1. INTRODUCTION

The Peristaltic Pump **RH-P100VS-100** is a single channel pump for the use in laboratory and extensively in industrial applications where accurate flow rate is essential. Pumping action is done by a roller cage driven by stepper motor. The motor and internal are almost independent of temperature. This pump has load and line compensation circuit. The rollers are made up of carbon filled nylon for trouble free operation. The electronic circuit provides constant flow rate even there is line voltage or load variation.

2. CHECK LIST

Items included in the packing

1. Peristaltic Pump model **RH-P100VS-100** - 1 No.

2. 230v,4 A Power chord with 3 pin plug - 1 No

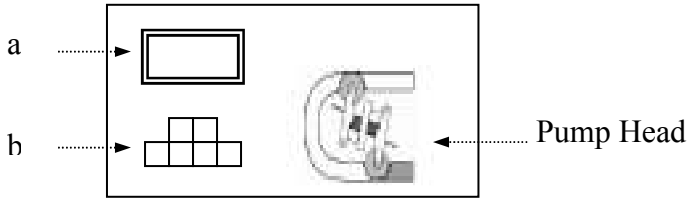
3. Connector for External Speed control - 1 No.
   (by 4 to 20mA current signal)

4. Tubing - 1 Mtr

5. Spare Fuses (1 Amps) - 2 No's

3. GENERAL DESCRIPTION

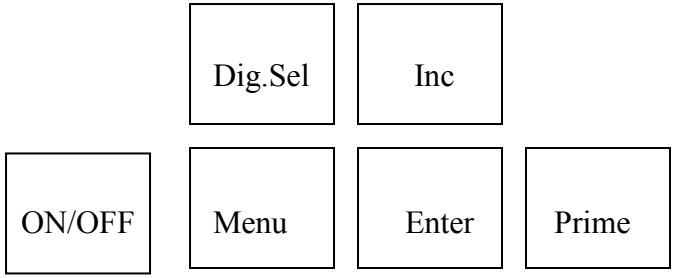
3.1.Front Panel



a. LCD Display

This Eight character Single Line Liquid Display will show the RPM and Timer values.

b. Key Pad



1. ON/OFF
2. MENU
3. DIG.SEL
4. INC
5. ENTER
6. PRIME

Brief Description of the functional keys

1. ON/OFF

Using this key the pump can be switched ON/OFF. The ON condition is indicated by a glowing LED.

2. Menu

This is used to select the RPM, ON time, Interval time etc.

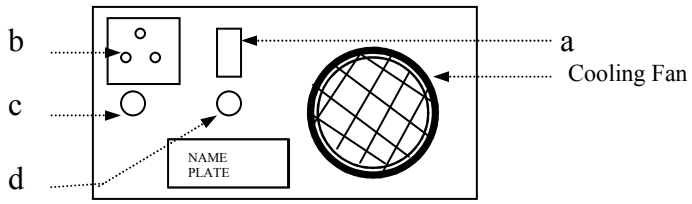
3.DIG.SEL, 4.INC & 5.ENTER

These switches are used to set the desired flow rate and timings

6.PRIME

By keeping this switch in pressed condition the pump can be run at its maximum speed. This switch will work only when the pump is in OFF condition

3.2 .Rear Panel



a. Mains ON/OFF Switch

This switch is used to **ON/OFF** the A.C .Supply to the pump. It has built in indication.

b. A.C.Main socket

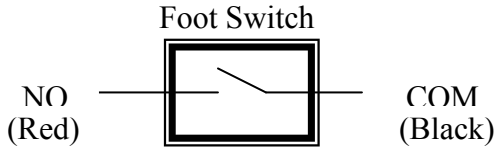
This socket accepts the supply of A.C.230v, 50Hz.Suitable power chord is provided with the pump.

c.Fuse

Protects the electronics and the motor in case of short circuiting. The Fuse rating is 1 Amps.

