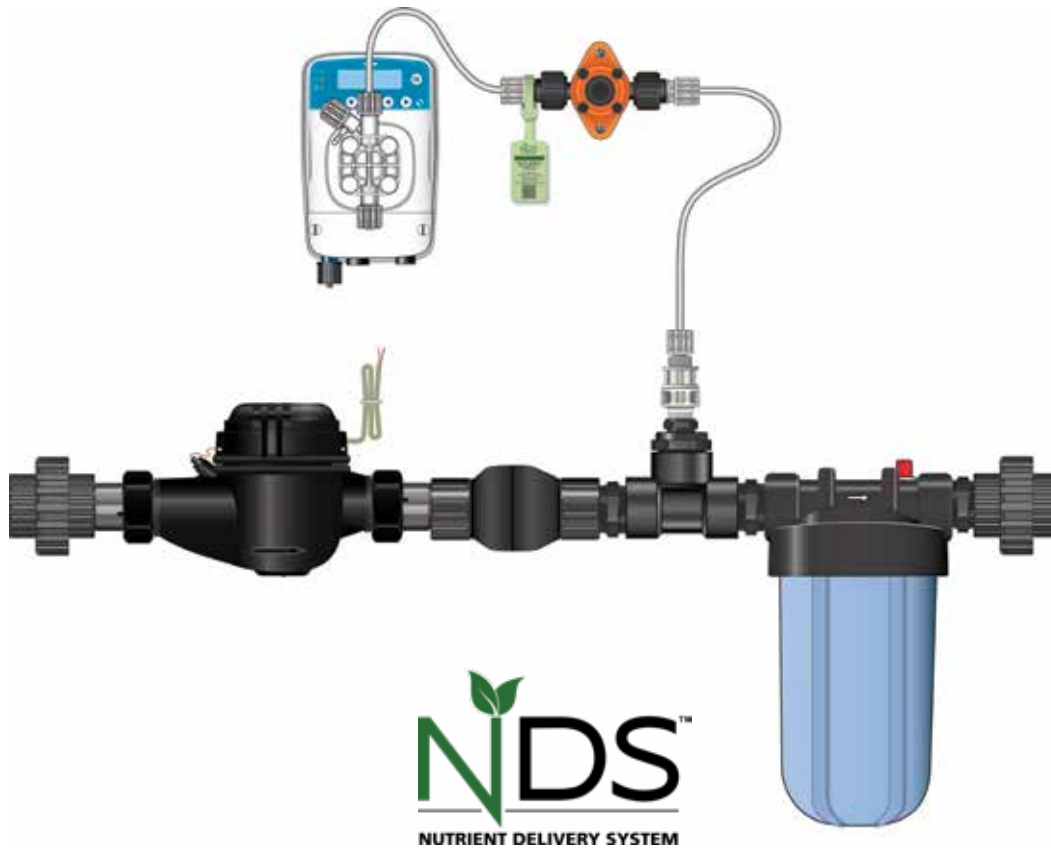


1 1/2" Micro-Doser Kit Manual

Part #: MDE0110MF1.5KIT




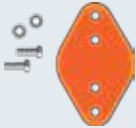


NOTE: Installation illustrations are to be used as a reference guide only.

1 1/2" Micro-Doser Kit Contents


Included in the Micro-Doser Kit 1 1/2":

PACK A			
Part	Part Number	Qty	Part Image
Water Meter with Adapters (1 pulse per 1 gallon)	WM150-1PPGP	1	 <p>gaskets water meter nuts adapters</p>
PACK B			
Part	Part Number	Qty	Part Image
1 1/2" Threaded Union	BK150-U	2	
1 1/2" Check Valve	CV112	1	
1 1/2" Tee	TT112	1	
1 1/2" to 3/4" Reducer Bushing	RB150-75	1	
3/4" to 1/2" Reducer Bushing	RB75-50ET	1	
1 1/2" Close Nipple	NIP150-2	3	
Digital Manual/Support Videos QR Tag	TAG-MD	1	
Thread Tape	TEF12	1	
PACK C			
Part	Part Number	Qty	Part Image
1 1/2" Mixing Chamber	MC150	1	

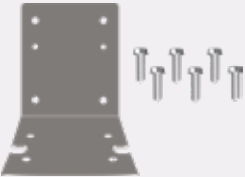
PACK D

Part	Part Number	Qty	Part Image
Pressure Relief Valve (PRV)	AVA0010101	1	
PRV Bracket	ASU0000101	1	
PRV Adapter Kit	KRA0005311	1	 tube nuts adapters o-rings locking collars hose nozzles
Syringe Kit	07944-KIT	1	 Included for difficult priming situations only.

