Finnpipette BioControl

INSTRUCTIONS FOR USE
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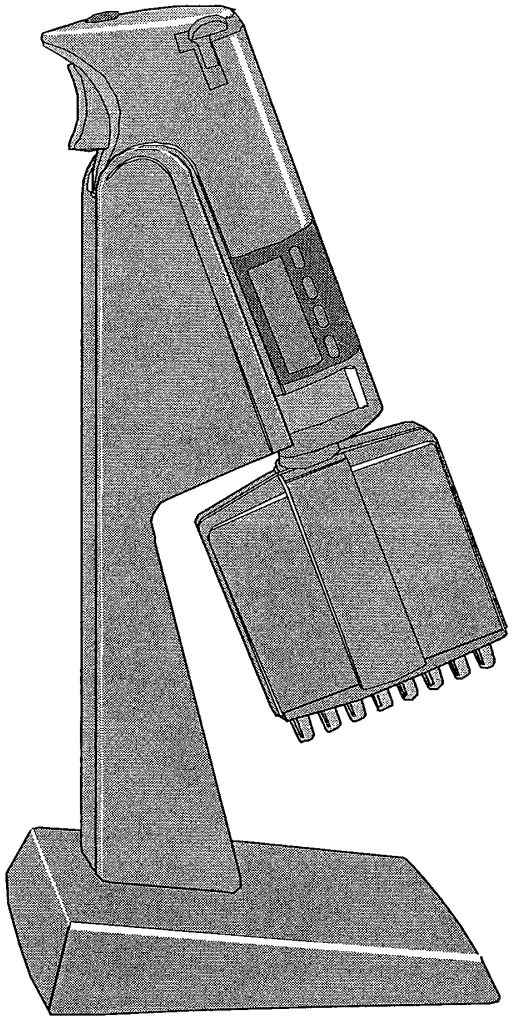
GUIDE D´UTILISATION
INSTRUCCIONES DE USO



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CONTENTS

These instructions for use apply to Finnpipette BioControl models 5-50 µl and 50-300 µl. The differences between the models are detailed in the text.

1 PRODUCT DESCRIPTION

The Finnpipette BioControl is an electronically-assisted pipette for versatile liquid handling operations.
The Finnpipette BioControl is operated with a dual-stop trigger that uses a natural hand movement, increasing comfort and reducing the risk of repetitive stress injuries.
Thanks to the electric motor and electronic control, pipetting is easy and comfortable, yet still fast and accurate.
Normal and stepper mode pipetting are possible with the same pipette. Forward and reverse pipetting are possible after volume adjustment; no other programming is needed. The dual stop trigger controls the pipetting action.
The pipette works on the air displacement principle (i.e. an air interface is left between the piston and the liquid).
The pipette's power source is an NiCd battery, which is suitable for rapid recharge. If needed, the battery can be recharged during the lunch hour.
The pipette uses detachable, disposable tips, which are easy to eject with a light lever action ejector. To insure sterility, you can detach the entire tip cone module and autoclave it.

PACKAGE

The complete Finnpipette BioControl package contains:
- Finnpipette with detachable multichannel tip cone module
- transformer
- recharging stand
- instructions for use
- tube of grease
- sample Finntips

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2 GETTING STARTED

Remove the contents from the package (Fig. 1), and verify that all items listed are included. Inspect for possible shipping damage. Save the packaging. Make sure that the pipette is the correct volume range and that the transformer has the right mains voltage.

RECHARGING

The pipette battery may be empty when purchased and must be recharged before initial use. Connect the transformer cord to the outlet on the right side of the stand. Plug the wall transformer into an outlet matching the specification on the cover (Fig. 2). **Use only the original BioControl transformer.**
Place the pipette on the stand, and note that the light beside the pipette display screen is on.
A green light indicates that the power is on, and the pipette is ready for use. A red light indicates that rapid recharge has been activated. The initial charge takes about one hour.
To ensure maximum battery capacity, the pipette should be stored on the stand when not in use. The power switches off automatically when the pipette is not in use or on the stand. The pipette display is blank when the power is off.
When you pick up the pipette, the power switches on automatically. If the power is going low, the text LOW BATT will be on the screen, indicating that the battery should be recharged. If you continue pipetting, an audible warning will sound.

3 PIPETTE OPERATIONS

The Finnpipette BioControl has four different operating modes: RESET, PIPETTE, STEPPER and POWER OFF.

