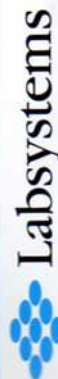
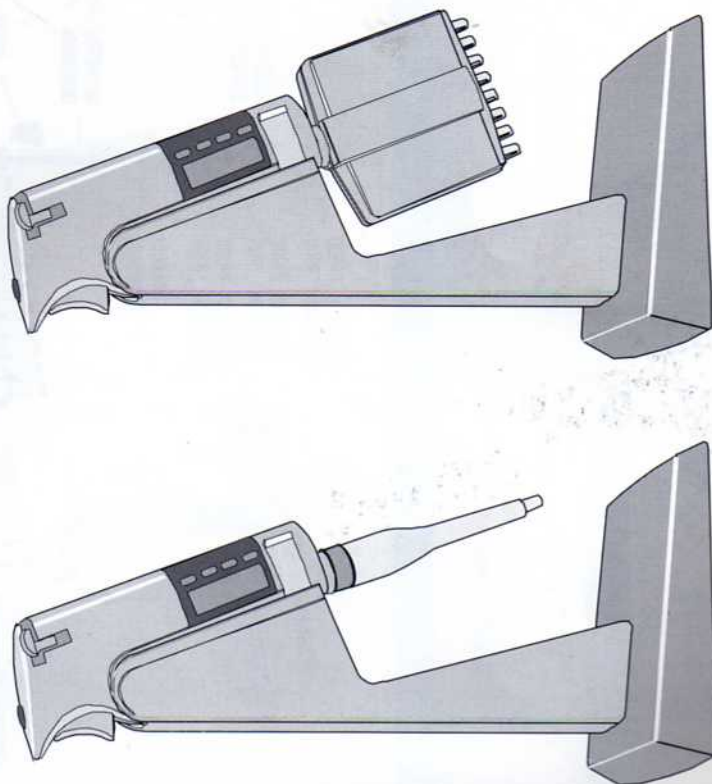


Finnpipette BioControl

INSTRUCTIONS FOR USE
BEDIENUNGSANLEITUNG
GUIDE D'UTILISATION ET D'ENTRETIEN
INSTRUCCIONES DE USO



Labystems
Sorvaajankatu 15, 00810 Helsinki, Finland
Telefax +358-9-32910414,
Tel. +358-9-329100

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1 PRODUCT DESCRIPTION

The Finnpiquette BioControl is an electronically-assisted pipette with interchangeable tip cone modules for a wide range of liquid handling operations. The dual-stop trigger that activates the Finnpiquette BioControl 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, an NiCd battery, is suitable for rapid recharge. If needed, the battery can even be recharged over the lunch hour.

The pipette uses detachable, disposable tips, which are easy to eject with a soft-touch lever action ejector. To insure sterility, the entire tip cone module can be detached and autoclaved.

PACKAGE

The complete Finnpiquette BioControl package contains:

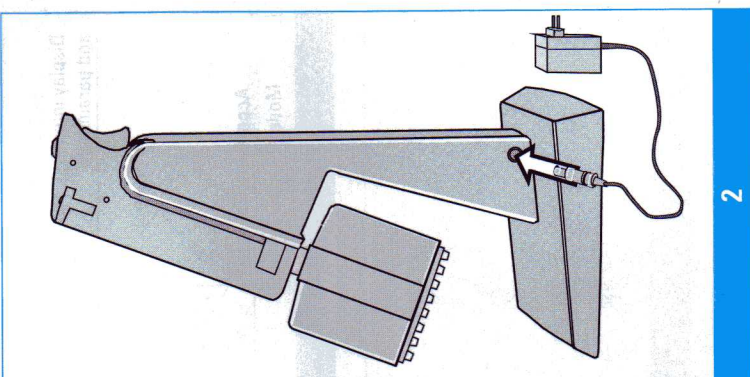
- Finnpiquette with detachable tip cone module(s)
- transformer
- recharge stand
- instructions for use
- calibration software diskette
- tube of grease
- sample Finn tips

