

SPECIFICATIONS:

Flow:	120 milliliters to 2.2 liters per minute
Fluid Viscosity:	0 to 200 centipoises
Suction Lift:	3 meters wet, 10 centimeters dry
Acceptable Fluid Temperatures:	-40 to 93 °C
Acceptable Tubing:	All types
Tubing Size:	Inside diameter of nominal 4.8 mm ($\frac{3}{16}$ inch)
Wetted Parts:	Dupont Delrin, 304 Stainless Steel, Viton, Dupont Teflon
Motor:	12 Volt DC Variable
Adaptor:	U.L. 120 VAC, 60 Hz, 47 W
Duty cycle:	Intermittent
Size:	20.3 x 12 x 11.5 cm (8 x 4 $\frac{3}{4}$ x 4 $\frac{1}{2}$ inches)
Weight:	454 grams (1 pound)

CAUTION: Prior to use, a 'Chemical Resistance Chart' should be used to insure that wetted pump parts will not be affected by chemical being pumped.

MAXIMUM FLOW RATES AT DIFFERENT HEAD PRESSURES

PSI	Ft H2O	ml/min	fluid oz/min
0	0	2,200	78
5	12	2100	75
10	23	1750	63
15	35	1250	45
20	46	350	13

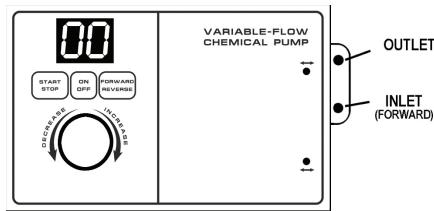


Figure 1. Control Panel

CONTROL PANEL

Start/Stop: Starts the pump running and stops the pump. In Timer setting mode use to set seconds.

On/Off: Power on or off. In Timer setting mode use to set minutes.

Forward/Reverse: Controls the direction of flow. Disabled when running. In Timer setting mode use to set hours.

Decrease/Increase adjustment knob: Use to adjust numerical settings, flow rate and time.

Top Directional flow LED indicator (FORWARD)

Bottom Directional flow LED indicator (REVERSE)

GENERAL INFORMATION

Variable flow Pump is a bidirectional, self-priming pump for precise-flow deliveries. The flow is proportionate to the speed of the pump head and the inside diameter of the tubing. A variable speed flow control provide fine resolution with a wide range of flow rates. Pump is powered by a 12-volt wall adapter that plugs into a wall receptacle.

SETUP

Using AC plug, insert plug into power outlet, and press ON/OFF button to power on unit.

OPERATION

- Slide one piece of tubing over the barbed outlet pump fitting. Place the other end of the tubing into the vessel to be filled.
- Power on the unit by pressing the ON/OFF button.
- Press FORWARD/REVERSE button to choose the pump flow direction. The LED (E/F) will light to indicate which direction pump is pumping.
- Press START/STOP button (A) to activate pump head.
- The flow rate can be varied for precise delivery by rotating the variable Decrease/Increase knob (D). Selecting a higher reference number increases the revolutions per minute and the flow rate of the pump.

TO CHANGE FLOW DIRECTION

- If the pump is pumping, press START/STOP to stop the pump.
- Press the FORWARD/REVERSE button to change the direction of the flow.
- Then press START/STOP again to start the flow.

NOTE: The pump must be stopped in order to change flow direction.

TROUBLESHOOTING

- If the pump sounds like it is pumping, but no liquid is moving, do the following. Prime the pump by placing some liquid into the barbed inlet fitting. This can be done by squeezing a short piece of tubing filled with liquid, an eyedropper, a bulb filled with liquid, blowing into a short piece of tubing filled with liquid, or using a syringe.
- If the pump has been pumping at high speed for sometime, the regulator chip may overheat and shut the unit down. Turn the pump off and allow it to cool down.
- If the pump makes no sound when turned on, make certain there is power to the outlet and the power supply is plugged in.

CAUTION: Pump is engineered to provide years of satisfactory service if handled properly. Here are a few precautions:

- Do NOT run the pump in reverse for long periods of time. This will shorten the life of the motor.

- This product is not designed for nor intended for use in patient-related applications.

BUILT-IN COUNTDOWN TIMER CONTROLLER

TO SET TIME IN SECONDS

1. Stop the pump if in operation.
2. Using the DECREASE/INCREASE knob set display to desired time in seconds.
3. Leave pump powered on and unplug from wall outlet.
4. While holding the START/STOP button, plug unit into the wall.
5. This will store the displayed value into the seconds counter.

TO SET TIME IN MINUTES

1. Stop the pump if in operation.
2. Using the DECREASE/INCREASE knob set display to desired time in minutes.
3. Leave pump powered on and unplug from wall outlet.
4. While holding the ON/OFF button, plug unit into the wall.
5. This will store the displayed value into the minutes counter.

TO SET TIME IN HOURS

1. Stop the pump if in operation.
2. Using the DECREASE/INCREASE knob set display to desired time in hours.
3. Leave pump powered on and unplug from wall outlet.
4. While holding the FORWARD/REVERSE button, plug unit into the wall.

5. This will store the displayed value into the hours counter.

NOTE: Time stored can be from 0 to 99 Hours 99 Minutes 99 seconds.

TO CLEAR THE TIME

1. Stop the pump if in operation.
2. Using the DECREASE/INCREASE knob set the display to "00".
3. Leave pump powered on and unplug from wall outlet.
4. While holding the START/STOP button, plug unit into the wall.
5. This will store the displayed value into the Seconds, Minutes, and Hours.

Note: LED will flash when a countdown event is programmed.

WARRANTY OR SERVICE

For warranty or service, contact:

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VARIABLE FLOW CHEMICAL TRANSFER PUMP INSTRUCTIONS

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