RESET MODE

When the pipette is recharged from flat, the pipette will be in reset mode (on-screen text CALIBRATE). To activate the pipette, press the dual stop trigger to the second stop (Fig.6).

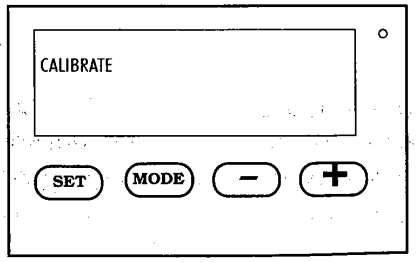

Fig.6. On-screen text CALIBRATE

PIPETTE MODE

Pipette is the normal operating mode. Forward and reverse pipetting are possible without programming.

STEPPER MODE

In stepper mode, the volume selected is dispensed repeatedly until the maximum capacity of the tip cone module has been delivered.

POWER OFF MODE

The pipette switches to POWER OFF mode when the pipette is motionless for 10 minutes. A slight movement will reactivate the pipette, switching it back on. The volume and mode settings remain as before.

DETACHING THE TIP CONE MODULE

To remove the tip cone module, first open the lock (about 45 degrees). Then pull out the module. To attach the module to the pipette, first put the module in the pipette and close the lock. Then press the dual stop trigger to the second stop, so the driving mechanism inside the handle descends to the lowest position. Release the trigger and, the pipette is ready to use.

TIP EJECTION

To eliminate the risk of contamination, the Finnpipette BioControl has a specially designed tip ejector lever. Tips are ejected when you press the lever down (Fig. 3). If you are left-handed, just rotate the tip ejector lever to the opposite side of the handle (Fig. 4) and you are able to press the lever with your left thumb.

SELECTING PIPETTING MODES

Both PIPETTE and STEPPER pipetting modes are possible with the Finnpipette BioControl. PIPETTE, the normal aspirate and dispense technique, can be used with or without blow-out. In stepper mode, the pipette aspirates and dispenses the selected volume repeatedly.

To change modes press the MODE key (Fig. 5). The words PIPETTE or STEPPER will blink on the screen. To confirm your choice, press SET. If you do not press SET within 20 seconds the pipette will return to the previous setting. You cannot change modes when the trigger is pressed.

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PIPETTE:

After selecting and confirming PIPETTE mode, (Fig. 7), the volume can be set. Press the + or - key to change the volume on the display. If you hold down the + or - key, the figures will scroll on the screen. Like the mode text, the volume figures will blink until you confirm your selection with the SET key. Once volume is set, the pipette is ready to use.

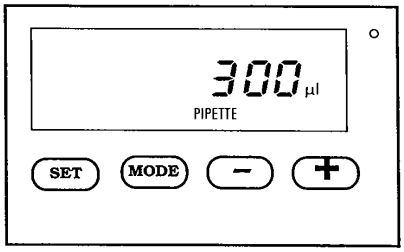

Fig.7. Display in PIPETTE mode

STEPPER:

After selecting and confirming STEPPER mode, (Fig. 8), set the volume using the + and - keys. The unit volume figures will blink until you confirm your choice by pressing SET. Once the unit volume is set, the number of repetitions will start to blink on the display.The maximum number of repetitions is the first proposal which you are able to change with + or - keys. Press SET to confirm your choice.

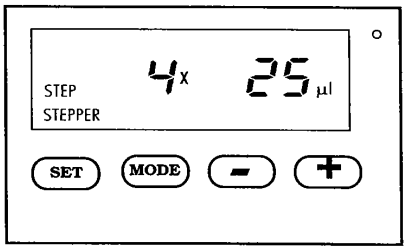

Fig.8. Display in STEPPER mode

The maximum number of repetitions possible depends on the size of the tip cone module and the unit volume adjusted. If the maximum number of repetitions is needed, press SET when MAX STEP appears on screen (Fig. 9).

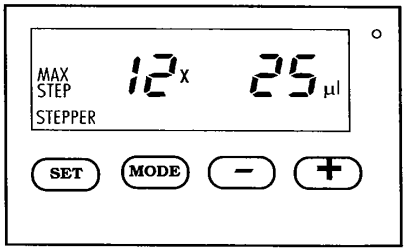

Fig.9. Display in STEPPER mode

PISTON SPEED

Before pipetting select the piston speed by adjusting the switch on top of the pipette, (Fig. 4). The three pipetting speeds are fast, normal and slow. Use fast pipetting speed for aspirating and dispensing liquid solutions that have a viscosity and surface tension similar to water. Slower speeds are required for liquids with a high viscosity, low surface tension or a tendency to foam.

