

Operation Manual for the Drummond Pipet-Aid[®] Elite[™] 400

**This equipment is for indoor use only.
Minimum environmental conditions are:**

Altitude:	Up to 2000 m
Temperatures:	5°C to 40°C
Humidity:	80% for 31°C decreasing linearly to 50% at 40°C
Mains Fluctuations:	±10%
Installation:	Category II
Pollution:	Degree 2

Made in USA
by

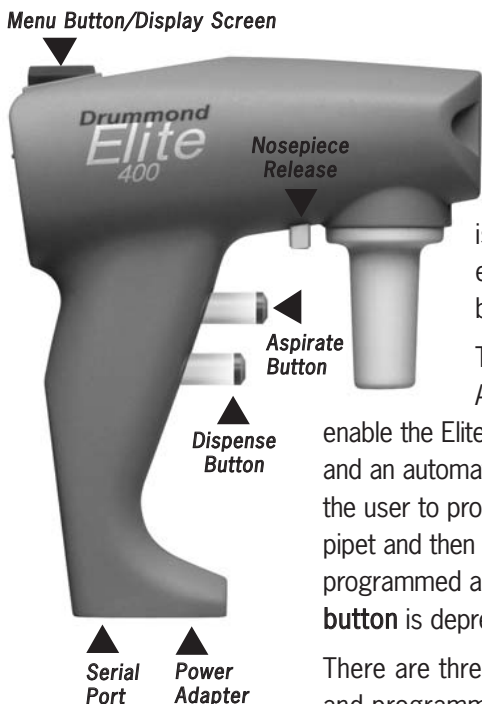


CAUTION: CAREFULLY READ THROUGH THIS ENTIRE MANUAL BEFORE USING YOUR NEW PIPET-AID. PAY CLOSE ATTENTION TO THE RULES FOR SAFE OPERATION WARNINGS AND CAUTIONS.



Programming and Operation Instructions for the Pipet-Aid® Elite™

Introduction



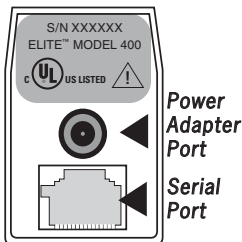
The Drummond Pipet-Aid Elite 400 is a programmable Pipet-Aid designed to be very accurate and easy to use. Programming is intuitive and cross training is so easy that everyone in the lab can be using it within minutes.

Two modes of operation are available.

A manual mode [F1F1] which will enable the Elite to function like a standard Pipet-Aid and an automatic mode [F4F4] which will enable the user to program an aliquot volume, fill the pipet and then automatically dispense the programmed aliquot each time the **dispense button** is depressed.

There are three controls used for operating and programming: the **aspirate button**; the **dispense button**; and the **menu button** which also functions as the **Display Screen**.

A menu is displayed on the **menu button/Display Screen**. Depressing the **aspirate button** will cause the menu items to scroll upwards and depressing the **dispense button** will cause the menu items to scroll downwards. When the cursor is pointed to the desired function on the **Display Screen**, press the **menu button** to select. If additional selections are required, prompts will appear on the **Display Screen**. Again, scroll to the appropriate function and press the **menu button** to select.



Power Adapter Port—
Do Not use with any other power supply with product. Use only Drummond Scientific supplied power supply

Serial Port—
Serial Port is for use by Drummond Scientific technical support only

Main Menu Options



Note: By depressing the menu button, you are entering the selected information.

When choices are necessary (i.e. pipet size or pipet brand), scrolling through will provide the available choices. When selecting pipet brand, [CORNG] is the same as Costar. Other choices are [FALCN] for Falcon/BD, [FISH] for Fisherbrand, and [VWR] for VWRbrand.

What is the Serial Port?

The Serial Port is used for internal purposes. At a later date, this port will be used for downloading upgrades.

Important Things to Note:

1. The Pipet-Aid Elite is designed for dispensing aqueous solutions using plastic pipets manufactured by BD Falcon or Corning Costar. *Fisherbrand™* and VWR brand disposable plastic pipets may also be used.
2. Removal of the tamperproof label on the back will void the warranty. No user serviceable components are inside the Elite™.

Rules for Safe Operation

- For Indoor use only.
- Never operate unit in an explosive atmosphere. The pump motor generates sparks.
- Expelling liquid from a pipet generates aerosols. The faster the liquid is expelled, the more aerosols are generated. Understand the nature of the liquid being pipetted and take appropriate precautions.
- Do not operate unit with a damaged cord.
- Do not handle power supply with wet hands.
- PIPETTING ACIDS OR STRONG ALKALIS WILL DAMAGE UNIT.
- When servicing, use only identical Drummond replacement parts.
- Save these instructions.

