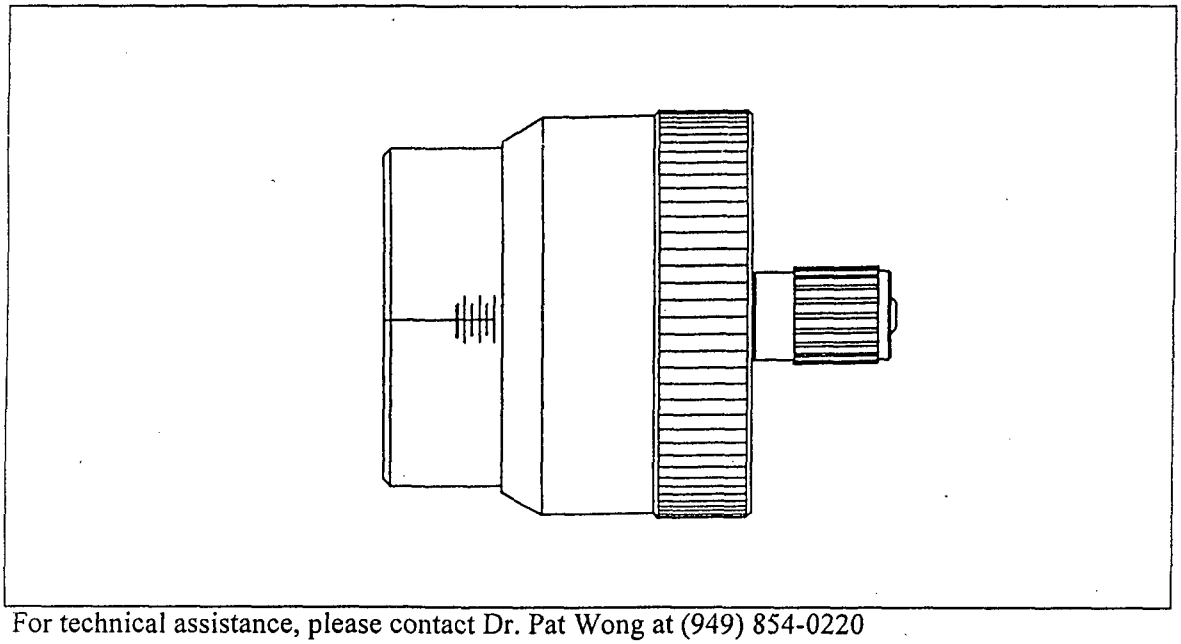
SOMAPATCH MW SERIES HYDRAULIC MICROMANIPULATORS

CAUTION

PRECISION INSTRUMENT
PLEASE HANDLE WITH CARE

When micro-manipulator is not in use, we recommend that you back off drive knobs to position (starting point of travel) shown below to minimize pressure in hydraulic lines. For Newport Model MX510/530 units retrofitted with Soma's MW series hydraulic mechanism, please see foot note.*



For technical assistance, please contact Dr. Pat Wong at (949) 854-0220

*MX510 and MX530 have 2 mm of travel in each axis. For units retrofitted with MW series hydraulic mechanism (repair codes RMW510 & RMW530), travel has been extended to 5 mm. Position shown in diagram corresponds to mid point of travel only. Knobs should be turned back further by another 3 mm to fully minimize pressure in hydraulic lines.

SOMA SCIENTIFIC INSTRUMENTS, INC.
5319 University Drive, #366, Irvine, CA 92612
Tel: (949) 854-0220 Fax: (949) 854-0223

MW Series Hydraulic Micromanipulator User Instructions

Introduction:

Thank you for purchasing SOMA's MW series hydraulic micromanipulator.

This micromanipulator is specifically designed for applications in patch clamping, intracellular recording and microinjection. The end product of years of intensive development and testing, it is engineered to provide high precision, low drift, long life and ease of use and service. We hope that your research work benefits from the new proprietary technology it incorporates.

Minimizing drift:

Tests of numerous types of micromanipulators have shown that maximum stability can only be attained when all mounting hardware and the microscope itself are stable to a value less than the overall drift that one can tolerate.

Sources that can have a deleterious effect include temperature fluctuations and vibrations resulting from pedestrian traffic in the building, street traffic, heating, air conditioning, slammed doors, noises, etc.

For maximum stability, all components in your recording setup, including microscope, should be solidly anchored to a vibration isolated work surface. SOMA provides a complete line of vibration isolated workstations.

If at all possible, all existing plastic parts between the recording electrode and the micromanipulator should be replaced by parts made with metal such as aluminum or steel. Rubber feet on bottom of microscope should be removed.

Temperature fluctuations should be kept to a minimum and recording sites should be shielded from radiant heat sources such as illumination lamps and air currents from heating or cooling vents.

For additional information on how to minimize drift, please see "*Technical Notes*" section at our web site, www.somascientific.com.

