



WORLD
PRECISION
INSTRUMENTS

INSTRUCTION MANUAL

PZMIV/PZMTIV

Precision Zoom Stereo Microscope

Serial No. _____

www.wpiinc.com

022124

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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 PZMIV binocular microscope is shown on its standard track stand.

INTRODUCTION

WPI's **PZMIV** stereo microscope 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.

PZMIV uses a modular, parallel-beam path design and a high quality optical system. The advanced optical design with plan achromatic objectives provides sharp and distortion-free image throughout the entire zoom range. The ergonomic design makes it easy to use—zooming is smooth and effortless, controlled by a large spring-loaded knob.

The **PZMIV** is available in a binocular or trinocular version. In addition, an extensive list of optional accessories is available that makes the **PZMIV** suitable for integrated optical and biological research. A variety of **PZMIV** microscope kits are also sold.

The microscope comes with a track stand, standard 10x eyepieces (wide-field, distortion-free and high eye point), and a 1x planachromatic distortion-free objective.

Parts List

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

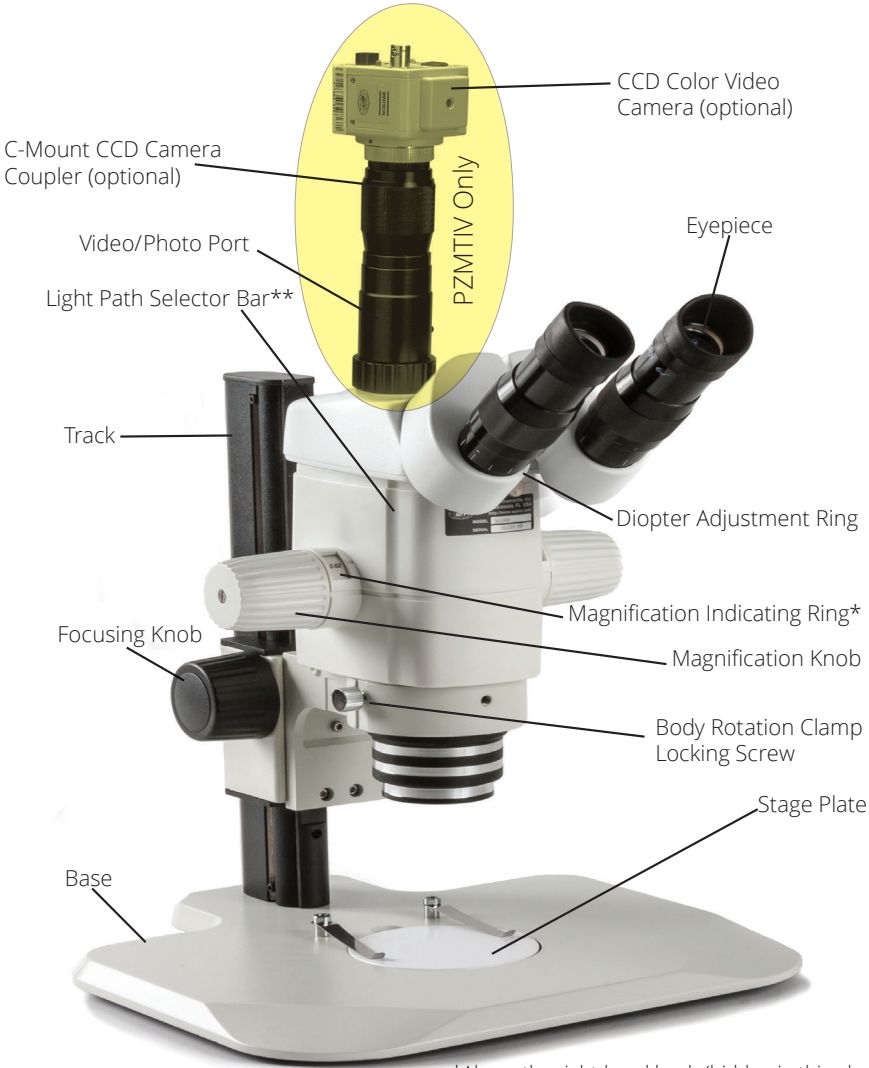
- (1) **PZMIV** Stereo microscope head
- (1) Track stand
- (1) Light ring adapter
- (2) 10X eyepieces (wide-field, distortion-free and high eye point)
- (2) Paired Eye Guards
- (1) 1x planachromatic distortion-free objective
- (1) Instruction Manual

