



XP Peristaltic Pump Installation, Operation and Maintenance Manual

Fixed and Adjustable Models



XP Adjustable Pump Shown

TABLE OF CONTENTS

1. Introduction	3
2. Safety Instructions	3
3. Technical Specifications	4
4. Installation.....	5
5. Operation	7
5.1. Fixed and Adjustable Speed Pumps.....	7
5.2. Adjustable Speed Pumps	7
5.3. General.....	9
6. Maintenance	9
6.1. Tubing Assembly Removal	10
6.2. Tubing Assembly Installation and Lubrication.....	11
6.3. Pools and Spas	13
7. Policies and Procedures	14
7.1. Manufacturers Product Warranty.....	14
7.2. Returns	14
7.3. Credits	15
Appendix.....	16
I. Pump Assembly and Wiring Diagram.....	16
II. Pump Head and Tube Assemblies.....	17
III. Maintenance Record	17
IV. Notes:	19
V. Installation (Use gridlines to map out pump installation)	20

1. Introduction

Thank you for your purchase of the Chem-Tech Series XP peristaltic pump from Pulsafeeder. We appreciate your decision to purchase a Pulsafeeder product. Please take this time to become familiar with your pump and the number of accessories that shipped with your product.

The shipping box contains the following items:

- 1) Peristaltic pump comprising of: a) pump head and tube assembly, b) Clear polycarbonate rain guard with locking thumb screw, and c) Snap-on rear rain guard (this can be found in the sealed bag that shipped with the product).
- 2) Instruction Manual.
- 3) Factory Replacement tube
- 4) Suction and Discharge tubing set (15-feet of ¼-inch OD Polyethylene Tubing).
- 5) Injector Valve
- 6) Strainer w/ Ceramic Weight.

2. Safety Instructions

READ AND UNDERSTAND ALL INSTRUCTIONS PRIOR TO USE. Failure to follow or understand instructions can/may lead to serious injury or death.

- **WARNING:** Secure chemicals & metering pumps, making them inaccessible to children & pets.
- **WARNING: DO NOT PUMP FLAMMABLE LIQUIDS.**
- **WARNING:** To reduce the risk of electrical shock-before maintenance, repair, or moving always disconnect the power to the pump by unplugging from wall outlet.
- **WARNING:** Do not tamper with, cut the plug or ground lug off the electrical cord. Consult a licensed electrician for proper installation.
- **WARNING:** Always wear protective clothing, including gloves and safety eye protection, when working on or near chemical metering pumps, consult chemical manufacture for protective equipment recommendations.
- **WARNING:** Always make sure the voltage on the pump data plate matches the installation voltage before plugging the pump into a wall outlet or hooking up to an electrical supply. If you are unsure have a licensed electrician inspect and install your pump.
- **WARNING:** Always depressurize system and drain the chemical prior to installation or maintenance.
- **WARNING:** Read and fully understand the section on tube replacement. Failure to do so may lead to serious injury.

- **WARNING: DO NOT MODIFY PUMP**, as this poses a potentially dangerous situation and voids the warranty.
- **WARNING:** If the injection point is lower than the chemical tank and pump, install an anti-siphon valve.
- **WARNING:** All pumps are factory tested with water. Remove tubing and thoroughly dry if the chemical being pumped will react with water (for example: sulfuric acid).
- **WARNING:** Only finger tighten plastic connections (Do not use a wrench).
- **WARNING:** Consult licensed plumber and electrician before installation to be sure to conform to local codes.
- **CAUTION:** Inspect tubing regularly for cracking or deterioration and replace as necessary. (Always wear protective clothing and safety eye protection when inspecting tubing.)
- **CAUTION:** KEEP FINGERS AWAY FROM ROTATING PARTS.
- **CAUTION:** If the pump is exposed to direct sunlight, use a U.V. resistant tubing.
- **CAUTION:** Follow directions and warnings provided with the chemical from the chemical manufacturer. The user is responsible for determining the chemical compatibility with the chemical feed pump.
- **CAUTION:** Consult with local health officials and qualified water conditioning specialists when treating potable water
- **CAUTION:** For accurate volume output, the pump must be calibrated under all operating conditions.

