STENNER PUMPS®

PERISTALTIC METERING PUMPS SINCE 1957

S10P SERIES

PERISTALTIC METERING PUMPS

INSTALLATION AND MAINTENANCE MANUAL

⚠WARNING

TO BE INSTALLED AND MAINTAINED BY PROPERLY TRAINED PROFESSIONAL INSTALLER ONLY. READ MANUAL & LABELS FOR ALL SAFETY INFORMATION & INSTRUCTIONS.

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IMSP 120920c

WARRANTY AND SERVICE POLICY

LIMITED WARRANTY

Stenner Pump Company will for a period of two (2) years from the date of purchase (proof of purchase required) repair or replace at our option all defective parts. Stenner is not responsible for any removal or installation costs. Pump tube assemblies and rubber components are considered perishable and are not covered in this warranty. Pump tube will be replaced each time a pump is in for service, unless otherwise specified. The cost of the pump tube replacement will be the responsibility of the customer. Stenner will incur shipping costs for warranty products shipped from our factory in Jacksonville, Florida. Any tampering with major components, chemical damage, faulty wiring, weather conditions, water damage, power surges, or products not used with reasonable care and maintained in accordance with the instructions will void the warranty. Stenner limits its liability solely to the cost of the original product. We make no other warranty expressed or implied.

RETURNS

Stenner offers a 30-day return policy on factory direct purchases. Except as otherwise provided, no merchandise will be accepted for return after 30 days from purchase. To return merchandise at any time, call Stenner at 800.683.2378 for a Return Merchandise Authorization (RMA) number. A 15% re-stocking fee will be applied. Include a copy of your invoice or packing slip with your return.

DAMAGED OR LOST SHIPMENTS

Check your order immediately upon arrival. All damage must be noted on the delivery receipt. Call Stenner Customer Service at 800.683.2378 for all shortages and damages within seven (7) days of receipt.

SERVICE & REPAIRS

Before returning a pump for warranty or repair, remove chemical from pump tube by running water through the tube, and then run the pump dry. Following expiration of the warranty period, Stenner Pump Company will clean and overhaul any Stenner metering pump for a minimum labor charge plus necessary replacement parts and shipping. All metering pumps received for overhaul will be restored to their original condition. The customer will be charged for missing parts unless specific instructions are given. To return merchandise for repair, call Stenner at 800.683.2378 or 904.641.1666 for a Return Merchandise Authorization (RMA) number.

DISCLAIMER

The information contained in this manual is not intended for specific application purposes. Stenner Pump Company reserves the right to make changes to prices, products, and specifications at any time without prior notice.

TRADEMARKS

IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

1. **READ AND FOLLOW ALL INSTRUCTIONS.**
2. **WARNING** - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
3. **WARNING** - Risk of Electric Shock. Connect only to a branch circuit protected by a ground-fault circuit interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
4. **WARNING** - To reduce the risk of electric shock, replace damaged cord immediately.
5. **SAVE THESE INSTRUCTIONS.**

SAFETY INFORMATION

⚠ WARNING **Warns about hazards that CAN cause death, serious personal injury, or property damage if ignored.**

ELECTRIC SHOCK HAZARD

⚠ WARNING **ELECTRIC SHOCK HAZARD:**
The pump must only be used with the Class II power supply that is supplied with the pump.

⚠ AVERTISSEMENT **RISQUE DE CHOC ELECTRIQUE:**
La pompe ne être utilisée qu'avec le bloc d'alimentation de type Classe II originalement fourni avec celle-ci.

⚠ WARNING **RISK OF ELECTRIC SHOCK:**
This pump has not been investigated for use in swimming pool or marine areas.

⚠ AVERTISSEMENT **RISQUE DE CHOC ELECTRIQUE:**
La pompe n'a pas été vérifiée et approuvée pour utilisation sur des applications de piscine ou autre installation marine.

DO NOT alter the power cord or power supply.

DO NOT use receptacle adapters.

DO NOT use pump with a damaged or altered power cord or power supply. Contact the factory or an authorized service facility for repair.

⚠ WARNING **HAZARDOUS VOLTAGE:**
DISCONNECT power cord before removing motor cover for service. **Electrical service by trained personnel only.**

⚠ WARNING **EXPLOSION HAZARD:**
This pump is not explosion proof. **DO NOT** install or operate in an explosive environment.

⚠ WARNING **RISK OF EXPOSURE:**
Potential for burns, fire, explosion, personal injury, or property damage. To reduce risk of exposure, the use of proper personal protective equipment is mandatory.

⚠ WARNING **RISK OF FIRE HAZARD:**
DO NOT install or operate on any flammable surface.

⚠ WARNING **RISK OF CHEMICAL OVERDOSE:**
To reduce risk, follow proper installation methods and recommendations. Check your local codes for additional guidelines.

⚠ WARNING To reduce the risk of injury, do not permit children to use this product. This appliance is not to be used by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

SAFETY INFORMATION continued

⚠ CAUTION Warns about hazards that WILL or CAN cause minor personal injury or property damage if ignored.

⚠ CAUTION PLUMBING:
Metering pump installation must always adhere to your local plumbing codes and requirements. Be sure installation does not constitute a cross connection. Check local plumbing codes for guidelines.

⚠ CAUTION This pump has been evaluated for use with water only.

NOTICE: Indicates special instructions or general mandatory action.

This metering pump is portable and designed to be removable from the plumbing system without damage to the connections.

Before installing or servicing the pump, read the pump manual for all safety information and complete instructions. The pump is designed for installation and service by properly trained personnel.

Installation and product must adhere to all regulatory and compliance codes applicable to the area.

⚠ This is the safety alert symbol. When displayed in this manual or on the equipment, look for one of the following signal words alerting you to the potential for personal injury or property damage.

⚠ Acceptable for indoor use; or, outdoor use when mounted as shown in the Installation Section.

⚠ Destiné à une utilisation intérieure ou extérieure lorsqu'il le schéma de la section installation est respecté.

⚠ Electrical installation should adhere to all national and local codes. Consult a licensed professional for assistance with proper electrical installation.

⚠ Removing power from recirculation pump must also remove power from pump.

⚠ The use of an auxiliary safety device (not supplied), such as a flow switch or sensor, is recommended to prevent feed pump operation in the event of a recirculation pump failure or if flow is not sensed.

⚠ Point of injection should be beyond all pumps, filters, and heaters.

⚠ Maximum temperature = 40°C

MATERIALS OF CONSTRUCTION

All Housings
Polycarbonate

Pump Tube & Check Valve Duckbill
Santoprene® (FDA approved)

Suction/Discharge Tubing & Ferrules
Polyethylene (FDA approved)

Suction Line Strainer and Cap
PVC or Polypropylene (both NSF listed); ceramic weight

Tube & Injection Fittings
PVC or Polypropylene (both NSF listed)

Connecting Nuts
PVC or Polypropylene (both NSF listed)

All Fasteners
Stainless steel

Leak Detect Components
Hastelloy®

ACCESSORIES

3 Connecting Nuts 1/4"

3 Ferrules 1/4" or 6 mm *Europe*

1 Duckbill Check Valve

1 Weighted Suction Line Strainer 1/4"

1 20' Roll of Suction/Discharge Tubing
1/4" White or UV Black OR 6 mm White *Europe*

2 Additional Latches

1 Mounting Bracket

1 Additional Pump Tube

1 Manual

FLOW RATE OUTPUTS

GALLONS & OUNCES

Item Number Prefix	Pump Tube	Turndown Ratio	Turndown 10 PPG	Gallons per Day	Gallons per Hour	Ounces per Hour	Ounces per Minute	Pressure Max. psi
S3P01	1	10:1	4:1	5.0	0.21	27.0	0.44	100
S3P02	2	10:1	4:1	17.0	0.71	91.0	1.51	100
S3P06	6	10:1	4:1	30.0	1.25	160.0	2.67	100

Approximate Maximum Outputs @ 50/60Hz

LITERS & MILLILITERS

Item Number Prefix	Pump Tube	Turndown Ratio	Turndown 10 PPG	Liters per Day	Liters per Hour	Milliliters per Hour	Milliliters per Minute	Pressure Max. bar
S3P01	1	10:1	4:1	19.0	0.79	789.00	13.0	6.9
S3P02	2	10:1	4:1	64.0	2.68	2681.00	45.0	6.9
S3P06	6	10:1	4:1	114.0	4.73	4732.00	79.0	6.9

Approximate Maximum Outputs @ 50/60Hz

NOTICE: The information within this chart is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Stenner Pump Company recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.

MODES OF OPERATION

The S10P Series is flow activated from a water meter, control valve, flow switch or any control equipment that responds to flow. The pump accepts a dry contact or a 12-24 VAC/VDC signal and runs at a set time, a set speed or a set flow rate output according to the mode of operation selected.

SECONDS (dry contact signal)

In the Seconds mode, the pump can receives a dry (non-voltage) contact and runs for a set time in response to receiving the contact. There are five pump operating time ranges and the maximum time is displayed in the control panel; the run time is adjustable from 10% to 100% in 1% increments.

1 SECOND = 0.1 to 1.0
5 SECONDS = 0.5 to 5.0
10 SECONDS = 1.0 to 10.0
20 SECONDS = 2.0 to 20.0
60 SECONDS = 6.0 to 60.0

AUXILIARY

In the Auxiliary mode, the pump receives a 12-24VAC/VDC signal and runs at a set speed for as long as it receives the signal. The pump speed is adjustable from 10% to 100% in 1% increments. If polarity is reversed when connecting a DC signal to the AUX input, the pump will not respond to the signal.

FLOW SWITCH

In the Flow Switch mode, the pump receives a dry (non-voltage) contact from a 2 wire flow switch and runs at the set speed for as long as it receives the dry contact. The pump speed is adjustable from 10% to 100% in 1% increments. The connection is not polarity sensitive (polarity is not an issue when connecting the flow switch wires).

