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INSTRUMENTS

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## INSTRUCTION MANUAL

# PZMIII/PZMTIII

*Precision Zoom Stereo Microscope*

Serial No. \_\_\_\_\_

[www.wpiinc.com](http://www.wpiinc.com)

050125



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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.



*Fig. 1—The PZMIII binocular microscope is shown on its standard post stand.*

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## INTRODUCTION

WPI's **PZMIII** stereomicroscope is an ideal tool for tissue dissection, cell injection, specimen manipulation, electrode inspection and many other applications requiring a magnified stereo view and ample working distance. It offers quality and performance at an affordable price. Advanced optics provide image sharpness found only among the best of this class.

Zooming is smooth and effortless, controlled by a spring-loaded knob. The **PZMIII**'s compact size and light weight make it more stable and easily manipulated on a boom stand.

With an extensive array of optional accessories, **PZMIII** is suitable for almost any | bio-research application requiring a stereo microscope.

## Parts List

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

- (1) **PZMIII** or **PZMTIII** Stereo microscope head
- (1) Post stand with focus mount and one locking screw
- (1) Light ring adapter
- (2) 10X eyepieces
- (2) Paired Eye Guards
- (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 11 of this manual. Please contact WPI Customer Service if any parts are missing at (941) 371-1003 or [wpi@wpiinc.com](mailto:wpi@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 11 of this manual.

## INSTRUMENT DESCRIPTION

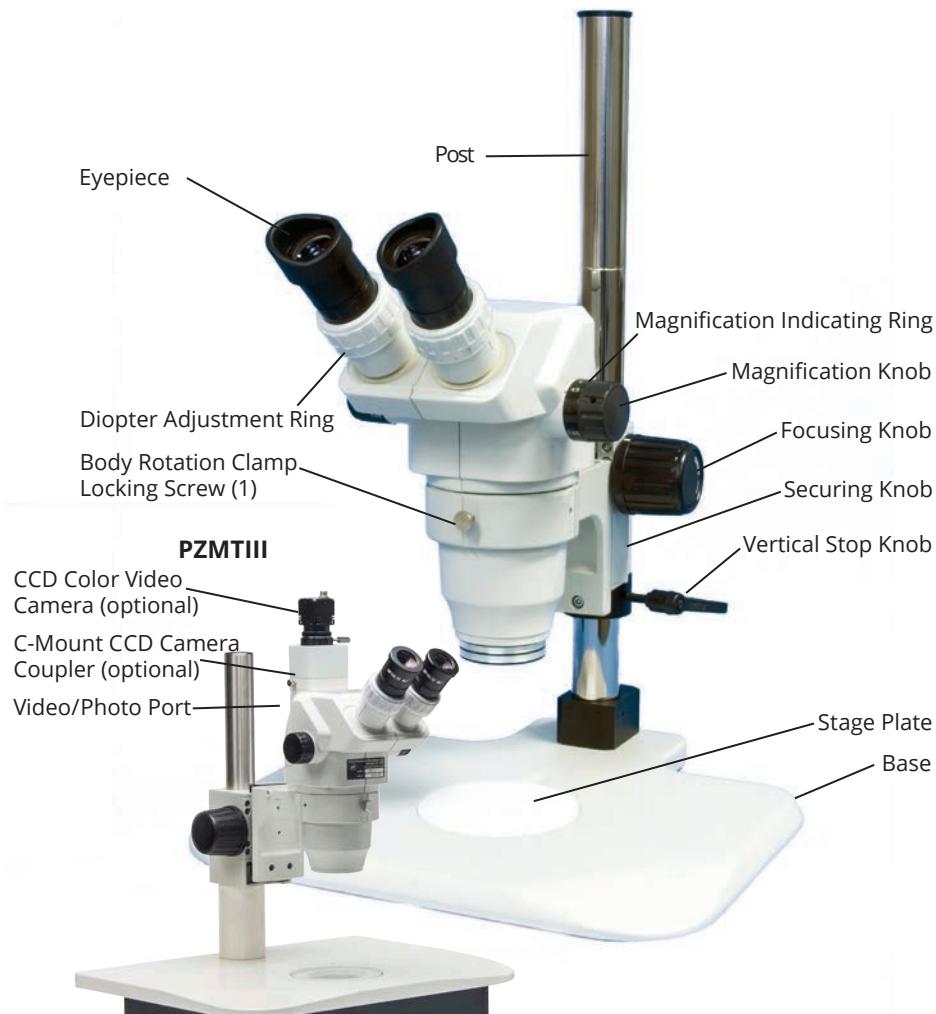


Fig. 2—This image identifies the parts of the binocular PZMIII.

