



M325

Three Axis Manual Micromanipulator

INSTRUCTION MANUAL

Serial No. _____

040114

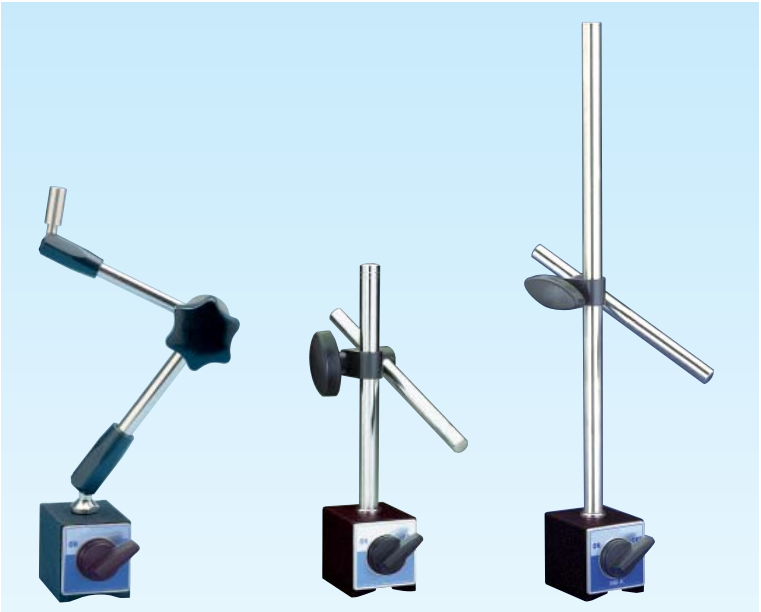


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OTHER POPULAR WPI PRODUCTS

Magnetic Holding Devices



M9

Mechanical clamp tightens three rotatable joints simultaneously with one locking knob. Arm adjusts without distortion. Base exerts a magnetic force of 100 kilos for greatest stability. Equipped with fine adjustment for precise operations.

Vertical Holding Power: 100 kgf (220 lb force)
Weight: 1.8 kg (4 lb)

M10

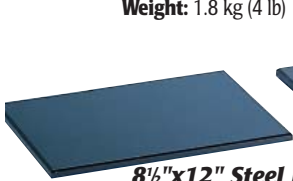
Similar to M1 but with a 12 mm diameter sub pole (fits 12 mm clamp supplied with M3301, DC3001, MD4 and MMJ manipulators).

Vertical Holding Power: 80 kgf (176 lb force)
Weight: 1.8 kg (4 lb)

M10L

Same as M10 but equipped with a taller (14-inch) vertical main pole.

Vertical Holding Power: 80 kgf (176 lb force)
Weight: 1.8 kg (4 lb)



8 1/2"x12" Steel Base Plate #5052



12"x24" Steel Base Plate #5479

BASE PLATES

A magnetic stand requires a steel mounting surface. WPI's steel base plates have plenty of mass to give stability to your experimental setup. Beveled edges make them easy to handle; rubber feet hold them off the benchtop, making them easier to grasp when moving; and the special black coating provides a durable protective finish.

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ABOUT THIS MANUAL

The following symbols are used in this guide:



This symbol indicates a **CAUTION**. Cautions warn against actions that can cause damage to equipment. Please read these carefully.



This symbol indicates a **WARNING**. Warnings alert you to actions that can cause personal injury or pose a physical threat. Please read these carefully.

NOTES and **TIPS** contain helpful information.

INTRODUCTION

The **M325** three axis manual micromanipulator is built of precision micrometeractuated linear slides. Each slide is comprised of a large micrometer head and a spring return linear slide. The micromanipulator has been carefully designed to minimize wear in the moving components to achieve a long operational life without the necessity for frequent maintenance or adjustment. The micrometer head is graduated in 10 μ m steps which enable repeatable positioning to an accuracy of $\pm 2\mu$ m.

A unique spring return mechanism is used to transmit movement of the micrometer spindle to the slide carriage - eliminating backlash, lost motion and reducing thread wear. Each linear slide utilizes ball bearings which enable the **M325** to carry loads of up to 1kg.

The toolholder can clamp onto tools with shaft diameters of 3.0-12.7mm and allows rotation around two axes. This provides a wide range of options for incorporating the manipulator into your workstations. The **M325** can also be configured very easily in left- or right-handed versions to allow several units to be positioned in close proximity. A quick-release clamp allows easy mounting onto any rod from 10.0-12.7mm diameter.

Parts List

After unpacking, verify that there is no visible damage to the sensor. Verify that all items are included:

- (1) **M325** Micromanipulator
- (1) **M3301EH**
- (1) **3327** Hex wrench
- (1) Instruction Manual

Unpacking

Upon receipt of this instrument, make a thorough inspection of the contents and check for possible damage. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed damage should be reported

at once to the carrier and an inspection requested. Please read the section entitled "Claims and Returns" on page 7 of this manual. Please contact WPI Customer Service if any parts are missing at 941.371.1003 or customerservice@wpiinc.com.

