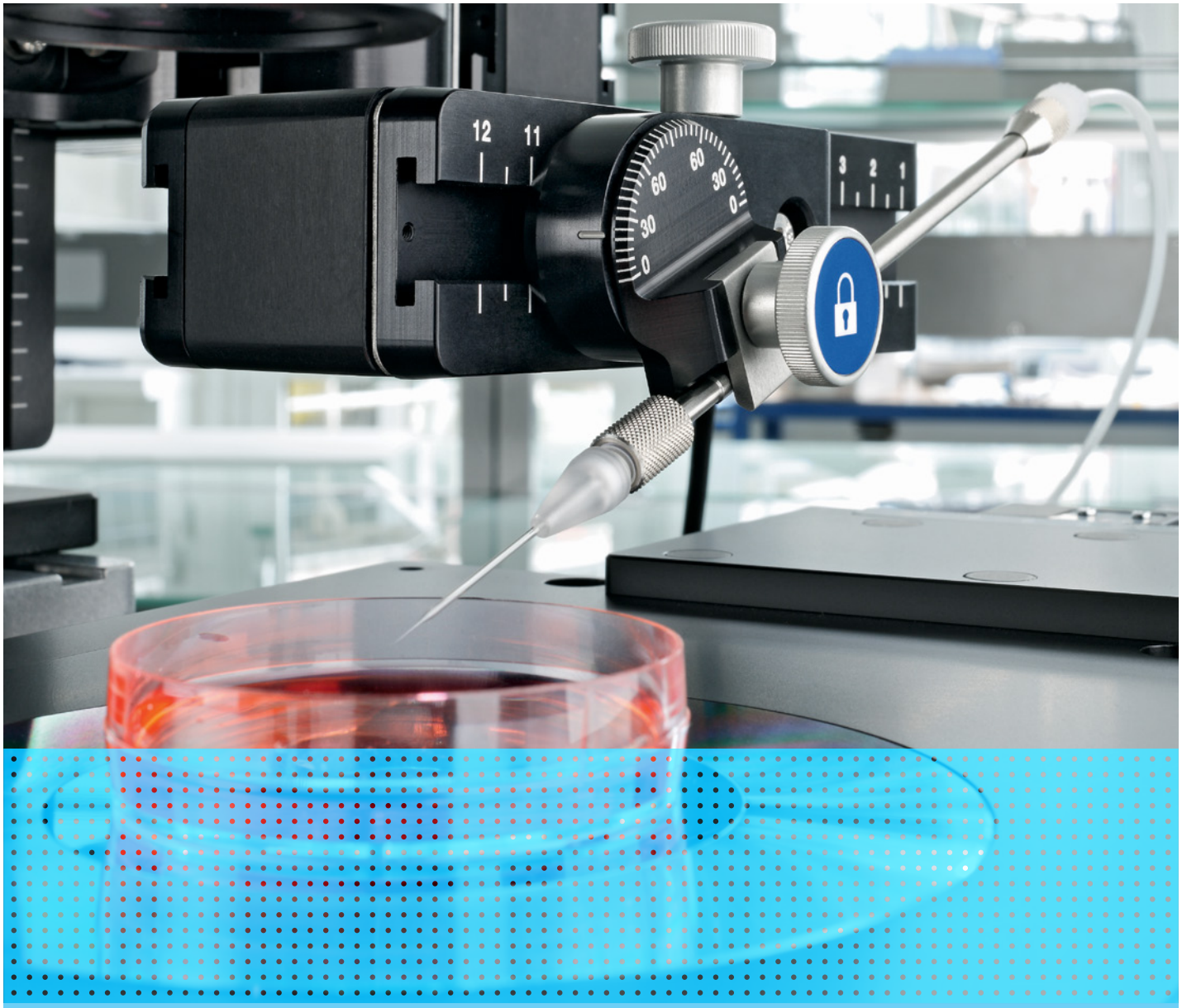
eppendorf



Smooth Operator

Eppendorf micromanipulators TransferMan® 4r and InjectMan® 4 with unprecedented movement control

Covering a broad range of applications, Eppendorf micromanipulation systems provide a high level of flexibility.

