

ε Dose



e-mail : mpvmkt@gmail.com
www.initiativempv.com

CONTENTS

I. Introduction

Please Check	1
Packing list	1
Description of product	1
Names of the parts	2

II. Installation

Installing the product	2
Piping	2
Connecting	4

III. Operation

Operating precautions	5
Air releasing	7
Discharge-volume setting	7
Procedure for prolonged shutdown of operation	8

IV. Troubleshooting

Troubleshooting	10
During Operation	11

V. Specifications

Specification	12
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Idose Programming & Exploded view

Idose Programming	13
Exploded view with component names	14

Please Check:

❖ Check the supplied items against the “Packing list” below.

- Has the pump sustained any damage from vibration or impact during transit?
- Have any of the screws come loose or fallen out?

Every care is taken by INITIATIVE in the transportation of its pumps, but if you come across anything untoward, please contact your vender or a INITIATIVE representative.

Packing list

Automatic air release I-Dose pump : 1 no

Liquid-end Material	CL
Hose/tube(3m)	PVC braided hose (6X11)
Air-release hose(1m)	Soft PVC hose (4X6)
anti-siphon check valve w/ duck bill cap	1set
foot valve	1set
ceramic weight	1set
pump mounting nuts/bolts	2set(M5X30)
operation manual	1copy

Description of product

This is an automatic air release solenoid-driven diaphragm metering pump with liquid-end parts which are resistant to chemicals and with a compact body. It can be operated on any supply voltage from AC 150V to AC 250V . Its discharge capacity has been adjusted so that it will remain constant over the supply voltage range.

Names of parts

Installing the product

- **This pump does not have explosion-proof specifications. Do not install it in explosion-proof regions or in explosive or combustible atmospheres.**
- **Install the pump in a location that cannot be accessed by anyone but control personnel.**
- **Do not install the pump where there is a risk of flooding or where there are high levels of moisture or dust. Doing so may cause electric shocks and/or malfunctions.**
- **This pump has a water-proof construction (equivalent to IP65). However, it is made of plastic so avoid installing it where it will be exposed to direct sunlight, wind or rain).** Ultraviolet rays may cause the plastic parts to deteriorate, and sand, dust, and rainwater may damage or corrode the pump body. When installing the pump outdoors, it is recommended that an awning or cover be installed to protect the pump from the elements and extend its service life.
- **Install the pump in a location where the ventilation is good and where the chemical will not freeze.**
- **Provide adequate space around the pump to facilitate maintenance and inspections.**
- **Place the pump in a level location, and secure it so that it will not vibrate. Installing the pump at an angle may result in discharge trouble or in the inability of pump to discharge.**

mounting bolt positions:

Use the pump-mounting bolts (×2) provided to secure the pump.

Piping

CAUTIONS:

- **Connect the pipes to the pump properly.**
- **Do not connect the pipes above a passageway. Do not install the pipes where the chemical may splash onto people even if the hose/tube should break.**
- **When using the pump in cold regions, the chemical may freeze inside the pump head or pipes, possibly damaging the pump and its surroundings. Be absolutely sure to install a heating unit or heat-insulating unit.**
- **When the hoses/tubes become very hot, their ability to withstand pressure will deteriorate. When using hoses/tubes available on the market, be absolutely sure to use the ones which are resistant to chemical and which can withstand the temperatures and pressures under which the pump will be used.**

- **The durability of a hose/tube differs significantly depending on the chemicals with which it is used, on the temperatures and pressures and on the presence of ultraviolet rays. Inspect the hoses/tubes, and replace them if they have deteriorated.**

IMPORTANT:

- **Install the pump as close as possible to the tank. If the suction-side pipe is too long, cavitation* may occur, possibly making it impossible to maintain the pump's metering capability.**

■Pulsation

- The occurrence of pulsation will cause the pump's hoses/tubes to vibrate. Secure the hoses/tubes so that they will not swing about.
- If reducing pulsation is critical, the installation of a damper is recommended.
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■Tubing length

- An excessively long hose/tube may result in increased pressure loss, may cause the pressure to exceed the pump's allowable pressure, or may give rise to over feed and/or cause pipe vibration.
- The pump comes with a 3-meter-long hose/tube for both the discharge side and suction side. Suction side should not exceed 1 m.
- When disconnecting the hose/tube for maintenance or other purposes and then reconnecting the same hose/tube, cut about 10 mm off the end of the hose/tube before reconnecting.
- When conducting maintenance, release the pressure of the discharge hose/tube.
- Provide a sufficient margin so that the hose/tube will not bend instead of curve round.
- Take steps to ensure that the hose/tube will not bend, rub against other parts, be cut or stepped on. Such actions can damage the hose/tube.
- Take steps to minimize the number of tight curves in the pipes, joints and other parts that may restrict the flow.