3. Technical Specifications

Refer to the data plate located on the back of the peristaltic pump. Note that the data plate will be located behind the back rain cover if installed. Please make note of the Electrical Rating, Feed Rate and Maximum Pressure of the pump. Use this information to complete the top three lines in Table 1 (below) by either circling the appropriate rating or crossing out those that do not apply. For example, if the Electrical Rating indicated on the data plate of the pump is 240V/60 Hz circle the same indicated rating on the first line of the table below. Keep this information handy for future reference and part replacement.

Figure 1 provides a quick reference for installation dimensional requirements.

Table 1: Technical Specifications

Electrical Rating	120V/60Hz	240V/60Hz	240V/50Hz
Feed Rate (GPD)	04 07 09 15 23	30 50	80
Feed Rate (LPH)	0.6 1.1 1.4 2.4 3.6	4.7 7.9	12.6
Maximum Pressure (PSI)	100		80
Maximum Pressure (Bar)	6.8		5.4
Maximum Ambient Temperature	104°F (40°C)		
Pump Safety Rating	ETL _C ETL, ETL _{SAN} , NSF 50*		

Enclosure Rating	NEMA 3R (IP32)
Pump Head	PVC
Pump Head Tubing	Norprene
Injection Fitting	PVC
Strainer	Polypropylene
Suction/Discharge Tubing	Polyethylene
Pump Housing	ABS or Polycarbonate/PBT/15%GF

*Except 50GPD (7.9 LPH) and 80GPD (12.6 LPH) Feed Rate pumps.

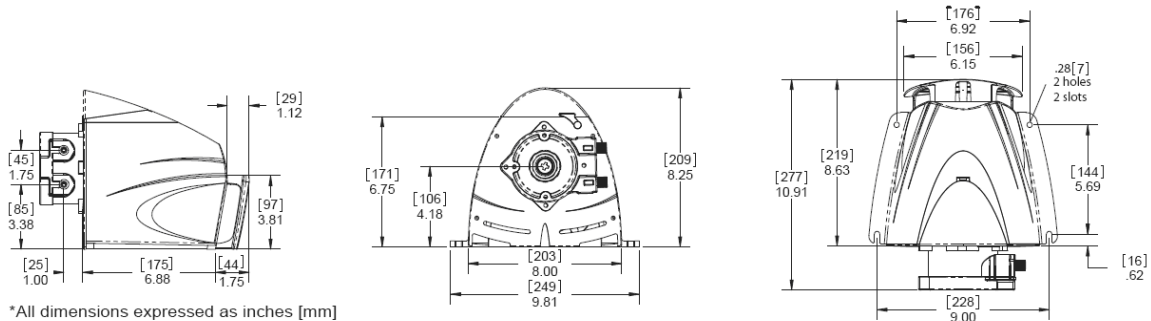


Figure 1: Pump Dimensions

4. Installation

NOTE: For pumps operating in swimming pool installations the pump is to be supplied by an isolating transformer or through a residual current device (RCD).

1) The pump can be installed either vertically or horizontally (See Figure 2). Make sure to secure the pump on a flat level surface that will support 50-lbs (22kg) and secure with four .25-in (6mm) screws in the holes provided. The guard snaps into the back of the pump via three tangs -- see Figure 1. The pump should be mounted with no less than 1.75-in (44mm) of clearance around the venting on both the front and the rear of the pump. Locate the pump so there is direct access to the power cord plug.

The pump is rated for indoor use only. For applications that are subject to splashing make sure the pump is mounted horizontally level with splash guard in place. Vertical mountings require the purchase of optional hood (J63004).

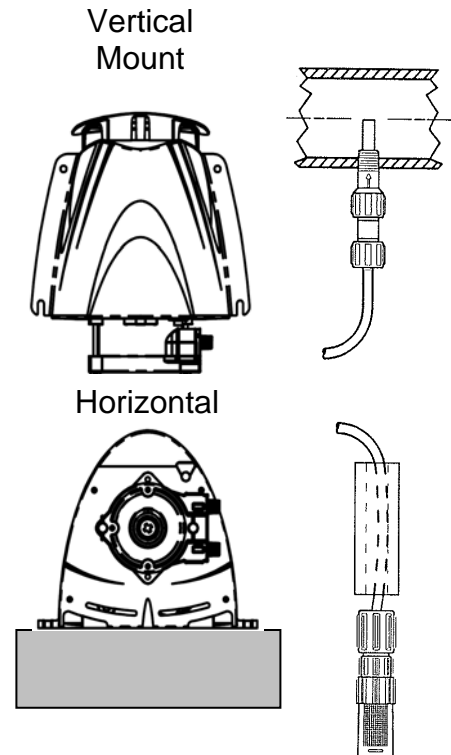


Figure 2: Injector Placement

2) Verify the electrical requirements for the pump

as listed on the name plate and connect to an appropriate electrical source in compliance with local codes for the specific application.