**\*NOTE:** "True trinocular" microscopes do not have the Light Path Selector Bar. Instead of blocking the right eye path, this port transfers 50% of the light intensity to the camera port.

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## Setup

1. Remove the microscope from the case and check that the following parts are all present and undamaged:
  - Microscope and Base
  - WFH 10x Wide-Field Eyepieces (two)
  - Paired Eyeguards (two)
  - Stage Plate
  - Instruction Manual
2. Unscrew the protective cap on the bottom of the microscope head.
3. Refer to the "Instrument Description" on page 3 and follow the set-up instructions below.
4. Loosen the securing knob to place the microscope at approximately the working distance.
5. The exact working distance is found by adjusting the focusing knob.
6. Install the WFH 10x eyepiece pair, included. Then, attach the paired eyeguards to the eyepieces.
7. When the optional stands are used instead of the standard base, see the "System Diagram" on page 5 for mounting instructions.
8. The Precision Zoom Stereo Microscope is now ready for normal operation.

## Adjusting a Microscope

These instructions describe how to properly focus a binocular microscope.

1. Turn on the lamp and adjust its intensity.
2. Set the eye piece diopters to zero.
3. Adjust the interpupillary distance so that the two circles of light merge into one.
4. Place a sample on the stage.
5. Select the 1.0 dial setting and look through the right eyepiece only.
6. Use the focus control knobs to adjust the focus of the sample.
7. When the sample is clearly visible, use only your left eye. Do NOT adjust the focus knobs. Instead, adjust the diopter on the left eyepiece until the sample comes clearly into view. The image should be clear with both eyes open.
8. Choose the desired zoom range. You may need to adjust the fine focus a little.

**TIP:** For information on microscope basics, understanding objectives, choosing a microscope camera, a camera comparison chart and a camera/microscope configuration chart, see [www.wpiinc.com/microscope](http://www.wpiinc.com/microscope).