Tubing

Automatic air release function for injection of general chemicals: I-Dose

- This pump has a discharge-side joint at the front of the pump head and an air-release side joint on its top.
- It is extremely dangerous for the user to forget to open the valve or for there to be the clogging of foreign matter inside the pump's discharge-side pipe. Be absolutely sure to install a relief valve, which will automatically release abnormally high pressure levels, on the discharge-side pipe.
- Install a valve for releasing abnormal pressure that has built up inside the discharge-side pipe. The 3-way valve on the washing water line may be used instead.

- To prevent gas lock and other such types of trouble, be absolutely sure to use the pump with a push-in pipe (when the pump is to be placed lower than the tank).
- In order to prevent gas lock caused by gases generated and building up inside the pipes, make the pipe connections as short as possible.

■ When installing the pump

❖ Do not install the pump above the tank.

(1) Connect the suction valve of the tank and the suction Side joint of the pump using the hose/tube.

When doing this, tilt the pipe at a downward gradient so that no air will be trapped inside the pipe.

(2) Connect the hose/tube to the discharge-side joint of the pump.

(3) Attach one end of the air-release hose to the air Release port, and return the other end to the tank or other container.

❖ Be absolutely sure to connect the foot valve supplied to the end of the suction-side hose/ tube to ensure that no dirt or foreign matter will be mixed inside the pump head or valve seat.

Connecting

Automatic air release function for injection of general chemicals: I-Dose

- iDose has a discharge-side joint at the front side of the pump head and an air-release joint on its top.
- When bending the hose/tube, provide sufficient leeway in the bending so that the hose/tube will not break. Also ensure that it will not be rubbed against or trodden on.
- Insert the hose/tube firmly so that it will not become disconnected, and tighten the nuts securely. Do not excessively tighten the nuts. Doing so may damage or break the joint.
- If the temperature of a liquid or ambient temperature is higher than room temperature, the tightening force will be reduced, and the hose/tube may become disconnected. After operation has started, tighten up the nuts as appropriate.
- When tightening the nuts, hold the hose/tube to prevent it from being twisted. The joints and other areas may be loosened by the return force of the hose/tube.
- When disconnecting the hose/tube for jobs such as maintenance and then afterwards re-connecting the same hose/tube, cut about 10 mm off the end of the hose/tube before re-using them.

■ Soft PVC hose (for air release)

- (1) Firmly insert the supplied soft PVC air-release hose as far as the base of the air-release joint on the top of the pump head.
- (2) Firmly tighten up the hose nut so that the hose will not become disconnected.
- (3) Return the other end of the hose to the tank or other container.

■ **Anti-siphon check valve w/ duck-bill cap**

This pump is provided with an anti-siphon check valve with duck-bill cap. Be absolutely sure to install it in the following cases.

- When the injection point is open to the atmosphere and liquid is to be injected at a position lower than the level of the liquid in the tank (prevention of siphoning)
- When the liquid is to be injected inside the suction-side pipe of a volute pump, etc.
- When chemicals greatly exceeding the pump's rated discharge volume are being fed (prevention of overfeed)

❖ Even with a rising pipe, overfeed may occur if the pipe is too long.

- (1) The anti-siphon check valve with duck-bill cap has an R1/2 external thread. Provide an Rc1/2 internal thread at the injection point.
- (2) Wind sealing tape around the external thread of the anti-siphon check valve with duck-bill cap, and screw the valve into the injection point.

If it is hard to screw the valve in, grasp the nozzle grip using a tool such as pliers, and tighten the valve gently.

❖ When connecting the hose/tube with the anti-siphon check valve with duck-bill cap already mounted on it to the main pipe, be absolutely sure to hold the valve body and turn the nut. If the nut is turned without holding the body, the threaded part on the nozzle may be damaged.

