Pump IV (Model 3389)—Medium/High Flow

SPECIFICATIONS

- Type: Variable flow, self-priming, peristaltic pump
- Flow control: Variable
- Flow rates: Pump I—Ultra Low Flow: 0.005 to 0.900 ml/min, Pump II—Low Flow: 0.03 to 8.20 ml/min, Pump III—Medium Flow: 0.4 to 85.0 ml/min, Pump IV—Medium Flow: 4.0 to 600 ml/min
- Silicone tubing temperature range: -40 to 500°F (-42 to 260°C)
- Motor: 12 VDC variable
- Case: ABS plastic
- Dimensions: 6 x 4 x 4.5/" (18.6 x 12.0 x 11.5 cm)
- Weight: 1/2 lb (567 g)
- Power: 120 V, 50/60 Hz

CONTROL PANEL

A. Start/Stop: Starts the pump running and stops the pump.
B. On/Off: Power on or off. In Timing setting mode use to set minutes.
C. Forward/Reverse: Controls the direction of flow. Disabled when running. In Timing setting mode use to set hours.
D. Decrease/Increase adjustment knob: Use to adjust numerical settings, flow rate and time.
E. Directional flow LED indicator (FORWARD)
F. Directional flow LED indicator (REVERSE)

GENERAL INFORMATION

Variable flow Mini-Pump is a bidirectional, self-priming peristaltic pump for precise low-flow deliveries. The squeezing action of the rollers on the tubing progressively moves fluid through the tubing in advance of the rollers, resulting in a peristaltic pumping action. The flow is proportionate to the speed of the pump head and the inside diameter of the tubing, both of which can be varied. A variable speed flow control and five different sized tubing assemblies provide fine resolution with a wide range of flow rates. Mini-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

1. Release the protective transparent cover by depressing the tab on the plastic retaining clip located at the bottom of the cover. The hinged cover can then be raised to gain access to the pump head and tubing assembly.
2. Take the tubing assembly (plastic fittings and attached tubing) and wrap the tubing around the pump head (white roller). Slide each plastic slotted fitting into each metal slotted U-shaped retaining bracket.
3. Attach tubing to the barbed fittings on the pump.
4. Power on the unit by pressing the ON/OFF button.
5. Press FORWARD/REVERSE button to choose the pump flow direction. The LED (UL) will light to indicate which direction pump is pumping.
6. Press START/STOP button (A) to activate pump head.
7. 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.
8. Select a tubing size with a mid-range for the expected flow rate.
9. To extend tubing life, select a tubing size with the largest diameter possible for the desired output and operate pump at lower speeds (without stalling the pump). If too large a diameter tubing is selected, and the pump is set at too slow a speed, the pump motor may stall or stop.
10. The tubing in the tubing assembly will eventually wear out and must be replaced. To replace tubing read the following sections: “Tubing Assemblies,” “Tubing,” etc.

NOTE: If very accurate flow control is important, allow the pump to operate for approximately 20 minutes to condition the tubing.

TO CHANGE FLOW DIRECTION

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

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

CAUTION: Mini-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.
- Do NOT manually turn the pump head. Turning the pump head manually will damage the pump gears.
- Do NOT touch the pump head while it is running.
This product is not designed for nor intended for use in patient-related applications.

TUBING ASSEMBLIES

- Tubing I.D. Approx. Tubing Length Approx. Flow Rate
  - 0.5 mm  3.25"  83 mm  0.005 – 0.013 ml/min
  - 0.8 mm  3.55"  89 mm  0.008 – 0.03 ml/min
  - 1.6 mm  4.25"  108 mm  0.05 – 0.17 ml/min
  - 2.0 mm  4.5"  114 mm  0.08 – 0.36 ml/min
  - 4.8 mm  5.0"  127 mm  0.35 – 0.96 ml/min
  - 6.4 mm  4.375"  111 mm  0.38 – 1.80 ml/min
  - Not supplied with pump

Tubing II—Low Flow

- Tubing I.D. Approx. Tubing Length Approx. Flow Rate
  - 0.5 mm  3.25"  83 mm  0.03 – 0.05 ml/min
  - 0.8 mm  3.55"  89 mm  0.04 – 0.14 ml/min
  - 1.6 mm  4.25"  108 mm  0.25 – 0.8 ml/min
  - 2.0 mm  4.5"  114 mm  1.0 – 3.7 ml/min
  - 4.8 mm  5.0"  127 mm  1.7 – 4.6 ml/min
  - 6.4 mm  4.375"  111 mm  1.8 – 9.2 ml/min
  - Not supplied with pump

