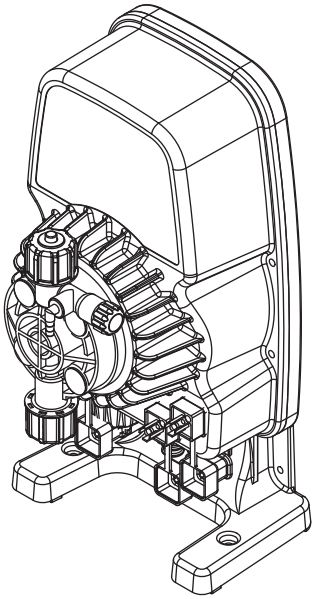
DIGITAL DOSING PUMP USER MANUAL



KK_DP_012_R9

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.

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 grave injury.
Measures to be taken to prevent such danger.

Warning!
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.

Caution!
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
Causing damage to the product or individuals.
Measures to be taken to prevent such danger.

Note!
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.

Information!
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 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!
Dosage pumps and accessories can only be mounted, operated and maintained by staff with sufficient qualifications. Incompetence will increase risk of accident.
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 2.2. User's Competence Page 5)

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 dosage pump against the user's manual and in an inconsistent way with the section titled "appropriate and desired use" especially with regards to safety.

When persons use incompetent products to perform relevant activities (See 2.2. User's Competence Page 5).

When unauthorized changes are made on the device by the user,

When user chooses a different dosage media than the one stated in the order.

Users should not prefer dosage liquid that is in a changed concentration, density, temperature, etc. against the manufacturer's conditions.

4.2 Purpose of production

NOVA Digital dosage pump has been designed for the following purpose:
Handling and dosage of liquids.

4.3 Device revision

This user's manual applies to following devices.

Devices	Software
Nova Digital Dosage Pump	1.07.899

4.4 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 6. Technical Data page 11).
- 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.

4.5 Prohibited dosage media

Product should not be used for following materials and ingredients:

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

4.6 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:

4.6.1 Wrong assembly

Wrong or loose screwing.

4.6.2 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.

4.6.3 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.

4.6.4 Erroneous commissioning

Commissioning with damaged facility

Shut-off valve closed to circuit

Closed suction or pressure line, (e.g. due to clogging)

Staff not experienced with the device

(See 2.2. User's Competence Page 5).

Insufficient protective equipment

4.6.5 Erroneous operation

Auxiliary equipment not working properly or fall apart
Unauthorized replacement of dosage pump
Negligence of operational faults
Elimination of operational faults by unauthorized staff without necessary competencies
(See 2.2. User's Competence Page 5).
Turning off the external fuse

4.6.6 Wrong maintenance

Performing maintenance on a running dosage pump

Performance of activities not described in the user's manual or insufficient or irregular control for correct operation

Inability to replace damaged pieces or cables due to insufficient insulation

Absence of any precaution against accidental commissioning during maintenance

Use of cleaning substances that might cause reaction with dosage media

Use of inappropriate cleaning equipment with wrong spare parts or lubricants

Installing spare parts without following the instructions in user's manual

Confusing sensor lines while reconnecting all lines

Failure to renew gaskets (damage in all gaskets or failure to remove them)

Negligence of safety data forms and insufficient protective equipment

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.)
Suitable for the dosage of abrasive and toxic liquid chemicals
Manual mode, automatic mode, analogue input, counter input, package mode, etc. 2x16 display
6 different menu and function buttons
English - Turkish language options
Real time clock
Wall and ground assembly option
Calibration

5.2 5.2 Scope of delivery

Please compare the delivery note with the scope of delivery. Following items are covered by delivery scope: Dosage Pump
Suction Line Set
Stroke Line Set
Hose Set (Suction Line, Stroke Line and for priming) Pump Assembly Stand
User's Manual

6 Technical Data

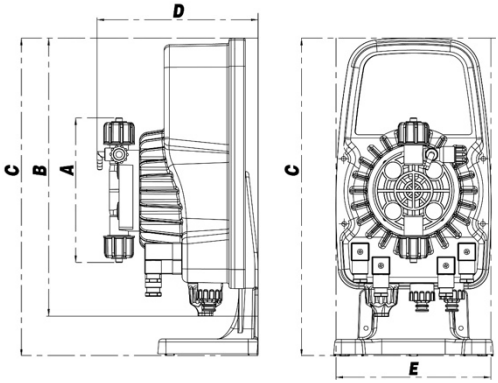
6.1 Model List

DP NOVA Model	Max /Lt	Max /P	Stroke /min	Ml /Stroke	Supply Voltage	Watt	Weight	Body	Max Ambient Temperature	Max Chemical Temperature	Diaphragm diameter
	Lt/h	Bar	Stroke	ml	Volt	W	kg	IP	°C	°C	Diaphragm Ø
D DMPR DMiA	12	4	150	1.333	12-28 V DC	38	4.1	65	0-45	0-40	65.5
	4	7	150	0.444		16					43.5
	3.5	20	150	0.388	95-260VAC 50-60Hz	15					43.5
	10	10	300	0.555		25					43.5
	25	5	300	1.388		27					65.5
DMPR-O	4	7	150	0,444	12-28 V DC	16					43,5
D-O	3,5	20	150	0,388	95-260VAC 50-60Hz	15					43,5

6.2 Additional Electrical Data

Alarm Relay	250VAC 5A / 30VDC 5A	
Fuse Value	In AC Models	In DC Models
	3A Fast Acting 5x20mm Cartridge Fuse	10A Fast Acting 5x20mm Cartridge Fuse

7 Dimensions



Picture1 Pump size for 40"head

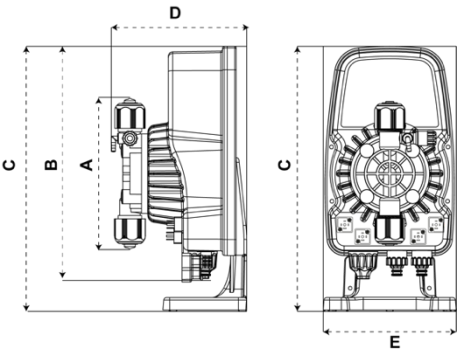
7.1 Pump size for 40" head

A : 136 mm **D** : 141 mm

B : 261 mm **E** : 146 mm

C : 300 mm

* Head set sizes may vary depending on pump capacity data. Capacity data: (See 6. Technical Data page 11).



Şekil 2 Pump size for 70" head

7.2 Pump size for 70" head

A : 170 mm D : 141 mm

B : 261 mm E : 146 mm

C : 300 mm

8 Installation

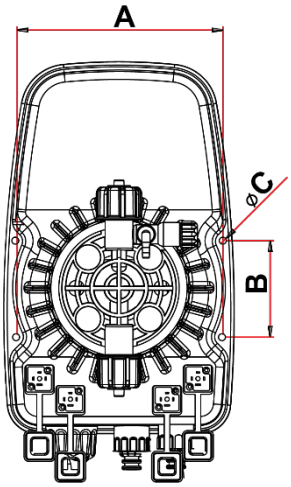
8.1 Pump Assembly Hole Dimensions

Dosage pump assembly holes are shown in following pictures.

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.

8.1.1 Pump Body Assembly Hole Dimensions

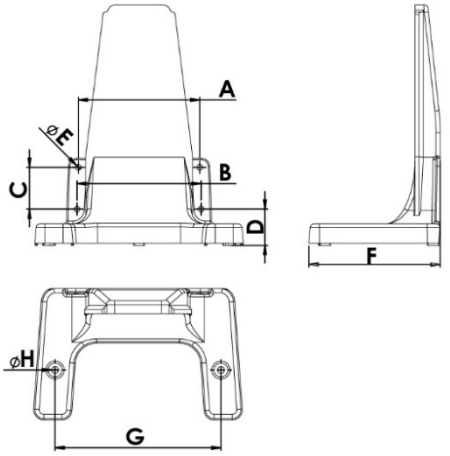


Picture3 Pump Body Assembly Hole Dimensions

Dimensions/mm

A	130 mm
B	61 mm
C	4,40 mm

8.1.2 Pump Stand Assembly Hole Dimensions



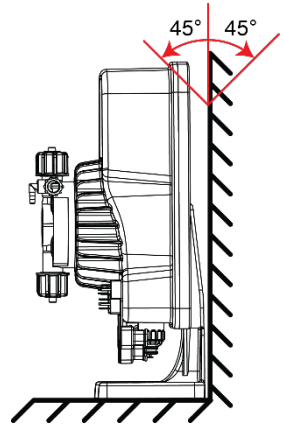
Picture4 Pump Stand Assembly Hole Dimensions

Dimensions/mm

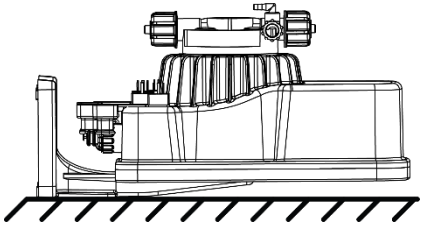
A	87 mm	E	4 mm
B	89 mm	F	94 mm
C	30 mm	G	119 mm
D	26 mm	H	5 mm

8.2 Pump Assembly Position

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



Picture5 Pump Correct Assembly Position

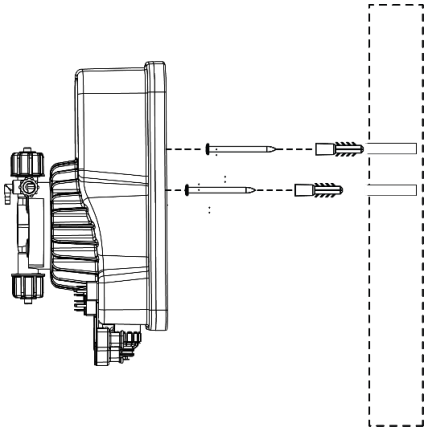


Picture6 Pump Wrong Assembly Position

Correct assembly

Wrong Assembly

8.3 Assembly to Wall or Plastic Panel



Picture7 Wall Assembly

Use the hole template in accordance with your pump's model to fix it to a wall

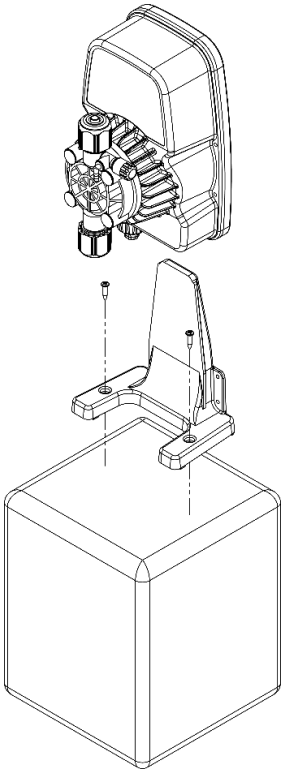
For Hole Sizes, See Page 15.