PACK E

Part	Part Number	Qty	Part Image
eOne MF 0110	PEU483891MEA	1	 One pump tubing kit

PACK F

Part	Part Number	Qty	Part Image
Wall Bracket for the Mixing Chamber	MC150-BRACKET	1	

1 1/2" Micro-Doser Kit

Step-by-Step Assembly Instructions

INSTRUCTION TO ASSEMBLE THE MICRO-DOSER KIT PLUMBING SECTION

- 1** Remove the white clear caps from the ends of the **Water Meter**, and discard.



- 2** To attach the **Adapters** to the ends of the **Water Meter**, slide the **Adapter** through the **Nut**. Place the **Gasket** between the **Adapter** and the **Water Meter** threads, as indicated in the image. Hand tighten the **Nut**.



- 3** Wrap **Thread Tape** 4 to 5 times on all threads, except on the **PRV Adapter Kit** parts. Make sure to wrap tape clockwise to prevent from unraveling.



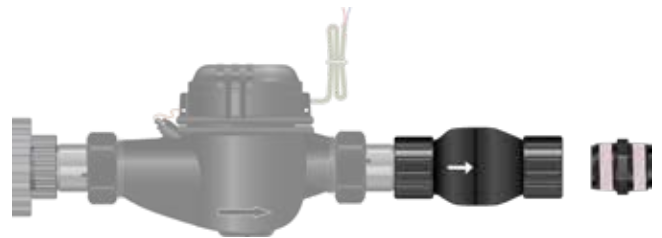
- 4** Attach a **Union** to the inlet side of the **Water Meter**. Make sure the arrow on the **Water Meter** is pointing in the direction of the flow.



- 5** Attach the **Check Valve** to the outlet side of the **Water Meter**. Make sure the arrow on the **Check Valve** is pointing in the direction of the flow.



- 6** Attach a **Close Nipple** to the **Check Valve**.



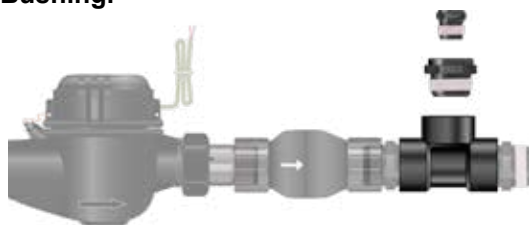
1 1/2" Micro-Doser Kit

Step-by-Step Assembly Instructions

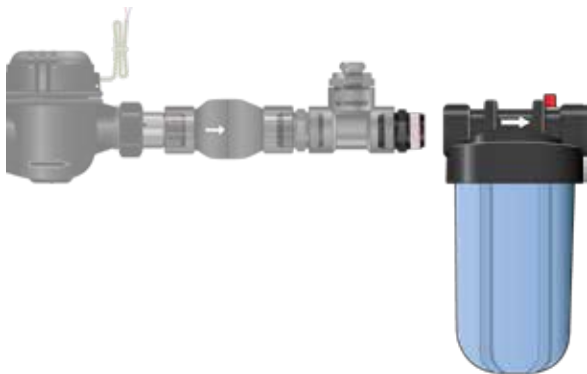
- 7** Attach the **Tee** to the **Nipple** and attach a second **Nipple** to the opposite end of the **Tee**.



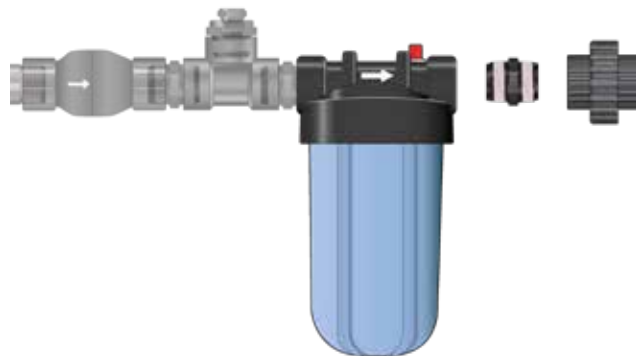
- 8** Thread the **1 1/2" to 3/4" Reducer Bushing** into the top opening of the **Tee**. Then thread the **3/4" to 1/2" Reducer Bushing** into the **1 1/2" to 3/4" Reducer Bushing**.



