

MP-V450 TUBING PUMP MANUAL

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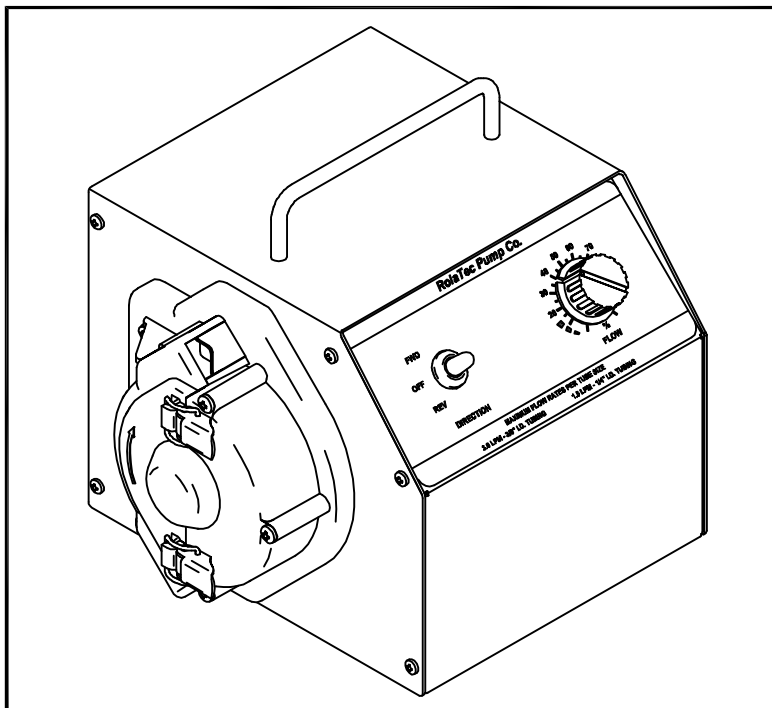
PUMP SPECIFICATIONS

Universal Input: 120 / 240 VAC, 60 Hz, 1.4 / 0.7 Amps, 1 Phase
24 VDC Gear Motor: 1/10 HP, 450 RPMs, Variable Speed
Forward-Off-Reverse Switch: Hesitation Center Position
Percentage Dial for Approximate Flow Settings: 20% - 100%
Maximum Flow Rate at 0 PSI: 7.8 LPM with 3/8" ID Tubing
Maximum Flow Rate at 20 PSI: 7.0 LPM with 3/8" ID Tubing
Size and (Weight): 9 1/2" x 10" x 10 1/2", (10 Pounds)

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MODEL MP-V450



1.0 SAFETY INSTRUCTIONS

When using electronic tubing pumps, basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury. More specifically, RolaTec pump model MP-V450 is not designed or intended for medical use in the treatment of patients and accordingly, has not been

submitted to or received FDA approval as a device for medical use. Also note that when pumping flammable or toxic fluids, the area should be properly ventilated. Failure to follow these instructions could result in serious injury or even death.

1.1 GENERAL SAFETY CONSIDERATIONS

Always wear protective clothing including gloves and safety goggles when working on or near the portable tubing pump.

Secure the tubing pump and any chemicals in an inaccessible manner away from children and pets.

Use only tubing that is specified for the pump and inspect it regularly for cracking or deterioration and replace as needed. Silicone tubing will last about 50 hours when pumping at maximum flow settings.

Make sure the voltage on the tubing pump matches the voltage at the outlet.

The pump is only splash proof, not weather proof or submersible.

Do not cut the plug or ground lug off of the electrical power cord.

1.2 SAFETY OPERATING PROCEDURES

Handle the pump with care. Dropping or heavy impact causes not only external damage to the pump, but also to electrical parts inside.

Never repair or perform maintenance to the pump while operating. Always disconnect electrical power.

When using the pump plugged in a continuous duty manner, do so in ambient temperature that doesn't exceed 100 Deg. F.

When using the pump in pressurized situations, make sure the pressure doesn't exceed the maximum pressure rating of the tube being used.

This pump is equipped with a power cord that has a grounding type three-prong plug. Only use a grounded receptacle when plugging the unit in. To disconnect, do not pull at the wire but grip the plug with our fingers and then pull it out. Do not use a receptacle in line with heavy electrical equipment. The surge voltage can cause failure of the electronic circuitry inside the pump.

Tubing pumps are designed to handle a variety of fluids which may contain chemicals that can cause irritation, illness or death if exposed to in an improper manner. Follow the manufacturer directions given with each type of chemical. Do not assume chemicals are the same because they look alike. We can not 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.