Returns: Do not return any goods to WPI without obtaining prior approval (RMA # required) and instructions from WPI's Returns Department. Goods returned (unauthorized) by collect freight may be refused. If a return shipment is necessary, use the original container, if possible. If the original container is not available, use a suitable substitute that is rigid and of adequate size. Wrap the instrument in paper or plastic surrounded with at least 100mm (four inches) of shock absorbing material. For further details, please read the section entitled "Claims and Returns" on page 7 of this manual.

INSTRUMENT DESCRIPTION

Installing the Electrode Holder

1. Unscrew the thumb screw some so that the hole in the shaft is completely exposed and the barrel can move freely on the shaft.

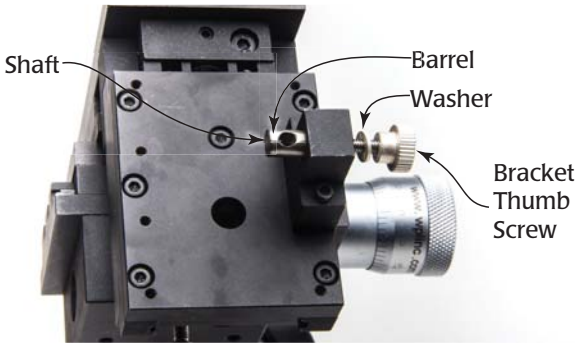


Fig. 1—Unscrew the bracket thumb screw to loosen the shaft in order to install the electrode holder bracket.



Fig. 2—(Left) The barrel slides over the shaft so that the beveled end is positioned towards the bracket holder and the hole in the barrel is aligned with the hole in the shaft.

Fig. 3—(Right) The barrel has a flat and a beveled edge, and it must be properly oriented.

NOTE: The barrel has a beveled edge which must be positioned towards the bracket holder as shown in Fig. 3. The flat side must face outwards.

2. Align the holes in the barrel and the shaft.
3. Line up the pin of the bracket with the holes in the barrel and the shaft. Then, slide the pin into the holes.

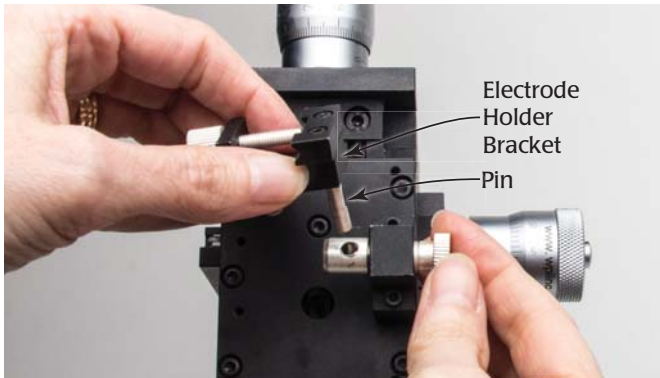


Fig. 4—Line up the pin on the bracket with the holes on the shaft and barrel.

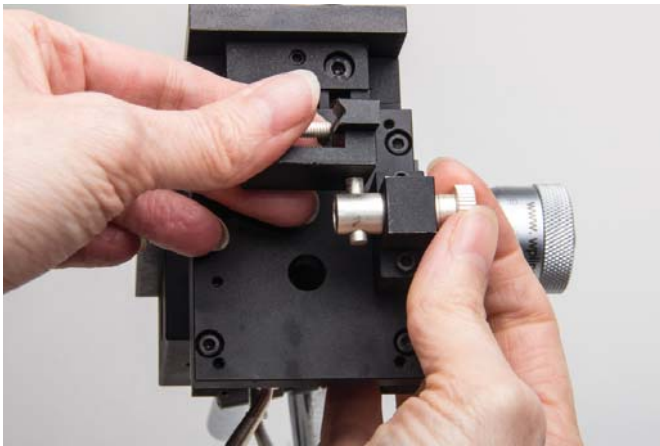


Fig. 5—Slide the pin into the holes and tighten the thumb screw.

4. Tighten the thumb screw a little so the pin is held firmly.

TIP: If you rotate the whole bracket just a small amount counter clockwise, a loose pin will tighten up on the bracket.

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5. Loosen the thumb screw and straighten the bracket.

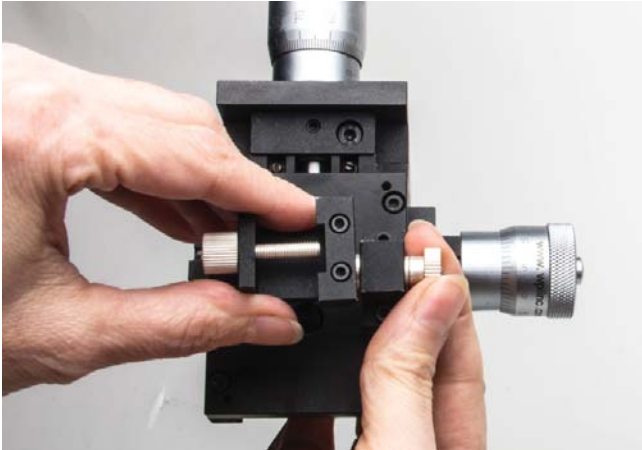


Fig. 6—Straighten the bracket and tighten the thumb screw to hold it securely.