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.



Picture8 Plastic Panel Assembly

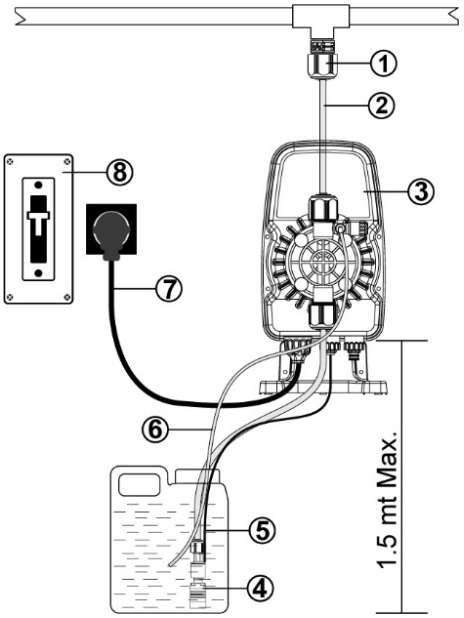
For Stand Assembly:

To assemble the device with pump assembly stand, fix the SCREW M4,2X19 YSB CHROMIUM PLATE as shown here.

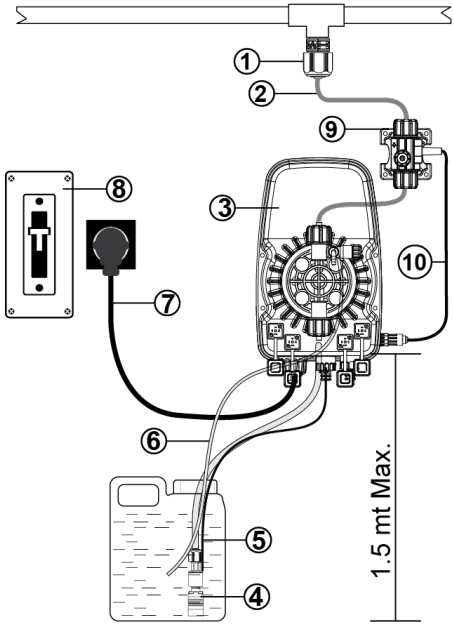
For Pump Assembly Stand hole sizes

See 8.1.2. Pump Assembly Stand hole sizes page 13

8.4 General Assembly of the Device



Picture9 General Assembly of the Device



1- Stroke Line
2- Stroke line hose
3- Dosage pump
4- Suction line
5- Liquid level sensor
6- Priming release hose
7- Power cable
8- Electricity safety panel
9- DP Stroke Sensor *
10- DP Stroke Sensor Cable*

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.

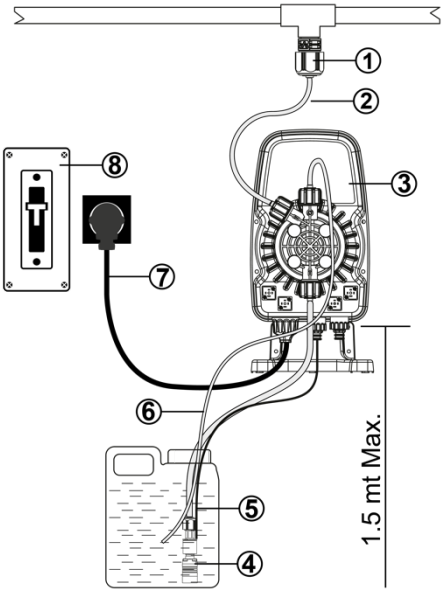
Electrical connection should be in such a distance not to be affected by liquid or chemicals.

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.

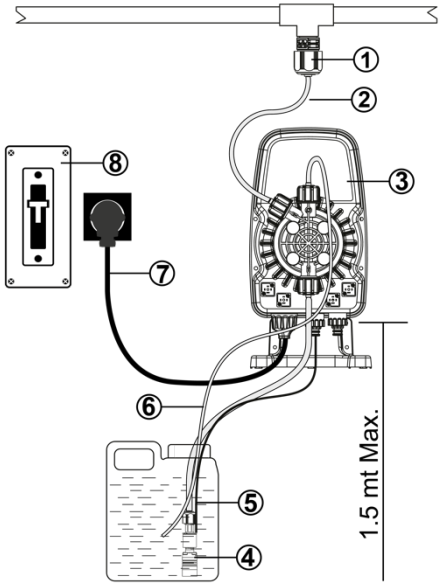
Pump capacities in digital models
can be easily adjusted
using the buttons. Parameter settings
are given in detail in following pages.

8.5 General Assembly of the Device



Picture10 General Assembly of the Device

1- Stroke Line
2- Stroke line hose
3- Dosage pump
4- Suction line
5- Liquid level sensor
6- Priming release hose
7- Power cable
8- Electricity safety panel
9- DP Stroke Sensor*
10- DP Stroke Sensor Cable*



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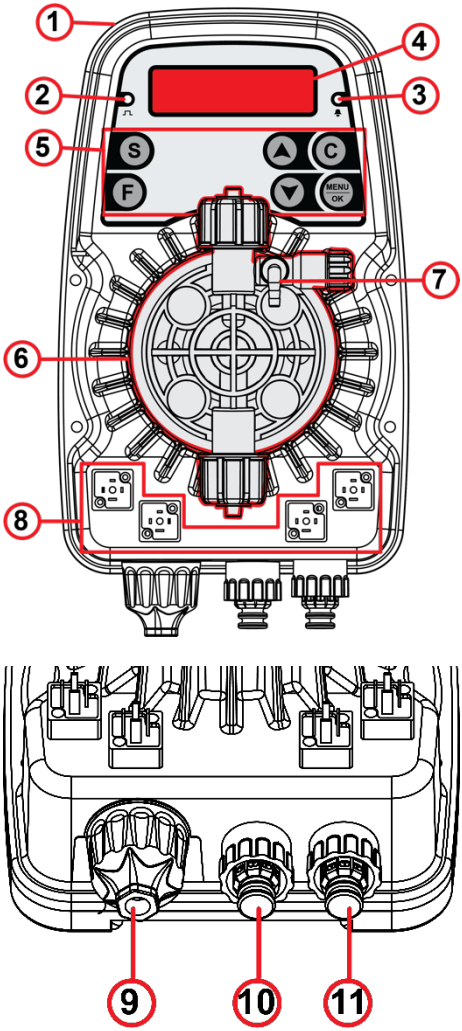
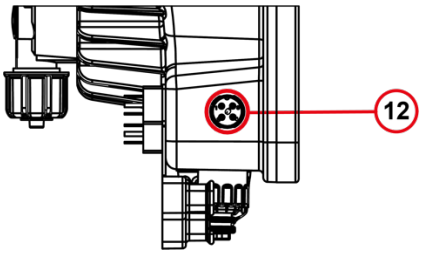




Picture11 Pump Functions

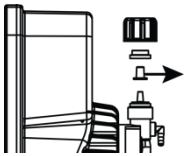
No	Description
1	Pump Body
2	Operating Indicator
3	Alarm Indicator
4	Digital Screen
5	Buttons
6	Pump Head
7	Priming
8	Connection Socket Inputs
9	AC - DC Power Input
10	Etk. Sen. Input Level L1
11*	Etk. Sen. Input Level L2 (for models D) Etk Sen. Input Sensor (for models DMPR - DMIA
12	Mic Connector Slot

*Varies depending on pump models.

9 Hydraulic Installation

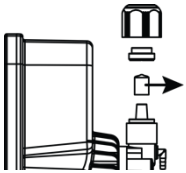
9.1 Attaching Hose to Pump Head

Attaching Hose to 40" Head

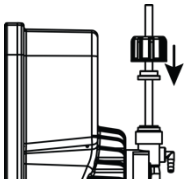


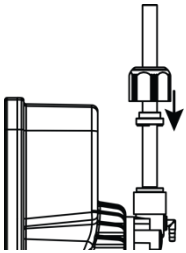
Picture12 Attaching Hose to 40" Head

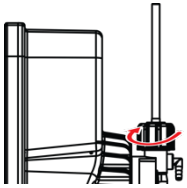
Attaching Hose to 70" Head

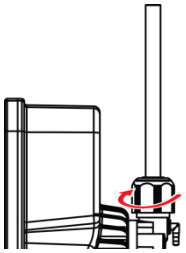


Picture13 Attaching Hose to 70" Head









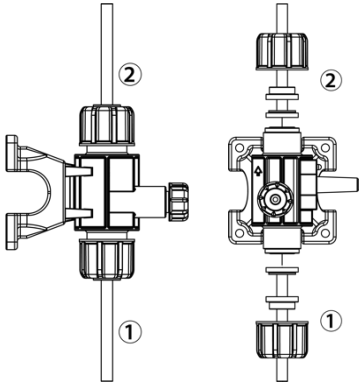
Remove Union covers.