2 GETTING STARTED

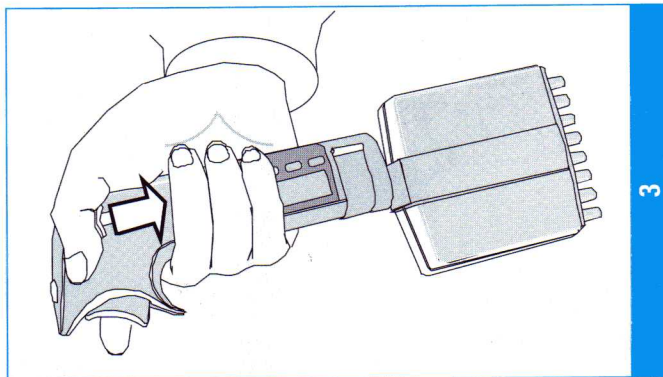
Remove the contents from the package (Fig. 1), and verify that all items listed above are included. Inspect for possible shipping damage. Save the packaging. Make sure that the modules are the desired volume range and that the mains voltage of the transformer is correct.

RECHARGING

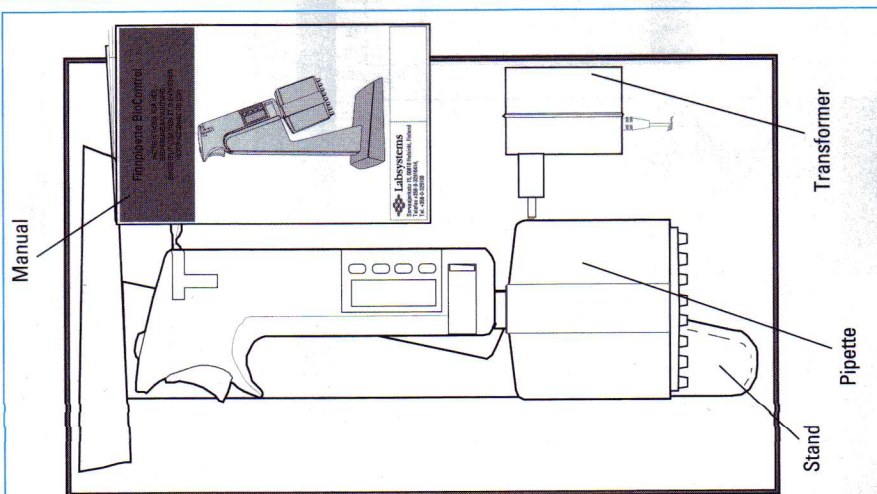
The pipette battery may be empty when delivered and must be recharged before initial use. Connect the transformer cord to the outlet on the side of the stand. Plug the wall transformer into an outlet matching the specification on the cover (Fig. 2). **Use only the original BioControl transformer.**



2

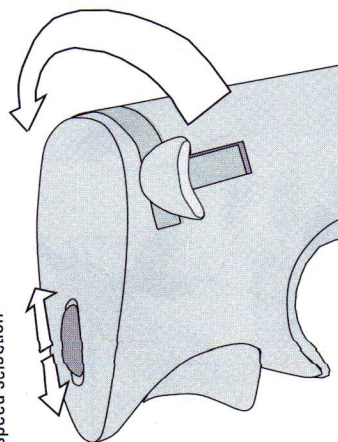


3



1

Three position pipetting
speed selection



4

Place the pipette on the stand, noting the light beside the pipette display screen. A green light indicates that the power is on, and the pipette is ready for use. A red light indicates that a 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 appear on screen, indicating that the battery should be recharged. If you continue pipetting, an audible warning will sound.

3 PIPETTE OPERATIONS

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

RESET MODE

The pipette automatically switches to reset mode (on-screen text CALIBRATE) whenever the snaplock attaching the tip cone module has been released or the pipette has been charged from empty. To activate the pipette, close the snaplock, choose the appropriate module (on the display) and press the set key. Press the dual-stop trigger to the second stop. Release the trigger, and the pipette is ready for use (Fig. 6).

