

De Fonbrune Precision Pneumatic Micromanipulator



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Since its inception, the De Fonbrune type micromanipulator has found extensive use in phases of biological research, colloidal chemistry, oil industry and in the study of fibers and yeast cells. More recent applications have been found in the areas of embryo transplant. The De Fonbrune micromanipulator takes advantage of principles of the pneumatic drive, in which the movements of the joystick control are transferred to the microtool being used in the experimental field under microscopic observation. This pneumatic control gives you smooth positive movement, virtually zero drift and no backlash, not possible with mechanical or hydraulic units.

The De Fonbrune micromanipulator system consists of the joystick manipulator and the receiver. The joystick manipulator contains the control lever, hand rest and three glass cylinders enclosing the brass piston pumps. The receiver unit contains the microtool holder, three sterling silver diaphragms, main shaft and linkage (all delicate components are protected by a clear plastic cover). The receiver unit is mounted on a base fitted with a rack and pinion assembly for vertical adjustment and slide assembly for horizontal adjustment (X-axis and Y-axis). The manipulator and receiver are connected together by flexible pneumatic tubing. Sterling silver diaphragms and precision manufactured cylinder assemblies offer long trouble free life.

Operating against air pressure, the pneumatic pumps are activated by the slightest movement of the joystick control lever. This control lever movement is transmitted pneumatically through the tubing, diaphragm and linkage to the microtool mounted on the main shaft. A single joystick controls the movement of the microtool in all three axes, X, Y, and Z, leaving the operator's other hand free. Separate joystick and receiver units are independent of the microscope. Connected by pneumatic tubing, they may be set up for either right or left-handed use. Through the microscope, the microtool appears to move exactly the same way as the hand. A ball swivel joint and telescoping mount provide unlimited positioning capability, enhancing height and angle options for the receiver unit. Mechanical controls on the receiver unit provide fast coarse adjustments. The pneumatic joystick control can be used for fine focus, positioning and the actual experimental operation.

- Pneumatic joystick control provides virtually zero drift and no backlash which is not possible with hydraulic or mechanical manipulators
- Single joystick controls the movement of the microtool in all three axes, x, y, and z, leaving the operator's other hand free
- Ratio adjustment control from 1:50 to 1:2500
- User set up for either right- or left-handed use
- Telescoping mount provides unlimited positioning capability
- Easy to maintain
- Used in a wide variety of applications:
 - Grafting and substituting nucleus of amoeba
 - Microinjections and operations on protozoa
 - Operations on blastomeres
 - Injections into blastocoeles
 - pH studies of living cell solutions
 - Isolation and transfer of single cells
 - Investigation of carcinomatous tissue
 - Investigations of ova and fertilization problems
 - Cellular manipulation

The microinstrument operates in a range of 1.5 mm from the center position (3 mm total). A moveable collar on the joystick provides simple ratio adjustment control that can be varied from 1:50 to 1:2500. Thus, the movement of the microtool can be adjusted to correspond to the magnification of the optical system or to increase or decrease the control sensitivity.

The receiver unit contains binding posts which permit the use of micro-electrodes. It contains both moveable and fixed instrument holders in addition to the main tool holder, as well as a built-in level and leveling screws on a heavy cast base to provide maximum stability.

All systems are shipped with the following: micro tool reamer, adjustable microclamp, microclamp extension, 1 vial capillary Tubes, 1 specimen chamber (moist), primary tool holder, 4 micro tool holders (50, 80, 100 mm and bent), 2 allen wrenches, pin-spanner wrench, face spanner wrench, cement (3 pcs.), 1 beeswax, 1 cylinder oil and 1 wax introducing instrument.

Specifications

Ratio Adjustment	1:50 to 1:2500
Movement Sensitivity at Max. Ratio	~1 μ m
Rack and Pinion Adjustment	2 in. (6 to 8 in. to center of microtool holder)
Ball Swivel Additional Height	4 in. (min.) to 5 in. (max.)
Angular Sweep	Horizontal to 20° from horizontal
Microtool Holder Angular Adjustment	\pm 15° from horizontal
Excursion of Microtool	Coarse adjustment 8.5 mm on X and Y axes; fine adjustment 1.5 mm from center position (3 mm total) in all axes
Shipping Weight	8.2 kg (18 lbs)

Catalog No.

CGS 9013.75

Product

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