3) Relieve the system pressure and drain the piping run where the injection fitting is to be installed. See Figure 2 for reference. **The injection fitting must not be installed in a dead end pipe or a deeply recessed tee. It should be installed so as to place the tip at the center of the fluid stream as indicated in Figure 2.** The injection fitting is supplied with .25-in NPT threads. If necessary drill a .44-in (11mm) diameter hole and using care not to tap too deeply, tap for .25-in NPT.

4) Apply Pipe tape to the injection fitting threads and install into piping system. **Do not remove the plastic sleeve on the tip of the fitting; it is a functional part** – see Figure 4.

CAUTION: Inspect the piping system and eliminate piping cross-connections to prevent feeding chemical to areas not needing treatment.

To install tubing remove the compression fitting's coupling nut and sleeve and slide onto tubing with the sleeve located .38-in (9,5mm) from the tubing end – see Figure 4. Place tubing into fitting and hand tighten the coupling nut. **NOTE:** Immerse tubing in hot water to soften prior to pushing on to fitting. **Hand-tighten only, do not use wrenches. For in line check valve location, do not insert the tube more than .38in into the valve body.**

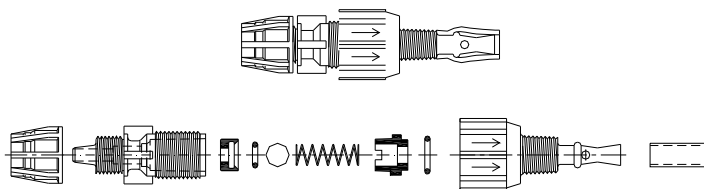


Figure 4: Injector valve

5) Referring to Figure 5 slide ceramic strainer weight on suction tubing first then remove the coupling nut from the strainer and slide onto tubing next. Push the end of the tubing onto the strainer and hand tighten the coupling nut. Hand-tighten only, do not use wrenches. Note: Immerse tubing in hot water to soften prior to pushing on fitting.

6) Install the strainer so it is off the bottom of the chemical container (1 to 2-inches (25-50mm)) and measure suction tubing length required. Cut tubing ends square and install on



Figure 5: Ceramic-Weighted Strainer

suction fitting of the pump. Hand-tighten only, do not use wrenches.

5. Operation

WARNING: Always make sure the voltage on the pump data plate matches the installation voltage before plugging the pump into a wall outlet or hooking up to an electrical supply. If you are unsure, have a licensed electrician inspect and install your pump.

5.1. *Fixed and Adjustable Speed Pumps*

CAUTION: Before plugging your pump into a wall outlet take a moment and locate the control panel of your pump. The control panel is located on top of the pump underneath a removable clear polycarbonate rain guard. A simple thumb screw secures the rain guard to the pump; its removal allows access to the control panel. Both fixed and adjustable speed pumps are equipped with a 3-position rocker switch mounted in the center of the control panel. Verify the switch is in the neutral or off-position before plugging your pump into a wall receptacle – see Figure 6 note that the image shown is for the Adjustable pump, the Fixed-Speed pump comes with the 3-way rocker switch, only.

As previously mentioned the rocker switch has three positions. The off-position is the middle or neutral position of the switch. The switch also provides a momentary-on function. By depressing and holding the switch toward the pump head (100%), the pump becomes energized. Upon releasing the switch, the rocker returns to the neutral, or off-position and pump operation ceases. This function is very useful when priming and/or replacing worn tubing in the pump.

To turn the pump on depress the rocker switch away from the pump head (switch position “I”). The switch locks in place and the pump becomes energized – see Figure 6 for specific functions. To turn the pump off (switch position “O”), return the rocker switch to the middle or neutral position.

5.2. *Adjustable Speed Pumps*

If you purchased a pump with the adjustable feed-rate option the control panel on your pump includes a control knob that adjusts the pump on/off cycle time. Rates are infinitely adjustable from 5% to 100% -- see Figure 6 for an illustration.