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Operating Precautions

! WARNING

- **Ensure that nobody other than the operators and control personnel will operate the pump.**
- **Do not operate the pump with wet hands. Doing so may result in electric shocks.**
- **When trouble has occurred (such as when smoke appears or there is a smell of burning), shut down the pump's operation immediately, and contact your vendor or a INITIATIVE representative. Otherwise, a fire, electric shocks and/or**

malfunctions may result.

- A situation in which the valve inside the pipe at the discharge side of the pump is shut off or becomes blocked with foreign matter is dangerous in that it may lead to an excessive rise in pressure that will exceed the pump's specification range, causing liquid to gush out, the pipe to be damaged and the pump itself to malfunction. Prior to operating the pump, check the valves and pipes, etc.

When working on the liquid-end parts of the pump, wear protective gear suited to the chemical concerned

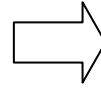
- (such as rubber gloves, a mask, protective goggles and work overalls that are resistant to chemical).
- The vibration of the pump may cause the hoses/tubes to become loose and disconnected. Before starting operation, secure the hoses/tubes and check their tightness.
- While the pump is operating, the pump's surfaces may become hot, reaching a temperature of 60°C or more.
- Idling the pump for prolonged periods of time can lead to malfunctions.

During Operation:

Check location	Details of check	Notes
Pump head	Check whether any liquid is leaking from the hole underneath the auxiliary ring at the back of the pump head.	If liquid is leaking, it may mean that the diaphragm is damaged. Inspect the diaphragm.
Joints/Pipes	Check for liquid leaks and looseness.	If liquid is leaking or there is a loose joint, replace or tighten it. If liquid still leaks, inspect the O-rings in the joint concerned.
Discharge Side-Pressure	Check the pressure gauge on the discharge side.	If the gauge shows an abnormal value, a pipe or valve may be blocked. Inspect the pipes.

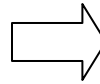
- When using the pump for the first time
- When resuming operation after a prolonged shutdown of operation

- When the pump is gas-locked
- When the tank is empty



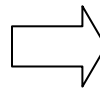
Air releasing

- When using the pump for the first time
- When changing the discharge volume



Discharge-volume setting

- When shutting down operation for a prolonged period
- When resuming operation after a prolonged



Procedure for Prolonged shut down of Operation

Air releasing:

- (1) Before proceeding with the air releasing, check that the end of the air-release hose has been led back to the tank or other container.
- (2) Turn off the pump's power, and release the pressure inside the discharge-side pipe.
- (3) Set the discharge volume to the maximum level.
- (4) Turn on the pump's power to start operating the pump.
- (5) After a few moments air will exit from the air-release port together with the liquid.
- (6) After all the air has been released, shut down the pump.

Discharge-volume setting:

MANUAL MODE: In manual mode, user can set number of strokes per minute & will Run continuously until user press STOP key. In this mode user can start or stop dosing by INC/START or DEC/STOP key.

SETTING PARAMETER: DOSING PUMP CONTROLLER three keys for setting parameters

- 1) SET/ENTER key
- 2) INC/START key
- 3) DEC/STOP key

In normal run mode display flashes number of strokes/ minute & mode of operation.

- When user press SET key controller goes to setting parameter mode & first of all flashes

'Stro' & 'number of strokes per minute' that can be change with INC & DEC keys, Number of strokes/minute has limit of minimum 30 to 300 strokes.

- When users press ENTER display flashes **'Vol-' & 'volume'** in milliliter (ml) that can be change with INC &DEC keys, Volume has limit of minimum 10ml & maximum 1000ml
- When user press ENTER display flashes **'Uv-' & 'Under voltage'** in volts (V) that can be change with INC & DEC keys under voltage has limit of minimum 100V & maximum 150V
- When user press ENTER display flashes **'Ov-' & 'over voltage'** in volts (V) that can be change with INC & DEC keys over voltage has limit of minimum 250V & maximum 270V
- When user press ENTER key display flashes **'oprn' & 'mode of operation'** (**'Auto or man'**)

Means AUTO or MANUAL Mode & that can be select by INC & DEC keys.

Now When user press Enter all setting Parameters are saved & controller goes into run mode.

