



INSTALLATION, OPERATION & MAINTENANCE

POLYMASTER LIQUID POLYMER BLEND & FEED SYSTEM



NEP-ZL104791

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WARNING

LOCKOUTS ARE REQUIRED BEFORE
SERVICING THIS EQUIPMENT.

SAFETY INSTRUCTIONS:

Shut off/Lockout pump Power before Servicing.
Be certain pump isolation valves are
Closed and chemical is shut off.
Bleed pressure before servicing.

SAFETY INSTRUCTIONS:

Shut off/Lockout Polymaster Power before Servicing.
Be certain Polymaster isolation valves are
Closed and chemical is shut off.
Bleed pressure before servicing.

WARNING

**Please read thoroughly before installation, operation or maintenance of any Polymaster Machine
Only suitability trained personnel should work on the equipment.**

***CAUTION: Before performing any maintenance disconnect electric power.**

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture, malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended use.
- Do not alter or modify this equipment.
- Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations, and wear safety goggles and or equipment when required.
- Do not exceed the maximum working pressure of the system as mentioned on the Polymaster tag.
- Do not use any piping to transport the equipment.
- Comply with all applicable local, state and national safety regulations.
- Do not allow Polymaster to run dry for long periods of time.

PRESSURIZED EQUIPMENT HAZARD

Spray from leaks or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Shut off the Polymaster and depressurize before performing any maintenance.
- Do not tamper with or perform unspecified alteration of this device.
- Always wear protective clothing, face shield, safety glasses and gloves when working on or near your Polymaster Machine.
- Additional precautions should be taken depending on the solution being pumped. Refer to MSDS precautions from your solution supplier.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Check all fluid connections before operating the equipment.
- Replace worn, damaged, or loose parts immediately.
- Before performing any maintenance, be sure to relieve pressure from the piping system and the equipment.
- Wear protective clothing and use proper tools as appropriate to avoid any injury.

FIRE AND EXPLOSION HAZARD

Improper grounding, poor air ventilation, open flames, or sparks can cause a hazardous condition and result in fire or explosion and serious injury.

- Ground the equipment. See installation instruction for grounding procedure.
- Static electricity may generate by fluid moving through pipes and hoses. A static spark could be produced by high fluid flow rate. Earthing is a must.
- Provide fresh air ventilation.
- Keep the Polymaster area free of debris, including cleaning agent, rags, and any flammable material.

TOXIC FLUID HAZARD

Hazardous fluids or toxic fumes can cause serious injury or death if splashed in eyes or on the skin, swallowed, or inhaled.

- Know the specific hazards of the fluid you are using. Read the fluid manufactures warnings.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Wear the appropriate protective clothing, gloves, eyewear and respirator.

SOUND HAZARD

The sound pressure level seldom exceeds 80dBA.

- Observe all safety precautions when operating the Equipment within close proximity for extended periods by wearing hearing protectors, if needed.
- Extended exposure to elevated sound levels may result in permanent loss of hearing acuteness, tinnitus, tiredness, stress, and other effects such as loss of balance and awareness.

MECHANICAL HAZARD

The Unit may shake or vibrate during operation.

Polymaster™

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DRAWINGS

Parts Drawing Gatlin Mixer

Parts Drawing Model PAD/PMD-60 and PAD/PMD-100

Parts Drawing Model PAD/PMD-200

Parts Drawing Model PAD/PMD-300

Parts Drawing Model PAD/PMD-600

Parts Drawing Model PAD/PMD-1200

Parts Drawing Model PAD/PMD-1200R

Parts Drawing Model PAD/PMD-3000

Parts Drawing Model PAD/PMD-3000R

Standard Polymaster electrical diagram (*refer to project specific electrical diagrams if applicable)



Use the QR Code to obtain a French translation copy of this IOM.

NEPTUNE CHEMICAL PUMP COMPANY LIMITED WARRANTY

All Neptune Polymaster units are tested at the factory prior to shipment. Each part used in their construction has been carefully checked for workmanship.

If the Polymaster is installed properly, Neptune Chemical Pump Company warrants to the purchaser of this product for a period of twelve months from the date of first use or eighteen months from shipment, whichever occurs first, this product shall be free of defects in material and/or workmanship, as follows:

1. Neptune Chemical Pump Company will replace, at no charge, any part that fails due to a defect in material and/or workmanship during the warranty period, FOB our factory, North Wales, Pennsylvania. To obtain warranty service, you must forward the defective parts to the factory for examination, freight pre-paid.¹
2. This warranty period does not cover any product or product part, which has been subject to accident, misuse, abuse or negligence. Neptune Chemical Pump Company shall only be liable under this warranty if the product is used in the manner intended by the manufacturer as specified in the written instructions furnished with this product.

Any express warranty not provided in this warranty document, and any remedy for breach of contract that, but for this provision, might arise by implication or operation of law, is hereby excluded and disclaimed. Under no circumstances shall Neptune Chemical Pump Company be liable to purchaser or any other person for any charge for labor, repairs, or parts, performed or furnished by others, nor for any incidental consequential damages, whether arising out of breach of warranty, express or implied, a breach of contract or otherwise. Except to the extent prohibited by applicable law, any implied warranty of merchantability and fitness for a particular purpose are expressly limited in duration to the duration of this limited warranty.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long any implied warranty lasts, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which may vary from state to state.

IMPORTANT

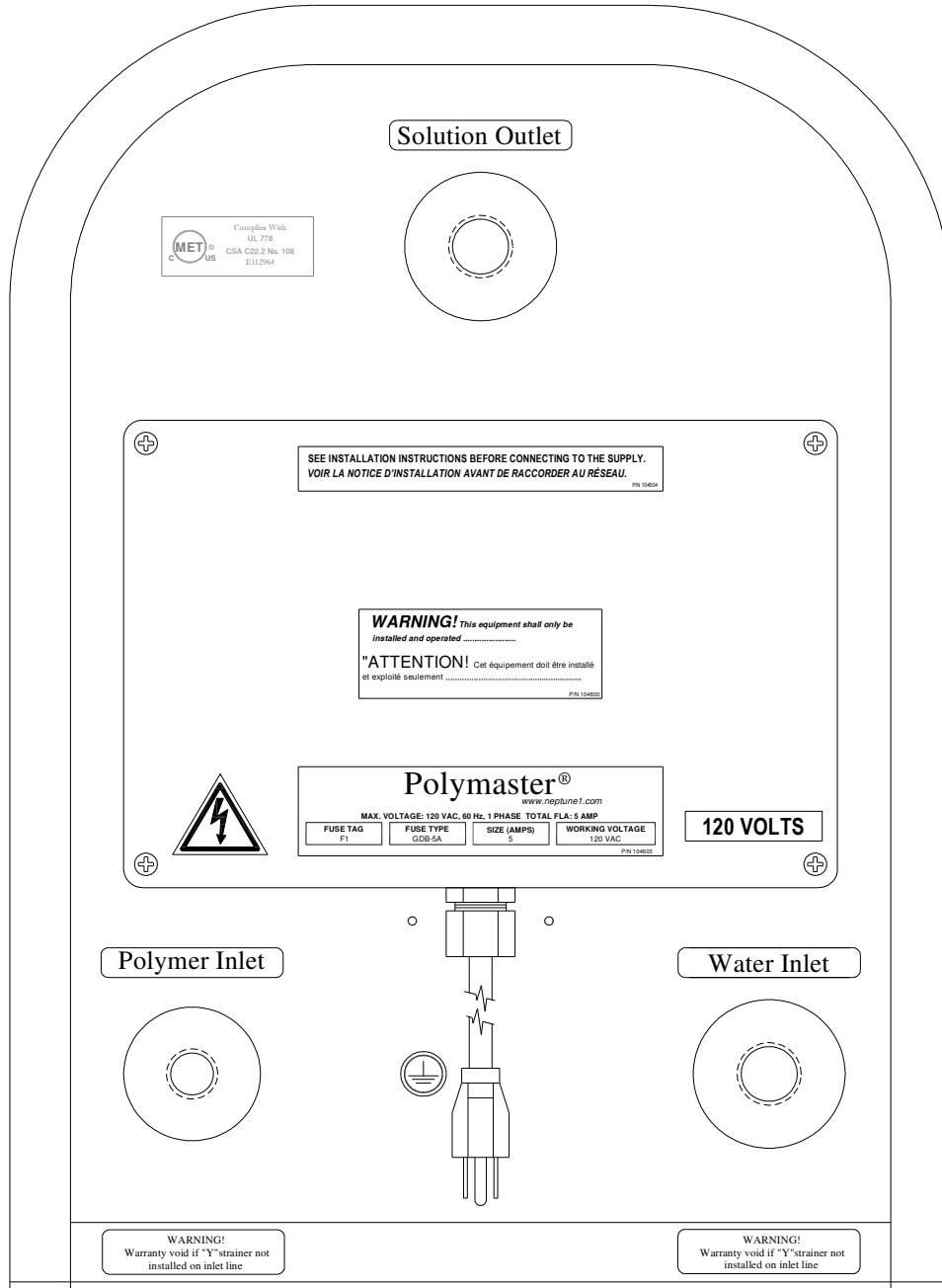
SHOULD IT BE NECESSARY TO SEND THE POLYMASTER TO THE FACTORY FOR REPAIR OR MAINTENANCE REBUILDING, PURGE ALL POLYMER FROM THE POLYMASTER BEFORE SHIPPING. FAILURE TO DO SO CAN CAUSE THE POLYMER TO SET-UP IN THE PUMP.

¹SEE IMPORTANT NOTICE - RETURN MATERIALS AUTHORIZATION

IMPORTANT NOTICE RETURN MATERIALS AUTHORIZATION

- (1) All equipment returned to Neptune Chemical Pump Company requires proper Returned Materials Authorization Number (RMA) and tags.
- (2) All equipment returned to the factory for repair or service must first be thoroughly flushed and have all chemical contact areas neutralized.
- (3) All equipment, which has been in contact with chemicals, must be accompanied by a copy of the Chemical Product Material Safety Data Sheet (MSDS).
- (4) Failure to comply with the above instructions will result in equipment being returned to sender, freight collect, without service.

TYPICAL BACK PANEL



POLY005

INSTALLATION

1. Unpack Polymaster from shipping container. Inspect system for any shipping damage and report it to the freight company and to Neptune immediately. Save the shipping container. Identify all the parts within the container. As a minimum, there should be a strainer for the water line, a strainer for the polymer line and a priming kit with a hand pump.

Record model number and serial number in spaces provided on page 29 of this manual for future reference. Model number information is located on system nameplate.

2. Install the Polymaster on a clean, level surface. If the system is to be wall-mounted, make sure the shelf brackets are anchored securely. Models PAD-1200R and PAD-3000R use remote pumps which are not built into the stainless steel chassis. The remote pump can be located on a molded plastic base (purchased separately) or on the floor or other support directly adjacent to the Polymaster.
3. Install strainer (shipped loose) in the dilution water line. Connect the water first through the line strainer then to the connection marked "Water Inlet". The maximum incoming water pressure is 100 psi, it is suggested that the normal operating pressure be 80 psi or less. A water pressure reducing valve is necessary for higher water pressures and is available through Neptune. The system includes an inlet water pressure gauge.
4. Potable water at ambient temperature is recommended. Dirty or secondary water could begin reacting with the polymer before it reaches the point of application.
5. Install strainer (shipped loose) in the polymer line. Connect the polymer feed first through the line strainer then to the connection marked "Polymer In". For remote pump models PAD-1200R and PAD-3000R - the polymer feed line should be fed through the line strainer, then connected directly to the suction of the remote feed pump.

Polymer suction line should be kept as short as possible and should be the same diameter or one size larger than the polymer inlet connection.

6. If feeding from a drum*, install the foot valve on the end of the polymer suction line in the polymer drum. This will prevent the polymer from draining into the drum when the pump is turned off. A drum wand assembly with foot valve is available from Neptune.
7. Connect the port marked "Solution Outlet" to the point of application. Dilution water inlet pressure must be 25psid (at full flow) higher than the pressure at the point of application or a water booster pump will be required. Polymaster will not operate if water flow and inlet pressure are insufficient.
8. Connect Polymaster to an electrical outlet using power cord and plug furnished. Be certain the electrical characteristics of the power source match the characteristics of the unit.
9. For all standard PAD models, the 4-20 mA signal should be connected in the rear electrical enclosure on terminals 1 and 2. It is recommended to refer to your unit specific electrical drawings.
10. The Polymaster is delivered with the pump lines full of mineral oil. **Do not flush pump or pump suction lines with water.** See Start Up procedure, Page 9.

Note: A flooded suction will always give less trouble, easier priming and superior performance

CAUTION

In addition to this instruction, there is a project specific mechanical drawings, a project specific electrical drawing and a metering pump instruction manual specific for the pump furnished with this unit. Refer to the metering pump instruction manual for pump start-up information.

Check nameplate for power requirements. Be certain power supply matches these requirements.

Electrical requirements available are: 115V-1 phase-50/60 Hz or 220V- 1 phase.-50/60 Hz depending on how the unit was ordered.

Standard units are furnished with a cord and plug. The plug is used as an electrical disconnect during maintenance. A grounded receptacle must be used. The cord may be removed and the unit hardwired to the power supply as long as a disconnect with lockout is provided.

For the proper handling of liquid polymers or other chemicals, contact the chemical supplier.

IMPORTANT NOTE:

The pump stroke length should only be adjusted while it is operating. Damage to the pump can occur if adjustments are attempted when pump is not cycling.

IMPORTANT NOTES:

All Polymaster units built between October of 2001 and October of 2012 require a minimum of 22psi. outlet back pressure for continuous operation. Without sufficient back pressure, system will display fault condition.

For previous version of the Polymaster Installation, Operation and Maintenance Manual order P/N ZL107874.

Contact Neptune Chemical Pump Co. for assistance.

Tel.: 215-699-8700
1 -888-3NEPTUNE (888-363-7886)
FAX: 215-699-0370
Email: www.pump@neptune1.com

THEORY OF OPERATION

The Neptune Polymaster polymer dilution system has three basic subsystems which are the water and Polymer feed/metering subsystem, the Gatlin distribution head subsystem and the mixing/activation subsystem.

1. WATER & POLYMER FEED/METERING SUBSYSTEM

The dilution water is connected to the bulkhead and labeled “Water/Inlet” at the back of the unit. Dilution water flows through a strainer (to be located outside of the unit), a NEMA 4X solenoid valve, a flow metering valve, with visual flowmeter, and then into pressure switch assembly. Once through the flowmeter, dilution water goes directly to the GATLIN distribution head where it is introduced to the metered neat polymer. A secondary dilution water flowmeter may have been supplied to accommodate high flow systems, see Post Dilution instructions at end of Manual.

If 40 mesh strainer or finer is not installed in the water line, the Warranty is null and void.

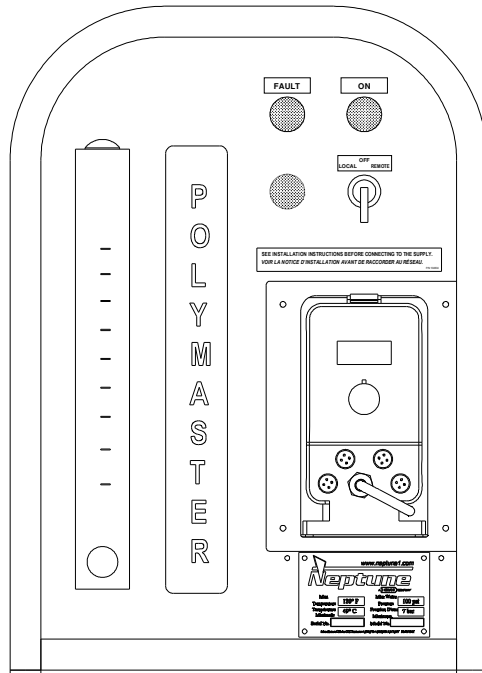
Neat polymer supply is connected to the bulkhead labeled “Polymer Inlet”. A strainer should be mounted in this line. A polymer feed metering pump draws the neat polymer into the system, through a strainer, and then injects it into the motor driven GATLIN distribution head where it is introduced to the dilution water.