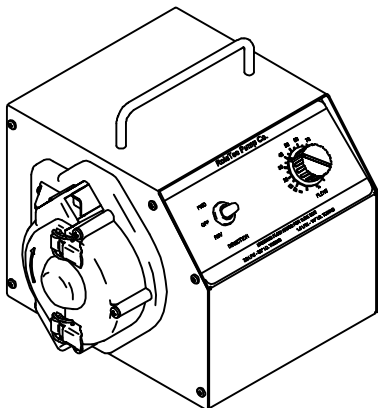
2.0 UNPACKING THE PUMP

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 the seller of the equipment.

Hang on to the shipping carton and packing materials after purchase. The carton and packing materials are needed to ship the product back for warranty matters or to obtain credit for any returns.

2.1 THE CARTON SHOULD CONTAIN

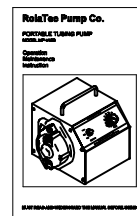
BENCH TOP PERISTALTIC PUMP



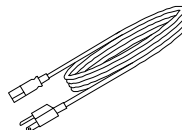
REGISTRATION CARD FOR WARRANTY



OPERATOR'S MANUAL



DETACHABLE POWER CORD



3.0 PRINCIPLE OF OPERATION

By peristaltic means, fluid being pumped is confined to just the tubing. Typical applications include sampling, metering, dispensing, and any sterile type fluid transfer where the pump will not contaminate the fluid or the fluid will not contaminate the pump. The Portable Tubing Pump is comprised of three major components: peristaltic pump head, tubing and portable drive

unit. The pump head's rotor assembly and hood is what directly interacts with the tubing to produce the flow. The tubing is placed between the rotor and hood where it is squeezed. The rollers on the rotor move across the tubing to push the fluid. The tubing then recovers its shape, creates a vacuum, and draws in more fluid.

3.1 PUMP HEAD FEATURES

Self Priming: The pump head has a maximum lift of 25 feet when using 1/4" ID tubing and 15 feet when using 3/8 ID tubing.

Rotor Assembly: Is removable for easy cleaning. The rollers have a dual bearing design for long life. The rotor is made of an engineering grade of thermal plastic material that is molded to precise tolerances for 1/8" wall tubing to increase tubing life and bearing life.

Spring-Loaded V-Clamps: Grip the outside of a tube to

prevent it from traveling through during operation. This feature eliminates the need for fittings. Fittings create dead space where particles and bacteria can accumulate. The V-Clamps automatically secure 1/2" to 5/8" O.D. tubes.

Pump Head Materials: Nylon, Stainless steel, Double shielded 52100 chrome steel ball bearings for the Removable Rotor; Black Glass-filled nylon for the Pump Base; Blue glass-filled nylon for the Cover and Hood

3.2 PUMP DRIVE UNIT FEATURES

Portable: 10 lbs. Bench Model.

24 VDC Motor: 1/10 HP, 2400 RPM (No Load), Permanent Magnet, Brush Type, Reversible. 5 - 1 speed reduction gearbox 450 rpm rotor speed.

Internal 150 Watt Universal Power Supply:Converts 120 VAC - 240 VAC, 60 Hz input to 24 VDC output to the motor.

Maximum Flow Rate @ 0 PSI Head Pressure: 7.8 LPM with 3/8" ID tubing, 3.8 LPM with 1/4" ID tubing.

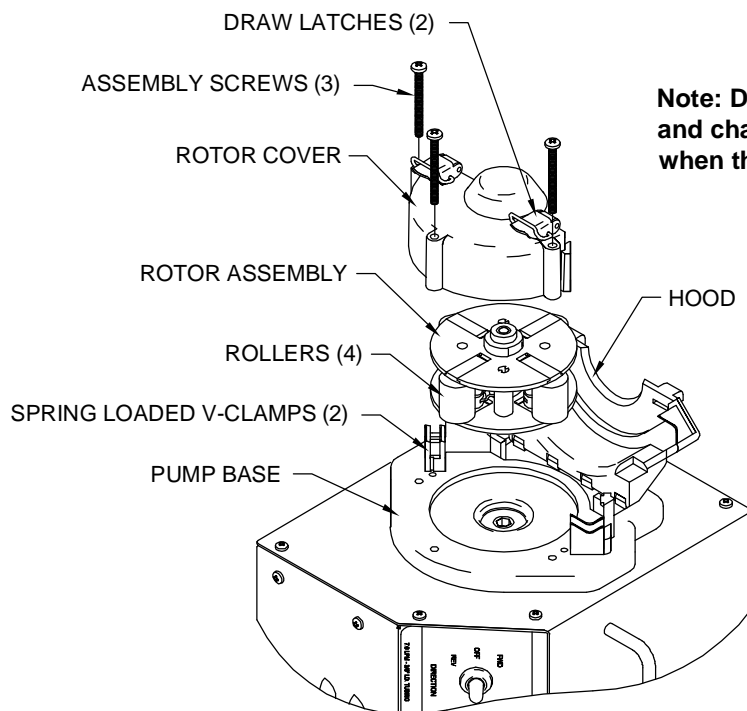
Maximum Flow Rate @ 20 PSI Head Pressure: 7.0 LPM with 3/8" ID tubing, 3.5 LPM with 1/4" ID tubing.

