

**PREMIA™ 75
MICRO**

SOLENOID METERING PUMP

BOOK NO. IM 460.150AF UA ISSUE A

PREMIA™ 75 MICRO

EQUIPMENT SERIAL NO. _____

DATE OF START-UP _____

START-UP BY _____

Prompt service available from nationwide authorized service contractors.

ORDERING INFORMATION

In order for us to fill your order immediately and correctly, please order material by description and part number, as shown in this book. Also, please specify the serial number of the equipment on which the parts will be installed.

WARRANTY

Seller warrants for a period of one year after shipment that the equipment or material of its manufacture is free from defects in workmanship and materials. Corrosion or other decomposition by chemical action is specifically excluded as a defect covered hereunder, except this exclusion shall not apply to chlorination equipment. Seller does not warrant (a) damage caused by use of the items for purposes other than those for which they were designed, (b) damage caused by unauthorized attachments or modifications, (c) products subject to any abuse, misuse, negligence or accident, (d) products where parts not made, supplied, or approved by Seller are used and in the sole judgement of the Seller such use affects the products' performance, stability or reliability, and (e) products that have been altered or repaired in a manner in which, in the sole judgement of Seller, affects the products' performance, stability or reliability. **SELLER MAKES NO OTHER WARRANTY OF ANY KIND, AND THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS OF THE MATERIAL OR EQUIPMENT FOR ANY PARTICULAR PURPOSE EVEN IF THAT PURPOSE IS KNOWN TO SELLER.** If Buyer discovers a defect in material or workmanship, it must promptly notify Seller in writing; Seller reserves the right to require the return of such defective parts to Seller, transportation charges prepaid, to verify such defect before this warranty is applicable. In no event shall such notification be received by Seller later than 13 months after the date of shipment. No action for breach of warranty shall be brought more than 15 months after the date of shipment of the equipment or material.

LIMITATION OF BUYER'S REMEDIES. The **EXCLUSIVE REMEDY** for any breach of warranty is the replacement f.o.b. shipping point of the defective part or parts of the material or equipment. Any equipment or material repaired or replaced under warranty shall carry the balance of the original warranty period, or a minimum of three months. Seller shall not be liable for any liquidated, special, incidental or consequential damages, including without limitation, loss of profits, loss of savings or revenue, loss of use of the material or equipment or any associated material or equipment, the cost of substitute material or equipment, claims of third parties, damage to property, or goodwill, whether based upon breach of warranty, breach of contract, negligence, strict tort, or any other legal theory; provided, however, that such limitation shall not apply to claims for personal injury.

Statements and instructions set forth herein are based upon the best information and practices known to U.S. Filter/Wallace & Tiernan, Inc., but it should not be assumed that every acceptable safety procedure is contained herein. Of necessity this company cannot guarantee that actions in accordance with such statements and instructions will result in the complete elimination of hazards and it assumes no liability for accidents that may occur.

The logo for US Filter, featuring the letters "US" in a bold, italicized font, followed by the word "Filter" in a stylized font with horizontal lines through the letters.

WALLACE & TIERNAN PRODUCTS
1901 West Garden Road, Vineland, NJ 08360

INTRODUCTION

These installation, operation, and maintenance instructions cover your electronic metering pump. Refer to the pump nameplate to determine the actual model.

DESCRIPTION

Diaphragm metering pumps are used to dispense chemicals or fluids. This is achieved by an electromagnetic drive mechanism (solenoid) connected to a diaphragm. When the solenoid is pulsed by the control circuit, it displaces the diaphragm, which, through the use of check valves, moves the fluid out the discharge under pressure. When the solenoid is de-energized, it returns the diaphragm and pulls more fluid into the pump head and the cycle repeats.

The pump stroke rate is controlled via the touchpad and present status is indicated by the LCD display. The stroke length is controlled by the stroke length knob.



WARNING: WHILE INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT, PERSONNEL CAN BE EXPOSED TO A NUMBER OF POTENTIALLY HAZARDOUS SITUATIONS THAT CAN RESULT IN SEVERE PERSONAL INJURY AND DAMAGE TO THE EQUIPMENT. THESE SITUATIONS ARE IDENTIFIED AND PROCEDURES TO AVOID THE POTENTIAL HAZARDS ARE HIGHLIGHTED AND DESCRIBED BY WARNINGS APPEARING ON THE FOLLOWING PAGES. FOR THIS REASON AND TO AVOID POSSIBLE SEVERE PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT, THIS EQUIPMENT SHOULD BE INSTALLED, OPERATED, AND SERVICED ONLY BY TRAINED, QUALIFIED PERSONNEL WHO ARE THOROUGHLY FAMILIAR WITH THE ENTIRE CONTENTS OF THIS INSTRUCTION BOOK.

NOTE: When submitting correspondence or ordering material, always specify model and serial number of apparatus.

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VERY IMPORTANT SAFETY PRECAUTIONS

This page provides very important safety information related to safety in installation, operation, and maintenance of this equipment.

WARNING

TO AVOID POSSIBLE SEVERE PERSONAL INJURY OR EQUIPMENT DAMAGE, OBSERVE THE FOLLOWING:

WHEN HANDLING ANY HAZARDOUS MATERIAL, USE EXTREME CARE TO AVOID CONTACT WITH THE MATERIAL. WEAR EYE PROTECTION AND APPROPRIATE PROTECTIVE CLOTHING. IT IS THE RESPONSIBILITY OF THE EQUIPMENT USER TO OBTAIN AND FOLLOW THE SAFETY PRECAUTIONS OF THE MANUFACTURER OF THE HAZARDOUS MATERIAL.

DONOT DISCONNECT THE DISCHARGE LINE FROM THE PUMP OR THE MAIN CONNECTION AND DO NOT DISASSEMBLE THE PUMPING PARTS WHILE THE SYSTEM IS UNDER PRESSURE. RELIEVE PRESSURE AND DRAIN THE DISCHARGE LINE FIRST.

DO NOT USE HOSE OR OTHER FLEXIBLE TUBING FOR THE DISCHARGE LINE WHEN PUMPING HAZARDOUS MATERIALS OR FOR DISCHARGE PRESSURE OR FLUID TEMPERATURE IN EXCESS OF 100 PSI OR 100°F. USE RIGID PIPE.

ALLOW SYSTEM TO DRAIN FULLY BEFORE ATTEMPTING TO DISASSEMBLE PIPING AND REMOVE VALVES AND/OR HEAD.

TO PREVENT ELECTRICAL SHOCK, UNPLUG POWER CORD BEFORE REMOVING CONTROL PANEL.

DONOT REPLACE HIGH TEMPERATURE CUT-OUT SWITCH WITH ONE OF A HIGHER VALUE.

THIS EQUIPMENT SHOULD BE INSTALLED, OPERATED, AND SERVICED ONLY BY TRAINED, QUALIFIED PERSONNEL WHO ARE THOROUGHLY FAMILIAR WITH THE ENTIRE CONTENTS OF THIS INSTRUCTION BOOK, WHICH SHOULD BE THOROUGHLY REVIEWED AND UNDERSTOOD PRIOR TO INSTALLING AND OPERATING THE EQUIPMENT.

USE ONLY USE/W&T LISTED PARTS EXCEPT COMMERCIALY AVAILABLE PARTS AS IDENTIFIED BY COMPLETE DESCRIPTION ON PARTS LIST. THE USE OF UNLISTED PARTS CAN RESULT IN EQUIPMENT MALFUNCTIONS HAVING HAZARDOUS CONSEQUENCES.

DO NOT DISCARD THIS INSTRUCTION BOOK UPON COMPLETION OF INSTALLATION. INFORMATION PROVIDED IS ESSENTIAL TO PROPER AND SAFE OPERATION AND MAINTENANCE.

VERY IMPORTANT SAFETY PRECAUTIONS (CONT'D)

NEVER REPAIR OR MOVE THE METERING PUMP WHILE OPERATING.

REFER TO THE MSDS FOR THE MATERIAL BEING HANDLED.

PUMP IS NOT TO BE USED TO HANDLE OR METER FLAMMABLE LIQUIDS OR MATERIALS.

DO NOT ATTEMPT TO PRIME USING A BLEED VALVE WITHOUT INSTALLING A RETURN LINE.

THIS PUMP IS SUPPLIED WITH A THREE-PRONG, GROUNDING-TYPE POWER PLUG. TO REDUCE RISK OF ELECTRIC SHOCK, CONNECT ONLY TO A PROPERLY GROUNDED, GROUNDING-TYPE RECEPTACLE.

ADDITIONAL OR REPLACEMENT COPIES OF THIS INSTRUCTION BOOK ARE AVAILABLE FROM:

USFILTER'S WALLACE & TIERNAN PRODUCTS
1901 W. GARDEN ROAD
VINELAND, NEW JERSEY 08360
PHONE: (856) 507-9000
FAX: (856) 507-4125

NOTE

Minor part number changes may be incorporated into USF/W&T products from time to time that are not immediately reflected in the instruction book. If such a change has apparently been made in your equipment and does not appear to be reflected in your instruction book, contact your local USF/W&T sales office for information.

Please include the equipment serial number in all correspondence. It is essential for effective communication and proper equipment identification.

GENERAL SAFETY CONSIDERATIONS

- Always wear protective clothing, including gloves and safety glasses, when working on or near chemical metering pumps.
- Inspect tubing regularly for cracking or deterioration and replace as necessary (when replenishing chemical solution). **Always wear protective clothing and safety glasses when inspecting tubing.**
- When pump is exposed to direct sunlight, use U.V.-resistant tubing.
- Follow the directions and warnings provided with the chemicals from the chemical manufacturer. The customer is responsible for determining chemical compatibility with the chemical feed pump.
- Secure chemicals and metering pumps, making them inaccessible to children and pets.
- Make sure voltage on chemical metering pump matches the voltage at the installation.
- Do not cut plug off of electrical cord or the ground lug—consult a licensed electrician for proper installation.
- Pump is **NOT** to be used to handle flammable liquids.

SAFE OPERATING PROCEDURES



CAUTION: All pumps are tested with water before shipment. Remove head and dry thoroughly if you are pumping chemical that will react with water (i.e., sulfuric acid). Valve seats, ball checks, gaskets, and the diaphragm should also be dried.

- Finger-tighten connections on pump head. **DO NOT USE A WRENCH.** Teflon tape is necessary only when pump is equipped with NPT connections.
- Before repairing or moving pump, disconnect power cord or turn off power to pump. De-pressurize system and drain chemical. **(Always wear protective clothing and safety glasses when working on metering pump.)**
- Always consult licensed plumber and electrician before installation, and make sure to conform to local codes.
- Consult with local health officials and a qualified water conditioning specialist when treating potable water.
- Be sure to de-pressurize system prior to hook-up or disconnection of metering pump.
- If point of injection is lower than chemical tank and pump, install an anti-syphon valve.
- **DO NOT MODIFY** pump, this poses a potentially dangerous situation and voids warranty.
- For accurate volume output, pump must be **calibrated** under **all** operating conditions.





NOTES ON PROTECTIVE EQUIPMENT AND CLOTHING

The following Warning appears in several locations in this book. It is general in nature due to the variety of hazardous liquids this equipment is capable of handling.

WARNING: WHEN DEALING WITH HAZARDOUS MATERIAL, IT IS THE RESPONSIBILITY OF THE EQUIPMENT USER TO OBTAIN AND FOLLOW ALL SAFETY PRECAUTIONS RECOMMENDED BY THE MATERIAL MANUFACTURER/SUPPLIER.

It is good general practice to make use of protective equipment when handling any hazardous material.

IT IS RECOMMENDED THAT SUCH PROTECTIVE EQUIPMENT BE USED BY ALL PERSONS SERVICING THIS PUMP, ASSOCIATED PIPING, TUBING, VALVES, AND ACCESSORIES, WHEN THE EQUIPMENT IS HANDLING ANY HAZARDOUS MATERIAL.

1. Goggles, flexible fitting, hooded ventilation (per ANSI Z87.1)	
2. Face Shield (per ANSI Z87.1)	
3. Chemical Apron	
4. Chemical Gloves	

NOTE: (1) ANSI Z87.1 “practice for occupational.....eye and face protection” recommends goggles (#1 above) as the “preferred protection” when handling chemicals that present a hazard from splash, acid burns or fumes; for severe exposure, a face shield (#2 above) over the goggles is recommended.

(2) An eye flushing fountain and a deluge-type shower may be recommended or required by insurance carriers or governmental safety agencies, which should be consulted for specific requirements.

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PREVENTIVE MAINTENANCE SCHEDULE AND RECORD OF PERFORMANCE

This equipment should receive preventive maintenance on a one (1) year cycle.* It is recommended that the following table be used to plan, schedule, and record this important work.

Date of Installation	
-----------------------------	--

Serial No.	Pin No.

Preventive Maintenance Log	
Schedule Date	Date Performed

***NOTE:** This is the recommended cycle. Your local operating conditions may call for more frequent preventive maintenance.



PROTECT YOUR EQUIPMENT INVESTMENT

MINIMIZE DOWNTIME

**ORDER A PREVENTIVE MAINTENANCE KIT NOW ...
KEEP ONE ON HAND**



PREMIA™ 75 MICRO



REGIONAL OFFICES

INSTALLATION, OPERATION, MAINTENANCE, AND SERVICE INFORMATION

Direct any questions concerning this equipment that are not answered in the instruction book to the Reseller from whom the equipment was purchased. If the equipment was purchased directly from USFilter's Wallace & Tiernan Products (USF/W&T), contact the office indicated below.

UNITED STATES

1901 West Garden Road
Vineland, NJ 08360
TEL: (856) 507-9000
FAX: (856) 507-4125

CANADA

If the equipment was purchased directly from USF/W&T Canada, contact the nearest office indicated below.

ONTARIO

250 Royal Crest Court
Markham, Ontario
L3R3S1
(905) 944-2800

QUEBEC

243 Blvd. Brien
Bureau 210
Repentigny, Quebec
(450) 582-4266

MEXICO

If the equipment was purchased directly from USF/W&T de Mexico, contact the office indicated below.