»The Eppendorf micromanipulators combine an intuitive user interface with an unprecedented movement control.«

Everyone who performs microinjection knows what's most important to guarantee best results: precision, fast processing and ease of use. With this in mind, we developed the TransferMan® 4r and InjectMan® 4 to make your work as easy as possible.

Microinjection into suspension cells

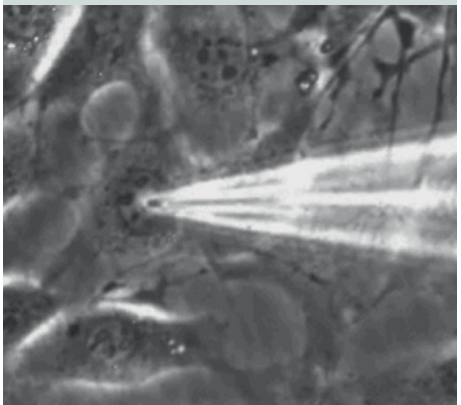
> Production of genetically modified animals using pronuclear and cytoplasmic injection (e.g. CRISPR)
> Applications in animal reproductive medicine (e.g. mouse ICSI)
> Serial injection into fish embryos (e.g. Zebrafish, Medaka)
> Injection into *C. elegans*, other worms, insects, etc.

Manipulation of suspension cells

> Stem cell transfer
> Nuclear transfer
> Transplantation of cells into small organisms or 3D cell culture
> Selection and isolation of individual cells (e.g. biopsies)

Other application examples

> Semi-automatic microinjection into adherent cells
> Positioning and selection of microparticles
> Microdissection of chromosomes, etc.
> Automatic dispensing of cell suspensions or solutions



TransferMan® 4r

The user-friendly TransferMan 4r combines an ergonomic and innovative operation concept that is ideal for manipulation of suspension cells such as oocytes and blastocysts. Application-specific user profiles simplify the individual workflow process with four predefined application masks to choose from (e.g. for cell transfer, DNA injection, etc.). The freely programmable »My application« mask can be optimized for specific individual needs.

Features/advantages

> Maximum stability ensures vibration-free work
> One Joystick for precise movement control in 4 axes: X, Y, Z and X/Z (axial)
> Programmable Z-axis limit for preventing capillary breakage
> Connection with Eppendorf PiezoXpert® and Eppendorf electronic microinjectors

1 Unique DualSpeed™ joystick for precise, instantaneous control and positioning using two different speed modes

2 Ergonomically shaped control panel for fatigue-free work

3 Optimized user interface for various applications simplifies work procedures

4 Simple and quick capillary and sample change using automated home function

5 Selection and programming of additional functions (e.g. storage of up to 5 positions, limit, Y-off)

6 Comfortable, individual speed adjustment

The unique DualSpeed™ joystick combines precise and intuitive, direct movement with dynamic movement control for covering longer distances or speeding up sample processing.
Furthermore, the dynamic movement mode can easily be switched off depending on the application need and personal preference.

InjectMan® 4

The InjectMan 4 is ideal for microinjection into adherent cells, smaller organisms, and embryos in the early stages of development. The combination of InjectMan 4, FemtoJet® 4i or FemtoJet® 4x even enables a fast, semi-automatic injection. Furthermore, the InjectMan 4 is the ideal micromanipulator for all complex applications that require a dynamic movement mode and direct control of the injection process via the joystick button. The axial movement ensures the optimal protection of sensitive cells and the lowest possible mortality rate.

Features/advantages

> Maximum stability ensures drift-free work
> Selection and programming of additional functions (e.g. axial movement, step injection)
> Connection with Eppendorf PiezoXpert for piezo-assisted penetration over a pre-defined distance
> PC interface for remote control

1 Dynamic movement control via joystick

2 Define injection levels and prevention of capillary breakage by programming the Z-axis limit

3 Connection with FemtoJet 4i, FemtoJet 4x for semi-automated axial injection

4 Simple and quick capillary and sample exchange using automated home function

5 Optimized user interface for various applications

The easily adjustable angle of the holding and injection capillaries can be set from 0° to 90°.

