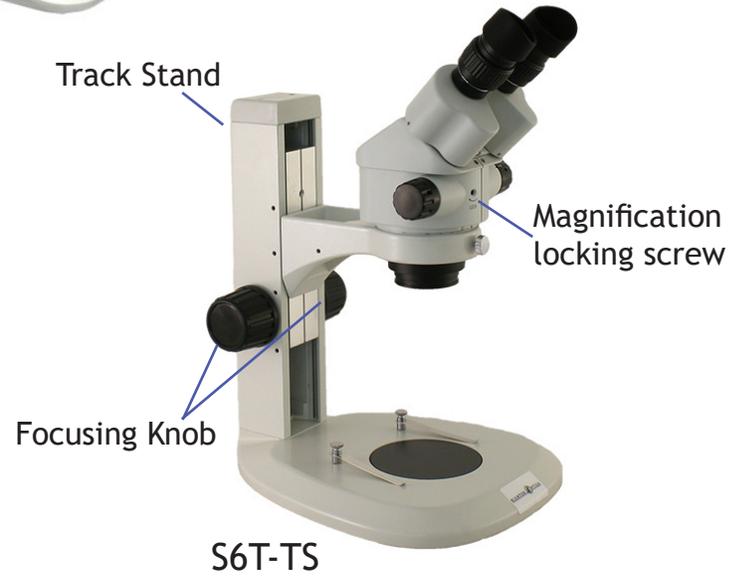
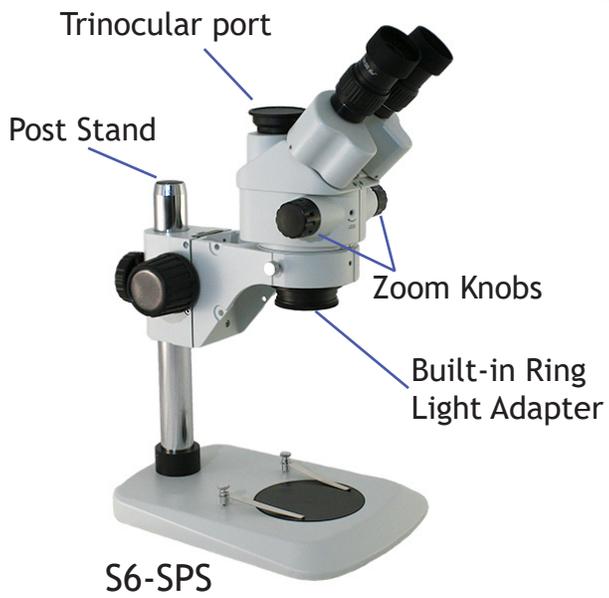
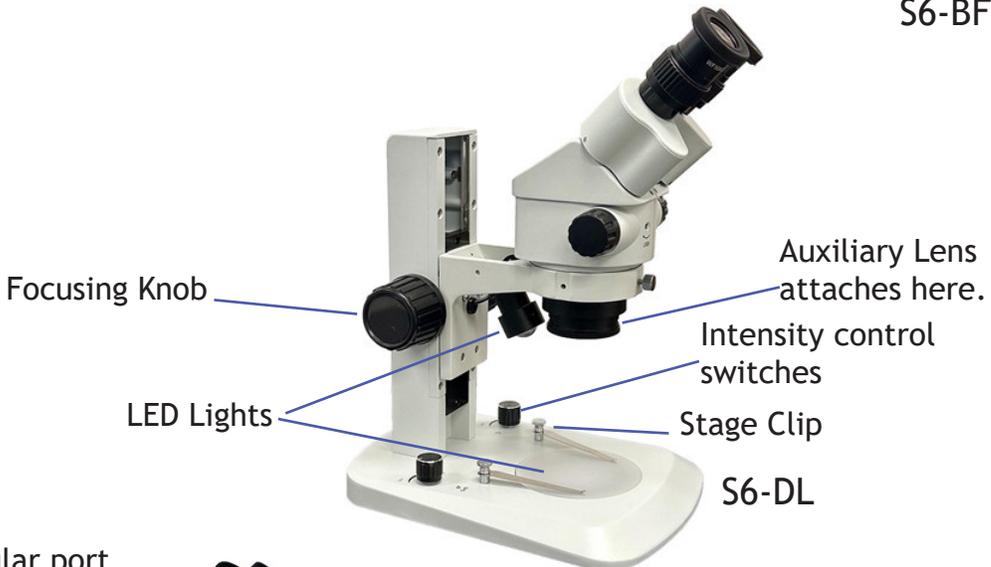