CAUTION: DO NOT USE THE CONTROL KNOB SET TO 0% TO TURN THE PUMP OFF: ALWAYS TURN THE PUMP OFF AT THE ROCKER SWITCH.

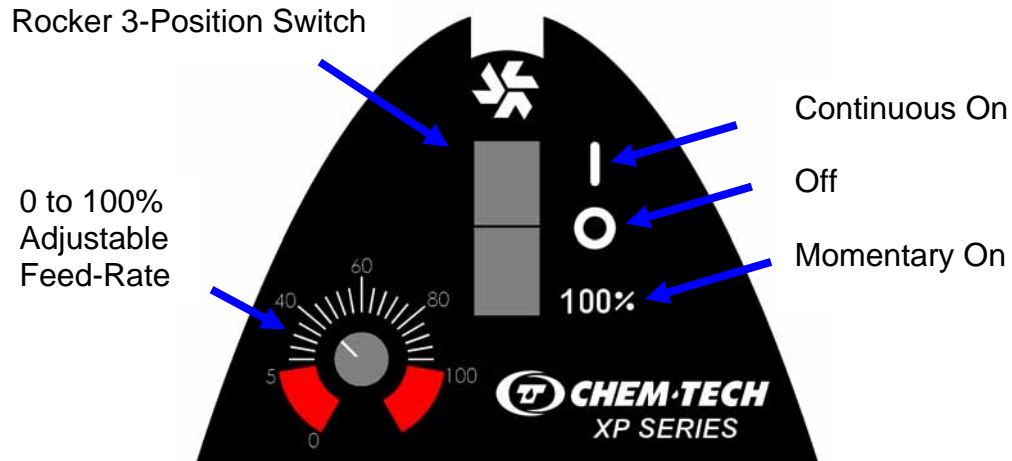
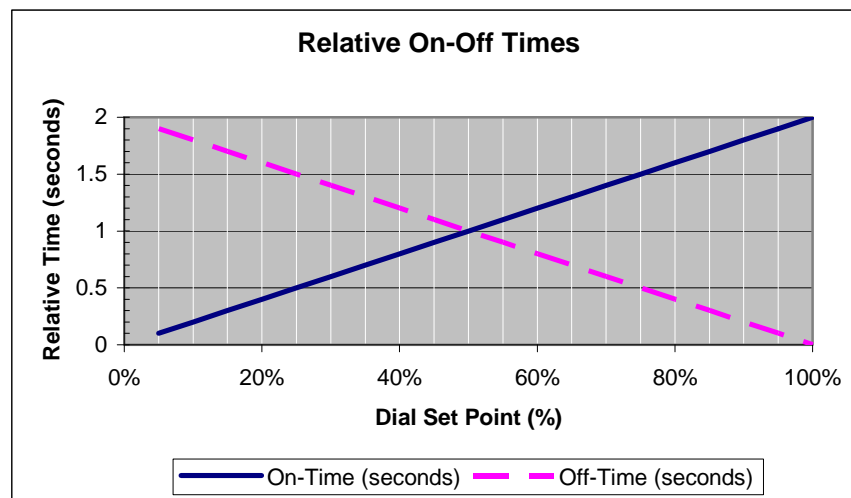


Figure 6: Adjustable Feed-Rate Pump Control Panel (Note Fixed Speed only has 3-Way Rocker Switch)

The cycle time is 2 seconds and the adjustment dial provides the setting percentage as the amount of time that the pump is on in each 2 second cycle. For example, a dial setting of 5% provides a 0.10-second on-time (0.05×2) and corresponding 1.90-second off-time ($2 - 0.10$). Conversely a setting of 95% provides a 1.90-second on-time (0.95×2) and corresponding 0.10-second ($2 - 0.10$) off-time. The graph below provides a convenient reference for all dial settings in terms of on and off-times.



Note that the momentary “On” (100% switch position) by-passes the adjustable timer setting of the pump, causing the pump to run continuously regardless of the timer percentage setting. When released the switch returns to the “Off” position (O).

5.3. General

DANGER: DO NOT ATTEMPT TO FEED CHEMICALS WITHOUT FIRST CONSULTING YOUR CHEMICAL FEEDER DEALER OR CHEMICAL SUPPLIER. To avoid running out of chemical, follow a regular schedule of monitoring chemical supply.