Plug & Play Motor Modules

True to its roots, the Eppendorf electronic micromanipulators convince with outstanding technical performance and an overall ergonomic concept. The robust and reliable devices are ergonomically correct and function with maximum stability.

The exceptional directness and smoothness of the movement in all directions make these manipulators ideal platforms for use in a broad range of applications.

Easily adaptable to all major microscope models, both TransferMan 4r and InjectMan 4 can be coupled with the electronic microinjectors FemtoJet 4i, FemtoJet 4x, and the Eppendorf PiezoXpert. This allows for integration of the operating functions into the manipulator control.

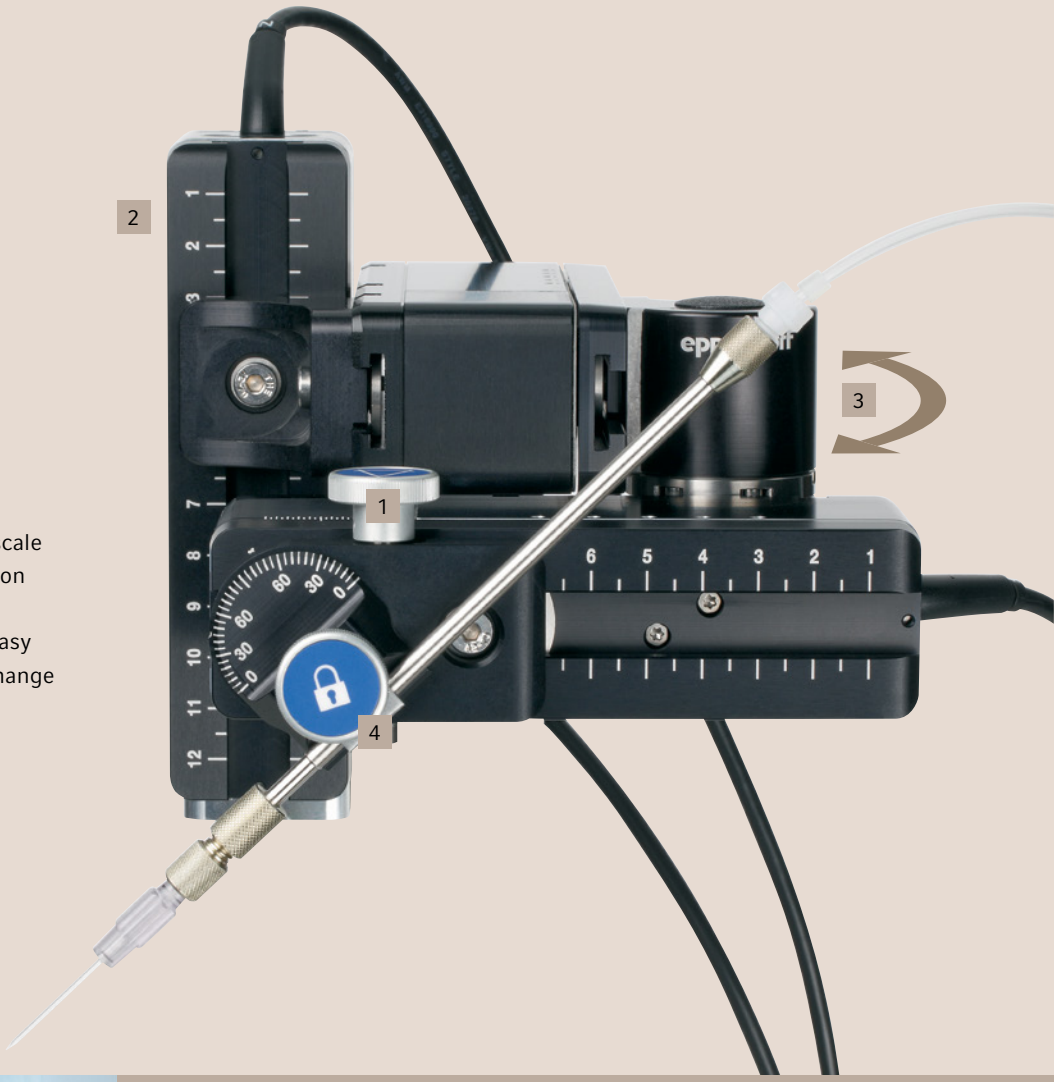
In combination, a micromanipulation system like this provides best performance and easiest operation.