Via Jose López Portillo No. 321
Col. Sta. Ma. Cuauhtepac, Tultitlan
Edo. México 54900
TEL: +52 55 2159 2976 / +52 55 2159 2989
FAX: +52 55 2159 2985



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SECTION 1 – TECHNICAL DATA

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1.1 Specifications

Pressure, MAX, PSI/BAR	300/20
@ GPD/GPH/LPD	3/0.13/11
Capacity, MAX, GPD/GPH/LPD	500/20.8/1890
@ PSI/BAR	20/1.4
Reproducibility, % MAX Capacity	2
Viscosity, MAX, CPS (1)	1000
Suction Lift @ 1 CPS, MAX, FT/M	10/3.1 (once primed)
@ 3000 CPS	3.5/1.1
Controls	6-Station Membrane Switch
Status Display	16-Position LCD Dot Matrix Backlight
Stroke Frequency, MAX, SPM	125
External Stroke Frequency Control (Automatic)	4-20 mAdc, 20-4 mAdc External Pacing
Stroke Frequency Turn Down Ratio	100:1
Stroke Length Turn Down Ratio	10:1
Output Relay (Signal Level Control)	24 Vdc, 10 mA
Output Relay (Power Option)	250 Vac, 50-60Hz, 0.5A
Power Input	115 Vac/50-60Hz/1ph 230 Vac/50-60Hz/1ph
Current Draw @ 115 Vac, Amps	1
Average Input Power @ MAX SPM Watts	130
Circuit Board Protection	Circuit Breaker (Panel Mount)
Temperature, MAX, °F/°C	104/40
Environmental (Shaded)	
Connections	
Tubing (2)	0.25" ID X 0.38" OD 0.38" ID X 0.50" OD 0.50" ID X 0.75" OD
Piping	0.25" FNPT 0.25" FNPT

1.2 Materials of Construction

The wetted materials (those parts that contact the solution being pumped) available for construction are glass-filled polypropylene, PVC, SAN, Hypalon, Viton, Teflon, 316 Stainless Steel, PVDF, Ceramic, and Alloy C. These materials are very resistant to most chemicals; however, there are some chemicals, such as strong acids or organic solvents, that cause deterioration of some elastomer and plastic parts, such as the diaphragm, the valve seat, or the head. Consult the Chemical Resistance Guide or your chemical supplier for information on chemical compatibility.

Various manufacturers of plastics, elastomers, and pumping equipment publish guidelines that aid in the selection of wetted materials for pumping commercially available chemicals and chemical compounds. Two factors must always be considered when using an elastomer or plastic part to pump chemicals:

- The temperature of service: Higher temperatures increase the effect of chemicals on wetted materials. The increase varies with the material and the chemical being used. A material quite stable at room temperature might be affected at higher temperatures.
- Material choice: Materials with similar properties may differ greatly from one another in performance when exposed to certain chemicals.

1.3 Manufacturer's Product Warranty

The manufacturer warrants its equipment of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 18 months from the date of purchase or one year from date of installation, or whichever comes first. The manufacturer's liability is limited to repair or replacement of any device or part that is returned, prepaid, to the factory and that is proven defective upon examination. This warranty does not include installation or repair cost and in no event shall the manufacturer's liability exceed its selling price of such part.

The manufacturer disclaims all liability for damage to its products through improper installation, maintenance, use, or attempts to operate such products beyond their functional capacity, intentionally or otherwise, or any unauthorized repair. Replaceable elastomeric parts are expendable and are not covered by any warranty, either expressed or implied. The manufacturer is not responsible for consequential or other damages, injuries, or expense incurred through 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 make any warranty other than the above.

1.4 Unpacking the Pump

Check all equipment for completeness against the order and for any evidence of shipping damage. Shortages or damages should be reported immediately to the carrier and to the seller of the equipment.

The carton should contain:

- Metering Pump
- Clear Flexible Suction Tubing
- Stiff White Discharge Tubing
- Foot valve/Strainer Assembly
- Backpressure Injection Valve Assembly
- One Instruction Book
- Five-Function Valve (most models)

Make sure that all items have been removed from the shipping carton before it is discarded.

1.5 Precautions for Operation

Each Electronic Metering Pump has been tested to meet prescribed specifications and safety standards. Proper care in handling, installation, and operation will help in ensuring a trouble-free installation.

Please read all these cautionary notes prior to installation and start-up of your metering pump.

NOTE: Pump must be installed and used with supplied back pressure/injection valve. Failure to do so could result in excessive pump output flow.

- Handle the pump with care. Dropping or heavy impact causes not only external damage to the pump, but also to electrical parts inside.
- Install the pump in a place where the ambient temperature does not exceed 104°F (40°C). The pump is water-resistant and dust-proof by construction and can be used outdoors; however, do not operate the pump submerged. To avoid high internal pump temperatures, do not operate in direct sunlight.

- Install the pump in a place convenient for its future maintenance and inspection, then fix it to prevent vibration.
- Protective caps must be removed prior to installing tubing onto valve assemblies. Use tubing of specified size. Connect the tubing to the suction side securely to prevent the entrance of outside air. Make sure that there is no liquid leakage on the discharge side.
- Be careful to check that the voltage of the installation matches the voltage indicated on the pump nameplate. Each pump is equipped with a three-prong plug. Always be sure the pump is grounded. To disconnect, do not pull wire, but grip the plug with fingers and pull out. Do not use the receptacle in common with heavy electrical equipment that generates surge voltage. This can cause the failure of the electronic circuit inside the pump.
- Tampering with electrical devices can be potentially hazardous. Always place chemicals and pump installation well out of the reach of children.



WARNING: NEVER REPAIR OR MOVE THE METERING PUMP WHILE OPERATING. ALWAYS DISCONNECT ELECTRICAL POWER. FOR SAFETY, ALWAYS WEAR PROTECTIVE CLOTHING (PROTECTIVE GLOVES AND SAFETY GLASSES) WHEN WORKING ON OR NEAR CHEMICAL METERING PUMPS.

- An air bleed valve is available for most models with tubing connections. Air purges should be performed when the pump chamber contains no fluid at the time of start-up. As a safety measure, connect the return tubing to the air bleed valve and bypass fluid back to storage tank or a suitable drain.
- Chemicals used may be dangerous and should be used carefully and according to warnings on the label. Follow the directions given with each type of chemical. Do not assume chemicals are the same because they look alike. Always store chemicals in a safe location away from children and others. USF/W&T cannot be responsible for the misuse of chemicals being fed by the pump. Always have the material safety data sheet (MSDS) available for any fluid being pumped.



WARNING: TO PREVENT SEVERE PERSONAL INJURY, REFER TO THE MSDS FOR THE MATERIAL BEING HANDLED.



CAUTION: All pumps are pre-tested with water before shipment. Remove head and dry thoroughly if you are pumping a material that

will react with water (i.e., sulfuric acid, polymers). Valve seats, ball checks, gaskets, and the diaphragm should also be dried. Before placing pump into service, extreme care should be taken to follow this procedure.

- Valve cartridges are stamped to indicate fluid flow direction. Always install so that markings read from top to bottom, and the arrow points in the direction of flow.
- When metering hazardous material, DO NOT use plastic tubing, use proper rigid pipe only. Consult supplier for special adapters or valve assemblies.



WARNING: PUMP IS NOT TO BE USED TO HANDLE OR METER FLAMMABLE LIQUIDS OR MATERIALS.

- Standard white discharge tubing is not recommended for installations exposed to direct sunlight. Consult supplier for special black tubing.
- USF/W&T will not be held responsible for improper installation of pump or for plumbing. All cautions are to be read thoroughly prior to hook-up and plumbing. For all installations, a professional plumber should be consulted. Always adhere to local plumbing codes and requirements.
- When using pump with pressurized systems, make sure the pressure of the system does not exceed the maximum pressure rating on the pump nameplate. Be sure to de-pressurize the system prior to hook up or disconnecting the metering pump.
- Electronic power modules are equipped with automatic reset thermal overload devices and may reset unexpectedly.
- The pump is designed to operate using a backpressure/injection valve. If the discharge point is below the liquid level of the source or if the discharge pressure is less than the suction pressure, syphoning may occur. To correct this condition, install an anti-syphon valve or other anti-syphon device. Check local regulations that may apply. (Refer to Figure 2.3 in Section 2.)
- If the power cord is unplugged, or in the event of electrical power interruption while the pump is operating, the pump will remember its last operating state for years and will resume operation as before, whenever power is restored.



SECTION 2 – INSTALLATION

List of Contents

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2.1 Introduction

The metering pump should be located in an area that allows convenient connections to both the chemical storage tank and the point of injection. The pump is water-resistant and dust-proof by construction and can be used outdoors; however, do not operate submerged. Avoid continuous temperatures in excess of 104°F (40°C). To do otherwise could result in damage to the pump.

2.2 Mounting

Typical mounting arrangements are shown in Figure 2.1.

NOTE: The injection point must be higher than the top of the solution supply tank to prohibit gravity feeding, unless a suitable backpressure is always present at the injection point.

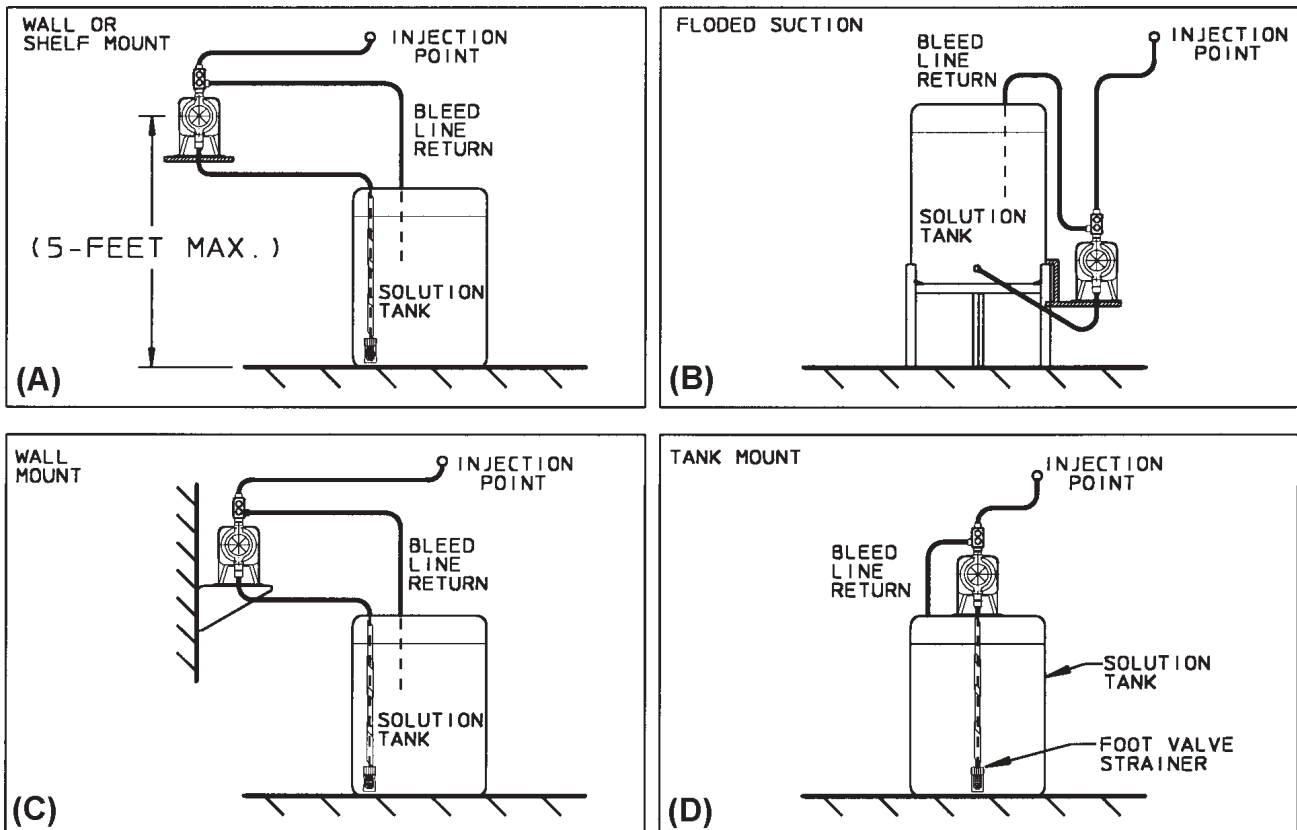


Figure 2.1

- For wall or shelf mounting, refer to Figure 2.1(A). Connect suction tubing to suction valve of chemical pump. Suction valve is the lower valve. Tubing should be long enough so that the foot valve/strainer assembly hangs about two to three inches above the bottom of chemical tank. To keep the chemical from being contaminated, the tank should have a cover.
- Flooded suction mounting (installing the pump at the base of the chemical storage tank, as shown in Figure 2.1(B)) is the most trouble-free type of installation and is recommended for very low output requirements. Since the suction tubing is filled with chemical, priming is accomplished quickly and the chance of losing prime is reduced.

To mount the pump, drill four holes of 1/4-inch diameter in the shelf as shown in the dimension drawing (Figure 2.2). Attach pump securely using four #10 bolts and nuts.

