



Micromanipulators

Care and Maintenance



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INSTRUCTION MANUAL

Serial No. _____

111901

World Precision Instruments

WARRANTY

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within ten (10) days after receipt of shipment. Claims for lost shipments must be made within thirty (30) days of receipt of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim is settled. In some instances, photographic documentation may be required. Some items are time-sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container

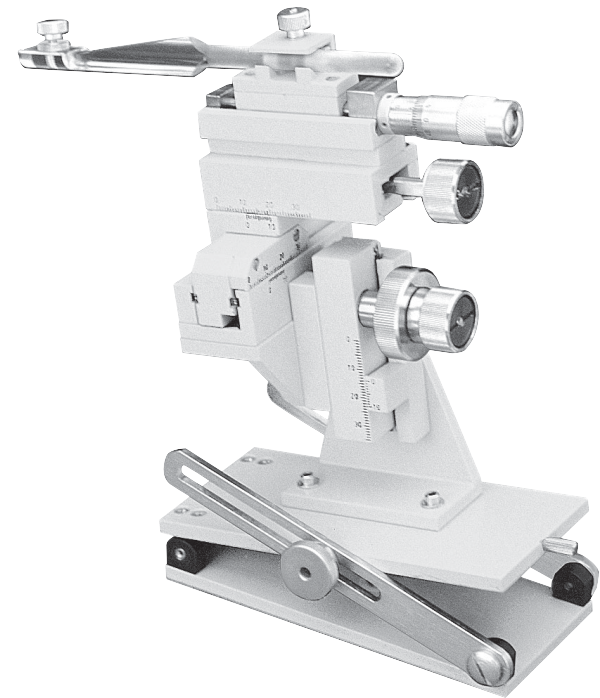
Do not return any goods to us without obtaining prior approval and instructions from our Returns Department. Goods returned (unauthorized) by collect freight may be refused. Goods accepted for restocking will be exchanged or credited to your WPI account. Goods returned which were ordered by customers in error are subject to a 25% restocking charge. Equipment which was built as a special order cannot be returned.

Repairs

Contact our Customer Service Department for assistance in the repair of apparatus. Do not return goods until instructions have been received. Returned items must be securely packed to prevent further damage in transit. The Customer is responsible for paying shipping expenses, including adequate insurance on all items returned for repairs. Identification of the item(s) by model number, name, as well as complete description of the difficulties experienced should be written on the repair purchase order and on a tag attached to the item.

** Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.*

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The micromanipulator you have just bought is a precision instrument. It has been calibrated at the factory and is ready to be used. As with any delicate mechanical device it needs your care and attention for long term accurate performance. The following are some helpful hints to make this possible.

When handling a micromanipulator, put it down gently; dropping it even a short distance can be damaging to the general alignment and adjustment. When not in use, adjust the three (X-Y-Z) guide surfaces in such a way that they are not exposed and cover the manipulator with a plastic bag. Dirt is your biggest enemy. If not in use for a prolonged time, occasionally work the three surfaces repeatedly back and forth to keep the grease pliable. Never oil the guide surfaces and under normal use you should not have to apply grease for many years.

Depending on the angle of application and the weight carried on any one guide-way, you may experience some drift. This can be easily corrected. Follow the procedure on the following pages to tighten the drag on the coarse manual slides.

When using the motorized version always be sure to check that the edge of the micrometer is aligned with the red dots on the motor housing in each axis before using

the manual control for coarse positioning. Running the motorized axes repeatedly against either end limit can damage the motor. Be advised that this damage is not covered by any warranty.

When using the dual tool holder micromanipulators, Models MD4R and MD4L, be careful not to twist the revolving axes which are spring loaded too hard or too far. This may damage the spring.

Installing the Tilt Base

The M3 Tilting Base is installed as follows: Remove the ring clamp by removing the two screws with the allen wrench provided with the M3. Attach the manipulator to the tilting base by using the two screws provided with the M3. Only two screws are required as two holes are used with a right-handed manipulator and the other two holes in the tilting base are used for the left-handed version.

Slide Tightening Procedure

Figure 1 shows a side view of the M3301L manual micromanipulator, with its three axes of coarse movement labeled A, B, and C. One or both of the two different types of coarse movement axes can be found on the DC3001R, DC3001L, MD4R, MD4L, MMJR, and MMJL. With time these movements may become worn, thereby reducing the drag and may show signs of drift. If this occurs follow the procedure outlined below to retighten them.