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.

Connect the hose coming out of the discharge line of the dosing pump to the suction line of the DP Stroke Sensor.

9.2 Attaching the Stroke Sensor Hose



Remove the gland caps.

Connect the hose coming out of the discharge line of the dosing pump to the suction line of the DP Stroke Sensor.

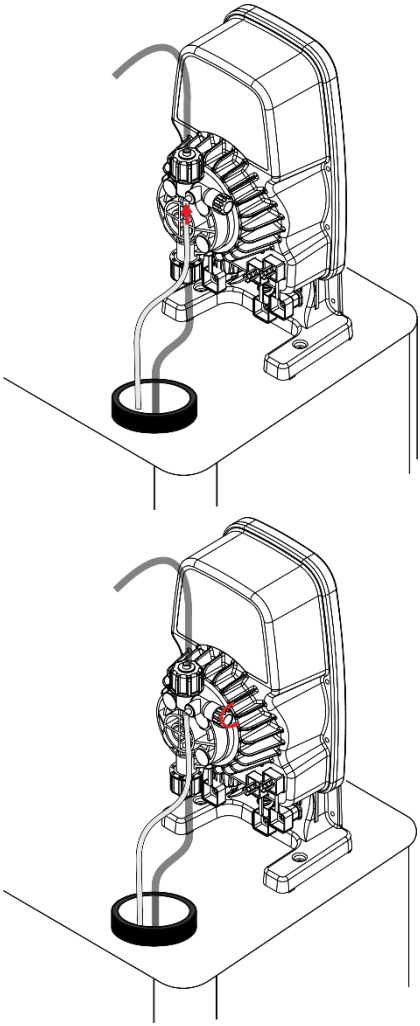
The hose coming from the pump discharge to the inlet no. 1 in the image should be connected in the order shown in the figure.

Output no. 2 in the image must be connected to the discharge line attached to the system in the order shown in the figure.

For stroke sensor settings, see: 12.2.4

See: 12.2.7

9.2.1 Priming



Picture14 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 can not be manually done in models equipped with automatic priming feature.

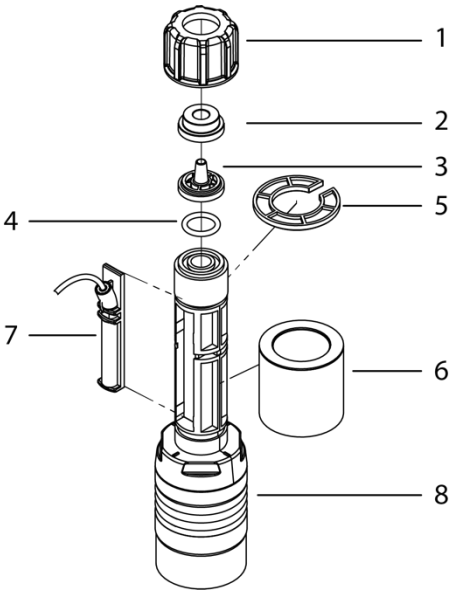
9.3 Suction Line Assembly

NOTE

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.



Picture15 Suction Line Assembly Diagram

No	Description	Unit
1	Union Cover 2 3/4	1
2	Hose End 9x12	1
3	Hose Press 9x12	1
4	Oring 11x2 Viton	1
5	Plastic Snap Ring	1
6	Sensor Body	1
7	Sensor	1
8	Suction Body	1

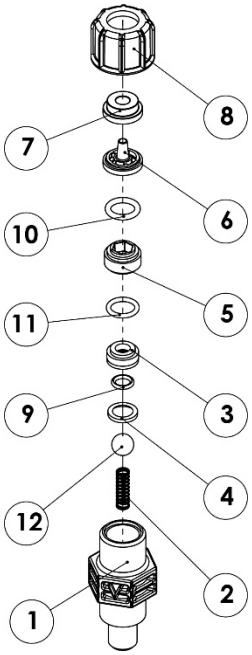
9.4 Stroke Line Assembly

NOTE

Stroke line should always be attached between pump's outlet union and pressurized line.

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.



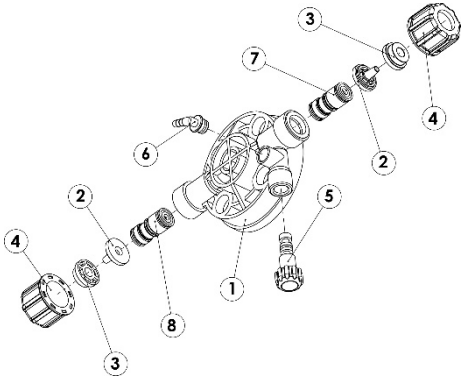
Picture16 Stroke Line Assembly Diagram

No	Description	Unit
1	STROKE BODY 1 PP	1
2	STROKE SPRING	1
3	BALL HOUSING BODY PVDF	1
4	BALL HOUSING SHIM PVDF	1
5	BALL HOUSING COVER PP	1
6	HOSE TIP 4X6 PP	1
7	HOSE PRESS 4X6 PP	1
8	UNION COVER 2 PP	1
9	ORING 6,75x1,78 VITON	1
10	ORING 11x2,5 VITON	1
11	ORING 11x2 VITON	1
12	BALL 10MM CERAMIC	1

9.5 Head Set Assembly

	NOTE
All parts of the head set 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.	

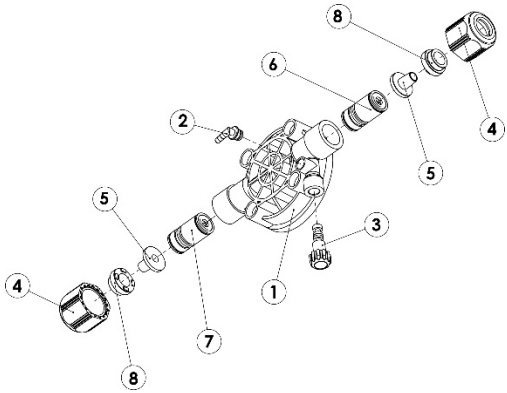
9.5.1 40" Head Set Assembly



Picture17 40" Head Set Assembly Diagram

No	Description	Unit
1	PUMP HEAD 40 PVDF	1
2	HOSE TIP 4X6 PVDF	2
3	HOSE PRESS 4X6 PVDF	2
4	UNION COVER 2 PVDF	2
5	UNION PRIMING 2 PVDF	1
6	PRIMING TIP PVDF	1
7	CARTRIDGE SET STROKE	1
8	CARTRIDGE SET SUCTION	1

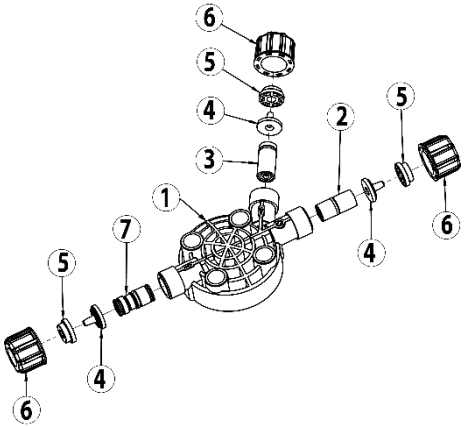
9.5.2 70" Head Set Assembly



Picture18 70" Head Set Assembly Diagram

No	Description	Unit
1	PUMP HEAD 70 PVDF	1
2	PRIMING TIP PVDF	1
3	UNION PRIMING 2 PVDF	1
4	UNION COVER 3/4 16MM PVDF	2
5	HOSE TIP 9X12 PVDF	2
6	CARTRIDGE SET STROKE	1
7	CARTRIDGE SET SUCTION	1
8	HOSE PRESS 9X12 PVDF	2

9.5.3 70" Head Set Assembly



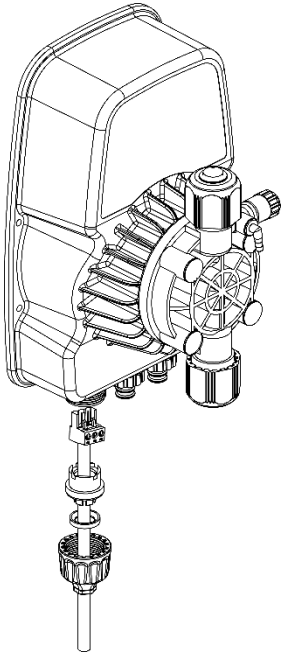
Picture19 70" Head Set Assembly Diagram

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

10 Electrical Installation

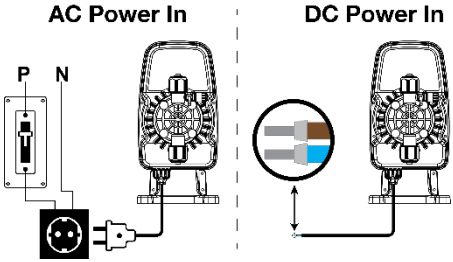
10.1 Principles

There is a wide power supply unit with 95 - 265 V AC 50/60 Hz in AC models and 12-28V DC in DC models in dosage pump.
Electrical wiring is in compliance with local regulations.
AC model dosage pump should be plugged into a grounded power outlet.
Dosage pump should be electrically locked to avoid dosage errors at the end of the operation.
Dosage pump should not be started by turning on or off the mains voltage.
pulse cables should not be installed in parallel to high voltage current lines or mains cables. You should direct feeding and pulse lines to different channels. You need 90° angle in line passage.
AC and DC connection input is given in the next diagram.



