Thermo Fisher
S C I E N T I F I C

Pipetting

Finnpipette Novus electronic pipette –manual model

Key words

Manual mode: A function of Finnpipette Novus electronic pipette that enables manual control of pipetting action and real-time volume measurement. It's commonly used to measure unknown volumes.

Titration: Laboratory method used to determine the unknown concentration of an identified analyte.

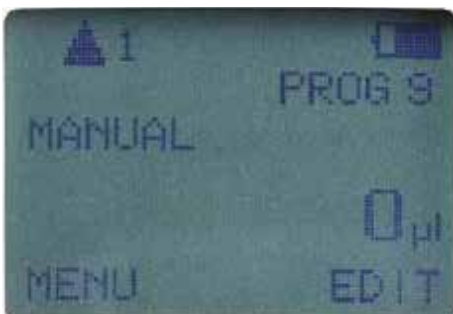**Supernatant:** The liquid on top of an insoluble material after centrifugation.

With 10 pipetting functions, Finnpipette Novus offers the ultimate in flexibility and variety that can't be found in manual pipettes, making it an excellent choice for a wide variety of applications.

The large screen displays aspirated or dispensed volume and speed for continuous control of pipetting action.

Goal

Thermo Fisher™ Finnpipette™ Novus™ features 10 different pipetting functions to cover a wide range of liquid handling applications. Thanks to the electronic motor and control, pipetting action requires no effort unlike with manual pipettes. The pipetting action is controlled by an index finger operated trigger. A light press of the trigger moves the piston up and down to aspirate and dispense liquid resulting in minimized thumb strain.
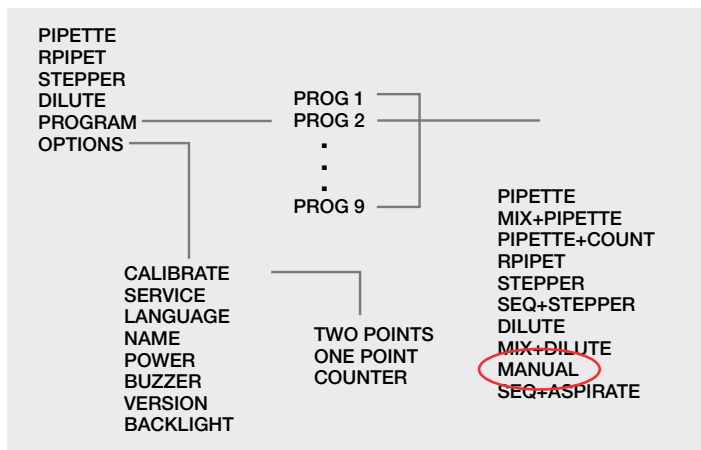
Even though the motorized pipetting action has several benefits, some applications may require more control on pipetting action during aspiration and/or dispensing. The Novus manual mode enables continuous control of the pipetting action during both aspiration and dispense. Manual mode functions in a similar way as the pipetting button of a manual pipette: liquid is aspirated as long as the trigger is kept pressed. After changing the piston direction to dispensing, liquid is dispensed as long as the trigger is kept pressed. The actual aspirated or dispensed volume is shown on the display in real-time enabling continuous volume control.

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Using the Novus manual mode

The manual mode can be found under the program menu.

```
PIPETTE
RPIPET
STEPPER
DILUTE              PROG 1
PROGRAM             PROG 2
OPTIONS               .
                     .
                     .
                    PROG 9              PIPETTE
                                        MIX+PIPETTE
                                        PIPETTE+COUNT
                                        RPIPET
                                        STEPPER
          CALIBRATE                     SEQ+STEPPER
          SERVICE                       DILUTE
          LANGUAGE                      MIX+DILUTE
          NAME       TWO POINTS         MANUAL
          POWER      ONE POINT          SEQ+ASPIRATE
          BUZZER     COUNTER
          VERSION
          BACKLIGHT
```

Setting volume and speed

1. **Selecting the maximum volume.**

   The maximum volume limits the aspiration volume. Maximum volume of the particular Novus model is used as a default. It´s also possible to edit the maximum volume limit. Use the scroll key to adjust the volume limit.