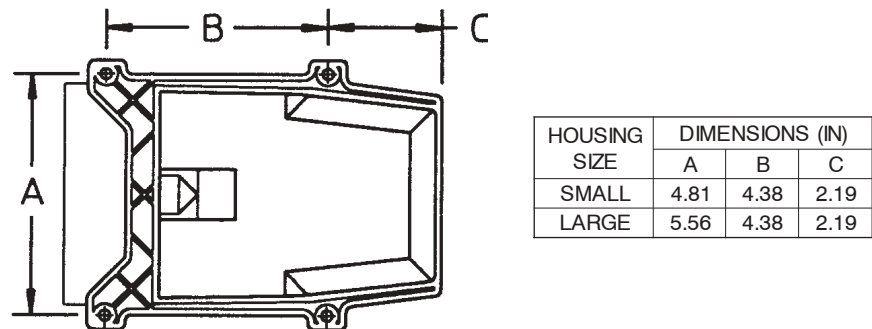


Figure 2.2

- The pump can be mounted to a wall, as shown in Figure 2.1(C). A wall-mount bracket kit is available that includes all necessary hardware to mount the pump to the wall. Mounting the pump other than as shown in Figure 2.1(C) defeats the purpose of the housing drain. Mounting dimensions for the pump are provided in Figure 2.2 for reference.
- The pump can be mounted on top of a solution tank as shown in Figure 2.1(D). Install the chemical pump on the cover. Insert suction tubing through the center hole and cut tubing so the foot valve/strainer hangs about two or three inches above the bottom of the tank. Mount the chemical pump rigidly by drilling four 1/4-inch holes and using our #10 screws and nuts.
- USE AN ANTI-SYPHON VALVE IN THE DISCHARGE LINE whenever the fluid pressure in the discharge line is below atmospheric

pressure. This can occur if the injection point is on the suction side of a water pump or against a “negative” head, such as when feeding down into a well (see Figure 2.3).

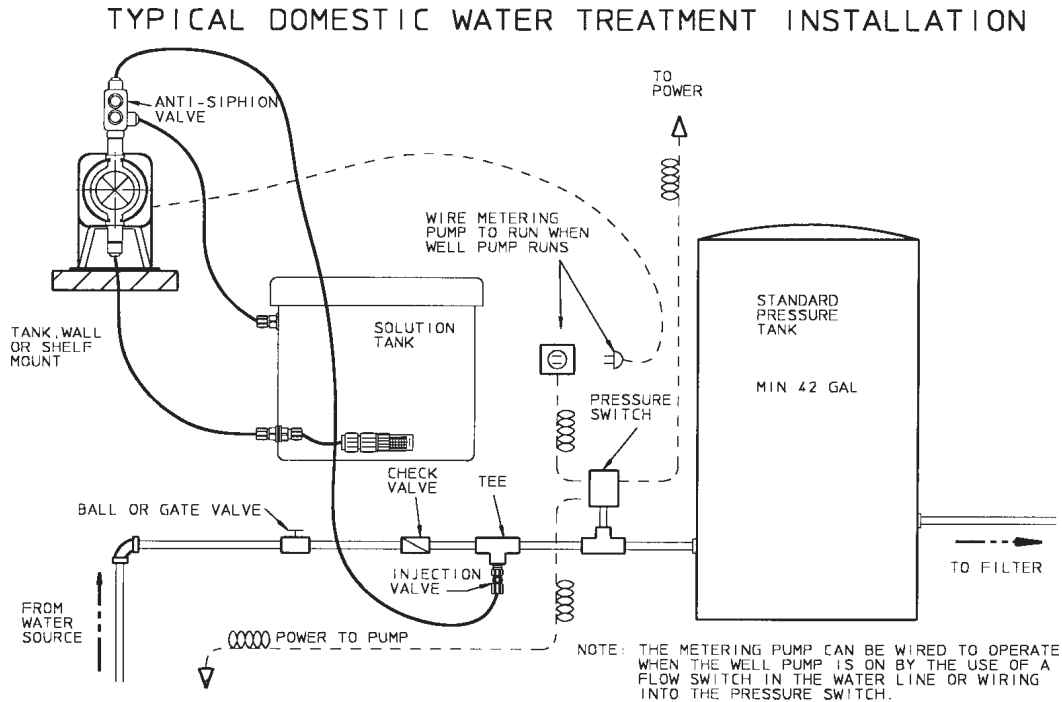


Figure 2.3

2.3 Piping

- Use provided tubing of specified size for connection. Connect tubing securely to prevent leakage of chemical and the entrance of air. Since plastic nuts are used for fittings, they should not be tightened excessively i.e. hand tighten only. NPT suction and discharge valves must NOT be over-tightened. Hold fittings in place while adding piping and fittings. NPT suction and discharge valves should only be tightened 25 to 35 in. lbs.



WARNING: TO AVOID POSSIBLE SEVERE PERSONAL INJURY, DO NOT USE HOSE OR OTHER FLEXIBLE TUBING WHEN PUMPING HAZARDOUS MATERIAL OR FOR DISCHARGE PRESSURE OR FLUID TEMPERATURE IN EXCESS OF 100 PSI OR 100° F. ALWAYS USE RIGID PIPE.

- If the air bleed valve assembly is being used, a return line (tubing) should be securely connected and routed back to the storage tank.



WARNING: TO AVOID POSSIBLE INJURY FROM CHEMICALS, DO NOT ATTEMPT TO PRIME USING A BLEED VALVE WITHOUT INSTALLING A RETURN LINE.

- To maintain metering performance, a back pressure/injection valve is provided. The injection valve must be installed in the discharge line. The best practice is to install the injection valve at the point of chemical injection.
- If the discharge tubing is going to be exposed to direct sunlight, black tubing should be used instead of the standard white translucent tubing supplied with each pump. To obtain this tubing, contact your supplier.
- To prevent clogging or check valve malfunction, always install a strainer assembly to the end of the suction tubing (see Figure 2.1(D)). This foot valve/strainer assembly should always be installed two to three inches above the bottom of the chemical tank. This will help prevent clogging the strainer with any solids that may settle on the tank bottom. The chemical tank and foot valve/strainer should be cleaned regularly to ensure continuous trouble-free operation. If the chemical being pumped regularly precipitates out of solution or does not dissolve easily or completely (e.g., calcium hydroxide), a mixer should be used in the chemical tank. These are readily available in many motor configurations and mountings. To obtain a mixer, contact your supplier.
- A flooded suction (tank liquid level always at a higher elevation than the pump) is recommended when pumping sodium hypochlorite (NaOCl) and hydrazine solution (N₂H₂), etc., which are liable to produce air bubbles. Maintaining a low liquid temperature will also help eliminate this problem.

- Pipe corrosion can result if dilution at the injection point does not occur rapidly. This problem is easily prevented by observing this simple rule: install injection fitting so that the end is in the center of the flow stream of the line being treated. Trim injector tip as required. See Figure 2.4.

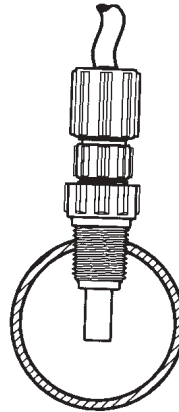


Figure 2.4

NOTE: Extended injection assemblies are available for large water lines. Consult your supplier for more information.

2.4 Wiring

- The metering pump should be wired to an electrical source that conforms to those on the pump nameplate. (Applying a higher voltage than the pump is rated for will damage the internal circuit.)



WARNING: RISK OF ELECTRICAL SHOCK. THIS PUMP IS SUPPLIED WITH A THREE-PRONG, GROUNDING-TYPE POWER PLUG. TO REDUCE RISK OF ELECTRIC SHOCK, CONNECT ONLY TO A PROPERLY GROUNDED, GROUNDING-TYPE RECEPTACLE.

NOTE: Field wiring must confirm to local electrical codes.

- In the electronic circuit of the control unit, measures for surge voltage are made by means of surge absorbing elements and high voltage semiconductors. Nevertheless, excessive surge voltage may cause failure in some areas. Therefore, the receptacle should not be used in common with heavy electrical equipment which generates high voltage. If this is unavoidable, however, measures should be taken by the installation of a surge absorbing element (varistor of minimum surge resistance 2000A) to the power supply connection of the pump (see Figure 2.5(A), or the installation of a noise suppression transformer (see Figure 2.5(B)).



Figure 2.5

- In the event of electrical power interruption during pump operation, the pump will remember its setting and automatically resume operation as before, whenever power is restored. If a manual reset is required to resume operation, the electrical circuit serving the pump must be suitably wired. Latching power relays which “drop out” upon loss of power, requiring manual reset, are typically used for this purpose.

2.5 Well Pump System Installation

- Ensure that the metering pump voltage matches the voltage of the well pump. Typical well pump electrical circuits are shown in Figure 2.6. All electric wiring should be installed by a licensed electrician and in accordance with local electrical codes.

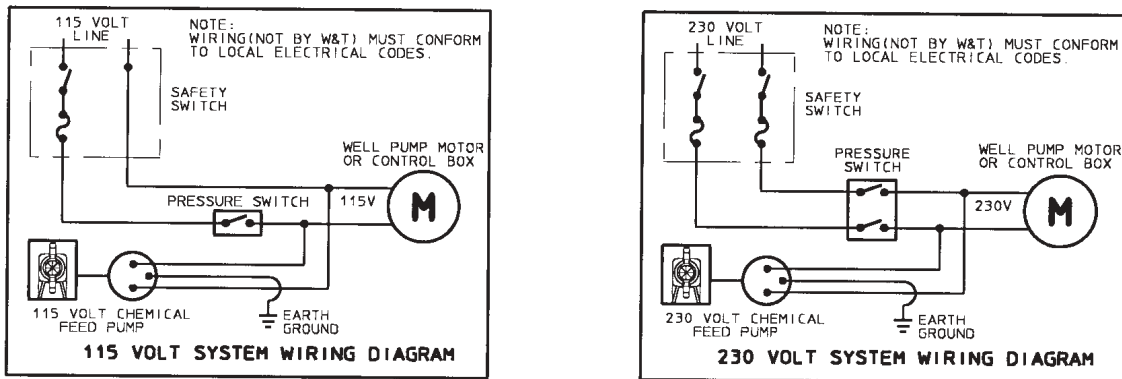


Figure 2.6

- Install the backpressure/injection valve (see Figure 2.7) on the discharge side of the metering pump into a tee that is installed into the water line going to the pressure tank.

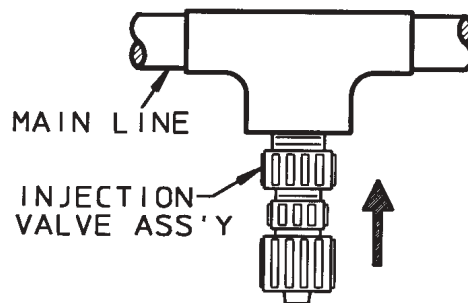


Figure 2.7

2.6 Five-Function Valve (See Figure 2.8)

- **Tubing Version:** Remove the tubing nut from the discharge valve cartridge. Install the O-ring supplied into the groove around the tubing tip. Screw the five-function valve onto the discharge valve. Connect discharge tubing to the five-function valve “OUTLET” and bypass the tubing to the “RETURN” connection.
- **NPT Version:** Apply Teflon tape or sealant to the threads of the five-function valve and screw the “INLET” connection into the discharge valve of the pump. Connect piping to the “OUTLET” and “RETURN” connections of the five-function valve.

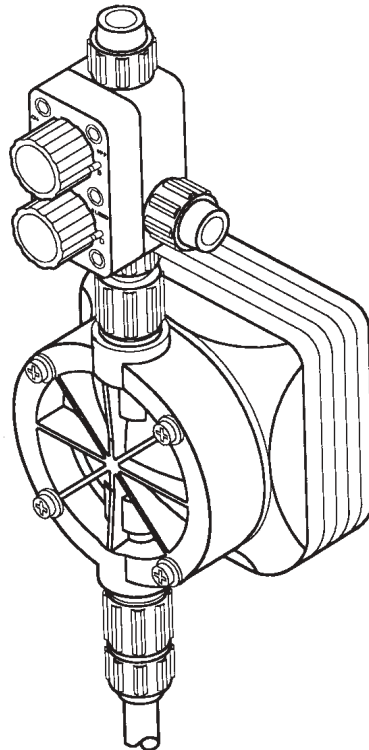


Figure 2.8

PREMIA™ 75 MICRO

2.6.1 Materials of Construction

Valve Body	- Glass Filled Polypropylene (GFPPL) - Polyvinylidene Fluoride (PVDF)
Diaphragms	- Teflon Faced Hypalon
O-Rings	- Teflon
Hardware	- 188 Stainless Steel (recessed)
Maximum Flow	- 240 GPD
Maximum Viscosity	- 1000 CPS
Pressure Relief Settings (nominal cracking pressure)	- 250 PSI (275) - 150 PSI (175) - 100 PSI (125)

NOTE: Pressure relief may occur at 50% above maximum pressure rating off pump.

Connections	- 1/4" x 3/8" tubing - 3/8" x 1/2" tubing - 1/4" MNPT
Relief Port	- 1/4" x 3/8" tubing - 1/4" MNPT (with NPT connection only)

1/4" MNTP CONNECTION			3/8" OD TUBING CONNECTION			1/2" OD TUBING CONNECTION		
MODEL NUMBER	PSI	VALVE BODY	MODEL NUMBER	PSI	VALVE BODY	MODEL NUMBER	PSI	VALVE BODY
AAA 3029	250	GFPPL	AAA 3026	250	GFPPL	AAA 3032	250	GFPPL
AAA 3011	150	GFPPL	AAA 3008	150	GFPPL	AAA 3014	150	GFPPL
AAA 2993	100	GFPPL	AAA 2990	100	GFPPL	AAA 2996	1000	GFPPL
AAA 3038	250	PVDF	AAA 3035	250	PVD	AAA 3041	250	PVD
AAA 3020	150	PVDF	AAA 3017	150	PVDF	AAA 3023	150	PVDF
AAA 3002	100	PVDF	AAA 2999	100	PVDF	AAA 3005	100	PVDF

NOTE: PVDF is standard for PVC, SAN, and PVDF.

SECTION 3 – OPERATION

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3.1 Controls and Operation (See Figure 3.1)

The pump performs the following functions:

- Selected Controls
 - + Fixed Rate
 - + External Pulse
 - Straight Pulses
 - Division
 - Pulse Storage
 - Multiplication
 - + External Current Signal
 - 4-20mA
 - 20-4mA
 - + Stroke Counting
 - + Timed Operation (intervals)

- Display Alarms
 - + Circuit Failure
 - + Signal Loss
 - + Full Count
 - + Pulse Overflow
 - + Pulse Rate High

- Relay Output (one selected at a time)
 - + Relay Off
 - + Stop Function
 - + Current Signal Loss
 - + Full Count
 - + Pulse Overflow
 - + Repeat Strokes
 - + Circuit Failure

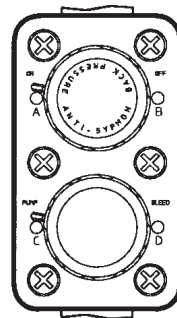


Figure 3.1

3.1.1 Using the Touchpad

All adjustments and changes to pump operation (except stroke length) are made through the six-button touchpad (Figure 3.2).