PIPETTING TECHNIQUES

Figures 10-12:
A = Ready position
B = First stop
C = Second stop

FORWARD AND REVERSE PIPETTING IN PIPETTE MODE

In PIPETTE mode, forward and reverse pipetting are possible without further programming. The two stops of the pipetting trigger correspond to the position of the piston, just as in manual pipetting.

FORWARD PIPETTING, (Fig. 10)

1. Press the trigger to the first stop.
2. Hold the pipette in vertical position and immerse the tip ends in the liquid in the reservoir. Let the trigger return to the ready position. Withdraw the tips from the liquid, touching them against the edge of the reservoir to remove excess liquid.
3. Place the tips against the wall of the receiving vessel. Dispense the liquid by pressing the pipetting trigger all the way down to the second stop. The dispense, blow-out action will empty the tips. Remove the tips from the vessel, sliding them along the wall of the vessel.
4. Release the trigger to the ready position.

If necessary, change the pipette tips and continue pipetting.

REVERSE PIPETTING, (Fig. 11)

The reverse technique is suitable for dispensing liquids with a high viscosity or tendency to foam easily. The technique is also recommended for dispensing very small volumes.

1. Press the pipetting trigger all the way down to the second stop.
2. Holding the pipette in vertical position, immerse the tip ends in the liquid in the reservoir and release the trigger. This action will fill the tips. Remove the tips from the liquid touching them against the reservoir to remove excess liquid.
3. Dispense the preset volume by gently depressing the trigger to the first stop. Hold the pipetting trigger at the first stop. The liquid remaining in the tips should not be included in the delivery.
4. The remaining liquid should be discarded by pressing the trigger to the second stop, or aspirated with the next pipetting sequence.

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STEPPER TECHNIQUE, (Fig. 12)

In STEPPER mode, repeated dispensing of a selected unit volume is possible. There are three phases in stepper pipetting: aspirate, dispense and blow-out.
1. Depress the pipetting trigger all the way down to the second stop.
2. Holding the pipette in a vertical position, immerse the tip ends in the liquid in the reservoir and release the pipetting trigger. This action will fill the tips and start the stepper sequence. Remove the tips from the liquid, touching them against the edge of the reservoir to remove excess liquid.
3. Dispense the preset unit volume by gently depressing the trigger to the first stop. Remove the tips from the vessel, sliding them along the wall of the vessel. Releasing the trigger to the ready position will not move the piston.
4. Activate the next delivery by pressing the trigger to the first stop again. The number of strokes left will be displayed on screen.
5. After the last stroke, the words STEPPER BLOW OUT will appear on screen, indicating that the dispense sequence is over. At this point, just the blow-out volume is left in the tips. Activate blow-out by pressing the trigger to the second stop.
6. Release the trigger, and you are ready to start the next stepper sequence.

CALIBRATION

Each Finnpipette BioControl is calibrated based on the ISO 8655 procedure before leaving the factory. If recalibration is necessary, contact your Labsystems supplier.

To check accuracy and precision you need an analytical balance, a small beaker and distilled water.
1. Adjust the pipette in pipetting mode with calibration volume, 100 µl for 10-300 µl module (20 µl for 1-50 µl module).
2. Place tips firmly on one of the center tipcones.
3. Pipette distilled water into a preweighed beaker at last four times and record each weight to the nearest tenth of a mg. All the weights should be inside the permitted range, 99.2 mg - 100.8 mg for 50-300 µl module (19.8 mg - 20.2 mg for 5-50 µl module).

STERILIZATION

The tip cone module can be sterilized by autoclaving it at 121°C (252 °F) and at 1 bar (15 p.s.i.) for a minimum of 20 minutes. No special preparations are needed prior to autoclaving. You can use steam sterilization bags if needed.
Note: Never autoclave the handle of the Finnpipette BioControl!

Frequent autoclaving of the tip cone module can cause some discoloration. This will not affect the accuracy and precision of the pipette.