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 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 100 mm (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



*Above the right-hand knob (hidden in this photo) is a detent control to provide discreet zoom

Fig. 2—This image identifies the parts of the trinocular PZMTIV. The binocular version (PZMIV) will not have the camera, video/photo port or the light path selector bar.

Setup

1. Remove the microscope from the case and that the parts are all present and undamaged. See “Parts List” on page 2.
2. Assemble the track stand.
3. Mount the microscope head into the focus mount.
4. Remove the protective cap on the bottom of the microscope head.
5. Refer to the parts diagram (Fig. 2) and follow the set-up instructions.
6. Install the WFH 10x eyepiece pair (included). The paired eyeguards can now be attached to the eyepieces.
7. The exact working distance is found by adjusting the focusing knob.
8. When the optional stands are used instead of the standard base, see “System Diagram” on page 5 for mounting instructions.

Adjusting a Microscope

These instructions describe how to properly focus a binocular microscope.

1. Turn on the lamp and adjust its intensity.
2. Adjust the interpupillary distance so that the two circles of light merge into one.
3. Place a sample on the stage.
4. Select the 10X objective and look through the right eyepiece only.
5. Use the coarse and fine focus control knobs to adjust the focus of the sample.
6. 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.
7. Choose the desired objective. 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.

System Diagram



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

OPERATING INSTRUCTIONS

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

1. Set up the microscope on the track stand. Mount the microscope head into the focus mount. Use focusing knob to bring microscope to focus.
2. 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.
3. Place a sample under the microscope, turn magnification knob to its greatest setting (5.0). 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 magnification knob while remaining in focus.
4. If image goes out of focus when zooming out, zoom to the lowest setting and focus each eyepiece individually by adjusting the diopter adjustment ring.
5. For video or photo applications on the PZMTIV:
 - Slide the light path selector bar to the "PHOTO IN" position in order to direct 100% of the light to the video/photo port. The right eyepiece will go dark. Otherwise, the right eyepiece and the photo port will share the light at 50% for each.
 - Remove the 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 the C-mount video or digital camera.
 - Refer to the camera's manual for connecting the camera to monitor.
 - Focus the image on the screen by adjusting the fine focus ring located at the back of the C-mount CCD camera coupler.

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.

ACCESSORIES

502000	PZMIV Binocular Body With 10X Eyepieces, 1X Objective, Eye guards
502001	PZMTIV Trinocular Body With 10X Eyepieces, 1× Objective, Eye guards
502004	Boom Stand (Heavy) W/O Focus Mount (requires 502009 Focus Mount for PZMIV)
502005	Ball Bearing Boom Stand (Heavy) W/O Focus Mount (requires 502009 Focus Mount for PZMIV)
502006	Boom Clamp Stand (Heavy) (requires 502009 Focus Mount for PZMIV)
504123	Extension for Heavy Clamp Stand
502007	Articulated Arm and Table Clamp w/o Focus Mount (requires 502009 Focus Mount for PZMIV)
502009	Universal Focus Mount for 76 mm PZMIV (Required for BS, AAC, BBS, and BCS) (5/8" pin)
502010	10× Wide Field Eyepiece for PZMIV (pair)
502011	16× Wide Field Eyepiece for PZMIV (pair)
502012	20× Wide Field Eyepiece for PZMIV (pair)
502013	25× Wide Field Eyepiece for PZMIV (pair)
500264	10× Eyepiece with Reticle (matches 10× eyepiece #502010)
500266	20× Eyepiece with Reticle (matches 20× eyepiece #502012)
502015	Ring Light Adapter for PZMIV (For R-8-8-WPI01 Ring Light Guide)
502017	0.50×, Planachromatic Objective (Distortion-free) (174 mm WD)
500262	0.5× CCD Camera Coupler, C-Mount (Use with COLCAM, USBCAM50)
500028	1× CCD Camera Coupler, C-Mount (Use with COLCAM)
502163	Wall Mount Plate for Articulated Arm System
500186	Bifurcated Light Guide with Lenses
R-8-8-WPI01	Ring Light Guide
EJA	Replacement Lamp for NOVAFLEX
EKE	Replacement Lamp for Z-LITE
Z-LITE	Z-Lite Fiber Optic Illuminator (115 V, 60 Hz, beige case)
Z-LITE-186	Z-Lite & Bifurcated Light Guide (115 V, 60 Hz, beige case)
Z-LITE-Z	Z-Lite Fiber Optic Illuminator (230 V, 50 Hz, black case)
Z-LITE-Z186	Z-Lite & Bifurcated Light Guide (230 V, 50 Hz, black case)

