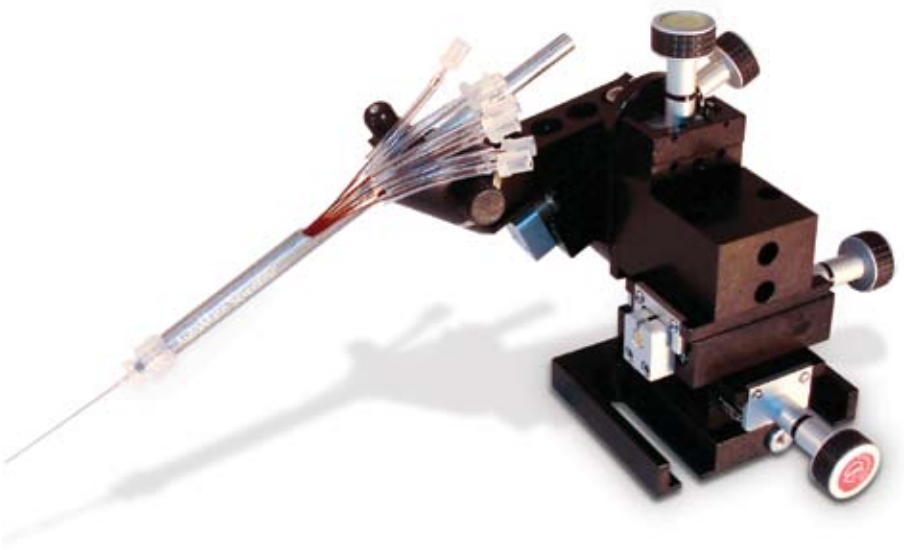
Stability and full features at a great price.



Manual Base Mount Micromanipulators

- **Four-axis control with soft touch knobs on all models shown**
- **Five or ten micron accuracy**
- **Combine with a Perfusion Pencil® for focal drug application**

The AutoMate Scientific Perfusion Pencil makes a perfect companion to these four-axis micromanipulators. Mount the Perfusion Pencil for micron accurate drug delivery and rapid rotational change-out. The small SD-10 manipulator offers 5 µm resolution. Its compact size makes it ideal for stimulator applications. The SD-130 manipulator is designed to maximize available space. Its narrow profile allows several manipulators to be placed in one quadrant. With a long 22 mm (0.86 inches) of travel on its probe axis and X axis, the SD-160 is ideal for axial cell probing. It includes an adapter mounted to the Θ axis with a rotational stop for convenient electrode/pipette replacement.

SD-130 Narrow Space-saving Manipulator

The SD-130 Manipulator is designed to maximize available space. The narrow profile design allows multiple manipulators to be placed in one quadrant. The SD-130 provides 38 mm coarse and 5 mm fine positioning travel in the X axis. Two-and-a-half turns of the coarse adjustment knob will fully retract the device in the X axis. The assembly is fitted with an MXC-45 probe clamp for easy changing of electrodes or other implements.

Y and Z axis adjustments are accomplished with the fine adjustment screws mounted on the back of the device. Additionally the Z axis adjustment screw may be configured with the knob on the top or the bottom, whichever provides the best access. The device angle is easily set by loosening the locking screw. The RTC-0.5 mounting base provides coarse rotational positioning and flexible mounting options of either base or post support. Left- or right-hand models allow additional flexibility to suit your application.

The extra length dovetail stage of the X axis combined with the spring loaded pivot mechanism (pat.# 6590723) of the other two axes allow for a high level of stability. This allows for smooth and precise adjustments.

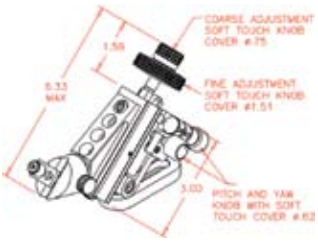
SD-160 Full-featured Manipulator

Unlike stages with rack and pinion drive, the SD-160 uses a spring loaded lead screw design against a solid stop, ensuring drift-free operation. The SD-160 incorporates fast-pitch, screw drive positioning, and smooth ball bearing motion in the X, Y, Z, and Θ axes for precision positioning. Color coded knobs are used to identify axis location in low light conditions.

For added positioning versatility, the top stage tilts at any angle through 360°, and includes 22 mm of linear travel along the probe axis. This feature plus 22 mm of X-axis travel make the SD-160 ideal for axial cell probing.