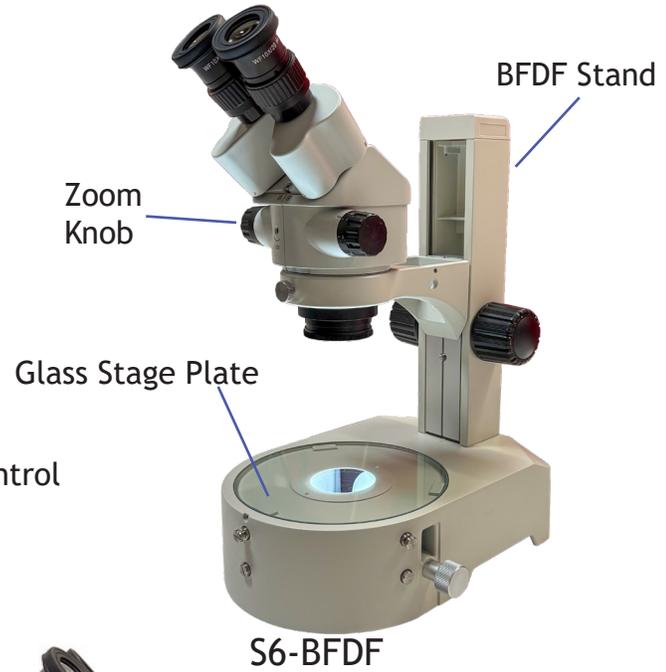
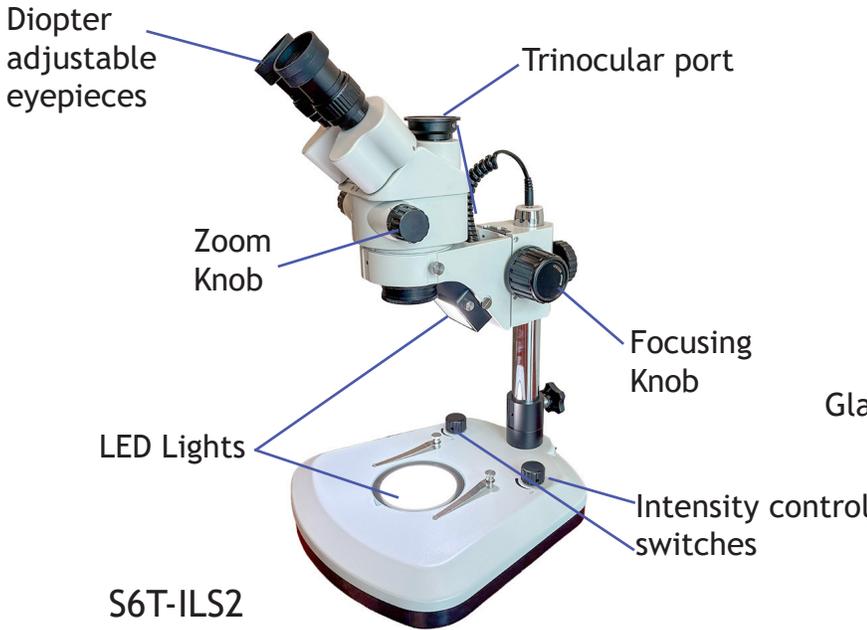