4 MAINTENANCE AND TROUBLESHOOTING

When the Finnpipette is not in use, make sure it is safely stored on the recharge stand. The pipette should be checked at the beginning of each workday for dust and dirt on the outer surfaces; pay close attention to the tip cone module in this regard. Use only 70% ethanol as a cleaning solvent.

If the pipette is used daily, it should be checked every three months, following the procedure below:

1. Detach the tip cone module by releasing the latch and removing the module (Fig. 14).
2. Use a screwdriver to remove the four screws of the module cover.
3. Pull out the colour code ring and lift the module spring out.
4. Lift the upper end of the tip ejector bar slightly and pull it out.
5. Open the cover and remove the pistons for cleaning (Fig. 14).
6. If needed, replace the seal by lifting the cover ring carefully from its snap joint with screwdriver.
7. Clean the piston, rings and tip cones with a dry nap-free cloth.
8. Grease the cleaned parts with lubricant provided in the package.
9. Reassemble the cover ring, spring, support ring and O-ring on the piston, place the assembly into the tip cone and close the cover ring snap joint.
10. Install the piston bar with pistons and tip cone into the cover and close the cover with four screws.
11. Install the tip ejector and module spring on the neck of the module. Press the spring down under the tip ejector. Close the ejector with code ring.

Labsystems' service department should handle all other service.

CAUTION!

If you send the pipette to us or to our local representative for service, please, ensure that the pipette has been decontaminated before returning.
Also, please, note that the postal authorities in your country may limit the sending of contaminated material by mail.

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TROUBLE SHOOTING

The troubleshooting guide below lists possible problems, causes and solutions.

Problem	Possible cause	Solution
Leakage	Tip incorrectly attached	Attach tips firmly
	Foreign bodies between tip and tip cone	Clean tip cone module; attach new tips
	Foreign bodies between the piston, O-ring and tip cone	Clean and grease O-ring and tip cone. Use grease
	Insufficient grease on tip cone and O-ring	Grease accordingly
	O-ring damaged	Change the O-ring
Inaccurate dispensing	Incorrect operation Tips attached incorrectly	Follow instructions carefully Attach tips firmly
	Calibration altered, possibly by misuse	
	Inappropriate calibration. High viscosity liquids may require recalibration.	
Display is blank	Battery is discharged	Mount the pipette in the recharge stand, and make sure that the light beside the display is on
	Power is OFF	Move the pipette slightly
CALIBRATE text on the display	Pipette is in reset mode	Press the dual stop trigger to the second stop.
Pipette won't operate	Tip cone module is improperly attached	Release the latch, attach module firmly to the pipette and lock the latch; press the trigger to the second stop.

5 PERFORMANCE AND ORDER INFORMATION

Liquid handling specifications:

Model	Cat.No	Volume µl	Increment Δ µl	Accuracy ± %	Precision (CV) %
FP BioControl 50 (8-ch)	4530 X00	1	1 µl	*)	*)
		5		2.00	2.00
		50		0.80	0.30
FP BioControl 300 (8-ch)	4530 X10	10	1 µl	*)	*)
		50		1.20	0.85
		300		0.50	0.25

*) Highly user dependent

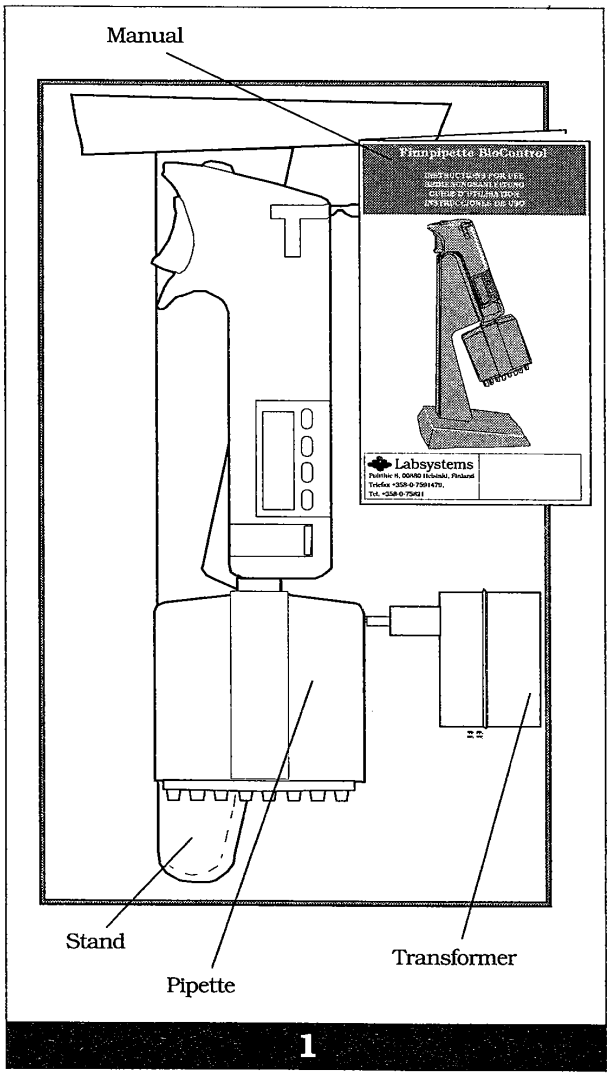
Tips	Cat.No	Quantity pcs	Volume µl
Finntip 300µl	940 1250	10x96/tray	0-300
Finntip 300µl	940 1260	1000/bag	0-300
Finntip 300µl	940 1270	22000/carton	0-300