NOTE: 1) while controller is in setting parameter mode it stops dosing also if fault related to under voltage or over voltage then also it stop dosing

2) When controller is in setting parameter mode & user not press any key then controller goes into run mode automatically after 10 sec

Procedure for prolonged shutdown of operation:

Follow the steps below when shutting down the pump for a prolonged period.

TO SHUT DOWN THE PUMP:

- (1) Operate the pump so that clean water or cleaning fluid is sucked in and discharged for about 30 minutes to clean the inside of the pump head.
- (2) Turn off the power completely.
- (3) Place the cover over the pump to protect the pump from the build-up of dust and corrosive environments.

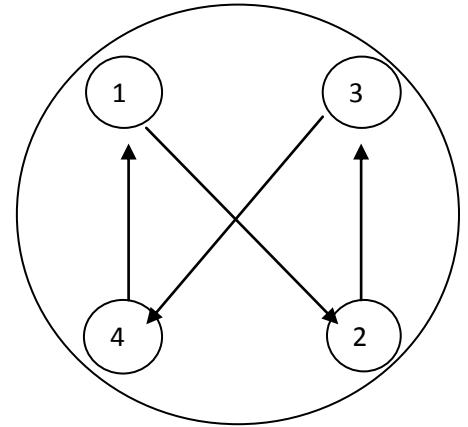
TO RESUME OPERATION:

(1) Check the inside of the tank for any sediment that may have accumulated, and check for signs of trouble such as cloudy liquid. If the liquid quality has deteriorated, clean the inside of the tank, and replace all the existing liquid with fresh chemical.

(2) Check the valve seat areas and check balls inside the joints for dirt and other foreign matter.

IMPORTANT

When securing the pump head using the head bolts, tighten them up evenly a little at a time in the sequence shown in the figure on the right. If, for instance, the bolts are tightened up in the sequence of 1 → 3 → 2 → 4, the bolts will be tightened unevenly, possibly causing the chemical to leak from the pump head.



Removing the diaphragm:

- 1) Remove the head bolts.
- 2) Remove the pump head.
- 3) Take hold of the outer circumference part of the diaphragm, and remove the diaphragm while turning it counterclockwise.
- 4) Remove the auxiliary ring, and remove the protective diaphragm.
- 5) Pull out the spacer from the protective diaphragm.

Installing the diaphragm:

- 1) Align the groove in the spacer with the new protective diaphragm, and assemble them properly.
- 2) Fit the new protective diaphragm with spacer into the pump shaft.
- 3) Align the auxiliary ring at the fixed position shown below, and install it.
- 4) Install the new diaphragm by turning it clockwise until it becomes stiff.

* If it is loose, it will make contact with the pump head, possibly causing malfunctions and/or damage.

- 5) Install the pump head, and secure it using the head bolts.

Troubleshooting:

WARNING:

- Ensure that nobody other than the operators and control personnel will operate the pump.
- Take steps to ensure that the power will not be turned on during the course of work. Hang a sign on the power switch indicating that work is in progress.
- Do not operate the pump with wet hands. Doing so may result in electric shocks.
- When trouble has occurred (such as when smoke appears or there is a smell of burning), shut down the pump's operation immediately, and contact your vender or a INITIATIVE representative. Otherwise, a fire, electric shocks and/or malfunctions may result.
- Do not attempt to disassemble the pump body or the circuit parts.
- During the air releasing, chemical may suddenly gush out from the pipes and other parts. Lead the end of the air-release hose bank to the tank or other container, and secure it so that it will not become disconnected.
- A situation in which the valve inside the pipe at the discharge side of the pump is shut off or becomes blocked with foreign matter is dangerous in that it may lead to an excessive rise in pressure that will exceed the pump's specification range, causing liquid to gush out, the pipe to be damaged and the pump itself to malfunction. Prior to operating the pump, check the valves and pipes, etc.

CAUTIONS:

- When working on the liquid-end parts of the pump, wear protective gear suited to the chemical concerned (such as rubber gloves, a mask, protective goggles and work overalls that are resistant to chemical).
- Before attempting to maintain or repair the pump, release the pressure in the discharge pipe, discharge the liquid in the pump head, and clean the liquid-end parts.
- The vibration of the pump may cause the hoses/tubes to become loose and disconnected. Before starting operation, secure the hoses/tubes and check their tightness.

