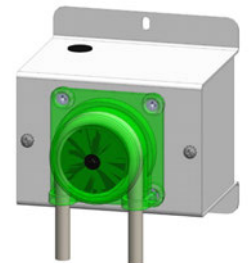
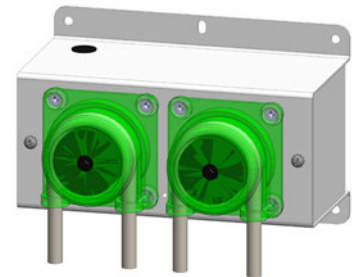
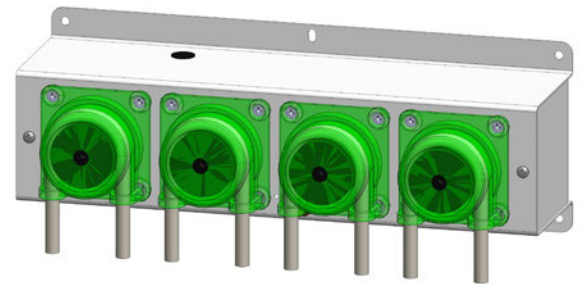
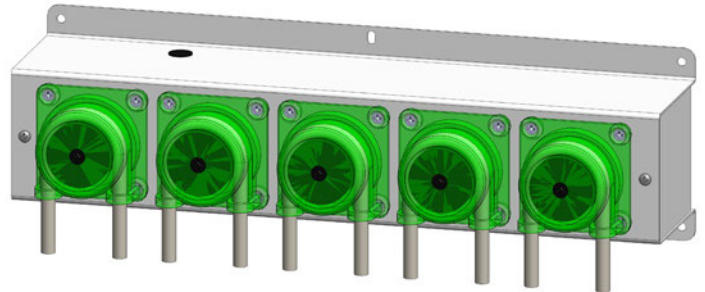


## AgrowDose Intelligent Peristaltic Metering Pumps

### Specifications

Power	12Vdc, 1Amp
Pump Heads	1, 2, 4 or 5
Flow Rate	Variable, 20-55mL/min
Tubing Material	FDA Approved Norprene
Tubing Size	1/4" O.D. x 3/16" I.D.
Max Outlet Pressure	25psi
Minimum Dose Size	1mL



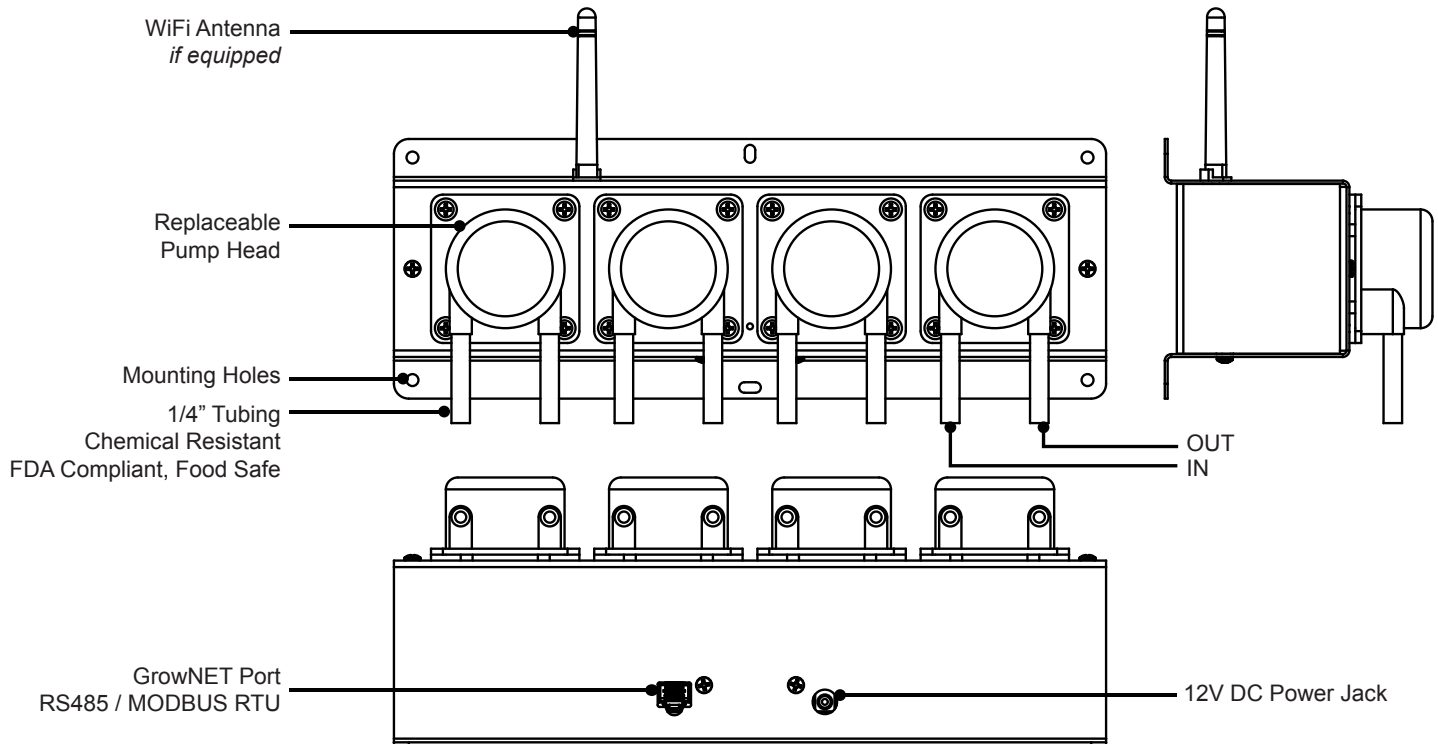
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# Installation Instructions