Current Draw @ 20 PSI Head Pressure: 3.0 amps @ 24 VDC when moving 7.0 LPM with 3/8" ID tubing.

24 VDC Cooling Fan: Moves 20 cubic feet of air per minute inside the unit. It only operates when the unit is plugged in.

Aluminum Enclosure: Has a tough powder coated paint finish. Is designed to protect internal electronics from liquid splashes from above only.

4.0 PUMP HEAD COMPONENTS AND CLEANING



Note: Disassembling the pump head and changing the tubing is easier when the unit is placed on its side.

4.1 PUMP HEAD CLEANING PROCEDURE

Note: Clean the pump and surrounding area immediately after any chemical spills. The spring-loaded mechanisms are constructed to maintain their original spring tension and free movement as long as the unit is kept reasonably clean.

Remove the Rotor Assembly: Rotate the unit on its side to make the pump head more accessible. Follow the assembly drawing in "Section 4.0" to remove the rotor for cleaning.

Rotate the unit upright: Then use a damp cloth or sponge to wipe the enclosure and pump base clean.

Note: The unit is only splash resistant when upright.

Cleaning the Rotor Assembly: Never disassemble the rotor, just remove it. Rinse the removed rotor with warm water until it is clean. Dry immediately with compressed air if available. Assemble the pump head when completed.

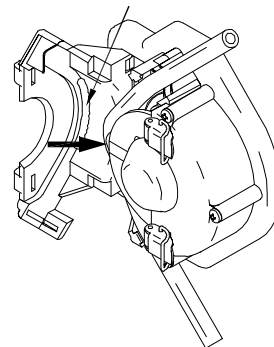
5.0 TUBING REPLACEMENT

STEP 1

With the Hood open, position a Roller until centrally located as indicated by the large arrow. Place a tube over the Spring Loaded V-Clamps and around the centrally positioned roller at its middle height.

To increase tubing life, apply synthetic grease to the upper inside corner of the hood as show on the right. We suggest purchasing a 3-oz tube of food-grade synthetic grease with PTFE from McMaster-Carr Supply Co., Part #1378K31. Phone: 630-833-0300

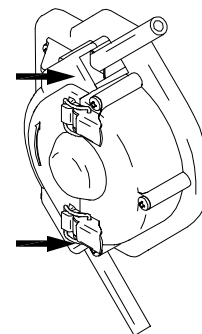
Apply synthetic grease to the upper inside corner of the hood.



STEP 2

With the tube in place, drive the Hood down as indicated by the arrows. Then secure the Hood with both Draw Latches.

Note: If the hood is difficult to latch, the tubing may have moved partially over the top of a roller thus causing interference. Make sure the tubing is positioned to the side of the roller before closing the hood.



STEP 3

After closing the hood, pull the tube until it moves 1/8" to 1/4" through the pump as indicated by the large arrow. This is done to remove tubing slack within the pump head.

When placing harder tubing in the pump, greater torque is required to start rotor movement. Set the flow control to 100% for initiating rotation. After orientating the rotor, you may stop the pump and set the desired flow setting.

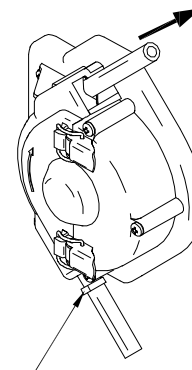
The flexible tubing may slowly travel through the pump during operations above 10 psi head pressure if not secured with a 'Hose Clamp'. To avoid such movement, mount the Hose Clamp around the outside diameter of the tubing next to the inlet side of the pump head.