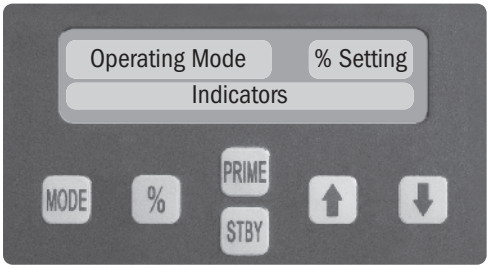
10 PPG DOSING

The 10 PPG mode is only for process flows from 0.1 to 14.0 GPM and a 10 PPG water meter. In the 10 PPG mode, the pump receives a dry contact from the water meter and runs at the programmed flow rate output for each pulse. The flow rate output is adjustable from 50% to 100% in 5% increments. The connection in not polarity sensitive.

⚠ **⚠ WARNING** **EXCEEDING MAXIMUM SYSTEM FLOW RATE OF 14 GPM IN 10 PPG DOSING MODE MAY LEAD TO DOSING ERRORS.**

CONTROL PANEL

From the factory, the keypad is locked, the pump is in standby, and set at the lowest settings.



Control Panel

UNLOCK KEYPAD
To unlock the keypad, simultaneously press and hold (MODE) and (%) for 5 seconds. The keypad will automatically lock if there is no operation for 60 seconds.

PRIME
To prime the pump or run the pump at full speed, first press & continue to hold (MODE), then press (PRIME).

STANDBY
To place the pump in or out of standby, first press & continue to hold (MODE), then press (STBY). The pump will not respond to incoming signals when in STBY mode.

SCROLL SCREENS
To scroll, first press & hold (MODE), then press (↑) or (↓) to scroll through the selections.

SET PERCENTAGE
After the operational mode is selected, select the percentage setting. First press & hold (%), then press (↑) or (↓) until the desired percentage is reached.

CONTROL PANEL continued

FLASHING INDICATORS

PRIME flashes when pump is priming.

STANDBY flashes when pump is placed in standby.

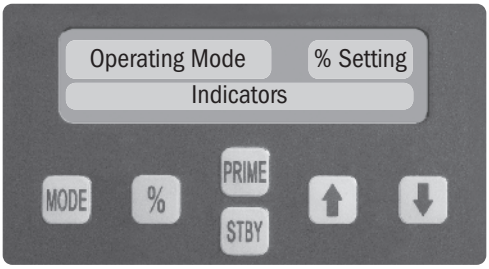
SIGNAL flashes when the pump receives a dry contact (10 PPG mode excluded).

LEVEL flashes when the pump receives a dry contact to the level input from a level sensing device.

CHANGE flashes when the tube hours exceed the hours set in the tube change timer.

LEAK flashes when a leak is detected.

KEYPAD LOCKED flashes and the keypad locks when there is no keypad activity for 60 seconds.



Control Panel

PERFORMANCE TIME MODES

PUMP LIFE HOURS

The total hours the pump has run displays on the pump run hours screen. The pump run hours cannot be reset.

TUBE RUN HOURS

The total hours the tube has been in service displays on the tube run hours screen.

NOTE: In Flow Switch and Auxiliary modes, the pump must be off at least once per hour for the tube hours to accumulate properly.

TUBE CHANGE HOURS

On the tube change hours screen, set the number of hours desired for the tube to run before a tube replacement. When the tube run hours exceeds the set hours, the CHANGE indicator flashes. The setting is 0 to 2550 in 10-hour increments.

RESET TUBE HOURS

After the tube is replaced, go to the reset tube hours screen and select yes to reset the tube run hours to zero. If the CHANGE indicator is flashing this step will clear the display.

PRE-PROGRAMMING REQUIREMENTS

Before programming the pump, collect or calculate the data in steps A through D then continue with the instructions for the Seconds, Auxiliary or Flow Switch mode.

A. Determine the **Maximum System Flow Rate** or **Well Pump Flow Rate in Gallons per Minute.**

If well pump output is unknown, refer to example below:

Calculate well pump output rate in gallons per minute (gpm).
Determine the output rate by opening a faucet until the well pump turns on. Immediately turn off the faucet and time how long the well pump runs. Next, measure the volume of water drawn from the faucet until the well pump turns on again.

$$\frac{\text{volume of water until the pump turns on (gal.)}}{\text{how long the pump runs (min.)}} = \textbf{Well Pump Output Rate (gpm)}$$

Example: After drawing 10 gallons of water, the well pump took 2 minutes to fill the pressure tank and stop.

$$\frac{10 \text{ gallons}}{2 \text{ minutes}} = 5 \text{ gpm}$$

B. Determine **Solution Strength Percentage** and the **Dosage Requirement in Parts per Million.**

If dosage is unknown, refer to example below:

Calculate required dosage in parts per million (ppm).
Refer to Oxidation Rates below. Estimate dosage and include the ppm of required residual.

Common Chemical Solution Strengths in ppm

Name	%	ppm
Sodium Hypochlorite	5.25 6.125 12.5	52,500 61,250 125,000
Potassium Permanganate Dissolved at 1/4 lb per gallon	3	30,000
Hydrogen Peroxide	7	70,000
Polyphosphate Dissolved at 1 lb per 10 gallons	1.2	12,000

Oxidation Rates

For each ppm of	Iron	Manganese	Hydrogen Sulfide
Required ppm of Chlorine	1	2	3
Required ppm of Hydrogen Peroxide	0.5	1	1.5

Example: To treat a water supply containing 2 ppm iron and 4 ppm hydrogen sulfide with a chlorine residual of 1 ppm, a dosage 15 ppm of chlorine is required.

2 ppm iron x 1 ppm chlorine = 2
4 ppm hydrogen sulfide x 3 ppm chlorine = 12
1 ppm chlorine residual = 1
Total 2 + 12 + 1 = 15 ppm

C. Calculate **Metering Pump Output Requirement in Gallons per Day.**

$$\frac{\text{Maximum System Flow Rate (gpm)}^{**} \times \text{Dosage (ppm)} \times 1440}{\text{Solution Strength ppm}^{*}} = \textbf{Metering Pump Output Requirement (gpd)}$$

* Solution Strength % x 10,000 = Solution Strength ppm

⚠ ** 10 PPG MODE: To calculate the Metering Pump Output Requirement in GPD, enter 14 GPM in the formula as the Maximum System Flow Rate (GPM) even if it is less than 14 GPM. To use the 10 PPG mode, the max. system flow rate MUST NOT exceed 14 GPM.

D. Reference the chart below to confirm the selected pump's maximum output slightly exceeds the pump output requirement calculated in C.

100 psi (6.9 bar) maximum

Item Number Prefix	Pump Tube	Maximum Output (gpd)
S3P01	1	0.5 to 5.0
S3P02	2	1.7 to 17.0
S3P06	6	3.0 to 30.0

SECONDS MODE
PROGRAMMING

1. Calculate the **Available Dose Time in Seconds.**
The available dose time is the minimum time interval between the water meter contact closures.

a. $\frac{60 \text{ Seconds}}{\text{Maximum System Flow Rate (gpm)}}$ = Maximum System Flow Rate (spg)

b. $\frac{\text{Maximum System Flow Rate (spg)}}{\text{Water Meter's contacts per gallon (cpg)}^*}$ = **Available Dose Time (sec.)**

* Refer to the water meter model to confirm the contact rate (cpg).

2. Calculate the **Pump Operating Time in Seconds.**

$\frac{\text{Pump Output Requirement (gpd) x Available Dose Time (sec.)}}{\text{Pump's Maximum Output (gpd)}}$ = **Pump Operating Time (sec.)**

⚠ **WARNING** **PUMP OPERATING TIME EXCEEDING AVAILABLE DOSE TIME MAY LEAD TO DOSING ERRORS.** To reduce operating time, select a pump with a higher output or use a stronger solution strength.

3. Calculate the **Pump Operating Time Percentage.**
Reference the chart to find the pump's maximum operating time for the formula below.

Seconds Mode	MAXIMUM Pump Operating Time in Seconds
1 SECOND	1.0
5 SECONDS	5.0
10 SECONDS	10.0
20 SECONDS	20.0
60 SECONDS	60.0

$\frac{\text{Pump Operating Time (sec.)}}{\text{Maximum Pump Operating Time (sec.)}^{**}}$ x 100 = **Pump Operating Time Percentage**

** Value can only be 1, 5, 10, 20, or 60.

4. Program the **Pump Operating Mode** and the **Pump Operating Time Percentage.**

Unlock the Keypad

Press (MODE) and (%) simultaneously and hold for 5 seconds to unlock the keypad.

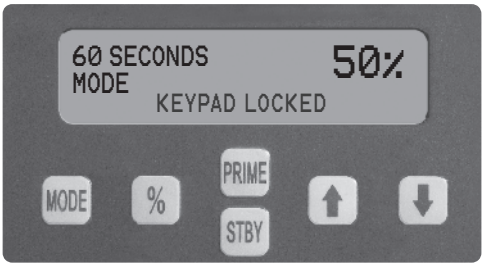
Pump Operating Mode

First, press and continue to hold (MODE), then press (↑) or (↓); when the display shows 1, 5, 10, 20 or 60 SECONDS, release both buttons to select based on the pump operating time determined in #2. The operating mode is now set.

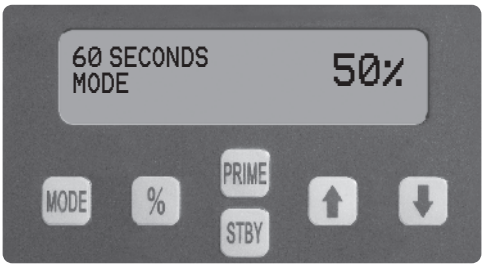
Pump Operating Time Percentage

The pump operating time can be set from 10% to 100% in 1% increments. First, press and continue to hold (%), then press (↑) or (↓) to adjust the pump operating time percentage determined in #3. When the display shows the desired percent, release both buttons to select. The percentage is now set.