Mount the pump on a vertical wall surface using the holes in the mounting flanges. The center flange hole may be used to hang and level the pump, however, the corner screw holes should be used for final mounting. Use caution to avoid over-tightening the screws and bending the flanges.

A 120Vac wall receptacle will be required within 6ft of the pump for the power adapter.

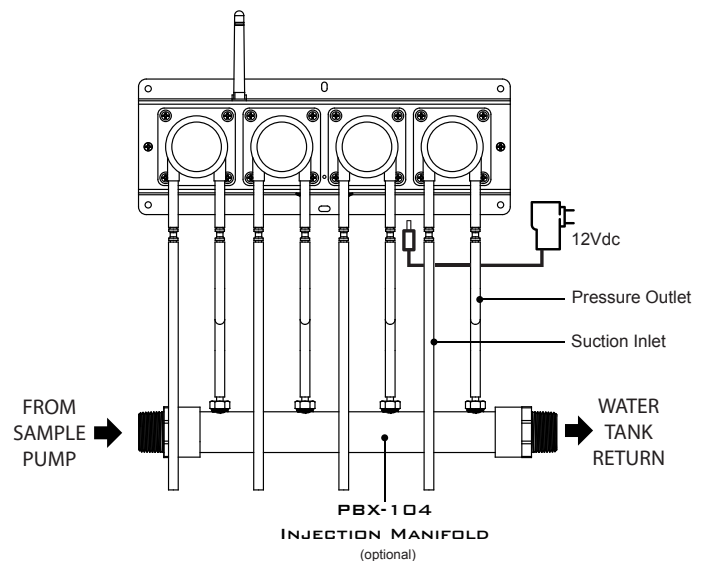


**Do NOT connect the GrowNET port to Ethernet networks.**

## Connecting Pump Tubing

Each pump has an inlet (suction) and outlet (pressure) tube. Using included barbed tubing connectors, install an inlet tube for each pump into the respective concentrate container, then install an outlet tube to the mixing reservoir or injection manifold.

Shown with optional PBX-100 series injection manifold designed for easy installation with a re-circulating pump for continuous recycling.