2. GATLIN DISTRIBUTION HEAD

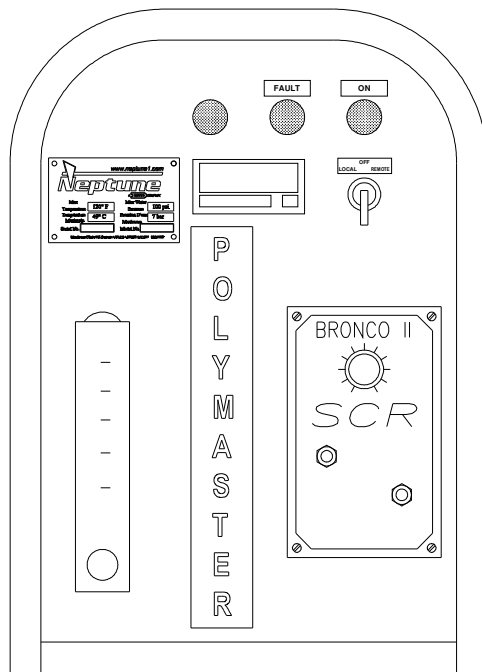
The mechanical distribution head is a patented design which is designed to hydraulically and mechanically spread the incoming polymer into extremely thin sheets, thus maximizing polymer surface area exposed to water. By creating thin sheets, the water contacts a larger surface area of polymer and is more easily and thoroughly wetted. This provides the initial activation.

3. MIXING

The Polymaster utilizes Komax Static Mixers to provide complete and thorough mixing of the polymer/water solution. The Komax Static mixer provides three types of mixing actions: Two-by-two division, Cross-current, and most important, a Back-mixing environment Two-by-two division assures that the polymer/water solution is in a constant state of separation and prevents the polymers from recombining into unmanageable product. Cross-current impinges the polymer with the water to fully disperse the one into the other and eliminate any dead zones or areas that are polymer rich. Finally, back mixing fully activates the polymer by exposing it to controlled shear in a localized environment. By using these three mixing actions together, it is possible to achieve a highly uniform mixture of polymer and water without shear damage, fisheyes, and or angel hairs.



**TYPICAL FRONT PANEL
WITH ELECTRONIC PUMP**



**TYPICAL FRONT PANEL
WITH SPEED CONTROL
FOR REMOTE PUMP MODELS**

POLY002

OPERATING INSTRUCTIONS

Please refer to system specific mechanical and electrical drawings and schematics for full information about the particular unit purchased for this site.

CONTROL PANEL

1. The power switch supplies power to the entire system when turned to “LOCAL” red run light will be lighted. When the power switch is in the “REMOTE” position, the unit is unable to run if a remote switch permits operation. Examples of the use of the remote contact would be starting to refill a tank on low level and stopping on high level or starting water flow in a treated line and stopping when the water flow ceases.
2. The pressure switch located in the dilution water line needs to be activated by dilution water pressure before the polymer pump or Gatlin mixer will operate. If the flow of water is not sufficient to create 25 psid of differential pressure, the system will go into a “standby” mode.
3. If a low water differential pressure condition is sensed, the amber “FAULT” light will come on and the pump and Gatlin will stop.
4. The system will automatically restart once differential flowing water line pressure is 25 psid or higher. Maximum static water line pressure is 100 psi.
5. The solenoid valve will open when the system power is “ON”. The polymer pump will also be energized but individual speed or stroke control settings may cause it to operate anywhere from 0-100% of capacity, i.e., the pump can be turned “OFF” by its’ own control knobs even when the systems power is “ON”.

FLUSH WATER

1. Normally, the Polymaster is flushed before shutdown. To flush, turnoff the polymer feed pump or turn the stroke speed to “0” using the controls on the face of the pump. Now, only dilution water is flowing through the system. Allow the water to run for 5-10 minutes, while the Gatlin is turning, to completely flush-out the system.
2. **Do not flush the chemical feed pump or pump suction and discharge lines with water as water will mix the polymer in the line and may solidify or gel plugging the line.**
3. For extended shutdown (more than 3-days) the chemical feed pump head and lines can be filled with mineral oil. Simply connect the suction line to a source of mineral oil, or fill the calibration column with mineral oil, and allow the unit to run until mineral oil has been drawn completely through the suction line, pump head and discharge line up to the Gatlin. Turn off the chemical feed pump as soon as these lines are filled with mineral oil and continue to run dilution water through the system for at least 5-10 minutes before shutting down.

DILUTION WATER FLOW CONTROL

1. The flowmeter indicates the dilution water flow rate. The water flowing through the flowmeter does not contain any polymer.
2. The flowmeter control knob is used for adjusting the dilution water flow rate.

POLYMER FLOW CONTROL

1. The feed pump controls the amount of polymer being metered into the system. Depending upon the type of feed pump, there may be pump speed and/or stroke length control. These adjustments are both on the pump for the electronic solenoid pumps. The speed control is on the face of the Polymaster for remote, motor driven pump models. There may also be a stroke length adjustment on remote pump models, depending on type of pump used.
2. For electronic metering pumps, and optional remote control mode may have been provided. Please consult the system specific electrical drawings.
3. Two types of Polymaster are offered, manual or automatic.

Model numbers beginning with PMD are “MANUAL” units and allow only for manual adjustment of the polymer flow. For electronic pumps, this may be by manual speed or manual stroke length adjustment or both. For motor driven diaphragm metering pumps, this will be by manual stroke length adjustment only. All other motor driven pumps including progressive cavity or rotary gear pumps are provided with a variable drive for speed adjustment.

Model numbers beginning with PAD are “AUTOMATIC UNITS” control the polymer flow rate automatically in response to a 4-20 mA signal. Electronic metering pumps use the 4-20 mA signal to control stroking speed, while providing a separate stroke length control. Motor driven diaphragm metering pumps also use the 4-20 mA signal to control pump speed while preserving a separate stroke length control. All other motor driven pumps including progressive cavity or roto gear types, speed adjustment will be proportionally to the 4-20mA input signal.

Electronic metering pumps will follow the 4-20 mA signal when the speed control mode is turned to the “EXT” position.

Automatic units using motor driven pumps have a speed dial on the front panel of the Polymaster which can be used to manually adjust the motor speed when the “MAN-AUTO” switch of the faceplate of the SCR drive is in the “MAN” position. The 4-20 mA signal will drive the pump when SCR drive toggle is in the “AUTO” position.

Please refer to the pump instruction manuals furnished for the particular unit.

LONG TERM STORAGE INSTRUCTIONS

If the system will not be operating for an extended period of time, all the polymer should be purged from the system. Polymer that is left in the pump head for three or more days may start to harden. If the Polymaster is to be shut down for more than three (3) days, flush carefully per the following procedure.

1. Begin water flush as described in step 5 under maintenance on page 15.
2. Purge all polymer for the chemical feed pump head, suction and discharge lines by filling with mineral oil. Simply connect the suction line into a source of mineral oil, or fill the calibration column with mineral oil and allow the unit to run until mineral oil has been drawn completely through the suction line, pump head, discharge line and polymer injection valve at the Gatlin. Turn off the chemical feed pump as soon as these lines are filled with mineral oil and continue to run dilution water through the unit for at least 5-10 minutes before final shut down.
3. **Do not flush the chemical feed pump of feed pump suction and discharge lines with water as water will mix with the polymer and may solidify or gel plugging the line.**

START-UP

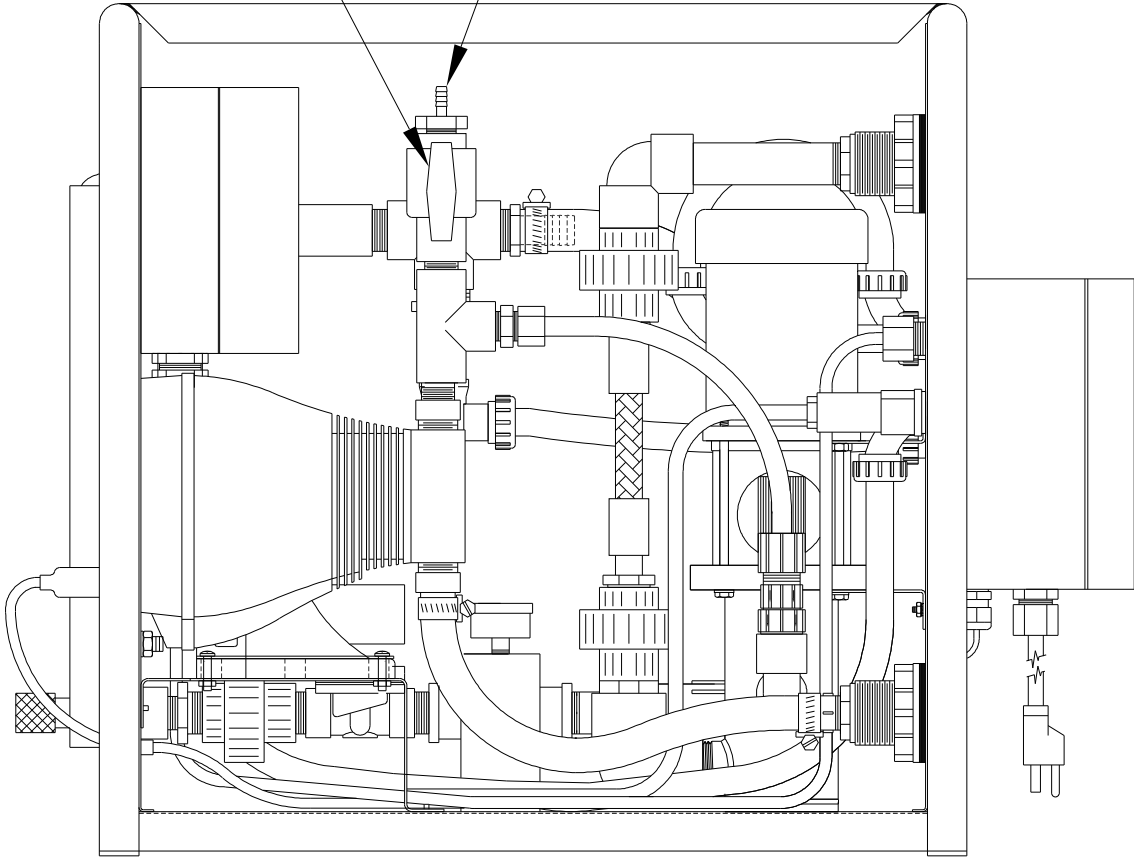
1. Apply power to the unit by turning the switch at the top right of the unit to “LOCAL”. The red “ON” light should come on. Since water has not yet been turned on, expect the amber “FAULT” light to illuminate immediately. This is normal when there is no water flow. The system requires a minimum of 25 psid differential pressure to sustain the Run mode otherwise the amber “FAULT” light will come on.
2. Allow water to flow into the system. Turn the water flow to maximum. Water flow is controlled by the control knob at the bottom of the flowmeter. All units include a solenoid valve (normally closed) which will not allow water to flow until the system is turned on.
3. Check for water leaks at all connections within and attached to the system. Tighten the connections, if necessary.
4. Prime the polymer feed pump until polymer is drawn to the pump outlet or bleed port using the priming kit hand pump furnished with the unit. **Continue the water flow at maximum while priming and starting up the polymer feed pump.**

(Priming process may vary slightly, see pump manufacturer’s recommended procedure). For installations that are especially difficult to prime, a hand operated vacuum pump has been included to assist the polymer feed pump in initially pulling in the polymer.
5. Turn the polymer pump to the desired setting. **ADJUST PUMP ONLY WHEN THE PUMP IS RUNNING. RECOMMENDED OPERATION IS TO SELECT THE CONVENIENT STROKE LENGTH SETTING AND MAKE ALL FURTHER ADJUSTMENTS, EITHER AUTOMATIC OR MANUAL, BY SPEED CONTROL.**
6. Now lower the water flow to the desired level. **At no time do you wish to create a situation where there is too much polymer and too little water or gelling can occur.**
7. Check for polymer leaks at all connections within and attached to the system. Check of air leaks in the pump suction piping. Tighten the connections, if necessary.
8. The system is now fully operational. Initial settings for desired dilution water and polymer flow rates have been made. Proceed to fine tune, depending upon the amount of polymer and desired dilution required and the performance of your process.

NOTE: The system must be calibrated to assure accurate polymer flow rates with the specific polymer and polymer feed setup used. Calibration instructions begin on page 11. .

OPEN VALVE
TO PRIME

CONNECT VACUUM HAND PUMP
TO PRIME CONNECTION HERE



POLY003

CALIBRATION

1. Calibration of the polymer pump is recommended once the system is operational. Differences in the specific gravity and viscosity of polymers, as well as the specific piping arrangement used, require calibration of the pump to determine the precise polymer feed rate at a particular pump setting. A chart is developed to show the flow rates at various pump settings specific to the polymer and the installation site. The dilution water flowmeter requires no calibration.
2. Connect a calibration cylinder with isolation valves to the polymer inlet line. Neptune offers complete calibration kits.
3. Fill the cylinder with polymer using gravity feed for a flooded suction installation or by pouring the cylinder full of polymer if using an arrangement where the polymer is pulled up out of a drum. **Never place water in the calibration cylinder as this could cause gelling and solidifying of polymer in the suction line or pump head.** The cylinder should be isolated from the polymer input line so only polymer from the cylinder is drawn. Measure the amount of polymer drawn out of the cylinder in a 1-2 minute test.
4. With the system on and dilution water flowing **at a rate which ensures the proper polymer percentage make-down.** Set the pump stroke length to 100%, and the stroke speed to 25%. Open the polymer cylinder, time the flow being pumped for 1 or more minutes, close the valve, and record the volume. Never run the polymer metering pump without a supply of chemical. Do not starve the pump. When switching from the normal suction line to the calibration cylinder, open the cylinder valve first and close the suction line valve last. When restoring normal flow, open the suction line first and close the calibration cylinder valve last.
5. Repeat Step 4 for pump settings at 50%, 75% and 100%.
6. With the data recorded, plot the pump setting versus the amount of polymer drawn down in the calibration cylinder as measured in milliliters. Convert the data into flow rates using one of the formulas below. Plot the flow rate vs. pump setting on the calibration graph on the next page.