CAUTION: Inspect peristaltic tubing frequently and replace when deterioration becomes apparent. Peristaltic tubing will eventually wear and break if neglected. This occurrence will cause chemical spillage and a potential for personal injury or damage to equipment. Always refer to chemical manufacturers recommendations with regards to safety and handling of hazardous or corrosive chemicals. Always wear protective clothing and safety glasses when working near chemical feed systems.

WARNING: Do not expose the pump or tubing to pressure exceeding the pressure rating on the pump nameplate.

- 1) Make sure the rocker switch is in the off/neutral position...
- 2) Fill the chemical tank with the chemical to be fed.
- 3) Depress and hold the Momentary-On (100%) button until the chemical is present in the discharge line up to the injection point.
- 4) If the pump is an adjustable model rotate the percentage knob to the desired feed-rate setting. Turn the rocker switch to the continuous-On position.

6. Maintenance

NOTE : To get actual feed rates for specific settings, the output must be verified by measuring the volume output. Use the flow chart Figure #6, as a guide. To get the actual feed rate for specific settings, each pump must be calibrated for its flow. As with any peristaltic pump output varies with pressure and tubing condition. It is recommended that feed rates be verified at every tubing change and after every 250-hour. More critical applications require more frequent verification.

NOTE: NO USER SERVICEABLE COMPONENTS ARE INSIDE THE ENCLOSURE. IF THE POWER SUPPLY CORD BECOMES DAMAGED, IT MUST BE REPLACED BY PULSAFEEDER, ITS REPRESENTATIVE, OR A SIMILARLY QUALIFIED TECHNICIAN IN ORDER TO AVOID A HAZARD.

6.1. *Tubing Assembly Removal*

Always wear protective clothing and safety glasses when working on the chemical pump and refer to the chemical manufacturers' safety precautions.

- 1) Remove the power to the pump and place the rocker switch in the Off ("O") position.
- 2) Relieve the system pressure and the drain discharge and suction tubing.
- 3) Loosen coupling nuts and remove the tubing from suction and discharge ports. See figure 7a.

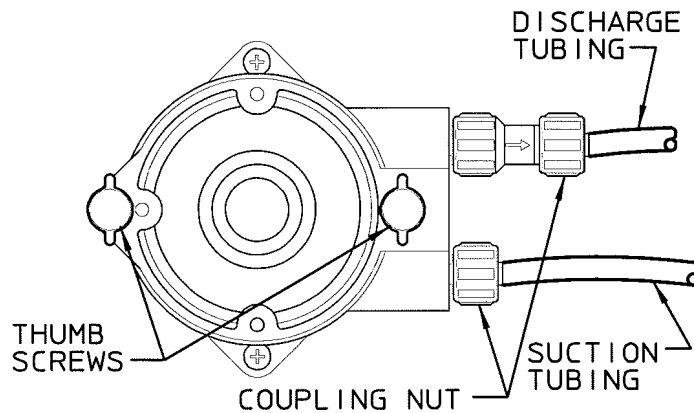


Figure 7a: Pump Head Assembly with Front Cover Attached

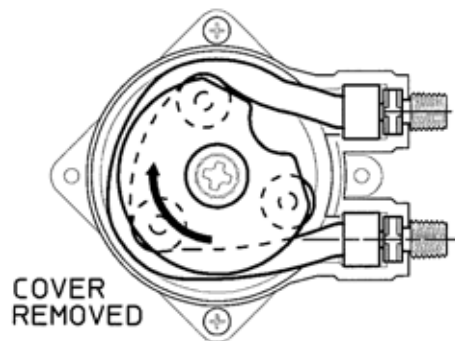


Figure 7b: Pump Head Assembly with Front Cover Removed

- 4) Remove the two thumb screws holding on the pump head cover and remove - See figure 7b above.

- 5) Remove pump head tube assembly by removing both connector fittings and pulling tubing straight out of the pump head. Tubing may retain a small amount of chemical. If the rotor assembly is removed, go to step #8.
- 6) Remove rotor assembly by pulling straight out of pump head. NOTE bearing lubrication every 500-hours; see section 6.2, "Tubing Assembly Installation and Lubrication".
- 7) Clean any tubing debris from the rotor assembly and pump head.

6.2. Tubing Assembly Installation and Lubrication

WARNING: When using the pump to load tubing the rocker switch must be in the Off ("O") position to prevent accidental motor starting. Caution must be used to keep fingers away from rotating parts.