NOTE:

- Use of a flow indicator is recommended as a method to detect discharge trouble.

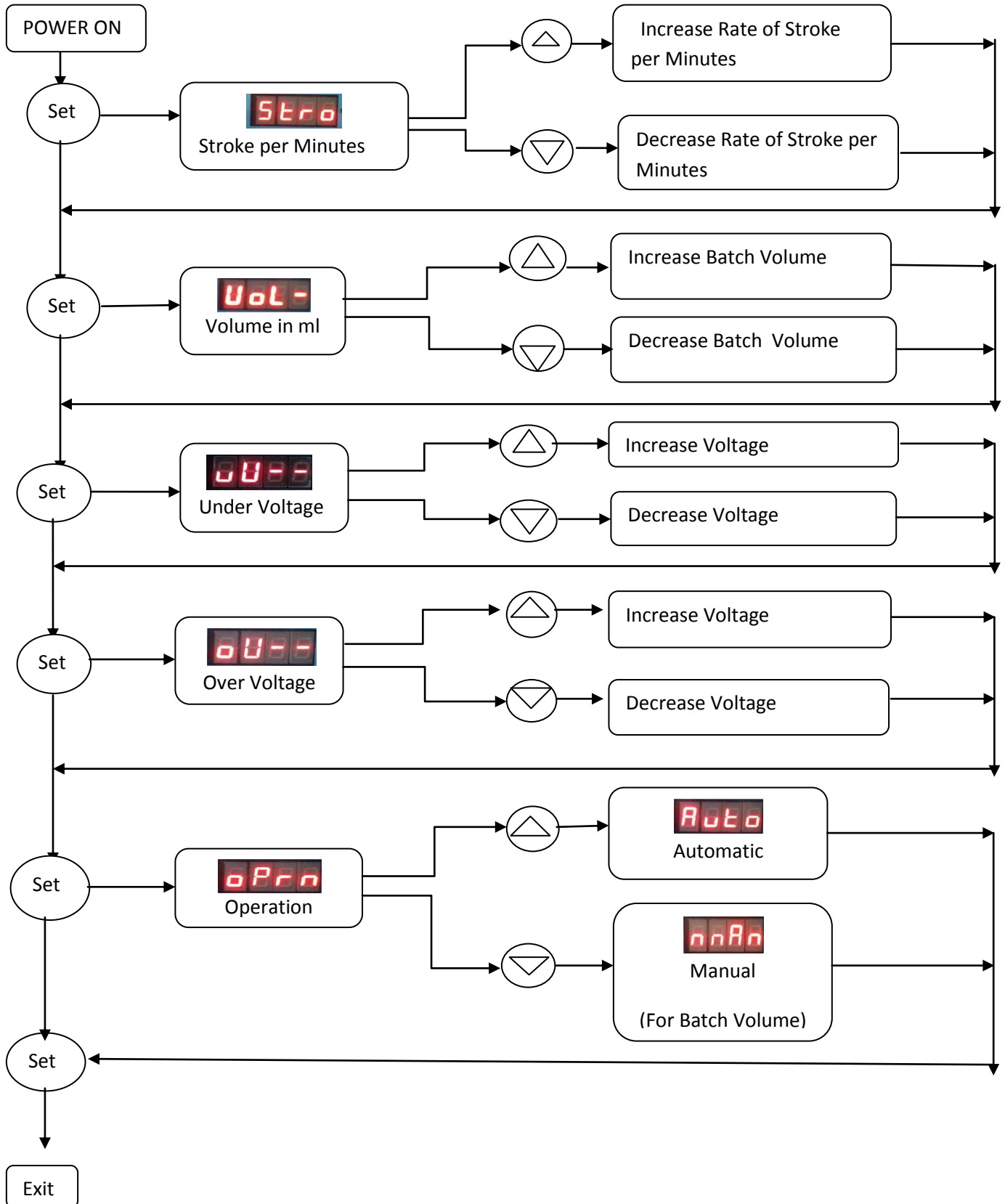
During Operation:

Trouble		Cause	Solution
The pump runs, but no liquid is pumped.	Air has found its way inside.	(1) A liquid which easily vaporize is being used. (2) Air has entered from a joint or seal to become mixed with the liquid. (3) The tank is empty.	(1) Dilute the liquid. (2) Tighten the parts from which the liquid is leaking. (3) After replenishing the liquid, proceed with air releasing.
	The pressure fails to rise.	(1) The supply voltage is low or the power supply used is not a commercial one.	(1) Connect the pump to the proper power supply.
	No liquid is sucked in.	(1) The strainer is clogged. (2) The pump is gas-locked. (3) The valve seat area has been assembled the wrong way round.	(1) Clean the strainer and the tank. (2) Proceed with air releasing. (3) Disassemble the valve seat area, and then re-assemble it properly.
	No liquid is discharged.	(1) The viscosity of the liquid is too high. (2) The pressure loss (pipe resistance) is too high.	(1) Reduce the viscosity of the liquid. (2) Install an air chamber at the discharge side, or use a pipe with a larger diameter.
Liquid is leaking.		(1) The pressure is increased due to clogging by dirt, etc. (2) Damage has resulted from fatigue of the pipes, diaphragm or other parts. (3) The nuts have not been adequately tightened.	(1) Disassemble and clean. (2) Replace the defective parts with new parts. (3) Tighten the nuts.
The pump fails to run.	The pilot lamp does not blink.	(1) Something is wrong with the power supply or supply voltage. (2) The wiring connections for the pump were not performed correctly. (3) The power cable is broken. (4) The main power switch is off. (5) The circuit breaker (CB) has been tripped. (6) The built-in protective fuse has blown.	(1) Check the power supply and supply voltage, and connect the pump to the correct power supply. (2) Check the wiring connections, and connect the wires correctly. (3) Repair or replace the power cable. (4) Turn on the main power switch. (5) After investigating the cause, reset the circuit breaker (CB). (6) Ask manufacturer for repair.
	The solenoid fails to work.	(1) The ground fault circuit interrupter (GFCI) has been tripped. (2) The electromagnetic contactor (MC) is defective.	(1) Ask manufacturer for repair. (2) Replace the electromagnetic contactor (MC).
There is a significant difference in the set discharge volume and the actual discharge volume.		(1) The discharge-volume setting is not correct. (2) The pipe connection conditions are different from the ones that were used to obtain the actually measured value.	(1) Set the correct value. (2) Conduct the measurements again under actual conditions, and then set the discharge volume accordingly.

Specifications:

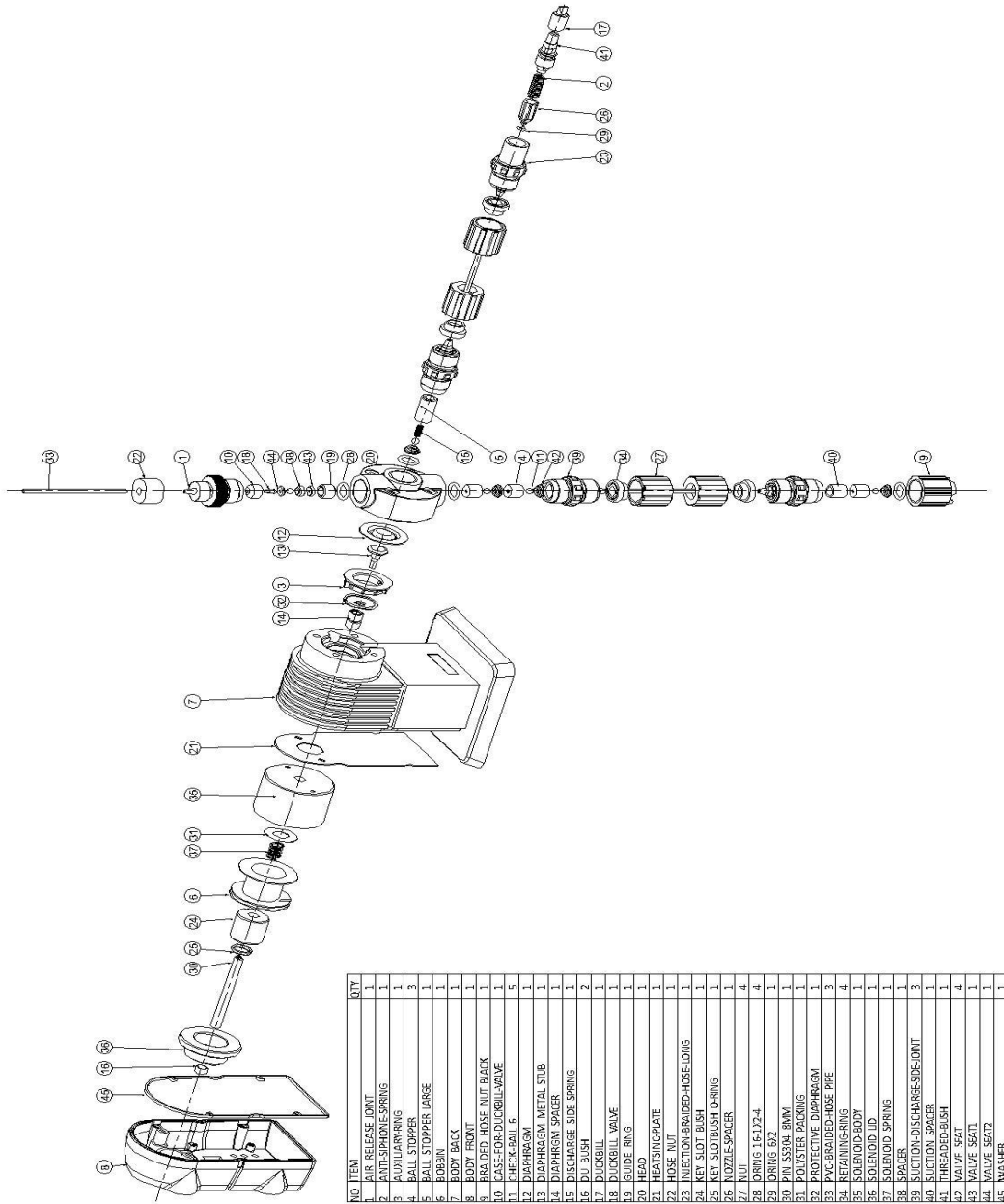
Specification		
Max. discharge volume*	mL/min	100
	L/h	6
Max. discharge pressure*	MPa	.5
	Bar	5
Stroke speed		30 to 300 strokes/min
Stroke length		Fixed at 1.0 mm
Connection (hose/tube: I.D×O.D)	Discharge side	
	Suction side	
	Air release	
Max. allowable viscosity		
Allowable temperature		
Ambient humidity		
Environmental protection		
Altitude of installation location		
Noise level		
Power supply	Rated voltage	AC 100 to 240 V
	No. of phases/ Frequency	
	Maximum current	
	Power consumption	
Weight		1.76kg

PROGRAMMING GUIDE OF I-DOSE



I Dose

Exploded View



NO	ITEM	QTY
1	RELEASE JOINT	1
2	ANTI-SPIRAL SPRING	1
3	ANTI-WEAR RING	1
4	BALL STOPPER	3
5	BALL STOPPER LARGE	1
6	BOBBIN	1
7	BODY BACK	1
8	BODY FRONT	1
9	BRAIDED HOSE NUT BACK	1
10	CASE FOR DUCKBILL VALVE	1
11	CHECK BALL 6	5
12	DIAPHRAGM	1
13	DIAPHRAGM METAL STUB	1
14	DIAPHRAGM SPACER	1
15	DISCHARGE SIDE SPRING	1
16	DUCKBILL	2
17	DUCKBILL VALVE	1
18	DUCKBILL VALVE	1
19	SLIDE RING	1
20	HEAD	1
21	HEATING PLATE	1
22	HOSE NUT	1
23	INJECTION-BRAIDED-HOSE-LONG	1
24	KEY SLOT BUSH	1
25	KEY	1
26	NOZZLE SPACER	1
27	NUT	4
28	RING 14-1724	4
29	RING 807	1
30	RING 14-1724	1
31	RING 807	1
32	PROTECTIVE DIAPHRAGM	1
33	PVC-BRAIDED-HOSE PIPE	3
34	RETAINING RING	4
35	SOLENOID BODY	1
36	SOLENOID LID	1
37	SOLENOID SPRING	1
38	SPACER	1
39	SUCTION-DISCHARGE-SIDE-JOINT	3
40	SUCTION SPACER	1
41	THREADED-BUSH	1
42	VALVE SEAT	4
43	VALVE SEAT	1
44	VALVE SEAT	1
45	WASHER	1