$$\text{Flow (gph)} = \frac{V \text{ (ml)}}{3785 \times t \text{ (sec)}} \times \frac{3600}{1}$$

$$\text{Flow (gph)} = \frac{V \text{ (ml)}}{3785 \times t \text{ (min)}} \times \frac{60}{1}$$

gph - gallons per hour

V - volume in milliliters

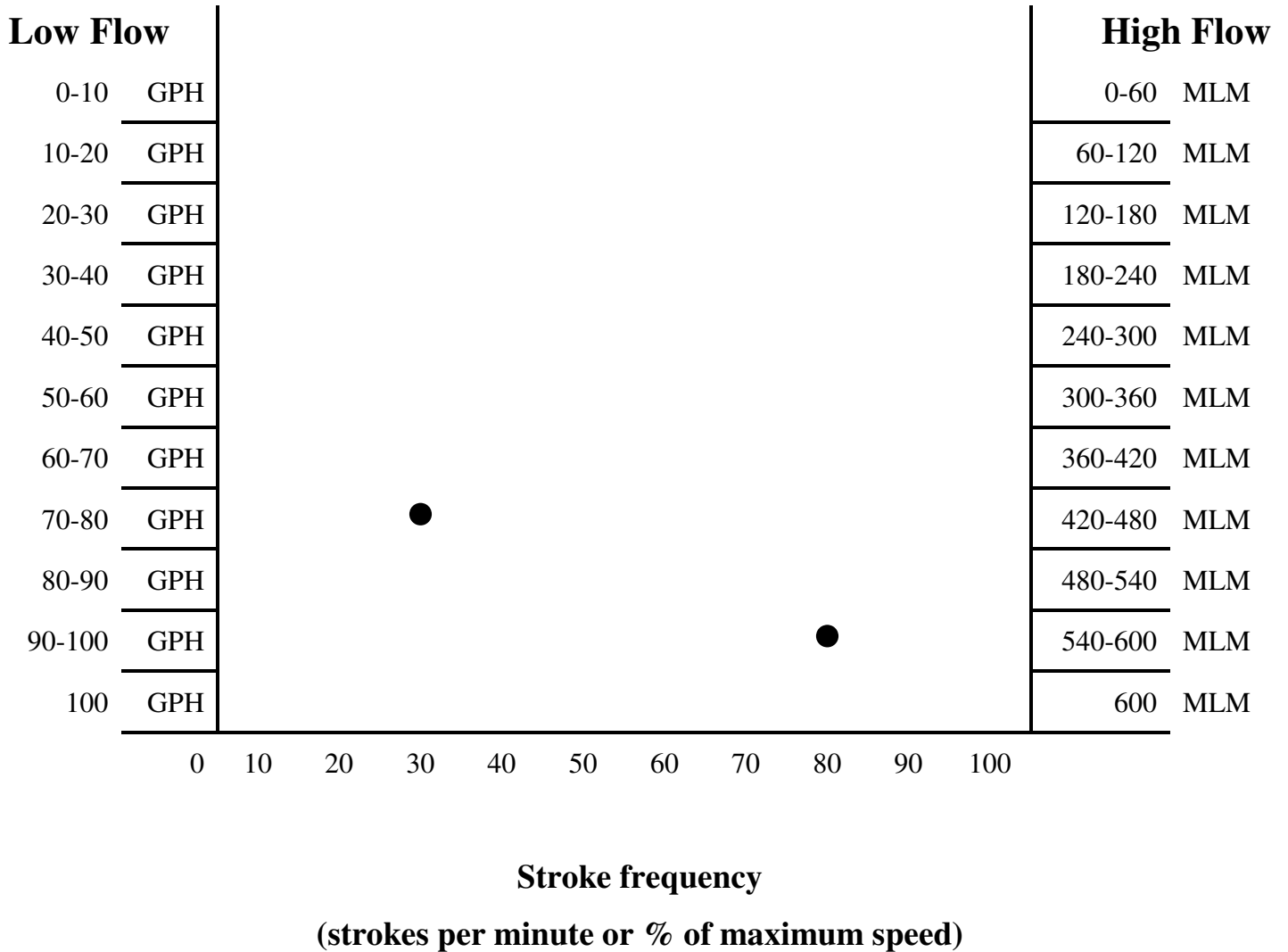
t - time in seconds or minutes

7. Note: Since stroke and speed may be adjustable, it is recommended to select a stroke length convenient for the application and to develop the calibration graph based on changes to the stroke speed. Additional calibration graphs may then be developed for other stroke length settings repeating 25%, 50%, 75% and 100% of stroke speed for each stroke length tested.

CALIBRATION GRAPH

For your convenience, the vertical scales on this graph are labeled for English Units (gallons per hour) or Metric Units (milliliters per minute). You cannot use both on the same graph since the scales are not related.

The left axis allows a finer plot on low volume pumps. The right axis allows plotting curves for higher flow rate pumps.



INSTRUCTIONS FOR OPERATION OF POST-DILUTION UNIT

(Applies to 2 stage dilution furnished on models PAD/PMD-3000 and PAD/PMD-3000R only)

The models PAD/PMD-3000 include two separate water flow indicators with separate water flow adjustment knobs. The primary dilution flow meter is located on the front face for the Polymaster. The second dilution or post dilution flow indicator is inside the unit with the rate setting valve at the top of the flow meter.

When using the dual dilution unit, a maximum of 20gpm (1200 gph) of water may be passed through the primary flow circuit into the Gatlin mixing chamber. Up to 30gpm (1800 gph) of water may be added by means of the secondary or post dilution water flow indicator.

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NOTE: If the Polymaster stops and the amber fault light comes on when turning on the post dilution unit, sufficient water flow or pressure may not be available from your water source.

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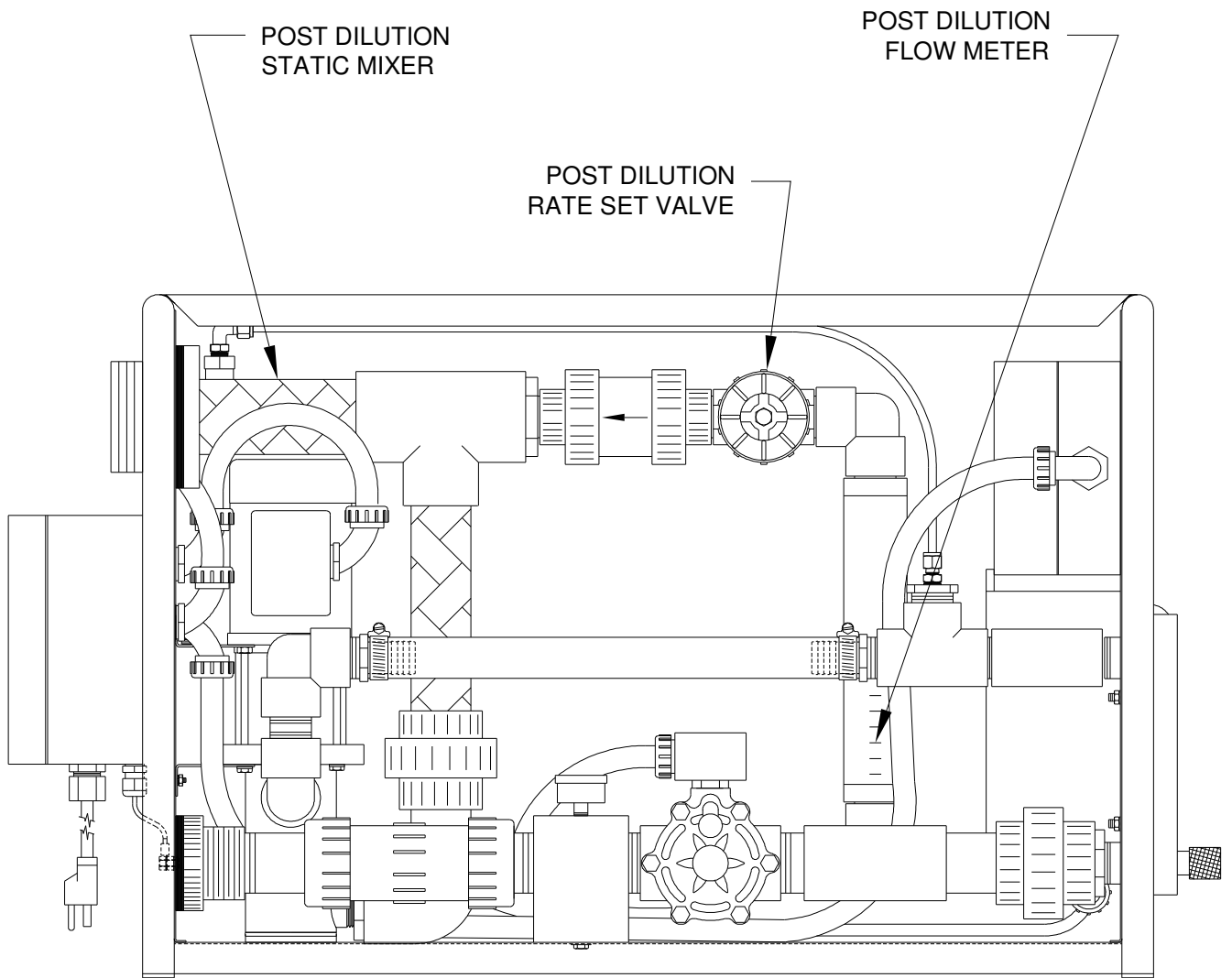
Complete steps 1-6 of the START -UP procedure on page 9 using only the primary flow indicator on the front panel of the Polymaster. Calculate the desired final solution percentage and set the post dilution flow indicator to provide the balance of dilution water required.

It is recommended that both primary and post dilution flow indicators be set to approximately the same flow rate unless the total water exceeds 2400gph in which case the maximum of 1200gph of water is added by the primary dilution flow meter and the balance is added by the post dilution flow meter.

The post dilution flow control valve is positioned at the top of the internal flowmeter. The Polymaster should produce double the desired final solution and then process down to the desired final concentration.

EXAMPLE: If you need 2400 gph of a 0.5% solution, set the Polymaster to produce 1200 gph on the primary dilution meter and 1200gph of water on the secondary dilution water meter. The Gatlin will produce 1% solution with the primary 1200gph of water and 12gph of neat polymer. The introduction of the secondary 1200gph of post dilution water will result in a total of 2400gph of a 0.5% final solution.

If a model PAD/PMD-3000 unit has been purchased and it is determined that less than 1200gph of total solution is required, then all of the dilution water should pass through the primary mixing circuit and the secondary dilution water meter should not be used. This will ensure the maximum velocity of the final solution through the static mixer.



MAINTENANCE

1. Inspect for polymer or water leaks in the system components.
 - A. If joint leakage is observed, tighten carefully. Most joints are plastic (i.e. PVC, Delrin, acrylic) and over-tightening will lead to breakage.
 - B. If component leakage is observed, replace the defective part. Contact Neptune for part replacement.
2. Inspect light and switches for proper operation.
 - A. If a light or switch is inoperative, replace the defective part.
3. Re-calibrate the pump.
 - A. If the brand or type of polymer is changed or if the pump flow rates appear to be different than originally calibrated, recalibrate and update the calibration graph. Inform the system operator so proper system performance will be achieved.
4. Lubrication - No lubrication required other than may be called for in the pump instruction manual.
5. Flush After Each Use
 - A. The Polymaster should be flushed before shutdown. To flush, turn off the polymer feed pump or set the stroke speed to “0” using the controls on the face of the pump. Now, only dilution water is flowing through the system. Allow the water to run for 10 minutes, while the Gatlin is turning, to completely flush-out the system. **Do not flush the chemical feed pump or feed pump suction and discharge lines with water as water will mix with the polymer in the line and may solidify or gel. See long terms storage instructions on page 10 for details on flushing pump head and lines.**
6. Check the polymer line strainer and water line strainer for debris with every new drum of polymer.
7. Follow manufacturer’s recommendation for routine maintenance of the chemical metering pump.

RECOMMENDED SPARE PARTS

Polymaster unit 120 volt	Kit No. 003896 Contains:	(3) replacement fuses (3) spare indicating lamp bulbs (1) spare Gatlin mechanical seal (1) spare polymer injection valve
Polymaster unit 220 volt	Kit No. 003866 Contains:	(3) replacement fuses (3) spare indicating lamp bulbs (1) spare Gatlin mechanical seal (1) spare polymer injection valve
Chemical Metering Pump	Refer to specific pump manual	(1) spare parts kit as recommended by pump manufacturer

Accessories

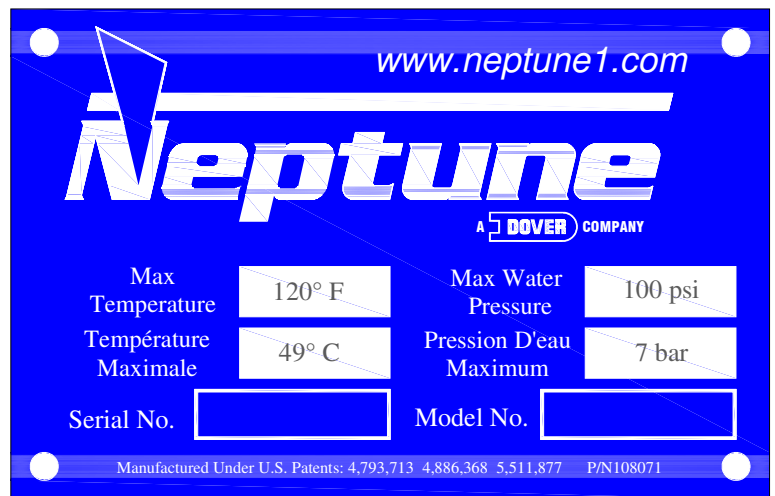
1" Poly y-strainer	Part Number 107825
1/2" Poly y-strainer	Part Number ST-PVC
Vacuum Hand Pump	Part Number 108233

PARTS ORDERING INSTRUCTIONS

The complete model number and serial number of the Polymaster must be furnished to insure prompt and accurate parts service. These numbers are found on the name plate (sample below) located on the front panel.

Send all orders or inquiries for parts to:

Parts Department
 Neptune Chemical Pump Company
 295 DeKalb Pike
 North Wales, PA 19454
 Tel.: 215-699-8700
 1 -888-3NEPTUNE (888-363-7886)
 FAX: 215-699-0370
 Email: www.pump@neptune1.com



Shipping Address:

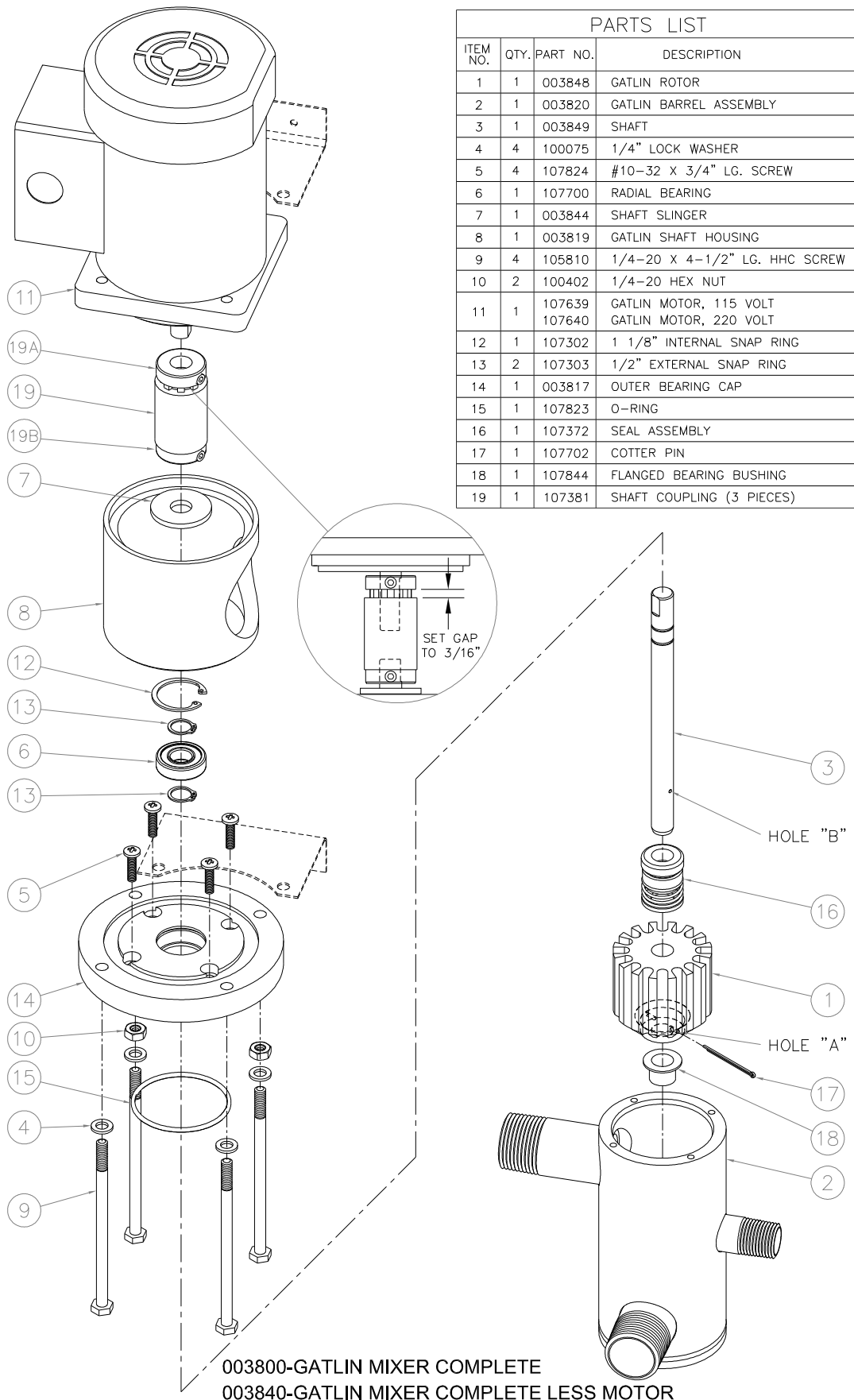
Any material returned to Neptune must first have an RMA# as described in the beginning of this manual.