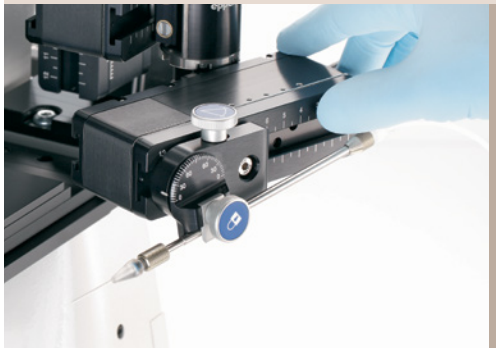
1 Easy adjustable angle from 0° to 90°

2 Plug & play system with scale to allow for easy installation

3 Swivel joint to allow for easy capillary and sample exchange

4 One-hand mounting of capillary holder





Swivel out function for easy capillary exchange.

Examples of Micromanipulation Workstations

Workstation for embryo manipulation techniques:
Recommended setup
> 2× TransferMan 4r
> 1× Microscope adapter (to be specified at time of order)
> 1× CellTram® 4r Air for holding
> 1× CellTram 4r Oil or CellTram 4r Air for injection
> 1× set of 25 VacuTip™
> 1× set of 25 TransferTip® (to be specified at time of order)

Optional
> 1× Eppendorf PiezoXpert®
> 1× set of 25 Piezo Drill Tips (to be specified at time of order)

Workstation for generation of transgenic animals via pronuclear/cytoplasmic injection:
Recommended setup
> 2× TransferMan 4r
> 1× Microscope adapter (to be specified at time of order)
> 1× CellTram 4r Air
> 1× FemtoJet 4i or FemtoJet 4x
> 1× set of 25 VacuTips
> 2× racks of 96 Microloader

Optional
> 1× Eppendorf PiezoXpert

Workstation for injection into fish embryos:
Recommended setup
> 1× InjectMan 4
> 1× Universal stand
> 1× FemtoJet 4x
> 2× racks of 96 Microloader

Optional
> 1× Eppendorf PiezoXpert

Workstation for adherent cell injection and for injection into Drosophila, *C. elegans* etc.:
Recommended setup
> 1× InjectMan 4
> 1× Microscope adapter (to be specified at time of order)
> 1× FemtoJet 4i
> 2× racks of 96 Microloader

Compatible to all major microscope brands

Eppendorf Micromanipulation Systems

Eppendorf PiezoXpert®

Our device for piezo-assisted micromanipulation facilitates easy perforation of cells for subsequent microinjection or manipulation. The piezo impulses are transmitted onto the attached microcapillary directly and without loss. Intuitive operation and a wide adjustment range ensure best performance and reproducible work. The electronic coupling with the TransferMan 4r and InjectMan 4 enables semi-automatic piezo-supported cell penetration.

FemtoJet® 4i / FemtoJet® 4x

Eppendorf FemtoJet 4i and 4x are perfectly suited for injecting small to intermediate volumes (up to 1 µL) featuring a wide range of functionality, simple operation and electronic coupling to both, TransferMan 4r and InjectMan 4, allowing for easy controlling of the injection process. The FemtoJet 4i features a built-in compressor to independently deliver the required pressure. Both units convince with highest precision that allows for reproducible injections.