For example, if the pump is set in the 60 seconds mode and the setting is 50%, the pump will run for 30 seconds when it receives a signal from the water meter.



Example of control panel with keypad locked.



Example of control panel set for 50% of 60 seconds.

AUXILIARY MODE
PROGRAMMING

The host device must have the ability to interface with the pump via a 12-24VAC/VDC signal. For typical water softener installation, the controller provides the ability to program the amount of water that passes through the water softener in gallons per signal (referred to as Water Volume per Signal in 2a below) and the duration of the signal in seconds (referred to as Water Softener Chemical Feed Duration in 2b below).

Refer to the specific water softener manual for instructions on how to program the settings and make the signal connections to the metering pump.

1. Determine the desired water volume (in gallons) that will pass through the water softener to require the (water softener) controller to send a signal to the metering pump (e.g. at every gallon).
NOTE: Smaller water volume between signals generally allows for more even chemical dispersion.

2. Calculate the **Water Softener Chemical Feed Duration in Seconds.**
The water softener chemical feed duration (in seconds) is the programmed amount of time that the (water softener) controller is continually activating the metering pump (to dispense chemical).

a. $$\frac{\text{Max System Flow Rate (gpm)}}{\text{Water Volume per Signal (gallons per signal)}} = \text{Signals Per Minute}$$

b. $$\frac{\text{60 Seconds}}{\text{Signals Per Minute}} = \textbf{Water Softener Chemical Feed Duration (sec.)}$$

⚠ **⚠ WARNING IF THE ACTUAL SYSTEM FLOW RATE EXCEEDS THE MAXIMUM SYSTEM FLOW RATE VALUE USED IN THE CALCULATION IN 2a; THE AVAILABLE WATER SOFTENER CHEMICAL FEED DURATION WILL BE REDUCED AND CAN LEAD TO DOSING ERRORS.**

3. Calculate the **Pump Speed Percentage.**

$$\frac{\text{Metering Pump Output Requirement (gpd) x 100}}{\text{Metering Pump Maximum Output (gpd)}} = \textbf{Pump Speed Percentage}$$

4. Program the **Pump Operating Mode** and the **Pump Speed Percentage.**

Unlock the Keypad

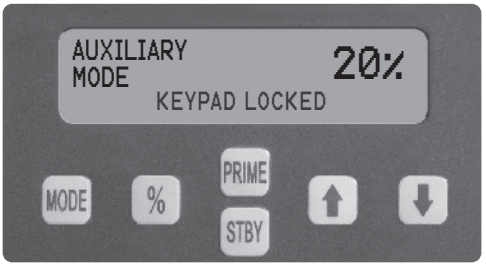
Press (MODE) and (%) simultaneously and hold for 5 seconds to unlock the keypad.

Pump Operating Mode

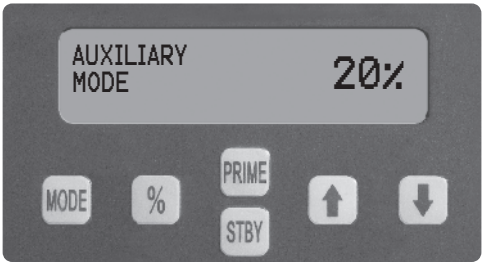
First, press and continue to hold (MODE), then press (↑) or (↓) to scroll through the modes of operation. When the display shows AUXILIARY, release both buttons to select. The operating mode is now set.

Pump Speed Percentage

The pump speed can be programmed from 10% to 100% in 1% increments. First, press and continue to hold (%), then press (↑) or (↓) to adjust the speed percentage determined in #3. When the display shows the desired percent, release both buttons to select. The percentage is now set.



Example of control panel with keypad locked.



Example of control panel with the pump speed set for 20%.

FLOW SWITCH MODE
PROGRAMMING

1. Calculate the **Pump Speed Percentage Setting.**

$$\frac{\text{Metering Pump Output Requirement (gpd) x 100}}{\text{Metering Pump Maximum Output (gpd)}} = \textbf{Pump Speed Percentage Setting}$$

2. Program the **Pump Operating Mode** and the **Pump Speed Percentage.**

Unlock the Keypad

Press (MODE) and (%) simultaneously and hold for 5 seconds to unlock the keypad.

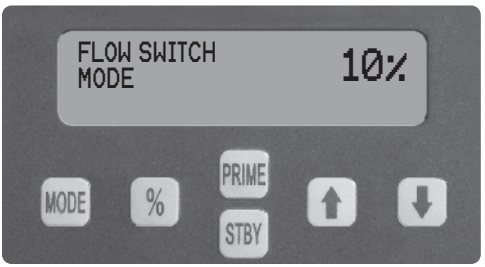
Pump Operating Mode

First, press and continue to hold (MODE), then press (↑) or (↓) to scroll through the modes of operation. When the display shows FLOW SWITCH, release both buttons to select. The operating mode is now set.

Pump Speed Percentage

The pump speed can be programmed from 10% to 100% in 1% increments. First, press and continue to hold (%), then press (↑) or (↓) to adjust the speed percentage determined in #1. When the display shows the desired percent, release both buttons to select. The percentage is now set.

Example of control panel with keypad locked.



Example of control panel set for 10% in Flow switch mode.

10 PPG MODE
PROGRAMMING

⚠ WARNING EXCEEDING MAXIMUM SYSTEM FLOW RATE OF 14 GPM IN 10 PPG DOSING MODE MAY LEAD TO DOSING ERRORS.

1. Calculate the **Pump Output Percentage Setting.**

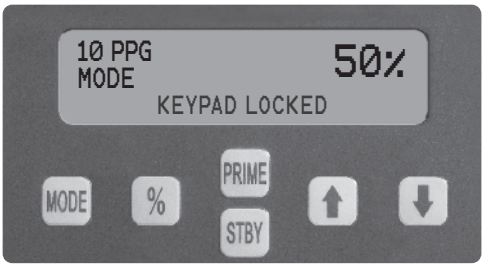
$$\frac{\text{Metering Pump Output Requirement (gpd)} \times 100}{\text{Metering Pump Maximum Output (gpd)}} = \textbf{Pump Output Percentage Setting}$$

2. Program the **Pump Operating Mode** and the **Pump Output Percentage.**

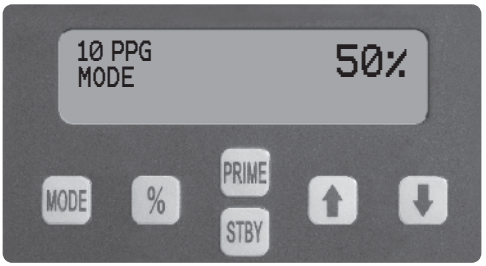
Unlock the Keypad
Press (MODE) and (%) simultaneously and hold for 5 seconds to unlock the keypad.

Pump Operating Mode
First, press and continue to hold (MODE), then press (↑) or (↓) to scroll through the modes of operation. When the display shows 10 PPG, release both buttons to select. The operating mode is now set.

Pump Output Percentage
The pump output can be programmed from 50% to 100% in 5% increments. First, press and continue to hold (%), then press (↑) or (↓) to adjust the output percentage determined in #1. When the display shows the desired percent, release both buttons to select. The percentage is now set.



Example of control panel with keypad locked.



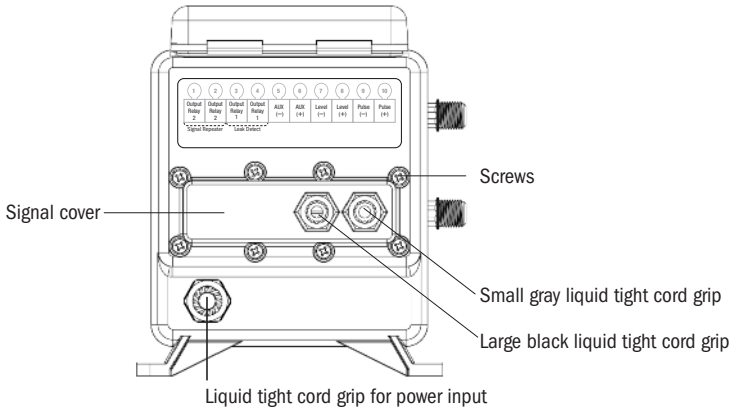
Example of control panel set for 50% in 10 PPG DOSING mode.

CONNECTIONS

USER INTERFACE CONNECTIONS

- The connection terminals are located at the rear of the pump. To access the terminals, unplug the pump, remove the Phillips head screws and remove the signal cover.
- Prepare the signal cable by removing 3.5" of the outer jacket. Bare 0.25" on the ends of the signal wires. See cautionary note below on wire approval, shielding, size, etc.
- Loosen the outer nuts on the liquid tight cord grips. Remove rubber plug from the cord grip.
- Insert a sufficient length of signal cable through the cord grip to allow for wiring.
- Make connections as required.
- Adjust signal cable so that the outer jacket is flush with the inside of the cord grip. Tighten the cord grip nut flush with the cord grip body.
- Replace signal cover, ensuring that the signal wires do not get pinched between the signal cover and pump body.
- Replace the signal cover screws, using care to find existing threads, and tighten until the signal cover is evenly and fully tightened down flush.