Neptune Chemical Pump Co.
 295 DeKalb Pike
 North Wales, PA 19454

TROUBLESHOOTING

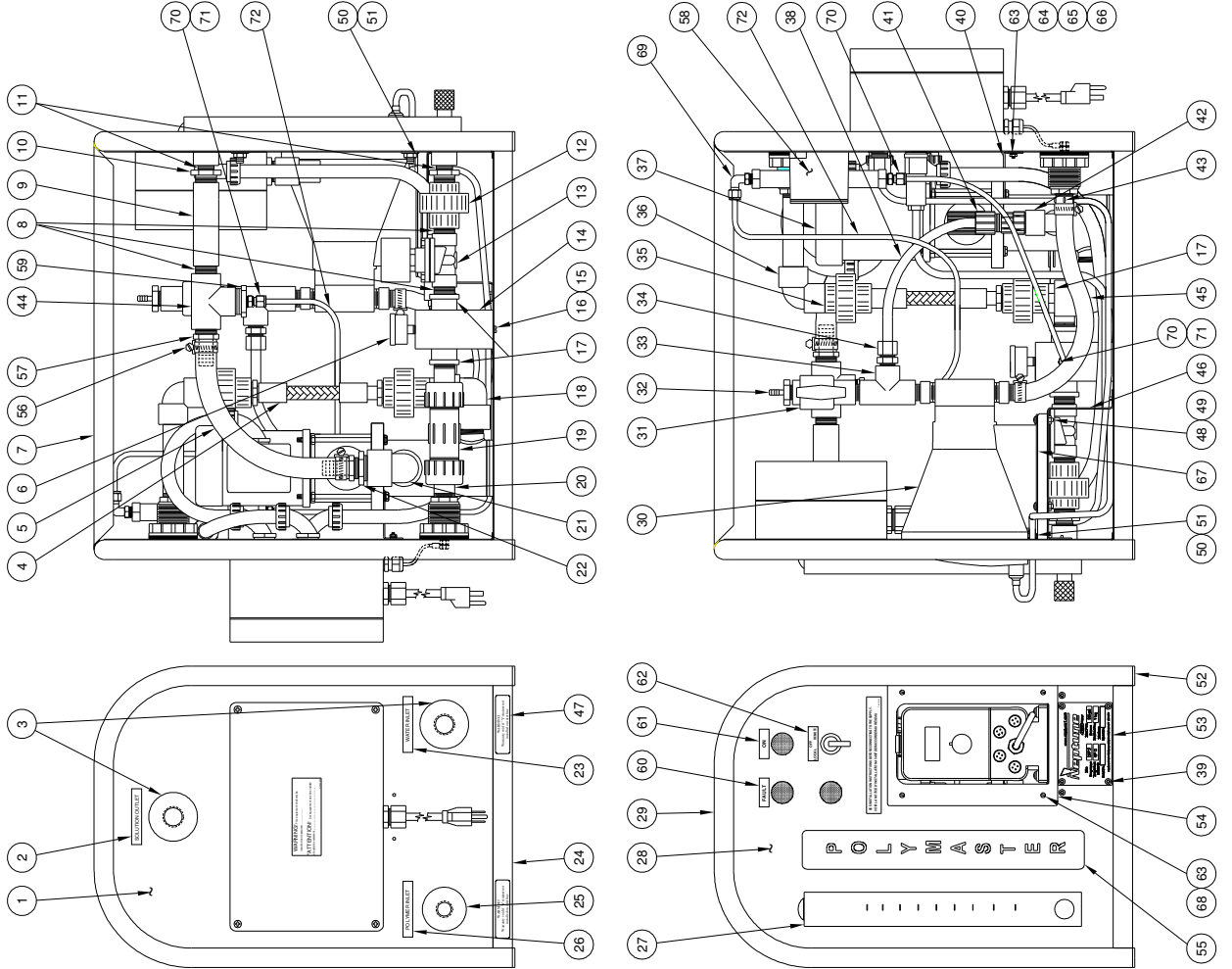
PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump running but not pumping chemical.	Air leak in suction line.	Tighten hosing and clamps.
	Empty polymer drum	Check o-ring in strainer cap to see if dislodged or cracked. Replace if cracked or missing. Check polymer supply.
	Plugged suction line.	Clean suction line, check strainer basket.
	Pump check valves dirty.	Inspect or clean pump valves.
	Clogged or missing foot valve. (Top mount pump only)	Clean or add foot valve.
	Pump rate set too low.	Increase stroke speed or length.
Pump loses prime after operation.	Polymer has hardened in check valve or 90° elbow connection To Gatlin.	Clean out check valves and elbow of all hardened polymer.
	Air leaks in suction line or missing/defective foot valve.	Tighten solution clamps using teflon tape. Install foot valve on end of suction hose. Use drum suction wand with foot valve. Refer to all remedies under "pump won't prime section" of pump instruction manual.
Pump starts, then stops.	Insufficient differential water pressure turning off pump power.	Check available water pressure, flow rate and back pressure at outlet.
Incomplete mixing.	Too low a flow.	Use smaller Polymaster unit or increase water flow.
Polymer flow rate low.	System pressure too high.	Double check pressure at outlet to be sure it does not exceed pump nameplate rating or dilution water pressure
	Pump check valves dirty.	Inspect or clean valves.
	4-20 mA signal not correct.	Check instrument providing signal.

Refer to the enclosed pump manufacturer's instruction manuals for additional troubleshooting information relating to the polymer feed pump.



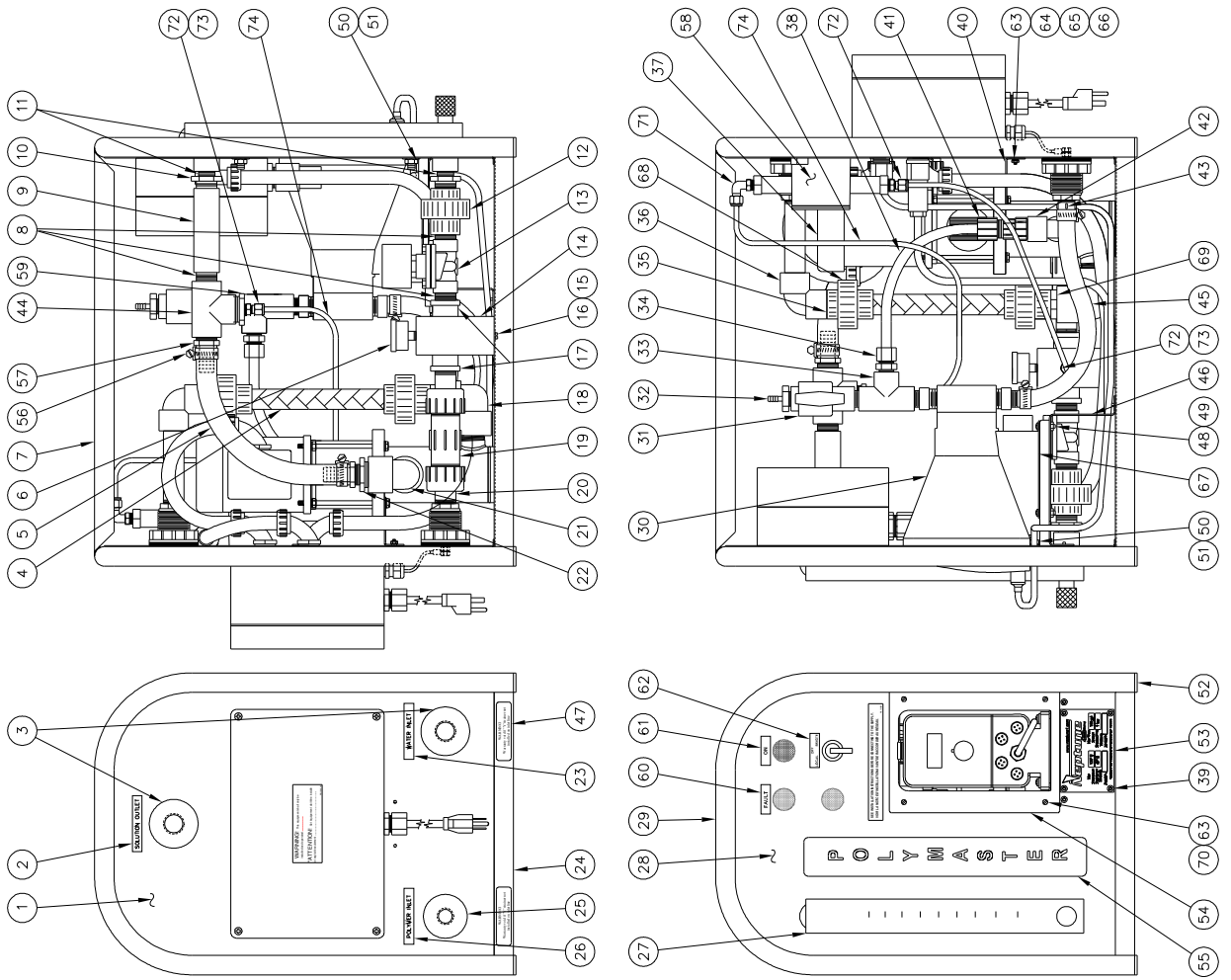
PARTS LIST			
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	003848	GATLIN ROTOR
2	1	003820	GATLIN BARREL ASSEMBLY
3	1	003849	SHAFT
4	4	100075	1/4" LOCK WASHER
5	4	107824	#10-32 X 3/4" LG. SCREW
6	1	107700	RADIAL BEARING
7	1	003844	SHAFT SLINGER
8	1	003819	GATLIN SHAFT HOUSING
9	4	105810	1/4-20 X 4-1/2" LG. HHC SCREW
10	2	100402	1/4-20 HEX NUT
11	1	107639 107640	GATLIN MOTOR, 115 VOLT GATLIN MOTOR, 220 VOLT
12	1	107302	1 1/8" INTERNAL SNAP RING
13	2	107303	1/2" EXTERNAL SNAP RING
14	1	003817	OUTER BEARING CAP
15	1	107823	O-RING
16	1	107372	SEAL ASSEMBLY
17	1	107702	COTTER PIN
18	1	107844	FLANGED BEARING BUSHING
19	1	107381	SHAFT COUPLING (3 PIECES)

PAD/PMD-60, PAD/PMD-100



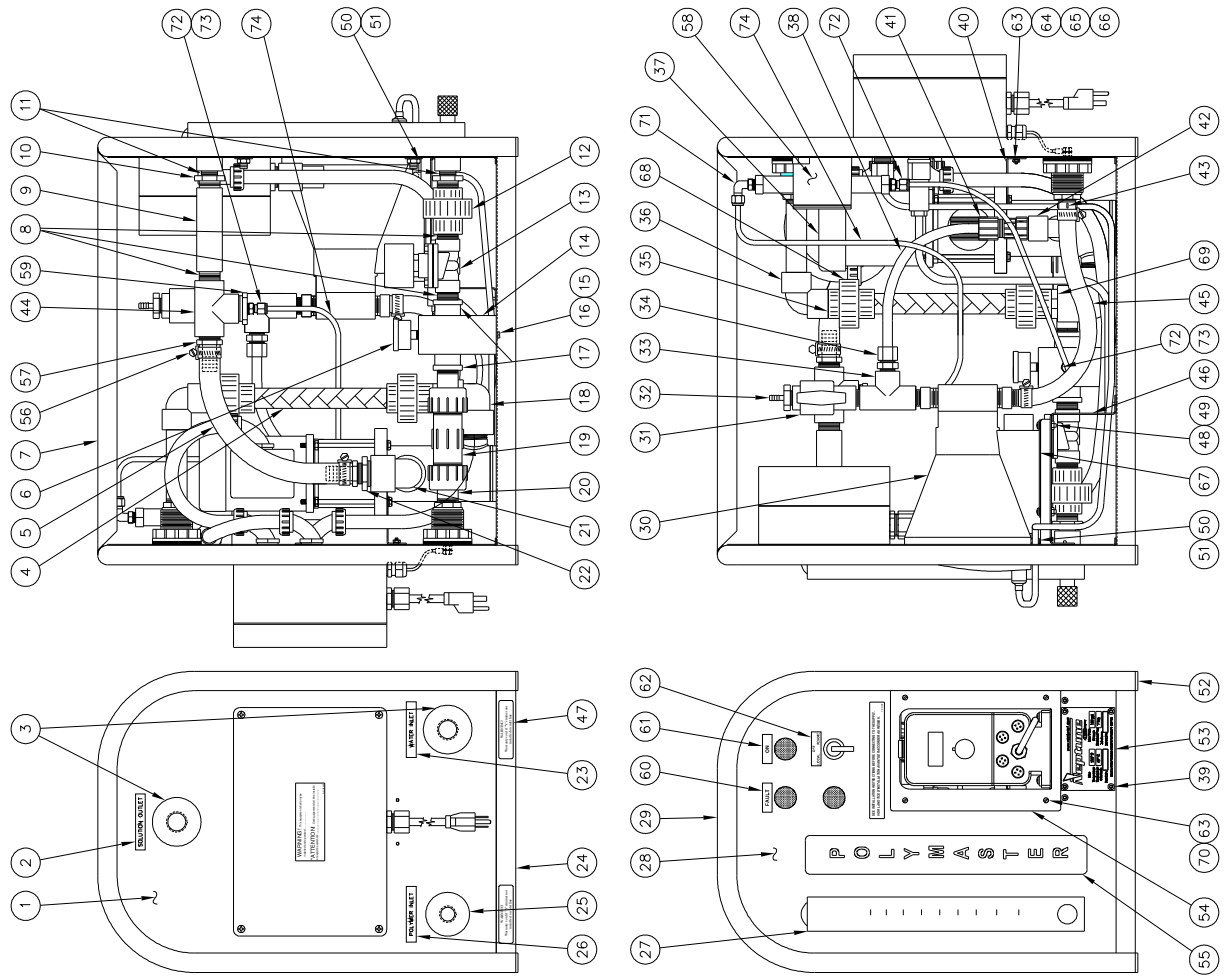
ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	107437	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107759	2	3/4" BULKHEAD ADAPTER
4	003892	1	STATIC MIXER ASSEMBLY
5	105984	1	3/4" I.D. X 18" LG. HOSE
6	107498	1	PRESSURE GAGE
7	003863	1	SUPPORT BAR
8	107175	3	3/4" CLOSE NIPPLE
9	0070514	3	COUPLING, 3/4" TXT PVC
10	101935	2	3/4" X 1/2" REDUCER BUSHING
11	107704	3	1/2" CLOSE NIPPLE
12	101961	1	3/4" UNION
13	107611	1	3/4" NC SOLENOID VALVE
14	004684	1	INLET BLOCK
15	107796	1	#10 X 1/2" LG. SELF TAPPING SCREW
16	107314	1	FENDER WASHER
17	107355	2	1" X 3/4" REDUCER BUSHING S X T
18	107316	1	1" ELBOW, S X T
19	107930	1	3/4" SUP. COUPLING
20	107121	2	3/4" X 6" LG. NIPPLE
21	101945	1	1" ELBOW, THREADED
22	101937	1	1" X 3/4" REDUCER BUSHING
23	107465	1	WATER INLET LABEL
24	107451	1	CHASSIS BASE
25	107453	1	1/2" BULKHEAD ADAPTER
26	107462	1	POLYMER INLET LABEL
27	107775	1	FLOWMETER
28	108070	1	FRONT PANEL FACE
29	003861	2	TUBE FRAME ENDS
30		1	PUMP
31	107623	1	1/2" BALL VALVE
32	107483	1	1/2" MNPT X 3/16" HOSE BARB
33	101954	1	1/2" TEE
34	107371	1	1/2" MNPT X 1/2" DIA. TUBE ADAPTER
35	100937	2	3/4" PIPE X 1 7/8" LG.
36	102216	1	3/4" ELBOW SW
37	003800	1	GATLIN ASSEMBLY
38	120428	1	1/2" OD X 12" LG. POLYETH. TUBING
39	107310	8	5/32" X 1/4" LG. RIVETS
40	107435	2	GATLIN SUPPORT BRACKETS
41	107606	1	1/2" POLY INJECTION VALVE
42	101943	1	1/2" ELBOW
43	102152	1	1/2" MNPT X 5/8" HOSE BARB
44	101955	1	3/4" TEE
45	105229	1	3/8" ID X 12" LG. HOSE
46	003868	1	PUMP MOUNTING BRACKET
47	107836	1	"Y" STRAINER WARNING LABEL
48	107701	2	#10-32 X 7/8" LG. PAN HD. SCREW
49	WAI170873	4	#10-32 KEP NUT
50	100556	2	3/8-24 HEX NUT, SELF LOCKING
51	106439	2	3/8" FLAT WASHER
52	107434	4	1" ROUND CAPS
53	108071	1	"POLYMASTER" NAMEPLATE
54	108072	1	FRAME PLATE
55	107461	1	POLYMASTER STICKER
56	106955	2	HOSE CLAMPS
57	107484	2	3/4" MNPT X 3/4" HOSE BARB
58	0062007	1	DIFFERENTIAL PRESSURE SWITCH
59	101932	1	3/4" X 1/4" REDUCER BUSHING
60	107338	1	"FAULT" LABEL
61	107361	1	"ON" LABEL
62	107456	1	LOCAL/REMOTE LABEL
63	100190	8	#6-32 X 3/8" LG. SLOTTED SCREW
64	100624	4	#6 FLAT WASHER
65	105401	4	#6 STAR WASHER
66	105446	4	#6-32 HEX NUT
67	003932	2	SECURING CLIP
68	107737	4	U-TYPE FASTENER
69	108073	1	ELBOW, 1/4 TUBE X MPT
70	0071402	3	STRAIGHT, 1/4 TUBE X MPT
71	8130601	2	SNUBBER, 1/4 NPT
72	0140102	1	TUBING, BLACK, 1/4" X 18" LG.

