



- ENVIRONMENTAL CHAMBER FOR HUMIDITY CONTROL
- PROGRAMMABLE AIR PRESSURE
- MEMORY STORAGE FOR UP TO 100 PROGRAMS
- WRITE PROTECTION AND DATE STAMP FOR EACH PROGRAM
- TWO SYMMETRICAL PIPETTES WITH EACH PULL
- TWO COOLING MODES: TIME AND DELAY
- PRE-PROGRAMMED SAMPLE PROGRAMS FOR INTRACELLULAR AND PATCH PIPETTES. SPECIAL PROGRAMMING ON REQUEST
- RAMP TEST TO ESTABLISH PROGRAM HEAT SETTINGS WHEN A NEW FILAMENT OR GLASS IS INTRODUCED
- VACUUM FLUORESCENT DISPLAY
- CONSTANT CURRENT POWER SUPPLY FOR FILAMENT AND PULL SOLENOID



## P-97 FLAMING/BROWN™ MICROPIPETTE PULLER

The **P-97** Flaming/Brown™ type micropipette puller is ideal for fabricating micropipettes, patch pipettes and microinjection needles. While retaining many of the features of earlier models, the **P-97** offers improvements in mechanical, electronic and software design. The result is better control of the pulling process and a higher degree of reproducibility. The **P-97** combines a proven mechanical system with a sophisticated, programmable microprocessor controller. This programmable control of the pulling parameters allows the investigator to design application specific pipettes from a wide range of glass compositions and sizes.

A number of other features have been incorporated in the design of the **P-97**. Most apparent is the environmental chamber which surrounds the heating filament. This environmental chamber is designed to minimize the effect of changing humidity on the reproducibility of pulled pipettes. A 25% increase in power over previous versions allows for the use

of larger heating filaments, larger diameter glass and multi-barrel glass. The metal jaws that clamp the heating filament have also been redesigned to minimize heat retention. There are two modes of cooling: time and delay. The delay mode provides extended cooling for large diameter and multi-barrel glass. A spring-loaded clamping mechanism has been added for easier loading of glass. A vacuum fluorescent display has been added that allows easy viewing.

Software improvements on the **P-97** include a display of the total heat-on time to assist in program development and troubleshooting. Up to 100 programs can now be written and stored in memory, which makes the **P-97** suitable for multiple users. These programs can now be write-protected, adding security to prevent programs from being changed or altered inadvertently. The display shows the last date and time the program was written or edited. In addition, the air pressure is a programmable parameter.

**P-97**  
Flaming/Brown type micropipette puller, glass stop, manual, and hard copy of Sutter Pipette Cookbook

Each puller comes with a FB255B filament and a sample box of BF150-110-10, BF100-50-10, and BF150-86-10 glass. Sutter pre-programs the P-97 with a 2.5mm box filament unless an alternative filament is requested.

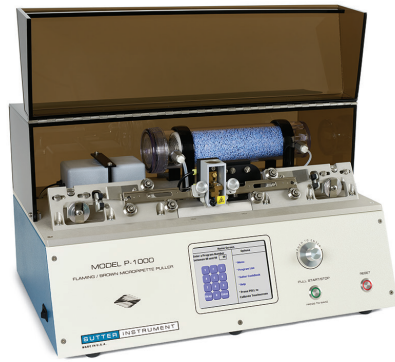
\* Patent No. 4,600,424



**SUTTER INSTRUMENT**

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P-1000



P-97

## SUTTER INSTRUMENT P-1000 / P-97 COMPARISON

Features	P-1000	P-97	Notes
Tip Size Range	0.06 $\mu\text{m}$ –3 $\mu\text{m}$	0.06 $\mu\text{m}$ –3 $\mu\text{m}$	Two identical pipettes with the same taper length and same tip size.
Taper Length Range	3 mm–15 mm	3 mm–15 mm	For longer or shorter tapers, contact Sutter Technical Support.
Two Identical Pipettes	Yes	Yes	To make overall length identical, please purchase and install the optional Glass Stop (part # GS) onto your puller bar.
Program Looping	Yes	Yes	4–5 loops is ideal for thick walled glass, while 2–3 loops is ideal for thin walled glass.
Multi-line Programming	Yes	Yes	The P-1000 has an additional feature “Line Repeat” (see below).
Humidity Control Chamber	Yes	Yes	This chamber is purged with dry air before and after the pull to remove humidity and control for the ambient conditions in the lab.
100 Program Spots	Yes	Yes	Ideal for labs with multiple users.
Two Cooling Modes: Time & Delay	Yes	Yes	Delay mode is recommended when making patch pipettes with thick walled glass.
Program Lock	Yes	Yes	On the P-1000, the PROGRAM LOCK feature is on the Menu Screen of the program.
Safe Heat Mode	Yes	No	The SAFE HEAT mode helps prevent filament burn-out.
Pipette Cookbook	Yes	No	The PIPETTE COOKBOOK can be used to search for a program that is appropriate for the filament installed in your puller, the glass dimension you are using, and your application.
Programming Touch Screen Display	Yes	No	The color TOUCH SCREEN DISPLAY provides an intuitive interface that allows more information to be displayed.
Temperature Sensor	Yes	No	The JAW TEMPERATURE SENSOR helps define ideal pulling conditions.
Pre-heat Mode	Yes	No	The <b>ThermoLock™</b> technology in the PRE-HEAT mode assures that the jaws have reached a specific temperature before the glass is pulled. This can increase the stability of the program from pull to pull.
Copy & Paste Function	Yes	No	The COPY & PASTE feature simplifies writing and editing a program.
Line Repeat	Yes	No	The LINE REPEAT feature simplifies writing multi-line programs.
Ramp Test Specific to Each Program	Yes	No	The RAMP TEST VALUE is linked and specific to each program.
Diagnostics	Yes	No	The DIAGNOSTIC feature can be used to check the Heat, Pull, Velocity Sensor, and Air/Cooling System functions of the puller.
Error Messages & Warnings	Yes	No	The P-1000 will alert the user if a system error occurs when pulling a pipette (filament burn-out, air leak, failed to melt glass, etc).
Pull Results	Yes	No	The PULL RESULTS feature displays the heat-on times line by line for the last two pulls.
Glossary	Yes	No	The GLOSSARY is a built-in dictionary of terms associated with the pipette puller.

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