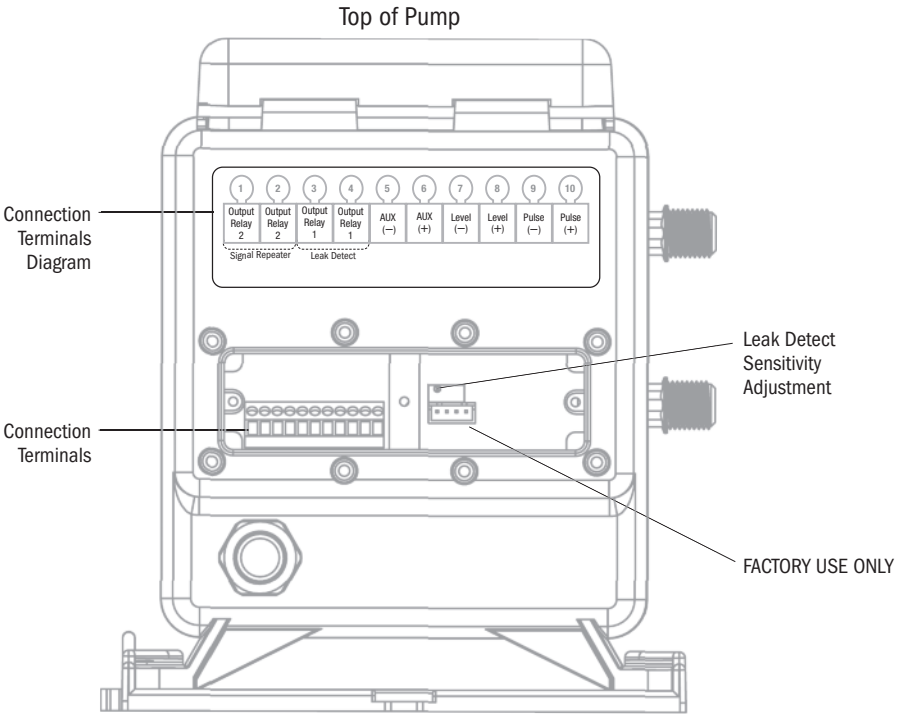
⚠ **⚠ WARNING** Failure to properly tighten or secure the cord grip or signal cover may allow water to enter the pump enclosure, which can cause pump failure, property damage, or personal injury.



⚠ **⚠ CAUTION** Signal cables must be UL, cUL AWM Style 2464 approved with conductors between 28 AWG and 18 AWG. Jacket diameter for small liquid tight must be 0.064" to 0.210". Jacket diameter for large liquid tight must be 0.114" to 0.250".

CONNECTIONS continued

DIAGRAM



Rear of the pump with signal cover removed

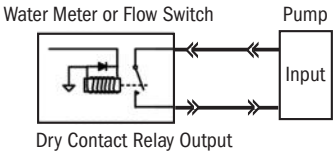
⚠ **⚠ CAUTION** If connecting a shielded signal cable to the pump, ensure that the shield wire is properly grounded on the controller (non-pump) side.

⚠ **⚠ CAUTION** DO NOT run signal wires in proximity to high voltage wires.

PULSE INPUT

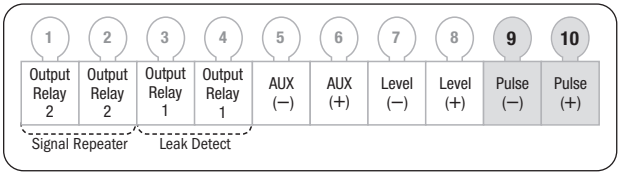
The pump injects solution when it receives a pulse signal from:

- a water meter and the pump is set to the “seconds” or “10 PPG” mode
- a flow switch and the pump is set to the “flow switch” mode



For connection to a Dry Contact

- There is no polarity to observe.
- Connect relay to Pulse (−), position 9 and Pulse (+), position 10.



AUXILIARY INPUT

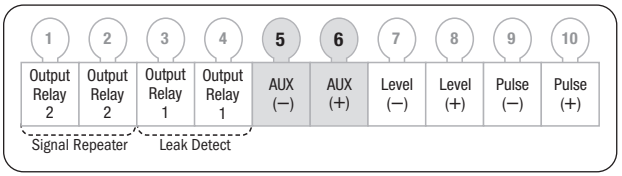
The pump in AUX mode injects solution when it receives a 12-24 VAC/VDC signal from an auxiliary device.

For connection to an AC signal

- There is no polarity to observe.
- Connect relay to AUX (−), position 5 and AUX (+), position 6.

For connection to a DC signal

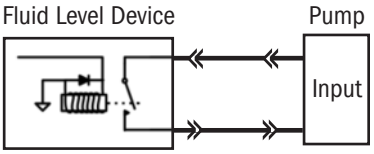
- Polarity must be observed. If polarity is reversed the pump will not respond to the signal.
- Connect OC positive to AUX (+), position 6.
- Connect OC common to AUX (−), position 5.



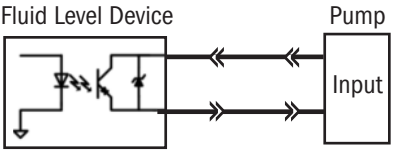
LEVEL INPUT

The pump receives a dry contact or open collector signal from a fluid level device to indicate a low level in the solution tank. When a signal is received on the level inputs, the pump will stop running and the display will flash LEVEL.

If the pump stops receiving the signal, the pump continues to run and the level flashing indicator automatically clears.



Dry Contact Relay Output



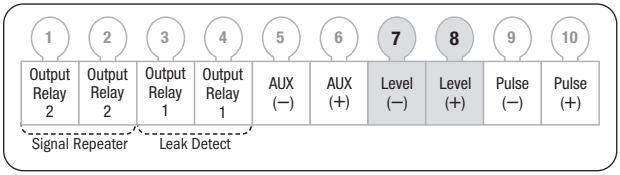
Open Collector Output

For connection to a Dry Contact

- There is no polarity to observe.
- Connect relay to Level (−), position 7 and Level (+), position 8.

For connection to an Open Collector

- Polarity must be observed.
- Connect OC positive to Level (+), position 8.
- Connect OC common to Level (−), position 7.



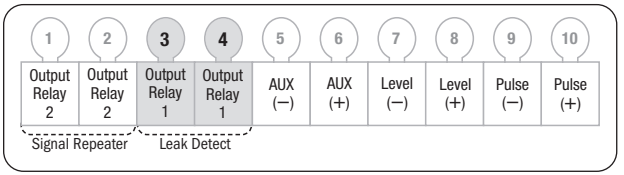
OUTPUT RELAYS

The relays are dry contacts, so there is no polarity to observe.

⚠ **⚠ WARNING** The output relays are for signal level only. Maximum rating is for 24VDC at 50mA.

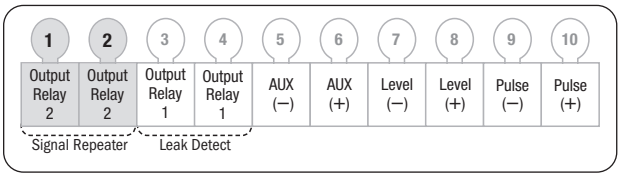
Relay 1: Leak Detect

- Relay 1 is Normally Open.
- The relay will close if a leak is detected.
- The relay will remain closed until the leak condition is cleared and the power to the pump is cycled .
- Connect to Relay 1 in positions 3 and 4.



Relay 2: Signal Repeater

- Relay 2 is Normally Open.
- The Signal Repeater repeats the incoming pulse.
- The Signal Repeater works at all pulse rates. The pump must have power applied.
- Connect to Relay 2 in positions 1 and 2.

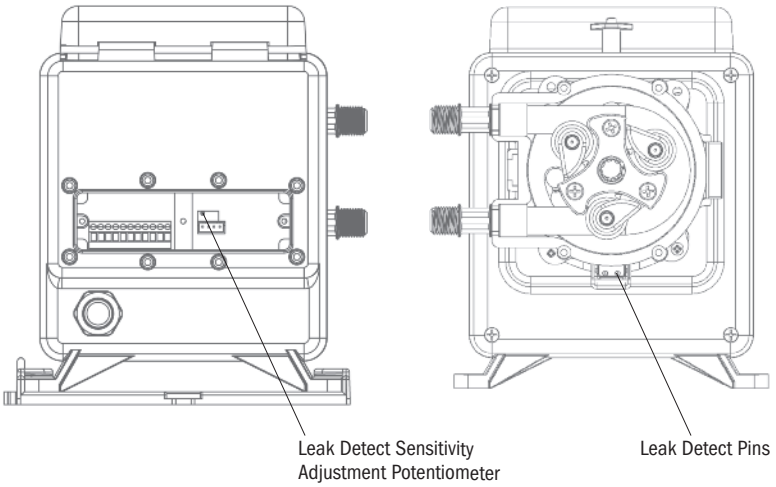


LEAK DETECT

The leak detect feature indicates if solution is present in the pump head by sensing the conductivity of the liquid. When a leak is detected, the pump shuts off, the relay closes, and the display flashes LEAK.

The sensitivity is factory preset to distinguish between water and common water treatment chemicals. The sensitivity is adjusted with the potentiometer (brass screw) located under the terminal cover on the back of the pump. A small flat blade screwdriver, less than 3 mm, is needed to turn the potentiometer. To reduce false leak detections, always calibrate the pump with the chemical and concentration utilized in the application.

To reset, the tube housing, cover & leak detect components must be clean, dry, and free of chemical residue. The power must be disconnected and reconnected to resume operation.



Follow the Sensitivity Calibration steps on the next pages

CALIBRATE THE LEAK DETECT SENSITIVITY page 1 of 2

⚠ WARNING TO BE INSTALLED AND MAINTAINED BY PROPERLY TRAINED PROFESSIONAL INSTALLER ONLY. READ MANUAL & LABELS FOR ALL SAFETY INFORMATION & INSTRUCTIONS.

⚠ WARNING Turn off water system, disable all pumps and depressurize the system before performing installation. Always wear proper protective safety equipment when working with metering pumps.

1. Place the pump in STANDBY.
2. Unplug the pump.
3. Remove tube housing cover from the pump head.
4. Remove the cover to access the adjustment potentiometer.
5. Use a small flat blade screwdriver less than 3 mm and turn the potentiometer clockwise until there is a clicking sound (approx. 25 rotations).
6. Plug the pump in.

