

# Operation Manual for the Drummond Portable Pipet-Aid<sup>®</sup> Elite<sup>™</sup>

Catalog Numbers

4-000-401

4-000-403

4-000-403-E

4-000-401-C

4-000-403-C

4-000-403-EC

**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

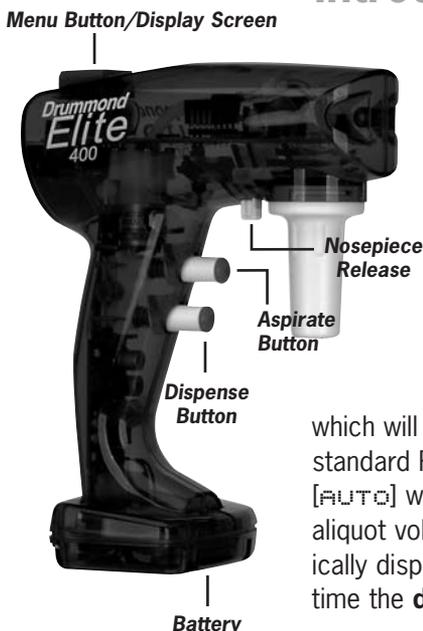


**DRUMMOND**  
**SCIENTIFIC COMPANY**

**CAUTION:** CAREFULLY READ THROUGH THIS ENTIRE MANUAL BEFORE USING YOUR NEW PORTABLE PIPET-AID<sup>®</sup> ELITE<sup>™</sup>. PAY CLOSE ATTENTION TO THE RULES FOR SAFE OPERATION WARNINGS AND CAUTIONS.

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

## Introduction

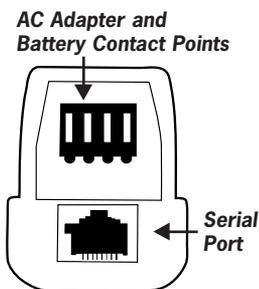


The Drummond Portable Pipet-Aid® Elite™ is a programmable Portable Pipet-Aid® designed to be very accurate and easy to use. Programming is intuitive and cross training is so easy that every one in the lab can be using it within minutes.

Two modes of operation are available. A manual mode [MAN] which will enable the Elite™ to function like a standard Pipet-Aid® and an automatic mode [AUTO] 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.



### Note-

⚠ Do not use with any other battery or power supply. Use only Drummond supplied battery and AC adapter

### 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 VWR brand.

## 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 Portable 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.

## Using the Charger:

To charge the battery, plug the charger supplied by Drummond into the battery. The charger has two LED's. The green LED will light when plugged into an outlet. The red LED will light when a discharged battery is plugged into it. The red LED will go out when the battery is fully charged.

A fully charged battery will enable you to use the unit for over two hours of continuous use.

The battery can be charged while on the handle or unclipped and charged off the handle. **The unit cannot be used when the charger is plugged into the attached battery.** An optional AC adapter is available if the user needs to use the unit as a corded model.

The Elite™ will turn off automatically if the charger is plugged into the battery while the battery is attached to the unit.

## Power

Slide on a fully charged battery or AC adapter on the bottom of the handle and back into place. 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 [FIPET] menu.

### Automatic Mode [AUTO]

In the auto mode, you must first go to [FIPET] 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 [FIPET] is selected, the **menu button** will then display choice of [VOLUME] 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 **aspire/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 **aspire/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 Portable Pipet-Aid® 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**.

## Using the Portable Elite™:

An internal timer will turn off the unit after seven minutes of non-use. If this occurs, simply turn the unit on and your program and settings are returned. There is no need to reprogram the unit.

## 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

**Note:** The Portable 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.

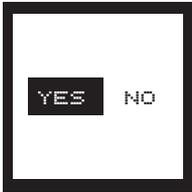
**For Technical Assistance call: 800-523-7480**



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.**

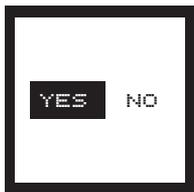
If performing the auto calibration does not improve the accuracy, you may want to enter the [OPTNS] mode and change the [OFST].



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



2. Scroll to [CAL], 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**.

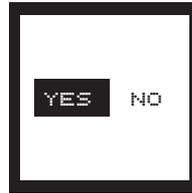
**Note: The [OFST] can be adjusted for each pipet size and brand.**

**THIS COMPLETES THE CALIBRATION PROCEDURE.**

# Turn Off the Portable Pipet-Aid® Elite™



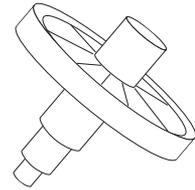
1. On the menu scroll to [OFF] and press **menu button**.



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

## 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 Portable Pipet-Aid® Elite™

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**.





# Ordering Information

<b>Cat. No.</b>	<b>Description*</b>
4-000-401 (Blue)	Portable Pipet-Aid® Elite™ 400, 110V 60 Hz
4-000-401-C (Clear)	Portable Pipet-Aid® Elite™ 400, 110V 60 Hz
4-000-403 (Blue)	Portable Pipet-Aid® Elite™ 400, 220V 50 Hz, CE Euro
4-000-403-C (Clear)	Portable Pipet-Aid® Elite™ 400, 220V 50 Hz, CE Euro
4-000-403-E (Blue)	Portable Pipet-Aid® Elite™ 400, 220V 50 Hz, UK
4-000-403-EC (Clear)	Portable Pipet-Aid® Elite™ 400, 220V 50 Hz, UK

\*Includes one battery and one charger

## Replacement Parts

<b>Cat. No.</b>	<b>Description</b>
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

## Accessories for the Portable Pipet-Aid® Elite™

4-000-091	Portable Pipet-Aid® Elite™ Battery (Blue)
4-000-091-C	Portable Pipet-Aid® Elite™ Battery (Clear)
4-000-094	Portable Pipet-Aid® Elite™ AC Adapter, 110V
4-000-095	Portable Pipet-Aid® Elite™ AC Adapter, 220V
4-000-095-E	Portable Pipet-Aid® Elite™ AC Adapter, 220V/UK

**Note: Accessories are not for use on the corded Elites (4-000-400 & 4-000-400-C).**



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Warning (Refer to accompanying documents)