- 9** Attach the **Mixing Chamber** to the **Close Nipple**. Make sure the arrow on the **Mixing Chamber** points in the direction of the flow.



- 10** Insert the third **Close Nipple** in the outlet of the **Mixing Chamber**, and attach the last **Union** to the other side of the **Close Nipple**.



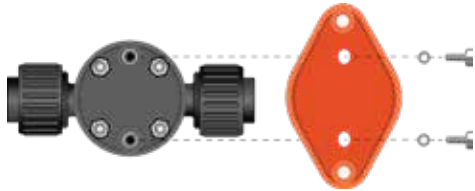
- 11** The **Plumbing Assembly** of your **Etatron Micro-Doser 1 1/2" System** is complete. Put the **Assembly** aside and continue with the **Pressure Relief Valve (PRV)**.



Assembly & Connection of the PRV to the Etatron Pump

For these steps you will need the PRV, PRV Bracket, PRV Adapter Kit from your Micro-Doser Kit & the Etatron eOne MF Pump

- 12** Attach the **PRV Bracket** to the bottom of the **PRV**. Use the nut and washer (included) to ensure the bracket is on securely.



NOTE: The outer holes on the bracket are used for mounting the PRV to a surface. Those need to be drilled out to accommodate 1/4" screws/bolts.

- 13** Place the **Small O-rings** in the grooves of the **Adapter**, and the **Large O-rings** in the threads of the **Adapters**.



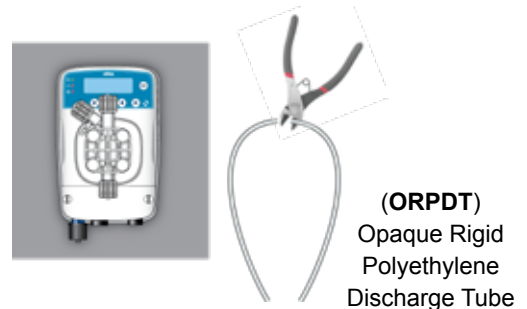
O-rings in place

NOTE: Wrap thread tape around the adapter's threads 2 - 3 times to avoid any leaks.

- 14** Attach the **Adapters** to the **PRV** by threading them into the **Unions**. Make sure the large **O-rings** face the **Unions**. Do not overtighten.



- 15** Take your pump from its box and mount it on the wall using the bracket included with the pump. Grab the Opaque Rigid Polyethylene Discharge Tube (**ORPDT**) included with the pump, and cut it in half (if cut too short the tension may cause leaks). Connect each one of the tube's halves to the **Adapters** on the **PRV** (see step 16).

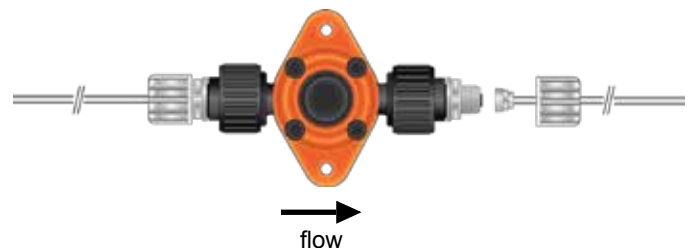


(ORPDT)
Opaque Rigid
Polyethylene
Discharge Tube

- 16** To attach the tubes to the **PRV**, insert the tube through the outside opening of **PRV Nut**. Insert the **Locking Collar** making sure the **Collar's** crown points away from the **Nut**. Now, insert the **Nozzle** in the tube's opening. Push the **Collar** and **Nozzle** together as close as possible. Repeat for the other tube half.

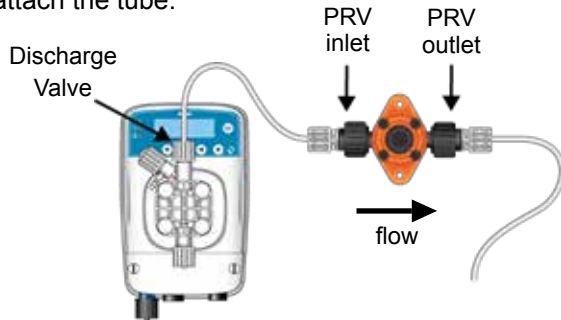


- 17** Now attach the ORPDT to the **Adapters** on the **PRV** using the **Nuts**.