PAD/PMD-200



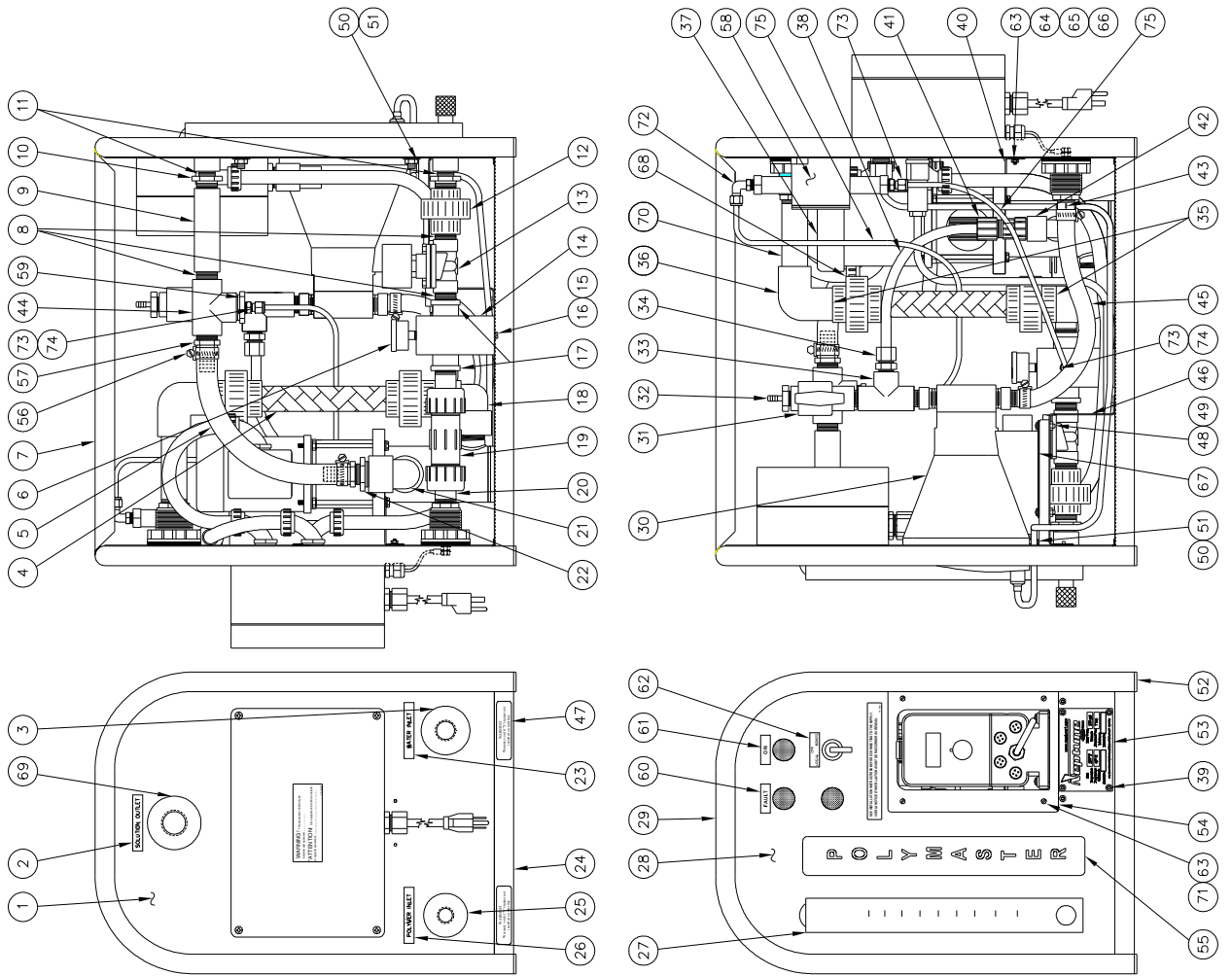
ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	107437	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107759	2	3/4" BULKHEAD ADAPTER
4	003876	1	STATIC MIXER ASSEMBLY
5	105984	1	3/4" I.D. X 18" LG. HOSE
6	107498	1	PRESSURE GAGE
7	003863	1	SUPPORT BAR
8	107715	3	3/4" CLOSE NIPPLE
9	0070514	2	COUPLING 3/4" TXT PVC
10	101935	1	3/4" X 1/2" REDUCER BUSHING
11	101704	3	1/2" CLOSE NIPPLE
12	101961	1	3/4" UNION
13	107611	1	3/4" NC SOLENOID VALVE
14	004684	1	INLET BLOCK
15	107796	1	#10 X 1/2" LG. SELF TAPPING SCREW
16	107314	1	FENDER WASHER
17	107355	2	1" X 3/4" REDUCER BUSHING S X T
18	107316	1	1" ELBOW, S X T
19	107830	1	3/4" SLIP COUPLING
20	101721	2	3/4" X 6" LG. NIPPLE
21	101945	1	1" ELBOW, THREADED
22	101937	1	1" X 3/4" REDUCER BUSHING
23	107465	1	WATER INLET LABEL
24	107451	1	CHASSIS BASE
25	107453	1	1/2" BULKHEAD ADAPTER
26	107462	1	POLYMER INLET LABEL
27	107775	1	FLOWMETER
28	106070	1	FRONT PANEL FACE
29	003861	2	TUBE FRAME ENDS
30	---	1	PUMP
31	107623	1	1/2" BALL VALVE
32	107483	1	1/2" MNPT X 3/16" HOSE BARB
33	101954	1	1/2" TEE
34	107371	1	1/2" MNPT X 1/2" DIA. TUBE ADAPTER
35	100937	2	3/4" PIPE X 1 7/8" LG.
36	102216	1	3/4" ELBOW S/W
37	003800	1	GATLIN ASSEMBLY
38	102428	1	1/2" OD X 12" LG. POLYETH. TUBING
39	107310	8	5/32" X 1/4" LG. RIVETS
40	107435	2	GATLIN SUPPORT BRACKETS
41	107606	1	1/2" POLY INJECTION VALVE
42	101943	1	1/2" ELBOW
43	102152	1	1/2" MNPT X 5/8" HOSE BARB
44	101955	1	3/4" TEE
45	105529	1	5/8" ID X 12" LG. HOSE
46	003868	1	PUMP MOUNTING BRACKET
47	107836	2	"Y" STRAINER WARNING LABEL
48	107701	4	#10-32 X 7/8" LG. PAN HD. SCREW
49	W170873	4	#10-32 KEP NUT
50	100556	2	3/8-24 HEX NUT, SELF LOCKING
51	106439	2	3/8" FLAT WASHER
52	107434	2	1" ROUND CAPS
53	108071	4	"POLYMASTER" NAMEPLATE
54	108072	1	FRAME PLATE
55	107461	1	POLYMASTER STICKER
56	106955	2	HOSE CLAMPS
57	107484	1	3/4" MNPT X 3/4" HOSE BARB
58	0062007	1	DIFFERENTIAL PRESSURE SWITCH
59	101932	1	3/4" X 1/4" REDUCER BUSHING
60	107338	1	"FAULT" LABEL
61	107361	1	"ON" LABEL
62	107456	1	LOCAL/REMOTE LABEL
63	100190	8	#6-32 X 3/8" LG. SLOTTED SCREW
64	100624	4	#6 FLAT WASHER
65	105401	4	#6 STAR WASHER
66	105446	4	#6-32 HEX NUT
67	003932	2	SECURING CLIP
68	102191	1	3/4" UNION S/W
69	102194	1	1" X 3/4" REDUCER BUSHING S/W
70	107737	4	U-TYPE FASTENER
71	108073	1	ELBOW, 1/4" TUBE X MPT
72	0071402	2	STRAIGHT, 1/4" TUBE X MPT
73	8130601	3	SNUBBER, 1/4" NPT
74	0140102	1	TUBING, BLACK, 1/4" X 18" LG.

PAD/PMD-300



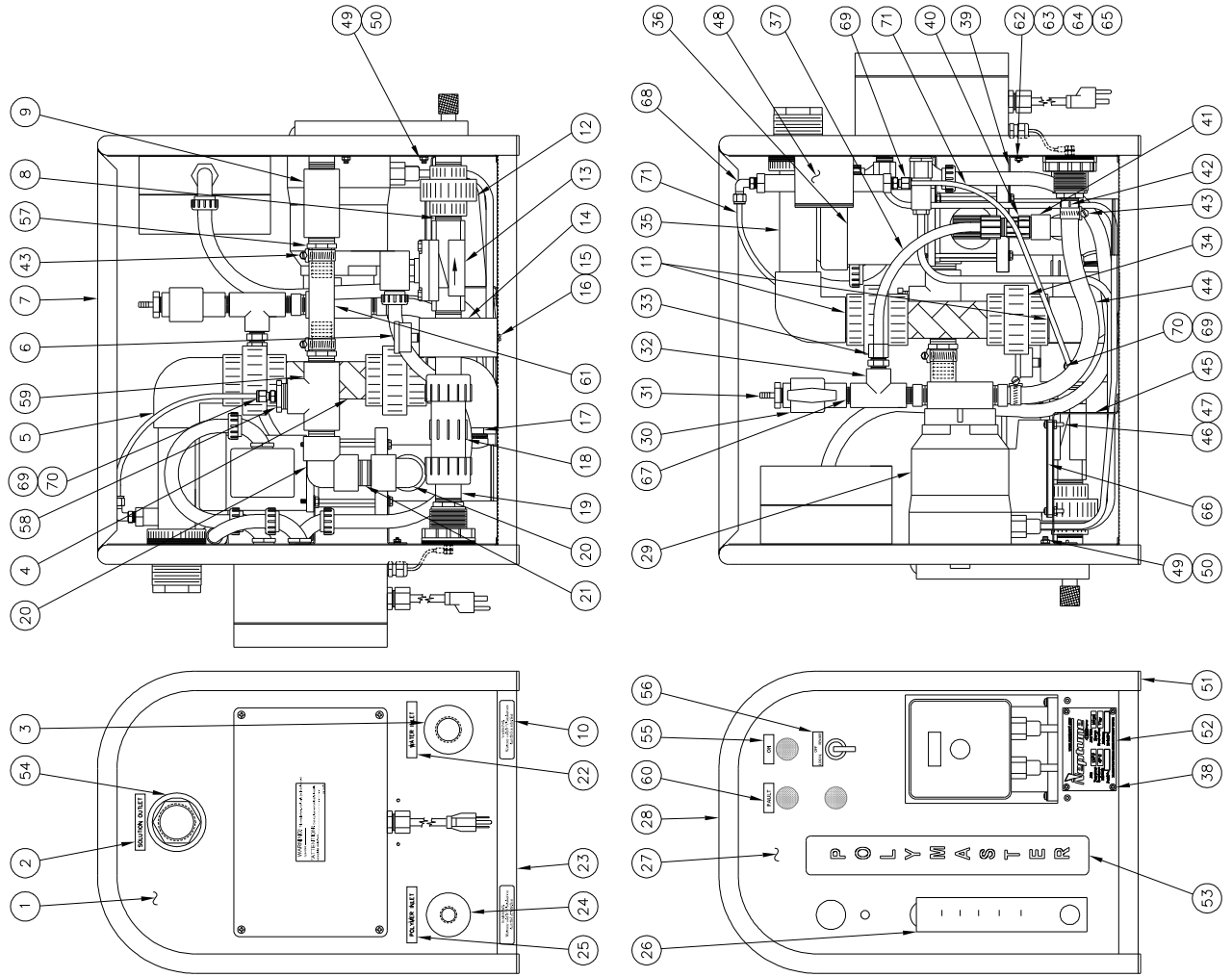
ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	107437	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107759	2	3/4" BULKHEAD ADAPTER
4	003876	1	STATIC MIXER ASSEMBLY
5	105984	1	3/4" I.D. X 18" LG. HOSE
6	107498	1	PRESSURE GAGE
7	003863	1	SUPPORT BAR
8	101715	3	3/4" CLOSE NIPPLE
9	0070514	2	COUPLING 3/4" TXT PVC
10	101935	2	3/4" X 1/2" REDUCER BUSHING
11	101704	3	1/2" CLOSE NIPPLE
12	101961	1	3/4" UNION
13	107611	1	3/4" NC SOLENOID VALVE
14	004684	1	INLET BLOCK
15	107796	1	#10 X 1/2" LG. SELF TAPPING SCREW
16	107314	1	FENDER WASHER
17	107355	2	1" X 3/4" REDUCER BUSHING S X T
18	107316	1	1" ELBOW, S X T
19	107830	1	3/4" SLIP COUPLING
20	101721	2	3/4" X 6" LG. NIPPLE
21	101945	1	1" ELBOW, THREADED
22	101937	1	1" X 3/4" REDUCER BUSHING
23	107465	1	WATER INLET LABEL
24	107451	1	CHASSIS BASE
25	107453	1	1/2" BULKHEAD ADAPTER
26	107462	1	POLYMER INLET LABEL
27	107775	1	FLOWMETER
28	108070	1	FRONT PANEL FACE
29	003861	2	TUBE FRAME ENDS
30		1	PUMP
31	107623	1	1/2" BALL VALVE
32	107483	1	1/2" MNPT X 3/16" HOSE BARB
33	101954	1	1/2" TEE
34	107371	1	1/2" MNPT X 1/2" DIA. TUBE ADAPTER
35	100937	2	3/4" PIPE X 1 7/8" LG.
36	102216	1	3/4" ELBOW S/W
37	003800	1	GATLIN ASSEMBLY
38	120428	1	1/2" OD X 12" LG. POLYETH. TUBING
39	107310	2	5/32" X 1/4" LG. RIVETS
40	107435	8	GATLIN SUPPORT BRACKETS
41	107606	1	1/2" POLY INJECTION VALVE
42	101943	1	1/2" ELBOW
43	102152	1	1/2" MNPT X 5/8" HOSE BARB
44	101955	1	3/4" TEE
45	105529	1	5/8" ID X 12" LG. HOSE
46	003868	1	PUMP MOUNTING BRACKET
47	107836	2	"Y" STRAINER WARNING LABEL
48	107701	4	#10-32 X 7/8" LG. PAN HD. SCREW
49	WAI70873	4	3/8-24 HEX NUT, SELF LOCKING
50	100556	2	3/8" FLAT WASHER
51	106439	2	1" ROUND CAPS
52	107434	4	"POLYMASTER" NAMEPLATE
53	108071	1	FRAME PLATE
54	108072	1	POLYMASTER STICKER
55	107461	2	HOSE CLAMPS
56	106955	2	3/4" MNPT X 3/4" HOSE BARB
57	107484	1	DIFFERENTIAL PRESSURE SWITCH
58	0062007	1	3/4" X 1/4" REDUCER BUSHING
59	101932	1	"FAUL" LABEL
60	107361	1	"ON" LABEL
61		1	LOCAL/REMOTE LABEL
62	107456	1	#6-32 X 3/8" LG. SLOTTED SCREW
63	100190	8	#6 FLAT WASHER
64	100624	4	#6 STAR WASHER
65	105401	4	#6-32 HEX NUT
66	105446	4	SECURING CLIP
67	003932	2	3/4" UNION S/W
68	102191	2	1" X 3/4" REDUCER BUSHING S/W
69	102194	4	U-TYPE FASTENER
70	107737	1	ELBOW, 1/4" TUBE X MPT
71	108073	1	STRAIGHT, 1/4" TUBE X MPT
72	0071402	3	SNUBBER, 1/4" NPT
73	8130601	2	TUBING, BLACK, 1/4" X 18" LG.
74	0141012	1	