Power

Insert the AC adapter jack into the **power adapter port** located on the bottom of the handle. Plug in the AC adapter. Depress and hold the **menu button** for at least two seconds and release. A green background with the Drummond logo will appear in the menu button display followed by an orange background with the main menu. The unit is now powered on and ready for use.

Note: When the unit is turned on the Display Screen will display pipet size and brand last used.

Initial Display Screen



Selecting Pipet Size and Brand for Proper Operation

Manual Mode [MAN]

It is not necessary to select a pipet size in the manual mode, but better control is achieved when doing so. The motor speed is automatically adjusted according to the size of the pipet selected. Speed control algorithms are programmed based on the pipet selected. Choose the size of pipet being used in the [PIPET] menu.

Automatic Mode [AUTO]

In the auto mode, you must first go to [PIPET] and program in the size and brand of pipets used. Then exit, go to [PROG] where you will enter the dispense aliquot. Then go to [AUTO]. The Display Screen will turn green and the size of pipet and aliquot volume will be displayed.

How to Select Pipet Size and Brand

When [PIPET] is selected, the **menu button** will then display choice of [VOLME] and [BRANDS]. To select the proper brand (manufacturer) and size, follow the instructions on page 5.

Size Selection

```
>>PIPET
MAN
PROG
AUTO
OPTNS
OFF
```

1. Scroll to [PIPET] mode & press **menu button**

```
>>VOLME
BRAND
EXIT
```

2. Scroll to [VOLME] to select pipet volume. Press **menu button**.

```
50 ML
>>EXIT
```

3. Use **aspirate/dispense buttons** to scroll pipet sizes

```
25 ML
>>EXIT
```

4. Depress **menu button** to select size displayed and to exit

Brand Selection

```
VOLME
>>BRAND
EXIT
```

1. Press **menu button** to enter brand selection mode

```
CORNG
>>EXIT
```

2. Use **aspirate/dispense buttons** to scroll through brands

```
CORNG
>>EXIT
```

3. Depress **menu button** to select brand and to exit

Operation in the Manual Mode

Manual mode is used for programming the Elite™ to function like a standard Pipet-Aid®. In this mode the menu button screen will read [MAN]. The upper control button is used for aspiration and lower control button for dispensing. Pipetting speed is proportional to button position—depress button fully for full speed and any partially depressed position for a corresponding variable pipetting speed. To exit the manual mode, select [EXIT] and depress the **menu button**. The main menu will be displayed.

Note: Initially when the dispense is first pushed, the unit will drain by gravity until the pump is activated by pushing the dispense button further.

Operation in the Automatic Mode

[AUTO] (**automatic mode**)-[AUTO] mode is used to automatically dispense the selected preset volume. Press the **menu button** to select. The display will change color to green. The volume shown is dispensed each time the **dispense button** is depressed.

How to Program for Automatic Mode:

1. Follow instructions for selecting Pipet Size and Brand Name on pages 4 and 5.



2. Scroll to [PROG], press **menu button**.



3. Scroll to desired dispense aliquot, press **menu button**.



4. Scroll to [AUTO], press **menu button**.

When a change in the aliquot is necessary, but the same pipet size and brand is used, scroll to [PROG], press **menu button**, scroll to desired volume and press the **menu button**. Return to [AUTO] and press **menu button**.

Insufficient volume in the pipet for a full aliquot:

When using the Elite in [AUTO] mode and there is insufficient volume in the pipet to deliver a full aliquot, the unit will make an audible “double beep” to alert you of this condition. A slight pause is built into the program to prevent accidental dispensing of short volumes.

After the beep, you can either fill the pipet up again or discard the sample into a waste bottle.

Manually Emptying the Pipet in Automatic Mode:

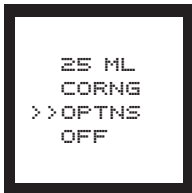
After you are finished dispensing in the [AUTO] mode and there is still some liquid remaining in the pipet, to empty simply depress and hold the **dispense button**, then press and hold the **fill button** and the pipet will totally empty.

Calibration Instructions

AUTO CALIBRATION SHOULD BE PERFORMED DAILY BEFORE USE.

For Technical Assistance call: 800-523-7480

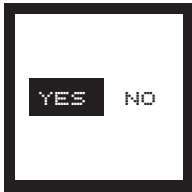
Note: The Pipet-Aid Elite is calibrated at the factory, however, if you find that your unit needs adjustment, use the following procedure. Our sensors measure internal pressure in the pipet and changes in atmospheric pressure can affect the accuracy of the programmed aliquot. If overnight changes occur, It may be due to a change in the atmospheric pressure.