Richter Optica

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Instructions for S6 Microscopes



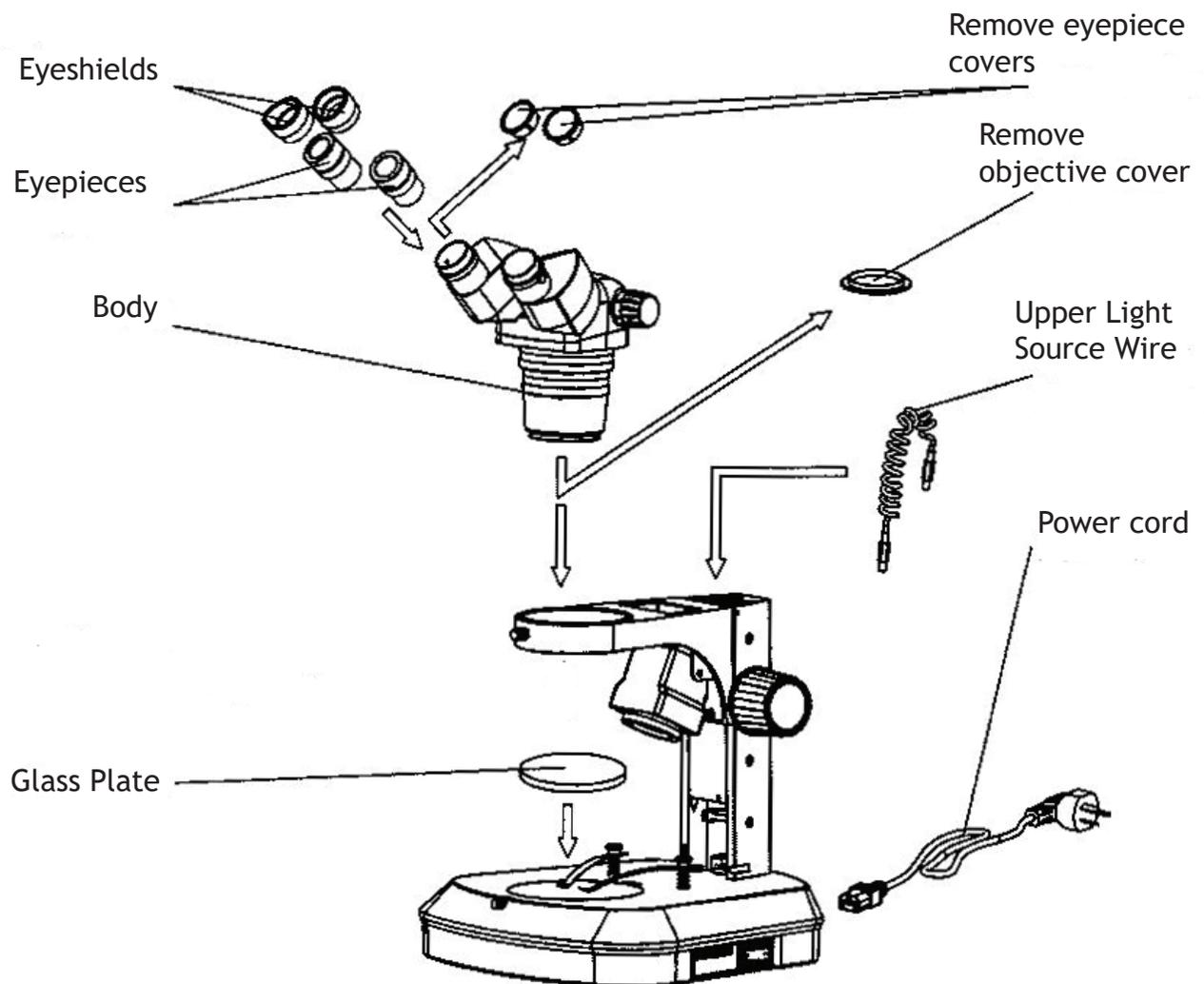
Thank you for your purchase of a Richter Optica microscope. The information in this manual is provided to answer most questions that can arise when operating your microscope and to help you avoid unnecessary maintenance expenses in the future.

Please carefully read instructions before operating microscope. Nomenclature used to describe components and controls are identified on opposite page.