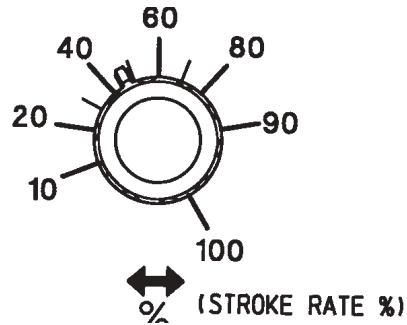











Figure 3.2



Except for alarm conditions, the LCD display (Figure 3.1) always presents either the present operating condition or a prompt that must be answered in order to commence operation.


There are two types of prompts:

- Prompts in the form of questions (marked with a flashing question mark) are used to navigate through the menu options. These prompts are answered by pressing either the  or  buttons.
- Prompts marked with alternating up and down arrows are always encountered when a numerical value must be selected (i.e., stroke rates, counts, run times, ratios). These prompts are answered by pressing either the  or  buttons to change the display value to the desired setting. After the desired value has been set in the display, press  key to accept this value and continue or press key  to return to the main menu.

To stop the pump at any time, press the red  button. To resume operation as before, press the  button.

To display the present stroking rate as a percentage of the maximum rate of the pump at any time, press the  button. Press any button to return to the normal display.

Pressing the  button while the pump is in operation will bring up the relay option menu. Pressing  will allow scanning the relay output options.

When the desired option is presented, press the  button; this will set the option and the screen will automatically return to the operating display.

3.1.2 Helpful Hints

- You can always get where you want to go simply by accepting or rejecting choices presented.
- If you find yourself within a menu where you don't want to be, keep selecting NO until you return to the main menu.
- If you go past the desired selection by mistake, keep selecting NO and the pump will take you back to it.
- If you press an inappropriate button, you will be notified by a message which lasts for several seconds.
- A partly flashing display requires your response.
- A flashing question mark requires a YES or NO answer.
- Flashing arrows require an Up or Down numerical adjustment. To make large numerical adjustments quickly, hold down either the Up or Down arrow buttons. The value in the display will change at an increased rate.
- A fully flashing display is an alarm.
- If power is interrupted, the pump will automatically resume operating where it left off when power is restored. The pump will remember this for years while power is off.

3.1.3 Control Options

3.1.3.1 Fixed Rate

The pump operates continuously at the set rate over the span 1-100% of maximum.

3.1.3.2 External Pulse Control - Straight Pulses

Each pulse received from the external signal port causes the pump to immediately stroke once at a rate limited by the maximum rate of the pump, 125 strokes per minute. If any pulses are received at a faster rate,

the Pulse Rate High alarm is triggered, during which the pump operates at its maximum rate and does not respond to the excess pulses.

In the Pulses Storage option, any pulse frequency received which is at a higher rate than the pump can respond to (125 contacts per minute), will cause excess pulses to be accumulated in memory. The pump will work off excess pulses at a rate of 125 strokes per minute when the signal level drops below the maximum rate. If the accumulation exceeds 9,999 pulses, memory storage capacity is exceeded and the Pulse Overflow alarm is triggered. During the Pulse Overflow condition the pump operates at 125 strokes per minute; when the incoming rate drops below 125 pulses per minute, normal Pulse Storage operation resumes, starting with a full memory.

3.1.3.3 External Pulse Control - Division

The pump operates as described above except that incoming pulses are divided by a value from 1 to 999 prior to actuating the pump. For example, at a setting of 5, every fifth incoming pulse causes the pump to stroke once.

The Pulse Storage option operates as described above.

Pulse division makes it possible to “tune” the pump by adjusting its response to an external pulse signal, such as that from a flowmeter, which is of too high a frequency to cause the desired feed by directly stroking the pump.

3.1.3.4 External Pulse Control - Multiplication

The pump operates as described previously except that incoming pulses are multiplied by a value from 1 to 999 prior to actuating the pump and then worked off at a selected stroking rate. For example, at a multiplier of 5 and a stroking rate of 25%, each incoming pulse causes the pump to stroke five times at 25% stroking rate and then stop. During operation, the display shows the present value and the present count on a running basis. Unless Pulse Storage is in effect, additional external pulses received while responding to a previous pulse are ignored.

This option is similar to Stroke Counting (see below) except that action is initiated automatically by one or more external pulses rather than once manually by the user. There is no Full Count alarm as in Stroke Counting since it is always possible to receive additional external pulses.

The Pulse Storage option operates as described above.

3.1.3.5 External Current Signal Control

In the 4-20mA (direct) option, the pump responds linearly to a current signal from the incoming signal port over the full operating span from 0% (4mA) to 100% (20mA). For example, a 12mA signal causes the pump to operate at 50% of full.

In the 20-4mA (reverse) option, pump response is the reverse of the above: from 0% (20mA) to 100% (4mA).

In both the 4-20mA and 20-4mA options, a ratio from 1 to 99% can be applied to step down the response. For example, a 12mA signal at a 50% ratio causes the pump to respond as if the signal were only 6mA (50% of 12mA)

In all of the above options, the Signal Loss alarm is triggered whenever the signal drops below approximately 2mA for several seconds. The pump stops operating during the loss of signal condition, and automatically resumes normal operation when the signal is restored.

3.1.3.6 Stroke Counting

The pump delivers a preset number of up to 9,999 strokes at a selected stroking rate. During operation, the display shows the preset value and the present count on a running basis. When the preset number of strokes has been delivered, the pump stops and the Full Count alarm is triggered. Pressing Yes when the Full Count alarm is displayed brings up the reset prompt. Continue pressing Yes to repeat the same stroking cycle or change the displayed values as they are presented to change the stroke count.

This option is similar to External Pulse Control - Multiplication (see above) except that action is initiated once manually by the user rather than by one or more external pulses.

3.1.3.7 Timed Operation

The pump runs for selected run times from 1 to 999 seconds (16.65 minutes) at selected intervals from 1 to 999 minutes (16.65 hours) at a selected stroking rate. For example, the pump might be set to operate for 50 seconds every ten minutes, at a 20% stroking rate. During operation the pump displays the run time in seconds and the interval in minutes.

3.1.4 Relay Settings

The following relay output options can be brought up on the menu by pressing the Yes button while the pump is in an operating condition (relay options vary with operating condition). Press the No button to scan through the options available. Only one relay output option may be selected. When the desired option is displayed, press the Yes button. This will set the relay for the chosen option and the display will automatically return to the previous operating display.

3.1.4.1 Relay Off

In all control options the relay remains open at all times

3.1.4.2 Stop Function

In all control options the relay is normally open and closes while the Stop Function is activated through the stop port.

3.1.4.3 Current Signal Loss

In any Current Signal control option, the relay is normally open and closes while the Signal Loss alarm is in effect.

3.1.4.4 Full Count

In the Stroke Counting control option, the relay is normally open and closes when the Full Count alarm is in effect.

3.1.4.5 Pulse Overflow

In any External Pulse control option with Pulse Storage, the relay is normally open and closes while the Pulse Overflow alarm is in effect.

3.1.4.6 Repeat Strokes

In all control options, the relay is normally open and closes momentarily during each stroke of the pump. If the pump is equipped with a 24Vdc signal relay output, this function may be used to pace another externally paced pump.

3.1.4.7 Circuit Failure

At all times, the relay is normally open and closes while the Circuit Failure alarm is in effect. The numbers which flash alternately with the alarm signal are for failure diagnosis at the factory.

3.1.5 Alarms

Alarms are distinguished by a fully flashing display

- **Circuit Failure:** At all times, pumping is disabled and the pump will no longer operate until repaired.
- **Signal Loss:** In any Current Signal option, the Signal Loss alarm is triggered whenever the signal drops below approximately 2mA for several seconds. The pump stops operating during the loss of signal condition and resumes normal operation when the signal is restored. This includes the 20-4mA option, in which a low current (4mA) signal normally calls for full pump output in order to prevent overfeeding in the event of signal loss.
- **Full Count:** In the Stroke Counting control option, when the preset number of strokes has been delivered and the pump stops, the Full Count alarm is triggered.
- **Pulse Overflow:** In the Pulse Storage option, when memory capacity is exceeded the Pulse Overflow alarm is triggered. The pump continues to respond to external signal pulses as if 9,999 pulses were in storage.
- **Pulse Rate High:** In any External Pulse Control option without Pulse Storage, receipt of any pulses at a faster rate than maximum pump stroking rate, 15 strokes per minute, the Pulse Rate High alarm is triggered. The pump continues to operate at its maximum rate and does not respond to the excess pulses.

3.1.6 Control Reference Summary

3.1.6.1 Control Options

Fixed Rate	<i>Fixed Rate 100%</i>
External Pulse	
Straight	<i>Straight Pulse</i>
Pulse Storage option	<i>Pulse - Store 9999</i>
Division	<i>Pulses ÷ 999</i>
Pulse Storage option	<i>÷ 999 Store 999</i>
Multiplication	<i>x 999/999</i>
Pulse Storage option	<i>x 999 Store 9999</i>
External Current	
4-20mA	<i>4-20mA Signal</i>
Ratio option	<i>4-20 Ratio 100%</i>
20-4mA	<i>20-4mA Signal</i>
Ratio option	<i>20-4 Ratio 100%</i>
Count Strokes	<i>Count 9999/9999</i>
Timed Interval	<i>999s Every 999m</i>

3.1.6.2 Output Relay Options

Relay Off	<i>Relay Off</i>
Stop Function	<i>Relay - Stop</i>
Current Signal Loss	<i>Relay - No signal</i>
Full Count	<i>Relay - Full Count</i>
External Pulse Overflow	<i>Relay - Overflow</i>

Repeat Strokes

Relay - Repeat

Circuit Failure

Relay Failure

3.1.6.3 Alarms (full flashing display)

Circuit Failure

Circuit Failure

Signal Loss

Signal Loss

Full Count

Full Count

Pulse Overflow

Pulse Overflow

Pulse Rate High

Pulse Rate High

3.2 Power

All metering pumps are available in 115 volts at 50/60 Hertz, single-phase. Optionally, 230 volts at 50/60 Hertz, single-phase can be provided. Prior to start-up, always check that the pump voltage/frequency/phase matches that of the power supply.



CAUTION: If the pump is fitted with a PVC pump head (fifth position of model number is “V”—PVC is gray, not black), uniformly hand-tighten the four head screws before use (18 to 22 in./lbs). Periodically tighten after installation.

3.2.1 Start Up and Shut Down

- To start pumps, turn on power.
- To shut down or stop pump, turn off power.

3.3 Priming



WARNING: WHEN WORKING ON OR AROUND A CHEMICAL METERING PUMP INSTALLATION, PROTECTIVE CLOTHING, GLOVES, AND SAFETY GLASSES SHOULD BE WORN AT ALL TIMES.



WARNING: ALL PUMPS ARE TESTED WITH WATER. IF THE CHEMICAL TO BE PUMPED REACTS WHEN MIXED WITH WATER (E.G., SULFURIC ACID, POLYMER) THE PUMP HEAD

SHOULD BE REMOVED AND DRIED THOROUGHLY ALONG WITH THE DIAPHRAGM AND VALVE SEATS.

- a. Turn on the power to the pump. Operate the pump in the fixed rate control mode at 100% (full) rate. The green LED will light up and flash off each time the pump strokes.
- b. Adjust the stroke length knob to the 100% setting mark. (Refer to paragraph 3.5, Stroke Length Adjustment, for more information.)
- c. If the discharge line is connected directly to a pressurized system, it should be temporarily bypassed during priming of the pump. A bleed valve will simplify this operation by allowing easy bypass of the discharge fluid. All air must be purged from the pump head before the pump will pump against pressure. (Refer to paragraph 3.4, Air Bleed Operation, for more information.)
- d. Chemical should reach the pump head after a few minutes of operation. If not, remove the discharge fitting and moisten the discharge valve area (ball check and valve seats) with a few drops of the chemical being fed to the metering pump.
- e. If the pump continues to refuse to prime, refer to paragraph 4.4, Troubleshooting.
- f. Turn the power on once more and adjust the pump flow to the desired rate. (Refer to paragraph 3.6, Controlling Procedure, for more information).
- g. Always check the calibration of the pump after start-up. It is best to calibrate the pump under your typical use conditions.

3.4 Air Bleed Operation

- a. While the pump is running, turn the bottom knob to the “D” position, also labeled “BLEED” (see Figure 3.3).
- b. Run the pump with the valve open until a solid stream of fluid comes out of the bypass tubing (1/4 x 3/8 supplied with valve), and there are no air bubbles.
- c. Close air bleed valve by turning bottom knob to position “C”, also labeled “PUMP”.

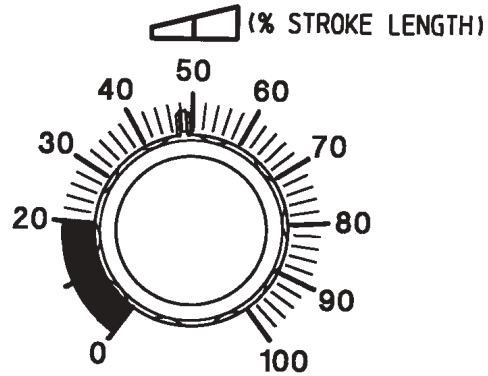


Figure 3.3



WARNING: FOR SAFETY, ALWAYS USE PROTECTIVE CLOTHING AND GLOVES, WEAR SAFETY GLASSES, AND USE A PROPER CONTAINER TO HOLD THE CHEMICAL.

3.5 Stroke Length Adjustment (See Figure 3.4)

Stroke length can be controlled within 0 to 100% of the diaphragm displacement. (It should be controlled within 10 to 100% for practical use.)