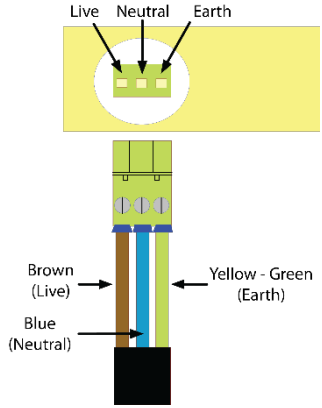
Picture20 Pump Power Input

10.1.1 Pump Connection Diagram



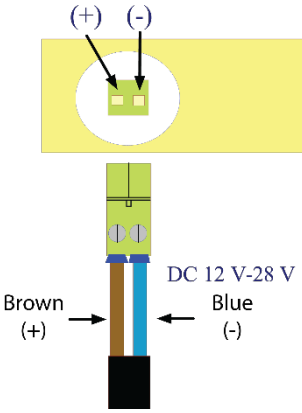
Picture21 Pump Power Connection

10.1.2 AC Input Connection



Picture22 AC Input Connection Diagram

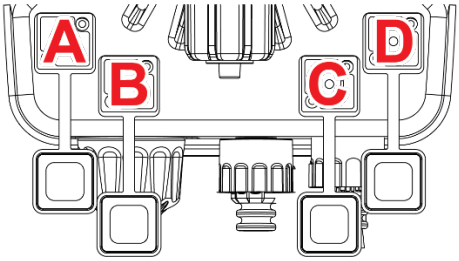
10.1.3 DC Input Connection



Picture23 Cable Color and DC Input Connection

10.2 Description of Connection Sockets

10.2.1 Socket Inputs



Picture24 Socket Inputs

10.2.2 Connection socket A

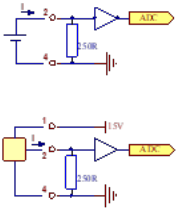
Used for 0-20mA analogue input and 4-20mA Analogue output.

4/20mA Input

Analogue output of an external source can be directly connected to the device.

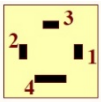
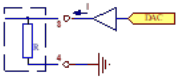
A 4-20mA sensor can be directly connected to the device with 24V from an internal source.

Maximum 30mA current can be supplied from an internal source.

Pin	Socket No	Assignment	Connection	Cable Color
1		24V		White Red
2		AN IN		Green
3				Yellow
4		iGND		Brown Black

4/20mA Output

4-20mA output is used for transferring sensor measurement data to another device when device is in control mode.

Pin	Socket No	Assignment	Connection	Cable Color
1				White -Red
2				Green
3		AN OUT		Yellow
4		iGND		Brown Color -Black

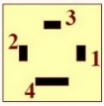
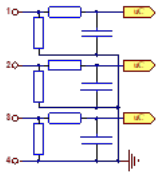
10.2.3 Connection socket B

Used as water level key input, Meter input and Flow key input.

LEVEL: Used for perceiving water tank level.

METER: Used as water meter, flow meter, pulse ratio.

FLOW: Used for perceiving flow. Can be used to check whether there is flow in sample line or not.

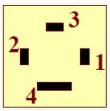
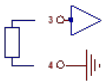
Pin	Socket No	Assignment	Connection	Cable Color
1		LEVEL		White -Red
2		METER		Green
3		FLOW		Yellow
4		iGND		Brown -Black

Connection socket B

10.2.4 Connection Socket C

Used for Alarm Relay output & Pt100 temperature input.
Alarm relay gives dry contact output in alarm.

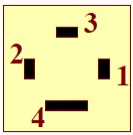
Pt100 temperature sensor is used for temperature compensation during pH measurement.

Pin	Socket No	Assignment	Connection	Cable Color
1		RLYa		White -Red
2		RLYb		Green
3		Pt100		Yellow
4		iGND		Brown -Black

Connection Socket C

10.2.5 Connection socket D

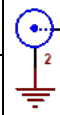
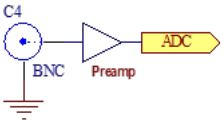
RS485(MODBUS) is used for communication.
Only available in devices with communication option.

Pin	Socket No	Assignment	Connection
1		A(+)	White -Red
2		B(-)	Green
3		-	-
4		iGND	Brown -Black

Connection socket D

10.2.6 Connection socket SENSOR

Used for pH / ORP / oFCL sensors.

Pin	Socket No	Assignment	Connection
1		pH / ORP / oFCL	
2		iGND	

11 Operation

11.1 Buttons

Icon	Description	Duty
S	Mode	Stop, Start
F	Function	Alternative indicators, Step, Tab, Step change,
▲	Up	Increase, Trigger, Process Stop
▼	Down	Reduce
C	Clean	Cancel, Priming, Process cancel
MENU / OK	Enter	Menu Enter, Confirm

11.1.1 Indicators

Indicator	Description	Color
Operating Indicator	Marks that pump is powered, Blinks when pump strokes	Green
Alarm Indicator	Blinks in case of any alarm	Red

11.2 Screen

2x16 back-lit character LCD
Lighting setting can be changed from menu.
Used for viewing pump operating status and adjusting the pump.

Picture25 Screen Functions
1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.
5,6: Varies depending on operating and sub-operating modes.

11.3 Menu

INFO
Alarm List
Device Info
CONFIGURATION
Language
Set Date
Set Time
LCD Backlight
Capacity Unit
Priming Time
WtrLvlSensType
FlowSensType
StrokeFeedback
Reset to Fact.
Limit Counter
Reset Counter
Limit Set
MB RTU Address
MB Baud Rate
CALIBRATION
Capacity Cal.
Sensor Cal
Sens Cal Type
Sens Cal Buf 1
Sens Cal Buf 2
OPERATION
Operating Mode
CapacityLowLim
CapacityHighLim
Operating Mode= (MANUAL)
Operating Mode= (ANALOGUE)
Analog In Type
Operating Mode= (PULSE INPUT)
Pulse In Mode

Stroke/Pulse	Water Meter	ppm Applicat	Flow Meter
Pulse Divide Pulse Count Stroke Count StrkMemorize AdaptiveStroke	Pulse Divide PulseAmountUnt PulseAmount Output mL/m3 StrkMemorize AdaptiveStroke	Pulse Divide PulseAmountUnt PulseAmount ppm Set Chemical Act StrkMemorize AdaptiveStroke	Pulse Divide PulseAmountUnt PulseAmount FlowMeterUnit Flow Ratio Min Flow Ratio Max

Operating Mode= (PULSE RATE)

Pulse Rat Mode

Frequency	Width	Rate
Pulse Freq Min Pulse Freq Max	Pulse Width Min Pulse Width Max	Pulse Duty Min Pulse Duty Max

Operating Mode= (CONTROL)

MeasSens Type

pH	ORP	FCL	mA Sensor
Temperat.Comp		pH Comp Val	MeasSens Unit MeasSnsUnitDot MeasSnsUnitMin MeasSnsUnitMax

Control Set Lo
Control Set Hi
SetLo CapRate
SetHi CapRate
Ctrl AnOutSet4
Ctrl AnOutSet20
Ctrl StrtUpDly

Operating Mode= (PACKAGE)

SubMode Package

Startup Once	Manual Trig	Pulse Trig	Periodic	Time Program
Process	Process	TrigPulseCount TrigPulseDiv Process	Trig Period Process	PrgPeriod(Days) Program Day No Program

SECURITY

Set Password

SERVICE
ClearCounter
Over Temp. Set

11.3.1 Menu Enter and Browse

Press MENU OK to enter the menu.
Use buttons ▲ and ▼ to navigate between menu steps
Use MENU OK button to enter sub menu items or to start menu functions
Use **C** button to exit menu, to return from sub menus to previous menu or to cancel functions.

11.3.1.1 Entering Password Protected Menus

If the password has been activated (if any other value than 0 has been entered)
You need to enter the password to enter sub menus that require a password.
Once you enter the password, it will be deactivated (password will not be required again to enter menu)
Password will reactivate if you don't press any button for 30 seconds
If the password has been activated, you will be required to enter password when entering menus apart from the Information menu.

Password Cancellation: You can move to processor temperature indicator screen by pressing Function button for 3 times in the main screen.
If a password has been set, press Function button for 10 seconds to see the message that the password has been rest.

11.3.2 Alarm Cases

You will see message in case of various alarms on the screen.

KK Memory Error	Control Card Flash Memory writing error
Comm.Err	Inter cards communication error
WaterLevelLow	Water level low
No Flow	No Flow
Measure R.High	Raw measurement value high
Measure R.Low	Raw measurement value low
Measure V.High	Measurement value high
Measure V.Low	Measurement value low
LimitExceeded	Set stroke limit reached
CB UnderVoltage	Control card low voltage
Stroke Problem	No pulse from stroke feedback
BB Com. Error	Sub card communication failure
Chem Level Low	Chemical tank level low
BB Over Current	Sub Card excessive flow
BB UnderCurrent	Sub Card low flow
BB Over Voltage	Sub Card high voltage
BB UnderVoltage	Sub Card low voltage
BB MemoryErr	Sub Card Flash Memory writing error
OverTemperature	Excessive Heat

When an alarm is generated:
Alarm relay gives output,
Alarm indicator starts blinking
Pump stops operating

Pump continues working once alarm is eliminated.