## System Diagram

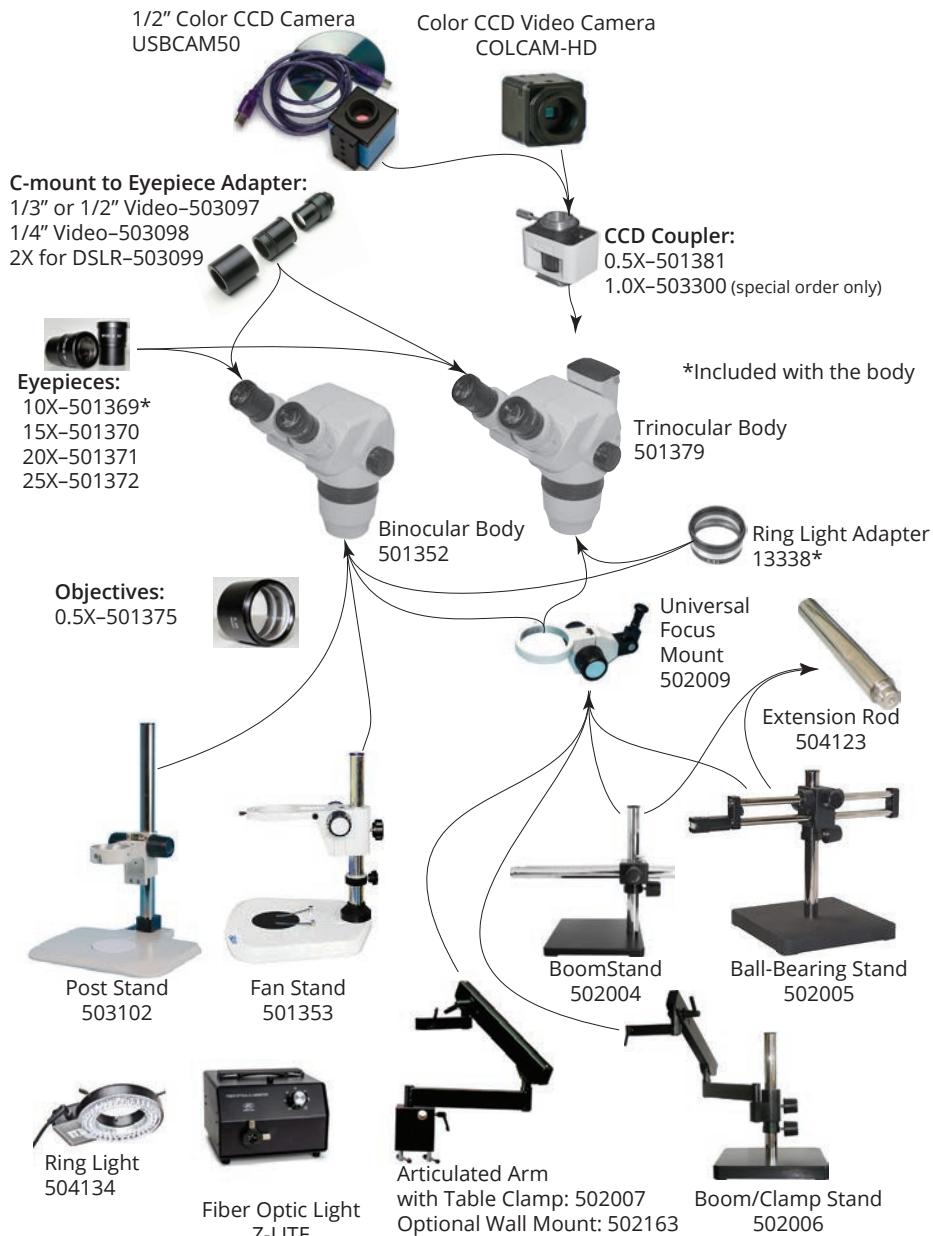


Fig. 3—This diagram shows many of the options available for the PZMIII.

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## OPERATING INSTRUCTIONS

Refer to Fig. 2 on page 3 and Fig. 3 on page 5 along with the following instructions on normal operation.

1. Applying Objectives—Remove ring light adapter before installation of any objective lenses. The ring light adapter may be placed on the objective if needed.
2. Working Distance Adjustment—Loosen the Securing knob and the Vertical Stop knob which secures the microscope to the post. Move the microscope to the desired height (working distance) according to lens (auxiliary objective lens) attached (see “Instrument Description” on page 3 for working distance). Then, re-tighten the knobs.
3. Interpupillary Distance Adjustment—Looking through the eyepieces with both eyes, adjust the interpupillary distance by sliding the two eyepiece tubes with both hands until a single image is observed.
4. Focus Adjustment—Place a sample under the microscope, turn the Magnification knob to its greatest setting (4.5). Focus the image by turning the Focusing knob. Once the image is in clear focus at its highest magnification you may zoom out to lower magnification by adjusting the Magnification knob while remaining in focus.
5. Diopter Adjustment—if the image does go out of focus when zooming out, zoom to the lowest setting and focus each eyepiece individually by adjusting the Diopter Adjustment Ring.
6. Video/Photo Applications (for the Trinocular **PZMTIII** only)—Remove the black protective cap on top of the Video/Photo port. Slip and secure the body of C-mount CCD camera Coupler over the Video/Photo port, with its focus ring facing back. Attach a C-mount video or digital camera. Refer to your camera’s manual for instructions on connecting the camera to a monitor. Focus the image on the screen by adjusting the Fine Focus Ring located at the back of the C-mount CCD camera coupler. \*

**\*NOTE:** Preset the eyepiece diopter on the right side to zero before adjusting the C-mount focus ring. This allows you to achieve parafocality.

## MAINTENANCE

This instrument should be kept in a cool, dry place free from direct sun, dust, alkali and acid fumes, as well as moisture.

Do not disassemble any of the lenses since they have all been properly aligned at the factory. The glass surfaces of the lenses should be cleaned with lens tissue or brushed with a soft camel-hair brush. Any dust which has fallen on lens exterior surfaces may be blown away with a commercial grade clean dust spray.

If stains deposit on exterior surfaces of the lenses, clean them gently using a mild soap solution with a lint free cloth. Industrial solvents should not be used since they may penetrate to the inside of the lens components and dissolve the lens cement.

When cleaning and lubricating the mechanical parts, special attention must be taken not to stain the optical surfaces with grease. The moveable mechanical parts should be lubricated occasionally with a non-corrosive grease.

When not in use, remove the eyepieces and put them back into the lens box. Replace them with the eyepiece tube dust covers. The microscope should then be secured in its box or covered with a dust cover.