LEAK DETECT continued

CALIBRATE THE LEAK DETECT SENSITIVITY page 2 of 2

7. Soak a small piece of sponge with the pumping solution and place over the two leak detect pins, use the expected weakest solution and keep in mind some solutions dilute with time.

8. Slowly turn the potentiometer counterclockwise until the display screen shows LEAK.

9. Turn the potentiometer an additional one full turn counterclockwise.

10. Remove sponge and thoroughly clean the solution off pins and confirm they are dry.

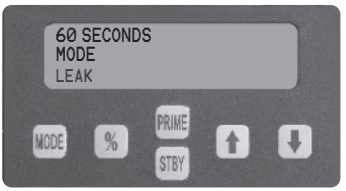
IMPORTANT: Confirm there is no chemical residue remaining on the leak detect components.

11. Disconnect, then reconnect power. Confirm the display screen does not show LEAK. If display shows LEAK, repeat steps 1-11. If the display does not show LEAK, go to step 12.

12. If the pump is not outdoors or exposed to water, go to step 14.

13. If the pump will be installed outdoors or exposed to water:

- Soak a small piece of sponge in water and place over the two leak detect pins. If the display shows LEAK, it indicates the conductivity of the pumped solution and water is too close and the pump cannot discriminate between the two. The liquid end needs to be protected from water intrusion to avoid a false leak detection.



- If the display does not show LEAK, the setting is complete.

14. Re-install the tube housing cover and the signal cover on the pump.

15. Prime the pump.

16. Verify pump operation.

INSTALLATION

ADDITIONAL SAFETY INSTRUCTIONS

NOTICE: Indicates special instructions or general mandatory action.

Read all safety hazards before installing or servicing the pump. The pump is designed for installation and service by properly trained personnel.

Use all required personal protective equipment when working on or near a metering pump.

Install the pump so that it is in compliance with all national and local plumbing and electrical codes.

Use the proper product to treat potable water systems, use only additives listed or approved for use.

Inspect tube frequently for leakage, deterioration, or wear. Schedule a regular pump tube maintenance change to prevent damage to pump and/or spillage.

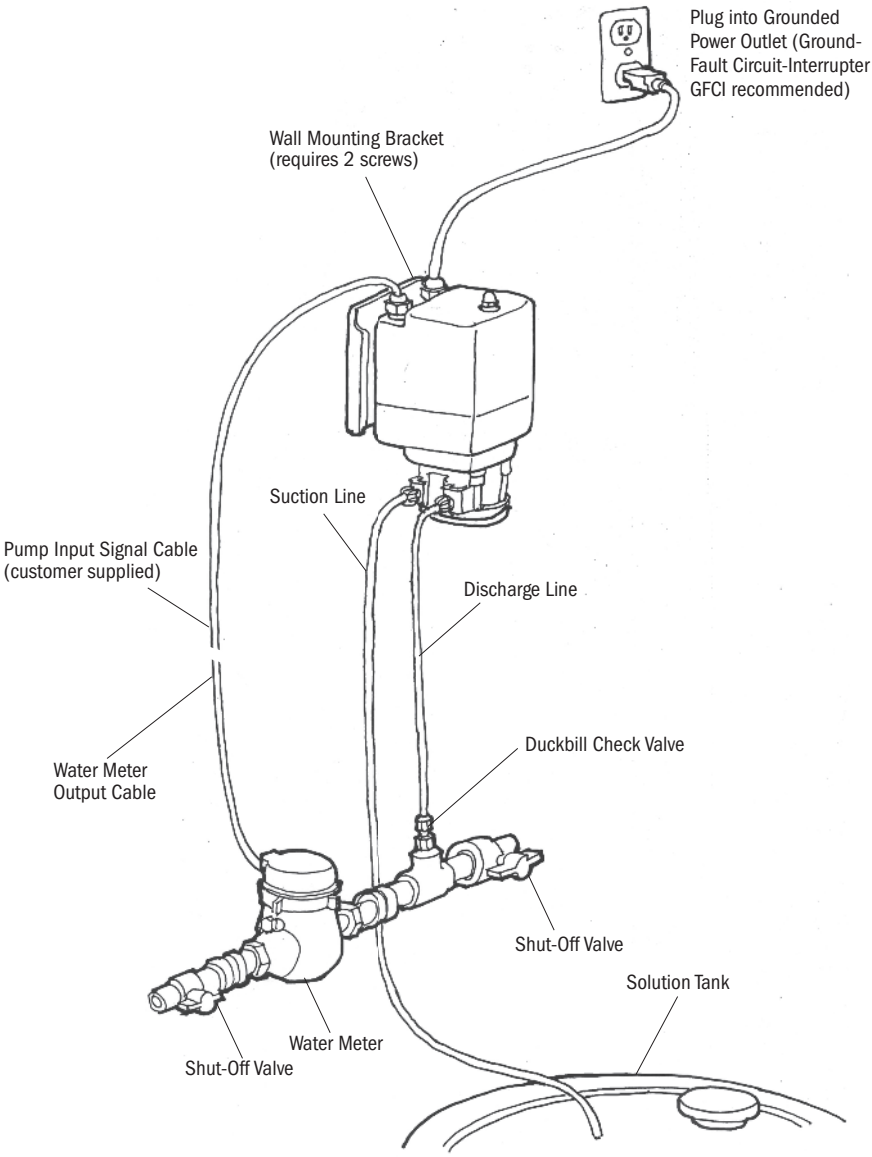
Pump is not recommended for installation in areas where leakage can cause personal injury or property damage.

1. Connect signal wires as required by the installation as described in the CONNECTION section.
2. Plug the pump into power. The cover must be lifted to program the pump. Loosen the display cover screw and lift the cover up. To unlock the keypad, simultaneously press and hold (MODE) and (%) for 5 seconds.
3. Put the pump in standby. First, press and continue to hold (MODE), then press (STBY).
4. Program the pump for the desired operating mode and % setting, refer to Programming Operational Modes in the manual. After programming, slide the cover on and reinstall the screw.

NOTE: Leave the unit in standby until the signal wires are connected and the pump is ready for priming.

INSTALLATION continued

DIAGRAM FEATURING A WATER METER



ADDITIONAL INSTRUCTIONS FOR CE PUMPS

ADDITIONAL INSTALLATION INSTRUCTIONS

1. All Class II Pumps located in Zone 1 of swimming pool areas require locating where flooding cannot occur.
2. This pump is intended to be installed as “fixed” as opposed to portable.
3. The pump must be installed in a vertical position as shown in the installation diagram.
4. After installation, the power supply plug must be accessible during use.
5. This unit must be scrapped if the supply cord is damaged.
6. Observe and comply with all National Wiring Standards.

ZUSTAZLICHE INSTALLIERUNGSANWEISUNGUN

1. Pumpen die sich in Zone 1 vom Schwimmbecken befinden sollen sind so einzurichten daß Ueberschwemmungen nicht vorkommen werde.
2. Diese Pumpe ist als fest montierte Ausrustung bedacht und soll nicht umstellbar gebraucht werden.
3. Die Pumpe muss vertikal installiert werden, siehe Zeichnung.
4. Die Stromversorgung muss nach der Installierung noch zuganglich sein.
5. Bei beschadigter Verkabelung ist dieses Gerat nicht mehr zu gebrauchen.
6. Staatliche Vernetzungsvorchriften mussen eingehalten werden.

INSTRUCTIONS SUPPLÉMENTAIRES D’INSTALLTION

1. Toutes les pompes installées dans la Zone 1 du périmètre de la piscine doivent être situées de manière à ne pas pouvoir être inondées.
2. Cette pompe est prévue pour installation fixe et non pas portative.
3. La pompe doit être installée en position verticale selon le dessin.
4. Après l’installation, la prise électrique doit rester accessible pendant l’utilisation.
5. Cette unité doit être mise au rebut si le cordon électrique est endommagé.
6. Observez et adhérez à toutes les Normes Nationales pour Installations Electriques.

INSTRUCCIONES ADICIONALES PARA INSTALACIÓN

1. Todas las bombas Clase II situadas en la Zona 1 de las áreas de la piscina requieren colocarse donde no puedan ser inundadas.
2. Esta bomba es para ser instalada “fija” en vez de portátil.
3. La bomba debe ser instalada en posición vertical como se muestra en el diagrama de instalación.
4. Depués de la instalación el enchufe suministrador de energía debe estar accesible durante el uso.
5. Se deberá deshechar la unidad si el cordón de abastecimiento se deteriora.
6. Observe y cumpla con todas las Reglas Nacionales para Instalaciones Eléctricas.

ISTRUZIONI SUPPLEMENTARI PER L’ INSTALLAZIONE

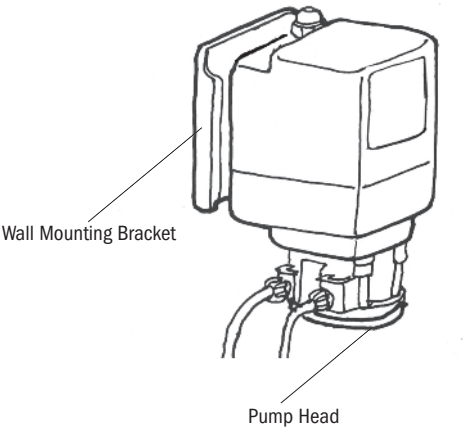
1. Tutte le pompe Classe II localizzate nella Zona 1 della superficie circostante la piscina devono essere collocate dove gli allagamenti no possono accadere.
2. Questa pompa, é inteso, deve essere installata come ‘fissa’ e non come portatile.
3. La pompa deve essere installata in posizione verticale come mostrato sul disegno.
4. Dopo l’installazione, la spina deve essere accessibile durante l’uso.
5. Questa unitá deve essere gettata via se il filo elettrico é danneggiato.
6. Osservare e aderire a tutte le Norme Nazionali Sugli Impianti Elettrici.

