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 chemical 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 chemicals listed or approved for use.
- Install the pump to work in conjunction with pool, spa, well pump, or system controls.
- Inspect tube frequently for leakage, deterioration, or wear. Schedule a regular pump tube maintenance change to prevent chemical damage to pump and/or spillage.
- Mount pump vertically and use spill recovery to run chemical back to tank in the event of tube failure.
- Pump is not recommended for installation in areas where leakage can cause personal injury or property damage.

INSTALLATION continued

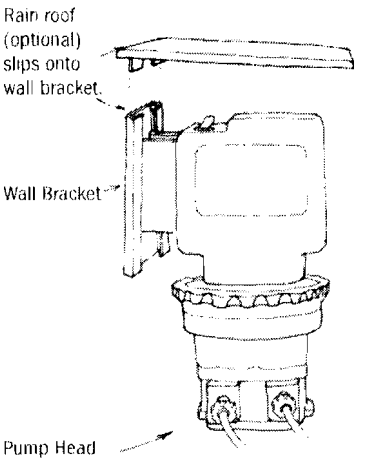
MOUNT PUMP

- **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 and the spill recovery *(see page 22)* in place to reduce the risk and severity of damage.**
- **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.**

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.

- **Provide 8" clearance to allow pump orientation to be reversed during tube replacement. DO NOT allow water intrusion into the motor or corrosion and damage will occur.**
- **To prevent motor damage, verify with a volt meter that the receptacle voltage corresponds with the pump voltage.**

3. Plug cord into receptacle and turn the motor power switch on. If the pump is adjustable, turn the dial ring to 10.
4. Activate the pump by the pump control (flow switch, pressure switch, etc.) and verify rotation of the roller assembly within the clear pump head. Turn pump switch off.



INSTALLATION continued

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 Rain Roof must be installed and "vertical orientation" mounting of entire unit observed.
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 werden.
2. Diese Pumpe ist als fest montierte Ausrustung bedacht und soll nicht umstellbar gebraucht werden.
3. Der Regendach muss installiert werden. Eine vertikale Asrichtung der Montage muß erzielt werden.
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. L'abri anti-pluie doit être installé et l'orientation verticale doit toujours être observée.
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.

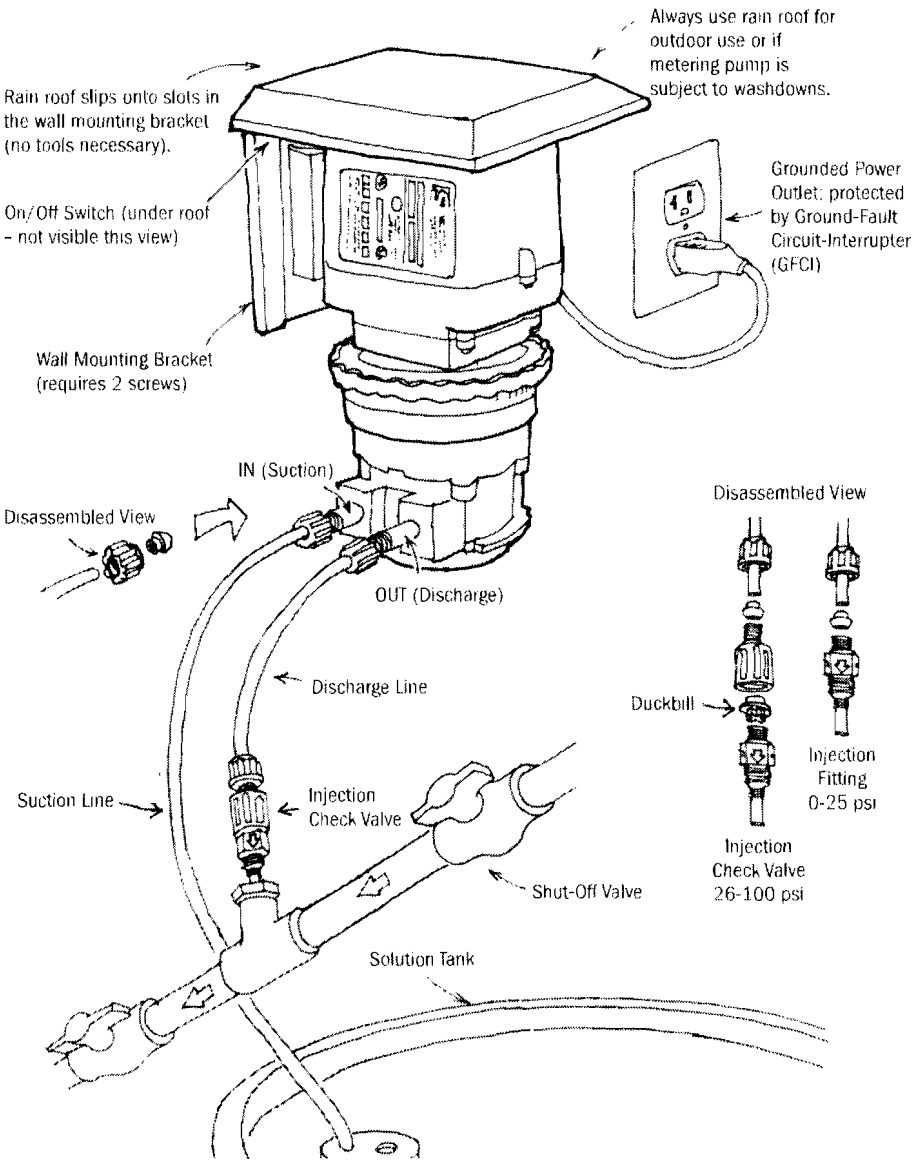
INSTUCCIONES ADICIONALES PARA INSTALACIÓN