CellTram® 4r Air/Oil

CellTram 4r Air and CellTram 4r Oil—manual microinjectors for pressure control, manual microinjection, and liquid dispensing—are designed with special emphasis on optimal ergonomics, operational comfort, and high precision. The CellTram 4r Air is a pneumatic microinjector for a broad range of microtransfer techniques. It is ideal for holding of cells or embryos in suspension or for dispensing the smallest volumes of liquid. The CellTram 4r Oil is the tool of choice for sophisticated applications that demand high resolution and sensitivity (e.g. embryo biopsies or injecting into plant cells). All models offer simple and reliable performance suiting all applications and personal working techniques, satisfying even the most demanding requirements.

Eppendorf Micromanipulation Accessories

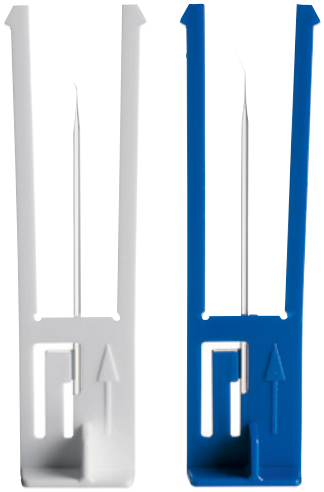
Eppendorf Antivibration Pads

The antivibration pads are specifically designed to effectively protect your micromanipulation system against extreme vibrations. The pads are simply directly positioned under the base points of your microscope. Five different sizes are available, from XS to XL. The various pads are optimized for specific load ranges to guarantee perfect results.

Eppendorf Cell Imaging Dishes

The Eppendorf 35 mm Cell Imaging Dish supports a premium performance in microinjection

> Low rim side walls allow for easier access for microinjection
> The polygonal gripping zone improves handling of dishes supported by comprehensive marks for facilitated orientation
> A TC treated glass surface enables attachment of most adherent cells
> A central cavity for concentrated growth and staining of cells reduces costs of antibodies and dyes



Eppendorf Microcapillaries

Eppendorf offers a wide range of excellent microcapillaries, designed to give you fast, efficient, and reproducible results for the most common applications.

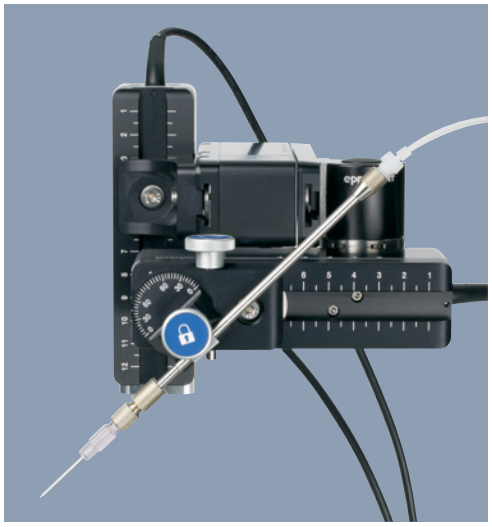
All microcapillaries offer you reproducible quality through narrowly defined specifications and intensive quality control, as well as the greatest security through effective sterilization methods.

> VacuTips for holding of suspension cells
> TransferTips for stem cell transfer etc.
> Femtotips and Femtotips II for microinjection of minimal volumes
> Piezo Drill Tips for piezo-assisted micromanipulation