Modifying:

The probe holder can be removed (i.e. to replace it with custom-made holders or adapters). Remove attaching screw with a 2 mm Allen wrench. When loosening this screw, grasp the probe holder to prevent applying excessive torque to the stage bearings underneath.

DO NOT attempt to adjust or remove any other screws. To do so may seriously interfere with proper operation of the manipulator and void warranty.

Regular maintenance:

Always keep micromanipulator covered when not in use or stored to prevent dust or other particles from contaminating stage bearings.

The fluid in the hydraulic mechanism is distilled water. Because Teflon hose is permeable to water, although very slowly, it will be necessary to refill the system periodically (1 to 3 years depending on condition of use). MW series manipulators are designed for field service and can be easily refilled. Each manipulator comes with all the necessary wrenches for removing bellow/hose assemblies for refilling. Refilling can also be done at our factory at a nominal charge.

When micromanipulator is not in use, we recommend that you back off drive knobs to minimize fluid pressure in Teflon hoses (See diagram on back of page). This will slow water evaporation.

CAUTION

Each axis of this micromanipulator consists of a spring-loaded miniature translation stage guided by high precision crossed roller bearings. To ensure proper operation, do not twist or bend any of the stages and under no circumstances should any stage be pushed or pulled by hand. Doing so may damage the hydraulic chambers rendering that axis inoperable.

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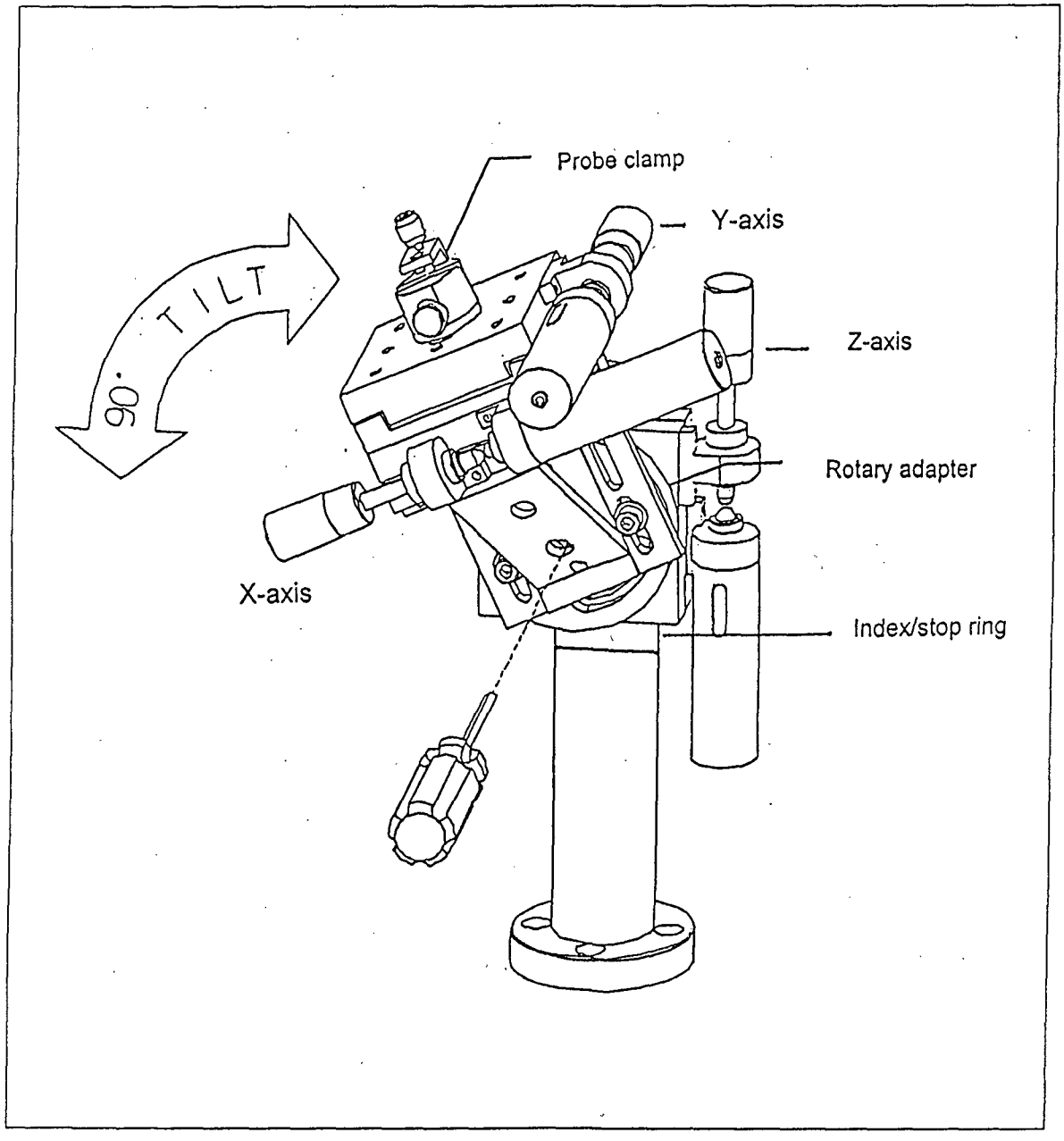
SOMAPATCH™ series micromanipulators