Tubing III—Medium Flow

- Tubing I.D. Approx. Tubing Length Approx. Flow Rate
  - 0.5 mm  3.25"  83 mm  0.2 – 0.8 ml/min
  - 0.8 mm  3.55"  89 mm  0.8 – 2.2 ml/min
  - 1.6 mm  4.25"  108 mm  3.0 – 12.0 ml/min
  - 2.0 mm  4.5"  114 mm  5.0 – 20.0 ml/min
  - 4.8 mm  5.0"  127 mm  17.0 – 60.0 ml/min
  - 6.4 mm  4.375"  111 mm  18.0 – 85.0 ml/min
  - Not supplied with pump

Tubing IV—Medium/High Flow

- Tubing I.D. Approx. Tubing Length Approx. Flow Rate
  - 0.5 mm  4.75"  121 mm  6 – 12 ml/min
  - 0.8 mm  5.375"  137 mm  20 – 90 ml/min
  - 1.6 mm  5.5"  140 mm  40 – 280 ml/min
  - 2.4 mm  5.375"  137 mm  80 – 600 ml/min
  - Slightly shorter tubing reduces the diameter by stretching the tubing and reducing the flow. The flow rate can be reduced slightly by cutting the tubing slightly shorter than indicated by the chart.

NOTE: The lengths given are for silicone tubing only, other tubing may require slightly shorter or longer lengths. The flow rates listed are for silicone tubing supplied with Mini-Pump.

For best results—
- Select a tubing size with a mid-range for the expected flow rate.
- To extend tubing life, select a tubing size with the largest diameter possible for the desired output and operate the pump at lower speeds (without stalling the pump). If too large a diameter tubing is selected, and pump is set at too slow a speed, the pump motor may stall or stop.

TUBING ASSEMBLY REMOVAL

1. Release the protective, transparent cover by depressing the tab on the plastic retaining clip located at the bottom of the cover. The hinged cover can then be raised to gain access to pump head and tubing assembly.
2. The tubing assembly is held in place by a slotted tube-lock at each end which is fastened securely by friction fit in a metal U-shaped retaining bracket.
3. Grasp the tubing (white round slotted part) on each side of the retaining bracket, and remove it by lifting upward.
4. Remove the other tube-lock in the same manner.

PREPARATION FOR INSTALLATION (TUBING ONLY)

1. After removing the tubing assembly, slide the slotted tube-lock on each end away from the barbed fittings. Remove the barbed fittings and tube-locks from the tubing, discarding the tubing.
2. Prepare a new length of tubing for installation by sliding a tube-lock over the end of the tubing. Insert a fitting to the end of the tubing. Make certain to slide the tubing over the barbed portion of the fitting. Repeat this procedure for the other end of the tubing.
3. The tubing assembly is now ready for installation.

TUBING ASSEMBLY INSTALLATION

1. Press one slotted tube-lock into the metal U-bracket.
2. Feed the tubing around the pump head (stretching the tubing slightly to ensure a good wraparound fit).
3. Press the second tube-lock into the other metal U-bracket.
4. Slip the second end of the tubing assembly into the other U-bracket with the washer to the right of the bracket.
5. Feed the tubing around the pump head (stretching the tubing slightly to ensure a good wraparound fit).
#3384, #3385 and #3386

3372 . . . . . 1/16-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3384, #3385 and #3386

3373 . . . . . 3/32-inch I.D. Silicone tubing and fittings/nipples (fitting 
            color coded red inside) for Cat. #3384, #3385 and #3386

3374 . . . . . 3/16-inch I.D. Silicone tubing and fittings/nipples (fitting 
            color coded blue inside) for Cat. #3384, #3385 and #3386

3375 . . . . . 1/4-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3384 and #3385

3376 . . . . . 1/4-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3386

3381 . . . . . 1/16-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3389

3382 . . . . . 3/32-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3389

3383 . . . . . 3/16-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3389

3384 . . . . . 1/4-inch I.D. Silicone tubing and fittings/nipples for Cat. 
            #3389

ACCESSORIES

Control Cat. No. 3280 Tight-Seal™ Hose/Tubing Clamp Assort-
ment includes 5 each of 13 different sizes. Clamps have an inside 
diameter of 0.246 to 1.610 inches. Clamps securely fasten tubing 
on connectors, pumps, glassware, and filtration units. Chemical-
corrosion-resistant, rustproof, and nonconducting nylon is ideal for 
use in wide-temperature range of 32 to 194°F.

Control Cat. No. 3285 Tight Ties™, Cable Ties Assortment 
includes 400 ties with lengths from 4 to 14 inches. One-piece, 
self-locking ties are made of chemical-corrosion-resistant, rustproof, 
and nonconducting nylon, ideal for use in wide-temperature range of 
-40 to 185°F.

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, SERVICE OF RECALIBRATION

For warranty, service, or recalibration contact:

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Control Company is ISO 9001:2008 Quality-Certified 
by DNV and ISO/IEC 17025:2005 accredited as a 
Calibration Laboratory by A2LA.