The SD-160 has an MXC-45 mounted to the Θ axis. The MXC-45's built-in rotational stop allows easy electrode/pipette replacement. SD-160s come standard with the ABP-R mounting plate. The mounting plate design enables coarse positioning between platform mounting holes as well as 360° of coarse rotational positioning. If rotation with a solid submicron level stop is required, the MX-RS rotation stage is designed to mount directly into the ABP-R as well as the SD-160.

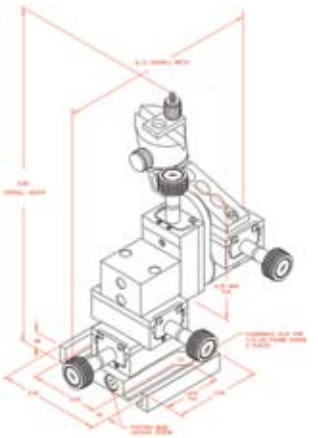
SD-130 Micromanipulator



SD-130 Performance Specs

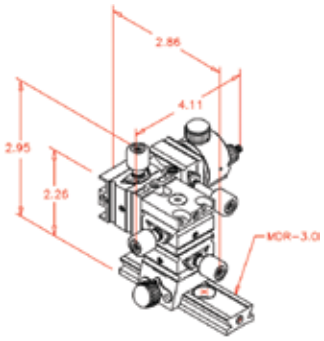
- Repeating probe holder
- Combined coarse and fine control on X axis
- Narrow space saving design
- Resolution 5 µm

SD-160 Performance Specs



- Rotatable mounting base
- Axial approach on 4th axis
- Repeating probe holder
- Maximum load 2 lbs
- Travel/axis 0.86 inch (22 mm)
- Min. controllable motion 10 µm

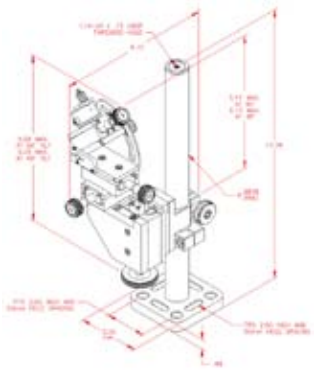
SD-10 Micromanipulator



Only 4.11 x 2.95" (10.44 x 7.49 cm)

- 10 mm travel in all 4 axes
- Dovetail mounting rail for easy removal or replacement
- Maximum load 0.5 lbs
- Travel/axis 0.39 inch (10 mm)
- Resolution 5 µm

SD-MX110 Micromanipulator



SD-10 Miniature Micromanipulator

The SD-10 is a miniature micromanipulator ideal for positioning applications requiring micron-level resolution. DT100 series stages use a precision-rolled 80 TPI lead screw for smooth positioning along their entire travel. The miniature dovetail slide uses an adjustable spring-loaded gib design. This feature ensures stability, straightness of travel and also works as a locking mechanism. The device is equipped with a fourth axis which can be set at any angle through 360° of motion.

The compact size of the SD-10 makes it ideal for stimulator applications. The mounting method makes removal and replacement very straightforward. The addition of a simple stop allows repeatable placement.

SD-MX110 Post-mount Micromanipulator

- Rotatable post mount
- Mounting rod and base included
- Maximum load 2 lbs
- Travel/axis 0.86 inch (22 mm)
- Resolution 10 µm

Unlike stages with rack and pinion drive, the SD-MX110 uses a spring-loaded lead screw design against a solid stop, which ensures drift-free operation. The SD-MX110 incorporates fast-pitch, screw drive positioning, and smooth ball bearing motion in the X, Y, Z, and probe axes for precision positioning.

For added positioning versatility, the top stage tilts at any angle from 0° to 90°, and includes 22-mm of linear travel along the probe axis. This feature plus 22-mm of X-axis travel make the SD-MX110 ideal for axial cell probing.

To make probe replacement efficient, the SD-MX110 can be rotated away from the microscope and returned back to the original position using an adjustable stop. Color coded knob caps are used to identify axis location in low light conditions.

Siskiyou Manual Manipulator Ordering Information

Part No.	Product Description
SD-10	**4 axis mini micromanipulator** (specify right or left hand)
SD-MX110	**Manual post-mount 4 axis micromanipulator**
SD-130	**4 axis compact micromanipulator**
SD-160	**4 axis full micromanipulator**

U.S./Canada prices shown. International prices add 20%. Email or visit web store for latest prices.

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Exceptionally smooth linear travel and drift-free operation.