6. Place the **M3301EH** electrode holder into the bracket so that the holder fits into the groove in the bracket. Tighten the bracket to hold the electrode.

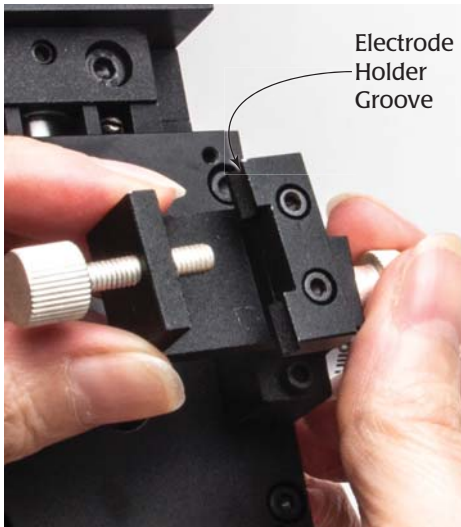


Fig. 7—(Left) The electrode should be positioned in the groove in the bracket.

Fig. 8—(Right) Tighten the thumbscrew on the bracket to securely fasten the electrode holder.

Changing the “Handed-ness”

Your M325 can easily convert from a right-handed to a left-handed unit and vice versa. To convert a right-handed unit to a left-handed unit, follow these instructions. Reverse the instructions to convert a left-handed unit to a right-handed one.

1. Position the manipulator with the “Y” axis adjustment on the left, and “Z” axis adjustment facing toward you (**Fig. 9**).

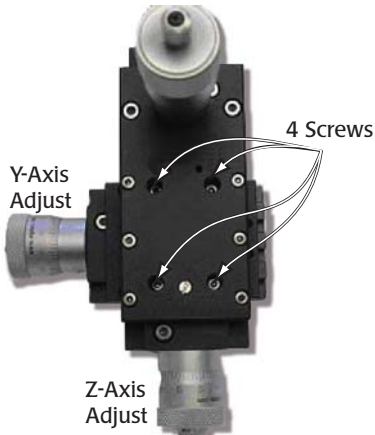


Fig. 9—Position right-handed micromanipulator to expose the four hex screws

2. Use the “Z” axis adjustment knob to align the access holes with the (4) screws that fasten the “Y” axis subassembly to the main unit (**Fig. 9**).
3. Using a 2.5mm hex wrench (WPI #3327), loosen and remove the (4) screws shown in **Fig. 9**. The manipulator disassembles into in two parts (**Fig. 10**).

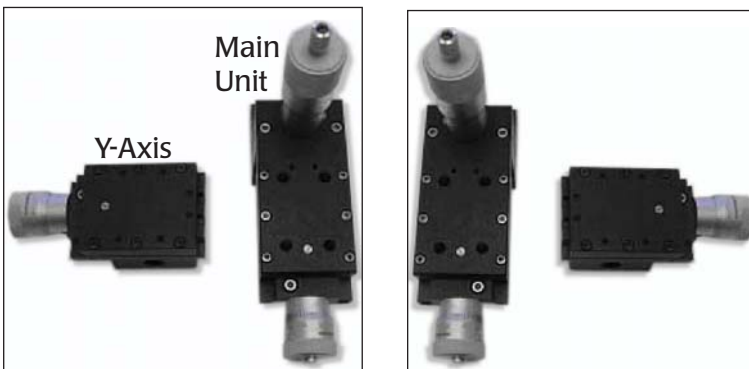


Fig. 10—(Left) Two parts of manipulator

Fig. 11—(Right) Y-Axis rotated 180°

4. Rotate the “Y” axis subassembly 180°, so that the “Y” axis adjustment knob is on the right-hand side, as shown in **Fig. 11**.
5. Align the “Y” axis subassembly with the same access holes on the main unit, and reassemble to the main unit.

ACCESSORIES

Table 1: Accessories

Part Number	Description
5052	Steel Base Plate
5479	Steel Base Plate
14444	Optional Differential Micrometer Head (per axis)
15873	Optional Angled Electrode Holder (13cm long)
500475	Ball Joint, 7cm long, for Ø 8mm Holder
500476	Ball Joint, 4cm long, for Ø 4mm Holder
M9	Magnetic Stand Rotatable
M10	Magnetic Stand
M10L	Magnetic Stand
M3301EH	Replacement Electrode Holder (14cm long)

SPECIFICATIONS

This unit conforms to the following specifications:

Travel Range

X-axis 25mm

Y-axis 10mm

Z-axis 10mm

Resolution

X-axis 10µm

Y-axis 10µm

Z-axis 10µm

Shipping Weight: 4 lbs. (1.8 kg)

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 30 days* 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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