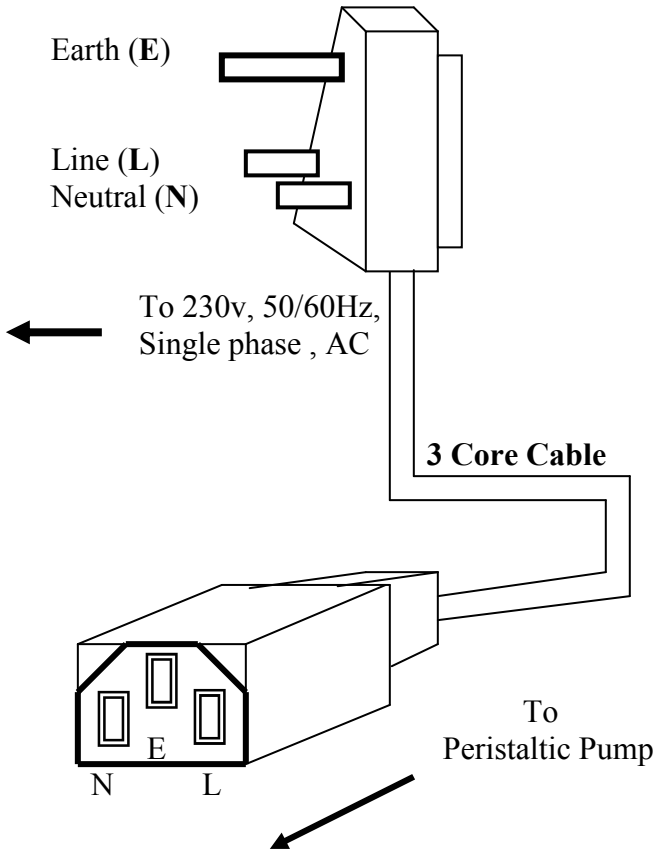
d. Foot Switch Terminal

The NO and Com points from the foot switch can be connected to this terminal, for external control.



4. OPERATION

Ensure Proper Earth for the Pump



4.1. General

Before start running ensure the following

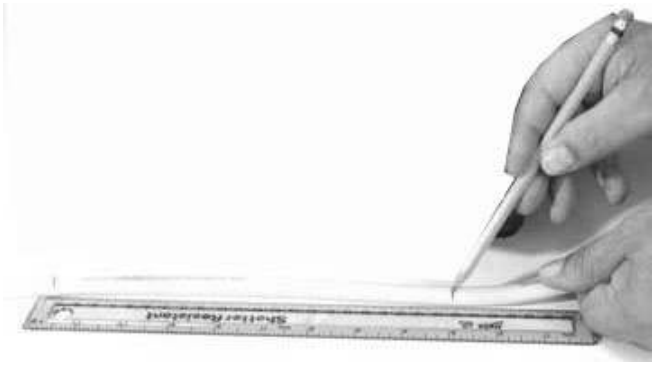
- Track and rollers should be clean
- Use suction and delivery pipe lines as equivalent to or larger than the diameter of pump tubing to minimise the friction losses.
- Delivery and Suction lined as short as possible. Minimise the number of bends.

4.2 Tube Selection

User should select appropriate tubing, which is compatible with the transferring medium chemically and physically.

4.3 .Loading the tube

Fitting the tube in the roller cage is a straight forward procedure requiring no specialised knowledge or expertise.



1. Mark 140 mm in the tubing. Ensure the marks should be present in the outside of the tube holders (top and bottom) after tube loading

2. Pull back the tube holding lever in the suction side, insert the tube and release the lever.



Step - 1 Step - 2 Step - 3

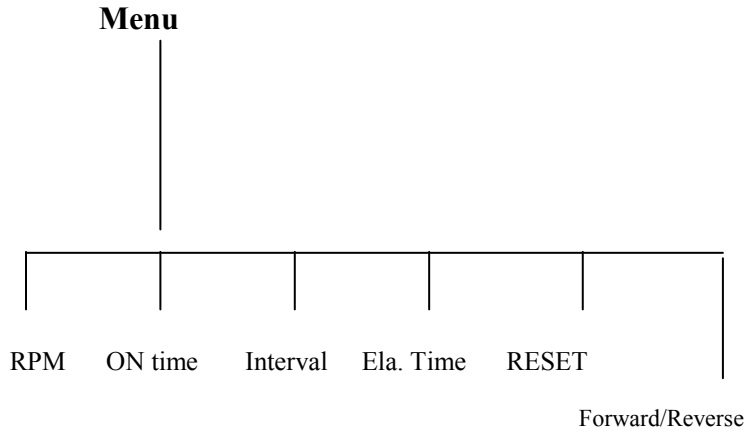
3. Rotate the roller cage in the clockwise direction so that the tube is automatically in its path.

4.Fit the tube in the delivery side of the tube holding mechanism as described in suction side.

5.Start the motor and confirm the smooth rotation of the rollers over the tube.

NOTE: The rollers are set for 1mm wall thickness tubes. If 1.5 mm wall thickness tube has to be used, Tighten the screws provided in the sides of both the roller holding plates uniformly by using the screw driver. Tighten the screws until required pumping pressure is achieved.