2. **Selecting pipetting speeds.**
   Press SPEED and the speed in (arrow up) starts to blink. Select the speed with the scroll key and accept with OK. Select the speed out (arrow down) and accept with OK. In the manual mode lower speeds (1-5) are available to ensure optimum control during pipetting.

Aspirating and dispensing

3. After setting the speeds, zero volume appears to the display.

4. Dip the tip under the liquid surface and press the trigger.

   – The liquid is drawn into the tip and the actual volume is shown on the display until the trigger is released or the volume limit is achieved.

5. The pipetting direction can be changed with IN/OUT key (left selection key) at any time.

6. To dispense the liquid, select the down direction and press the trigger.

   – The liquid is dispensed, and the actual volume is shown on the display until the trigger is released or the volume limit is achieved.

7. If necessary, change the tip and continue pipetting.

Note:

- The volume display can be reset to zero at any time by pressing RESET (right selection key).

- When using the manual mode for titration, press RESET (right selection key) after aspirating the required amount of the titrant into the tip, to reset the volume before start adding titrant to the solution.

Using Novus manual mode in different applications

Continuous control of pipetting action and real-time volume tracking makes Novus an excellent choice for a variety of applications that are cumbersome or timely when performed using manual pipettes. Some examples are given here.

Measuring unknown volume

A tube or a bottle with some liquid left in it is often found in the lab. Before starting a next application or test it´s important to know if there is enough liquid to cover the next round before opening a new tube or bottle. Being able to measure an unknown volume fast and efficiently is important also in applications where knowing the sample volume is crucial in order to dilute samples into same concentration.

Collecting supernatant

Centrifugation is used in many applications to separate particles like cells from a liquid medium or to separate particles of different masses into separate fractions. For example, when measuring protein concentration, the soluble proteins remain in the supernatant that is then used in the actual experiment. In some applications the volume of the supernatant must also be measured.

By using Novus manual mode with controlled pipetting action and speed it´s possible to collect supernatant accurately and sensitively to prevent mixing of the supernatant and insoluble particles. Index finger-based trigger action eliminates thumb strain commonly involved in usage of manual pipettes particularly in application where low pipetting speed is required. Possibility to set volume limit prevents excess amount of the supernatant to be collected. Continuous volume tracking enables to measure the volume of the supernatant during pipetting requiring no additional step to measure volume.

Titration

Titration used to determine the unknown concentration of an identified analyte. Titration is used for example when measuring free fatty acid content and vitamin C concentration.

In titration, one solution (solution 1 = titrant) is added to another solution (solution 2) until a chemical reaction between the components in the solutions has run to completion. The completion of the reaction is usually shown by a change of color caused by a substance calledan indicator.

Titration is a very sensitive method requiring a device enabling a controlled way to add the titrant to the solution to be titrated. It also should be possible to measure the volume of the added titrant. By using Novus manual mode it´s possible to dispense liquids drop by drop and measure the dispensed volume simultaneously, making it a respectable alternative to traditional burettes especially in small volume titration.

Gel loading and collecting particles

Gel loading is a delicate procedure that requires a low and constant pipetting speed. The manual mode features a pipetting speed range with lower speeds than other Novus functions. For example, dispensing 100 µL in other Novus functions with speed 1 lasts 6.7 seconds, with the manual mode it lasts 31.6 seconds. Motorized pipetting action ensures constant pipetting speed through the application. These features combined to the real-time pipetting control make the Novus manual mode a perfect tool for gel loading.

In some applications collecting particles or drops from the liquid is needed. The Novus manual mode can also be used as a suction device to collect particles and drops one by one. It can be also used to collect the remaining liquid from tubes and bottles to reduce waste.

Learn more at **thermofisher.com/finnpipette**

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