Stroke length can be set by means of the stroke length adjusting knob while the pump is in operation.

NOTE: Do not turn the knob while the pump is stopped.

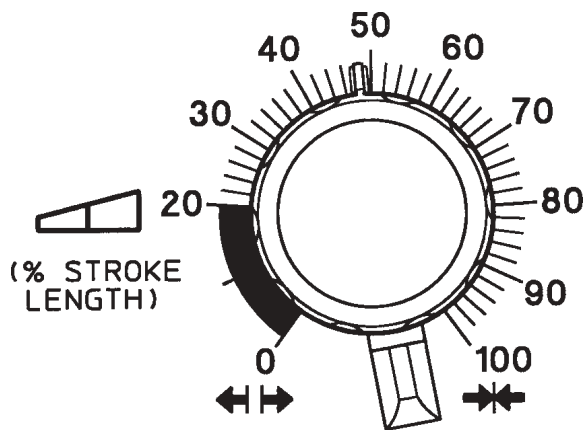


Figure 3.4

3.6 Controlling Procedure (For Fixed Rate)

Proper set points for stroke length and stroke frequency should be determined after consideration of the pump and characteristics of the fluid. The following procedure is recommended from the viewpoint of pump performance.

NOTE: The closer the stroke length is to 100%, the better the pump performance will be.

- a. Set the stroke length to 100%. Measure the output capacity
- b. Adjust the stroke rate frequency to obtain the desired output. If adjustment by stroke rate alone does not bring the output low enough, the stroke length may be adjusted to lower the maximum output.
- e. Measure the output capacity to ensure that the required value is obtained.

Example

Set Stroke Length	=	100%
Set Stroke Rate	=	100%
Output Capacity (Rated Pressure)	=	21 GPD*
Desired Flow	=	17 GPD
Adjust Stroke Rate to 81%		
Output Capacity	=	$\frac{17}{21} \times 100 = 81\%$ (approx.)*

To obtain the desired flow, stroke length is set at 100% and stroke rate is set at 81% (i.e., output capacity = 0.81 x 21 = 17 GPD*).

*Check these values by measurement. Output capacity is higher when feeding against less than rated pressure.

3.7 Operation by External Input Signals

The pump can be controlled by three types of input signals. All are fully isolated from AC input power and from earth ground. The input socket connections are located at the bottom of the control panel face and the signal cords are provided with the pump. Remove rubber plugs to access the plug sockets.

3.7.1 Stop Function

Operation of the pump can be stopped by an external signal input. When the external signal is input to the stop terminals, the red light goes on and operation of the pump is stopped. The stop function overrides all control options and input signals at other terminals. Previous operation resumes when the stop signal is removed.



CAUTION: Operation of more than one pump from the same contact closure will damage the pump circuits. When such operation is required, the pump circuits must be electrically isolated from one another by means of a multi-contact control relay or similar means.

Input signals should be no-voltage signals from relay contacts, etc., and the input of other signals is prohibited. (In case of relay contacts, electric resistance must be 100 ohms or less at ON, and 1M ohm or more at OFF).

The stop function is commonly used in conjunction with a tank float switch. The float switch contacts are normally open, but, when the tank level falls past a certain point, the contacts close and the pump stops. Signal cord is provided with the pump.

3.7.2 External Pacing Function

The pump's stroke rate can be controlled by an external pulse signal through the external signal terminals while the pump is in one of the external pacing control modes.



CAUTION: Operation of more than one pump from the same contact closure will damage the pump circuits. When such operation is required, the pump circuits must be electrically isolated from one another by means of a multi-contact control relay or similar means.

After receiving an input signal, the pump generates the necessary power pulse to actuate the solenoid. The external signal input is debounced by the pump circuit.

Input signals should be no-voltage signals from relay contacts, etc., and the input of other signals is prohibited. (In the case of relay contacts, electric resistance must be 100 ohms or less at ON, and 1M ohms or more at OFF). The pulse duration of the input signal must be 10 milliseconds or over and the frequency of input signal must not exceed 125 times/minute, unless accommodated by pulse division or pulse storage. Signal cord is provided with the pump.

3.7.3 4-20 mA/20-4 ma Function

The pump's stroke rate can be controlled by a 4-20 mA direct or inverse current signal when in one of the current signal modes.

The pump automatically adjusts stroking rate according to the signal level provided to the pump.

Pumps may be wired in series to the current signal providing that the signal source is sufficient to handle the load (each pump has an impedance of 187ohms).

The pump responds to a straight (non-ratio) 4-20mA signal as follows. (Figure 3.5 shows straight response and response ratioed by 25,50 and 75%).

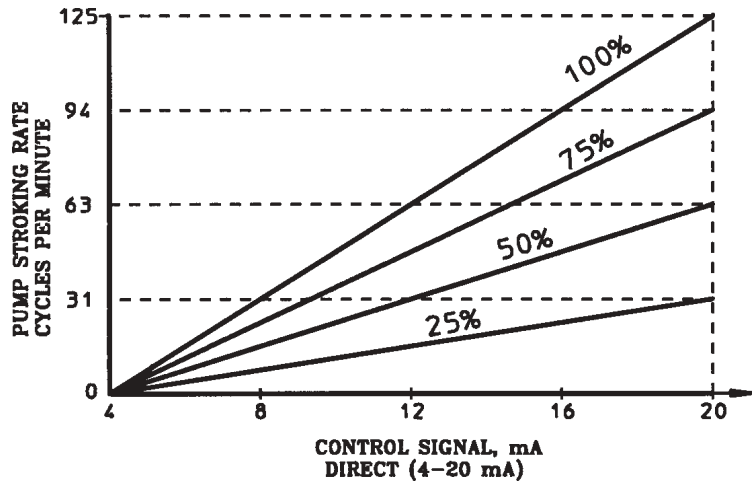


Figure 3.5

The pump responds to a 20-4mA signal as follows. (Figure 3.6 shows straight line response and response ratioed by 25,50 and 75%.)

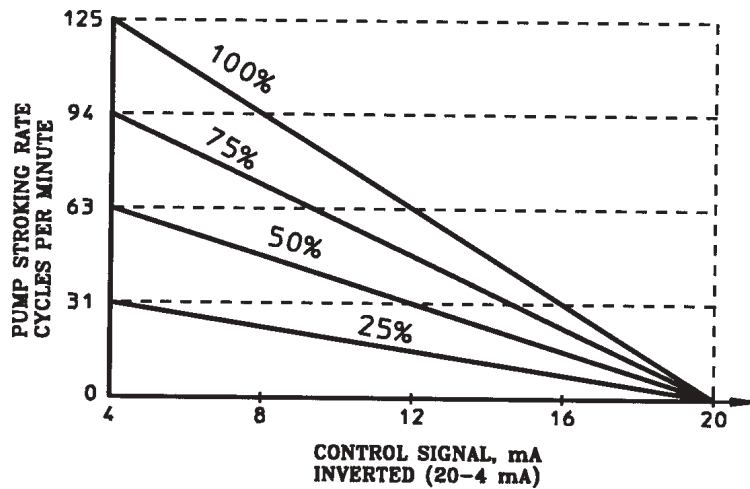


Figure 3.6

The signal cord is provided with the pump and has the following polarity:

White = Positive (+)

Black = Common

Signal input impedance is 187 ohms.

3.8 Output Relay

Each pump has the option of being provided with one of two separate normally open output relay options. Relays close according to the option selected, and remain closed during the condition specified for the selected option, except for the repeat strokes option.

The **Signal Level** output relay option is via the output signal terminals on the pump control panel. It is designed to provide direct or inverted voltage output signals as shown in Figure 3.7. The voltage input must have a high-impedance characteristic and must not exceed 24 Vdc. The pump circuit can source or sink a maximum current of 10mA. The signal cord is provided with the pump and has the following polarity when connected to the pump terminals.

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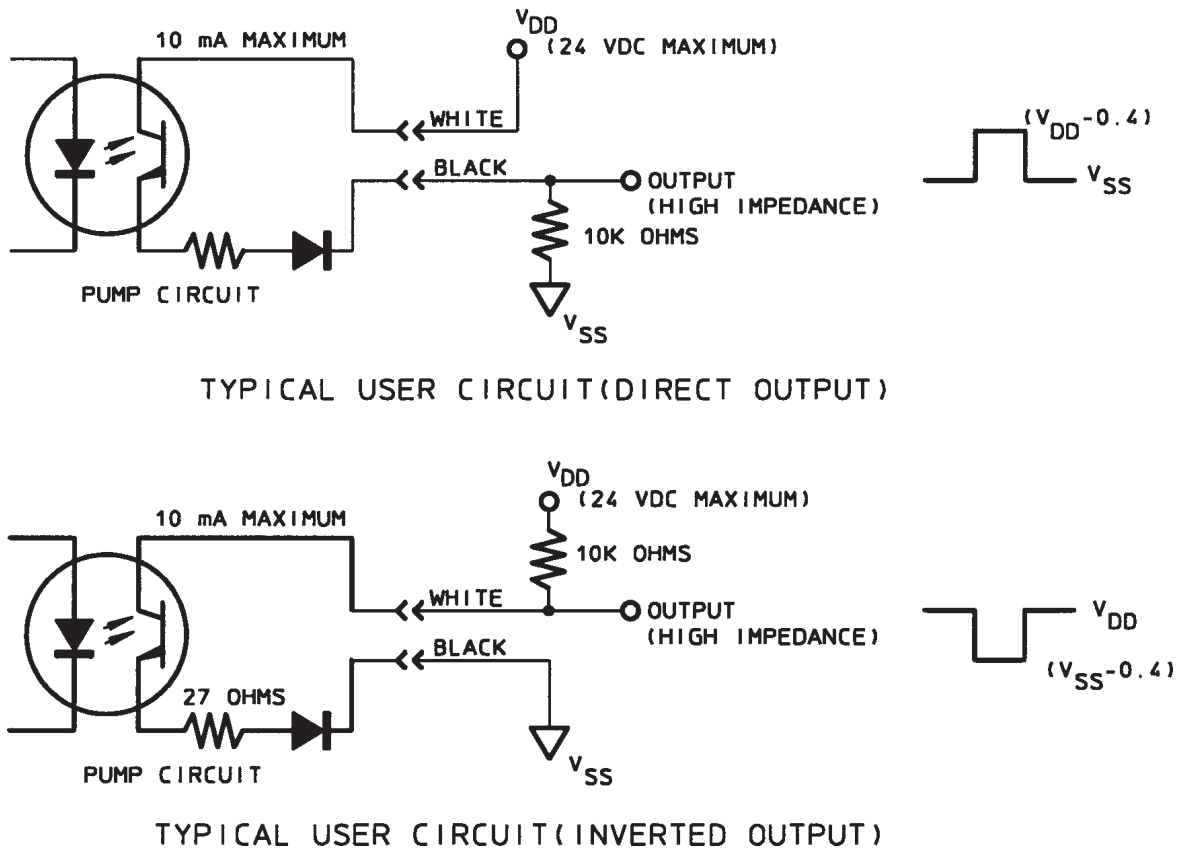


Figure 3.7

The **Power Level** option is via the power relay cord which exits the pump below the control panel. The power level relay is a zero-crossing triac-type solid-state switch as seen in Figure 3.8 which is designed to switch ac current only and has the following ratings:

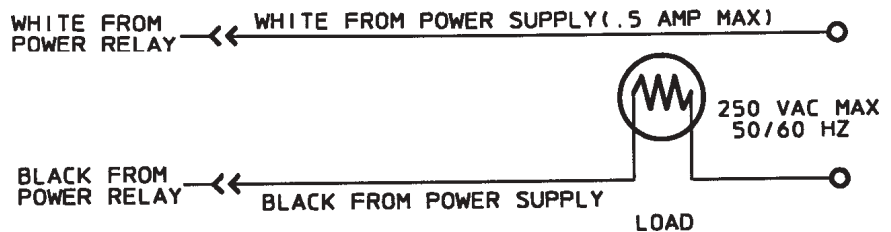


Figure 3.8

Voltage	Current	Power
min = 12 Vac, 50/60Hz	min= 10mAmps	min = 12 watts (at 12 Vac)
max = 250 Vac, 50/60Hz	max = 0.5Amps	max=120 watts (at 240 Vac)

*Load can be any device which meets the above voltage and current limits (i.e., lamp, alarm, siren, relay, etc.)



WARNING: DO NOT APPLY POWER DIRECTLY TO THE RELAY CORD WITHOUT A SUFFICIENT LOAD TO LIMIT CURRENT AS INDICATED ABOVE. DO NOT EXCEED THE SPECIFIED VOLTAGE RATING. EXCESS CURRENT OR VOLTAGE WILL DAMAGE THE PUMP AND CAUSE FIRE AND ELECTRICAL FIRE HAZARDS. DO NOT INSTALL ANY TYPE OF STANDARD POWER PLUG TO THE RELAY CORD.

3.9 Five-Function Valve Operation

3.9.1 Pressure Relief Function

Designed to relieve excessive pump discharge pressure (approximately 50% above PRV rating). PRV is functional anytime the bottom control knob is turned to the “C” position, also labeled “PUMP”.

Color code for PRV rating:

Blue	100psi
Green	150 psi
Red	250 psi

3.9.2 Back Pressure Function

The back pressure function allows the pump to meter to atmosphere by creating a discharge restriction of approximately 20 psi. Back pressure is provided anytime the knob is turned to the “A” position, also labeled “ON”.

NOTE: The back pressure function is not intended to prevent flowthrough from the elevated supply tanks. The pump-rated pressure does not have to be de-rated when the back pressure knob is in the “ON” position.

3.9.3 Anti-Syphon Function

The anti-syphon function prevents syphoning through the pump when pumping to a receptacle lower than the pump. This feature is active when the top knob is turned to the “A” position, also labeled “ON”.