x=0=Eur. 1=US 2=Jap. 3=UK 4=Australia

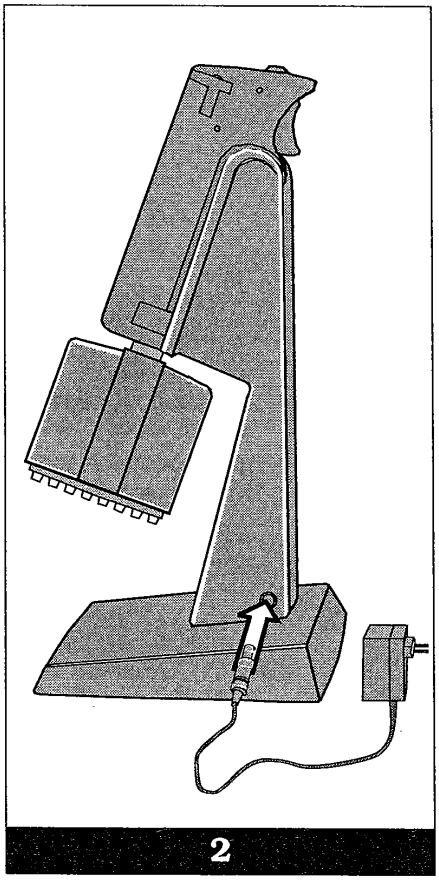
Battery:
Rechargeable NiCd battery. Charging time max. 1 hour for an empty battery.

Transformer:
Input voltage is printed on the transformer. Use only the original transformer supplied with the pipette.

Specifications are subject to change without notice.


Manual
Finnpipette BioControl
Labsystems
Stand
Pipette
Transformer

1



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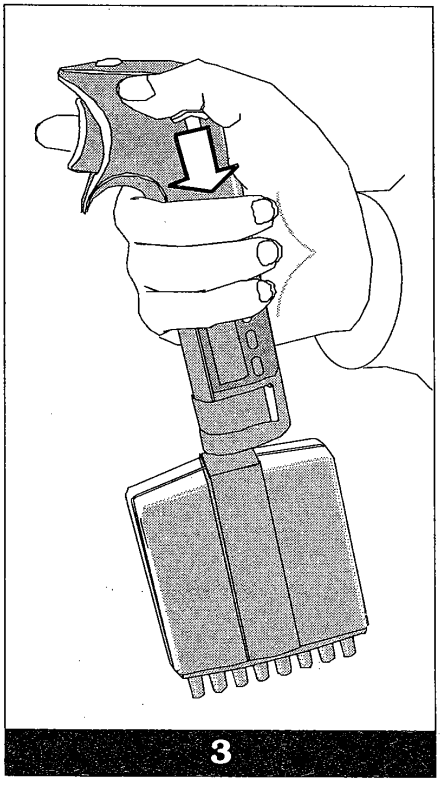