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. Es necesario instalar el techo de lluvia, y montar la unidad entera siguiendo una orientación vertical.
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 tettoia deve essere installata e il montaggio 'orientazione verticale' dell'intera unitá deve essere osservato.
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.

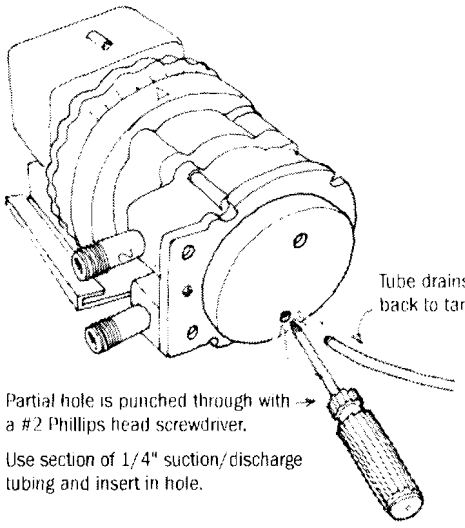
INSTALLATION DIAGRAM

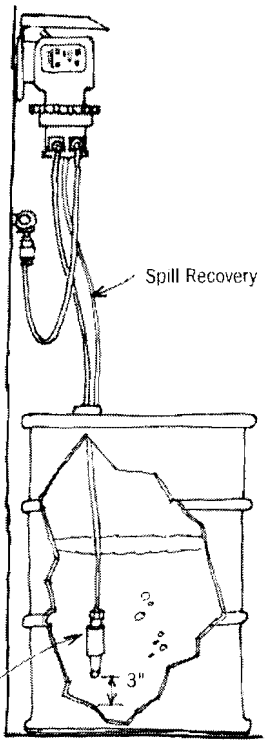


INSTALLATION continued

SPILL RECOVERY

In case of tube rupture, chemical drains back into solution tank, preventing spillage onto ground/floor and stops chemical from collecting in tube housing.





INSTALLATION continued

SUCTION DISCHARGE LINES - INSTALL SUCTION/DISCHARGE 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.

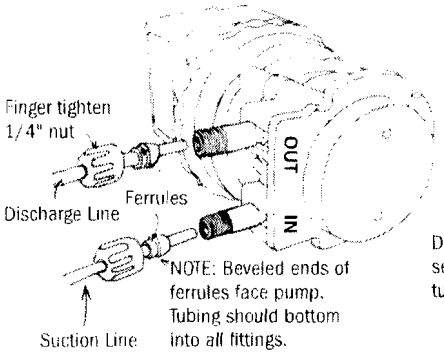
2. Make connections by sliding the line(s) through connecting nut* and ferrule and finger tighten to the corresponding tube fittings. Suction side tube connection is indicated by "IN" on the tube housing cover.