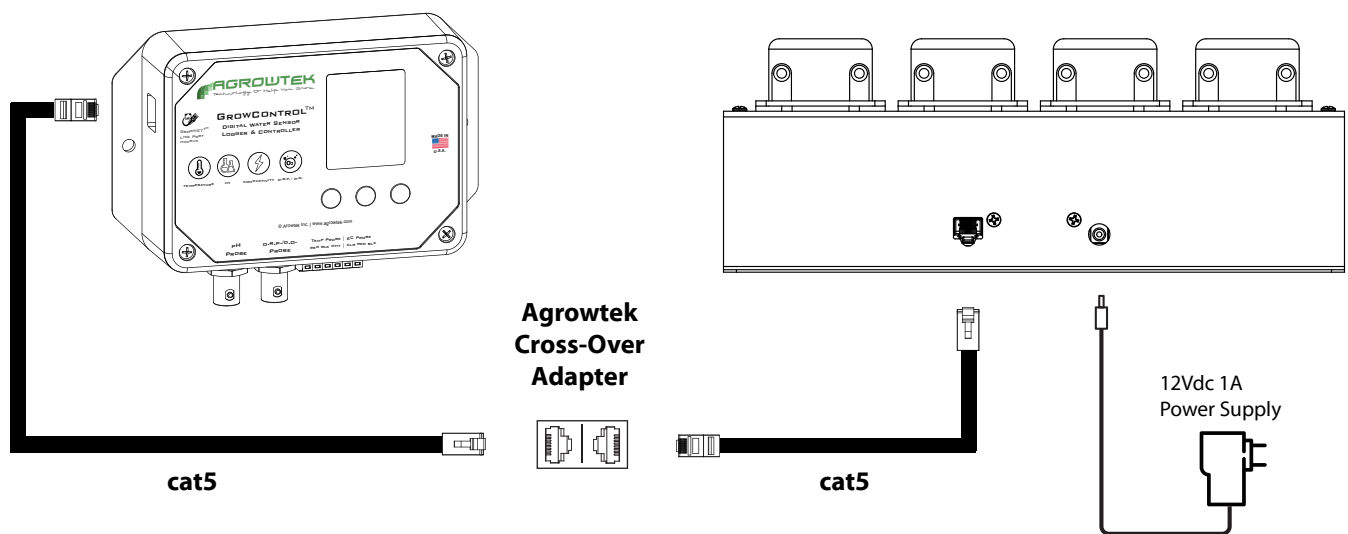
# Connection to SXHM Controller

Connect an ADi dosing pump directly to Agrowtek's SXHM hydroponics sensor to form a powerful, autonomous pH and EC set-point dosing system. Operate a single, dual or quad AgrowDose pump and configure each pump as an EC part or pH up or down part. Automatically maintains pH and EC concentrations with a simple repeating recipe dosing method.

A direct-link connection between a SXHM sensor and ADi pump requires Agrowtek's cross-over adapter.



**IMPORTANT! ONLY use cross-over adapters provided by Agrowtek.** Do not use other cross-over adapters or cross-over cables unless they are constructed exactly as diagramed on the cross-over diagram. Incorrect cross-over adapters or cables can cause damage to the equipment.

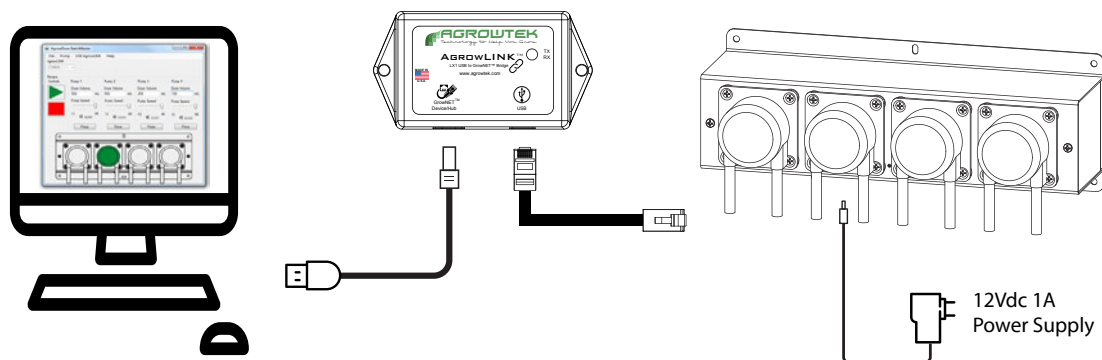


Please see the "MDX" product manual for more information on setting up and installing the MDX mini-dosing system.