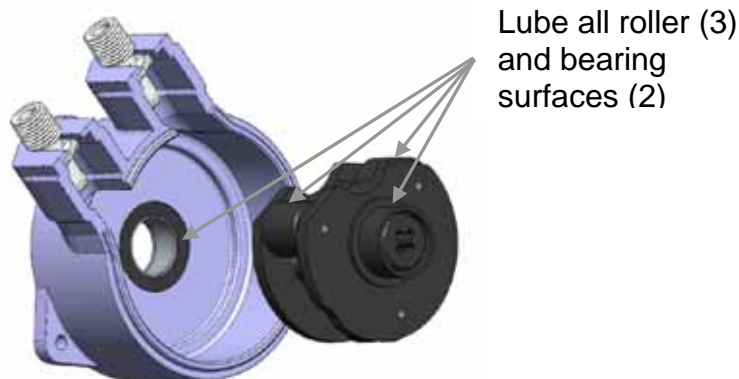


Figure 8: Pump Head w/ Rotor Assembly Removed

NOTE: Lubrication of rotor assembly should be performed at least once a year (residential service). Clean front and rear rotor bearings and surfaces with a clean shop cloth (item. No. 8, in assembly drawing on pg. 17). Lubricate with a PTFE thickened, medium viscosity, synthetic grease intended for plastic parts. Ref. Grease Kit (P/N J30257) – see Figure 8.

- 1) Reinstall the rotor assembly by aligning the cross in the rotor to the drive shaft cross and fully insert into pump head.
- 2) Use the 100% button and align the rotor assembly as shown in Figure 9a.

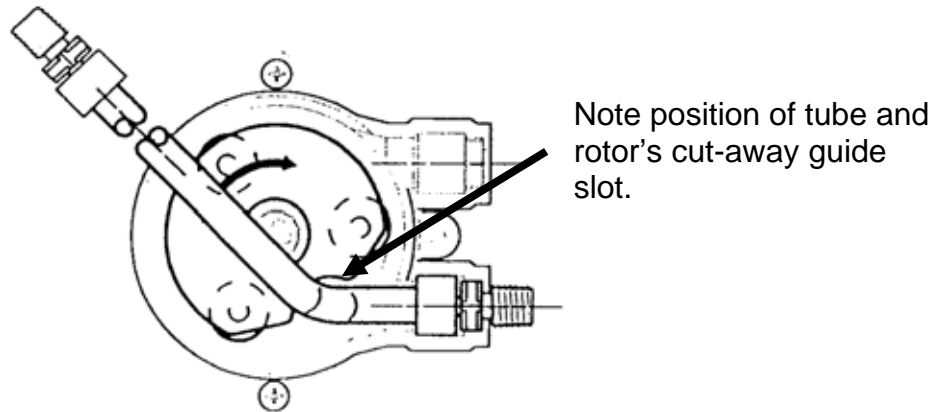
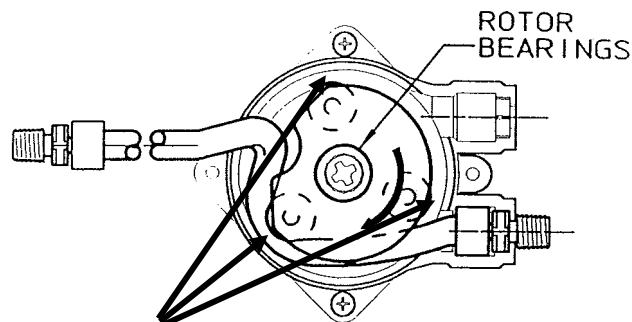


Figure 9a: Rotor Alignment at Start of Tube Installation

3) Insert one connector end of the tubing assembly into the bottom retaining slot in the pump head. Insert the tube through the guide slot in the rotor. Using caution, intermittently depress the 100% button and feed the tube around the pump head as the guide slot rotates. **Be very careful not to get any objects (fingers, ties, hair, etc.) close to the rotors and pump head as severe pinch points exist, see Figure 9b. Keep hands and fingers away from the rotor assembly while feeding the new tube.**



WARNING: Note severe pinch points between rollers and pump housing

Figure 9b: Feeding the New Tube

When the rotor is positioned as in Figure 9c, release the 100% button. Insert the other connector into its retaining slot.

- 4) Align the pump head cover bearing bore with the rotor shaft and press into place.
- 5) Loosely reinstall the two thumb screws.