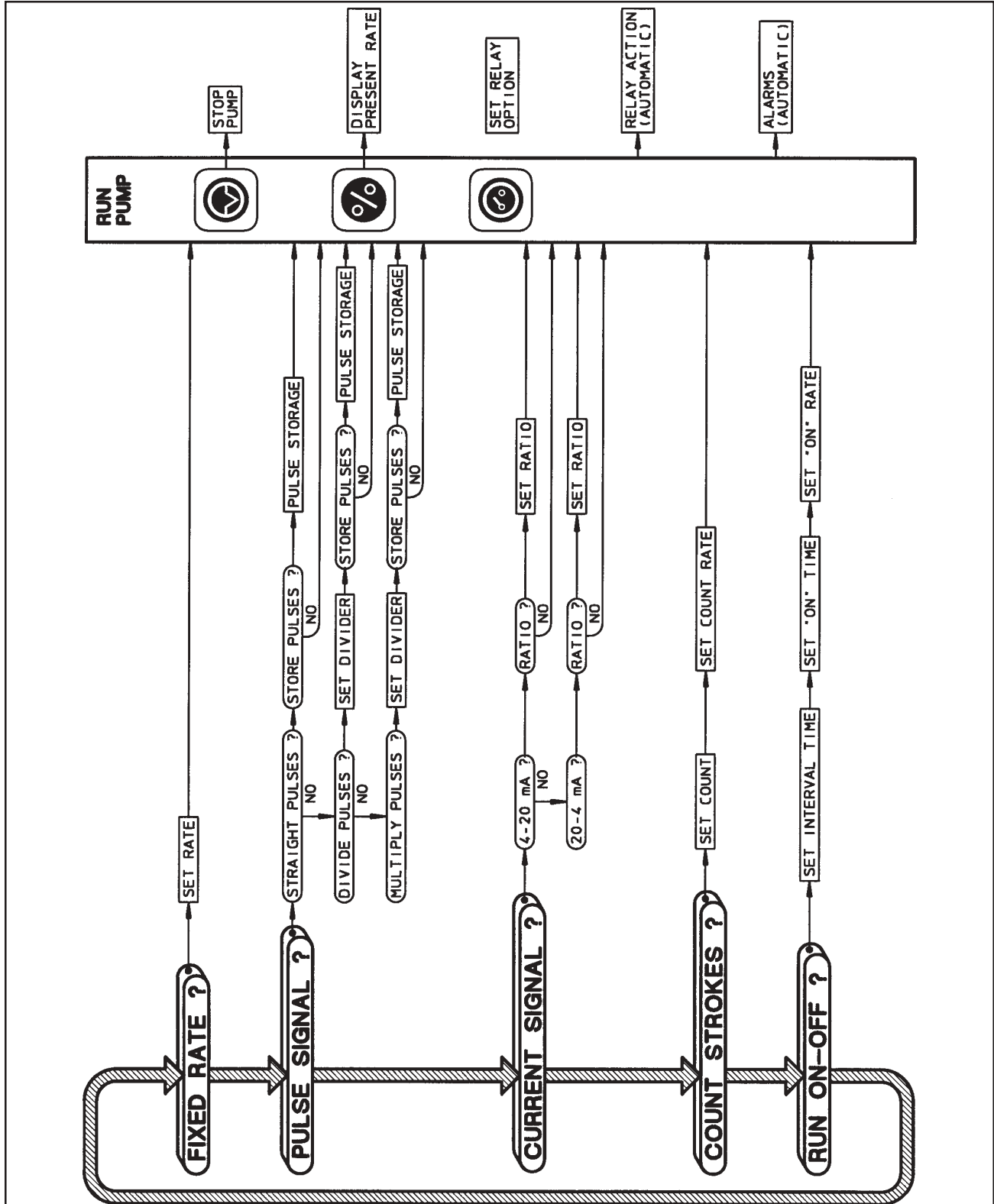
3.9.4 Pump head Air Bleed Function

This function is used when starting the pump to aid in priming. It allows for removal of air from the pump head by bypassing air and fluid out the “RETURN” connection. This feature will function when the bottom knob is turned to letter “D” position, also labeled “BLEED”.

3.9.5 Discharge Drain Function

This function is used to depressurize the pump discharge line and/or drain it. This function is accomplished by turning the top knob to the “B” position, also labeled “OFF”, and the bottom knob to the “D” position, also labeled “BLEED”. This will bypass discharge line fluid to the five-function valve “RETURN” line.

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PREMIA™ 75 MICRO SOLENOID METERING PUMP
- CONTROL OPTIONS AND SETTINGS

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WARNING: BEFORE PERFORMING ANY MAINTENANCE OR REPAIRS ON CHEMICAL METERING PUMPS, BE SURE TO DISCONNECT ALL ELECTRICAL CONNECTIONS AND ENSURE THAT ALL PRESSURE VALVES ARE SHUT OFF AND PRESSURE IN THE PUMP AND LINES HAS BEEN BLED OFF.



WARNING: ALWAYS WEAR PROTECTIVE CLOTHING, GLOVES, AND SAFETY GLASSES WHEN PERFORMING ANY MAINTENANCE OR REPAIRS ON CHEMICAL METERING PUMPS.

4.1 Routine Maintenance

- Routinely check the physical operating condition of the pump. Look for the presence of any abnormal noise, excessive vibration, low flow and pressure output, or high temperatures (when running constantly at maximum stroke rate, the pump housing temperature can be up to 160°F [70°C]).
- For optimum performance, cartridge valves should be changed every four to six months. Depending on the application, more frequent changes may be required. Actual operating experience is the best guide in this situation. Repeated short-term deterioration of valve seats and balls usually indicates a need to review the suitability of wetted materials selected for the application. Contact the supplier for guidance.
- Check for leaks around fittings or as a result of deteriorating tubing (e.g., when standard white translucent discharge tubing is exposed to direct sunlight). Take appropriate action to correct leak by tightening fittings or replacing components.
- Keep the pump free of dirt/debris, as this provides insulation and can lead to excessive pump temperatures.
- If the pump has been out of service for a month or longer, clean the pump head/valve assemblies by pumping fresh water for approximately 30 minutes. If the pump does not operate normally after this “purging run,” replace the cartridge valve assemblies.

4.2 Disassembly and Assembly

4.2.1 Diaphragm Removal

- a. Flush pump head and valve assemblies out by running pump on water or other suitable neutralizing solution. Wash outside of pump down if chemical has dripped on pump.
- b. Set stroke length of pump to 0% and unplug pump.
- c. Disconnect tubing or piping from the pump. Remove the four pump head screws and then remove the pump head assembly.
- d. Remove the diaphragm by grasping it at the outer edges and turning it counterclockwise until it unscrews from the electronic power module (EPM). Do not lose the deflection plate or the diaphragm shims that are behind the diaphragm.

NOTE: Shim quantity can be from none to three.

- e. Inspect diaphragm if it is intended to be used again. Look for indications of the Teflon face being over-stretched (localized white areas) or the elastomer on the back of the diaphragm being worn. Excessive amounts of either condition require diaphragm replacement.

4.2.2 Diaphragm Replacement

Refer to drawings in the back of the manual.

NOTE: When replacing the diaphragm, it is always a good idea to replace the valve cartridges and other worn parts. A kit is available from your supplier with all parts necessary to completely rebuild your pump's wet end. All your supplier needs to know to supply this kit is the PM kit number on your pump's nameplate.

- a. Set pump stroke length to 0% and unplug the pump.
- b. If you kept the shims from the original diaphragm, or know the original quantity, you can avoid step c for shimming the diaphragm and go to step d.
- c. Slide the diaphragm deflection plate onto the back of the diaphragm stud, radius side toward the diaphragm. Next, slide three shims onto the diaphragm threaded stud, and screw the diaphragm into the EPM unit. Refer to Figure 4.1. Turn diaphragm clockwise until deflection

plate and shims are tight against solenoid shaft and the diaphragm stops turning. If there is a gap between the adapter and the diaphragm, repeat the procedure, removing one shim each time until the diaphragm just touches the adapter or is slightly recessed.

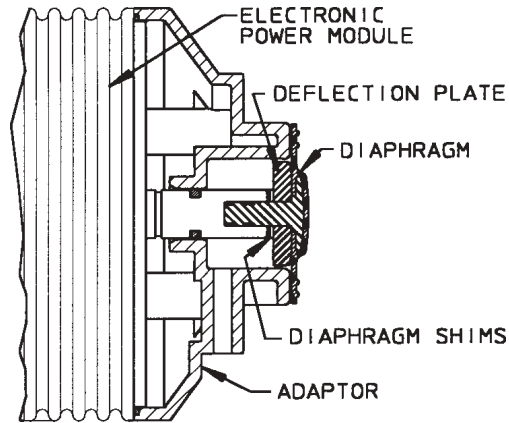


Figure 4.1

- d. Apply grease to areas of the diaphragm that contact the deflection plate or radius on the adapter.
- e. Screw the diaphragm into the EPM unit's shaft with the deflection plate and appropriate number of shims in between.
- f. Adjust stroke length to 50%. It is easier to do this if you turn the pump on temporarily. Place the pump head onto the adapter with the valve flow arrows pointing up, and install and tighten the pump head screws. Tighten the screws until the pump head pulls up against the adapter.
- g. Adjust stroke length back to 100% for easier priming and place pump back into service.

4.2.3 Valve Replacement

- a. Flush pump to clean any chemical from the pump head.
- b. Unplug the pump, release system pressure, and disconnect any tubing or piping.
- c. Unscrew the valve cartridges and discard. Also remove O-rings down inside pump head.

- d. Using new O-rings, install new valve cartridges with stamped letters reading from top to bottom, and the arrow pointing in the direction of flow. Hand-tighten only, do not use wrenches or pliers. This is especially important when the pump head is SAN material.
- e. Reconnect tubing or piping and reinstall the pump.
- f. Check for leaks around newly installed fittings.

4.3 Five-Function Valve

The only maintenance required is to replace the diaphragms whenever the pump head diaphragm is replaced. Sometimes when pumping dirty fluids, solids may become trapped between the PRV diaphragm (bottom one) and the PRV seat. This may cause the PRV to weep slightly. This is easily remedied by removing the diaphragm, wiping it with a cloth, and reinstalling it. If the damage is excessive, the diaphragm will have to be replaced.

4.4 Troubleshooting

The following table identifies a number of possible problems, along with probable causes and corrective actions.

Table 4.1 - Troubleshooting

FAULT CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
LOSS OF CHEMICAL RESIDUAL	Pump setting too low.	Adjust to higher setting (pump must be operating during the stroke length adjustment).
	Scale at injection point.	Clean injection parts with 8% muriatic acid or undiluted vinegar. (Refer to Section 4 for more information).
	Solution container allowed to run dry.	Refill the tank with solution and prime. (Refer to Section 3 for more information).
TOO MUCH CHEMICAL	Pump setting too high.	Lower pump setting (pump must be operating to adjust stroke length knob).
	Chemical in solution tank too rich.	Dilute chemical solution. NOTE: For chemical that reacts with water, it may be necessary to purchase a more dilute grade of chemical direct from chemical supplier.
	Siphoning of chemical into well or main line.	Test for suction or vacuum at the injection point. If suction exists, install an anti-siphon valve.
LEAKAGE AT TUBING CONNECTION	Worn tube ends.	Cut off end of tubing (about 1") and then replace as before.
	Chemical attack.	Consult your seller for alternate material.

Table 4.1 - Troubleshooting (Cont'd)

FAULT CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
FAILURE TO PUMP	Leak in suction side of pump.	Examine suction tubing. If worn at the end, cut approximately an inch off and replace.
	Valve seats not sealing.	Clean valve seats if dirty or replace with alternate material if deterioration is noted.
	Low setting on pump.	When pumping against pressure, the dials should be set above 20% capacity for a reliable feed rate.
	Low solution level.	Solution must be above foot valve.
	Diaphragm ruptured.	Replace diaphragm as shown in Section 4. Check for pressure above rated maximum at the injection point. NOTE: Chemical incompatibility with diaphragm material can cause diaphragm rupture and leakage around the pump head.
	Pumphead cracked or broken.	Replace pump head as shown in Section 4. Make sure fittings are hand tight only. Using pliers and wrench can crack pump head. Also, chemical incompatibility can cause cracking and subsequent leakage.
	Pumphead contains air or chlorine gas.	Bleed pump head (see paragraph 3.4, Air Bleed Operation).
	Breakdown or disconnection of wiring.	Connect wiring properly. Check fuse or circuit breaker.
	Voltage drop.	Take measures after investigation of cause.
Malfunction of electronic control board.	Contact supplier.	

Table 4.1 - Troubleshooting (Cont'd)

FAULT CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
PUMP LOSES PRIME	Dirty check valve.	Remove and replace or clean off any scale or sediment.
	Ball checks not seating or not sealing properly.	Check seat and ball checks for chips, clean gently. If deformity or deterioration is noted, replace part with proper material. Resulting crystals can hold check valves open, therefore the valves must be disassembled and cleaned. Be sure to replace all parts as shown in the Parts Diagram (at the end of the manual).
	Solution container runs dry.	Refill container with proper chemical.
	Chemical outgassing.	Bleed gas, use flooded suction, maintain chemical at room temperature.
FITTING LEAKAGE	Loose fittings.	All fittings can be hand tightened to prevent leakage. Clean off chemicals that have spilled on pump.
	Broken or twisted gasket.	Check gaskets and replace if broken or damaged.
	Chemical attack.	Consult your pump supplier for alternate material.
PUMP WILL NOT PRIME	Too much pressure at discharge.	Turn off all pressure valves, loosen outlet tubing connection at discharge point. Remove discharge valve cartridge. Dampen ball check and valve seats with a few drops of solution. Set pump dials to maximum rate. When pump is primed, reconnect all tubing connections.
	Check valves not sealing.	Disassemble, loosen, clean and check for deterioration or swelling. Reassemble and wet the valve assembly, then prime.(Refer to Section 3 for more information.)
	Output dials not set at maximum.	Always prime pump with output dials set at maximum rated capacity.
	Suction lift height too much.	Decrease suction lift or pull vacuum on pump discharge until pump is primed.
	Pump equipped with spring loaded high viscosity valves.	Loosen discharge valve to aid in priming, take necessary safety precautions, or apply vacuum to pump discharge.

WARNING LABEL

The following warning label has been attached to the equipment.