[MDX System Instruction Manual](#)

# Connection to USB AgrowLINK



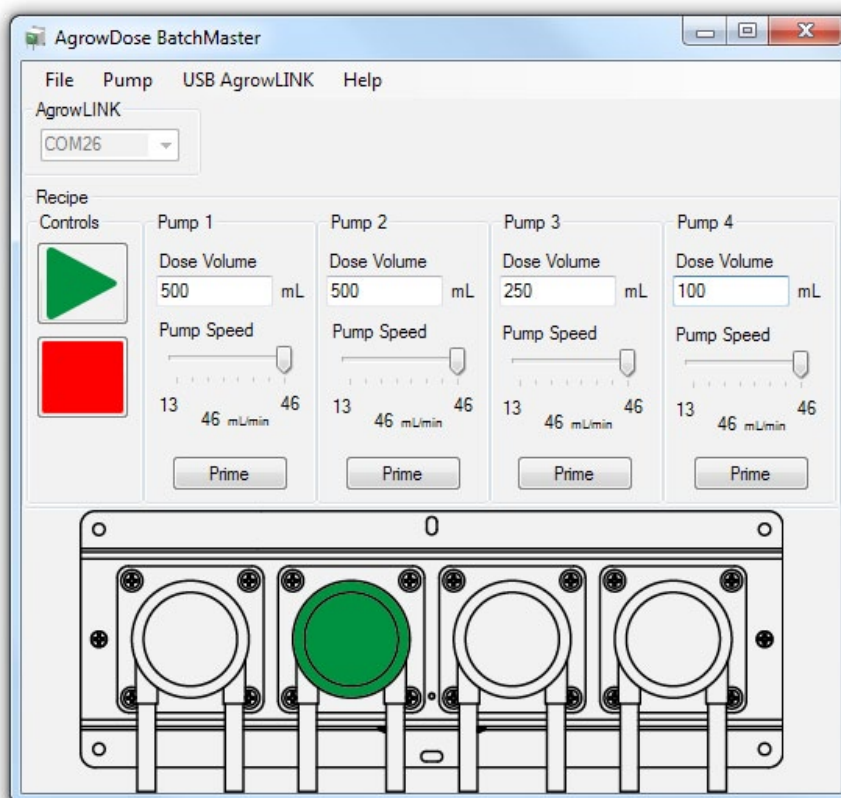
LX1 USB AgrowLINK connects Agrowtek's devices to a computer's USB port for:

- Firmware Updates
- Configuration
- Batch Dosing Control
- More

Perform batch dosing directly from a PC for creating nutrient mixtures, laboratory chemical dispensing, food and beverage mixing, and more. Standard FTDI drivers automatically install in Windows for the LX1 link.

## AgrowDose BatchMaster PC Software

BatchMaster is a free PC software application for directly operating the ADi dosing pumps through a LX1 USB AgrowLINK. To download the software, please visit our website at [www.agrowtek.com](http://www.agrowtek.com).



# BatchMaster Software Setup

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## Setup

To setup and install the free software you must be using a Windows operating system.

1. Download the installer from Agrowtek's website.
2. Open the installer and follow the command prompts.
3. If you are given a security warning asking permission to modify files (install them,) select YES.

Connect the USB AgrowLINK and allow the drivers to automatically install. Wait until a message is displayed in the task bar indicatin the device is ready to use (it may take several minutes.) If the device drivers fail to install, you can install them from the BatchMaster software.

## Driver Installation

If the device drivers have not automatically installed:

1. Open the BatchMaster program.
2. Ignore warnings that advise the AgrowLINK was not detected (press OK.)
3. From the top menu bar select: USB AgrowLINK > Install Driver.
4. The driver installer will open; follow the command prompts to complete the driver installation.

## Detect the AgrowLINK

If your AgrowLINK was not connected before you opened the program, you can search for it by selecting: USB AgrowLINK > Detect AgrowLINK.