Siskiyou Motorized & Hydraulic Manipulators

Siskiyou manipulators are well-known for their reliable performance in electrophysiology recording and stimulation. Motorized manipulators are available with push-button, joystick, dial and computer controllers for single or multiple manipulators. Headstage and electrode mounts are available for major amplifier brands.

Motorized Manipulators, Four-axis Base Mount

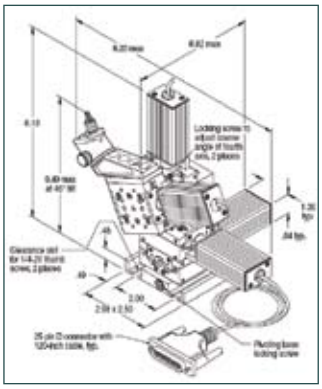
The MX7600 motorized crossed roller bearing micromanipulator is ideal for patch recording experiments. Offering exceptionally smooth linear travel and a precision preloaded lead screw to ensure drift-free operation. The motorized 4-axis micromanipulator incorporates our MXC-45 pipette holder mounted to an adjustable clamp on the θ axis. This clamp allows the MXC-45 and θ axis to be adjusted to the desired angle of approach from 0° to 180° for true axial approach. The MXC-45's built in rotational stop allows easy pipette replacement. The MX7600 can be used with our e series and MC2000 controllers to drive the 7600 stage through a closed loop interface between the controller and the

Features

- 1.7 mm/second rapid positioning
- Axial approach on 4th axis
- Repeating probe holder

Performance Specifications

- Maximum load 2 lbs
- Travel / axis 0.80 inch (20 mm)
- Minimum controllable motion 0.1 µm
- Backlash ≤ 5 µm
- Point to point accuracy ± 2 µm



motor encoder. The closed loop connection ensures 0.2 µm and 0.1 µm resolution, respectively.

MX7600 series stages come standard with our ABP-R mounting plate. The design of this mounting plate enables coarse positioning between platform mounting holes as well as 360° of coarse rotational positioning. If rotation with a solid submicron level stop is required, the MX-RS rotation stage is designed to mount directly into the ABP-R and has mounting holes to attach to the base of the MX7600.

Push-Button Controller

The MC1000e is a simple push-button controller with submicron positioning capability that is compatible with our 800 and 7000 series actuators, manipulators, and stages.

The MC1000e 4-axis controller has two preset speed settings: rapid (1.7 mm/second) and medium (300 µm/second). The third speed selector (slow) has a variable 330° potentiometer that enables settings from high speed (50 µm/second) to low speed (2 µm/second). With the speed selector set at the slowest settings, consistent 0.2 µm moves are easily made by the simple bump of an axis button.

All of the Siskiyou controllers on these two pages use encoder feedback from the motor to drive the device. This encoder coupling enables the use of the DR1000 digital readout for repeated positioning requirements.

The MC1000e controllers also use a wall mounted power supply as their source for clean DC power. All cables are shielded and a central ground lug is located on the junction-box to ensure noise-free operation during sensitive electrophysiology experiments.

Four-axis Closed Loop Dial Controller

The MC1000e-R/T 4-axis dial controller acts as a remote micrometer control for 800 & 7000 series actuators, manipulators, and stages. It uses encoder feedback from our closed loop devices to create an electronic link between the controller dial and the device being driven. This direct coupling to the encoder ensures smooth and coordinated motion between the controller and the drive.

A two-position rocker switch is conveniently located on the top of the controller. The rapid setting is set to maximize speed (1.7 mm/second) when the dial is turned at 180 RPM. The slow setting is set to maximize resolution (0.2 µm) but still allow coarse positioning (800 µm/second).

Three-axis Closed Loop Joystick Controller

The MC1000e-J joystick controller is designed for coarse micron level positioning of our 800 and 7000 series actuators, manipulators, and stages.

The joystick control is proportional from slow to high through the travel range of the joystick motion. A two-position rocker switch is conveniently located on the top of the controller. The rapid setting is set to maximize speed (1.7 mm/second) when the joystick is moved to its farthest position from center. The slow setting is set to maximize resolution (0.2 µm, 30 µm/second).

Polarity switches on the junction box allow the joystick motion to be set to match the output of the device being driven. This feature ensures intuitive interaction between the joystick operator and the operation.

