User Manual

Zoom Stereo
Trinocular Microscope Body

Model HW43C

MicroscopeNet.com

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i. Caution

1. Open the carton carefully with a knife or paper cutter. Find the “UP” sign and place the Styrofoam container on the side that makes the arrow upward. If the “UP” sign is missing, please open the Styrofoam container gently to prevent any accessory, i.e. objectives or eyepieces, from dropping and being damaged.

2. Do not discard the molded Styrofoam container; the container should be retained should the microscope body ever requires reshipment.

3. Keep the instrument out of direct sunlight, high temperature or humidity, and dusty environments. Ensure the instrument is located on a smooth, level and firm surface.

ii. Care and Maintenance

1. Do not attempt to disassemble any component including eyepieces, objectives or focusing assembly.

2. Keep the instrument clean; remove dirt and debris regularly. Accumulated dirt on metal surfaces should be cleaned with a damp cloth. More persistent dirt should be removed using a mild soap solution. **Do not use organic solvents for cleansing**.

3. The outer surface of the optics should be inspected and cleaned periodically using an air stream from an air bulb. If dirt remains on the optical surface, use a soft cloth or cotton swab dampened with a lens cleaning solution (available at camera stores). All optical lenses should be swabbed using a circular motion. A small amount of absorbent cotton wound on the end of a tapered stick makes a useful tool for cleaning recessed optical surfaces. Avoid using an excessive amount of solvents as this may cause problems with optical coatings or cemented optics or the flowing solvent may pick up grease making cleaning more difficult. Oil immersion objectives should be cleaned immediately after use by removing the oil with lens tissue or a clean, soft cloth.

4. Store the instrument in a cool, dry environment. Cover the instrument with the dust cover when not in use.

1 Components Illustration

1	Photo Tube	7	Diopter Adjusting Ring
2	Trinocular Head	8	Eyepiece Tube
3	Swapping Lever	9	Prism Housing
4	Zoom Adjusting Knob (0.7X-4.5X)	10	Auxiliary Objective Lens
5	Eyeshield	11	WF20X Eyepiece
6	WF10X Eyepiece		

2 Operation

2.1 Installing the microscope body

The microscope body should work with a boom stand, which has a microscope body holder to hold the microscope.

1) Loosen the body lock thumb screw on the focus block ring holder.
2) Insert the trinocular head into the ring holder, tighten the thumb screw.

2.2 Installing the eyepieces

1) Take off the caps on both eyepiece tubes.
2) Insert the eyepieces you want to use into the eyepiece tubes.

2.3 Focusing

There is no focusing mechanism with the microscope body. Normally, the focusing mechanism is on the stand.

The following is a focus adjustment of microscope body working with a boom stand:

1) Put the specimen under the microscope.
2) Turn the zoom adjusting knob to the maximum magnification (4.5X) (***Fig. 1***).
3) Set the lower edge of diopter adjusting ring to their original positions (***Fig. 2).***
   This is important for par-focal when you zoom in or out. The only case you need to turn the diopter off the white line is that you have different eye sights between your two eyes.
4) Observe the specimen through the right eyepiece and make the image clear by turning the focusing knob. If you couldn't get the specimen focused, you may need to adjust the height of the horizontal bar by moving it along the stand post. Refer to the notes in red below if you still have problems.
5) Rotate the zoom adjusting knob to the minimum magnification (0.7X) (***Fig. 1***).
6) Observe the specimen through the right eyepiece and make the image clear by turning the right diopter adjusting ring.
7) Redo the step (2), (4), (5) and (6) till the right adjusting ring is more precise.
8) Do the step (5) and make the image clear which is observed through the left eyepiece by turning the left diopter adjusting ring.
9) Turn the zoom adjusting knob to get the desired magnification.
10) If auxiliary objective lens is applied, the working distance changed significantly and the horizontal has to be moved up or down accordingly.

Fig. 1

Fig. 2

Note:

If you have a thin specimen, the microscope may not focus even at its lowest position since the distance is larger than 100mm. In this case, you need to put a something with the thickness no less than 10mm under the specimen to raise the height so that you can reach the 100mm working distance. *(Fig. 3)*

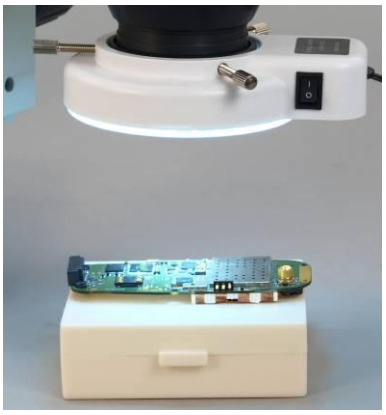

Fig. 3

2.4 Adjusting interpupillary distance

While observing with both eyes, adjust the prism housing along the direction of arrowhead of the ***Fig. 4***. The interpupillary distance is correct when the left and right fields of view converge completely into one image.