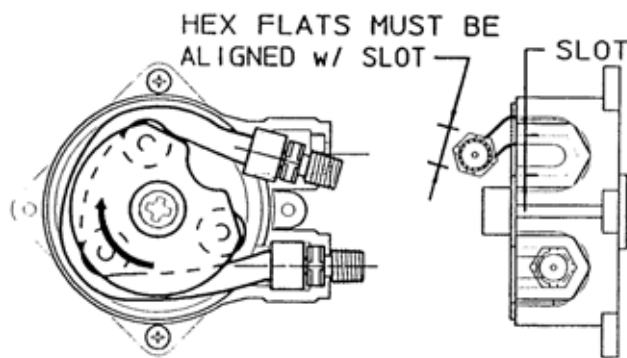


Figure 9c: Finishing the New Tube Installation

- 6) Using the 100% button, run the pump for several revolutions and then fully tighten the thumb screws hand tight.
- 7) Return the pump to service by following the procedures in the installation section.

6.3. *Pools and Spas*

Pumps carrying the “ETL Sanitation” (tested to NSF Standard-50) marks are listed for swimming pools, spas and hot tubs, and when proper materials are selected, are capable of handling but not limited to the following chemical solutions:

12.0% ALUMINUM SULPHATE,	5.0% SODIUM CARBONATE,
2.0% CALCIUM HYPOCHLORITE,	10.0% SODIUM HYDROXIDE,
12.5% SODIUM HYPOCHLORITE,	10.0% HYDROCHLORIC ACID.

To meet the requirements of the “ETL Sanitation Mark” qualification, 1) Replace the peristaltic tubing (as described above), 2) Grease the rotor bearing and 3) Oil the three rotor rollers at intervals of 500-hours operation time (actual running time).

7. Policies and Procedures

7.1. *Manufacturers Product Warranty*

PULSAFEEDER warrants equipment of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24-months from the date of shipment. The manufacturer's liability is limited to repair or replacement of any failed equipment or part which is proven defective in material or workmanship upon manufacturers' examination. This warranty does not include removal or installation costs and in no event shall the manufacturers liabilities exceed the selling price of such equipment or part.

The manufacturer disclaims all liability for damage to its products through improper use, installation, maintenance or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any unauthorized repair. Replaceable elastomeric parts, including peristaltic tubing, are covered for 12 months. The manufacturer is not responsible for consequential or other damages, injuries or expense incurred through the use of its products.

The above warranty is in lieu of any other warranty, either expressed or implied. The manufacturer makes no warranty of fitness or merchantability. No agent of ours is authorized to provide any warranty other than the above.

For warranty and service matters within the European Union, contact the seller or:

**PULSAFEEDER, INC.
STEIGAR 24
NL 1351 AB ALMERE
NETHERLANDS**

7.2. *Returns*

The Customer Service Department will issue a Return Authorization (RA) number for all returns.

The following information will be required:

1. Billing and a ship-to address.
2. Model and serial number.
3. Contact name and phone number.
4. Reason for return.
5. Purchase order (where applicable).
6. RA number on outside of the carton.
7. Type of chemical that was pumped.