1. Scroll to [OPTNS], press **menu button**.



2. Scroll to [CAL], press **menu button**.



3. Scroll to [YES], press **menu button**.



4. Remove any pipet and press **menu button**.



5. Scroll to [EXIT], press **menu button**.

THIS COMPLETES THE AUTO CALIBRATION AND COMPENSATION FOR CHANGES IN ATMOSPHERIC PRESSURE.

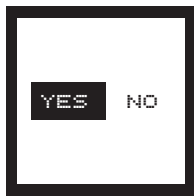
If performing the auto calibration does not improve the accuracy, you may want to enter the [OPTNS] mode and change the [OFST].



1. Scroll to [OPTNS], press **menu button**.



2. Scroll to [OFST], press **menu button**.



3. Scroll to [YES], press menu button.

Adjusting the Offset: **Please record the [OFST] value before changing any settings.**

The formula to adjust the offset is:

$$\left(\frac{\text{Actual Volume}}{\text{Prog. Vol.}} \right) \times \text{Current Offset} = \text{New Offset}$$

The [OFST] is changed by scrolling either up or down.

Example: A 10 mL pipet is selected, the aliquot programmed is 1.00 mL, and the actual aliquot obtained is 1.1 mL. You see the current [OFST] is 1.05. Divide 1.1 by 1.0 and the result is 1.1. Multiply current offset (1.05) by 1.1 and the result is 1.155. This will be the new adjusted offset. Scroll up to reach this new number. The offset can be increased or decreased in .005 increments by scrolling with the fill or empty buttons.

Note: If actual volume is higher than program volume, increase offset. If actual volume is lower than program volume, decrease offset.



1. Scroll to [EXIT], press menu button.

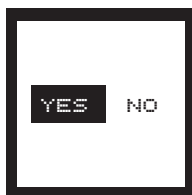
Note: The [OFST] can be adjusted for each pipet size and brand.

THIS COMPLETES THE CALIBRATION PROCEDURE.

Turn Off the Pipet-Aid® Elite™ 400



1. On the menu scroll to [OFF] and press **menu button**.

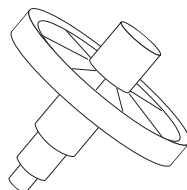


2. Scroll to [YES] and press **menu button**.

Note: If you unplug the unit from the power supply, no damage will be done.

Changing the Self-Locking Filter

1. A self-locking filter is inside the white nosepiece. Aspirating solutions into the filter will cause the filter to lock and will prevent contamination of internal parts of the unit. The filter must be replaced to continue pipetting.
2. To change the filter, push the nosepiece release in and twist the nosepiece counter-clockwise 1/8 of a turn.
3. Remove the rubber insert and the two T.C. gaskets on either side of the filter. Replace the filter with a Drummond self-locking filter (#4-000-051-E*) available from your local dealer.
* This filter has been flow tested for use with the Pipet-Aid Elite
4. Make sure you clean and dry the rubber insert to prevent contamination of the new filter. Many users keep extra rubber inserts (#4-000-002) available to alternate when replacing filters.



Cleaning the Pipet-Aid® Elite™ 400

Wiping the unit with a soft cloth or wipe moistened with isopropyl alcohol is sufficient to clean the unit. Avoid the use of acetone and other organic solvents which will damage the handle and the **menu button/Display Screen**.

Notes

Notes

Ordering Information

Cat. No.	Description
4-000-400 (Blue)	Pipet-Aid® Elite™ 400, 110V 60 Hz
4-000-400-C (Clear)	Pipet-Aid® Elite™ 400, 110V 60 Hz
4-000-402 (Blue)	Pipet-Aid Elite 400, 220V 50 Hz, CE Euro
4-000-402-C (Clear)	Pipet-Aid Elite 400, 220V 50 Hz, CE Euro
4-000-402-E (Blue)	Pipet-Aid Elite 400, 220V 50 Hz, UK
4-000-402-EC (Clear)	Pipet-Aid Elite 400, 220V 50 Hz, UK

Replacement Parts

Cat. No.	Description
4-000-051-E	Self-Locking Filters (PK. 5)
4-000-057	T.C. Gaskets (PK. 2)
4-000-079-W	Nosepiece, White
4-000-096	Blue Button Pads
4-000-098	110V Power Supply



DRUMMOND
SCIENTIFIC COMPANY

500 Parkway, Box 700
Broomall, PA 19008
800/523-7480 • FAX: 610/353-6204
Web site: www.drummondsci.com

For Technical Assistance, call
1-800-523-7480 or e-mail
elite@drummondsci.com

©Copyright, Drummond Scientific Company, 2006 Printed in USA

REV4/1.1.06



Warning (Refer to accompanying documents)