INSTALLATION continued

MOUNT PUMP

- Recommended mounting is vertical with pump head pointed downward or horizontal sitting on motor base.
- Select a dry location (to avoid water intrusion and pump damage) above the solution tank. Best recommended location is above the solution tank in a vertical position with the pump head pointed downward.
- To prevent pump damage in the event of a pump tube leak, never mount the pump vertically with the pump head up.
- To avoid chemical damage from fumes, DO NOT mount pump directly over an open solution tank. Keep tank covered.
- Avoid flooded suction or pump mounted lower than the solution container. Draw solution from the top of the tank. Pump can run dry without damage. If pump is installed with a flooded suction, a shut-off valve or other device must be provided to stop flow to pump during service.
- Provide 8" clearance to allow pump removal.
- To prevent damage, verify with a volt meter that the receptacle voltage corresponds with the pump voltage.
- After installation and after the settings are adjusted, be sure to tighten the screw on the cover of the control panel.

1. Use the mounting bracket as a template to drill pilot holes in mounting location.
2. Secure bracket with fasteners or wall anchors. Slide pump into bracket.



INSTALL SUCTION LINE TO PUMP HEAD

1. Uncoil the suction/discharge line. Use outside of solution tank as a guide to cut proper length of suction line ensuring it will be 2-3" above the bottom of solution tank.

Allow sufficient slack to avoid kinks and stress cracks. Always make a clean square cut to assure that the suction line is burr free. Normal maintenance requires trimming.

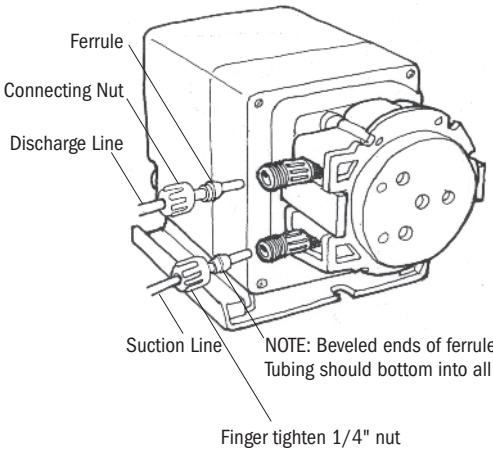
Suction lines that extend to the bottom of the tank can result in debris pickup leading to clogged injectors and possible tube failure.

2. Make connections by sliding the line(s) through connecting nut and ferrule and finger tighten to the corresponding tube fittings.

3. Finger tighten nut to the threaded tube fitting while holding the tube fitting.

Over tightening the nut with a wrench may result in damaged fittings, crushed ferrules, and air pick up.

DO NOT use thread sealant tape on pump tube connections.



DO NOT use thread seal tape on pump tube threads.

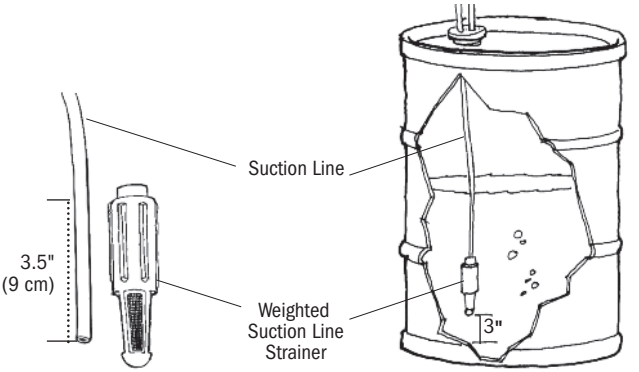
INSTALLATION continued

INSTALL SUCTION WEIGHT TO SUCTION LINE

1. Drill a hole into the bung cap or solution tank lid. Slide the tubing through and secure the weighted strainer to the line.
2. To attach the strainer, push approximately 3.5" of suction line through the cap on the strainer body. Pull tubing to make sure it is secure.
3. Suspend slightly above tank bottom to reduce the chance of sediment pickup.

DO NOT mix additives in the solution container. Follow recommended mixing procedures according to the manufacturer.

DO NOT operate pump unless additive is completely in solution. Turn pump off when replenishing solution.



INSTALL DISCHARGE LINE TO PUMP HEAD AND INJECTION POINT

1. Make a secure finger tight connection on the discharge fitting of the pump head as instructed in Install Suction Line instructions.

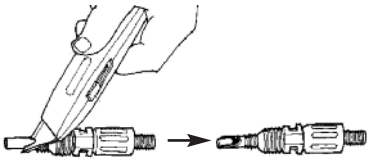
DO NOT use thread sealant tape on pump tube connections.

⚠ WARNING HAZARDOUS PRESSURE: Shut off water or circulation system and bleed off any system pressure.

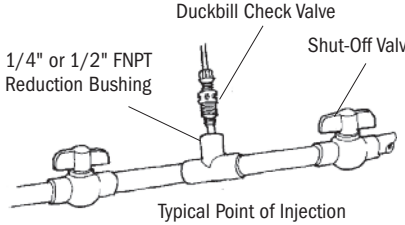
Locate a point of injection beyond all pumps and filters or as determined by the application.

2. A 1/4" or 1/2" Female NPT (FNPT) connection is required for installing the injection fitting. If there is no FNPT fitting available, provide one by either tapping the pipe or installing FNPT pipe tee fitting.
3. Wrap the Male NPT (MNPT) end of injection fitting with 2 or 3 turns of threading tape. If necessary, trim the injection fitting quill as required to inject product directly into flow of water.
4. Hand tighten the injection fitting into the FNPT fitting.
   - **a.** Install connecting nut and ferrule to the pump discharge tubing. Insert discharge tubing into injection fitting until it reaches base of fitting.
   - **b.** Finger tighten connecting nut to fitting.

DO NOT use thread seal tape on pump tube threads.



Trim injection fitting end



Typical Point of Injection

START PUMP

1. Take the pump out of standby. First, press and continue to hold (MODE), then press (STBY). Prime the pump. First, press and continue to hold (MODE), then press (PRIME). Once the pump is primed, release both buttons. Observe flow as actuated by the system and check all connections for leaks.
2. After suitable amount of dosing time, perform tests for desired readings (e.g., pH or ppm). If necessary, fine tune dosing levels by adjusting the percentage or by adjusting the solution strength.

NOTE: If the signal indicator flashes during the run cycle in the 1, 5, 10, 20, or 60 seconds modes, the meter contacting rate is too high for the setting programmed. Revisit the dry contact water meter programming section and correct the setting to avoid incorrect dosing.

NOTICE: The injection point and fitting require periodic maintenance to clean any deposits or buildup. To allow quick access to the point of injection, Stenner recommends the installation of shut-off valves.

NOTICE: Be sure to replace cover and tighten display screw.

TROUBLESHOOTING – MOTOR

⚠ **⚠ WARNING** **HAZARDOUS VOLTAGE: DISCONNECT** power cord before removing motor cover for service. **Electrical service should be performed by trained personnel only.**

PROBLEM	POSSIBLE CAUSE	SOLUTION
Display does not work	No power cord connection point	Check receptacle voltage/controller output voltage
	Failed power supply	Return to factory for evaluation
	Pump requires re-initialization	Disconnect, then reconnect power to pump
Drive assembly does not work	Pump is in STANDBY	Remove from STANDBY
	Level input received	Replenish solution in tank
	Aux DC signal installed with reverse polarity	Observe polarity
	Failed motor	Return to factory for evaluation
	Pump requires re-initialization	Disconnect, then reconnect power to pump
Output is higher or lower than expected	Incorrect tube size or setting	Replace tube with correct size or adjust settings
Pump cycles ON/OFF	Failed fan	Return to factory for evaluation
	High ambient temperature	The ambient temperature rating is 104°F (40°C)
Pump does not alarm for given condition	Output relay wired incorrectly	Confirm wiring is correct; output relays are dry contact and do not provide voltage
Leak detect not working	Chemical or residue on leak detect components; or components are missing or not making contact	Clean leak detect components or replace if missing/damaged and ensure components are making contact
	Leak detect sensitivity was calibrated incorrectly	Follow the leak detect sensitivity calibration instructions

TROUBLESHOOTING – PUMP HEAD

PROBLEM	POSSIBLE CAUSE	SOLUTION
Roller assembly will not expand or collapse with tube housing cover	Stripped or cracked roller assembly hub	Replace roller assembly
Components cracking	Chemical attack	Identify and correct cause; clean components of chemical & replace tube according to instructions
	Chemical intrusion from tube failure	Identify and correct cause; clean components of chemical & replace tube according to instructions
Pump head leaking	Pump tube rupture	Replace pump tube according to instructions
No pump output, pump head rotates	Roller assembly not fully expanded	Expand roller assembly using pump head cover as a tool, according to instructions
	Depleted solution tank or weighted strainer is above solution	Replenish solution & position suction line 3" above bottom of tank
	Leak in the suction line or at connections	Correct or replace suction line or connections
	Ferrules installed incorrectly, missing or damaged	Replace ferrules, beveled end faces pump
	Injection point is clogged	Inspect and clean injection point
	Clogged suction and/or discharge line and/or injection check valve	Clean and/or replace as needed
	Life of pump tube exhausted	Replace tube according to instructions, schedule tube replacement based on application
	Suction line is flush with the nose of the weighted strainer	Pull suction line approximately 1" from bottom of strainer, cut bottom of suction line at an angle
	Sleeve and/or plastic gripper inside 3/8" connecting nut is missing, damaged,or incorrectly assembled	Replace if damaged or missing; Reorient if incorrectly assembled; gripper beveled end faces nut; sleeve wide end faces gripper
Low pump output, pump head rotates	Life of pump tube exhausted	Replace tube according to instructions, schedule tube replacement based on application
	Rollers worn or broken	Replace roller assembly
	Injection point is restricted	Inspect and clean injection point regularly
	Incorrect tube size	Refer to flow rate output chart and replace tube with correct size
	High system back pressure	Verify system pressure against tube psi, replace tube if needed
No pump output, pump head doesn't rotate	Stripped or cracked roller assembly hub	Replace roller assembly
	Motor problem	Refer to motor troubleshooting section
Pump output high	Incorrect tube size or setting	Replace tube with correct size or adjust settings
	Roller assembly broken	Replace roller assembly

