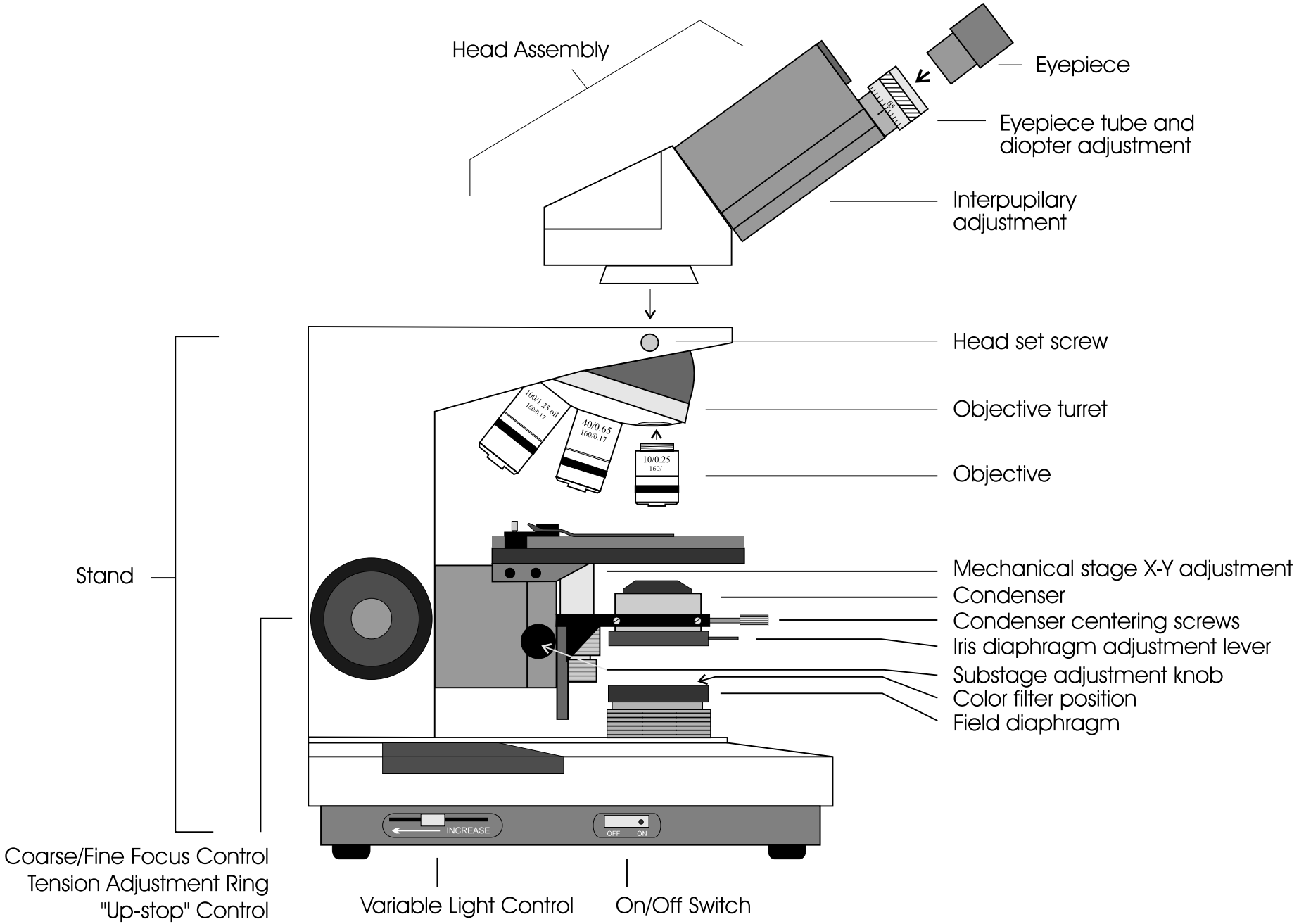
Operation Manual

for Micromaster® I Microscopes

This manual covers catalog numbers:
S11031, S11033, and S11035

Fisher Scientific

Micromaster I Diagram



General Operation

Thank you for purchasing a Micromaster I microscope. This instrument has been designed and built for professional use. We recommend you read this entire manual carefully before beginning to use the instrument. Please be sure to record the pertinent information in the "registration" portion at the end of this manual.

Assembly: (reference figure #1)

1) Before assembling, you should check over the packaging for all parts and accessories. Make sure you have all of the items on the list below, and any items you may have ordered as optional accessories. If you are missing any items, or would like additional accessories, please contact your sales representative.

   Standard items for all microscopes (refer to diagram at left): stand w/ condenser, head assembly, eyepieces, objectives, blue frosted filter, dust cover, spare bulb, and spare fuse.

