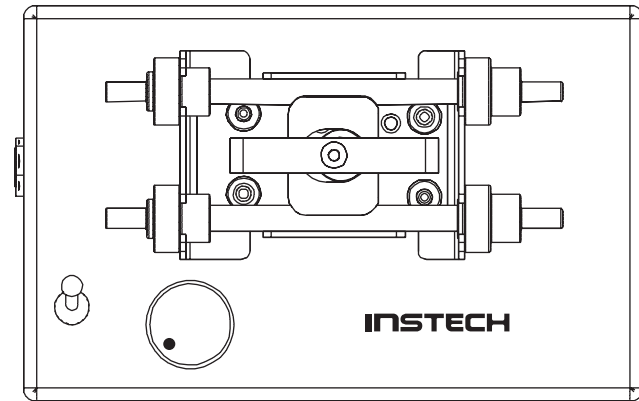


INSTECH

Model S21P Shuttle Pump

Operating Instructions



INSTECH

The equipment behind the science.

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prod docs/pumps/S21/S21pman.qxp 4/19/05

NOTE: This pump is for laboratory use only.
It is not intended for use on humans.

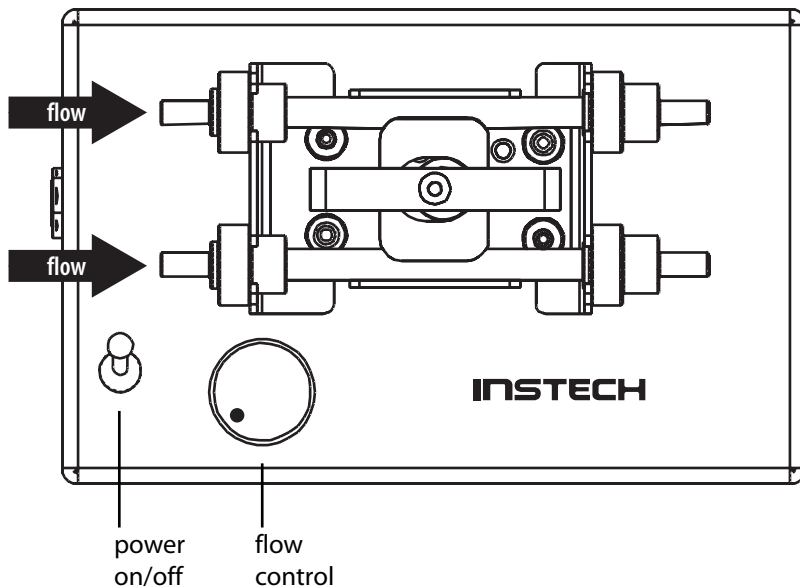
Description

Instech's incredibly efficient shuttle pumps were originally designed to deliver nutrients to cell culture experiments conducted on the Space Shuttle, where space and power consumption are significant constraints.

These pumps use a patented oscillating shuttle mechanism (pat. no. 5,415,532) to move fluids at rates from 2 to 35 ml per minute. Because pump tubes are not squeezed to occlusion, fluids will free flow in the forward direction. The gentle pulsing action of these pumps is ideal for blood, cell suspensions, and abrasive slurries.

This pump features Instech's MC50 motor control circuitry which will maintain constant speed under varying loads.

With power consumption in the 100 milliwatt range, these pumps are hundreds of times more efficient than conventional peristaltic pumps. Tube sets should last much longer than tube sets in peristaltic pumps because the mechanism does not grind away at the tubing.



Set Up and Operation

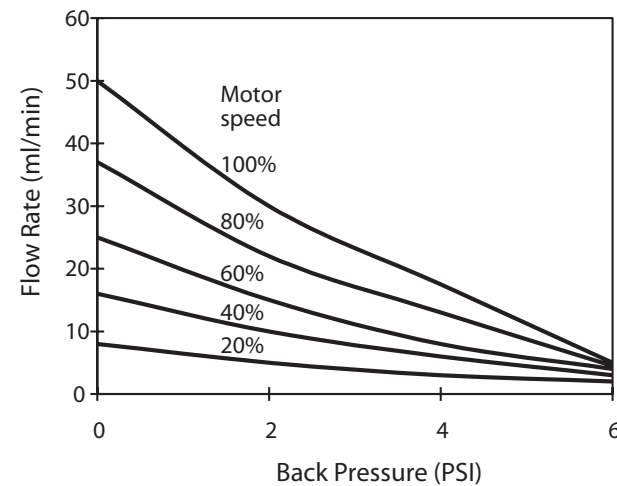
Install the tube sets by inserting one end and then stretching the tube to engage the other end. Note that the valve seats are of different diameters so that the sets can be installed in one direction only.

Connect user-supplied 1/8in ID tubing to create a dual channel pulsatile pump with a maximum flow of approximately 20 ml/min per channel, or 'Y' the two channels together to create a single channel pump with a maximum flow of approximately 35-40 ml/min. The flow will be less pulsatile when the channels are combined.

The unit is powered by a wall-mounted 12V adapter or an internal 9V backup battery. The top speed with the 12V adapter will be higher than the top speed under battery power.

Flow Characteristics

Note: rates are approximate; max flow typically 35-40 ml/min



Replacement Parts

Please call us or visit www.instechlabs.com for the latest pricing.

Part No.	Description	Unit
S21/TS	Long-life tube sets for S20 or S21 shuttle pumps	pkg of 2
5190-10-0034	Replacement US-type 12V power adapter	ea