PAD/PMD-600



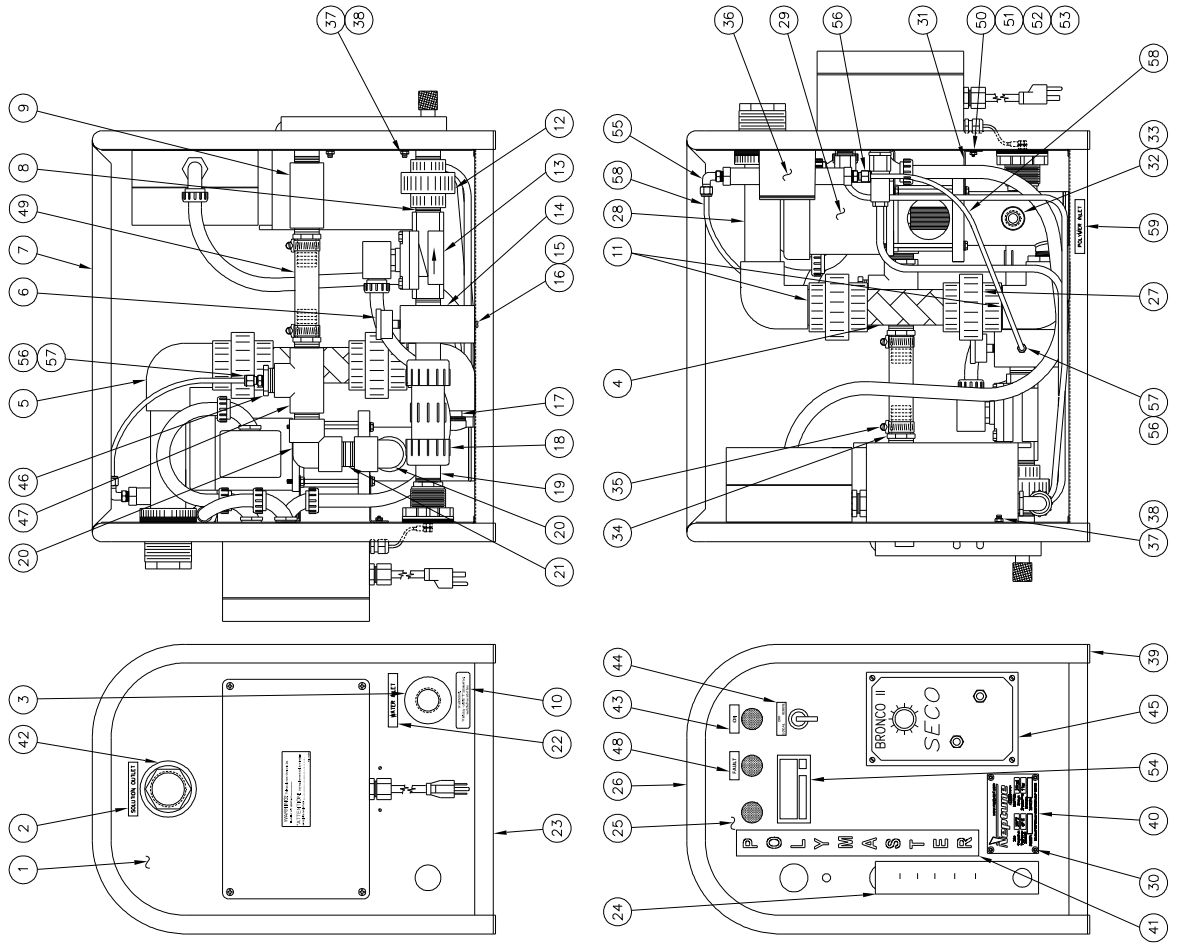
ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	107437	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107759	1	3/4" BULKHEAD ADAPTER
4	003877	1	STATIC MIXER ASSEMBLY
5	105984	1	3/4" I.D. X 14" LG. HOSE
6	107498	1	PRESSURE GAUGE
7	003863	1	SUPPORT BAR
8	107115	3	3/4" CLOSE NIPPLE
9	0070514	3	3/4" x 1/2" REDUCER BUSHING
10	101935	2	1/2" CLOSE NIPPLE
11	101704	3	3/4" UNION
12	101961	1	3/4" NC SOLENOID VALVE
13	107611	1	INLET BLOCK
14	004684	1	#10 X 1/2" LG. SELF TAPPING SCREW
15	107796	1	FENDER WASHER
16	107314	1	1" X 3/4" REDUCER BUSHING S X T
17	107355	2	1" ELBOW, S X T
18	107316	1	3/4" SLIP COUPLING
19	107830	1	3/4" X 6" LG. NIPPLE
20	101721	1	1" ELBOW, THREADED
21	101945	1	1" X 3/4" REDUCER BUSHING
22	101937	1	WATER INLET LABEL
23	107465	1	CHASSIS BASE
24	107451	1	1/2" BULKHEAD ADAPTER
25	107453	1	POLYMER INLET LABEL
26	107462	1	FLOWMETER
27	107636	1	FRONT PANEL FACE
28	108070	1	TUBE FRAME ENDS
29	003861	2	PUMP
30	---	1	1/2" BALL VALVE
31	107623	1	1/2" MNPT X 3/16" HOSE BARB
32	107483	1	1/2" TEE
33	101954	1	1/2" MNPT X 1/2" DIA. TUBE ADAPTER
34	107371	1	1" PIPE X 2 1/8" LG.
35	120467	2	1" ELBOW S/W
36	102214	1	GATLIN ASSEMBLY
37	003800	1	1/2" OD X 12" LG. POLYETH. TUBING
38	120428	1	5/32" X 1/4" LG. RIVETS
39	107310	2	GATLIN SUPPORT BRACKETS
40	107435	1	1/2" POLY INJECTION VALVE
41	107606	1	1/2" ELBOW
42	101943	1	1/2" MNPT X 5/8" HOSE BARB
43	102152	1	3/4" TEE
44	101955	1	5/8" I.D. X 12" LG. HOSE
45	055529	1	PUMP MOUNTING BRACKET
46	003868	1	"Y" STRAINER WARNING LABEL
47	107836	2	#10-32 X 7/8" LG. PAN HD. SCREW
48	107701	4	#10-32 X 7/8" LG. PAN HD. SCREW
49	WAI70873	4	3/8"-24 HEX NUT, SELF LOCKING
50	100556	2	3/8" FLAT WASHER
51	106439	2	1" ROUND CAPS
52	107434	4	"POLYMASTER" NAMEPLATE
53	108071	1	FRAME PLATE
54	108072	1	POLYMASTER STICKER
55	107461	1	HOSE CLAMPS
56	106955	2	3/4" MNPT X 3/4" HOSE BARB
57	107484	2	DIFFERENTIAL PRESSURE SWITCH
58	0062007	1	3/4" X 1/4" REDUCER BUSHING
59	101932	1	"FAULT" LABEL
60	107338	1	"ON" LABEL
61	107361	1	LOCAL/REMOTE LABEL
62	107456	1	#6-32 X 3/8" LG. SLOTTED SCREW
63	100190	8	#6 FLAT WASHER
64	100624	4	#6 STAR WASHER
65	05401	4	#6-32 HEX NUT
66	105446	4	SECURING CLIP
67	003932	2	1" UNION S/W
68	102192	1	1" BULKHEAD ADAPTER
69	107670	2	1" X 6" LG. NIPPLE
70	101727	4	U-TYPE FASTENER
71	107737	1	ELBOW, 1/4" TUBE X MPT
72	108073	1	STRAIGHT, 1/4" TUBE X MPT
73	0071402	3	SNUBBER, 1/4" NPT.
74	8130601	2	TUBING, BLACK, 1/4" X 18" LG
75	0140102	1	

PAD/PMD-1200



ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	003845	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107670	1	1" BULKHEAD ADAPTER
4	003929	1	STATIC MIXER ASSEMBLY
5	102215	2	1/2" ELBOW, S/W
6	107498	1	PRESSURE GAGE
7	003863	1	SUPPORT BAR
8	101722	2	1" CLOSE NIPPLE
9	0070520	2	COUPLING 1" TXT PVC
10	107836	2	1 1/2" X 2 3/4" LG. PIPE
11	100939	1	1" UNION
12	101962	1	1" NC SOLENOID VALVE
13	107654	1	INLET BLOCK
14	004684	1	#10 X 1/2" LG. SELF TAPPING SCREW
15	107796	1	FENDER WASHER
16	107314	1	1 1/2" X 1" REDUCER BUSHING S X T
17	107317	1	1" SLIP COUPLING
18	107831	1	1" X 10" LG. NIPPLE
19	106625	2	1" ELBOW, THREADED
20	101945	1	1" SHORT NIPPLE
21	101723	1	WATER INLET LABEL
22	107465	1	CHASSIS BASE
23	107451	1	1/2" BULKHEAD ADAPTER
24	107453	1	POLYMER INLET LABEL
25	107462	1	FLOWMETER
26	107632	1	FRONT PANEL FACE
27	108070	2	TUBE FRAME ENDS
28	003861	1	PUMP
29	107623	1	1/2" BALL VALVE
30	107483	1	1/2" MNPT X 3/16" HOSE BARB
31	107483	1	1/2" TEE
32	101954	1	1/2" MNPT X 1/2" DIA. TUBE ADAPTER
33	107371	2	1 1/2" UNION S/W
34	107673	1	1 1/2" PIPE X 7 15/16" LG.
35	100939	1	GATLIN ASSEMBLY
36	003800	1	1/2" OD X 12" LG. POLYETH. TUBING
37	204288	1	5/32" X 1/4" LG. RIVETS
38	107310	8	GATLIN SUPPORT BRACKETS
39	107435	2	1/2" POLY INJECTION VALVE
40	107606	1	1/2" ELBOW
41	101943	1	1/2" MNPT X 5/8" HOSE BARB
42	102152	1	HOSE CLAMPS
43	106431	4	5/8" ID X 12" LG. HOSE
44	105529	1	PUMP MOUNTING BRACKET
45	003868	4	#10-32 X 7/8" LG. PAN HD. SCREW
46	107701	4	DIFFERENTIAL PRESSURE SWITCH
47	W1170873	4	1/4"-20 HEX NUT, SELF LOCKING
48	0062007	2	1/4" FLAT WASHER
49	107637	2	1" ROUND CAPS
50	105811	2	1" POLYMASTER NAMEPLATE
51	107434	4	POLYMASTER STICKER
52	108071	1	1 1/2" BULKHEAD ADAPTER
53	107461	1	"ON" LABEL
54	102107	1	LOCAL/REMOTE/OFF LABEL
55	107361	1	1" NPT X 1/4" HOSE ADAPTER
56	107456	2	1" X 1/4" REDUCER BUSHING
57	102151	1	1" TEE
58	W1170475	1	"FAULT" LABEL
59	101956	1	1" ID X 8" LG. HOSE
60	107338	1	#6-32 X 3/8" LG. SLOTTED SCREW
61	105821	4	#6 FLAT WASHER
62	100190	4	#6 STAR WASHER
63	100624	4	#6-32 HEX NUT
64	105401	4	SECURING CLIP
65	105446	2	1/2" CLOSE NIPPLE
66	003932	1	ELBOW, 1/4" TUBE X MPT
67	101704	1	1/4" TUBE X NPT
68	108073	3	SNUBBER, 1/4" NPT
69	0071402	2	TUBING, BLACK, 1/4" X 18" LG
70	8130601	1	
71	0140102	1	