In case of multiple alarms, you will see the first alarm message in the main screen.
View detailed alarm list from Information/Alarm menu.

12 Operation

12.1 Operation modes

Moreover, there are 4 different operation modes:

Icon	Description
	Stop
	Start
	Trigger wait (used in package control mode)
	Starting, Fast Start, Priming

12.1.1 Stop

When the pump  is in "start" mode, press **S** Mode button to switch to  "stop" mode.

12.1.2 Operation

When the pump is in  "stop" mode, press **S** Mode button to switch to  "start" mode.

12.1.3 Process Trigger

When the pump is in Package operation mode Manual Trigger sub-mode in  "Trigger wait" mode, press ▲ Up button to trigger the process. When in manual trigger sub-mode, press ▲ Up button again to stop the process

12.1.4 Priming

When the pump is in main screen, you can initiate priming by pressing and holding **C** button in any time and mode.

12.2 Configuration

12.2.1 Language

There are 6 language options as Turkish, English, German, French, Italian and Spanish.

Press Enter

Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.

Choose "Language" menu item using Up Down buttons and press Enter.

Choose desired language menu item using Up Down buttons and press Enter.

Press and hold C button to return main screen.

12.2.2 Date Adjust

Follow these steps to adjust the date:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Set Date" menu item using Up Down buttons and press Enter.
Navigate between steps by function button.
Change the value by Up Down buttons.
Press Enter to confirm.
Press C to cancel.
Press and hold C button to return main screen.

12.2.3 Time Adjust

Follow these steps to adjust the time:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Set Time" menu item using Up Down buttons and press Enter.
Navigate between steps by function button.
Change the value by Up Down buttons.
Press Enter to confirm.
Press C to cancel.
Press and hold C button to return main screen.

12.2.4 Screen Light adjust

Follow these steps to adjust back-lit intensity of the screen:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "LCD Backlight" menu item using Up Down buttons and press Enter.
Choose desired light level using Up Down buttons and press Enter.
Press and hold C button to return main screen.

12.2.5 Pump Stroke Rate Selection

Follow these steps to change pump stroke rate:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Stroke Rate" menu item using Up Down buttons and press Enter.
Choose desired stroke rate using Up Down buttons and press Enter.
Press and hold C button to return main screen.
Pump stroke rate will be seen in this way in all screens and menus

12.2.6 Adjusting Priming Duration

Follow these steps to change pump priming duration:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Priming Time" menu item using Up Down buttons and press Enter.
Choose desired value using Up Down buttons and press Enter.
Press and hold C button to return main screen.
Pump will continue priming process for the duration specified in this parameter.

12.2.7 Selection of water level Detector Type

Follow these steps to change pump water level detector type:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "WtrLvlSensType" menu item using Up Down buttons and press Enter.
Choose desired value using Up Down buttons and press Enter.
Press and hold C button to return main screen.
There are 3 types as Passive, NormalyOpen and NormalyClosed.

12.2.8 Selection of Flow Detector Type

Follow these steps to change pump flow detector type:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "FlowSensType" menu item using Up Down buttons and press Enter.
Choose desired value using Up Down buttons and press Enter.
Press and hold C button to return main screen.
There are 4 types as Passive, NormalyOpen, NormalyClosed and pulse.
Alarm will sound if there is no pulse for 2 seconds in pulse mode.

12.2.9 Beat Feedback Settings

If the stroke sensor connected to the dosing pump is requested to enter the air bleeding mode after how many strokes it has missed, the desired number of missed strokes for such stroke sensor is determined in this menu.

12.2.10 Reset to Factory Settings

Follow these steps to restore pump to factory settings:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Reset to Fact." menu item using Up Down buttons and press Enter.
Choose Yes using Down button and press Enter.
Press and hold C button to return main screen.
All settings will be restored to factory settings.

12.2.11 Limit Counter

Pump will operate until reaching the limit value and then stop by sounding an alarm once limit has been reached. Once limit counter value has been reset, it will continue operation.
If the limit value is adjusted to 0, pump will not sound alarm.

12.2.11.1 Resetting Limit Counter

Follow these steps to reset pump limit counter:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Limit Counter" menu item using Up Down buttons and press Enter.
Choose "Reset Counter" menu item using Up Down buttons and press Enter.
Press Function button.
Choose Yes using Down button and press Enter.
Limit counter will be reset
Press and hold C button to return main screen.

12.2.11.2 Limit Setting of Limit Counter

Follow these steps to adjust pump limit counter limit:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "Limit Counter" menu item using Up Down buttons and press Enter.
Choose "Limit Set" menu item using Up Down buttons and press Enter.
Choose desired value using Down button and press Enter.
Press and hold C button to return main screen.
Pump will stop operation once limit value has been reached.

12.2.12 MODBUS Communication

You can access and change remotely the parameters of the pump using MODBUS RTU protocol with RS485 communication module that is an optional item.
Parameter list is given in the Annex.

12.2.12.1 Adjusting MODBUS RTU Address

Follow these steps to change MODBUS RTU address:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "MB RTU Address" menu item using Up Down buttons and press Enter.
Choose desired address using Up Down buttons and press Enter.
Press and hold C button to return main screen.
Use this address to access the Pump via MODBUS.

12.2.12.2 Adjusting MODBUS RTU Communication Rate

Follow these steps to change MODBUS communication rate:
Press Enter
Choose "CONFIGURATION" menu item using Up Down buttons and press Enter.
Choose "MB Baud Rate" menu item using Up Down buttons and press Enter.
Choose desired rate using Up Down buttons and press Enter.
Press and hold C button to return main screen.
MODBUS will use this rate as communication rate.

12.3 Calibration

12.3.1 Capacity Calibration

Follow these steps to calibrate pump capacity ratio:
Pour liquid into a measuring cylinder and dip the suction set into it, and then mark the starting value of the cylinder.
Press Enter.
Choose "CALIBRATION" menu item using Up Down buttons and press Enter.
Choose "Capacity Cal." menu item using Up Down buttons and press Enter.
You will see Normal Capacity and Calibrated capacity data. Press Enter.
Adjust the stroke rate to be used during Calibration using Up Down buttons and press Enter.
Pump will start operating under adjusted stroke rates.
Press Enter after minimum 30 seconds of operation. Pump will stop.
Calculate the difference between the first and current value on cylinder.
Set this value by up and down buttons to the value on the screen and press Enter.
You will see Normal Capacity and Calibrated capacity data. Press Enter.
Calibration completed.
Press and hold C button to return main screen.

12.3.2 Sensor Calibration

Sensor type	Suggested Calibration Type	Buffer 1	Buffer 2
pH	Double Point	4,0 pH	7,0 pH
ORP	Single Point	-	475mV
FCL	Sampling	-	-
mA Sensor	Sampling	-	-

12.3.2.1 Single Point Sensor Calibration

Follow these steps for Single Point Sensor calibration:
Wash the sensor with distilled water and dry it, then dip into Buffer liquid.
Press Enter.
Choose "CALIBRATION" menu item using Up Down buttons and press Enter.
Choose "Sensor Cal." menu item using Up Down buttons and press Enter.
On the right upper corner, you will see liquid value and the measured value below.
Wait until measured value is fixed and then press Enter.
Calibration completed.
Press and hold C button to return main screen.

12.3.2.2 Double Point Sensor Calibration

Follow these steps for Double Point Sensor calibration:
Wash the sensor with distilled water and Dip into 2nd Buffer liquid.
Press Enter.
Choose "CALIBRATION" menu item using Up Down buttons and press Enter.
Choose "Sensor Cal." menu item using Up Down buttons and press Enter.
On the right upper corner, you will see 1st buffer liquid value and the measured value below.
Wait until measured value is fixed and then press Enter.
On the right upper corner, you will see 2nd buffer liquid value and the measured value below.
Wash the sensor with distilled water and Dip into 2nd Buffer liquid.
Wait until measured value is fixed and then press Enter.
Calibration completed. Press and hold C button to return main screen.

12.3.2.3 Sampling Sensor Calibration

Follow these steps for Sampling Sensor calibration:
Take sample water from measurement line and detect the value according to DPD1 method.
Press Enter.
Choose "CALIBRATION" menu item using Up Down buttons and press Enter.
Choose "Sensor Cal." menu item using Up Down buttons and press Enter.
You will see the value measured by device on right upper corner and span value below.
Adjust span value with up and down button to equalize the value measured by the device and the value measured with DPD1 method and press Enter.
Calibration completed.
Press and hold C button to return main screen.

12.4 Operation Modes

Pump has 6 different operation modes:
Manual: Manual control of pump dosage ratio
Analogue: Analogue control of pump dosage ratio with 0/4_20 mA pulse
Pulse Input: Control of pump dosage ratio or stroke number according to number of pulses
Pulse Rate: Control of pump dosage ratio with pulse frequency, width or ratio
Control: Control of pump dosage ratio according to the value on sensor

12.4.1 Manual Operation Mode

12.4.1.1 Choosing operation mode

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Operating Mode" menu item using Up Down buttons and press Enter.
Choose "Manual" menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see "MANUAL" on pump's main screen

Picture26 Manual Operation Mode Selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.

