESUH	SupplyVoltageHigh	Supply Voltage High

Digital Level Controlled Models

A) If there is no image on screen:
   a) Check power cable.
   b) Make sure that electricity values are AC 220V 50-60Hz.

B) If LED is blinking:
   a) There is no liquid left in liquid tank.
   b) Liquid level sensor may not be fully submerged in liquid tank.
   c) Cable of liquid level sensor might be faulty or broken.

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_3COOH	2	1	1	1	1	3	1	1	3	1	3	1	3	1
Aluminium 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 :Good 3 :Non-Resistant

15 Model List / Flow Pressure Graphic

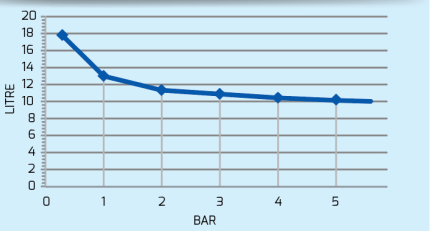
15.1 Model List

MODEL	Max /Lt	Max /P	Stroke /min	ml/ Stroke	Supply Voltage	Watt	Product Weight	Body	Max Ambient Temperature	Max Chemical Temperature
	Lt/h	Bar	Stroke	ml	Volt	W	kg	IP	°C	°C
LARA DS LARA DMS LARA PR	2	10	120	0,278	12-28VDC	25	2,1	65	0-45	0-40
	2	10	150	0,222	230V AC	17				
	5	7		0,555						
	5	5	120	0,694	12-28VDC	25				
	10	5	150	1,111	230V AC	17				
	2	20		0,222						
LARA DS-0 LARA DMS-0 LARA PR-0	2,5	10	120	0,347	12-28VDC	25				
	2	20	150	0,222	230V AC	17				

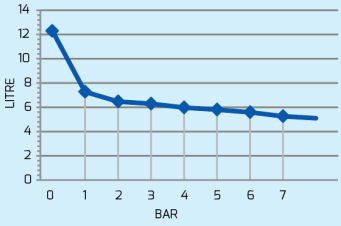
15.2 Flow Pressure Graphic

15.2.1 Manual Venting Flow Pressure Graphic

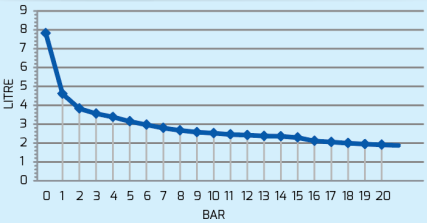
LARA 10L/5B



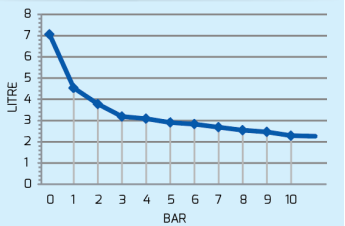
LARA 5L/7B



LARA 2L/20B

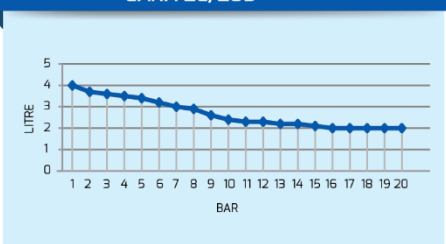


LARA 2L/10B

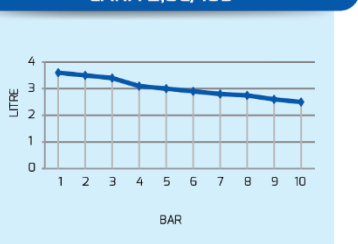


15.2.2 Automatic Venting Flow Pressure Graphic

LARA 2L/20B



LARA 2,5L/10B



16 Warranty / Standards

16.1 Warranty

Dosage Pump is under warranty for 2 years against damages arising from material and manufacturing faults according to legal regulations.
Damages arising from normal wear, overloading or undue usage are not covered by warranty.
Damages from material or manufacturing faults shall be compensated by repairing or replacing faulty part or the device completely.
Claims of warranty shall be accepted only if device is returned to the supplier or authorized service in full shape **without disassembly**.

CAUTION

Warranty Certificate should be filled and approved by the dealer where you buy the device. Please have the certificate stamped by the dealer and keep it.

16.2 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