# Running a Recipe

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Each pump may have a setting for the dose volume (mL) and the flow rate of the pump (mL/min).

## To create a batch recipe:

1. Set the flow rate for each pump. Most applications will use the pumps at full speed. The speed may be reduced if required for your application.
2. Set the volume that each pump should dose.
3. Save the recipe if desired by selecting: File > Save. Choose a location and name the file then press "Save."

Saved recipies may be recalled by selecting: File > Open and choosing a recipe file.

## Run a Batch

Once the recipe is configured, it may be "run" by pressing the green "play" button. The pumps will begin dosing with the first pump. Once the specified volume is completed, the next pump will begin. When all pumps have metered the volume in the recipe, the batch is complete.

## Stop Pumps

All pumps may be stopped immediately by pressing the red "stop" button.

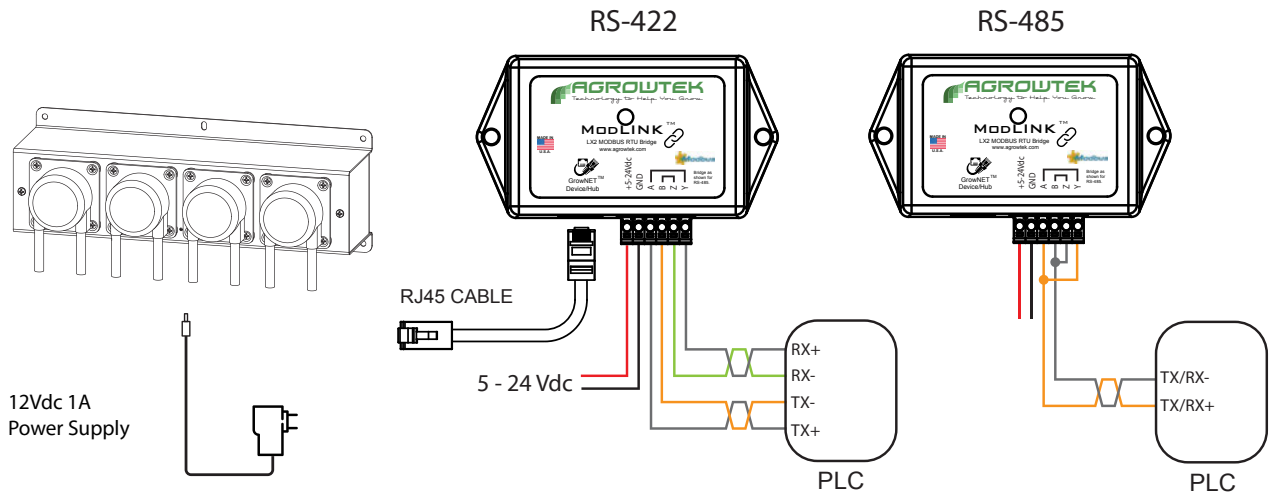
## Prime

Each pump may be primed for 10 seconds automatically by pressing the "Prime" button for the respective pump. The pump will operate at the speed selected allowing the speed to be previewed or tested.

# Connection to MODBUS RTU

## RS-485 / RS-422

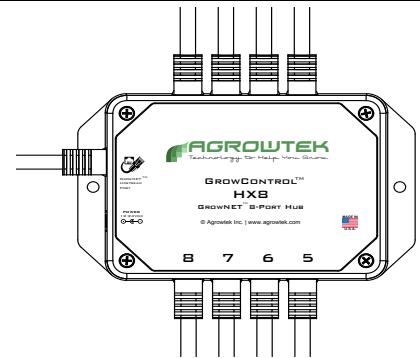
Use the LX2 ModLINK to connect MODBUS devices to the GrowNET™ port.



## HX8 8-Port Hubs

HX8 GrowNET™ Hubs allow multiple GrowNET™ sensors, relays and dosing pumps to be connected to a single LX1 or LX2 interface. Individually buffered, full-duplex ports for signal integrity. Hubs can be daisy chained to form a network of up to 247 devices.