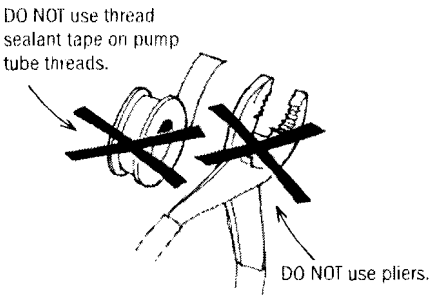
3. Finger tighten nut to the threaded tube fitting while holding the tube fitting.

Over tightening the ferrule and 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 or tools to tighten connections.

More on next page





*For 3/8" connections only. While stabilizing the tube fitting, attach female end of adapter to the tube fitting(s) (ferrule inside). Slide line through 3/8" connecting nut and finger tighten to male end of adapter. If leak occurs, gradually tighten the 3/8" connecting nut as required.

INSTALLATION continued

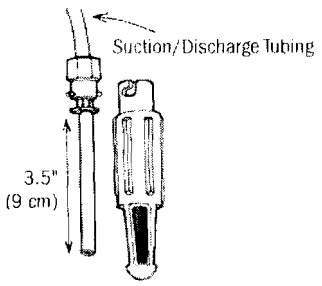
SUCTION LINE - INSTALL SUCTION WEIGHT

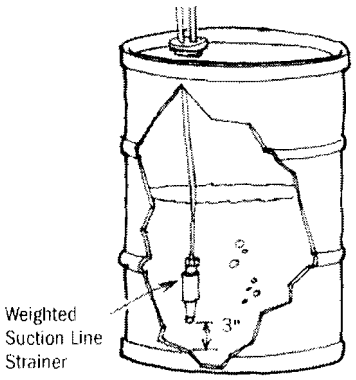
1. Drill a hole into the bung cap or solution tank lid. Slide the tubing through and secure the weighted strainer to the line.
2. To attach the strainer, slide approximately 3.5" of tubing through the collet and lock into place on strainer body. Pull tubing to make sure it is secure.
3. Suspend slightly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

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

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

DO NOT slide tubing all the way to the bottom of the weighted strainer. Tubing could become flush with the nose of the strainer and the pump may not prime due to blockage.





INSTALLATION continued

INSTALLING 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 or tools to tighten connections.

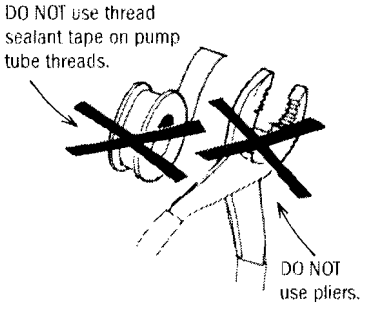
⚠ WARNING | HAZARDOUS PRESSURE: Shut off water or circulation system and bleed off any system pressure.

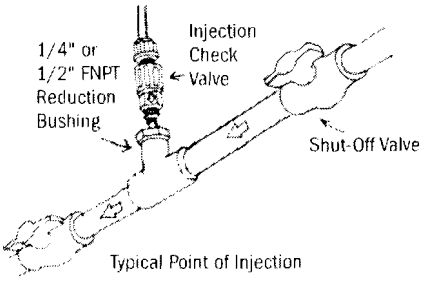
Locate a point of injection beyond all pumps and filters or as determined by the application.

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.

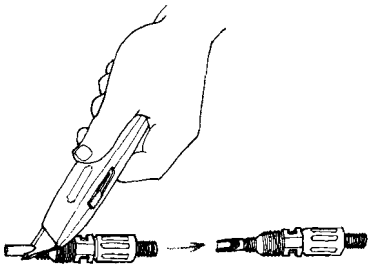
3. Wrap the Male NPT (MNPT) end of injection fitting with 2 or 3 turns of threading tape. If necessary, trim the injection fitting quill as required to inject product directly into flow of water.

More on next page





Typical Point of Injection



Trim Injection Fitting

INSTALLATION continued

4. Hand tighten the injection fitting into the FNPT fitting.

   0-25 psi Models (includes injection 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.

   26-100 psi Models (includes injection check valve)

   a. Prior to connection, test injection check valve and NPT threads for leaks by pressurizing system. If necessary, tighten an additional 1/4 turn.

   b. Install connecting nut* and ferrule to the pump discharge tubing. Insert discharge tubing into check valve body until it reaches base of body.

   c. Finger tighten connecting nut* to fitting.