12.4.1.2 Adjusting stroke rate of the pump

Adjusts pump's stroke rate with Up and Down buttons in the main screen.
Use function button to browse between value grades.
Confirm with Enter.
Cancel with C button to return previous value.
If left in adjustment screen, it will automatically confirm and continue operating.

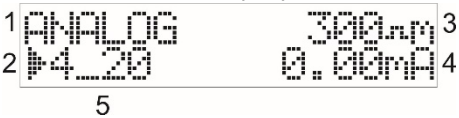
12.4.1.3 Limiting stroke rate of the pump

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Stroke Low Lim" for lower limit and "Stroke High Lim" for upper limit using up and down buttons and press Enter.
Adjust value with Up and Down buttons and press Enter button. Hold pressing C button until returning main screen.

12.4.2 Analogue Operation Mode

12.4.2.1 Choosing operation mode

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Operating Mode" menu item using Up Down buttons and press Enter.
Choose "Analog" menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see "ANALOG" on pump's main screen



Picture27 Analogue Operation Model Selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Shows Analogue Input value
5: Marks pulse input mode.

12.4.2.2 Selection of analogue input mode

There are 4 input modes in Analogue operation mode.

Icon	Description
4_20	4_20mA Input
0_20	0_20mA Input
20_4	20_0mA Input
20_0	20_4mA Input

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Analog In Type" menu item using Up Down buttons and press Enter.
Choose appropriate menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see analogue input sub mode icon in section no. 5 on pump main screen

12.4.2.3 Limiting stroke rate of the pump

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Stroke Low Lim" for lower limit and "Stroke High Lim" for upper limit using up and down buttons and press Enter.
Choose desired value using Up Down buttons and press Enter.
Press and hold C button to return main screen.

12.4.2.4 Operation of Analogue mode

This adjusts the pumo dosage ratio according to pump stroke limit parameters by analyzing analogue input pulse value.

Example:
Operation limit lower : 50 strokes/minute
Operation limit upper : 200 strokes/minute
Analog input mode : 4-20mA

Pump strokes 50 times per minute at 4mA and below.
Pump strokes 200 times per minute at 20mA and above.
Pump strokes proportionately between 50 strokes/minute and 200 strokes/minute between 4 and 20mA interval.

12.4.3 Pulse Input Operation Mode

12.4.3.1 Choosing operation mode

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Operating Mode" menu item using Up Down buttons and press Enter.
Choose "Pulse Input" menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see "PULSEi" on pump's main screen

Picture 28 Pulse Input Operation Mode Selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.
5: Shows remaining pulse number.
6: Shows remaining stroke number

12.4.3.2 Selection of pulse input sub mode

There are 4 sub operating modes of pulse Input Operating Mode.

Icon	Description
StP1	Stroke / Pulse mode
WtrM	Counter mode
PPM	Ppm Application mode
FlwM	Flow Meter mode

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Pulse Input Mode" menu item using Up Down buttons and press Enter.
Choose appropriate menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see pulse input sub mode icon in section no. 4 on pump main screen

12.4.3.3 pulse / stroke sub operating mode

Used for having the pump stroke in a certain number against a certain pulse.
Main screen will appear as follows in this mode.

Picture29 Pulse / Stroke sub operating mode

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.
5: Shows remaining pulse number.
6: Shows remaining stroke number

Pulse Divide	Shows the number of pulses that twill pass before increasing pulse counter. Used in the adaptation of pulse sources that create very fast pulses.
Pulse Count	Shows the number of pulses that should be counted by the counter. This triggers stroke once certain number of pulses have been counted.
Stroke Count	Shows number of strokes. Triggered by pulse counter, the pump strokes as many times as set and waits for the pulse counter to trigger again.
StrkMemorize	Stroke memory setting active/passive option Once activated, if the pulse counter triggers before stroke number is completed, then pump will memorize strokes. Pump will stroke until number of strokes has been completed.
AdaptiveStroke	Adaptive stroke rate active/passive option Once activated, the pump will adapt its speed to previous pulse frequency and distribute the chemical homogeneously.

12.4.3.4 Water Counter sub operation mode

This is used to supply chemical in set quantity into 1m^3 water.
Pump will adjust stroke rate automatically based on parameters.
Main screen will appear as follows in this mode.

Picture30 Water counter sub operation mode

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.

5: Shows remaining water quantity. Pulse Divide	Shows the number of pulses that twill pass before increasing pulse counter. Used in the adaptation of pulse sources that create very fast pulses.
PulseAmountUnt	Unit of quantity passing through the counter in 1 pulse (Lt, m^3)
PulseAmount	Quantity passing through meter in 1 pulse.
Output mL/m3	Quantity of chemical to be dosed per 1 m^3.
StrkMemorize	Stroke memory setting active/passive option Once activated, if the pulse counter triggers before stroke number is completed, then pump will memorize strokes. Pump will stroke until number of strokes has been completed.
Adapt Stroke Rate	Adaptive stroke rate active/passive option Once activated, the pump will adapt its speed to previous pulse frequency and distribute the chemical homogeneously.

12.4.3.5 ppm Application sub operation mode

This is used to supply chemical in set ppm quantity into 1m^3 water.
Pump will adjust stroke rate automatically based on parameters.
Main screen will appear as follows in this mode.

Picture 31 ppm Application sub operation mode

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.
5: Shows remaining pulse number.
6: Shows remaining stroke number
Following parameters in "Operation" menu should be adjusted appropriately.

Pulse Divide	Shows the number of pulses that twill pass before increasing pulse counter. Used in the adaptation of pulse sources that create very fast pulses.
PulseAmountUnt	Unit of quantity passing through counter in 1 pulse.
PulseAmount	Unit of quantity passing through the meter in 1 pulse (Lt, m^3)
ppmSet	chemical ratio in ppm
Chemical Act	Activity of the chemical to be dosed
StrkMemorize	Stroke memory setting active/passive option Once activated, if the pulse counter triggers before stroke number is completed, then pump will memorize strokes. Pump will stroke until number of strokes has been completed.
Adapt Stroke Rate	Adaptive stroke rate active/passive option Once activated, the pump will adapt its speed to previous pulse frequency and distribute the chemical homogeneously.

12.4.3.6 Flowmeter sub operation mode

This is used to adjust pump stroke rate proportionate to flow ratio as measured from the flowmeter.
If the flow ratio is equal to or below "Flow Ratio Min" parameter, then the pump will stroke as stated in "StrokeRateLimLo",
If the flow ratio is equal to or above "Flow Ratio Max" parameter, then the pump will stroke as stated in "StrokeRateLimhi",
If the flow ratio is between “Flow Ratio Min” and “Flow Ratio Max” parameters, it adjusts the stroke rate proportionally according to the rates stated in “StrokeRateLimLo” and “StrokeRateLimHi”

Main screen will appear as follows in this mode.

Picture 32Flowmeter sub operation mode

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.
5: Shows measured flow ratio
Following parameters in "Operation" menu should be adjusted appropriately.

Pulse Divide	Shows the number of pulses that twill pass before increasing pulse counter. Used in the adaptation of pulse sources that create very fast pulses.
PulseAmountUnt	Unit of quantity passing through the counter in 1 pulse (Lt, m^3)
PulseAmount	Quantity passing through meter in 1 pulse.
Flow Meter Unit	Flow Meter unit (Lth, m^3h)
Flow Ratio Min	Flow meter minimum ratio
Flow Ratio Max	Flow meter maximum ratio

12.4.4 Pulse Rat Mode

12.4.4.1 Choosing operation mode

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Operating Mode" menu item using Up Down buttons and press Enter.
Choose "Pulse Rate" menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see "PULSEr" on pump's main screen

Picture 33 Pulse Input Operation Mode Selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode.
5: Shows measured pulse data

12.4.4.2 Selection of pulse ratio sub mode

There are 3 sub operating modes of Pulse Rate Operating Mode.

Icon	Description
Freq	Frequency mode
Plwd	Pulse Width Mode
Duty	Pulse Rate mode

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Pulse Rate Mode" menu item using Up Down buttons and press Enter.
Choose appropriate menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see pulse rate sub mode icon in section no. 4 on pump main screen

12.4.4.3 Frequency sub operation mode

This is used to adjust pump stroke rate according to pulse frequency.
If the pulse frequency is equal to or below "Pulse Frequency Min" parameter, then the pump will stroke as stated in "StrokeRateLimLo",
If the flow ratio is equal to or above "Pulse Frequency Max" parameter, then the pump will stroke as stated in "StrokeRateLimhi",
If the flow ratio is between “Pulse Frequency Min” and “Pulse Frequency Max” parameters, it adjusts the stroke rate proportionally according to the rates stated in “StrokeRateLimLo” and “StrokeRateLimHi”
Following parameters in "Operation" menu should be adjusted appropriately.

Pulse Frequency Min	Pulse frequency minimum ratio
Pulse Frequency Max	Pulse frequency maximum ratio

12.4.4.4 Pulse Width sub operating mode

This is used to adjust pump stroke rate according to pulse width.
If the pulse width is equal to or below "Pulse Width Min" parameter, then the pump will stroke as stated in "StrokeRateLimLo",
If the flow ratio is equal to or above "Pulse Width Max" parameter, then the pump will stroke as stated in "StrokeRateLimhi",
If the flow ratio is between “Pulse Width Min” and “Pulse Width Max” parameters, it adjusts the stroke rate proportionally according to the rates stated in “StrokeRateLimLo” and “StrokeRateLimHi”

Following parameters in "Operation" menu should be adjusted appropriately.