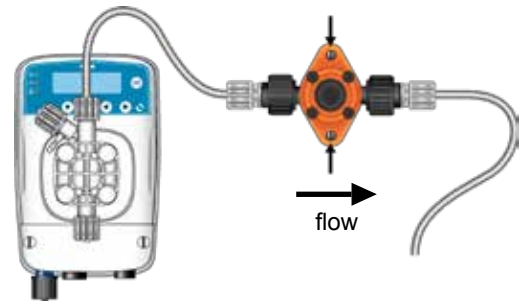


flow

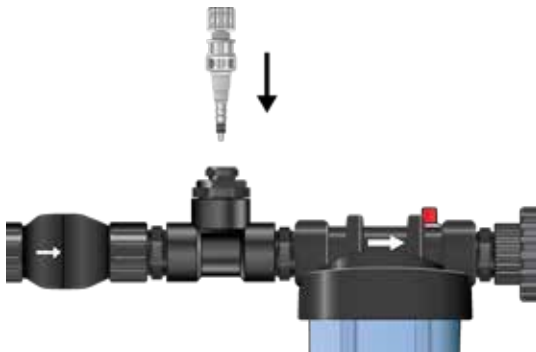
- 18** Grab the other end of the **ORPDT** on the inlet side of the **PRV**, and attach it to the Discharge Valve of the pump's head. Follow instructions in step 16 to attach the tube.



- 19** Mount the **PRV** to the wall or surface using 1/4" screws/bolts. Make sure the tube runs with no tension from the pump to the **PRV**.



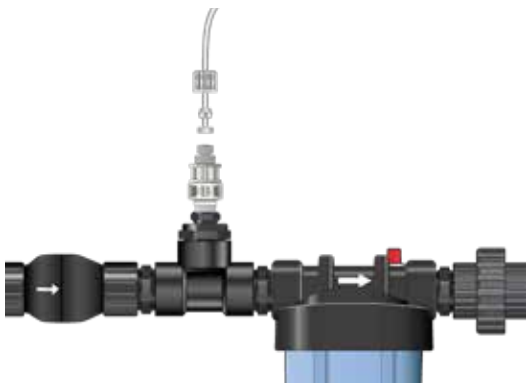
- 20** Grab the Injection Valve from the pump box. Insert the Injection Valve into the 3/4" to 1/2" **Reducer Bushing** in the **Micro-Doser Plumbing Assembly**, hand tighten only.



- 21** Anchor the **Micro-Doser Plumbing Assembly** to the wall or surface, right underneath the pump.



- 22** Remove the Nut, Collar, and Nozzle from the top of the Injection Valve, and attach the tube from the outlet side of the **PRV**, following the same procedure in step 16.



- 23** Your **Micro-Doser 1 1/2" Kit** assembly is now connected to your pump.



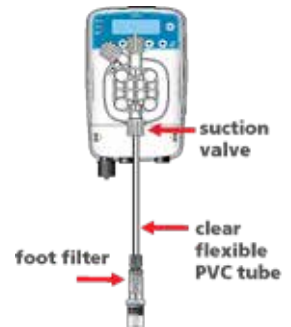
Tubing Connection - Water Meter Wiring

Attaching the Foot Filter and Priming Tubing

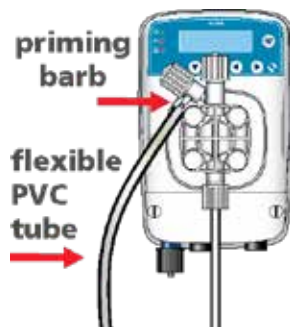
24 Grab the Clear flexible PVC Tube included with your pump. Cut the **Tube** in half, one piece for the Priming Valve and the other one for the Suction Valve.



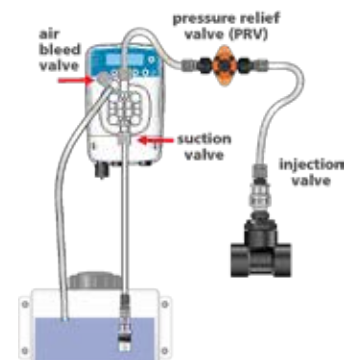
25 Attach the end of one of the sections to the Suction Valve and the other end to the Foot Filter, following procedure in Step 16. Make sure the Foot Filter sits comfortably in the chemical container.



26 Slide the second section of the Clear Flexible PVC Tube onto the Priming Barb. Place the other end of the tube inside the chemical container.



27 Next, connect the pump to the **Water Meter** (see steps 28 - 33 below).



CONNECTING THE WATER METER - You will need a punch and a small flat head screwdriver

28 To connect the pump to the **Water Meter**, remove the bottom front cover from the pump, using a flat head screwdriver.



