Multiple modes of operation: manual, automatic, and USB control

Diverse applications ranging from microinjection of cells, embryos, tissue slices, larvae and adult insects to stereotaxic injection into brain and spinal cord

Accurate and reproducible injection and aspiration

High resolution and dynamic range

Automated injection volumes from 1 nL to 500 µL

Minimum micropipette tip size of 4 µm

Can be used with needles pulled from 1.0 – 1.2 mm capillaries

XWI Motorized Injector

The Xenoworks™ XWI motorized microinjector is a versatile hydraulic microinjector designed for use in microinjection workflows, as well as in stereotaxic and other tissue injections. The XWI uses a linear actuator to drive a piston accurately and reproducibly against a column of hydraulic fluid, producing reliable fluid motion in an injection pipette. The full stroke of the XWI actuator is 500 µL, allowing the injector to be used for many injections before the fluid reservoir must be refilled.

For microinjection workflows, manual operation of the injector using the control knob gives users direct control over injection and aspiration. The fluid displacement rate in manual operation mode spans three orders of magnitude, from 3.1 µL/revolution to 70 nL/revolution in five steps.

Manual operation of the XWI is suited for numerous applications including: pronuclear injection, nuclear transfer, embryonic stem cell injection, Xenopus oocyte injection, embryo injection, polar body biopsy, single-cell picking, brain and spinal cord injection

For stereotaxic and other tissue injections, the XWI has a programmable automatic mode with injection/aspiration rates between 1 nL/s and 10 µL/s. The XWI can be configured to use injection pipettes with outer diameters between 1.0 and 1.2 mm, regardless of inner diameter. The XWI micropipette holder can be mounted to commercial stereotaxic frames with stock adaptors. For other tissue injections, the micropipette holder can be held in one hand while the controller is operated either by the other hand, or the included footswitch. The micropipette holder also fits stock rod holders of most micromanipulators, including all Sutter Instrument micromanipulators. Use of a glass, rather than metal, microinjection needle minimizes damage to the target tissue and improves targeting and specificity. It does this by allowing for the use of needles with small outer diameters and bore diameters as small as 4 µm. In automatic mode, the XWI can be programmed to inject between 1 nL and 500 µL of solution in a single programmed injection.

Automatic operation of the XWI microinjector is suitable anywhere a pneumatic, hydraulic, or syringe pump injector might be used including: stereotaxic injection, nerve injection, (xeno)transplantation, subretinal injection, intrathecal and spinal cord injection, round window and semicircular canal injection, cerebrospinal fluid (CSF) sampling

The XWI motorized microinjector can also be controlled by a computer via USB with user-designed software, using freely available Sutter Instrument drivers and software development kits.

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MADE IN USA

11-2023

XENOWORKS™ XWI MOTORIZED MICROINJECTOR AND ACCESSORIES

XWI	Xenoworks™ Motorized Microinjector Includes: Hydraulic injector body, ROE controller, footswitch, microtool holder, injection and filling tubing, connecting cables, and manual.
XWI-MH	XWI microtool holder with O-Rings, gaskets for 1.0 – 1.2 mm OD pipettes.
XWI-FILL	Filling kit for Xenoworks Motorized Microinjector.
XWI-AT	Spare injection tubing and fittings for Xenoworks Motorized Microinjector.
BR-OIL	Light mineral oil, suitable for mouse embryo cell culture

SPECIFICATIONS
XENOWORKS XWI MOTORIZED MICROINJECTOR

Full Stroke Volume	500 µL
Piston Resolution	275 pL (Manual Mode) 1 nL (Automatic Mode)
Injection Rates	70 nL/Rev – 3.1 µL/Rev (Manual Mode) ±1nL/s - ±10 µL/s (Automatic Mode)
Features	• Manual and automatic operation modes • Versatile applications • Rotary encoder interface • High resolution • Large volumetric operating range • Realtime volume readout • Footswitch operation • Ergonomic design
Dimensions	Injector Mechanical: 255 mm x 35 mm x 35 mm Controller: 140 mm x 130 mm x 80 mm
Electrical	115/230 Volts 50/60 Hertz power line