SPECIFICATIONS

This unit conforms to the following specifications:

Eyepieces.....	WFH 10X
Auxiliary Lenses.....	1X
Zoom Range.....	0.62X – 5X
Total Magnification.....	6.2X – 50X
Zoom Ratio.....	8:1
Field of View.....	Ø33.9-Ø4.2 mm
Working Distance.....	80 mm
Binocular Tube.....	Inclined 45°
Interpupillary Distance.....	50 – 75 mm
Diopter Adjustment.....	±5 Diopter
Microscope Body.....	Rotatable 360°
Optional Accessories	
Eyepieces.....	16X, 20X, 25X
Auxiliary Lenses.....	0.5X
Total Magnification.....	3.1X – 62.8X
Field Of View.....	Ø67.7 – Ø3.6 mm
Working Distance.....	187 mm
Shipping Weight.....	23 lb.

PZMiv & PZMTiv Eyepieces and Objectives

Objective	10x Eyepiece		16x Eyepiece		20x Eyepiece		25x Eyepiece		Working Distance
	Mag	Field (mm) (Video Field)	Mag	Field (mm) (Video Field)	Mag	Field (mm) (Video Field)	Mag	Field (mm) (Video Field)	
0.5x	3.1x - 25x	67.7 - 8.4 (31.8 - 3.95)	5x - 40x	45.2 - 5.6 (31.8 - 3.95)	6.2x - 50x	35.5 - 4.4 (31.8 - 3.95)	7.8x - 62.8x	20 - 3.6 (31.8-3.95)	187 mm
1.0x (inc)	6.2x - 50x	33.9 - 4.2 (15.9 - 1.97)	9.9x - 90x	22.6 - 2.8 (15.9 - 1.97)	12.4x - 100x	17.7 - 2.2 (15.9 - 1.97)	15.5x - 125x	14.5 - 1.8 (15.9 - .97)	80 mm

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

APPENDIX: BOOM STAND ASSEMBLY

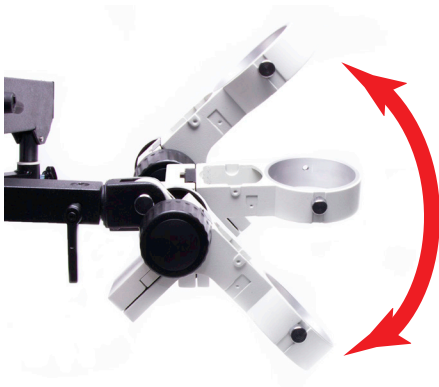
1. Remove all the parts from the box.
2. Unscrew the hex screw from Vertical Post. The Vertical Post should have a cross block attached to it.
3. Screw the Vertical Post and Base together using the hex screw. (Insert the screw from bottom of the base into the threaded section of Vertical Post.)
4. Insert the Horizontal Bar into the opening in the cross block with the slot side facing up.



Focus Mount

1. Remove the focus mount from the protective packaging.
2. Insert the focus mount into the end of the Horizontal Bar and secure it by tightening the set screw.
3. 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) 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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