29 Remove the rubber cap on the left.



30 Using a punch tool, punch a small hole through the rubber cap.



31 Insert the **Water Meter** wires through the hole in the rubber cap.



32 Run the wires back through the hole in the front cover and reinsert the rubber cap.



33 Insert the wires into terminals 3 and 4 from left (push the buttons to insert). Make sure they are connected properly and secured.



Pump Priming

Priming the Pump

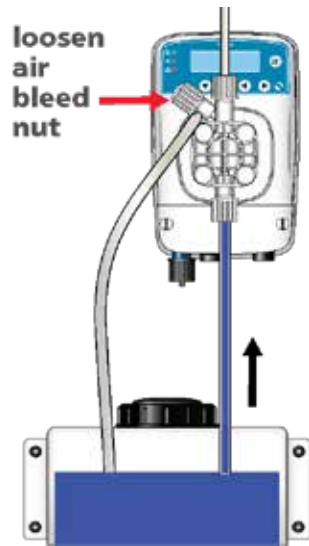
- 1 Plug in the pump, the display will read **SETUP FW01 VFT**. Press the arrow to the right to reach **FW03 MF**.



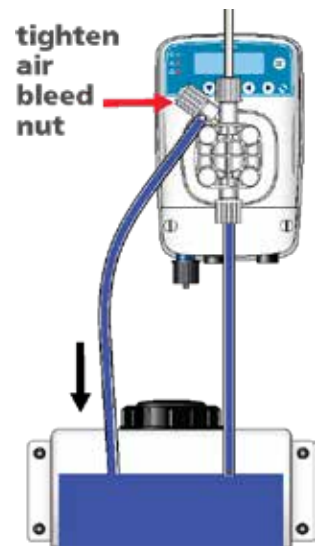
- 2 Push the **START/STOP** button twice. Screen shows **OPERATING MODE/ MANUAL MODE**.



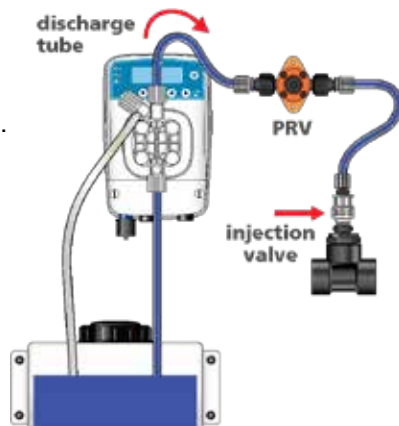
- 3 Loosen the air bleed nut. Push the **START/STOP** button to begin the priming functions. The pump will begin to stroke/click.



- 4 Once the chemical starts going down the air bleed tube, re-tighten the air bleed nut back up.



- 5 Chemical should start going up the discharge tube and toward the injection valve.



- 6 Push the **START/STOP** button to stop the priming function once chemical reaches the injection valve.



Pump Programming

- 7** Push the right arrow until the display reads **OPERATING MODE/ 1 x N (M) MODE.**

Please see page 9 for detailed instructions to determine the Number of Pulses (N) Per Water Meter Signal.



- 8** **Pulse/Stroke Volume** is calculated in relation to the pressure in the irrigation line. Use the values below to determine volume.

PUMP MODEL	PSI	Single Pulse Volume (mL)	Maximum Volume (mL)
0110	30	0.23	41.4
	35	0.22	39.6
	40	0.22	39.6
	45	0.21	37.8
	50	0.21	37.8
	55	0.20	36
	60	0.19	34.2
	65	0.19	34.2
	70	0.18	32.4

- 9** Push the down arrow to enter into the program. Use the right arrow button to enter number of pulses for each gallon of water. Press the down arrow to save the settings.



- 10** Push the **START/STOP** button to begin the program operation.



- 11** You can now turn on the irrigation water to begin operation of the system using the water meter.

CAUTION

See operating manual for complete instructions and safety standards.

When connecting a metering pump either to a public water supply or to its own water source, you must respect the regulations in force concerning protection of the source i.e. backflow prevention, etc.

NEED HELP? CALL 1-800-451-6628



Micro-Doser 1 1/2" Kit Installation

Pump Calculations

Follow these steps to calculate the Number of Pulses Per Signal (N) to reach a desired Injection Rate.