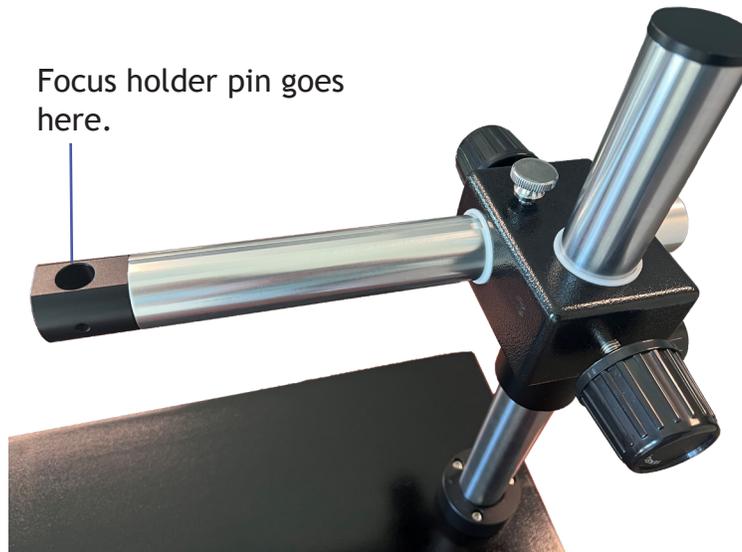
UNPACKING

Do not discard styrofoam container or packing materials until you are sure shipment is complete and undamaged (retain styrofoam shipping container to store your microscope when it is not in use). Remove all tape and packing material used to protect microscope during shipment. Make certain lens surfaces do not come in contact with dirt, fingerprints, or oil. Damage of lens surfaces occur when they come in contact with such contaminants, and image quality is reduced.

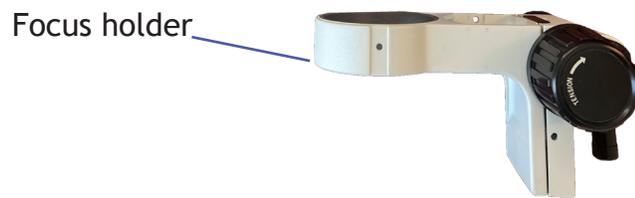
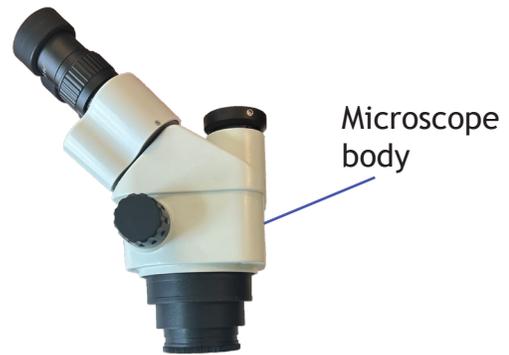
Assembly of Track Stands is shown in the diagram below. The assembly will vary slightly depending on stand type.



The following images depict S6 systems on boom stands. To assemble a boom stand system, first put the boom stand pieces together. The assembled boom stand without a microscope body is shown below.



Then, the focus holder attaches to the end of the boom arm using a pin mount. Once the focus holder is in place, put the microscope body into the holder, and tighten the set screw on the focus holder to secure the body in place.



The fully assembled S6 on a boom stand is shown below. Note that a LED ring light is attached in this photo.



OPERATION

Illumination (for models with built in illumination):

- Before operating the microscope, adjust the intensity controls located on each side of the base to the minimum position. This should be done prior to each time light is turned on or off. Failure to do so will significantly shorten the life of the bulb.
- Make certain that the main voltage of your microscope corresponds to the voltage of your power outlet, either 120v or 220v. Insert microscope power cord into power outlet.
- The S6 on lighted LED stand may include a glass or clear stage plate. This plate is ideal for viewing transparent specimen slides or specimens that are thin enough for light to pass through them (insect wings, plant leaves, etc.). Alternate black/white contrast plates can be used when viewing opaque objects or for dissecting.
- Some models come equipped with a rocker switch on the base of the microscope. These switches are used to turn the light on/off. The rheostat control knobs will not work if the rocker switch is in the “off” position.

Illumination using an external light, such as a LED ring light

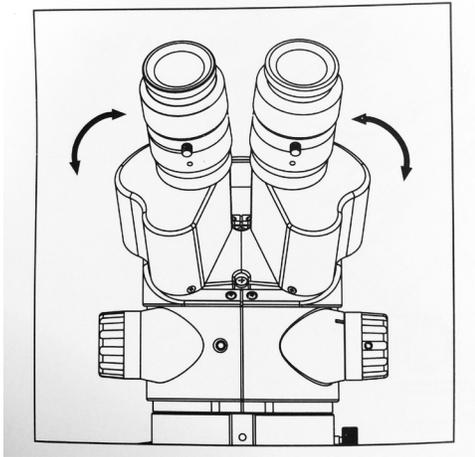
- The ring light attaches to the bottom of the microscope objective as shown in the photo below. Push the light up as far as it will go before securing it.
- Secure the ring light to the bottom of the microscope objective by tightening the three screws on the sides of the light.
- Plug the ring light power cable into the power source.