AAA2520: This equipment may handle HAZARDOUS materials, which can cause severe personal injury.

Use appropriate protective clothing and eye protection.

To prevent spraying of liquid, DO NOT disconnect discharge tube/main connection without first relieving pressure and draining line.

Tighten couplings nuts by hand—DO NOT use wrench.

For safety precautions, refer to the MSDS for the material being handled and the equipment instruction book for further important details and precautions.

To avoid possible severe personal injury from electrical shock, disconnect power source before servicing.



PREMIA™ 75 MICRO



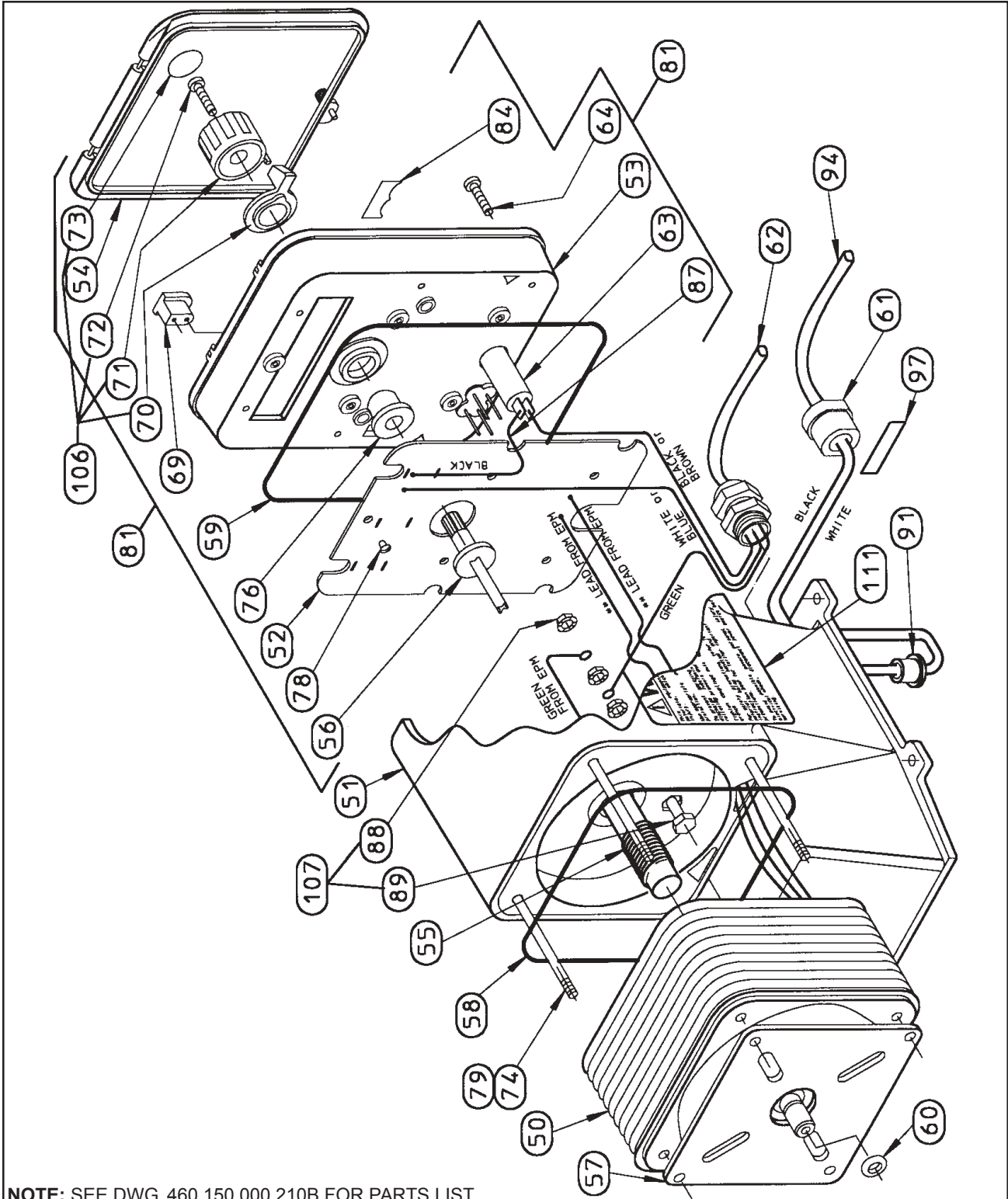


SECTION 5 - ILLUSTRATIONS

List of Contents

	DWG. NO.
Parts	
Power Relay Drive Assembly	460.150.000.210A&B
Signal Relay Drive Assembly	460.150.000.215A&B
Pump Head Assembly	460.150.000.220A&B
Five-Function Valve Assembly	460.150.000.030A&B

PREMIA™ 75 MICRO



NOTE: SEE DWG. 460.150.000.210B FOR PARTS LIST.

PREMIA™ 75 MICRO SOLENOID METERING PUMP - POWER RELAY DRIVE ASSEMBLY - PARTS

460.150.000.210A

ISSUE 0 2-96

PREMIA™ 75 MICRO

KEY NO.	QTY.	DESCRIPTION
50	1	ELECTRONIC POWER MODULE (EPM)
51	1	HOUSING
52	1	ELECTRONIC CONTROL BOARD
53	1	CONTROL PANEL
54	1	DUST COVER ASSEMBLY
55	1	FEMALE ADJUSTMENT SHAFT
56	1	MALE ADJUSTMENT SHAFT
57	1	EPM RETAINING PLATE
58	1	EPM/HOUSING O-RING
59	1	CONTROL PANEL O-RING
60	1	SECONDARY SEAL
61	1	STRAIN RELIEF, SIGNAL CORD
62	1	POWER CORD ASSEMBLY
63	1	CIRCUIT BREAKER
64	5-6	CONTROL PANEL SCREW
69	3	PIN PLUG
70	1	LOCKING TAB
71	1	KNOB, STROKE LENGTH
72	1	KNOB MOUNTING SCREW
73	1	STICKER, STROKE LENGTH KNOB
74	4	EPM MOUNTING SCREW
76	1	GROMMET, STROKE LENGTH
77	1	TOUCH PAD (NOT SHOWN)
78	5	CIRCUIT MOUNT SCREW
79	4	EPM MOUNTING WASHER
81	REF	CONTROL PANEL ASSEMBLY
84	1	STOP/SIGNAL LABEL
85	2	STOP/FUNC. CORD (NOT SHOWN)
86	1	RELAY LABEL
87	1	JUMPER WIRE
88	3	GROUND LUG NUT w/ WIRE
89	1	GROUND LUG BOLT
91	1	SIGNAL CORD BUSHING
92	1	BREAKER COVER (NOT SHOWN)
94	1	SIGNAL CORD
97	1	SIGNAL POWER LABEL
106	REF	KNOB KIT. STROKE LENGTH
107	REF	GROUND LUG KIT
111	2	LABEL, DECAL "WARNING" (US)

** 115 VOLT EPM UNITS HAVE GREY LEADS.

** 230 VOLT EPM UNITS HAVE RED LEADS.

NOTE: TERMINAL LOCATIONS ON THE CIRCUIT BOARD VARY DEPENDING ON THE CONTROL OPTION.

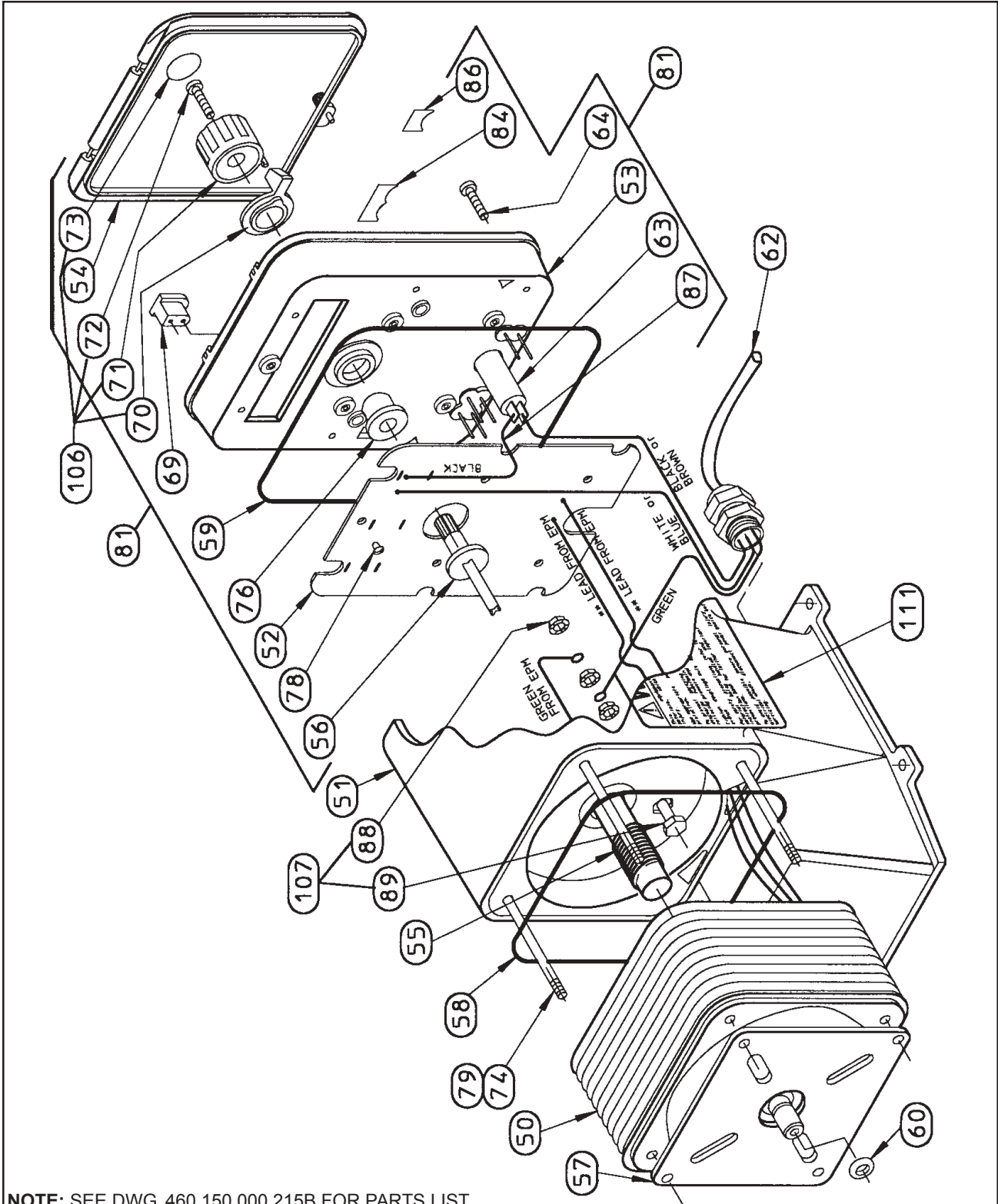
WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

PREMIA™ 75 MICRO SOLENOID METERING PUMP
- POWER RELAY DRIVE ASSEMBLY - PARTS LIST

460.150.000.210B

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NOTE: SEE DWG. 460.150.000.215B FOR PARTS LIST.

PREMIA™ 75 MICRO SOLENOID METERING PUMP
- SIGNAL RELAY DRIVE ASSEMBLY - PARTS

460.150.000.215A

ISSUE 0 2-96

PREMIA™ 75 MICRO

KEY NO.	QTY.	DESCRIPTION
50	1	ELECTRONIC POWER MODULE (EPM)
51	1	HOUSING
52	1	ELECTRONIC CONTROL BOARD
53	1	CONTROL PANEL
54	1	DUST COVER ASSEMBLY
55	1	FEMALE ADJUSTMENT SHAFT
56	1	MALE ADJUSTMENT SHAFT
57	1	EPM RETAINING PLATE
58	1	EPM/HOUSING O-RING
59	1	CONTROL PANEL O-RING
60	1	SECONDARY SEAL
62	1	POWER CORD ASSEMBLY
63	1	CIRCUIT BREAKER
64	5-6	CONTROL PANEL SCREW
69	3	PIN PLUG
70	1	LOCKING TAB
72	1	KNOB MOUNTING SCREW
73	1	KNOB STICKER, STROKE LENGTH
74	4	EPM MOUNTING SCREW
76	1	GROMMET, STROKE LENGTH
77	1	TOUCH PAD (NOT SHOWN)
78	5	CIRCUIT MOUNT SCREW
79	4	EPM MOUNTING WASHER
81	REF	CONTROL PANEL ASSEMBLY
84	1	STOP/SIGNAL LABEL
85	3	STOP/FUNC. CORD (NOT SHOWN)
86	1	RELAY LABEL
87	1	JUMPER WIRE
88	3	GROUND LUG NUT w/ WASHER
89	1	GROUND LUG BOLT
92	1	BREAKER COVER (NOT SHOWN)
106	REF	KNOB KIT. STROKE LENGTH w/ LOCK
107	REF	GROUND LUG KIT
111	2	LABEL, DECAL "WARNING" (US)

** 115 VOLT EPM UNITS HAVE GREY LEADS.

** 230 VOLT EPM UNITS HAVE RED LEADS.

NOTE: TERMINAL LOCATIONS ON THE CIRCUIT BOARD VARY DEPENDING ON THE CONTROL OPTION.