2) Start by removing the stand its protective foam packaging and placing on a stable counter top. Remove head from packing and place on top of stand so the dovetail flange slides into place. Secure with the knurled set screw. Note: Do not release the head until it is firmly secured with the set screw.

3) Remove eyepiece(s) from packaging and slide into the eyetubes.

4) Remove the objectives and install one at a time by screwing them into objective turret.

Lighting and Power:

1) Connect the power cord to suitable 110 VAC power supply and turn on light with the "on/off" switch. If light does not come on, check to see that the variable control is set to the "high" setting.

2) Once in operation, light intensity is adjusted with the "variable light control" by means of voltage regulation (reference figure #1).

3) If the lamp fails to light, replace the it with one of the spares. Occasionally, these lamps are damaged in shipping. Before attempting to replace or remove the lamp, UNPLUG THE MICROSCOPE FROM ANY POWER SOURCE! Lamp replacement is done by *gently* laying the microscope on its side and opening the trap door. Once the door is open, the lamp can easily be removed simply by grasping the lamp and pulling it from its socket. When replacing, insert the new lamp into the same fixture. When replacing the lamp, be careful NOT TO TOUCH THE GLASS ENVELOPE WITH YOUR FINGERS. Use a tissue or other medium to grasp the lamp. This will prevent oils from your hand from reducing lamp life (reference figure #2).

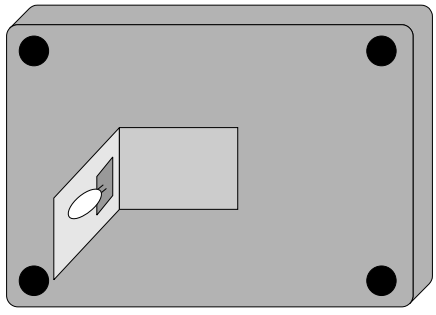


Figure #2

Focusing and Mechanical Stage Mechanisms:

1) Focusing adjustment is done with the "Coarse/Fine Focus Control" knobs (reference figure #1). The coaxial arrangement allows for easy, precise adjustment without stage drift.

2) Turning the "Coarse/Fine Focus Control" will raise and lower the stage vertically. One complete turn of the fine focusing mechanism will raise or lower the stage 0.3mm, and the smallest graduation refers to 2um of vertical movement. One complete turn of the coarse focusing knob will raise or lower the stage 3.6mm.

3) To ensure long life, always turn the focusing control knobs slowly and uniformly.

4) The focusing mechanism is equipped with a tension adjustment ring. When you first setup the microscope, turn the coarse focus control knob to feel for tension. If you find the knob difficult to turn, loosen the tension adjustment ring situated between the coarse focus knob and the stand (figure #3). This ring will reduce the force needed to turn the knob. Be careful, if the ring is loosened too far, the stage will have no tension to hold it in place and will "drift" down when not held in place. You must find a balance in which the tension is adequate to hold the stage in place, but not so tight that it is difficult to turn.

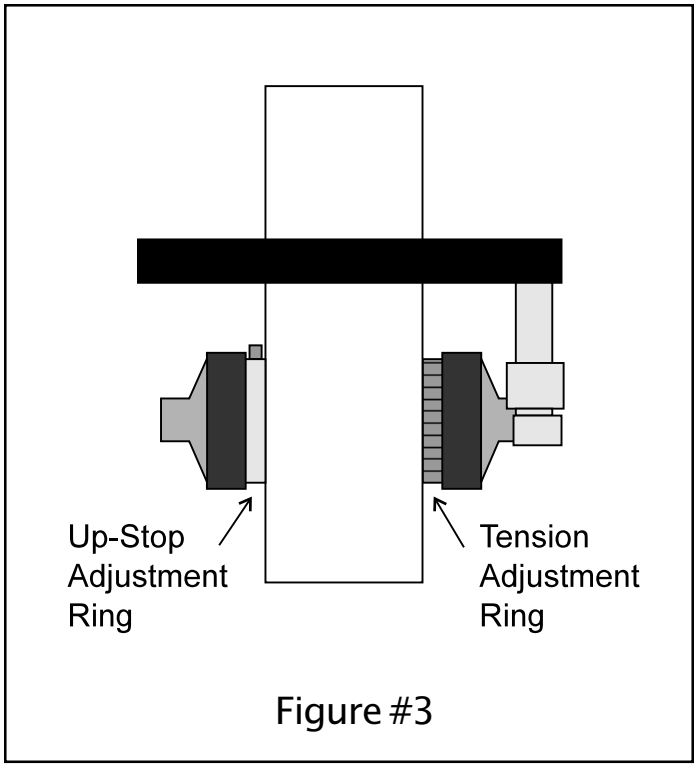


Figure #3

5) The focusing mechanism is also equipped with a safety "up-stop" set ring (figure #3). When set, this ring will limit the uppermost travel position of the stage. When used properly, the up-stop will prevent the slide from ever making direct contact with the tip of the objective. The best way to set this position is to place a slide with cover slip on the stage and swing the 100x objective into position. Now look very carefully at the gap between the tip of the 100x objective and the top of the cover slip. Slowly raise the stage with the coarse, and then fine, adjustment until the objective is VERY close to touching (within 1/2 a millimeter) or just touching. Locate the up-stop set ring on the right side of the stand just above the focus control knobs. First loosen this ring to reset the mechanism by rotating the knob counter clockwise until you feel the tension release. Then tighten the knob by rotating it clockwise until it is "finger tight". The stage will now not raise above this location.