Attaching the ring light to bottom of the S6 microscope body

Interpupillary Adjustment:

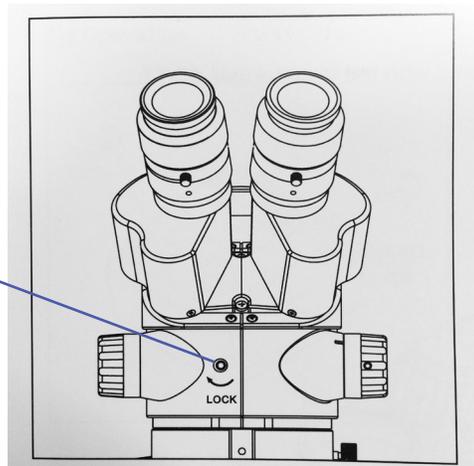
This will permit each user to adjust the spacing between eyepieces to accommodate distance between their eyes. While looking through the microscope eyepieces with both eyes, grasp eyepiece tube housings with both hands and rotate them, moving eyepieces apart or together until a full field of view is observed and the images blend into one. Interpupillary distance is now corrected for your own inter-ocular distance and does not require further adjustment unless another user changes the adjustment.



Focusing:

- Adjust zoom control knobs (located on both sides of the head) so that the lowest magnification number “0.7” is positioned at the white notch index on head. Lower magnifications have larger fields of view, making it easier to position and locate area to be viewed.
- Place object on stage.
- Position focusing knobs in the center of focusing range.
- Use included allen key to lock and set magnification if desired.
- On mounted post models, the height of the viewing head can be adjusted up or down on the post in order to focus on different sized objects. Loosen the locking knob located on the locking support collar, allowing the support collar to slide down to bottom of post. While firmly holding focusing holder containing viewing head with one hand, loosen locking knob located on back of focusing holder so that head can move freely up or down on post. While looking through microscope, move viewing head up or down on post until object can be seen in approximate focus. Tighten focusing holder locking knob. Position the support collar under the focusing block and tighten locking knob on support collar. It is not necessary to make this adjustment every time you change objects to be viewed, so long as the different objects are of similar thickness or height.
- On models with lighted post stands, the up/down movement of the viewing head is limited to the traverse permitted by the regular focusing knobs.
- Both eyepieces have a knurled diopter adjustment ring. Rotate the diopter until the zero(0) lines up with the notch on the diopter.
- Adjust zoom control to the highest magnification by aligning the number “4.5” on the zoom knob.
- While looking through the right eyepiece with one eye, rotate focusing knob until specimen comes into sharp focus through the right eyepiece.
- Adjust zoom control knob to the lowest magnification.
- Adjust the right diopter until the image is sharp. Do not change the focusing knob position. Repeat to adjust the right diopter.
- The image should now be sharp throughout the zoom power range.

Tighten set screw to lock zoom at specific magnification



MAINTENANCE

WARNING: For your own safety, turn switch off and remove plug from power source before maintaining your microscope. If the power cord is worn, cut or damaged in any way, have it replaced immediately to avoid shock or fire hazard.

1. Optical Maintenance

Do not attempt to disassemble any lens components. Consult a microscope service technician when any repairs not covered by instructions are needed.

Prior to cleaning any lens surface, brush dust or lint off lens surface using a camel hair brush. You can also use an ear syringe or canned compressed air, sold by computer stores.

To clean eyepiece lenses, do not remove from eyepiece tube. Clean only the outer lens surface. Breathe on lens to dampen surface, then wipe with lens paper or use a cotton swab moistened with distilled water. Wipe lenses with a circular motion, applying as little pressure as possible. Avoid wiping dry lens surface as lenses are scratched easily. If excessive dirt or grease gets on lens surfaces, a small amount of Windex can be used on a cotton swab or lens tissue. To clean objective lenses, do not remove objectives from microscope. Clean front lens element only, following same procedure.

2. Mechanical Maintenance

The only mechanical adjustment the microscope might require is the tension of the focusing mechanism. This has been adjusted at the factory, but over time it may loosen and cause the head of the microscope to slip downward on the focusing block.

The tension adjustment collar is located between arm and focus knob on left side of microscope when the stage is facing towards you. With a jewelers type screwdriver, loosen slotted set screw located on knurled surface of the tension adjustment collar. Turn collar clockwise to tighten tension, counter-clockwise to loosen tension. After adjusting, tighten set-screw to lock collar into place.