Technical Specifications

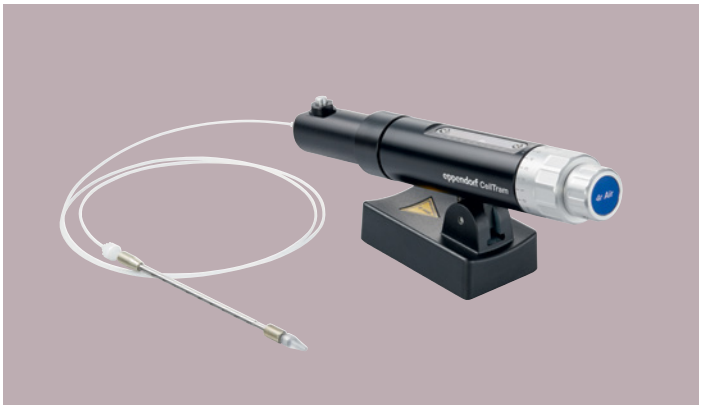
Control board	TransferMan® 4r	InjectMan® 4
Control	One joystick for movement control in X-, Y-, Z- and X/Z-dimension	
Speed control	Proportional and dynamic kinetics	Dynamic kinetics
Working mode	Coarse, fine, x-fine	
Dimensions (W×H×D)	205 mm × 288 mm × 152 mm	
Weight	1.8 kg	
External device/PC	Serial interface SubD9, male	

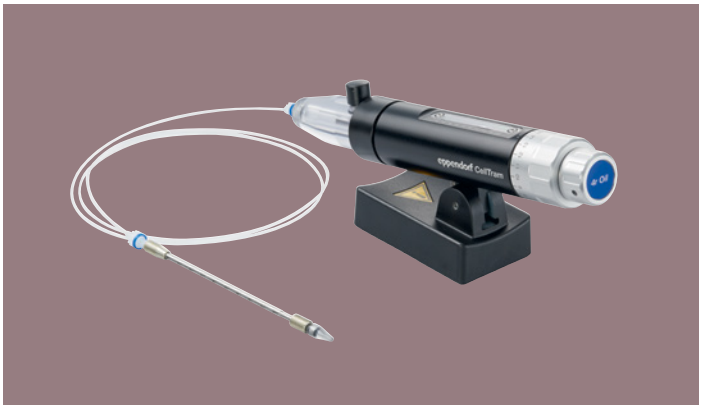
Motor module set	TransferMan® 4r/InjectMan® 4
Travelling distance	≥20 mm
Weight (complete)	2.15 kg
Stepper motor	X- ,Y- ,Z-module
Single module (X,Y,Z)	
Step size (computational resolution)	<20 nm
Speed	0–10,000 µm/s
Mechanical adjustability	>80 mm
Dimensions	129 mm × 51 mm × 36 mm
Direction of rotation	-45°– +90°
Capillary exchange	Direction of rotation: forward (swivel out)
Sample replacement	Direction of rotation: backward (swivel in)
Operating angle of angle head	0°– 90°



	Eppendorf PiezoXpert®
Applications	> Transfer of embryonic or induced pluripotent stem cells into blastocysts > Mouse ICSI (Intracytoplasmic Sperm Injection) > Enucleation/nuclear transfer > Blastomere biopsy from mouse embryos > Biopsy of equine embryos for PGD (Preimplantation Genetic Diagnosis)
Input voltage	100 V–240 V, 50–60 Hz
Power input	18 W
Max. power input	<0.18 A
Interface	USB 2.0 (for technical service)
Dimensions (W × H × L)	17 cm × 11.5 cm × 23 cm
Weight	2.8 kg

	CellTram® 4r Air	CellTram® 4r Oil
Applications	> Gentle holding of cells in suspension (e.g., oocytes or blastocysts) > Aspiration and dispensing of small cells (e.g., sperm) > Manual microinjection and dispensing of aqueous solutions	> Aspiration and dispensing of small cells (e.g., sperm) > Manual microinjection under high pressure (e.g., into plant cells) > Removal of cells (e.g., for embryo biopsies)
Generation of pressure	Cylinder/piston system, air-filled	Cylinder/piston system, oil-filled
Volume change per revolution	60 µL / 600 µL	1 µL / 10 µL
Cylinder volume	10 mL	1,000 µL
Minimum adjustable volume	<100 nL	<1.5 nL
Maximum pressure	3,000 hPa	20,000 hPa
Injection tube	Fluorinated ethylene propylene (FEP), 1.3 m length, inner diameter 0.5 mm, outer diameter 2 mm	Fluorinated ethylene propylene (FEP), 1.3 m length, inner diameter 1 mm, outer diameter 2 mm