Model MM-1R



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Step by step final assembly procedure for SOMAPATCH-MM-1 Series Micromanipulators

SOMAPATCH-MM-1 series micromanipulators are designed for mounting on an air table with 1/4 x 20, 1 inch off center tapped mounting holes. Each manipulator is shipped partially assembled. Please follow final assembly procedures listed below.

Please check that you have the following components:

1. XY-axis assembly (1)
2. Z-axis assembly (1)
3. Post/index ring assembly (1)
4. 1/4 x 20 x 0.5 stainless mounting screws (4)
5. 3-axis motion contoller (1)
6. Interconnecting cable (3)
7. Ball driver, 3/16 (1)
8. Hex wrenches, 3/32 (1) & 3mm (1)

Mounting micromanipulator on air table:

1. Remove all packing materials.

2. Attach post assembly to table with 4 screws.

3. Mount Z-axis assembly on post to approximate desired height. Manual and motorized drives of stage should be located to your right for right-handed version and to your left for left-handed version. Tighten post clamp.

4. Remove and put aside the stainless steel screw from circular slot of the rotary adapter on Z-axis assembly.

5. Line up center screw of rotary adapter with through hole on bracket of XY-axis assembly and secure it to Z-axis assembly using the 2 screws/washers on the rotary adapter (see diagram).

6. Holding the XY-axis assembly, loosen center screw on rotary adapter and adjust tilt angle to desired position (zero to 90 degree). Tighten center screw.

7. Remove XY-axis assembly from rotary adapter. Re-insert and tighten stainless steel screw to Z-axis assembly through one of the circular slots. Re-attach XY-axis assembly.

8. Adjust assembled manipulator to exact height desired.

9. Loosen screw of index ring on post and push it against bottom of post clamp. Rotate index ring clockwise until index pin hits pin on post clamp. Tighten screw on index ring.

10. Connect motorized drives to controller with cables. Your manipulator is now ready for use.

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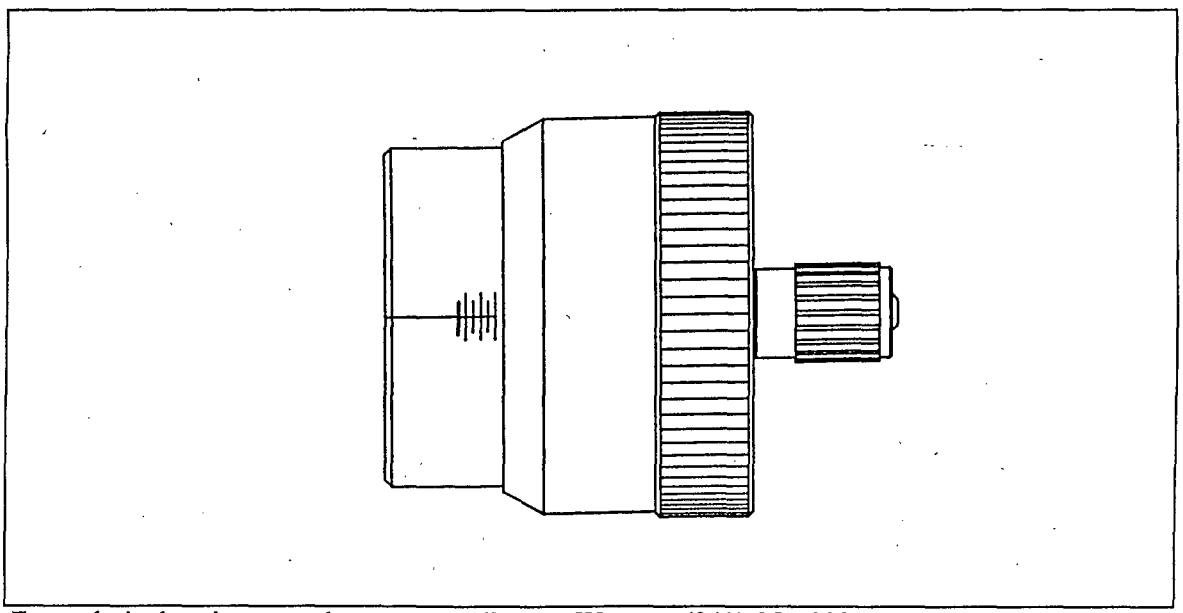

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