Pulse Width Min	Pulse width minimum ratio
Pulse Width Max	Pulse width maximum ratio

12.4.4.5 Pulse Rate sub operating mode

This is used to adjust pump stroke rate according to pulse rate.
If the pulse ratio is equal to or below "Pulse Rate Min" parameter, then the pump will stroke as stated in "StrokeRateLimLo",
If the pulse ratio is equal to or above "Pulse Rate Max" parameter, then the pump will stroke as stated in "StrokeRateLimhi",
If the pulse ratio is between “Pulse Rate Min” and “Pulse Rate Max” parameters, it adjusts the stroke rate proportionally according to the rates stated in “StrokeRateLimLo” and “StrokeRateLimHi”

Following parameters in "Operation" menu should be adjusted appropriately.

Pulse Rate Min	Pulse ratio minimum ratio
Pulse Width Max	Pulse ratio maximum ratio

12.4.5 Control Operating Mode

12.4.5.1 Choosing operation mode

Press Enter

Choose "Operation" menu item using Up Down buttons and press Enter.

Choose "Operating Mode" menu item using Up Down buttons and press Enter.

Choose "Control" menu item using Up Down buttons and press Enter.

Press and hold C button to return main screen.

You will see "CONTRL" on pump's main screen

Picture 34 Control Operation Model Selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Shows starting delay
5: Shows measured sensor data

12.4.5.2 Selection of sensor type

4 different sensor applications can be selected in control mode. Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "MeasSens Type" menu item using Up Down buttons and press Enter.
Choose appropriate sensor type using Up Down buttons and press Enter.
Press and hold C button to return main screen.

Screen parameter values will differ based on the selected sensor.

12.4.5.3 Adjusting control parameters

Following parameters in "Operation" menu should be adjusted appropriately.

MeasSens Type		Shows the sensor type to be used in control mode (pH, ORP, FCL, mA Sensor)
pH	Temperat.Comp	pH Sensor Temperature compensation active/passive option
FCL	pH Comp Val	FLC sensor compensation pH value
mA Sensor	Measurement Unit	4-20mA sensor measurement unit (ppm, mgL)
	Measurement Decimal Point	States the decimal point of measured value (0-3)
	Measurement Minimum	States 4mA equivalence of the measured value (0,00-20,00)
	Measurement Maximum	States 20mA equivalence of the measured value (0,00-20,00)
Control Set Lo		States low set point.
Control Set Hi		States high set point.
SetLo StrRate		States low set point stroke rate.
SetHi StrRate		States high set point stroke rate.
Ctrl AnOutSet4		States Analogue Output 4mA measurement value
Ctrl AnOutSet20		States Analogue Output 20mA measurement value
Ctrl StrtUpDly		States starting delay.

You will also see temperature value once pH sensor is selected and Temperature compensation is activated.

Picture 35 Adjusting control parameters

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Shows temperature
5: Shows measured sensor data

12.4.5.4 Operating control mode

Pump will calculate the stroke rate based on "SetLo StrRate" and "SetHi StrRate" parameters by analyzing the sensor reading according to "Control Set Lo" and "Control Set Hi" parameters. It will strike as many as the calculated stroke rate.
Example: Pump will calculate the stroke rate based on "SetHi CapRate" and "SetLo CapRate" parameters by analyzing the sensor reading according to "Control Set Lo" and "Control Set Hi" parameters.
It will strike as many as the calculated stroke rate.
Calculated stroke rate = (SetHi CapRate and SetLo CapRate) / (Control Set Hi and "Control Set Lo) * (Sensor Value - Control Set Lo)+ Control Set Lo

Control Set Lo : 6.0
Control Set Hi : 7.0
SetLo CapRate : 100spm
SetHi CapRate : 300spm

Sensor Value : 6.2
= (300-100) / (7.0-6.0) * (6.2-6.0) + 100
= 140

Sensor Value : 6.5
= (300-100) / (7.0-6.0) * (6.5-6.0) + 100
= 200

Sensor Value : 6.8
= (300-100) / (7.0-6.0) * (6.8-6.0) + 100
= 260

Control Set Lo : 6.0
Control Set Hi : 7.0
SetLo CapRate : 100spm
SetHi CapRate : 300spm

Sensor Value : 6.2
= (300-100) / (6.0-7.0) * (6.2-7.0) + 100
= 260

Sensor Value : 6.5
= (300-100) / (6.0-7.0) * (6.5-7.0) + 100
= 200

Sensor Value : 6.8
= (300-100) / (6.0-7.0) * (6.8-7.0) + 100
= 140

12.4.5.5 Analogue Output

This is used for sending the pump's calculated sensor value to another device through 4-20mA output.
Output value will be calculated based on ratio of measured value to "Ctrl AnOutSet4" and "Ctrl AnOutSet20" parameters.

12.4.6 Package Operation Mode

12.4.6.1 Choosing operation mode

1 Press Enter

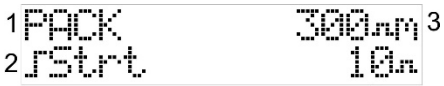
2 Choose "Operation" menu item using Up Down buttons and press Enter.

3 Choose "Operating Mode" menu item using Up Down buttons and press Enter.

4 Choose "Package" menu item using Up Down buttons and press Enter.

5 Press and hold C button to return main screen.

6 You will see "PACKAGE" on pump's main screen



Picture 36 Package Operation Mode Selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode
5: Shows remaining number of strokes, remaining number of pulses, remaining duration, etc. (varies based on sub operating mode)

12.4.6.2 Selection of sub operating mode

There are 5 sub operating modes of Package Operating Mode.

Icon	Description
Sturt.	Startup Once
Manu	Manual Trigger
Puls	Pulse Trigger
Peri	Periodic Trigger
Prg	Time Program Trigger

Press Enter
Choose "Operation" menu item using Up Down buttons and press Enter.
Choose "Altmod Package" menu item using Up Down buttons and press Enter.
Choose appropriate menu item using Up Down buttons and press Enter.
Press and hold C button to return main screen.
You will see pulse rate sub mode icon in section no. 4 on pump main screen

12.4.6.3 Startup Once

In this mode, process will be triggered when pump is energized.

Process is performed and stays idle.

Picture 37 Startup Once mode at start

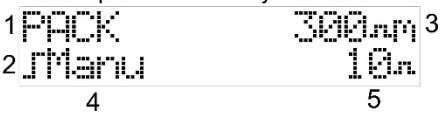
1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode
5: Shows remaining stroke number

Following parameters in "Operation" menu should be adjusted appropriately.

Process	This is the part where process is adjusted

12.4.6.4 Manual trigger sub operating mode

In this mode, trigger will switch to waiting mode while on "start" mode.
Press mode button to retrigger the process.
Process is performed and stays idle.



Picture 38 Manual trigger sub operating mode selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode
5: Shows remaining stroke number
Following parameters in "Operation" menu should be adjusted appropriately.

Process	This is the part where process is adjusted

12.4.6.5 Pulse Trigger sub operating mode

In this mode, trigger will switch to waiting mode while on "start" mode.
Once pulse number reaches pulse number, process will be triggered.
Process is performed and stays idle.

Picture 39 pulse trigger sub operating mode selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode
5: Shows remaining pulse/stroke number
Following parameters in "Operation" menu should be adjusted appropriately.

Trigger Pulse Count	States the number of pulses that pulse counter should count.
TrigPulseDiv	Shows the number of pulses that should be counted by the pulse counter.
Process	This is the part where process is adjusted

12.4.6.6 Periodic sub operation mode

In this mode, trigger will switch to waiting mode while on "start" mode.
Process is triggered at predefined periods.
Process is performed and stays idle.

Picture 40 Periodic sub operating mode selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode
5: Shows remaining period time

Following parameters in "Operation" menu should be adjusted appropriately.

Trigger period	Stands for trigger period.
Process	This is the part where process is adjusted

12.4.6.7 Time Program sub operating mode

In this mode, trigger will switch to waiting mode while on "start" mode.

Process will be trigged based on adjusted Time program.

Process is performed and stays idle.

Picture 41 Time program sub operating mode selection

1: Marks operating mode
2: Marks working mode.
3: Marks stroke rate.
4: Marks Sub Operating mode
5: Shows remaining time for next program

Following parameters in "Operation" menu should be adjusted appropriately.

PrgPeriod(Days)	States time program cycle duration.
PrgDayNo	States day of the program in real time.
Program	This is the part where Time Program will be adjusted.

12.4.6.8 Process Settings

This is the screen where process is adjusted.

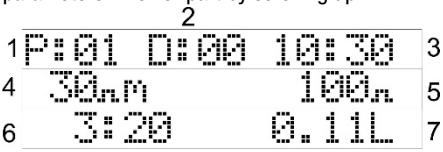
Picture 42 Process adjustment

1: Shows process stroke rate
2: Shows process duration.
6: Shows number of process strokes.
4: Shows process total quantity.

Adjust the process stroke rate using up and down buttons.
Pass on to next step using Function button.
Change stroke number using up and down buttons.
When stroke number is changed, process duration and quantity will also automatically change.
Press Enter to confirm. Cancel settings with C button.

12.4.6.9 Time Program

This is the screen where time program and process settings are made.
There are two screens here; when the tab switches to steps number 4 and 5, you will see the parameters in lower part by scrolling up.



Picture 43 Time program

1: Program No.
2: Process day
3: Process starting time.
4: Shows process stroke rate
5: Shows process stroke number
6: Shows process duration.
7: Shows process total quantity.