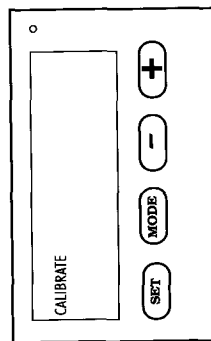


Fig. 6. On-screen text CALIBRATE

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 after the pipette has been motionless for 10 minutes. A slight movement reactivates the pipette, switching it back on. Volume and mode settings remain as before.

CHANGING THE TIP CONE MODULE

To change the tip cone module, first open the snaplock (about 45 degrees), and then pull out the module. To attach the module to the pipette, insert the module in the pipette and close the snaplock. This activates the RESET mode. (To activate the pipette, close the snaplock) Next, choose the appropriate module (channel number and max. volume will be blinking on screen). Accept the previous module by pressing the SET key or choose another module by pressing the + or - keys. Confirm your selection with the SET key. Then press the dual stop trigger to the second stop, so the piston mechanism inside the handle descends to its lowest position. Release the trigger, and the pipette is ready for use (Fig. 6).

TIP EJECTION

To eliminate the risk of cross-contamination, the Finn pipette BioControl has a specially designed tip ejector lever. Eject tips by pressing down the lever (Fig. 3). If you are left-handed, just rotate the tip ejector lever to the opposite side of the handle (Fig. 4) and press the lever with your left thumb.

SELECTING PIPETTING MODES

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

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.

PIPETTE:

Set the volume after selecting and confirming PIPETTE mode, (Fig. 7). 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 the volume is set, the pipette is ready for 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 first option is the maximum number of repetitions. Use the + and - keys to choose the appropriate volume. Press SET to confirm your choice.

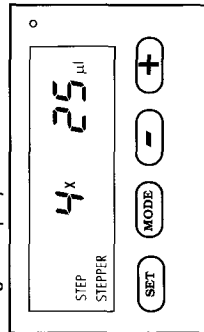


Fig. 8. Display in STEPPER mode

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

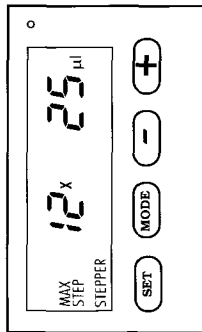


Fig. 9. Display in STEPPER mode

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. Fast pipetting is for aspirating and dispensing liquid solutions with 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

PIPETTE mode, forward and reverse pipetting are possible without further programming. The 0 stops of the pipetting trigger correspond to the position of the piston, just as in manual pipetting.

FORWARD PIPETTING, (Fig.10)

Press the trigger to the first stop.
Hold the pipette in a vertical position and dip the tip ends in the liquid. 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.
Place the tips against the wall of the receiving vessel. Dispense the liquid by pressing the pipetting trigger to the second stop. The dispense blow-out action will empty the tips. Remove the tips from the liquid, sliding them along the wall of the vessel.
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. The technique is also recommended for dispensing very small volumes.

Press the pipetting trigger to the second stop.
Holding the pipette in the vertical position, dip the tip ends in the liquid 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.
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.
The remaining liquid should be discarded by pressing the trigger to the second stop, or aspirated with the next pipetting sequence.

STEPPER TECHNIQUE, (Fig.12)

STEPPER mode, repeated dispensing of a selected unit volume is possible. There are three cases in stepper pipetting: aspirate, dispense and blow-out.
Press the pipetting trigger to the second stop.
Holding the pipette in a vertical position, dip the tip ends in the liquid 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.
Dispense the preset unit volume by gently pressing the trigger to the first stop. Remove the tips from the liquid, sliding them along the wall of the vessel. Releasing the trigger to the ready position will not move the piston.
Activate the next delivery by pressing the trigger to the first stop. The number of strokes left will be displayed on screen.
After the last stroke, the words STEPPER BLOW OUT will appear on screen, indicating that the dispense sequence has been completed. At this point, only the blow-out volume is left in the tips. Activate blow-out by pressing the trigger to the second stop.
Release the trigger, and you are ready to start the next stepper sequence.