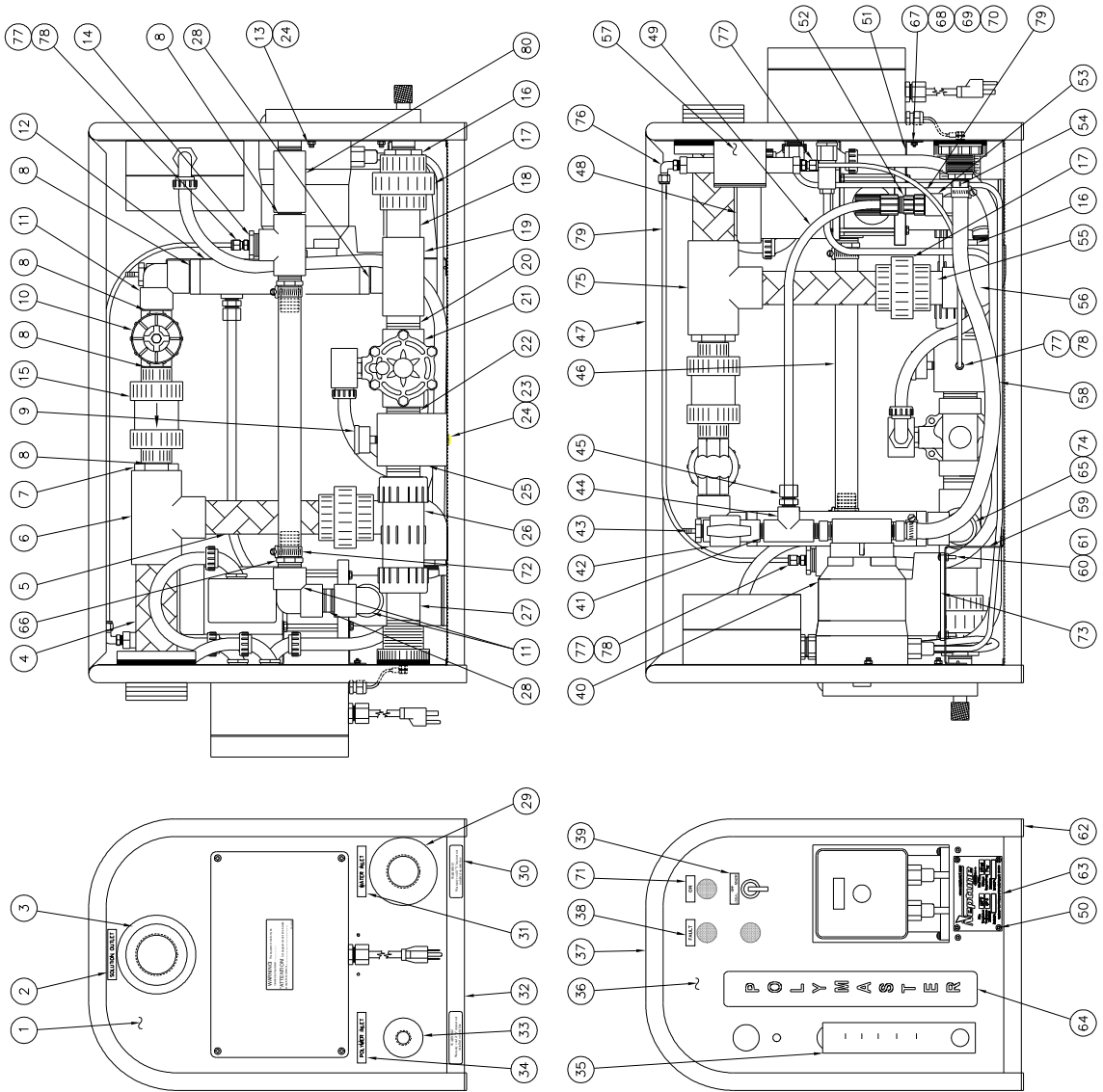
PAD/PMD-1200R



ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	003845	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107670	1	1" BULKHEAD ADAPTER
4	003929	1	STATIC MIXER ASSEMBLY
5	102215	2	1 1/2" ELBOW, S/W
6	107498	1	PRESSURE GAUGE
7	003863	1	SUPPORT BAR
8	101722	2	1" CLOSE NIPPLE
9	0070520	1	COUPLING 1" TXT, PVC
10	107836	1	"Y" STRAINER WARNING LABEL
11	100939	2	1 1/2" X 2 3/4" LG. PIPE
12	101962	1	1" UNION
13	107654	1	1" NC SOLENOID VALVE
14	004684	1	INLET BLOCK
15	107796	1	#10 X 1/2" LG. SELF TAPPING SCREW
16	107314	1	FENDER WASHER
17	107317	1	1 1/2" X 1" REDUCER BUSHING S X T
18	107831	1	1" SLIP COUPLING
19	106625	1	1" X 10" LG. NIPPLE
20	101945	2	1" ELBOW, THREADED
21	101723	1	1" SHORT NIPPLE
22	107465	1	WATER INLET LABEL
23	107451	1	CHASSIS BASE
24	107632	1	FLOWMETER
25	107845	1	FRONT PANEL FACE
26	003861	2	TUBE FRAME ENDS
27	107673	2	1 1/2" UNION S/W
28	100939	1	1 1/2" PIPE X 7.15/16" LG.
29	003800	1	GATLIN ASSEMBLY
30	107310	4	5/32" X 1/4" LG. RIVETS
31	107435	2	GATLIN SUPPORT BRACKETS
32	107606	1	1/2" POLY INJECTION VALVE
33	101966	1	1/2" COUPLING
34	102151	1	1" NPT X 1" HOSE ADAPTER
35	106431	2	HOSE CLAMPS
36	0062007	1	DIFFERENTIAL PRESSURE SWITCH
37	107637	2	1/4-20 HEX NUT, SELF LOCKING
38	105811	2	1/4" FLAT WASHER
39	107434	4	1" ROUND CAPS
40	108071	1	"POLYMASTER" NAMEPLATE
41	107461	1	POLYMASTER STICKER
42	102107	1	1 1/2" BULKHEAD ADAPTER
43	107361	1	"ON" LABEL
44	107456	1	LOCAL/REMOTE/OFF LABEL
45	109922	1	SPEED CONTROLLER
46	WAT170475	1	1" X 1/4" REDUCER BUSHING
47	101956	1	1" TEE
48	107338	1	"FAULT" LABEL
49	105821	1	1" ID X 8" LG. HOSE
50	100190	4	#6-32 X 3/8" LG. SLOTTED SCREW
51	100624	4	#6 FLAT WASHER
52	105401	4	#6 STAR WASHER
53	105446	4	#6-32 HEX NUT
54	107876	1	SPEED READOUT
55	108073	1	ELBOW, 1/4" TUBE X MPT
56	0071402	2	STRAIGHT, 1/4" TUBE X MPT
57	8130601	3	SNUBBER, 1/4" NPT
58	0140102	1	TUBING, BLACK, 1/4" X 18" LG
59	107462	1	POLYMER INLET LABEL

PARTS NOT SHOWN:
 107825----1" POLY. "Y" STRAINER
 ST-PVC---1/2" POLY. "Y" STRAINER
 108233----VACUUM HAND PUMP

PAD/PMD-3000

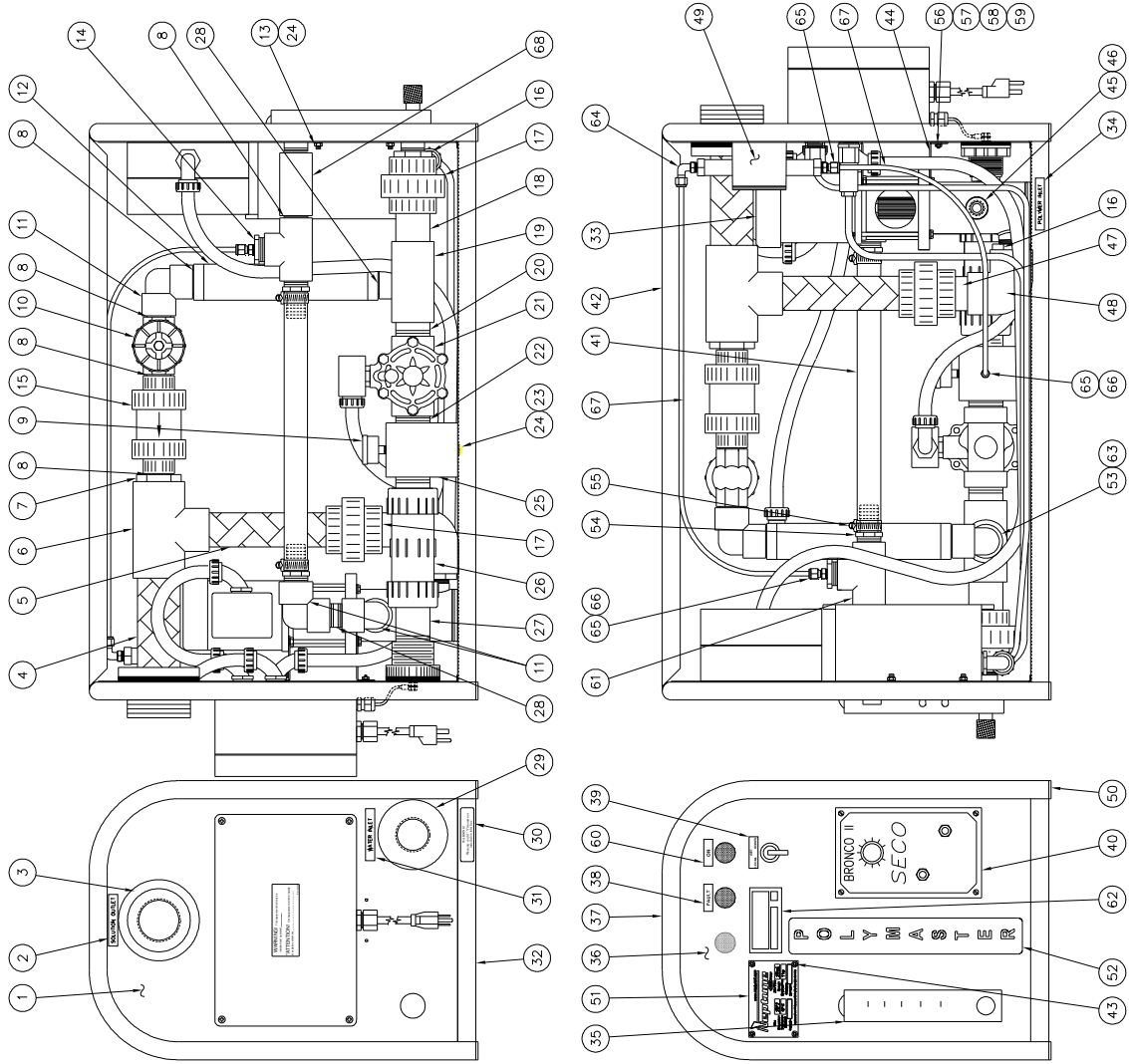


ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	003846	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107833	1	BULKHEAD ADAPTER
4	003879	1	1/2" X 1/4" TUBING ASSEMBLY
5	107838	1	1/2" X 1/4" TUBING ASSEMBLY
6	107838	1	2" X 1/2" X 1/2" REDUCER TEE
7	107846	1	2" X 1" REDUCER BUSHING, S X T
8	101722	5	CLOSE NIPPLE
9	107498	1	PRESSURE GAGE
10	107615	1	1" GATE VALVE
11	101945	1	1" ELBOW, THREADED
12	107643	3	ROTIOMETER, 0-31 GPM
13	107637	2	1/4-20 HEX NUT, SELF-LOCKING
14	WA170475	1	1" X 1/4" REDUCER BUSHING
15	107617	1	1" CHECK VALVE
16	107617	2	1" X 1/4" REDUCER BUSHING, S X T
17	107617	2	1/2" UNION W/ NUT
18	107617	1	1/2" X 1/4" LG. APPROX. NIPPLE, S/W
19	100939	1	1/2" X 1/2" LG. APPROX. NIPPLE, S/W
20	107837	1	1/2" X 3/8" LG. NIPPLE, T.O.E.
21	101733	1	1/2" X 1/2" X 1/2" X 1" REDUCING TEE, S/W
22	107646	1	1/2" SOLENOID VALVE
23	101728	1	1/2" CLOSE NIPPLE
24	100403	1	1/4-20 X 1/2" LG. SCREW
25	106811	3	1/4" WASHER
26	004847	1	1/2" INLET BLOCK
27	107832	1	1/2" COMPRESSION COUPLING
28	107848	1	1/2" X 10" LG. NIPPLE
29	101723	2	1" SHORT NIPPLE
30	107836	1	1/2" BULKHEAD ADAPTER
31	107465	2	"Y" STRAINER WARNING LABEL
32	107454	1	WATER INLET LABEL
33	107453	1	32" CHASSIS BASE
34	107462	1	1/2" BULKHEAD ADAPTER
35	107632	1	POLYMER INLET LABEL
36	108070	1	FLOWMETER
37	003861	2	TUBE INLET LABEL
38	107456	2	FRONT PANEL FACE
39	107456	1	TUBE INLET LABEL
40	107456	1	LOCAL/REMOTE/OFF LABEL
41	101704	1	PUMP
42	107623	1	1/2" CLOSE NIPPLE
43	107483	1	1/2" BALL VALVE
44	101954	1	1/2" MNPT X 3/16" HOSE BARB
45	107371	1	1/2" TEE
46	105821	1	1/2" MNPT X 1/2" DIA. TUBE ADAPTER
47	003862	1	1" ID X 16" LG. HOSE
48	003800	1	SUPPORT BAR
49	120428	1	GATLIN ASSEMBLY
50	107310	1	1/2" OD X 24" LG. POLYETH. TUBING
51	107435	8	5/32" X 1/4" LG. RIVETS
52	107606	1	GATLIN SUPPORT BRACKET
53	101745	1	1/2" POLY INJECTION VALVE
54	100939	1	1/2" ELBOW, 5/8" HOSE BARB
55	102215	1	1/2" W/PIPE X 3/8" LG.
56	102215	1	1/2" ELBOW, S/W
57	0062007	1	DIFFERENTIAL PRESSURE SWITCH
58	105529	1	5/8" ID X 24" LG. HOSE
59	003868	1	PUMP MOUNTING BRACKET
60	107701	4	#10-32 X 7/8" LG. PAN HD. SCREW
61	WA170873	4	#10-32 KEP NUT
62	107434	4	1" ROUND CAPS
63	108071	1	POLYMASTER NAMEPLATE
64	107461	1	POLYMASTER STICKER
65	107461	1	1" ELBOW, 1/2" HOSE ADAPTER
66	102190	2	1" NPT W/ 3/8" HOSE ADAPTER
67	100190	4	#6-32 X 3/8" LG. SLOTTED SCREW
68	100524	4	#6 FLAT WASHER
69	105401	4	#6 STAR WASHER
70	105446	4	#6-32 HEX NUT
71	107361	4	"ON" LABEL
72	106431	1	HOSE CLAMPS
73	103982	2	3/8" NPT PIPE
74	120428	2	1" NPT TEE
75	101959	1	ELBOW, 1/4" TUBE X MPT
76	108073	3	STRAIGHT, 1/4" TUBE X MPT
77	0071402	1	SHIMMER, 1/4" NPT X 18" LG
78	8130601	1	TUBING, 1/4" NPT X 1/4" LG
79	0070520	1	COUPLING, 1" TPT, PVC
80	0070520	1	COUPLING, 1" TPT, PVC

PA/PM-3000R

ITEM NUMBER	PART NUMBER	QTY.	DESCRIPTION
1	003846	1	REAR PANEL FACE
2	107460	1	SOLUTION OUTLET LABEL
3	107460	1	STATIC MIXER ASSEMBLY
4	003873	1	1 1/2" STATIC MIXER ASSEMBLY
5	003878	1	2" X 2" X 1 1/2" REDUCER TEE
6	107838	1	2" X 1" REDUCER BUSHING, S X T
7	107846	1	1" CLOSE NIPPLE
8	101722	5	PRESSURE GAGE
9	107498	1	1" GATE VALVE
10	107615	1	1" ELBOW
11	107643	1	ROTORHEAD OUTLET GPM
12	107637	1	1 1/4" X 1/2" REDUCER BUSHING
13	107637	2	1" CHECK VALVE
14	WA170475	1	1 1/2" X 1" REDUCER BUSHING, S X T
15	107317	2	1 1/2" UNION, S/W
16	107673	2	1 1/2" X 4" LG. APPROX. NIPPLE, S/W
17	100939	1	1 1/2" X 1 1/2" X 1" REDUCING TEE, S/W
18	107837	1	1 1/2" X 3" LG. NIPPLE, T.O.E.
19	101733	1	1 1/2" SOLENOID VALVE
20	107646	1	1 1/2" CLOSE NIPPLE
21	101728	1	1 1/4"-20 X 1/2" LG. SCREW
22	100403	1	1/4" WASHER
23	100403	3	1 1/2" INLET BLOCK
24	004847	1	1 1/2" COMPRESSION COUPLING
25	107832	1	1 1/2" X 10" LG. NIPPLE
26	107848	1	1" SHORT NIPPLE
27	10723	2	1/2" BULKHEAD ADAPTER
28	107671	2	STRAINER WARNING LABEL
29	107856	2	WATER WASH LABEL
30	107465	1	3" GATUN ASSEMBLY
31	107465	1	POLYMER INLET LABEL
32	003800	1	FLOWMETER
33	107462	1	FRONT PANEL FACE
34	107632	1	TUBE FRAME ENDS
35	107845	2	"FAULT" LABEL
36	003861	1	LOCAL/REMOTE/OFF LABEL
37	107338	1	SPEED CONTROLLER
38	107456	1	SUPPORT BAR
39	109922	1	1" ID X 16" LG. HOSE
40	105821	1	5/32" X 1/4" LG. RIVETS
41	003962	1	GALIN SUPPORT BRACKETS
42	107310	4	1/2" COUPLING
43	107435	1	1 1/2" PIPE X 3 3/8" LG.
44	101966	1	1 1/2" ELBOW, S/W
45	100939	1	DIFFERENTIAL PRESSURE SWITCH
46	100939	1	1" ROUND CAPS
47	102215	1	"POLYMASTER" NAMEPLATE
48	0062007	4	1" ELBOW, S X T
49	107434	1	HOSE CLAMPS
50	108071	1	#6-32 X 3/8" LG. SLOTTED SCREW
51	107461	1	#6 STAR WASHER
52	107316	2	#6-32 HEX NUT
53	102151	1	1" NPT X 1" HOSE ADAPTER
54	106431	2	HOSE CLAMPS
55	100190	4	1" NPT PIPE X 3-1/8" LG.
56	100624	4	STRAIGHT 1/4" TUBE X MPT
57	105401	4	SNUBBER, 1/4" NPT
58	105401	4	TUBING, BLACK, 1/4" X 18" LG
59	105446	4	COUPLING 1" TXT, PVC
60	107361	1	SOLENOID LABEL
61	107836	1	SPEED READOUT
62	120469	1	3" NPT PIPE X 3-1/8" LG.
63	120469	1	ELBOW, 1/4" TUBE X MPT
64	108073	3	STRAIGHT 1/4" TUBE X MPT
65	007102	2	SNUBBER, 1/4" NPT
66	810601	2	TUBING, BLACK, 1/4" X 18" LG
67	0140102	1	COUPLING 1" TXT, PVC
68	0070520	1	COUPLING 1" TXT, PVC