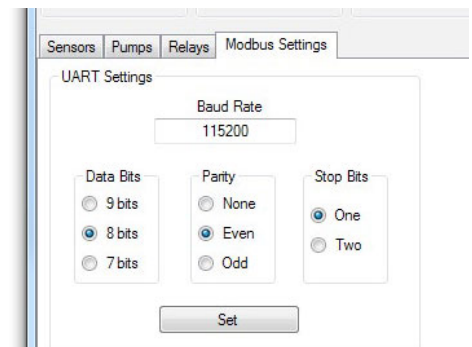
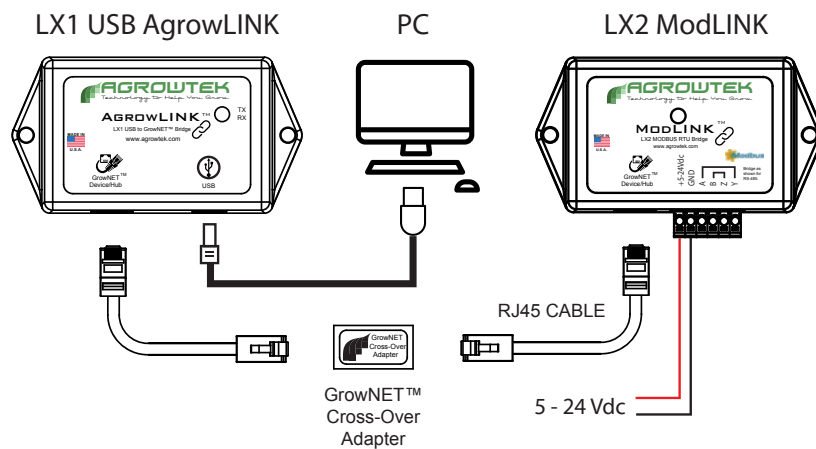
Hubs provide up to 1A of power for operating sensors and some relays directly over the GrowNET cable. A DC jack on the hub provides 24Vdc power to the ports from the included 120V wall power supply.



## Serial Speed & Format

The default serial data format for the LX2 ModLINK interface is: **19,200 baud, 8-N-1**.

Alternate speeds and formats between 9,600 - 115,200 baud may be configured with the free AgrowLINK PC utility using a LX1 USB AgrowLINK and the cross-over adapter supplied with the LX2 ModLINK.



See MODBUS manual for more information.



[MODBUS Manual](#)

## Supported Commands

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0x03 Read Multiple Registers  
0x06 Write Single Register  
0x10 Write Multiple Register

## Register Types

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All registers are 16 bits wide with addresses using the standard MODICON protocol. Floating point values use the standard IEEE 32-bit format occupying two contiguous 16 bit registers. ASCII values are stored with two characters (bytes) per register in hexadecimal format.

## Motor Operation Registers

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Motors are operated simply by sending the desired speed to each motor's **speed** register. Positive percentages result in CW (forward) rotation while negative percentages result in CCW (reverse) rotation.

FORWARD: +30 to +100% | REVERSE: -30 to -100% | STOP: 0%



**Speeds below 30% will result in a stalled motor and should not be used.**



**Included power supply is sufficient to drive a single motor at a time.**

Driving multiple motors simultaneously may cause the power supply voltage to drop below acceptable levels and put the pump into a fault protection mode requiring a power cycle.

To drive multiple motors reliably, provide 0.5A/Motor (12Vdc, 2.1mm Jack, Center Positive)

Motor life and service intervals can be tracked by observing the pump motors' accumulated run time which is tracked in seconds in a 32-bit register for each pump motor.

# MODBUS Register Map

Parameter	Function	Type	Scale	Access	Address
Device Address	Slave Address	Value, 1-247	8 bit	R/W	40001
Serial#	Serial Number	ASCII	8 Char	R	40004
DOM	Date of Manufacture	ASCII	8 Char	R	40008
HW Version	Hardware Version	ASCII	8 Char	R	40012
FW Version	Firmware Version	ASCII	8 Char	R	40016
Pump 1	Speed (0-100)	Signed Int	16 bit	R/W	40101
Pump 2					40102
Pump 3					40103
Pump 4					40104
Pump 5					40105
Pump 6					40106
Pump 7					40107
Pump 8					40108
Motor 1	Accumlated Run Time (seconds)	Unsigned Int	32 bit	R	49000
Motor 2					49002
Motor 3					49004
Motor 4					49006
Motor5					49008
Motor 6					49010
Motor 7					49012
Motor 8					49014

# Maintenance

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AgrowDose pumps are low maintenance and have a durable DC motor and non-servicable gear box for very long life. Pump tubing is non-servicable and the economical pump heads are replaced as units with new rollers, tubing and lubricant. Head replacement does not require any tools and takes only moments.