Adjust program number with up and down buttons.
Pass on to next step using Function button.
Adjust the process starting date using up and down buttons.
When set to "0", program will be disabled and process will not be initiated.
Pass on to next step using Function button.
Adjust the process starting time and minute using up and down buttons.
Pass on to next step using Function button.
Adjust the process stroke rate using up and down buttons.
When stroke number is changed, process duration will also automatically change.
Pass on to next step using Function button.
Change stroke number using up and down buttons.
When stroke number is changed, process duration and quantity will also automatically change.
Press Enter to confirm. Cancel settings with C button.

13 Parameter List

MENU	Description	Process	Detail	Default	Min	Max
INFO						
Alarm	Shows the list of active alarms	Function				
Device Info	Software version and capacity of electronic cards are shown	Function				
CONFIGURATION						
Language	Changes device language	Selection	0:English 1:Turkish	0	0	1
Set Date	Adjusts date	Adjust Date				
Set Time	Adjusts time	Adjust Time				
LCD Backlight	Adjusts LCD Backlight brightness	Adjust		7	0	10
Stroke Rate	Selects pump stroke	Select	0:Capacity Lh 1:stroke% 2:stroke/Hour SPH 3:stroke/Minute SPM	3:stroke/Minute SPM	0	3
Priming duration	Adjusts priming.	Adjust	Second	30	0	600
WtrLvlSensType	Water Level Detecting Type	Select	0: Passive 1: NormalyOpen 2: NormalyCosed	1: NormalyOpen		
FlowSensType	Flow Detection Type	Select	0: Passive 1: NormalyOpen 2: NormalyCosed 3: Pulse	1: NormalyOpen		
StrokeFeedback	Chemical follow-up from pump outlet after stroke	Select	0: Passive 1: 1 stroke 2: 2 strokes 3: 3 strokes 4: 5 strokes 5: 10 strokes	0: Passive		
Reset to Fact.	Return to Factory Settings	Function				
Limit Counter	Sub Menu					
Reset Counter	Resets Limit Counter	Function				

Parameter List

MENU	Description	Process	Detail	Default	Min	Max
Limit Set	Adjusts limit set value	Adjust	m3	0.00	0.00	300.00
MB RTU Address	MODBUS RTU communication address	Adjust		1	0	255
MB Baud Rate	MODBUS RTU communication speed	Select	0: 2400 bps 1: 4800 bps 2: 9600 bps 3: 19200 bps 4: 38400 bps 5: 57600 bps 6: 115200 bps	2:9600	0	6
CALIBRATION						
Capacity Cal.	Calibrates pump capacity.	Function				
Sensor Cal.	Calibrates used sensor.	Function				
Sensor Cal Type	Selects used sensor calibration type	Select	0:Single Point 1:Double Point	1	0	1
Sens Cal Buf 1	Adjusts 1st Buffer Liquid value To be used in sensor calibration	Adjust		400	0	Max Sens Val
Sens Cal Buf 2	Adjusts 2nd Buffer Liquid value To be used in sensor calibration	Adjust		700	0	Max Sens Val
OPERATION						
Operating Mode	Selects operation mode of pump.	Select	0:Manual 1:Analogue 2:PulseInput 3:PulseRate 4:Control 5:Program	0:Manual	0	5
Stroke Lo Lim	Adjusts capacity ratio lower limit.	Adjust		0	0	
Stroke Hi Lim	Adjusts capacity ratio upper limit.	Adjust				
Analog In Type	Selects analogue input operating mode	Select	0: 4-20mA 1: 0-20mA 2: 20-4mA 3: 20-0mA	0: 4-20mA	0	3
Pulse Divide	Adjusts Pulse Divider value	Adjust		10	1	1000
Pulse Input Mod	Selects pulse input working mode.	Select	0: Stroke/Pulse 1: Water Counter	0: Stroke/Pulse	0	3

MENU	Description	Process	Detail	Default	Min	Max
			2: ppm Application 3: Flow Meter			
Pulse Count	Adjusts pulse Input Mode, Stroke/Pulse Mode, Pulse Number	Adjust		2	1	10000
Stroke Count	Adjusts Pulse Input Mode, Stroke/Pulse Mode, Stroke Number	Adjust		5	1	10000
PulseAmountUnt	Quantity unit to be counted	Select	0: Lt 1: m3	0: Lt	0	1
PulseAmount	Quantity to be collected per pulse	Adjust	Lt	0.010	0.010	30.000
Output mL/m3	Quantity to be dosed per m3	Adjust	mL	1	1	10000
ppmSet	Targeted ppm	Adjust	Ppm	1.00	0.00	100.00
Chemical Act	Chemical Activity	Adjust	%	15.0	1.0	100.0
StrkMemorize	Stroke Memory control	Select	0: Passive 1: Active	5	1	10000
AdaptiveStroke	Adaptive stroke rate control	Select	0: Passive 1: Active	0	0	1
FlowMeterUnit	Flow meter unit	Select	0: Lt/h 1: m3/h	0: Lt/h	0	1
Flow Ratio Min	Flowmeter stroke/flow ratio min	Adjust	LTs	0.0	0.0	3000.0
Flow Ratio Max	Flowmeter stroke/flow ratio max	Adjust	LTs	100.0	0.0	3000.0
Pulse Rat Mode	Selects pulse input working mode.	Select	0: Pulse Frequency 1: Pulse Width 2: Pulse Ratio	0: Pulse Frequency	0	2
Pulse Frequency Min	Adjusts Pulse Frequency Minimum value	Adjust	Hz	0	0	10000
Pulse Frequency Max	Adjusts Pulse Frequency Maximum value	Adjust	Hz	10000	0	10000
Pulse Width Min	Adjusts Pulse Width Minimum value	Adjust	mSec	1	1	10000
Pulse Width Max	Adjusts Pulse Width Maximum value	Adjust	mSec	1000	1	10000
Pulse Rate Min	Adjusts Pulse Ratio Minimum value	Adjust	%	0.0	0.0	100.0

Parameter List

MENU	Description	Process	Detail	Default	Min	Max
Pulse Rate Max	Adjusts Pulse Ratio Maximum value	Adjust	%	100.0	0.0	100.0
Control Set Lo	Control Mode Low Set Value	Adjust		500	0	2000
Control Set Hi	Control Mode High Set Value	Adjust		700	0	2000
SetLo StrRate	Control Mode Low Set Value Capacity Ratio	Adjust		150	0	2000
SetHi StrRate	Control Mode High Set Value Capacity Ratio	Adjust		10	0	2000
Ctrl AnOutSet4	Analogue Output Set Value 1	Adjust		500	0	2000
Ctrl AnOutSet20	Analogue Output Set Value 2	Adjust		700	0	2000
Ctrl StrtUpDly	Control Mode Start Delay	Adjust	Second	10	0	3600
MeasSens Type	pH-ORP-oFCL-mASens	Select	0:pH 1:ORP 2:oFCL 3:4-20mA Sensor	1	0	3
Temperat.Comp		Select	0: Passive 1: Active	0: Passive	0	1
pH Comp Val		Adjust	pH	7.0	0.0	14.0
Measurement Unit		Select	0:Ppm 1:mgL	0	0	1
Measurement Decimal Point		Adjust		2	0	3
Measurement Minimum		Adjust		0	0	2000
Measurement Maximum		Adjust		1000	0	2000
Altmod Program		Select	0: Startup Once 1: Manual Trigger 2: Pulse Trigger 3: Periodic 4: Time Program	0: Startup Once	0	4
TrigPulseCount		Adjust		1	1	1000
TrigPulseDiv		Adjust		1	1	1000

MENU	Description	Process	Detail	Default	Min	Max
Trig Period		Adjust Period				
Process		Function				
PrgPeriod(Days)		Adjust		7	1	30
PrgDayNo		Adjust		1	1	30
PRG		Function				
SECURITY						
Set Password		Adjust				
SERVICE						
Reset Counter		Function				
Over Temp. Set		Adjust				

14 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 hypochloride, there might be a solid calcium layer on surfaces of the pump that contacts the chemical.

14.1 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

	**NOTE**
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.	

15 Troubleshoot

15.1 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.

15.2 Electrical Malfunctions

If one of the LED is not on or screen backlit is not working:
Check power connection.
Make sure that only authorized staff or service intervenes in all malfunctions in the power cable.
Power values should match the pump model.
See 6.2. Additional Electrical Data Page 11

Check pump fuse. If it is broken, replace with appropriate fuse. If the new fuse is also blowing, contact the pump dealer.

NOTE

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

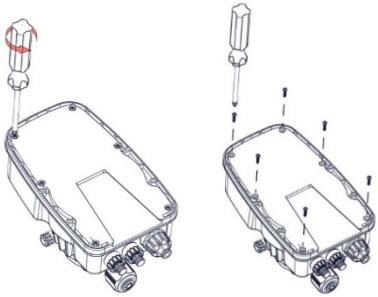
15.2.1 Replacing the Fuse

WARNING

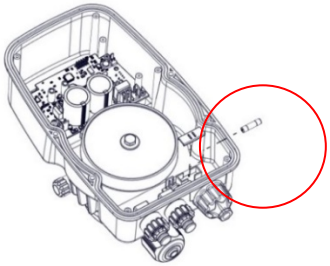
Your product warranty will become void if fuse is not replaced by the technical service.

WARNING

Disconnect the power before any service action on the device.
Use appropriate cartridge fuse in dosage pumps. See 6.2. Additional Electrical Data Page 11



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



Picture 44 Replacing the 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.

16 Warranty / Standards

16.1 Warranty

Device 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