Four-axis Closed Loop Push-Button with Target

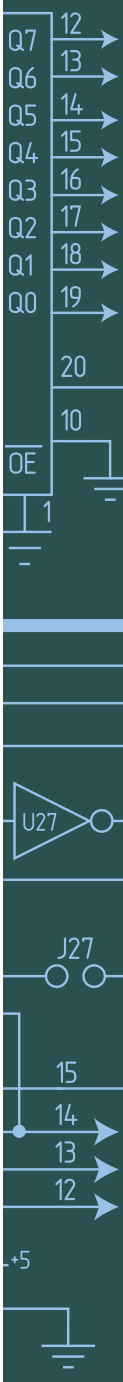
The MC1100e uses the same control features as our popular MC1000e controller with a TARGET/RETRACT feature on one axis. The TARGET/RETRACT allows the user to set a target location at a desired point. When it becomes necessary to back away from the experiment area, the user simply depresses the RETRACT button. The stage/actuator plugged into that axis then automatically retracts to its full negative limit. The user then can return to the previously set position by simply depressing the TARGET button.

The MC1100e 4-axis controller has two preset speed settings: rapid (1.7 mm/second) and medium (300 µm/second). The third speed selector (slow) has a variable 330° potentiometer that enables settings from high speed (50 µm/second) to low speed (2 µm/second). With the speed selector set at the slowest settings, consistent 0.2 µm moves are easily made by the simple bump of an axis button.

Controller Switch Box

Our easy to use ABDC switching box allows control of one to four 4-axis micromanipulators by one controller (MC2000 excluded). The basis of the design is simple and requires only an extra controller junction box for each added micromanipulator or motor drive group (up to four per group). Junction boxes must be purchased separately, however this is more cost-effective than individual handheld control units.

When used with the MC1100e controller, the user can save a "target" location for each manipulator independent of the operation of the others even after switching between micromanipulators. The switch box comes with enough cables to attach four junction boxes, and all connections are shielded.



Hydraulic, Integrated Base Mount Micromanipulators

Features

- Water based hydraulic system
- Less than 2 µm drift / hour
- Ideal for intracellular recording

Performance Specifications

- Travel / axis:
  Total 0.80 inch (20 mm)
  Fine 0.2 inch (5 mm)

- Minimum controllable motion:
  Coarse 10 µm
  Fine 0.5 µm

Smooth motion and instant response to hand adjustments makes the MX6600 ideal for long term intracellular recordings. The water based hydraulic mechanism has a thermal expansion two to three times less than that of oil based systems, thus minimizing drift to less than 2 µm per hour at constant temperatures.

The MX6600 design integrates the metal bellow system with our precision crossed roller stage to ensure precision movement and long life. The fine positioning dials on three axes use our ultrafine 127TPI adjustment screws to enable 0.5 µm resolution. The coarse positioning knobs on four axes incorporate 20TPI screw drive positioning for smooth motion in the X,Y, Z, and Θ axes. The Θ axis can be adjusted to the desired angle of approach from 0° to 180°.

The MX6600 has our MXC-45 mounted to the Θ axis. The MXC-45's built-in rotational stop allows easy electrode/pipette replacement. MX6600s come standard with our ABP-R mounting plate. The design of this mounting plate enables coarse positioning between platform mounting holes as well as 360° of coarse rotational positioning. If rotation with a solid submicron level stop is required, the MX-RS rotation stage is designed to mount directly into the ABP-R as well as to the base of the MX6600.

Repeatable Headstage and Probe Clamps

Features

- Unique swing-out design
- Spring-loaded lock knob
- Compatible with Axon 200/700 series, HEKA EPC-10, and A-M Systems model 2400

Axon 200/700 Headstage Mount

The MXC-45D's unique design allows repeatable electrode replacement with a simple but accurate rotating clamp. The top clamp of the MXC-45D is designed to be compatible with Axon CV200B, CV-7A, and HEKA EPC-10 headstages. The rotating portion is configured such that the probe /pipette rotates up and away from the experiment at a 45° angle through a full 180°. The repeatable stop returns to its location with micron level accuracy and the stop's orientation can be changed simply by loosening a single 1/4-20 cap screw.

Probe Clamp

The MXC-45's unique design allows repeatable electrode replacement with a simple but accurate rotating clamp. The top clamp of the MXC-45 is designed to be compatible with headstage mounting rods from 3- to 10-mm in diameter. The rotating portion is configured such that the probe /pipette rotates up and away from the experiment at a 45° angle through a full 180°. The repeatable stop returns to its location with micron level accuracy and the stop's orientation can be changed simply by loosening a single 1/4-20 cap screw.