Fig. 4

2.5 Using eyeshield

1) For user who does not wear glasses, hold the diopter-adjusting ring to prevent them from rotating and turn the eyepiece till the eyeshield fit the observer well.
2) For user who wears glasses, take the eyeshield off before observation.

2.6 Mounting the 0.3X, 0.5X, or 2X auxiliary objective *(optional, may not included in your package)*

1) Loosen and take off the cover (the black piece on the bottom of objective housing).
2) Screw on the thread auxiliary objective lens (***Fig. 5***).

Fig.5

2.7 Mounting the illumination device *(optional, may not included in your package)*

1) Screw on the 48mm thread ring light adapter (***Fig. 5***).
2) Attach the ring light on the ring light adapter with tube-side facing down.
3) Tighten the 3 screws to lock the ring light on the adapter (***Fig. 6)***.
4) Connect the power adapter (some models have the adapter built-in the light unit) to the ring light and power outlet.

Fig. 6

Note:

- The illumination is optional and may have different color and shape from the one in the figure, depending on the model purchased.

2.8 Installation and operation camera *(optional, may not included in your package)*

1) Insert the camera into the photo tube, and then connect the camera to a computer via USB2.0 cable. (***Fig. 7)***
2) The manual for the camera is on a CD (or mini CD). Refer to the manual to install the driver and software on to the computer.
3) Bring the microscope into focus by following the procedures in **2.3**.
4) Pull the swapping lever out as shown in ***Fig. 8***.
5) Open image observing software to examine.
6) If the image is not clear, turn the upper half part to lower down or rise up the camera mounted on the top, till the image is clear, tighten the lock screw.
7) You can also capture images or record live videos through the software, depending on the functions provided by the software.

Fig. 7

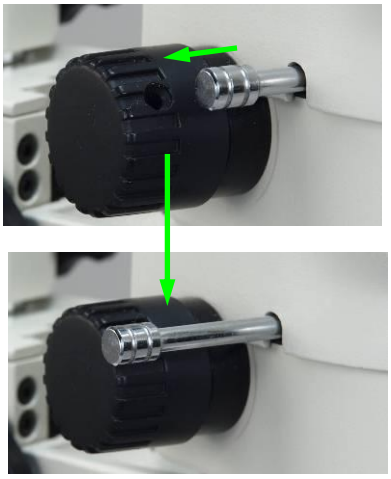

Fig. 8

Note:

- The camera is optional and may have different color and shape from the one in the figure, depending on the model purchased.
- After switch to the photo viewing mode, you still can observe through the right eyepiece tube.
- Please refer to the manual in the camera's CD for the details of installation and operation of the camera.

3 Specifications

General	
Model	HW43C
Total Magnification	3.5X ~ 90X
Viewing Head	Trinocular, inclined 45º, swiveling 360º Adjustable Interpupillary distance 47 ~ 73mm (1-3/4" ~ 2-3/4") Adjustable diopter on both eyepiece tubes
Eyepieces	1 pair of high eye point wild field WF10X/20 1 pair of high eye point wild field WF20X/10 1 pair of wild field WF30X ***(optional)***
Objectives	Zoom 0.7X ~ 4.5X, Zoom ratio: 6.5:1
Auxiliary Objective Lens	0.5X, 0.3X ***(optional)*** or 2X ***(optional)***
Focus Mechanism	Rack and pinion, focusing knobs on both sides
Working Distance	100mm (3-15/16") without auxiliary objective lens If auxiliary objective lens is added, see ***working distance and field of view of add-on auxiliary objective lenses***
Objective Field of View	Max 30mm (1-3/16") with WF10X eyepieces but no auxiliary objective lens If auxiliary objective lens is applied, see ***working distance and field of view of add-on auxiliary objective lenses***
Illumination ***(optional)***	Refer to the illuminators
Cameras ***(optional)***	Refer to the cameras
Boom Stand ***(optional)***	Refer to the Boom Stand
Dimension	17.5cm x 17.2cm x 23cm (6-7/8" x 6-3/4" x 9-1/16")
Shipping Package	7 lbs (3 kg)

Eyepieces			
Designation	**Magnification**	**Field of View**	**Mount Size**
Wide Field	10X	20mm	30mm
Wide Field	20X	10mm	30mm
Wide Field ***(optional)***	30X	9mm	30mm

Magnifications								
Eyepiece	10X				20X			
Objective	Zoom 0.7X~4.5X				Zoom 0.7X~4.5X			
Auxiliary objective Lens	-	0.5X	0.3X ***(optional)***	2X ***(optional)***	-	0.5X	0.3X ***(optional)***	2X ***(optional)***
Magnification	Zoom 7X~45X	Zoom 3.5X~22.5X	Zoom 2.1X~13.5X	Zoom 14X~90X	Zoom 14X~90X	Zoom 7X~45X	Zoom 4.2X~27X	Zoom 28X~180X

(Continuous….)