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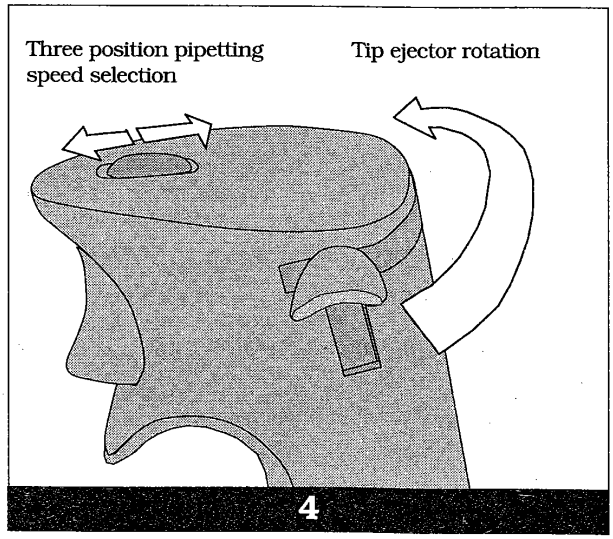
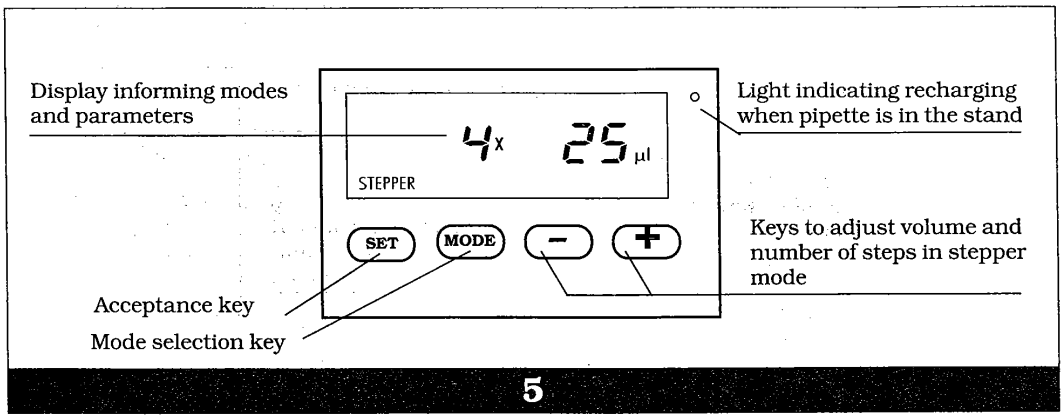
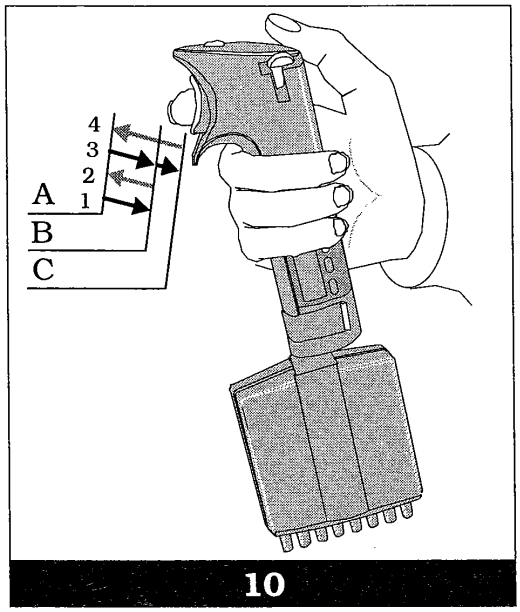

Three position pipetting speed selection
Tip ejector rotation

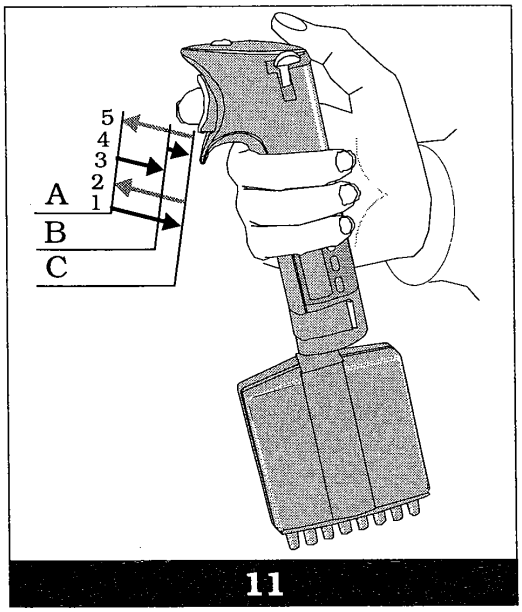
4


Display informing modes and parameters
4x
25 µl
STEPPER
Light indicating recharging when pipette is in the stand
SET
MODE
Keys to adjust volume and number of steps in stepper mode
Acceptance key
Mode selection key