Tools required: A broad blade flathead screwdriver, a small jeweler's screwdriver,

pliers, and a piece of rubber or other material for protecting control knobs A, B, and C when grasped firmly with the pliers.

Preparation: With a Dremel or similar grinding tool, grind a notch in the center of the blade of the screwdriver (see Figure 2).

Procedure: For axes controlled by knobs A and C: Grasp the knurled knob housing with the pliers, being careful to protect the knob by covering it with a cloth or piece of rubber. While holding the housing securely, loosen the large screw (shown in Figure 3) in the back of the knob with the modified screwdriver. The notch in the screwdriver should straddle the pin in the center of the screw. Hold the slide from traversing and rotate the knurled housing clockwise. This will now tighten the movement. When the required drag has

been achieved, hold the knurled knob and tighten the large screw being careful not to further rotate the housing.

For the axis controlled by knob B: First remove the large screw holding knurled knob C in place. Next remove knurled knob C by unscrewing it counter-clockwise. Locate the small set screw labeled D in Figure 4. Loosen this screw. While holding knurled knob B rotate the collar D clockwise to tighten the movement. When the required drag has been achieved, tighten the set screw being careful not to further rotate the collar. Replace knob C and the large screw that holds it in place. Adjust knob C to achieve the proper drag as described above for knob A, then tighten the large screw while holding knob C in place.

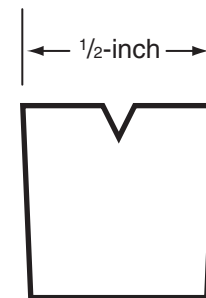


Fig. 2

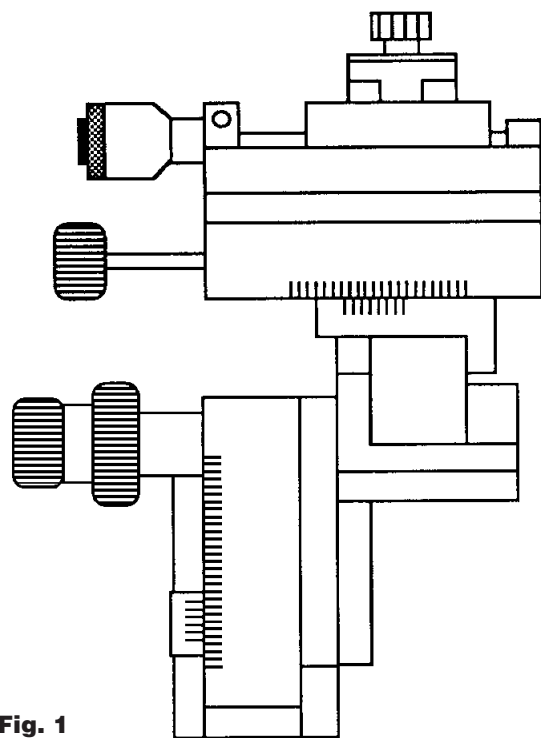


Fig. 1

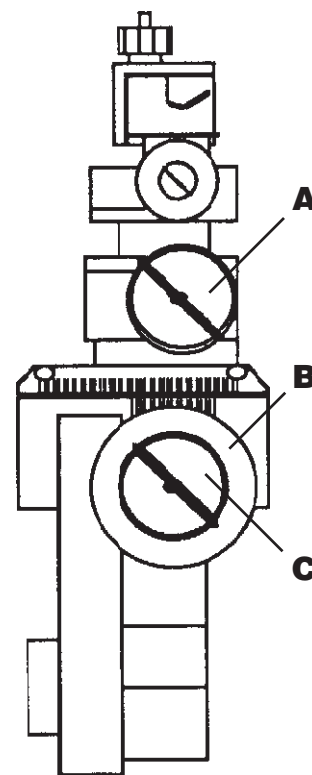


Fig. 3

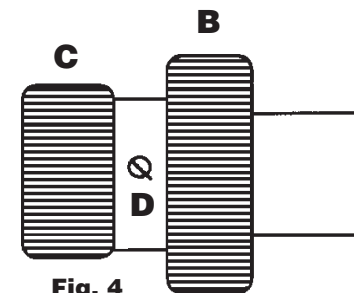


Fig. 4