5. Turn pump on and re-pressurize system. Observe chemical flow as actuated by system and check all connections for leaks.

6. After suitable amount of dosing time, perform tests for desired chemical readings (e.g., pH or ppm). If necessary, fine tune dosing levels by rotating dial ring (adjustable pumps only) or by adjusting solution strength.

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.

*For 3/8" connections, insert discharge tubing until if reaches base of injection fitting (25 psi) or check valve body (100 psi). If leak occurs, gradually tighten the 3/8" connecting nut as required.

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
Loud or excessive noise	Worn ball bearings	Replace rotor assembly
	Insufficient lubrication	AquaShield® grease to gears and gear posts
	Worn gears or gear posts	Inspect and/or replace gears and gear posts
Motor does not work; fan does not turn	Faulty electrical supply	Check supply voltage circuit
	Rotor bound to coil	Replace bearing brackets if cracked
	Damaged motor coil	Replace motor coil
	Worn or damaged motor bearings	Replace rotor assembly
	Damaged power cord	Inspect and/or replace power cord
	Rotor rusted to coil	Clean off coil and motor or replace
	Faulty wire connections	Inspect and/or repair electrical connections
	Obstructed fan	Remove obstruction
Motor runs; fan turns, output shaft does not	Worn or damaged gears	Replace gears as needed
Motor overheats and shuts off and on	Incorrect voltage	Check voltage and frequency matches data label
	High ambient temperature	Pumps are rated at 125°F maximum
	Damaged/malfunctioning coil	Replace motor coil
Phenolic gear is stripping	Water intrusion	Use rain roof & replace phenolic gear
	Cracked bearing bracket	Replace bearing bracket & phenolic gear
	Worn gear posts	Replace gear posts & phenolic gear
	Rusted helical gear at end of rotor	Buff off rotor or replace rotor, replace phenolic gear
	Worn gear case cover	Replace gear case
	Insufficient lubrication	Lubricate with AquaShield®

TROUBLESHOOTING - FEED RATE CONTROL

PROBLEM	POSSIBLE CAUSE	SOLUTION
Adjustment ring will not turn	Seized variable cam	Grease variable cam & cam slot
	Seized adjustment ring	Clean then lubricate ring with AquaShield
Adjustment ring turns, output doesn't change	Variable cam disengaged from ring	Re-insert 90° end into ring
	Broken variable cam	Replace variable cam
Pump head does not rotate	Worn index plate	Turn over or replace index plate
	Motor problem	Refer to Motor section
	Pump head roller assembly stripped	Replace roller assembly
	Index pin holder loose	Tighten holder into spider assembly
	Index pin broken	Replace index pin and lifter assembly
Pump head rotates continuously	Variable cam	Replace or re-insert variable cam
Erratic indexing	Index plate worn	Turn over or replace index plate
	Variable cam worn	Replace variable cam
	Lifter worn	Replace index pin & lifter assembly

TROUBLESHOOTING - PUMP HEAD

PROBLEM	POSSIBLE CAUSE	SOLUTION
Components cracking	Chemical attack	Check chemical compatibility
Pump head leaking	Pump tube rupture	Replace pump tube, ferrules; center tube
No pump output, pump head rotates	Depleted solution tank	Replenish solution
	Pump suction line weight is above solution	Maintain suction line 2-3" above bottom of tank
	Leak in the suction line	Inspect or replace suction line
	Ferrules installed incorrectly, missing or damaged	Replace ferrules
	Injection point is clogged	Inspect and clean injection point
	Clogged suction/discharge tubing and/or injection check valve	Clean and/or replace as needed
	Life of pump tube exhausted	Replace pump tube, ferrules; center tube
	Suction tubing is flush with the nose of the weighted strainer	Pull suction tubing approximately 1" from bottom of strainer / Cut bottom of suction tubing at an angle
Low pump output, pump head rotates	Life of pump tube exhausted	Replace pump tube, ferrules; center tube
	Rollers worn or broken	Replace roller assembly
	Injection point is restricted	Inspect and clean injection point
	Incorrect tube size	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 roller assembly	Replace roller assembly
	Feed rate control problem	Refer to feed rate control section
	Motor problem	Refer to motor section
Pump output high	Incorrect tube size or setting	Replace tube with correct size or adjust settings.
	Roller assembly broken	Replace roller assembly
	Malfunctioning feed rate control	Refer to feed rate control section
	Incorrect motor rpm	Replace with motor that matches pump model