6) The "Mechanical Stage Adjustment" controls provide easy and accurate positioning of the sample. One complete turn of the longitudinal control will move the specimen 28mm. One complete turn of the transverse control will move the specimen 16mm.

7) The spring loaded slide holder can be removed for users who prefer not to use a mechanical stage. Simply unscrew the two knurled knobs which lock the slide holder onto the stage, and remove the holder.

Interpupillary and Diopter Adjustment:

1) Interpupillary adjustment, the distance between eyepieces, is made through a folding action that is built into the head. Place a specimen on the stage and focus using the 10x objective. Move the eyepieces together or apart as necessary so the field appears as one circle and viewing is comfortable.

2) Diopter adjustment allows for proper optical correction for each individual's eyesight. This adjustment is easily made, and is recommended prior to use.

3) Using the 40x objective and a sample slide (i.e., one which produces an easily focused image), close your left eye and bring the image into focus with the "Coarse/Fine Focus Control". Once the image is well focused using only your right eye, close your right eye and check the focus with your left. If the image is not perfectly focused, make fine adjustments with the left "Diopter Adjustment" (figure #1). Once complete, the microscope is corrected for *your* vision.

Substage Adjustments:

1) Adjustments to the substage condensing system are crucial for proper illumination and performance. There are three basic adjustments to be made: Centering, Vertical Focusing, and Aperture Adjustment.

2) Centering: The condenser is mounted on a spring loaded mechanism with two centering screws which extend out from the substage. You should check the centration upon initial setup and periodically thereafter. We suggest using a simple method for centering the condenser. Using the 4x objective and no specimen or slide, close the iris diaphragm to its smallest position and lower it down. You will see the closed iris come into the field leaving only a small circle of light in the center. If the circle of light is not in the center of the field, use the centering knobs to move to this position (figure #4a). Once you feel the circle of light is near center, open the iris a little more so the circle of light takes up almost the entire field. Now recenter the image to ensure accuracy.

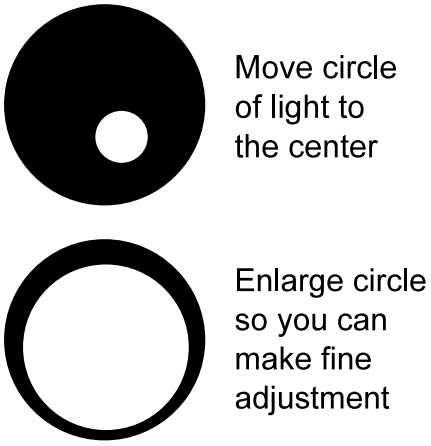


Figure #4

3) Vertical Focusing: The condenser can be raised and lowered with the "Substage Adjustment Knob" (reference figure #1) in order to focus the light for optimal illumination.

4) Aperture Adjustment: The light path can be adjusted with the "Iris Diaphragm Adjustment" (reference figure #1) located just below the condenser. Aperture adjustments are made to induce contrast into a specimen, not to adjust light intensity. Proper aperture adjustment is crucial for quality imaging.

Maintenance & Care:

1) Keeping the instrument clean will greatly extend the life of the product. The warranty described below is based on the assumption that the instrument is well cared for and cleaned regularly. Failure to do so may result in nullification of the warranty.

2) Keep the instrument covered with a dust cover whenever not in use.

3) Periodically wipe the instrument down with a damp (but not dripping wet) cloth.

4) It is imperative that you have the instrument serviced by your Fisher Service Representative or some other qualified microscope technician.

Statement of Limited Product Warranty:

Westover Scientific, Inc. certifies that this microscope is free from defects in workmanship or materials under normal use and maintenance. The period of warranty is 24 months from the date of purchase. If defects in workmanship or materials appear within 24 months of the date of initial purchase, and, the unit has been subjected *only* to normal use and properly maintained, Westover Scientific agrees to repair or replace, as its sole option, without charge to the purchaser any defective component part of the product. The remedies herein are the buyers sole and exclusive remedies. Westover Scientific, Inc. shall not be held liable for any direct, indirect, or consequential damage or decay to the product that results from improper use or maintenance.

Model Number: _____ (found on the back of the microscope)

Serial Number: _____ (found on the back of the microscope)

Date we bought the microscope: _____