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Precision Syringe Pumps

Pump 33 Twin Pump for Continuous Flow



Reciprocal/Parallel Mode - Syringe mechanisms can run in the same or opposite directions (i.e. both infusing/withdrawing at the same time or one infusing and the other withdrawing)

Proportional Mode - Different flow rates and syringe diameters can be set for each syringe mechanism

AutoStop Mode - Pump stops operation when a limit switch is activated.

Continuous Run Mode - When a limit switch is activated each syringe mechanism reverses direction.

The pump has high pressure capability and TTL and RS-232 interface for data acquisition and control. The communication ports enable daisy-chaining of up to 100 pumps.

- Two independent pumps in a single package
- Operate each pump independently at its own flow rate to either infuse or withdraw
- Synchronize the two pumps for all types of exchange procedures and dilutions of identical amounts
- Deliver or withdraw continuously, 24 hours a day
- 2 year warranty

Specifications

Type	Microprocessor dual drive, single syringe, infusion/withdrawal
Accuracy	±.35%
Reproducibility	±0.1%
Syringe sizes:	
Minimum	0.5 µl
Maximum	140 ml
Flow Rate:	
Minimum	0.0004 µl/hr
Maximum	106.6 ml/min
Non Volatile Memory	Storage of all settings
RS-232	RJ11-4 conductor
TTL	9-pin connector
Average Linear Force	57 lbs
Drive Motor	2 motors, each 0.9° stepper motors
Motor Drive Control	Microprocessor controlled from 1/2 to 1/4 microstepping
Motor Step per Revolution of Lead Screw	1600 at 1/2 stepping or 3200 at 1/4 stepping
Step Rate:	
Minimum	27.3 sec/step
Maximum	416.7 µsec/step
Pusher Travel Rate:	
Minimum	0.726699 µm/min
Maximum	95.25 mm/min
Power	45 W, 1.0 A fuse
Voltage Range	95 to 130 VAC, 60 Hz; 220 to 260 VAC, 50 Hz, selectable
Dimensions, H x W x D	15.2 x 31.1 x 28.6 cm (6 x 12.5 x 11.25 in)
Weight	6.8 kg (15 lb)

The Harvard 33 Syringe Pump offers continuous infusion or withdrawal, 24 hours a day, 365 days a year with the accuracy and low flow of a Harvard syringe pump.

The Harvard 33 Syringe Pump is a breakthrough in pumping technology. The 33 has two independent pumping channels linked through hardware and software. When combined with a valve box, it provides the continuous delivery of a peristaltic or piston pump with the accuracy, absence of pulsation and low flow rates of a syringe pump.

The Harvard 33 Twin Syringe Pump opens up whole new pumping possibilities. These are some of the applications of this pump:

- The injection of dyes, perfumes and flavoring in industrial applications
- Applications with liquids or viscous materials in micro-manufacturing
- Continuous injections of reactants into reactor vessels
- Simultaneous samplings from two sites
- Continuous injection for long term toxicology testing

Several modes of operation are available to accommodate a range of setups and experimental protocols. A unique movable limit switch mechanism is used to change direction or stop operation of the pump depending on the mode of operation.

Catalog No.	\$	Product
NP 55-3333		Harvard 33 Twin Syringe Pump

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