

## Nanoject™ III Programmable Nanolitre Injector

**NEW  
range**



The Drummond Programmable Nanoject™ III Nanolitre Injector is designed for meticulous injection procedures into cellular models such as oocytes and embryos with delicate membranes.

It offers a number of state-of-the-art features to provide easy setup and operation as well as more accurate injection volumes down to 0.6 nanolitres. Potential applications have been expanded with the introduction of a user-friendly, fully programmable touchscreen located on the control box.

The intuitive touchscreen enables prompted input and execution of tasks. The operational modes enable the user to program the unit to do single manual injections, as well as multiple injection cycle recipes. The program recipes are automatically saved and labelled in sequential order.

Programmability, the lower injection volume capability plus the user's ability to select the injection rate widens the potential range of applications for the Nanoject III.

The Nanoject III does not use any O-rings to secure the micropipette. Instead, a small chuck and a silicon receiver have been incorporated for the glass micropipette. The proven hydraulic technology ensures:

- Lower injection volumes
- User selected injection rate
- Accurate and consistent injection

The Universal Power Source provides adapter plugs to enable the unit to be used in the UK, US, Europe and Australia simply by inserting the proper plug.

The Nanoject™ III Programmable Nanolitre Injector kit includes the following components:

- The control box and power source
- Injector
- Injector head cable
- Vial of 100 3.5" glass capillaries
- Vial of 100 7" glass capillaries
- Backfilling needle
- Universal adapter



### Operating Modes

#### ■ Manual Mode

Enables the user to manually fill and empty the micropipette

#### ■ Inject Mode

Used to do single or multiple manual injections. The user can program an injection volume between 0.6 and 999.9nL, and an injection rate in nL/sec.

#### ■ Program Mode

Enables the user to program multiple injection cycle recipes. The Recipes are automatically saved and labelled in sequential order

#### ■ Set-Up mode

Enables the user to program and store the manual fill and empty rates. The fill and empty speeds are programmed separately to the injection rate.

### Specifications

Power Source	100/240 volt, 50/60 Hz
Total Sample Volume	4.2 µL
Fill / Empty Volume Speed	10 - 200 nL/sec
Injection Volume Range	0.6 - 999.9 nL
Injection Rate	10 - 200 nL/sec
Plunger Travel	23 mm
Glass Micropipette Dimensions	OD 0.045" (1.14 mm), ID 0.021" (0.53 mm)

### Nanoject™ III Programmable Nanolitre Injector

Catalogue Number	Description
3-000-207	Nanoject III Kit 100-240 volts
3-000-032	Foot Switch (remote capability for fill, empty and inject functions)

Supplied with universal adaptor for easy mounting

For accessories, please see page 30.

## Nanoject™ II Autoinjector

The Drummond Nanoject™ II Auto Injector is a high performance instrument, which has been specifically designed to perform ultra-delicate nanolitre injection procedures into cells, including oocytes and embryos. Positive displacement technology and precision microcapillaries together with unique features enhance the ease of use, precise delivery of sample and protection of cells.

The automated microprocessor control delivers volumes from 2.3nl up to 69nl with complete accuracy and precision, even when sample contaminants are present. Cells are protected by the remote controlled, non-rotating plunger that eliminates vibration, minimising cell rupture.

The narrow tips and delivery volume of the Nanoject II enable injections into specimens other than Xenopus. Quieter and smoother than former models, the higher torque motor further reduces tip movement. A novel collet configuration holds the microcapillary more securely reducing air infiltration and oil leakage.



The Nanoject II Kit includes the following components:

- Injector head with lead
- Control box
- Power supply
- Capillary glass: 2 vials of 100 pieces per vial:
  - 3.5" capillaries, Pk100
  - 7.0" capillaries, Pk100
- Replacement O-ring kit with standard collet
- Allen key for replacing wire plunger
- Needle for backfilling capillaries/micropipettes (30 gauge x 2" length)
- Universal Adaptor to enable fitting to most micromanipulators



## Operating Speed

Nanoject™ II has two speed options for each operation, allowing the user to fill and inject at half speed and facilitating the use of smaller microcapillaries.