PARTS NOT SHOWN: 107825---1" POLY "Y" STRAINER
 S7-PVC---1/2" POLY "S" STRAINER
 108233---VACUUM HAND PUMP

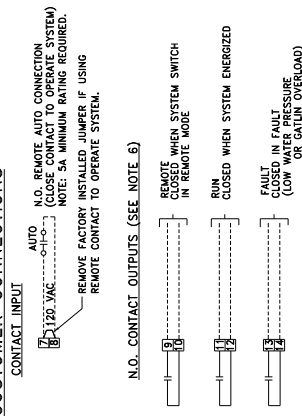


POLY013

ELECTRICAL NOTES:

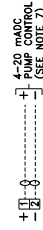
1. REVIEW ALL SAFETY AND OPERATING INSTRUCTIONS BEFORE USING THIS EQUIPMENT
2. POLYMASTER IS INTENDED FOR USE IN A INDOOR NON-HAZARDOUS AREA
3. **WARNING-** RISK OF ELECTRIC SHOCK:
OPERATING VOLTAGE IS 120 VOLTS, 60 HERTZ, SINGLE PHASE.
FOR PORTABLE USE POLYMASTER IS PROVIDED WITH A POWER CORD AND A NEMA 5-15P TYPE PLUG. CONNECT TO A PROPERLY INSTALLED AND PROTECTED GROUNDING TYPE RECEPTACLE.
USE LOCAL-OFF-REMOTE SWITCH (HST) TO TURN OFF POLYMASTER BEFORE PLUGGING OR UNPLUGGING.
DISCONNECT POLYMASTER FROM POWER SOURCE BEFORE SERVICING.
IT IS STRONGLY RECOMMENDED POLYMASTER BE USED WITH A POWER CIRCUIT CONTAINING GROUND FAULT PROTECTION.
4. PORTABLE DEVICE - FOR DIRECT CIRCUIT POWER CONNECTION REMOVE THE POWER CORD AND PROVIDE A SUITABLE DISCONNECT AND A SEPARATE GROUND WIRE ATTACHED TO REAR ENCLOSURE GROUND BAR.
5. CONSUMABLES:
FUSE: BIGGS GDB-5 OR EQUAL
LAMPS: 130 VOLT SIZE T-3 1/4 MINATURE BAYONET TYPE
6. CONTACT OUTPUT RATING: 10 AMPS @ 120 VAC (RESISTIVE)
7. CUSTOMER WIRING NOTE: IF METERING PUMP WITH REMOTE ANALOG CONTROL INPUT IS SPECIFIED, WIRE ANALOG SIGNAL USING TWISTED, SHIELDED ELECTRONIC INSTRUMENT CABLE. RUN SIGNAL CABLE SEPARATE FROM AC WIRING.

CUSTOMER CONNECTIONS



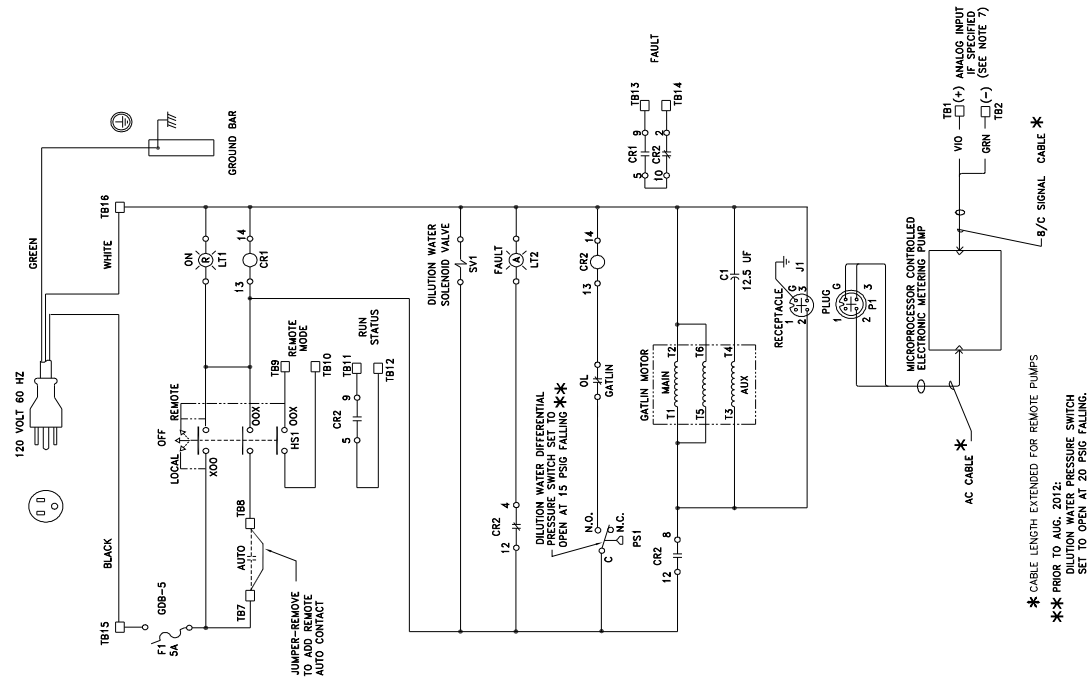
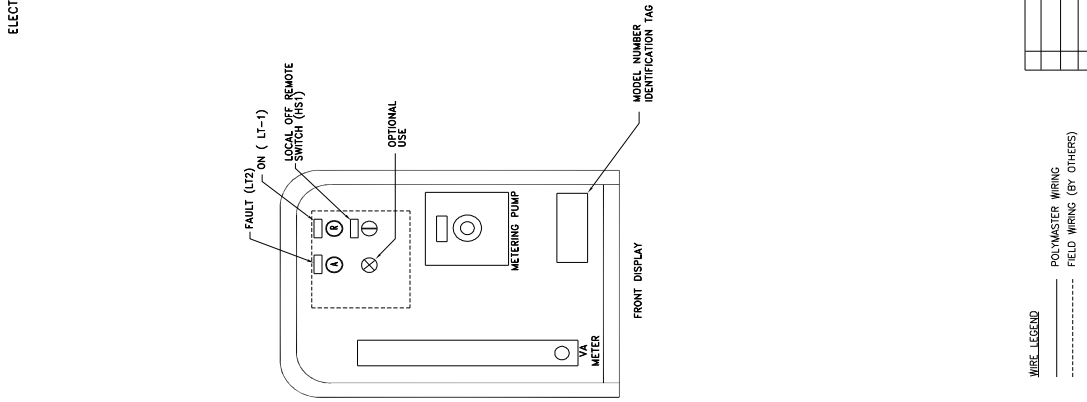
CAUTION: CUSTOMER MUST REMOVE ALL POWER APPLIED TO TB9 TO TB14 BEFORE WORK IS PERFORMED INSIDE REAR CABINET.

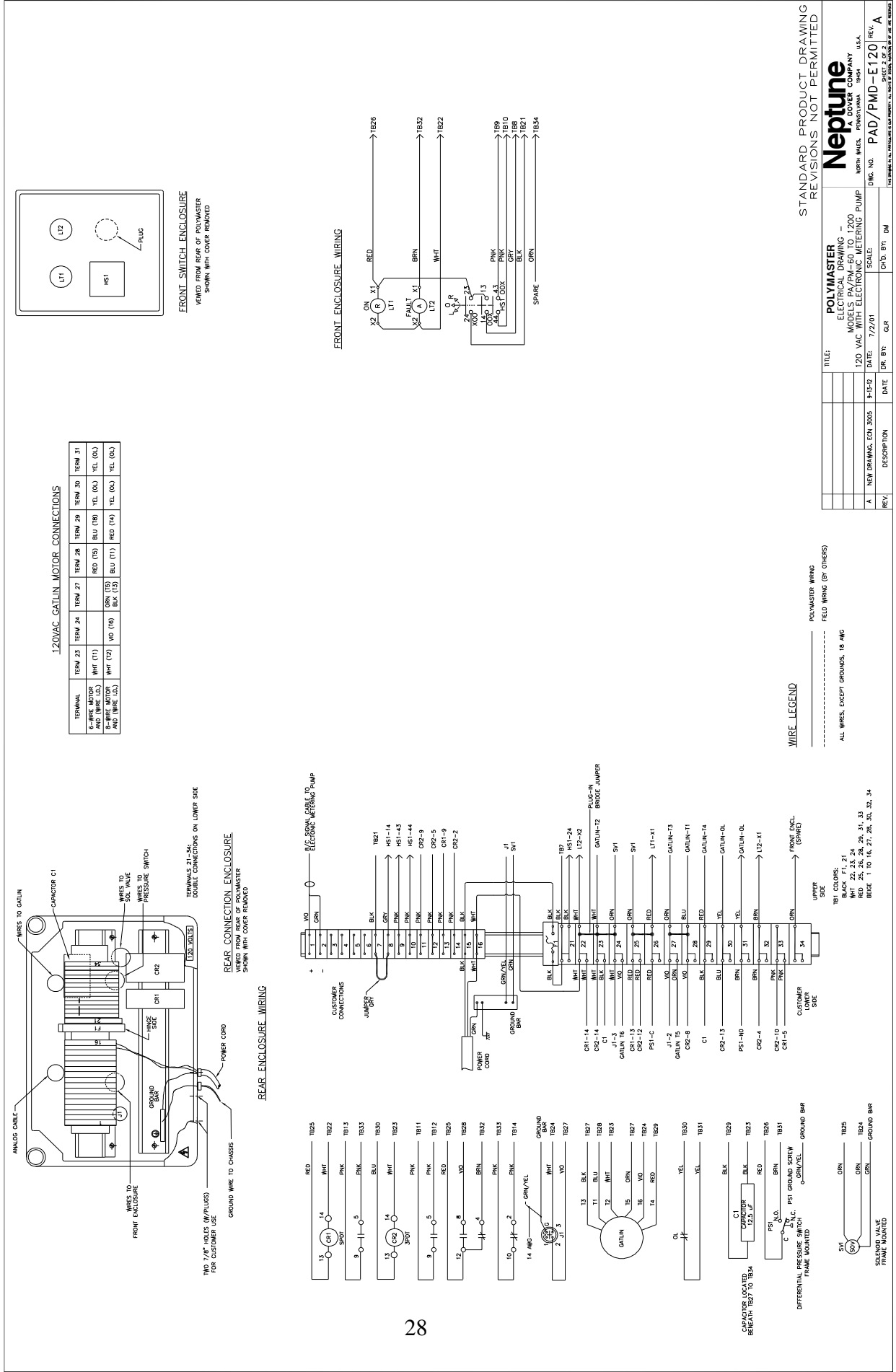
ANALOG INPUT IF SPECIFIED:



STANDARD PRODUCT DRAWING
REVISIONS NOT PERMITTED

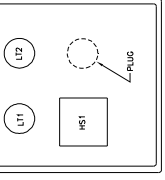
REV.	DESCRIPTION	DATE	DR. BY:	CHK. BY:	QTY.
A	NEW DRAWING FOR 2008	7/2/01	JFS	DM	
TITLE: POLYMASTER ELECTRICAL DRAWING - 12000 COBLES PMP/PW-60 TO 12000 120 VAC WITH ELECTRONIC METERING PUMP SCALE: 1:1 DWG. NO. PAD/PMD-E120 NORTH WALE, PORTLAND, MAINE, U.S.A. SHEET 1 OF 2 NEPTUNE PUMP COMPANY					





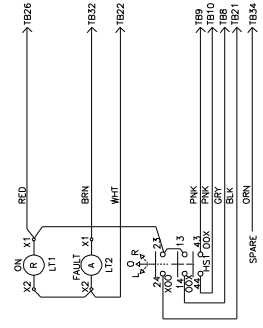
120VAC GALIN MOTOR CONNECTIONS

TERMINAL	TERM 23	TERM 24	TERM 27	TERM 28	TERM 29	TERM 30	TERM 31
6-WIRE MOTOR AND (WIRE CO.)	WHT (T1)			RED (T5)	BLU (T6)	YEL (O2)	YEL (O2)
AND (WIRE CO.)	WHT (T2)	W/O (T8)	GRN (T3)	BLU (T3)	RED (T4)	YEL (O4)	YEL (O4)

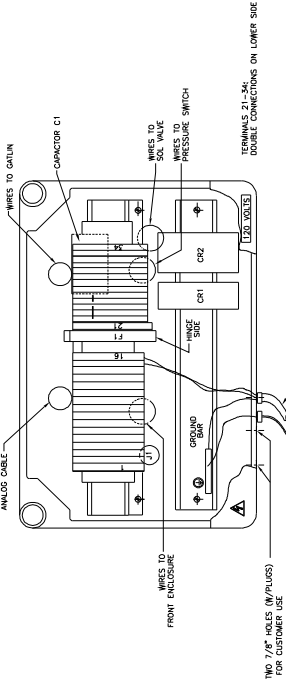


FRONT SWITCH ENCLOSURE
VIEWED FROM REAR OF POLYMASTER
SHOWN WITH COVER REMOVED

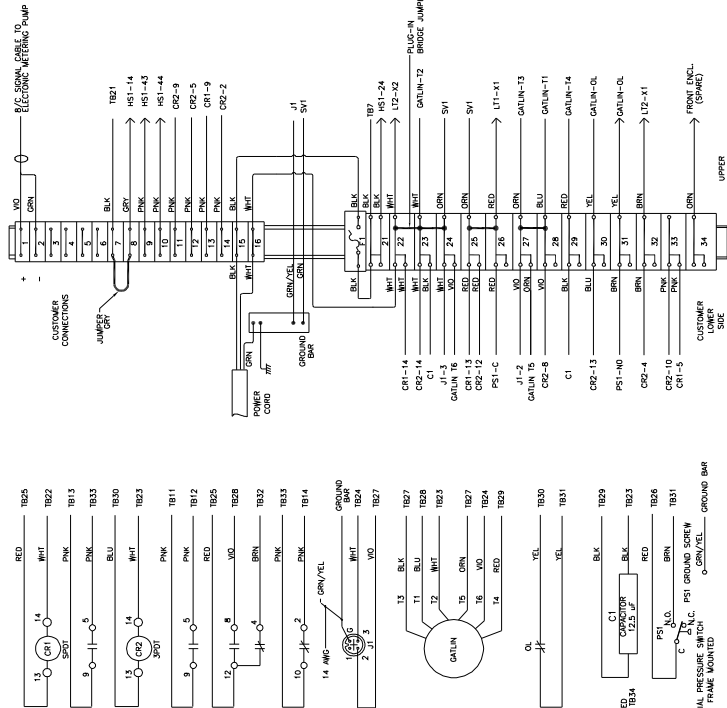
FRONT ENCLOSURE WIRING



REAR CONNECTION ENCLOSURE
VIEWED FROM REAR OF POLYMASTER
SHOWN WITH COVER REMOVED



REAR ENCLOSURE WIRING



WIRE LEGEND

----- POLYMASTER WIRING
----- FIELD WIRING (BY OTHERS)
ALL WIRES, EXCEPT GROUNDS, 18 AWG

UPPER SIDE
POLYMASTER WIRING
FIELD WIRING (BY OTHERS)
LOWER SIDE
CUSTOMER WIRING

STANDARD PRODUCT DRAWING
REVISONS NOT PERMITTED

TITLE: POLYMASTER ELECTRICAL DRAWING - MODELS PA/PMD-60 TO 1200 120 VAC WITH ELECTRONIC METERING PUMP
DATE: 9-15-92
SCALE: 1/2"=1'-0"
DWG. NO.: PAD/PMD-E120
REV. A

Polymaster MAINTENANCE LOG

Polymaster Model _____

Serial # _____

Pump Model _____

Maximum Water Flow _____

Pump Maximum Flow _____

Maximum Water Pressure _____

NEPTUNE CHEMICAL PUMP CO., INC. Tel.: 215-699-8700 • FAX: 215-699-0370

DATE	SERVICED BY	MAINTENANCE PERFORMED