NOTE: It is recommended that you leave the tension as loose as possible for ease of focusing, yet not so loose that it permits the head of the microscope to drift downward from its own weight and cause the microscope to “drift” out of focus.

TROUBLESHOOTING: Optical

PROBLEM	POSSIBLE CAUSE
Dust or dirt in field of view.	Dust or dirt on objective, illuminator or eyepiece.
Double Image	Interpupillary distance is not set correctly.
	Diopter adjustment not set on eyepieces.
	Two different eyepieces are being used.
Sample blurs when magnification changes.	Diopter adjustment is not set properly on eyepieces.
	Specimen is not properly in focus.
Focusing is loose or too tight.	Adjust tension adjustment knob on the side of the microscope next to the focusing knob.

TROUBLESHOOTING: Electrical

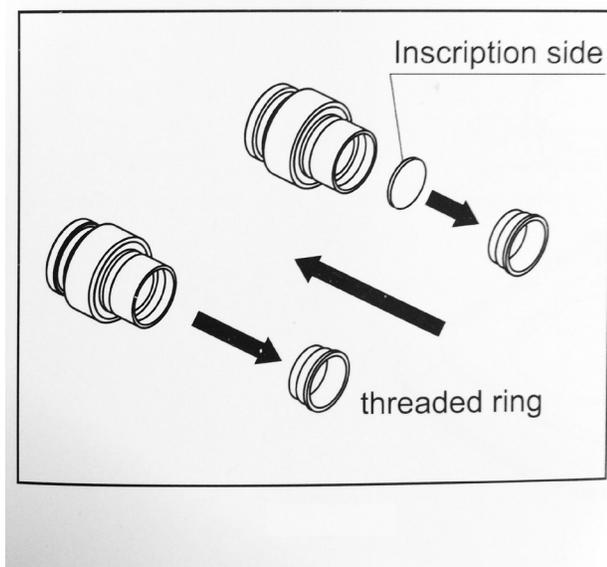
PROBLEM	POSSIBLE CAUSE
Lamp does not turn on and light up.	Power cord not plugged in, or batteries are not charged.
	Light is burned out.
Inadequate brightness.	Rheostat knob needs adjustment.
Lamp blows out immediately.	Incorrect bulb being used.
Lamp flickers.	Connector wires are not secured.
	Lamp near end of life.
	Lamp not securely plugged into socket.

* Loosening & Tightening focusing tension depends on the microscope stand you have. The BL stand adjusts the focus tension by holding both focus knobs (left & right) and while holding the left steady, rotating the right knob. The CL microscope stand focus is adjusted similarly by holding both knobs and rotating the right knob forward or back to tighten or loosen.

EYEPIECE RETICLE INSTALLATION

The Richter Optica S6 stereo microscope widefield high-eyepoint 10x and 15x eyepieces both accept a 24mm diameter reticle. To install the reticle:

1. Remove the eyepiece from the eyetube and turn the eyepiece upside down.
2. Twist out and remove the threaded retaining ring from the bottom of the eyepiece.
3. Place the eyepiece reticle in the eyepiece with the inscription side facing the front of the eyepiece.
4. Screw the retaining ring back into the bottom of the eyepiece to hold the reticle in place.



S6 STEREO MICROSCOPE MAGNIFICATION

The Richter Optica S6 stereo microscope can achieve different magnifications based on the eyepieces and auxiliary lenses used. Refer to the chart below in order to select the proper eyepiece and auxiliary lens accessories to meet your needs.

Auxiliary Lens	Working Distance	Eyepieces					
		Widefield 10x		Widefield 15x		Widefield 20x	
		Total Magnification	Field Size (mm)	Total Magnification	Field Size (mm)	Total Magnification	Field Size (mm)
0.5x	177mm	3.5x-22.5x	57.1-8.9	5.25x-33.75x	42.9-6.7	7x-45x	28.6-4.4
1x (None)	100mm	7x-45x	28.5-4.4	10.5x-67.5x	21.4-3.3	14x-90x	14.3-2.2
1.5x	47mm	10.5x-67.5x	19-3	15.75x-101.25x	14.2-2.2	21x-135x	9.5-1.5