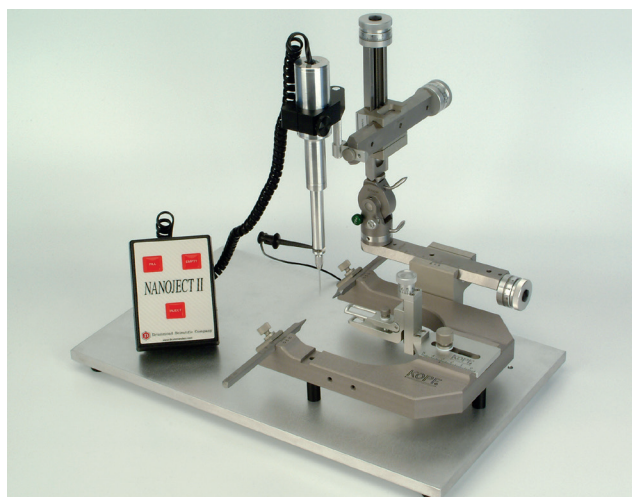
Handling of more viscous samples has also been improved, with no need for tedious recalibration if the viscosity changes.

Operation	Speed Option	Speed (nl/sec)
Fill Speed	Fast	46nL
	Slow	23nL
Injection Speed	Fast	46nL
	Slow	23nL
Empty speed	Fast	230nL
	Slow	92nL

## Recording Nanoject II Injector

The Recording Nanoject II has been specifically developed to improve microvolume injection techniques in the study of connectivity and function of specific brain nuclei. When used in conjunction with an extracellular amplifier, the integrated system enables small volumes to be injected into targeted areas.

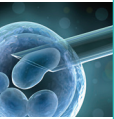
- Compatible with most popular stereotaxic instruments
- Supplied with Universal Adapter for easy mounting
- Supplements stereotaxic co-ordinates in guiding the placement of microvolume injections
- Provides direct displacement of neuronal tracer or excitotoxin from the dispenser



### Nanoject II Auto Injector

Catalogue Number	Description
3-000-206A	Nanoject II Auto Injector Kit 220V UK Charger
3-000-205A	Nanoject II Auto Injector Kit 220V EURO Charger
3-000-206-RN	Recording Nanoject II Auto Injector 220V UK
3-000-026	Foot Switch for Nanoject II Auto Injector
3-000-029	Control Box For Nanoject II

Note: Universal adaptor supplied with both models for easy mounting



## Nanoject Accessories

### Replacement Parts

#### Nanoject II Replacement Parts

Catalogue Number	Description
3-000-024-A	Universal Adaptor for Nanoject II*
3-000-030-A	Replacement Injector for Drummond Nanoject II™
3-000-027	Backfilling Needle for Nanoject II Auto Injector
3-000-000-203-X	Wire Plunger for Nanoject II Auto Injector

\* Can be used on stereotaxic equipment using 7.9mm clamps

### Injector Tips

Two lengths of borosilicate glass (N-51-A) capillaries are available for use with Nanoject II –3.5" and 7" and are ready for pulling to the required tolerance. Once the tips are pulled, they must be "backfilled" with oil (or other non-compressible fluid) before attachment to the injector. Silicone or mineral oil is frequently used for this purpose. Backfilling is performed using a 30 gauge x 2" needle and a syringe.

The precise operation of the Nanoject Auto Injectors depends greatly on the use of tips prepared from the specific glass provided. For this reason, it is recommended that only Drummond microcapillaries are used.



#### Injector Tips/Replacement Glass Capillaries

Catalogue Number	O.D (mm)	Length	I.D (mm)	Pack Size
3-000-203-G-X	1.14	3.5"	0.53	100
3-000-203-G-XL	1.14	7"	0.53	100

## Micromanipulators

The injector head should be mounted on a micromanipulator or stereotaxic unit using the Universal adaptor supplied in the kit. The Marzhauser MM33 micromanipulator is a popular, manual model equipped with high precision and stable cross-roller bearings, which work constantly without any noticeable wear even after many years of intensive use.

The MM33 also has a number of ergonomic benefits. The control knobs for all three axes are arranged at the same level so that it can be easily operated without looking. In addition, the operational controls are at the back of the unit, allowing several devices to be easily installed side by side. A support base is available for the MM3 micromanipulator and is also compatible with other brands.

For convenient hands-free operation, an optional foot switch can be used to control the Nanoject II and Nanoject III remotely.



#### Nanoject Accessories

Catalogue Number	Description
3-000-024-R	Micromanipulator Model MM33 Right-Handed Configuration
3-000-024-L	Micromanipulator Model MM33 Left-Handed Configuration
3-000-025-SB	Support Base for Micromanipulator