1. Identify operating pressure of system (**Dynamic PSI**).
2. Specify the volume of concentrate to be injected, per gallon.
3. Identify single pulse volume at the operating pressure identified in Step 1.
4. **DIVIDE:**
 - a. **(Volume to be injected per gallon) / (Single Pulse Volume) = Number of Strokes needed per gallon.**
 - b. If this is not a whole number:
 - i. Chose closest whole number to set – variation from desired injection will be minimal, but fluctuations may be noticeable at very low or very high flow rates.

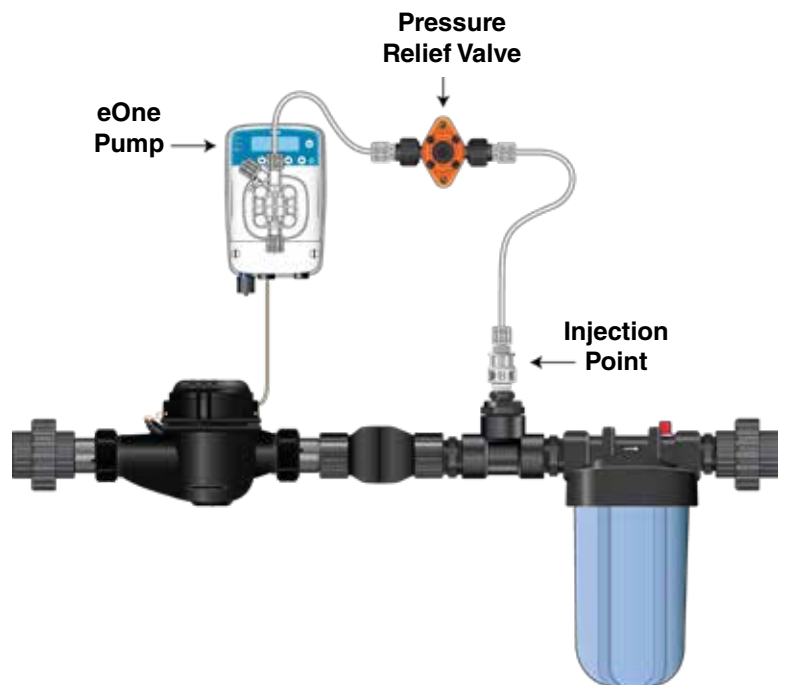
See “**USING THE PRESSURE RELIEF VALVE**” to decrease the Single Pulse Volume, to a volume that divides evenly into the desired Volume to be injected per gallon.

Using the Pressure Relief Valve

Etatron **eOne pumps** should be installed with a **Pressure Relief Valve** on the injection line, between the pump and the injection point.

This valve serves two purposes:

- a. To vacuum relief in a siphon situation.
- b. To make changes to the Single Pulse Volume. Using the adjustment screw, the amount of pressure that the eOne pump experiences can be increased above line pressure.



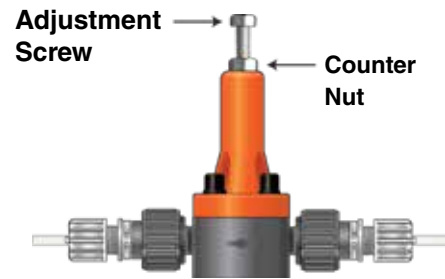
Volumetric Testing Procedure

To adjust the Single Pulse Volume with the Pressure Relief Valve (PRV), follow these steps:

- 1** Remove the Black Protection Cap from the PRV.



- 2** Loosen the Counter Nut from the Adjustment Screw.



- 3** Turn Adjustment Screw clockwise to increase Back Pressure, and reduce Single Pulse Volume.
- Turn Adjustment Screw counter-clockwise to decrease Back Pressure, and increase Single Pulse Volume (back pressure cannot be adjusted to PSI lower than dynamic pressure of water line).



- 4** Perform Volumetric test to determine/confirm Single Pulse Volume (see VOLUMETRIC TESTING PROCEDURE steps).

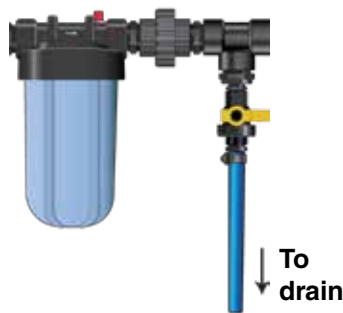
- 5** Repeat steps 3-4 as necessary until desired Single Pulse Volume is reached.