CALIBRATION

Each Finnpiquette BioControl is factory-calibrated based on the ISO 8655 procedure. To check the accuracy and precision of the pipette, you need an analytical balance, a small beaker and distilled water.

1. Set the pipette to PIPETTE mode and set the calibration volume as indicated in the table below.
2. Place the tip firmly on the tip cone (one of the center tip cones of multichannel modules)
3. Pipette distilled water into a preweighed beaker at least five times. Weigh after each delivery.
The weight is related to volume through a correction factor which depends on temperature and pressure.
All the results should be within the permitted range.

If recalibration is necessary, use the PC program included with the pipette. Read the README-file on the diskette for more detailed instructions.

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 required prior to autoclaving. Steam sterilization bags can be used if needed.

Note: Never autoclave the handle of the Finnpiquette 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 Finnpiquette is not in use, make sure it is safely stored on the recharge stand. The pipette should be checked for dust and dirt on the outer surfaces at the beginning of each workday; 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.

MULTICHANNEL MODULES:

1. Detach the tip cone module by releasing the snaplock and removing the module.
2. Use a screwdriver to remove the four screws in the module cover.
3. Pull out the colour code ring and lift out the module spring.
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. 15 12-ch, Fig. 16 8-ch).
6. If needed, replace the seal by lifting the cover ring carefully from its snap joint with a screwdriver.
7. Clean the piston, rings and tip cones with a dry nap-free cloth.
8. Grease the cleaned parts with the lubricant that comes with the pipette.
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, pistons and tip cone into the cover, and close the cover with the four screws.
11. Install the tip ejector and module spring on the neck of the module. Press the spring under the tip ejector. Close the ejector with the colour code ring.

ANGLE CHANNEL MODULES:

0.1 µl and 40-200 µl modules:

- Detach the tip cone module by releasing the snaplock and removing the module.
- Pull out down the tip ejector as far as it goes. Two square holes will be visible on the module body.
- Use a small flat screwdriver to release the snap joints in the square holes.
- Pull out the piston.
- Pull out the other parts (Fig. 17).
- Clean the piston, rings and tip cones with a dry nap-free cloth.
- Grease the cleaned parts with the lubricant that comes with the pipette.
- Assemble the parts in reverse order.
- Install the locking ring by pressing it with the screwdriver.

1-1000 µl module:

- Detach the tip cone module by releasing the snaplock and removing the module.
- Pull out down the tip ejector as far as it goes. Two square holes will be visible on the module body.
- Use a small flat screwdriver to release the snap joints in the square holes. (Fig. 14).
- Pull out the piston.
- The piston assembly cannot be disassembled; only the o-ring can be replaced.
- Clean the cylinder, piston assembly and tip cones with a dry nap-free cloth.
- Grease the cleaned parts with lubricant that comes with the pipette.
- Assemble the parts in reverse order.
- Install the locking ring by pressing it with the screwdriver.

1 ml and 2-10 ml modules:

- Detach the tip cone module by releasing the latch and removing the module.
- Pull down the tip ejector as far as it goes. Detach the lower part of the tip ejector. (Snap fit).
- The upper part can be slid upwards and removed.
- Press the snap joints of the cylinder to release them. Pull out the cylinder.
- Pull out the piston.
- The piston assembly cannot be disassembled; only the o-ring can be replaced.
- Clean the cylinder, piston assembly and tip cone with a dry nap-free cloth.
- Grease the cleaned parts with the lubricant that comes with the pipette.
- Assemble the parts in reverse order.

systems' 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 is decontaminated before returning. Also, please note that the postal authorities in your country may restrict the shipment of contaminated material by mail.

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 and the pipette won't operate	Pipette is in reset mode	Lock the latch and select the module. Press the dual stop trigger to the second stop.
	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.