McMaster-Carr 'Snap-Grip Hose Clamp' Part Numbers

Ph: 630-833-0300, (20 per package)

5246K64 for 1/4" ID x 1/2" OD tubing

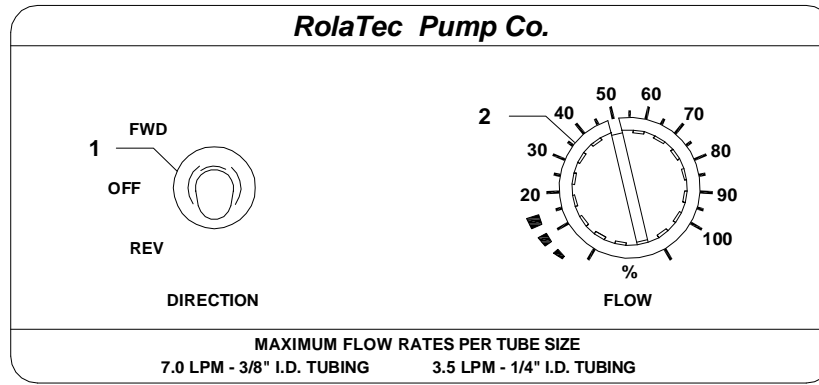
5246K66 for 3/8" ID x 5/8" OD tubing



HOSE CLAMP

Note: Too small of a clamp will restrict flow.

6.0 CONTROL PANEL DESCRIPTION



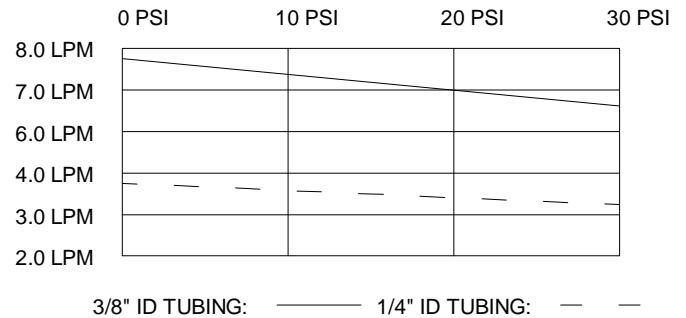
- 1) Direction Switch with Hesitation Center:** Sets the direction of flow through the tubing. The arrow on the pump hood is direction of flow when switched to forward.

This switch has a hesitation center that prevents operation of the lever through the center or Off position until pressure is momentarily relieved. The switch should be to the Off position before plugging the unit in.

- 2) Flow Adjustment Knob:** To obtain approximate flow rates, use the "Maximum Flow Rates Per Tube Size" information listed on the control panel along with the adjustment knob. For example, when using 3/8" I.D. tubing and 3.5 LPM of flow is required, align the knob's indicator notch to the 50% graduation, (50% of 7.0 LPM is 3.5 LPM). The flow rates are based upon pumping water at 70 F. with outlet flow restricted 20 psi.

FLOW RATE CHART

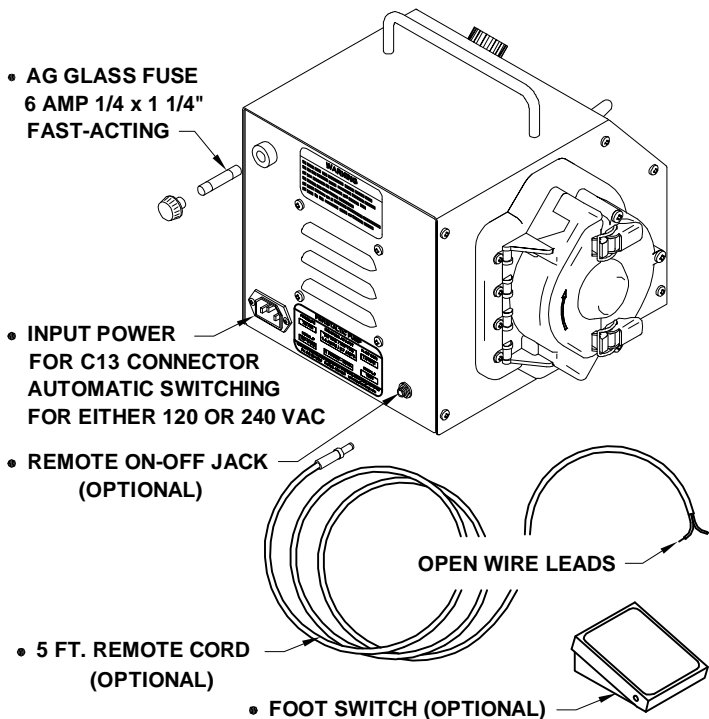
FLOW RATE WITH OUTLET RESTRICTED 0 - 30 PSI HEAD PRESSURE



Flow rates based upon using 1/8" wall 65 durometer tubing.

Note: Flow will decrease substantially when pump head pressure goes above 30 psi. Flow will also decrease if pumping viscous fluids. For precise flow needs, calibrate the settings for your particular operating conditions.