	FemtoJet® 4i	FemtoJet® 4x
Applications	> Microinjection into suspension or adherent cells > Semi-automatic, serial injection in combination with InjectMan 4 > Ideal for serial injection volumes from femtoliter up to 100 pL	> Microinjection into *C. elegans*, early fish embryos, *Xenopus* oocytes > Semi-automatic, serial injection in combination with InjectMan 4 > Preferably used for injecting higher volumes (up to 1 µL) and/or longer injection series
Pressure supply	Integrated compressor	External pressure source required
Pressure display	Can be set to hPa or psi	
Programmable parameters	Injection time, injection pressure, compensation pressure	
Injection time	0; 10–99; 99 s; can be set in increments of 0.01 s	
Injection pressure	0; 5–6,000 hPa (87 psi)	
Compensation pressure	0; 5–6,000 hPa (87 psi)	
Clean function	Maximum rinsing pressure 6,000 hPa (87 psi)	
Dimensions (W × H × D)	21,3 cm x 25 cm x 20,7 cm	
Weight	5 kg	3.5 kg
Serial interface	RS-232, USB (for service only)	

Antivibration Pads

Size	Weight range
XS	4.5–6.0 kg
S	6.0–8.0 kg
M	8.0–10.0 kg
L	10.0–12.5 kg
XL	12.5–16.5 kg

Ordering information

Description	International Order no.	North America Order no.
TransferMan® 4r, micromanipulator with DualSpeed™ joystick for direct and dynamic movement control (for research use only)	5193 000.012	5193000020
InjectMan® 4, micromanipulator with dynamic movement control (for research use only)	5192 000.019	5192000027
Microscope adapter, for TransferMan® 4r and InjectMan® 4		
Leica® 1, for Leica® DMI3000 B, 3000 M, 4000 B, 5000 B, 5000 M, 6000 B, DM IRB E, HC, DMi8 and DM IRE 2 microscopes	5192 301.000	5192301000
Leica® 2, for Leica® DM IL LED and HC microscopes	5192 302.007	5192302007
Nikon® 1, for Nikon Eclipse® Diaphot 200, 300 and Eclipse® Ti-E, Ti-U, Ti-S, TE200, TE300, TE2000 microscopes	5192 316.008	5192316008
Nikon® 2, for Nikon® Eclipse® Ts2R microscope	5192 317.004	5192 317.004
Nikon® 3, for Nikon® Eclipse® Ti2-E/-A/-U microscopes	5192 318.000	5192 318.000
Olympus® 1, for Olympus® IX50, IX51, IX70, IX80, and IX81 microscopes	5192 306.002	5192306002
Olympus® 2, for Olympus® IX53, IX73, IX83 microscopes	5192 307.009	5192307009
Olympus® 3, for Olympus® IX53 with illumination IX2-ILL30	5192 308.005	5192308005
Zeiss® 1, for Zeiss® Axiovert® 200, Axio Observer A1, D1, Z1 and Axio Observer 3, 5, 7 microscopes	5192 311.006	5192311006
Zeiss® 2, for Zeiss® Axio Vert.A1 microscope	5192 312.002	5192312002
Universal stand, for mounting TransferMan® 4r and InjectMan® 4 on upright microscopes and stereo microscopes	5192 325.007	5192325007
Adapter bridge, for mounting TransferMan® 4r and InjectMan® 4 on microscope adapters for TransferMan® NK 2, InjectMan® NI 2 and PatchMan™ NP 2	5192 321.001	5192321001
Accessories for TransferMan® 4r and InjectMan® 4		
Positioning aid, pack of 2, for mounting universal capillary holder and capillary holder 4 on TransferMan® 4r and InjectMan® 4	5192 072.001	5192072001
Spare parts kit	5192 071.005	5192071005
Connecting cable TransferMan® 4r/InjectMan® 4 to FemtoJet® 4i/x	5192 082.007	5192082007
Connecting cable, for connecting Eppendorf micromanipulators with FemtoJet® and FemtoJet® express	5181 070.015	920005845
Y-cable FJ4, for connecting FemtoJet 4i/4x with a PC and TransferMan® 4r or InjectMan® 4	5192 080.004	5192080004
Connecting cable, for connecting Eppendorf micromanipulators with PC or Eppendorf PiezoXpert® and FemtoJet®	5181 150.094	920005837
Y-cable PX, for connecting Eppendorf PiezoXpert or a PC with TransferMan® 4r or InjectMan® 4	5192 081.000	5192081000
Headstage holder, for pre-amplifier, for InjectMan® 4	5192 073.008	5192073008
Foot control, for Eppendorf micromanipulators	5252 070.020	5252070020
Tube adapter, 2 pcs, for connecting injection tubes with an outer diameter of 2 mm or 3 mm	5194 075.407	5194075407
Microinjectors & Eppendorf PiezoXpert®		
FemtoJet® 4i, programmable microinjector with integrated compressor	5252 000.013	5252000021
FemtoJet® 4x, programmable microinjector with external pressure supply	5253 000.017	5253000025
CellTram® 4r Air, pneumatic, manual microinjector with gears 1:1 and 1:10	5196 000.013	5196000013
CellTram® 4r Oil, hydraulic, manual microinjector with gears 1.1 and 1:10	5196 000.030	5196000030
Capillary holder 4 (slim shape), for flat angle injections, for microcapillaries with outer diameter 1.0 mm	5196 062.000	5196062000
Eppendorf PiezoXpert®, for piezo-assisted micromanipulation, incl. actuator 2, foot control, spacer plate and grip head 4 size 0	5194 000.016	5194000024

