

## Description

Eight models of Pipetman continuously adjustable digital pipette cover the entire volume range from 0.1  $\mu\text{L}$  to 10 mL. The P-200-M8 eight-channel Pipetman is also available, with a volume range of 20–200  $\mu\text{L}$ , for convenience when using 96-well plates.

Pipetman pipettes are not limited to fixed volume increments — 5  $\mu\text{L}$  or 10  $\mu\text{L}$ . They can be set to any volume, e.g. 6.6, 133.3, 377, 2228  $\mu\text{L}$ .

Piston stroke is set by adjusting a micrometer coupled directly to a digital volume indicator, which reads in microliters. The digital volume indicator simplifies volume setting and virtually eliminates calculation errors.

All Pipetman models have a highly polished stainless steel piston, patented polyethylene seal, and neoprene compression o-ring. Pipetman models require no routine lubrication for long, trouble-free service.

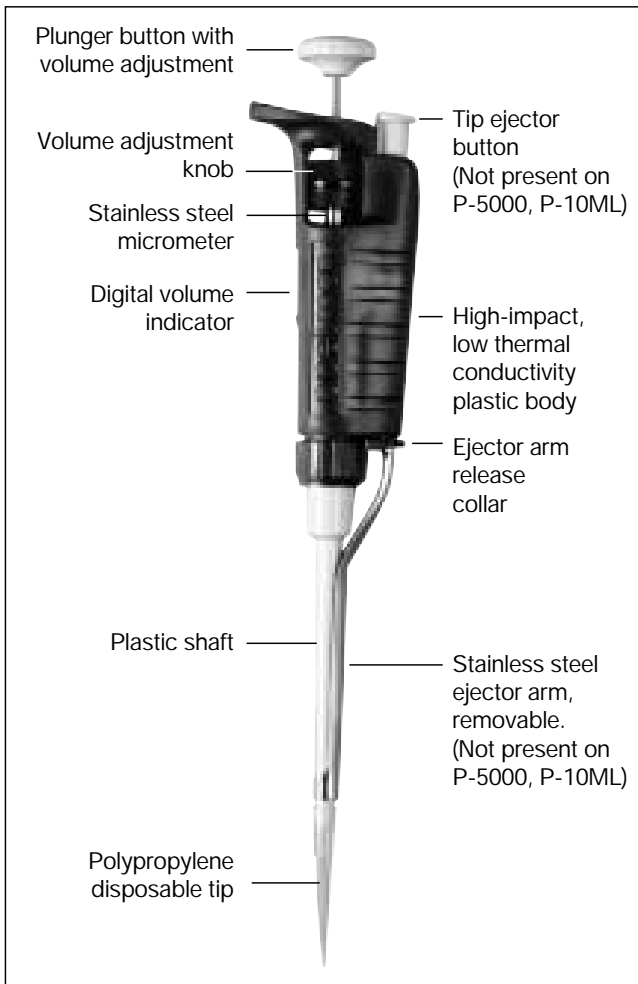


Figure 1 Pipetman P-200

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A stainless steel tip ejector is provided with all models except P-5000 and P-10ML, for safe disposal of used tips. The ejector can be removed by pulling on the plastic collar on the ejector arm. Reattachment is quick and easy.

## Autoclaving

The shaft and tip ejector are autoclavable: 121°C, 1 bar, 15–20 minutes. (P-5000, P-10ML do not use tip ejectors.)

## Volume Indicator

The digital volume indicator is read from top to bottom. For P-2, P-10, P-20, P-100, and P-200, black digits indicate microliters and red digits tenths and hundredths of microliters. For P-1000 and P-5000, red digits indicate milliliters and black digits microliters. For P-10ML, black digits indicate milliliters and red digit tenths of a milliliter.

Sample values, volume ranges, and smallest increments for each Pipetman model are shown below:

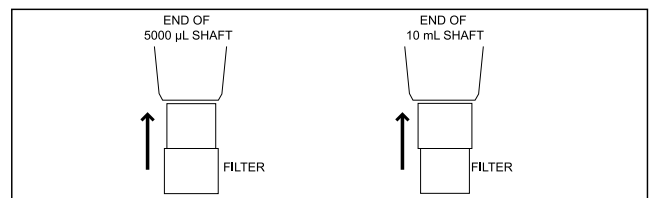
P-2	P-10	P-20	P-100	P-200	P-1000	P-5000	P-10ML
1	0	1	0	1	0	1	0
2	7	2	7	2	7	2	7
5	5	5	5	5	5	5	5
1.25 $\mu\text{L}$	7.5 $\mu\text{L}$	12.5 $\mu\text{L}$	75 $\mu\text{L}$	125 $\mu\text{L}$	0.75mL	1.25mL	7.5mL

Pipetman Model	Range ( $\mu\text{L}$ )		Smallest Increment $\mu\text{L}$
	Adjustable	Recommended	
P-2	0 to 2	0.1 to 2	0.002
P-10	0 to 10	0.5 to 10	0.02
P-20	0 to 20	2 to 20	0.02
P-100	0 to 100	10 to 100	0.2
P-200	0 to 200	50 to 200	0.2
P-1000	0 to 1,000	100 to 1,000	2.0
P-5000	0 to 5,000	500 to 5,000	2.0
P-10ML	0 to 10,000	1 mL to 10 mL	20.0

## Safety Filter, P-5000 and P-10ML

Models P-5000 and P-10ML use a safety filter in the end of the shaft to help prevent liquid entering the shaft and contacting the piston, should the plunger be allowed to snap up during aspiration. This is particularly important using large volumes. If the filter gets wet, replace it.