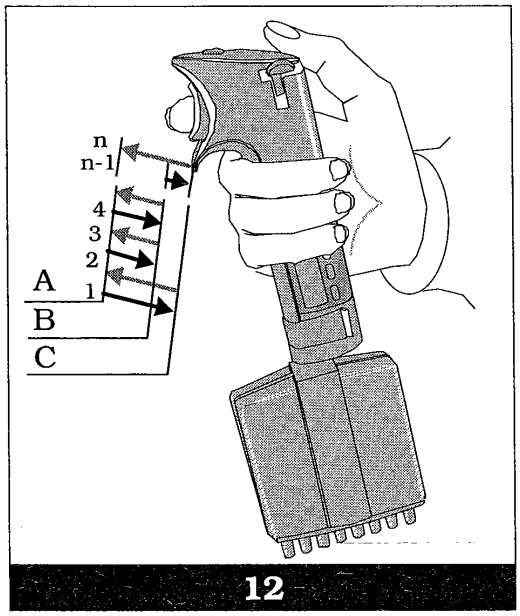
5


4
3
2
1
A
B
C

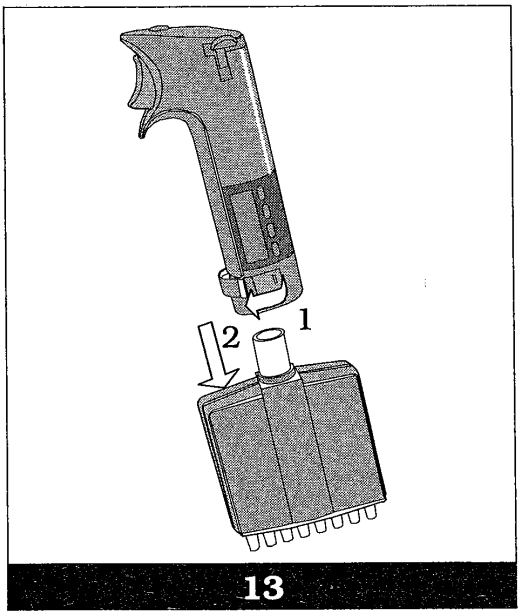
10


5
4
3
2
1
A
B
C

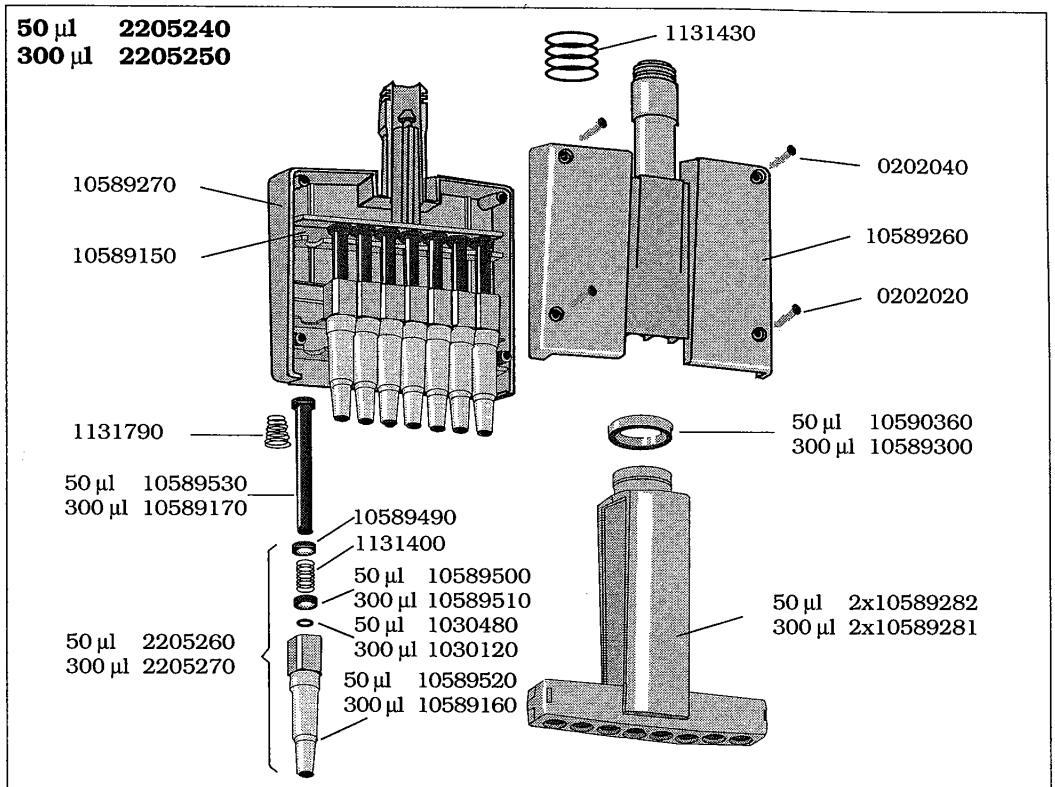
11

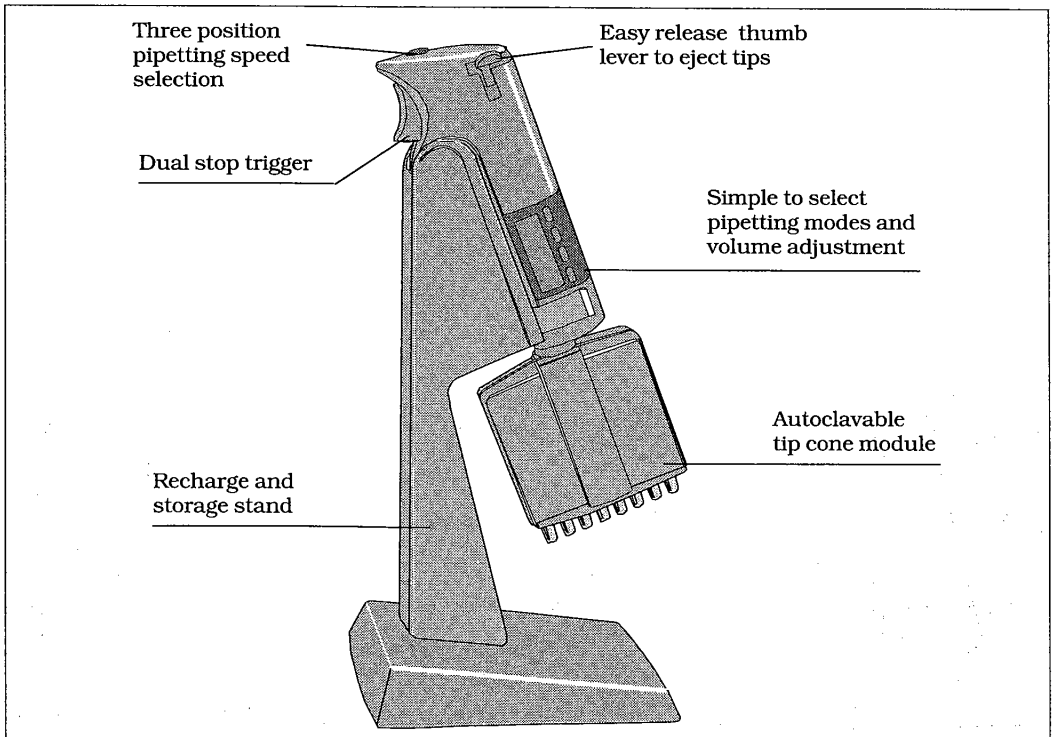

n
n-1
4
3
2
1
A
B
C

12


1
2

13


50 µl 2205240
300 µl 2205250
1131430
10589270
10589150
0202040
10589260
0202020
1131790
50 µl 10590360
300 µl 10589300
50 µl 10589530
300 µl 10589170
10589490
1131400
50 µl 10589500
300 µl 10589510
50 µl 1030480
300 µl 1030120
50 µl 10589520
300 µl 10589160
50 µl 2205260
300 µl 2205270
50 µl 2x10589282
300 µl 2x10589281


Three position pipetting speed selection
Easy release thumb lever to eject tips
Dual stop trigger
Simple to select pipetting modes and volume adjustment
Autoclavable tip cone module
Recharge and storage stand