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	Replace pump tube, ferrules; center tube
	Calcium or mineral deposits	Clean injection fitting, replace pump tube, ferrules; center tube
	Excessive back pressure	Verify system pressure against tube psi, replace tube if needed
	Tube is twisted	Replace pump tube, ferrules; center tube
	Tube not centered	Replace pump tube, ferrules; center tube
Tube life is shortened	Chemical attack	Check chemical compatibility
	Mineral deposits at injection point	Remove deposits, replace pump tube, ferrules; center tube
	Sediment blockage at check valve	Maintain suction line 2-3" above bottom of tank
	Degraded check valve duckbill	Replace duckbill at every tube change
	Duckbill in wrong orientation	Reverse duckbill orientation
	Tube manually stretched or pinched during replacement	Follow tube replacement instructions and allow roller assembly to stretch tube into place
	Seized rollers caused abrasion on tube	Clean roller assembly or replace
	Exposure to heat or sun	Do not store tubes in high temperatures or in direct sunlight
Tube connection is leaking	Missing ferrule on 1/4" or 6 mm line	Replace ferrule
	Crushed ferrule	Replace ferrule
	Ferrule in wrong orientation	Reverse orientation of ferrule
	3/8" nut loose	Secure adapter and tighten 3/8" nut as needed
	Missing ferrule in 3/8" adapter	Replace with new adapter fitting or insert new ferrule into adapter

TUBE REPLACEMENT - SAFETY INFORMATION

⚠ WARNING RISK OF CHEMICAL 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 chemical 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 remove chemical from pump.

⚠ Consult chemical manufacturer and MSDS sheet for additional information and precautions for the chemical in use.

⚠ Personnel should be skilled and trained in the proper safety and handling of the chemicals in use.

⚠ Inspect tube frequently for leakage, deterioration, or wear. Schedule a regular pump tube maintenance change to prevent chemical 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/CHEMICAL EXPOSURE

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

⚠ Use caution when disconnecting discharge tubing from pump. Discharge may be under pressure. Tubing may contain chemical.

NOTICE: Indicates special instructions or general mandatory action.

NOTICE: DO NOT apply grease, oil, or lubricants to the pump tube or housing.

NOTICE: Prior to pump tube replacement, inspect the entire pump head for cracks or damaged components. Ensure rollers turn freely.

NOTICE: Rinse off chemical residual and clean all chemical and debris from pump head components prior to tube replacement. Apply Stenner grease to main shaft and tube housing cover bushing during tube replacement.

NOTICE: DO NOT pull excessively on pump tube. Avoid kinks or damage during tube installation.

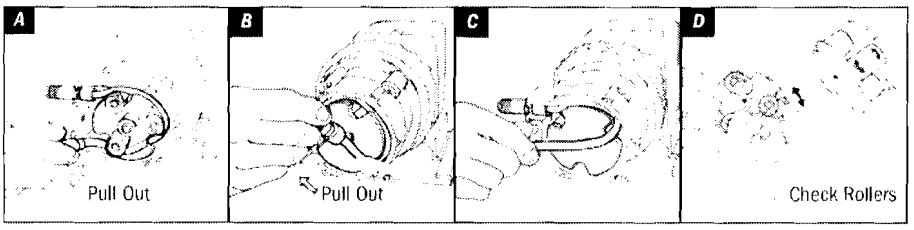
NOTICE: Inspect the suction/discharge tubing, injection point (into pipe), and injection check valve duckbill for blockages after any tube rupture. Clear or replace as required.

TUBE REPLACEMENT continued

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/discharge line to remove chemical and avoid contact.
3. Turn pump off.
4. Disconnect the suction and discharge connections from pump head.
5. Plug power cord into constantly energized, properly grounded receptacle for service.