TROUBLESHOOTING – PUMP TUBE

NOTICE: A leaking pump tube damages the metering pump. Inspect pump frequently for leakage and wear. Refer to Tube Replacement section for additional safety precautions and instructions.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Tube leaking	Pump tube ruptured	Identify and correct cause; clean components of chemical & replace tube according to instructions
	Mineral deposits at injection point	Clean injection fitting; replace tube & duckbill, according to instructions
	Excessive back pressure	Verify system pressure against tube psi, replace tube if needed
	Tube is twisted	Replace tube according to instructions, hold tube fitting while tightening connecting nut to prevent twisting
	Tube not centered	Clean components of chemical, replace tube according to instructions & confirm tube is centered
Tube life is shortened	Chemical attack	Check chemical compatibility
	Mineral deposits at injection point	Clean injection fitting, replace tube & duckbill according to instructions
	Sediment blockage at check valve	Clean injection fitting; ensure suction line is 3" above tank bottom; use suction line strainer
	Degraded check valve duckbill	Replace duckbill at every tube change
	Duckbill in wrong orientation	Reverse duckbill orientation
	Seized rollers caused abrasion on tube	Clean roller assembly or replace; do not lubricate
	Exposure to heat or sun	Do not store tubes in high temperatures or in direct sunlight
Tube connection is leaking	Ferrules installed incorrectly, missing or damaged	Replace ferrule, beveled end faces pump
	Crushed ferrule	Replace ferrule, beveled end faces pump
	3/8" nut loose	Hold adapter while tightening 3/8" nut as needed
	Missing ferrule in 3/8" adapter	Replace with new adapter fitting or insert new ferrule into adapter
	Sleeve and/or plastic gripper inside 3/8" connecting nut is missing, damaged, or incorrectly assembled	Replace if damaged or missing. Reorient if incorrectly assembled; gripper beveled end faces nut; sleeve wide end faces gripper

TUBE REPLACEMENT SAFETY INFORMATION

⚠ WARNING **RISK OF EXPOSURE**

- To reduce risk of exposure, check the pump tube regularly for leakage. At the first sign of leakage, replace the pump tube.
- To reduce risk of exposure, the use of proper personal protective equipment is mandatory when working on or near metering pumps.
- To reduce risk of exposure, and also prior to service, shipping, or storage, pump generous amounts of water or a compatible buffer solution to rinse pump.
- Consult SDS sheet for additional information and precautions for the additive in use.
- Personnel should be skilled and trained in the proper safety and handling of the additive in use.
- Inspect tube frequently for leakage, deterioration, or wear. Schedule a regular pump tube maintenance change to prevent damage to pump and/or spillage.

⚠ CAUTION **PINCH POINT HAZARD:**

- Use extreme caution when replacing pump tube. Be careful of your fingers and **DO NOT** place fingers near rollers.

⚠ WARNING **HAZARDOUS PRESSURE EXPOSURE:**

- Use caution and bleed off all resident system pressure prior to attempting service or installation.
- Use caution when disconnecting discharge tubing from pump. Discharge may be under pressure. Tubing may contain fluid being metered.

NOTICE: Indicates special instructions or general mandatory action.

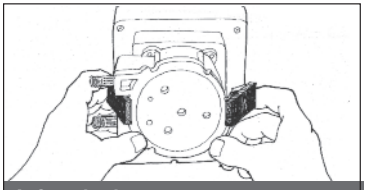
- **DO NOT** apply grease, oil, or lubricants to the pump tube or housing.
- Prior to pump tube replacement, inspect the entire pump head for cracks or damaged components. Ensure rollers turn freely.
- Rinse off fluid residual and clean all fluid and debris from pump head components prior to tube replacement.
- **DO NOT** pull excessively on pump tube. Avoid kinks or damage during tube installation.
- Inspect the suction/discharge tubing, injection point (into pipe), and injection fitting for blockages after any tube rupture. Clear or replace as required.

TUBE REPLACEMENT

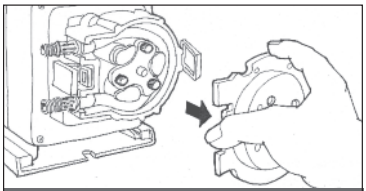
PREPARATION

1. Follow all safety precautions prior to tube replacement.
2. Prior to service, pump water or a compatible buffer solution through the pump and suction and discharge lines to remove chemical and avoid contact.

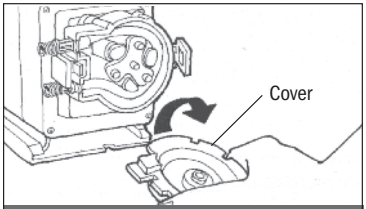
REMOVE THE PUMP TUBE



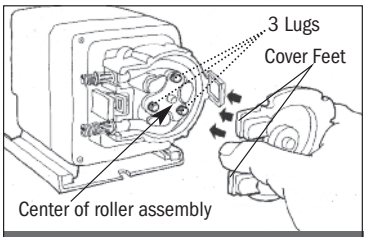
A Open latches



B Remove cover



C Invert cover



D Align cover feet near tube fitting

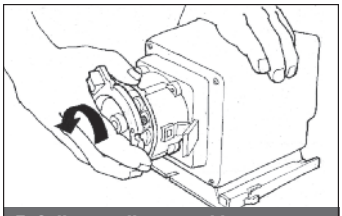
1. Unplug the power cord to ensure the power to the pump is off. Disconnect the input signal.
2. Depressurize and disconnect the suction and discharge lines.
3. Open the latches on both sides of the head. ***A***

   For CE pump only: Remove the safety screw on cover.
4. Remove the tube housing cover and flip to use as a tool in the next step. ***B*** & ***C***
5. Align the center of the inverted cover with the center of the roller assembly so that the three holes on the face of the cover align with the three knurled lugs on the roller assembly. Position the cover feet near the tube fittings. ***D***

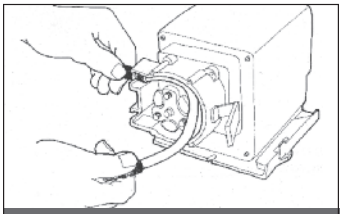
   NOTE: The roller assembly must be collapsed to remove the tube.

TUBE REPLACEMENT continued

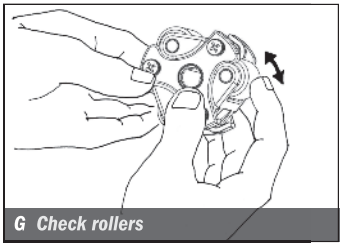
REMOVE THE PUMP TUBE continued



E Collapse roller assembly



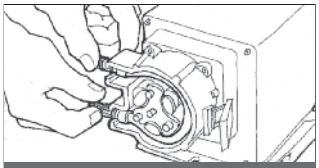
F Remove tube



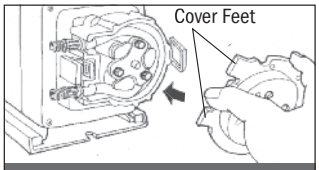
G Check rollers

6. Collapse the roller assembly. Hold the pump securely, use the tube housing cover as a tool and quickly (snap) rotate the cover counterclockwise to collapse the roller assembly. The tube will no longer be pressed against the tube housing wall. ***E***
7. Remove and discard the pump tube. ***F***
8. Remove the roller assembly and housing. Set them aside to re-install later.
9. Use a non-citrus all-purpose cleaner to clean chemical residue from all pump components.
10. Check the housing for cracks. Replace if cracked.
11. Ensure the rollers turn freely. Replace the roller assembly if the rollers are seized or worn or if there is a reduction or lack of output from the pump. ***G***
12. Reinstall clean tube housing.
13. Apply AquaShield™ to the shaft tip.
14. Install the roller assembly.

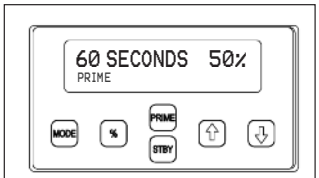
INSTALL THE TUBE/EXPAND THE ROLLER ASSEMBLY



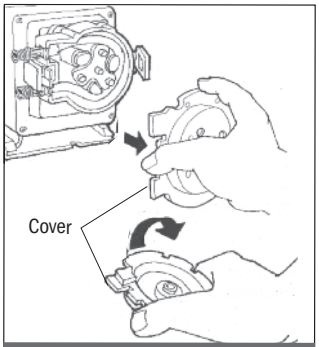
H Place new tube



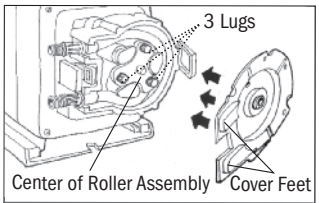
I Install cover feet first



J Place pump in PRIME



K Invert cover



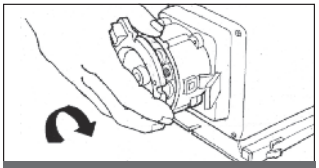
L Align cover feet near bottom

1. Ensure the power to the pump is off and the input signal is disconnected.
2. Place the new tube in the pump head and use your fingers to center it on the rollers. ***H***
3. Place the tube housing cover (feet first) on the tube housing, affix the front of the latches to the cover lip and then press the latches back to secure. Be sure the cover is seated with the sleeve bearing on the shaft and is flush with the housing before latching. ***I***
4. Plug the pump in. With the pump head cover latched, allow the pump to run the roller assembly in its collapsed position for one minute by pressing and holding the PRIME and MODE at the same time and hold for one minute. ***J***
5. Unplug the power cord.
6. Remove the tube housing cover and flip to use as a tool in the next step. ***K***
7. Align the center of the inverted cover with the center of the roller assembly so that the three holes on the face of the cover align with the three knurled lugs on the roller assembly. Position the cover feet near the bottom. ***L***

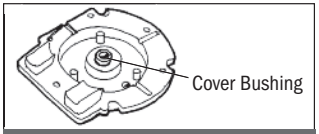
TUBE REPLACEMENT continued

INSTALL THE TUBE/EXPAND THE ROLLER ASSEMBLY continued

IMPORTANT: THE ROLLER ASSEMBLY MUST BE EXPANDED so the tube is pressed against the tube housing wall.



