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INSTRUCTION MANUAL

Binocular Loupes

Serial No._____

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Microstar OM-100 Surgical Miscroscope

High quality wide field optics, 5 levels of magnification, integrated fine focus objective lens and fully adjustable dual maneuvering handles.

2 illumination options, both through a 7-mm diameter fiber optic cable:

- 150 watt halogen (double lamp)
- 180 watt Xenon lamp, the ideal light for surgical procedures

FDA CERTIFIED
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NEW!

CE

Binocular			Arm		Light Source		Filter		Order Number
Straight	Inclined	Ergobinocular	Short	Long	Halogen	Xenon	Green	Orange	
●			●		●		●		504373
	●			●	●		●		504374
		●		●		●		●	504375

CONTENTS

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.

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Fig. 1 504040 Flip-up 3.0X TTL (fixed) binocular loupes allow use of prescription lenses (installed by user's ophthalmologist).

INTRODUCTION

Surgical loupes help to alleviate eye strain by enlarging the image when you are working on tiny subjects or conducting precision operations. They are portable and easier to use than a surgical microscope.

Choosing Loupes

Choosing the correct surgical loupes for your application involves several factors, including resolution, working distance, field of view, depth of field, magnification, weight and interpupillary distance. These terms are defined below.

Ideally, you want the lowest magnification that is suitable for your application. As a general rule, the lower the magnification, the greater the depth of field and field of vision. Likewise, the longer the working distance, the greater the field of view. The larger your field of view, the less you need to turn your head. This reduces eye strain and fatigue. It is also important to consider the weight and fit of your loupes. Lightweight loupes are more comfortable for longer periods of use, and they are less likely to slide down your nose as you work. WPI loupes have adjustable interpupillary distance for a correct fit every time.

Three styles of loupes are available today. The first is a single lens loupe for simple, low-magnification applications. A photographer or jeweler might use this style. The second style is the Galilean loupe designed by the 17th century astronomer Galileo Galilei. Galilean loupes use multiple lenses and offer magnification between 2.0x and 3.0x. These are easy to use, lightweight and affordable. For greater magnification up to about 8.0x, prismatic loupes (Keplerian) are available. Designed by Johannes Kepler, prismatic loupes use a series of lenses and prisms to magnify the subject. They offer greater magnification, sharp resolution and a greater depth of field.

Resolution determines the amount of fine details that can be distinguished. The type of glass used in the lenses and coatings applied to it can affect the resolution of your loupe. To test a set of loupes, look through them at a piece of graph paper. Notice color distortions or curvature of the lines. A high resolution loupe will have crisp, straight lines. The lines, seen through lower quality lenses, will be slightly blurred and curved.

Working Distance is distance at which a loupe will focus. The working distance is equal to the distance from the loupe lens to the top of your subject. Each loupe has a defined working distance, but the working distance you require will depend upon your height, posture and table height. It is best to determine your desired working distance, and then choose a set of loupes that will meet your criteria.

You can measure your actual working distance or use the table below to get a rough idea. To measure your working distance, sit or stand in a comfortable position with your back straight. Do not lean forward too much. Measure the distance from your eyes to the top of your subject. Usually, your working distance will be close to what is shown in the table below.

Your Height	**WD** (when sitting)	**WD** (when standing)
<5'7" (170cm)	34cm (14")	42cm (16")
5'7"-6'4" (170-193cm)	42cm (16")	50cm (20")
>6'4"(193cm)	50cm (20")	55cm (22")

Field of View–The area that is in focus when viewed through the loupes is the field of view. The longer the working distance of a loupe, the greater its field of view will be. Likewise, the lower the magnification factor, the larger the field of view. This tradeoff must be considered carefully when choosing loupes. When using a Galilean loupe the center of the image is clear, but the outer rim of the image is blurred. The prism loupe image is sharp to the very edge of the field of view.

Depth of Field–Like the field of view, the depth of field is directly related to the working distance and magnification factor. The depth of field is the amount of depth that is in focus when viewing the subject through the loupe. Greater depth of field is preferred, because you can see deeper into the subject without repositioning. For greater depth of field, choose a loupe with a longer working distance or a lower magnification factor.

Magnification–The size of the image viewed through the loupe is determined by the amount of magnification, which is a personal preference. Higher magnification provides a larger image, but it also means a reduced field of view and depth of field. Generally speaking, for simple surgical cases or for beginners in training, 2.5x or 3.0x magnification is sufficient. When a more delicate or complicated procedure is required, choose a magnification factor of 3.5x to 4.5x. If you are working on a tiny area or are conducting a microsurgery, chose a magnification factor of 5.0x to 6.0x. Higher magnification loupes can be used in place of a surgical microscope, if desired.

Interpupillary Distance–The distance between the pupils of your two eyes is your interpupillary distance. For the sake of comfort when focusing, your loupes must fit your eyes. You optometrist can give you an exact measurement. Most WPI loupes are adjustable so that you can set your loupes to an interpupillary distance that suits you.

Fig. 2 The 504056 Loupes are easily adjustable.

Notes and Warnings

CAUTION: NEVER immerse your loupes in water, cleaning solution or a cold sterilization solution. Do not spray a cleaner directly on the lenses.

CAUTION: Do not autoclave or chemiclave loupes.

CAUTION: Do not clean loupes with any product containing a glutaraldehyde.

Parts List

After unpacking, verify that there is no visible damage to your loupes. Verify that all items are included:
(1) Set of binocular loupes
(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 8 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 8 of this manual.