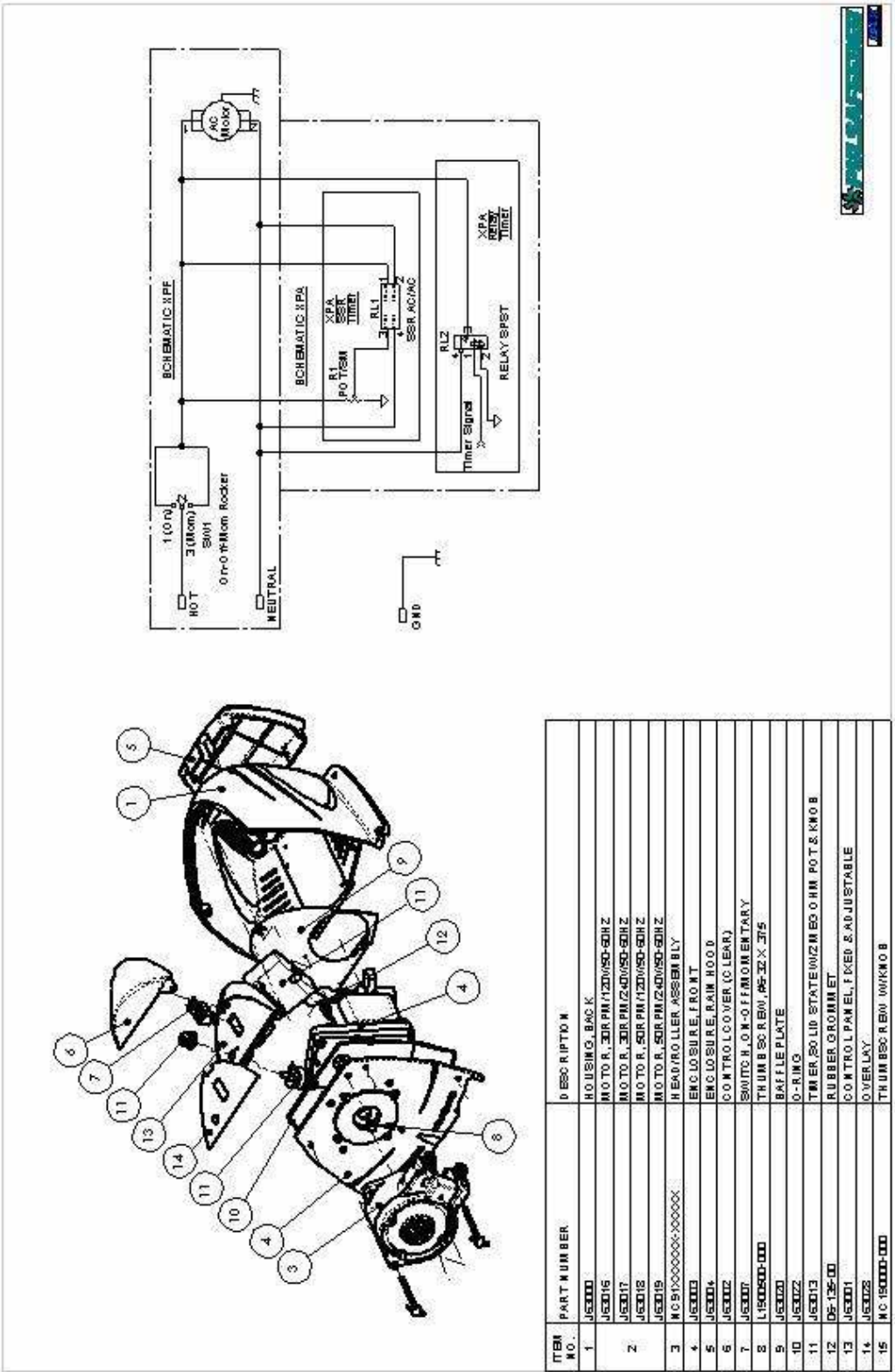
All material must be returned freight prepaid. All merchandise must be properly packaged and free of any corrosive, toxic or otherwise hazardous chemical. All items returned must reference Return Authorization number.

7.3. Credits

No equipment will be accepted beyond six months after date of shipment from the factory. Only unused and undamaged equipment will be accepted for return to stock. All credits are based on acceptance of materials as new and unused by our inspection personnel. A restocking fee will apply. All equipment returned for credit must have a RA number and be returned freight prepaid.

Appendix

I. Pump Assembly and Wiring Diagram



II. Pump Head and Tube Assemblies

ITEM NO.	PART NUMBER	DESCRIPTION
1	HEAD TUBE FITTING	PVC OR NORYL
2	HEAD TUBE	NORPRENE
3	CLAMP RING	NYLON

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	NC020001-PVC	HEAD(CLR-PVC), FRONT PUMP	1
2	NC020002-PVC	HEAD(CLR-PVC), CTP REAR PUMP	1
3	NC400001-000	ROTOR,FEMALE BLK	1
4	NC400002-000	ROTOR,MALE BLK	1
5	NC560002-NYL	BRG.FLGD .8765X1.003X.500	2
6	NC560001-188	BRG(SST),.81X.888X.468LG SLEEVE	2
7	NC560003-OLT	BRG(BRZ),.375 X .503 X.750-LG.	3
8	NC430003-NYL	ROLLER(NYL), .508X.7735X.745LG	3
9	L8607300-188	PIN(SST),.156X1.12-LG ROLL	3

III. Notes:

[illegible]

IV. Installation (Use gridlines to map out pump installation)

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The grid covers the entire area of the page, leaving no margins or additional markings.