4.4. MENU FUNCTIONS



1. RPM - Speed – 00.01 to 99.99

2. On Time - 01 Min. to 99 Hours, 59 Mins.

3. Interval - 00.1 Sec. to 99.9 Sec.

4. Ela.Time - Elapsed Time- Et. 99:59 (Max.)

5. RESET - It reset the elapsed time

6. Forward/Reverse - This function is used to change the direction of rotation of the rotor

a. FLOW RATE SELECTION

1. RPM selection

The flow rate can be varied by changing the speed. The speed of the pump head can be varied from **0.01 to 99.99**. The approximate flow rate can be selected by using the output per revolution given below for various tubes.

The approximate **ml/rev**.:
1 mm I.D. - 0.15 ml
2 mm I.D. – 0.35 ml
3 mm I.D. - 0.85 ml

The RPM for the required flow rate can be calculated as follows

$$\text{RPM} = \frac{\text{Flow rate(ml/min)}}{\text{ml/rev}}$$

Example:

1. For a flow rate of **8.5 ml/min in 3mm** I.D.tubing

$$\text{RPM} = \frac{8.5}{0.85} = 10.0 \text{ (App.)}$$

The exact quantity of the flow with respect to the RPM has to be measured at the actual environment. Using this output calculate the exact output per revolution and use this calibrated value for further settings.

2. RPM setting

1. Press the 'Menu' key, using the 'Inc' key, select the '- RPM -' and press 'Enter'.

2. Using 'Dig.Sel'. switch, select the digit in the four digit value.

3. The selected digit will blink.

4. When the digit is blinking, use the Inc. Key to change the value from 0 to 9 as required.

5. Then press the dig.sel. key once again to select the next digit and set the desired value as mentioned in points 2,3 & 4.

6. After the completion of **RPM** entry, press 'Enter'.

b. SETTING THE ON TIME

The ON TIME can be varied from 1 min to 99 hours. To set the required ON TIME follow the procedure mentioned below.

1. Press the 'Menu' switch and select the 'On Time' mode using the 'Inc' key.

2. Using the Dig.Sel. switch select the the digit in the four digit value.

3. The selected digit will blink.

4. When the digit is blinking, use the Inc. Key to change the value from 0 to 9 as required.

5. Then press the dig.sel. key once again to select the next digit and set the desired value as mentioned in points 3 & 4.

Note:

If the Timer value is set at 00.00, then the pump will run As a normal Peristaltic Pump with manual ON/OFF

c. SETTING THE INTERVAL

The Interval time can be varied from 00.1 to 99.9 Sec. To set the required Interval time, follow the procedure mentioned below.

1. Press the 'Menu' switch and select the 'Interval' mode using the 'Inc' key.

2. Using the Dig.Sel. switch select the the digit in the three digit value.

3. The selected digit will blink.

4. When the digit is blinking, use the Inc. Key to change the value from 0 to 9 as required.

5. Then press the dig.sel. key once again to select the next digit and set the desired value as mentioned in points 3 & 4.

Note:

If the Interval time is set at 00.0, Manual 'ON' is required after the completion of ON time for the next cycle.

5. MAINTENANCE

The peristaltic pump **RH-P100VS-100** does not require any regular service or maintenance other than replacement of worn-out tubing.

It is advisable to replace the tubing after 300 to 500 Hours depending upon the environment ,to minimise the risk of tubing breakage during operation.

6 .LUBRICATION

No lubrication is required as the internal mechanisms are lubricated for life. Lightly lubricate the rollers whenever it is necessary. External lubrication of tubing is recommended for longer life of the tube. Silicon grease(midland silicon MS4 or equivalent)can be used with advantage on all materials except silicon rubber. Glycerin and other non-solvent lubricants can be applied to silicone rubber and other elastomers.

7. TECHNICAL SPECIFICATIONS

No.of channel	:	One
Speed	:	00.01 to 99.99 RPM
Flow Rate	:	6ml to 3.6 Ltr./hr
Tubing	:	1 to 3 mm I.D
		with 1 or 1.5 mm wall thickness
On Time	:	1 min to 99 hours,59 Mins.
Interval Time	:	00.0 to 99.9 Sec
Motor	:	DC Stepper Motor(Cont.Duty)
Supply	:	230v +/- 10%,50Hz A.C.
Temp. range	:	0 to 50 deg.C
Dimension	:	130 x 225 x 290mm (H x W x D)
Weight	:	6 Kgs.(Approx.)

PERISTALTIC PUMP

MODEL RH-P100VS-100

USER'S MANUAL

RAVEL HITEKS PVT.LTD.,
150-A,ELECTRONIC INDUSTRIAL ESTATE
PERUNGUDI,CHENNAI –96
PH.:044-24960825, 24961004 FAX.: 4204 9599
e-mail: technical@ravelhiteks.com
Web.: www.ravelhiteks.com