

## ***Pump '33' Double Syringe 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 RS232 interface for data acquisition and control. The communication ports enable daisy-chaining of up to 100 pumps.

- Two independent pumps in a single casing
- Two stepper motors; two lead screws
- Operate one pump with the other idle
- 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

### Specifications

Type	Microprocessor dual drive, single syringe, infusion/withdrawal
Accuracy	±1%
Reproducibility	±0.1%
Syringe sizes:	
Minimum	0.5 µl
Maximum	140 ml
Flow Rate:	
Minimum	0.0004 µl/hr
Maximum	106.6 ml/min

The Harvard '33' offers continuous infusion or withdrawal, 24 hours with the accuracy and low flow of a Harvard syringe pump.

The Harvard '33' Double Syringe Pump is a breakthrough in pumping technology. The Harvard '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' 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
CGS 8095.63	Harvard '33' Double Syringe Pump