Volumetric Testing Procedure

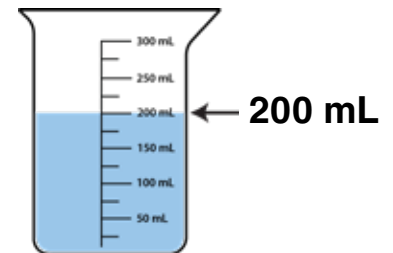
You can test check the amount of solution being injected by drawing concentrate from a graduated cylinder, with **MINIMUM 5 mL** graduation, and at least 250 mL in total volume; then, run the pump for a set number of strokes.

All volumetric testing should be done with the pump fully primed and ready to operate. The pump should be in **STANDBY MODE**.

- 1** Connect a hose to the **Test / Dump Port** on the water line. Put the hose end in the drain.

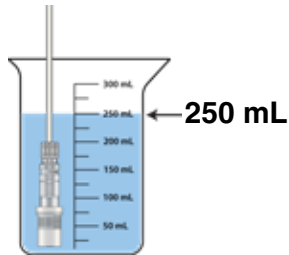


- 2** Fill a graduated cylinder with 150 mL - 200 mL of concentrate solution.



- 3 Place the suction strainer (Foot Filter) in the graduated cylinder.

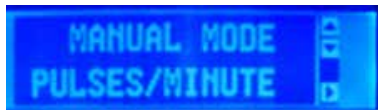
The suction strainer will displace ~50 mL. Note the volume in the graduated cylinder with the suction strainer.



- 4 Using ◀ ▶ buttons, set the pump to **MANUAL MODE**.



- 5 Press ▼ button to enter the Mode Settings.



- 6 Press ▼ button, the screen should read **PULSES / MINUTE - PULSES NUM: 300**

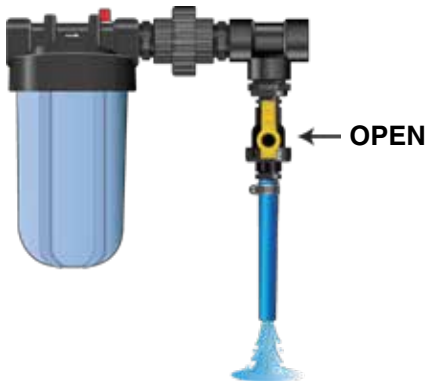


- 7 Press ◀ ▶ buttons to set **PULSES / MINUTE** to 100 (100 pulses / min).

- 8 Press the ▼ button, to save the new **PULSE / MINUTE** settings.

- 9 Open **Test/Dump Port** to allow water flow.

GPM of water does not matter at this time, injection will be done manually rather than proportionately.



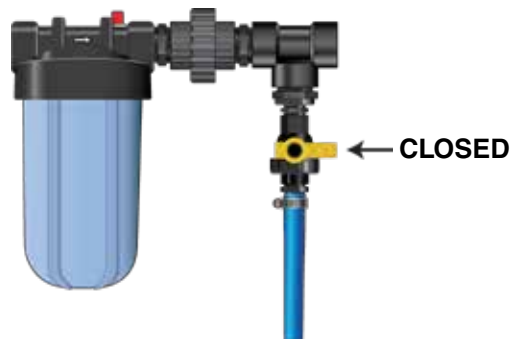
- 10 Press the **START / STOP** button to activate the pump. Run the pump for 1:00 Minute (use a timer).



11 Press the **START / STOP** button again to return pump to **STANDBY MODE**



12 Close the **Test/Dump Port** to stop water.



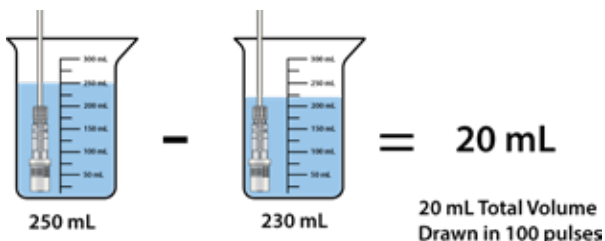
The system should be flushed before entering / returning to Operational Modes.