A variety of bundles  
are available.

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## ACCESSORIES

<b>13338</b>	Ring Light Adapter for the PZMIII (For <b>R-8-8-WPI01</b> Ring Light Guide)
<b>501352</b>	PZMIII Binocular Body
<b>501379</b>	PZMTIII Trinocular Body
<b>502004</b>	Boom Stand (Heavy) W/O Focus Mount (requires 502009 Focus Mount for PZMIII)
<b>502005</b>	Ball Bearing Boom Stand (Heavy) W/O Focus Mount (requires 502009 Focus Mount for PZMIII)
<b>502006</b>	Boom Clamp Stand (Heavy) (requires 502009 Focus Mount for PZMIII)
<b>504123</b>	Extension for Heavy Clamp Stand
<b>502007</b>	Articulated Arm and Table Clamp w/o Focus Mount (requires 502009 Focus Mount for PZMIII)
<b>502009</b>	Universal Focus Mount for 76 mm PZMIII (Required for BS, AAC, BBS, and BCS) (5/8" pin)
<b>501369</b>	10× Eyepiece for PZMIII (pair)
<b>501370</b>	15× Eyepiece for PZMIII (pair)
<b>501371</b>	20× Eyepiece for PZMIII (pair)
<b>501372</b>	25× Eyepiece for PZMIII (pair)
<b>501375</b>	0.50× Objective
<b>501381</b>	0.5× C-Mount CCD Camera Coupler
<b>502163</b>	Wall Mount Plate for Articulated Arm System
<b>Z-LITE</b>	Z-LITE Fiber Optic Illuminator
<b>500186</b>	Bifurcated Light Guide with Lenses
<b>R-8-8-WPI01</b>	Ring Light Guide
<b>Z-LITE-186</b>	Z-LITE Fiber Optic Illuminator with Bifurcated Light Guide and Lenses
<b>EJA</b>	Replacement Lamp for Z-LITE, 200 hour, 150 W, 3250°K
<b>EKE</b>	Replacement Halogen Lamp for Z-LITE, 40 hour, 150 W, 3350°K
<b>504134</b>	LED Ring Light

## SPECIFICATIONS

This unit conforms to the following specifications:

Eyepieces	WFH 10× (two), standard
.....	WF 15×, 20×, 25×, optional
Objectives (optional) .....	0.5×
Zoom Range.....	0.67× – 4.5×
Total Magnification.....	6.77× – 45×
Field of View.....	Ø34–Ø5 mm
Working Distance.....	80 mm
Binocular Tube .....	Inclined 45°
Interpupillary Distance .....	47–70 mm
Diopter Adjustment .....	±5 Diopter (both eye tubes)
Microscope Body .....	Rotatable 360°
Auxiliary Lenses	
Total Magnification.....	3.35×–56.25×
Widest Field Of View .....	Ø68 mm
Working Distance .....	177 mm

	10× Eyepiece		15× Eyepiece		20× Eyepiece		25× Eyepiece		
Obj.	Magnifi- cation	Field of View (Video)	WD						
0.5×	3.35-22.5×	65.67-9.78 (30.8-4.59)	5.03-33.75×	47.76-7.11 (30.8-4.59)	6.7-45×	35.82-5.33 (30.8-4.59)	8.38-56.25×	26.87-4 (30.8-4.59)	177

*The Video Field is based on a 1/2-inch CCD (8 mm diagonal) and a 0.5X camera adapter.*

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## APPENDIX: BOOM STAND ASSEMBLY

1. Remove all the parts from the box.
2. Unscrew the hex screw from Vertical Post. The Vertical Post should have a cross block attached to it.



3. Screw Vertical Post and Base together using the hex screw. (Insert the screw from bottom of the base into the threaded section of Vertical Post.)
4. Insert the Horizontal Bar into the opening in the cross block with the slot side facing up.

Two different types of focusing assemblies are available:

### Focus Mount

1. Remove the focus mount from the protective packaging.
2. Remove the knob from the 5/8 pin, if supplied.
3. Insert the focus mount into the end of the Horizontal Bar and secure it by tightening set screw.
4. Tighten one or both hex screws (2.5 mm and 4 mm) so the microscope head is tiltable but not free to swing.



**TIP:** The focus mount can be inserted from the TOP, BOTTOM or END of the Horizontal Bar. For oblique viewing, set the focus mount up at various angles and then tighten the handle.

## **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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