For P-5000 insert the small diameter into the shaft; for P-10ML insert the large diameter into the shaft. Part numbers are 6190-164 (pack of 100) and 6190-165 (pack of 1000).



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## Operation

There are two ways of setting volume on Pipetman pipettes: with the volume adjustment knob, or by turning the plunger button. Both give exactly the same results.

### Volume Setting using Plunger Button

- 1a. Hold Pipetman in one hand. With thumb and forefinger, turn the plunger button counterclockwise until the volume indicator is  $\frac{1}{3}$  revolution above the desired setting, then turn slowly clockwise until the desired volume shows on the indicator.

### Volume Setting using Volume Adjustment Knob

- 1b. Hold Pipetman in one hand. With the other hand, turn the volume adjustment knob counterclockwise so the volume indicator is  $\frac{1}{3}$  revolution above the desired setting, then turn slowly clockwise until the indicator shows the desired volume.
2. ALWAYS dial down to the desired volume. This prevents mechanical backlash from affecting accuracy. If you pass the desired setting, turn the dial  $\frac{1}{3}$  revolution higher than desired and reset the volume. The friction ring prevents unintentional volume changes.
3. Attach a new disposable tip to the pipette shaft. Press only enough to make a positive airtight seal.
4. Press the plunger to the FIRST STOP. This part of the stroke is the volume displayed on the indicator.
5. Holding Pipetman vertically, immerse the tip into the sample to the proper depth; see page 5.
6. Allow the pushbutton to return slowly to the UP position. Never let it snap up!
7. Pause briefly to ensure that the full volume of sample is drawn into the tip.
8. Withdraw the tip from the sample liquid. If any liquid remains on the outside of the tip, wipe it carefully with a lint-free tissue, avoiding the tip orifice.
9. To dispense sample, touch the tip end against the side wall of the receiving vessel and depress the plunger slowly to the first stop.  
Wait: 1 second\* (P-2, P-10, P-20, P-100, P-200)  
1-2 seconds\* (P-1000)  
2-3 seconds\* (P-5000, P-10ML)  
\* Longer for viscous solutions.  
Then press the plunger to the SECOND STOP (bottom of stroke), expelling any residual liquid in the tip.
10. With the plunger fully pressed, withdraw Pipetman from the vessel carefully, tip against the vessel wall.

11. Allow the plunger to return to the up position.
12. Discard the tip by depressing the tip ejector button. A fresh tip should be used for each sample to prevent sample carryover.

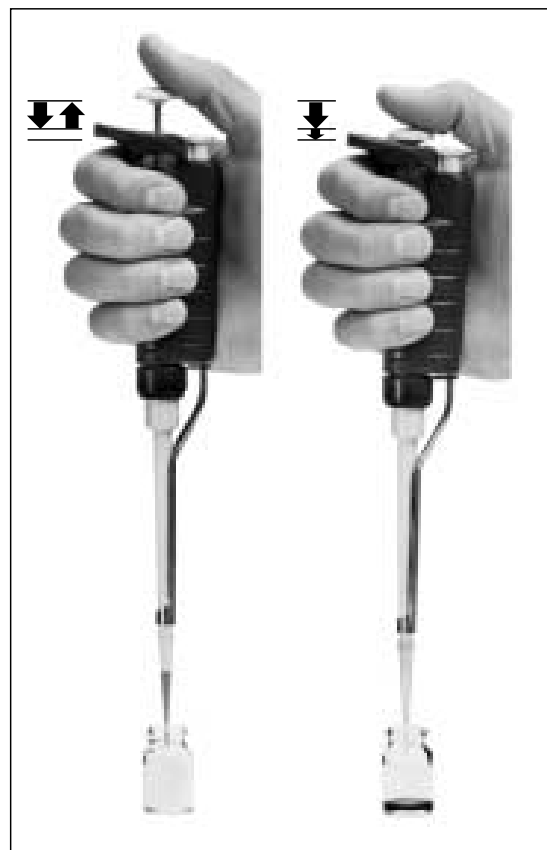


Figure 2 Operating Pipetman

## Tip Selection

- Tips must seal properly on the shaft to assure an airtight seal and avoid leaks or poor accuracy.
- Tips must be soft and flexible so that the shaft is not scratched or worn prematurely.
- Tips must be free from microscopic flash and particulates. Flash gives poor precision and accuracy.
- The tip orifice must be the correct size, and orifice size and geometry must be consistent from tip to tip. Otherwise, accuracy and precision will be affected.
- Interior and exterior surfaces must be clear, smooth, and hydrophobic to avoid retention of liquid. Too much retention results in poor accuracy and reproducibility.