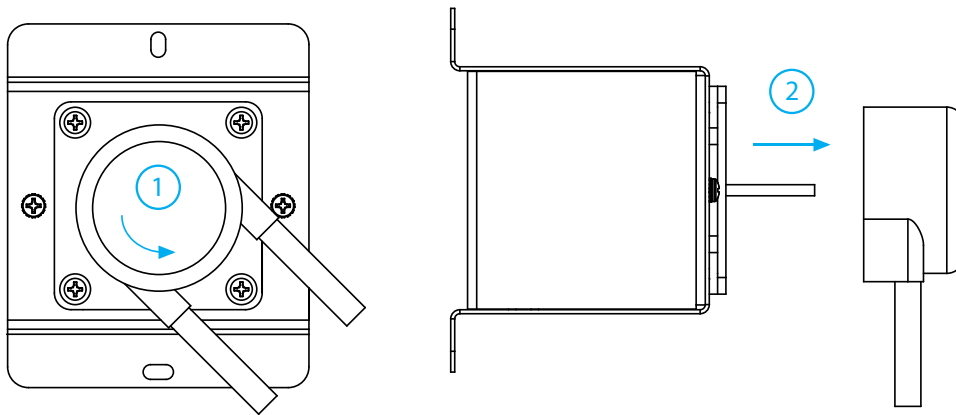
## Replacing Pump Head

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Pump heads are replaceable when the tubing wears out from extended use. Pump heads typically last 12-24 months depending on the volumes being dispensed and frequency of use. When the tubing begins to leak, replacement is a simple process:

1. Rotate the pump head counter-clockwise 1/8 turn
2. Slide the head off of the motor shaft.

Replace in reverse order.



## Storage and Disposal

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### Storage

Store equipment in a clean, dry environment with ambient temperature between 10-50°C.

### Disposal

This industrial control equipment may contain traces of lead or other metals and environmental contaminants and must not be discarded as unsorted municipal waste, but must be collected separately for the purpose of treatment, recovery and environmentally sound disposal. Wash hands after handling internal components or PCB's.

## Warranty

Agrowtek Inc. warrants that all manufactured products are, to the best of its knowledge, free of defective material and workmanship and warrants this product for 1 year from the date of purchase. This warranty is extended to the original purchaser from the date of receipt. This warranty does not cover damages from abuse, accidental breakage, or units that have been modified, altered, or installed in a manner other than that which is specified in the installation instructions. Agrowtek Inc. must be contacted prior to return shipment for a return authorization. No returns will be accepted without a return authorization. This warranty is applicable only to products that have been properly stored, installed, and maintained per the installation and operation manual and used for their intended purpose. This limited warranty does not cover products installed in or operated under unusual conditions or environments including, but not limited to, high humidity or high temperature conditions. The products which have been claimed and comply with the aforementioned restrictions shall be replaced or repaired at the sole discretion of the Agrowtek Inc. at no charge. This warranty is provided in lieu of all other warranty provisions, express or implied. It is including but not limited to any implied warranty of fitness or merchantability for a particular purpose and is limited to the Warranty Period. In no event or circumstance shall Agrowtek Inc. be liable to any third party or the claimant for damages in excess of the price paid for the product, or for any loss of use, inconvenience, commercial loss, loss of time, lost profits or savings or any other incidental, consequential or special damages arising out of the use of, or inability to use, the product. This disclaimer is made to the fullest extent allowed by law or regulation and is specifically made to specify that the liability of Agrowtek Inc. under this limited warranty, or any claimed extension thereof, shall be to replace or repair the Product or refund the price paid for the Product.