Ordering information

Description	International Order no.	North America Order no.
Antivibration Pads		
Antivibration Pad XS, weight range 4.5–6.0 kg	5181 301.009	920007945
Antivibration Pad S, weight range 6.0–8.0 kg	5181 303.001	920007953
Antivibration Pad M, weight range 8.0–10.0 kg	5181 305.004	920007961
Antivibration Pad L, weight range 10.0–12.5 kg	5181 307.007	920007970
Antivibration Pad XL, weight range 12.5–16.5 kg	5181 309.000	920007988
Consumables		
TransferTip® RP (ICSI), for sperm injection using the ICSI technique, set of 25	5195 000.010	5195000010
TransferTip® F (ICSI), for sperm injection using the ICSI technique, set of 25	5195 000.001	5195000001
TransferTip® R (ICSI), for sperm injection using the ICSI technique, set of 25	5195 000.028	5195000028
TransferTip® (ES), for ES cell transfer, set of 25	5195 000.079	5195000079
VacuTip I, holding capillary, set of 25	5195 000.036	5195000036
VacuTip II, holding capillary, set of 25	5195 000.044	5195000044
Piezo Drill Tip Mouse ICSI, for piezo-assisted mouse ICSI, set of 25	5195 000.087	5195000087
Piezo Drill Tip ES, for piezo-assisted mouse ES cell transfer, set of 25	5195 000.095	5195000095
Femtotips®, injection capillary, set of 20	5242 952.008	5242952008
Femtotip II, injection capillary, set of 20	5242 957.000	5242957000
Biopsy Tip I, capillary for laser-assisted biopsy of cells and organelles, set of 25	5195 000.052	5195000052
Biopsy Tip II, capillary for laser-assisted biopsy of cells and organelles, set of 25	5195 000.060	5195000060
Microloader™, tip for filling Femtotips® and other glass microcapillaries, 192 pcs. (2 racks × 96 pcs.)	5242 956.003	5242956003
Eppendorf Cell Imaging Dishes , TC treated, sterile, free of detectable pyrogens, DNA, RNase and DNase. Non-cytotoxic.		
Eppendorf Cell Imaging Dish 145 µm, 35 x 10 mm	0030 740.009	0030740009
Eppendorf Cell Imaging Dish 170 µm, 35 x 10 mm	0030 740.017	0030740017

Your local distributor: www.eppendorf.com/contact
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