7.0 POWER CONNECTION & OPTIONAL REMOTE JACK



The Input Power Jack accepts the C13 type connector of the Detachable Power Cord that comes with the pump. The cord has a standard 120 VAC grounded plug for wall connection.

The pump's internal power supply is a universal type that will accept either 120 or 240 VAC single phase power. International power cords are an option with the proper 240 VAC / 60 Hz wall plug.

7.1 OPTIONAL REMOTE ON-OFF JACK

The Remote On-Off Jack is an option for pump model **MP-V450-R**. Included with this model is a 5 Foot Remote Cord.

This is a switching jack that opens the circuit to the motor when the male plug of the cord is inserted into the jack. The 2 leads from the end of the cord need to be connected to activate a power relay inside the enclosure to start the motor. The pump operates normally from the control panel when the plug isn't inserted into the jack. Switching devices for remote on-off operation could be the Foot Switch(Shown) or a timer unit.

The Remote On-Off Jack with the Foot Switch is an option with model **MP-V450 -FS**. The Foot Switch has a spring return normally open circuit that closes when the pedal is pressed down.

8.0 TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
FAILURE TO PUMP AT SPECIFIED FLOW RATES	<ol style="list-style-type: none"> 1. The tubing was not properly installed. 2. Using the wrong size tubing. 3. Pumping a viscous fluid or the flow is restricted on the outlet side of the tubing. 4. The tubing is wore out. 5. Operating the pump with tubing that is too stiff or thin. 6. There is an electronic malfunction. 	<ol style="list-style-type: none"> 1. Refer to section 5.0, Tubing Replacement. 2. Measure the inside dia. of the tube being used then see 6.0, Control Panel Description, Item 3. 3. For precise flow requirements, calibrate the flow settings for your particular operating conditions. 4. Contact the seller for tubing replacement. 5. Use specified tubing. Visit www.rolatecpump.com and click on the Tubing Selection link. 6. Contact RolaTec.
ROTOR WILL NOT ROTATE WHEN SWITCHED TO FORWARD OR REVERSE	<ol style="list-style-type: none"> 1. The tubing was not properly installed. 2. Attempting to operate the pump with tubing that is too stiff or thick. 3. There is an electronic malfunction. 	<ol style="list-style-type: none"> 1. Refer to section 5.0, Tubing Replacement. 2. Use specified tubing. Visit www.rolatecpump.com and click on the Tubing Selection link. 3. Check the 6 amp fuse before contacting RolaTec.
TUBE LIFE IS VERY SHORT	<ol style="list-style-type: none"> 1. The tubing was not properly installed. 2. The chemical solution being pumped is not compatible with the tubing material. 	<ol style="list-style-type: none"> 1. Refer to section 5.0, Tubing Replacement. 2. Visit www.rolatecpump.com and click on the Tubing Compatibility link for proper material.

9.0 POLICIES AND PROCEDURES

If the pump was purchased from RolaTec Pump Co., then contact RolaTec directly for service matters, warranty work and returns. RolaTec reserves the right to update pricing and design without notice.

9.1 MANUFACTURER'S PRODUCT WARRANTY

The manufacturer warrants its product to be free of defects in material or workmanship. Liability under this policy extends for 2 years from the date of purchase. The manufacturer's liability is limited to repair or replacement of any device or part, which is returned, prepaid, to the factory and which is proven defective upon examination. In no event shall the manufacturer's liability exceed its selling price of such device.

The manufacturer disclaims all liability for damage to its products through improper maintenance, use or attempts to operate such products beyond their functional capacity, intentionally or

otherwise, or any unauthorized repair. Replaceable tubing is expendable and is not covered by any warranty either expressed or implied. The manufacturer is not responsible for consequential damages, injuries or expense incurred through use of its products. Contact RolaTec before attempting any questionable function.

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

9.2 RETURNS FOR REPAIR, WARRANTY OR CREDIT

Contact the distributor to obtain a Return Authorization (RA) number for any returns requiring repair, warranty work or if returning entire product for credit. The distributor may ask that the pump be shipped directly to RolaTec Pump Company. No returns for credit will be accepted beyond 30 days after the date of purchase. All items must be present with a copy of the invoice or receipt. Credits are based upon the acceptance of materials

as being new and unused by the inspection people of the manufacturer. The buyer will only be reimbursed a maximum of 90% of the purchase price due to restocking fees. All returns must be properly packaged, free of hazardous chemicals and have the freight prepaid. Type or print the issued RA number just below your return address. Have the following information ready before contacting the distributor:

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Billing and a ship-to address 2. Model and serial number 3. Contact name and phone number | <ol style="list-style-type: none"> 4. Reason for return 5. Invoice number |
|--|---|