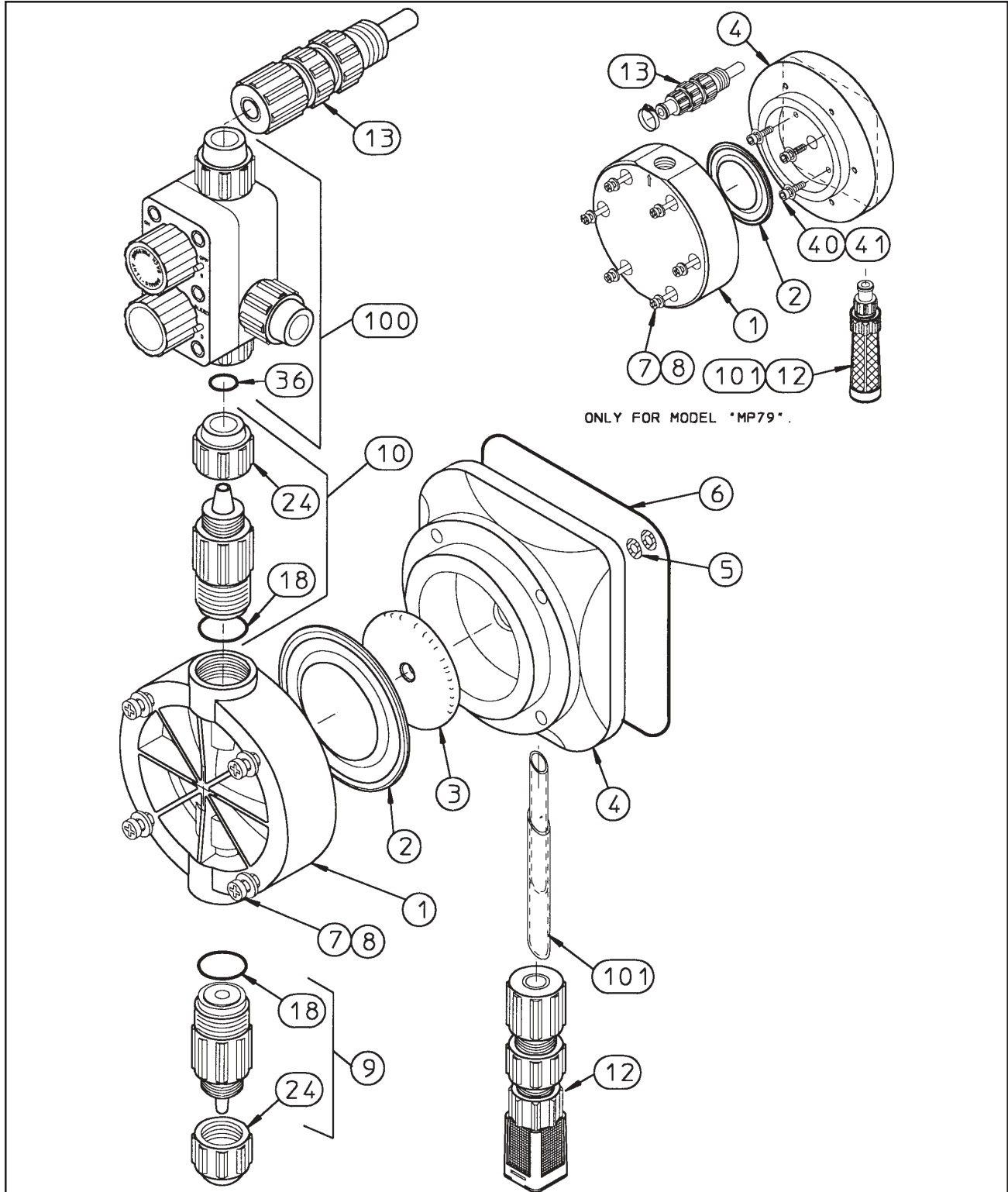
WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

PREMIA™ 75 MICRO SOLENOID METERING PUMP
- SIGNAL RELAY DRIVE ASSEMBLY - PARTS LIST

460.150.000.215B

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ONLY FOR MODEL "MP79".

NOTE: SEE DWG. 460.150.000.220B FOR PARTS LIST.

PREMIA™ 75 MICRO SOLENOID METERING PUMP - PUMP HEAD ASSEMBLY - PARTS

460.150.000.220A

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KEY NO.	QTY.	DESCRIPTION
1	1	PUMP HEAD
2	1	DIAPHRAGM
3	1	DEFLECTION PLATE
4	1	ADAPTOR
5	0-2	DIAPHRAGM SHIMS
6	1	O-RING
7	4-6	PUMP HEAD SCREWS
8	4-6	PUMP HEAD WASHERS
9	1	SUCTION VALVE CARTRIDGE ASSEMBLY
10	1	DISCHARGE VALVE CARTRIDGE ASSEMBLY
12	1	FOOT VALVE/STRAINER ASSEMBLY
13	1	INJECTION VALVE ASSEMBLY
18	2	O-RING
24	2	COUPLING NUT
36	1	O-RING
40	4	ADAPTOR SCREW
41	4	ADAPTOR WASHER
100	1	FIVE-FUNCTION VALVE
101	1	TUBE WAND

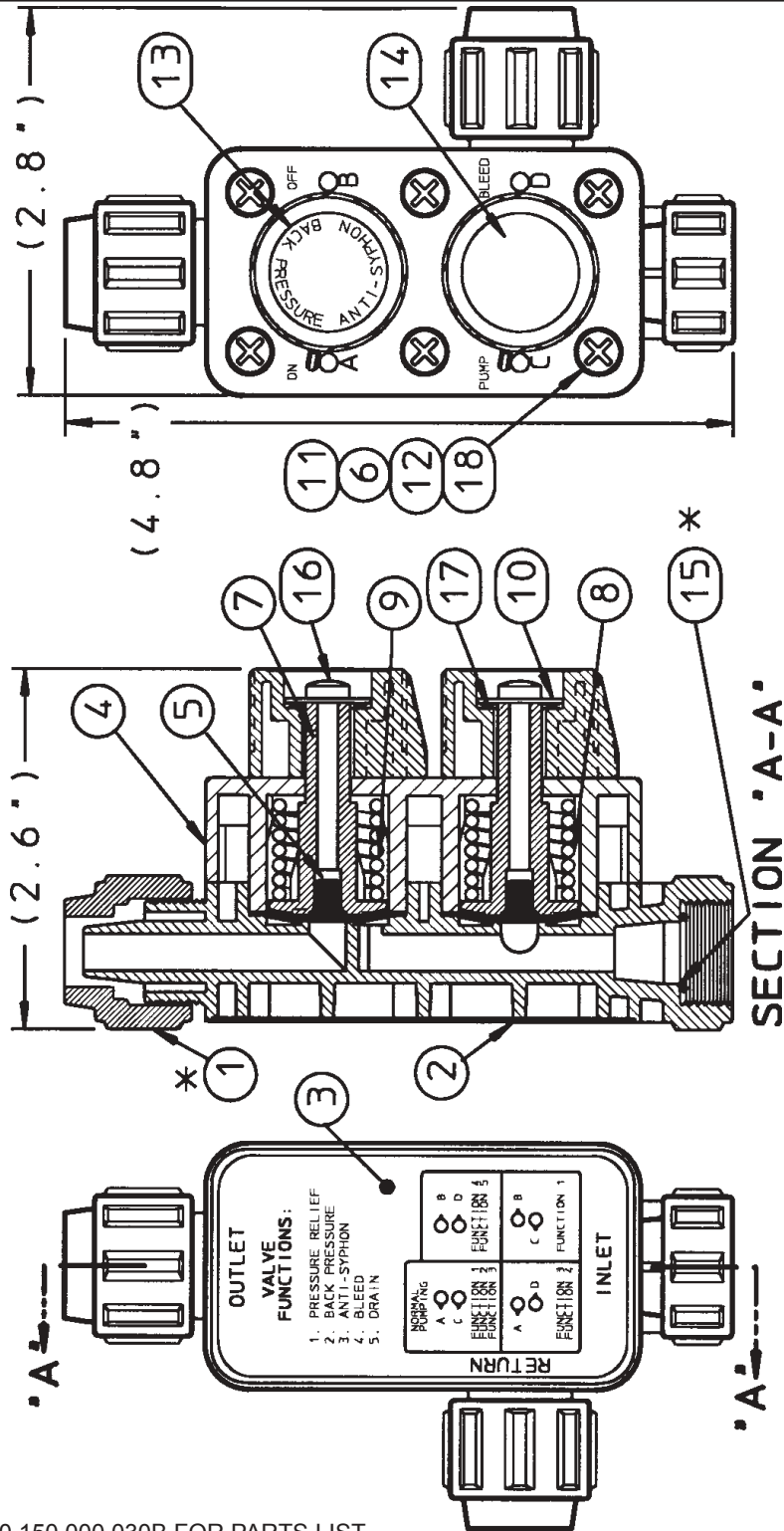
WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

PREMIA™ 75 MICRO SOLENOID METERING PUMP
- PUMP HEAD ASSEMBLY - PARTS LIST

460.150.000.220B

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PREMIA™ 75 MICRO



NOTE: SEE DWG. 460.150.000.030B FOR PARTS LIST.

PREMIA™ 75 SOLENOID METERING PUMPS
 - FIVE-FUNCTION VALVE ASSEMBLY - PARTS

460.150.000.030A

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KEY NO.	QTY.	DESCRIPTION
#1	2	COUPLING NUT, .38" OD (FPP) OR
	2	COUPLING NUT, .38" OD (PVD) OR
2	2	COUPLING NUT, .50" OD (FPP) OR
	2	COUPLING NUT, .50" OD (PVD)
	1	BODY, VALVE, .25" - NPT (FPP) OR
	1	BODY, VALVE, .25" - NPT (PVD) OR
	1	BODY, VALVE, .38" OD TUBE (FPP) OR
	1	BODY, VALVE, .38" OD TUBE (FPP) OR
	1	BODY, VALVE, .50" OD TUBE (FPP) OR
	1	BODY, VALVE, .50" OD TUBE (FPP)
3	1	LABEL, FIVE-FUNCTION
4	1	BODY BLOCK
5	2	DIAPHRAGM ASSEMBLY
6	6	FLAT WASHER
7	2	KNOB, ADJUSTMENT
8	1	SPRING, P.R.V., 50 psi OR
	1	SPRING, P.R.V., 100 psi OR
	1	SPRING, P.R.V., 150 psi OR
	1	SPRING, P.R.V., 250 psi
9	1	SPRING
10	2	FLAT WASHER
11	6	SCREW, FILLISTER #10-32 x 1.5" LG.
12	6	NUT, HEX #10-32 x .13" thk.
13	1	LABEL, KNOB (BLACK)
14	1	LABEL, KNOB 100psi (BLUE) OR
	1	LABEL, KNOB 150psi (GREEN) OR
	1	LABEL, KNOB 250psi (RED) OR
#15	1	LABEL, KNOB 50psi (BLACK)
	1	GASKET, O-RING, TFE
16	2	SCREW, SELF-TAP .75" LG.
17	2	SPRING, CURVED WASHER
18	6	WASHER, FLAT .091" thk.

REQUIRED FOR VALVES WITH TUBING CONNECTIONS ONLY.

FPP = GLASS-FILLED POLYPROPYLENE.

PVD = POLYVINYLIDENE FLUORIDE.

TFE = TEFLON.

WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

**PREMIA™ 75 SOLENOID METERING PUMPS
- FIVE-FUNCTION VALVE ASSEMBLY - PARTS LIST**

460.150.000.030B

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PREMIA™ 75 MICRO



SECTION 6 - PREVENTIVE MAINTENANCE KITS

The manufacturer has built a reputation for superior reliability by supplying carefully designed, high-quality equipment. Even the best equipment, however, requires a minimal amount of maintenance. PM kits are designed to guard against unnecessary downtime and assure you the highest level of efficient and uninterrupted service.

PM kits contain those recommended spare parts that will most likely require normal maintenance.

A typical PM kit includes Valve Cartridges with O-Rings, Head, Diaphragm, Secondary O-Ring Seal, Head Screws, Washers, and an exploded view drawing.

PM kits will save you money. When you need a part, you've got it! You can cut downtime and production loss from days to minutes. You also save by buying parts in PM kit form compared with buying individual parts.

Each PM kit part is vacuum-sealed to keep it clean, even when stored for long periods of time.

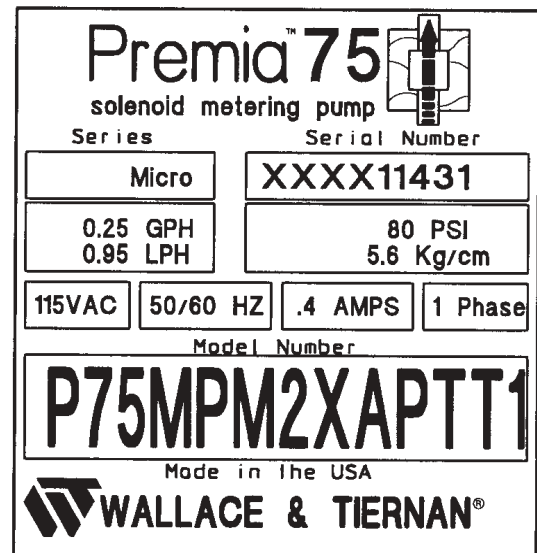
A PM kit is a troubleshooter's best friend. In the event of a breakdown, it will put you back in business fast! Preventive maintenance will ensure continuous high performance of your pump.

Keep on pumping! Get all the money-saving and security benefits of PM kits immediately.

SELECTING A PM KIT

The PM kit's part number is displayed on the pump model label as shown.

To order the proper PM kit model, begin with the letter "K" followed by the 2nd, 5th, 6th, 7th, and the 8th position of the pump model number.





PREMIA™ 75 MICRO



SECTION 7 - REPAIR SERVICE

Normally following the instructions in the previous sections of the manual will rectify any pump problems. If, however, after following these instructions the pump does not perform properly, it can be returned for repair. Please follow the instructions below:

1. Pump cannot be serviced properly if the original pump nameplate or data contained on the nameplate is not intact.
2. Thoroughly flush pumphead and outside of pump with water or a suitable fluid to neutralize any residual chemical left in pump.
3. Include written explanation of the following:
 - A) Problem _____
 - B) Pumped Fluid _____
Name _____
Viscosity _____
Fluid Temperature _____
 - C) Pressure @ Discharge _____
@ Suction _____
or @ Suction Lift _____
 - D) Environmental Temperature _____
 - E) Electrical Service _____
Volts _____
Hz _____
Phase _____
 - F) Nameplate Data _____
Series _____
Serial # _____
PM Kit # _____
4. Package the pump in the original box if available and send to the address specified by your pump supplier.