INSTRUMENT DESCRIPTION

BINOCULAR LOUPES

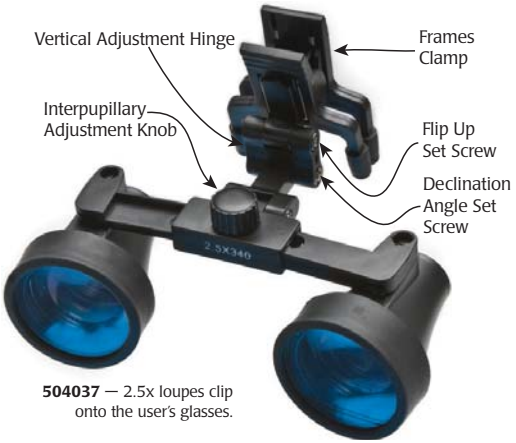
PART #	STYLE	POWER	WORKING DISTANCE	
504037	Clip-On	2.5x	34cm	
504039	TTL	2.5x	34cm	
504040	Flip-Up: For prescription lenses	3.0x	39cm	
504050	Prism	3.5x	34cm	
504051	Prism	3.5x	50cm	
504052	Prism	4.5x	50cm	
504053	Prism	4.5x	34cm	
504054	Prism	4.0x	50cm	
504055	Prism	4.0x	34cm	
504497	Prism	5.0x	50cm	

** Lenses are individually adjustable*
*** Both lenses are adjusted simultaneously*

NOTE: WPI loupes may be used in typical room temperature and humidity environments with adequate illumination.

OPERATING INSTRUCTIONS

Your loupes must be properly adjusted before you use them.



504037 — 2.5x loupes clip onto the user's glasses.

Fig. 3 These clip-on loupes may be positioned over the frames of your glasses.

Installing Clip On Loupes

Pinch together the Frames Clamp and slide the clamp over the frame of your glasses just above the nose piece.

Wearing Loupes

1. Put on your loupes like you would a pair of glasses.
2. Because loupes are typically heavier than reading glasses, they are usually worn with a strap. Position the strap comfortable and tighten the strap firmly against your head.

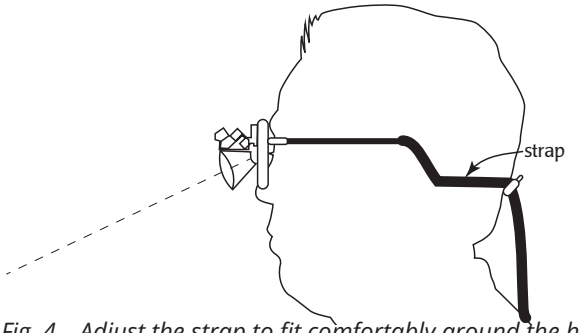


Fig. 4 Adjust the strap to fit comfortably around the head and hold the lenses securely. Angle the lenses to relive neck strain.

3. The vertical position of the loupes may be adjusted by repositioning the Vertical Adjustment Hinge.
4. Loosen the Declination Angle Set Screw and comfortably position the loupes so that the barrels of the loupes point downward in a 30-45° angle. You should be able to look through the loupes without straining your neck. When you find a comfortable angle, tighten the set screw again to lock in your preferred position.

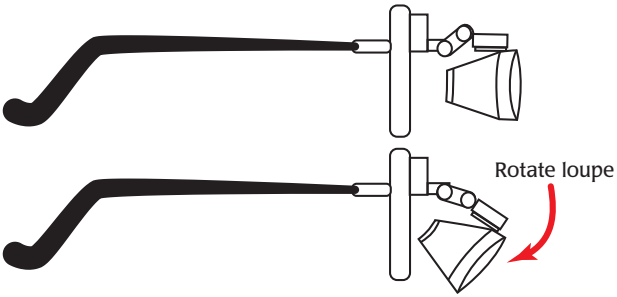
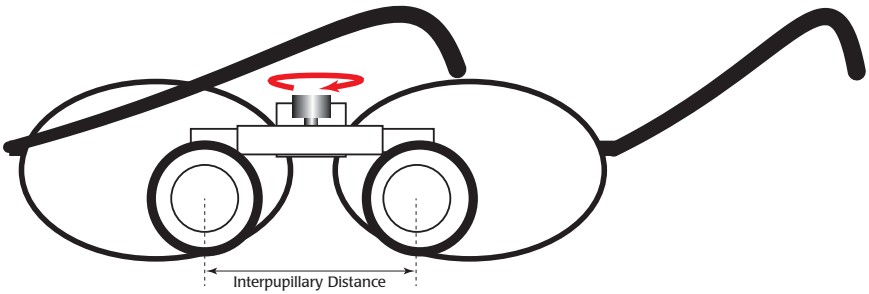


Fig. 5 Rotate the loupes downward in a 30-45° angle.

5. Many loupes are designed to flip up out of the way when they are not in use. You may control how easily they flip up or down by tightening or loosening the Flip Up Set Screw.

Adjusting the Interpupillary Distance

Look through the loupes and focus on an object. Rotate the Interpupillary Adjustment Knob to move the loupes closer together or farther apart. You should see a single image when they are properly adjusted for your eyes. If you see a double image, the loupes are not properly adjusted.



It may also be necessary to adjust the vertical position of your loupes by moving the Vertical Adjustment Rail to obtain a clear image.

NOTE: If your loupes have an asynchronous adjustment so that each lens moves independently, you will need to loosen both the thumb screws above the lenses. Then,

position each lens independently on its bar. Tighten both thumb screws when you get the lenses in the proper position for your eyes.

NOTE: The interpupillary distance of TTL (Through The Lens) loupes is not adjustable.

MAINTENANCE

Gently blow dust off the surface of the lenses. If necessary, the loupes may be cleaned with a 50/50 mixture of alcohol and distilled water. Cover both ends of the lenses before packing them away after use.

Fig. 6 The 504053 loupes are prism lenses that offer 4.5x magnification.

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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