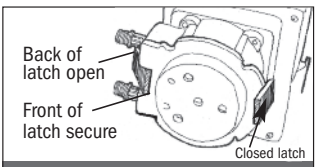
M Expand roller assembly



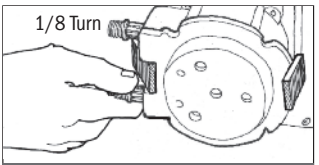
N Apply Aquashield™ to cover bushing

8. Hold the pump securely. Use the cover as a tool and quickly (snap) rotate the roller assembly clockwise to expand the roller assembly. The tube will be pressed against the tube housing wall. ***M***
9. Apply a small amount of AquaShield™ to the cover bushing ONLY. DO NOT lubricate the pump tube. ***N***
10. Place the tube housing cover (feet first) on the tube housing, affix the front of the latches to the cover lip and then press the latches back to secure. Be sure the cover is seated with the sleeve bearing on the shaft and is flush with the housing before latching.

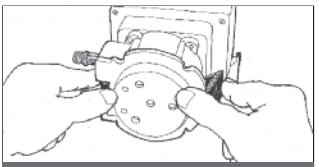
CENTER THE TUBE



O Prepare to center tube



P Center tube



Q Secure latches

1. Lift the latch located between the tube fittings, leaving the end of the latch engaged with the lip on the tube housing cover. Leave the latch on the opposite side engaged. ***O***
2. Plug the pump in. Place the pump in PRIME mode and turn the tube fitting on the suction side not more than 1/8 of a turn in the direction the tube must move. ***P***
3. Do not let go of the fitting until the tube rides approximately in the center of the rollers.
4. Take the pump out of prime mode, let go of the fitting, and secure the latch between the fittings. ***Q***
5. Inspect the suction and discharge lines, point of injection, and check valve duckbill for blockages. Clean and/or replace as required.
6. Reconnect the suction and discharge lines.
7. Prime pump and verify operation.
8. Place pump in desired operating mode.

CLEANING THE POINT OF INJECTION SAFETY INFORMATION

NOTICE: Indicates special instructions or general mandatory action.

The injection check valve allows the extension tip to be installed in the center of the pipe directly in the flow of water to help reduce deposit accumulation.

⚠ WARNING Warns about hazards that CAN cause death, serious personal injury, or property damage if ignored.

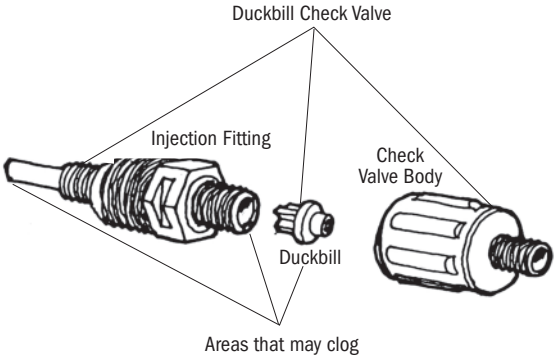
This is the safety alert symbol. When displayed in this manual or on the equipment, look for one of the following signal words alerting you to the potential for personal injury or property damage.

⚠ WARNING HAZARDOUS PRESSURE/CHEMICAL EXPOSURE

Use caution and bleed off all resident system pressure prior to attempting service or installation.

Use caution when disconnecting discharge line from pump. Discharge line may be under pressure. Discharge line may contain chemical.

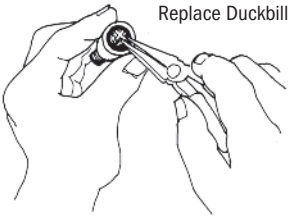
To reduce risk of exposure, the use of proper personal protective equipment is mandatory when working on or near chemical metering pumps.

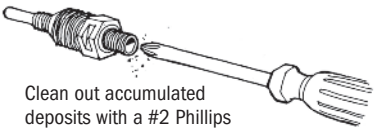


CLEANING THE POINT OF INJECTION continued

1. Turn metering pump off and unplug cord. Disable water pump or auxiliary equipment electrical supply.
2. Depressurize system and bleed pressure from pump discharge line.
3. Loosen and remove connecting nut and ferrule from the injection check valve to disconnect discharge tubing:
   - Unscrew the top fitting (check valve body) to disassemble. The bottom fitting (injection fitting with arrow) should remain attached to the pipe.
   - Remove duckbill from check valve body and replace if deteriorated or swollen (replace duckbill with every tube change). If clogged, clean or replace (yearly replacement recommended).
   - Examine O-ring in the injection fitting and replace if deteriorated or damaged.
4. Insert a #2 Phillips head screwdriver through injection fitting into the pipe to locate or break up accumulated deposits. If screwdriver cannot be inserted, drill the deposit out of the injection fitting (DO NOT drill through the opposite pipe wall).

More on next page



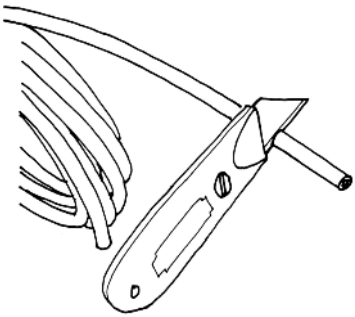


Clean out accumulated deposits with a #2 Phillips head screwdriver.

Periodic inspection and cleaning of the point of injection will maintain proper pump operation and provide maximum tube life.

CLEANING THE POINT OF INJECTION continued

5. Replace discharge line if cracked or deteriorated. If the end is clogged, cut off the calcified or blocked section of discharge line:
   - Reassemble the injection check valve in reverse order.
   - Replace ferrule and reinstall the discharge line to the injection check valve approximately 3/4" until it stops.
6. Tighten the connection nut finger tight.
7. Enable the water pump electrical supply and pressurize the water system.
8. Put the metering pump back in service and inspect all connections for leaks.



Cut off the calcified or blocked section.

PUMP HEADS, PARTS & SERVICE KITS

Refer to the **FLOW RATE OUTPUTS** chart to match the pump with the correct tube.

Pump Heads

100 psi (6.9 bar) max. Includes S3QP pump head, tube, duckbill, ferrules 1/4" *(EUROPE 6 mm)*

PART NUMBER	UM	DESCRIPTION
S310■-1	EA	S3QP Pump Head; Santoprene® tube *select # 1, 2 or 6 for* ■
S310■-2	2-PK	
EUROPE		
S315■-1	EA	S3QP Pump Head; Santoprene® tube *select # 1, 2 or 6 for* ■
S315■-2	2-PK	

Pump Heads Parts

PART NUMBER	UM	DESCRIPTION
S3400-1	EA	S3QP Tube Housing with Latches
S3400-2	2-PK	
S3500-1	EA	S3QP Roller Assembly
S3500-4	4-PK	
S3600-1	EA	S3QP Tube Housing Cover
S3600-4	4-PK	
QP401-2	2-PK	Plastic Latches

Service Kits

100 psi (6.9 bar) max. Inc. S3QP roller assembly, tube, latches, duckbill, 1/4" nuts & ferrules *(EUROPE 6 mm)*

PART NUMBER	UM	DESCRIPTION
S310■K	KIT	S3QP Pump Head Service Kit; Santoprene® tube *select # 1, 2 or 6 for* ■
EUROPE		
S311■K	KIT	S3QP Pump Head Service Kit; Santoprene® tube *select # 1, 2 or 6 for* ■

NOTE: Confirm material compatibility with the chemical resistance guide.

PUMP TUBES & DUCKBILL CHECK VALVE

Refer to the **FLOW RATE OUTPUTS** chart to match the pump with the correct tube.

Pump Tubes Includes ferrules 1/4" *(EUROPE 6 mm)*

PART NUMBER	UM	DESCRIPTION
UCCP20■	2-PK	Santoprene® tube *select # 1, 2 or 6 for* ■
MCCP20■	5-PK	
EUROPE		
UCCP2■CE	2-PK	Santoprene® tube *select # 1, 2 or 6 for* ■
MCCP2■CE	5-PK	

Pump Tubes Includes duckbill, ferrules 1/4" *(EUROPE 6 mm)*

UCCP■FD	2-PK	Santoprene® tube *select # 1, 2 or 6 for* ■
EUROPE		
UC■FDCE	2-PK	Santoprene® tube *select # 1, 2 or 6 for* ■

Duckbill Check Valves 100 psi (6.9 bar) max.

PART NUMBER	UM	DESCRIPTION
UCDBINJ	EA	1/4" includes Santoprene® duckbill, nut, ferrule
MCDBINJ	5-PK	
UCINJ38	EA	3/8" includes Santoprene® duckbill, nut
MCINJ38	5-PK	
EUROPE		
UCINJCE	EA	6 mm includes Santoprene® duckbill, nut, ferrule
MCINJCE	5-PK	

STENNER PUMPS

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Assembled in the USA

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