13 Note volume in graduated cylinder.

SUBTRACT:

Starting Volume in cylinder with suction strainer	−	End Volume in cylinder with suction strainer	=	Total Volume drawn in 100 Pulses
---	---	--	---	----------------------------------

Example:



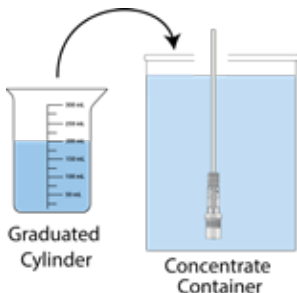
14 **DIVIDE:**

Total Volume drawn in 100 Pulses	=	Volume per Pulse
100 Pulses		

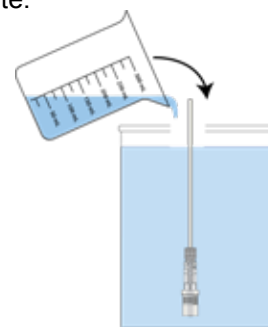
Example:

$$\frac{20 \text{ mL}}{100 \text{ Pulses}} = 0.2 \text{ mL}$$

15 Remove the suction strainer from the graduated cylinder, and place the suction strainer back in the concentrate container.

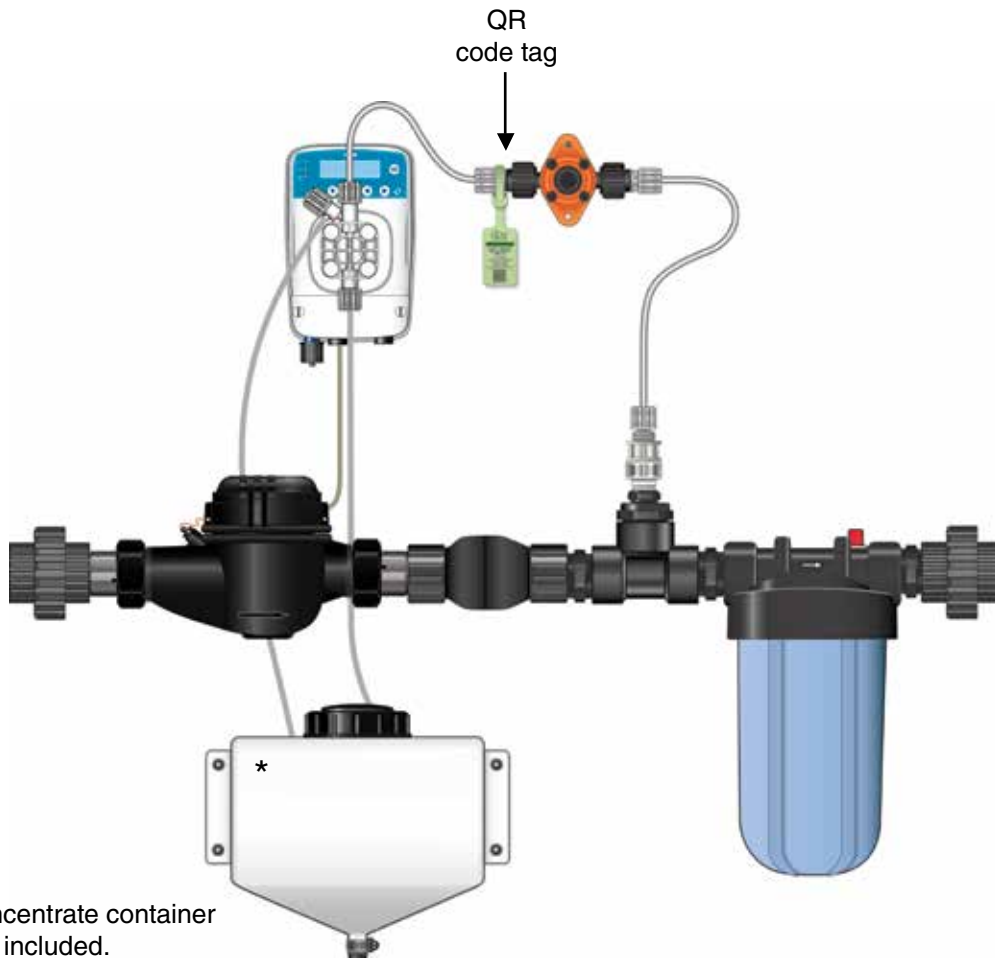


16 Return concentrate solution remaining in graduated cylinder to concentrate container to eliminate waste.



Attach the QR Code Tag to your Micro-Doser 1 1/2" Kit

The QR Code on the tag will take you to a page with programming, priming and calculation videos for the Etatron eOne MF pump, as well as a digital version of this manual.



*Concentrate container not included.



**Dilution Solutions • 2090 Sunnydale Blvd. • Clearwater, FL, USA
1-800-451-6628 • 727-451-1198 • www.dilutionsolutions.com**



LIT-EN-MDE0110MF1.5KIT

eOne