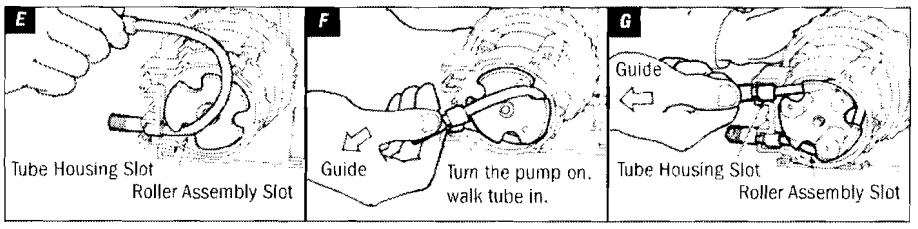
TUBE REPLACEMENT continued



REMOVE OLD TUBE

1. Remove and set aside cover and screws.
2. Set feed rate dial on the low setting until finished.
3. Turn pump on and let it run until one of three roller assembly slots lines up with the tube fitting on the suction side. *Illustration A*
4. Turn pump off.
5. Lift tube fitting out of housing slot and pull it toward center of roller assembly. *Illustration B*
6. Turn pump on and allow roller assembly to jog while guiding tube, with tension, up and out of housing. *Illustration C*
7. Turn pump off. Remove and discard pump tube.
8. Remove roller assembly, shaft, and housing.
9. Use non-citrus all-purpose cleaner to clean chemical residue from pump head housing, roller, and cover.
10. Check housing for cracks. Replace if cracked.
11. Ensure rollers spin freely. *Illustration D*
12. Replace roller assembly if: seized, excessive side play from bore wear, or if rollers are visibly worn.
13. Reinstall clean tube housing.
14. Grease shaft tip and install.
15. Install roller assembly.

TUBE REPLACEMENT continued



IMPORTANT! DO NOT lubricate pump tube or roller assembly.

INSTALL NEW TUBE

1. Manually rotate the roller assembly counter clockwise to align one of three roller assembly slots with the suction side housing slot.
2. Place tube fitting into suction side slot of the housing and the roller assembly slot. *Illustration E*
3. With pump setting on low, hold tube fitting and jog roller assembly by turning pump on.

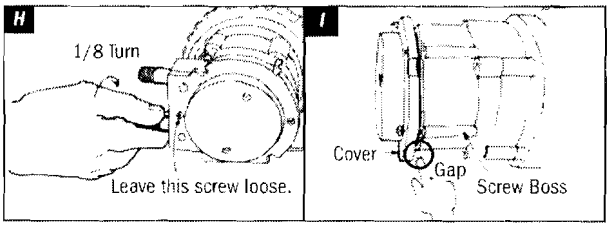
IMPORTANT! Avoid rotating wrist, which can result in a twisted tube that will not center. **DO NOT** force tube and be careful of your fingers.

4. Guide tube, with slight tension (toward the center) to prevent pinching between housing and roller assembly. *Illustration F*
5. When tube reaches the top housing slot, turn pump off.
6. Turn dial ring to setting 10, hold tube fitting firmly, and turn pump on.

NOTE: A used tube will have stretched approximately 3/4" and the new tube will appear to be stiff and short. Follow directions to allow rollers to stretch tube into place.

7. Allow rollers to stretch tube into place while guiding tube into slot. *Illustration G*
8. Turn pump off.
9. Apply a small amount of grease (AquaShield®) to cover bushing ONLY and replace cover and two screws, leaving front screw in-between the fittings loose.

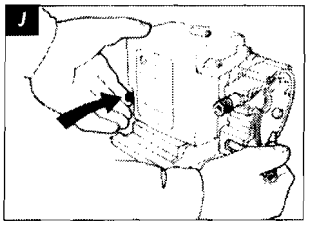
TUBE REPLACEMENT continued



CENTER NEW TUBE

1. To center pump tube on rollers, set feed rate dial to setting 10. Turn pump on. *Illustration H*
2. Turn the tube fitting on the suction side not more than 1/8 of a turn in the direction tube must move.
3. DO NOT let go of fitting until tube rides approximately in center of rollers.
4. Turn pump off, let go of fitting, and tighten cover screws. Cover is not on securely if there is a gap between screw boss and cover. *Illustration I*

NOTE: Cover screws are self-tapping and must be backed in to locate original thread before securing. If a screw boss is stripped, use alternate bosses and position opposite from each other. Never secure the cover plate with more than 2 screws.



TUBE CHANGE FOR FIXED OUTPUT PUMP

To install a new tube in a fixed output pump, follow the instructions above and utilize the on/off switch to jog the roller assembly in the absence of the feed rate control. *Illustration J*