Eyepiece	30X							
Objective	Zoom 0.7X~4.5X							
Auxiliary objective Lens	-	0.5X	0.3X ***(optional)***	2X ***(optional)***				
Magnification	Zoom 21X~135X	Zoom 10.5X~67.5X	Zoom 6.3X~40.5X	Zoom 42X~270X				

Working Distance and Field of View of Add-on Auxiliary Objective Lenses			
Auxiliary Objective Lens	Eyepiece	Field of View	Working Distance
0.3X ***(optional)***	WF10X/20	85mm ~ 13mm 3-5/16" ~ 1/2"	230mm (9-1/16")
0.5X	WF10X/20	60mm ~ 9.2mm 2-3/8" ~ 3/8"	165mm (6-1/2")
2X ***(optional)***	WF10X/20	14.5mm ~ 2.5mm 9/16"~ 3/32"	33mm (1-5/16")
No	WF10X/20	30mm ~ 5mm 1-3/16" ~ 3/16"	100mm (3-15/16")

4 Troubleshooting Guide

OPTICAL PROBLEMS		
Problem	**Cause**	**Solution**
Totally dark in the view field	The cover of objectives is still on	Take off the cover of objectives
Incomplete vision	The interpupillary distance is not correct	Adjust the interpupillary distance
	Diopter is not correct	Adjust the diopter
	The right and left eyepiece are not same	Check and mount the same eyepieces
Dirt or dust on the view	Dirt or dust on the eyepiece lens, objective lens	Clean the lens with a camera cleaning kit
	Dirt or dust on specimen	Clean the specimen
Cannot bring specimen in focus	The objectives is too far away or too close to the specimen and out of the range of focus stroke	Adjust the height of the trinocular head so that the distance between the objectives and specimen is about 100mm
		If you have a thin specimen, the microscope may not focus even at its lowest position. see ***Note 2.3***

5 Optional Parts

(The optional parts may be included in some models or sold separately.)

1) Auxiliary Objective Lenses

	Model	Magnification
	AJ3D3AUX	0.3X
	AJ3D5AUX	0.5X
	AJ3X2	2X

2) Illuminators

	Model	Lamp
	A9208	8W fluorescent ring light, 110V
	A9254P	54 LED ring light, input: 100V ~ 240V 50/60HZ
	A9264S	64 LED ring light, input: 100V ~ 240V 50/60HZ
	A92144L	144 LED ring light, input: 90V ~ 265V AC 50/60HZ
	A92144S	144 LED ring light, input: 100V ~ 240V 50/60HZ
	A12CR	Halogen 21V/150W, fiber cold ring light Input: 115V or 230V switchable (internationally)
	A12CY	Halogen 21V/150W, fiber cold Y light Input: 115V or 230V switchable (internationally)

3) Cameras

	Model	Resolution	Operating System	Software
	A1502	640 x 480 (0.3MP)	MS Windows (32/64-bit) Mac OS	Included
	A1510	1280 x 1024 (1.3MP)	MS Windows (32/64-bit)	
	A1520C	1600 x 1200 (2.0MP)	MS Windows (32/64-bit) Mac OS	
	A1530X	2048 x 1536 (3.0MP)		
	A1550X	2592 x 1944 (5.0MP)		
	A1590	3488 x 2616 (9.0MP)	MS Windows (32/64-bit)	

4) Boom Stand

	Model	Descriptions	Body holder Dimension
	A901	Single arm length: 16” Overall length: 23-1/2” Pillar height: 17” Base size: 9”x9”x1-3/4” Horizontal travel stroke: 9-1/4” Vertical travel stroke: 7-1/2”	76mm
	A902	Double arm length: 20” Overall length: 27” Pillar height: 17” Body holder can flip up to 90° Base size: 10-1/4"x8-1/4"x2" Horizontal travel stroke: 8-5/8” Vertical travel stroke: 10-7/8”	
	A90F1	Table clamp: maximum opening 2.4" Spring loaded Articulating arm, multi-arm 360° free revolution in horizontal direction Radius of working area: maximum 41" Focus block: rack and pinion focus adjustment 55 mm Diameter of post for focus block: Φ30mm	
	A90F4	Table clamp: maximum opening 2" Spring loaded Articulating arm, multi-arm 360° free revolution in horizontal direction Radius of working area: maximum 39" Focus block: rack and pinion focus adjustment 55 mm	