



User's Manual

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Introduction

Congratulations on the purchase of your new AmScope microscope!

This manual is designed for the SE400 series microscopes.

Please take a few minutes to familiarize yourself with the features and functions of your new microscope.

If you'd like more information on microscopes, parts, or accessories, please visit our website at:

www.iScopeCorp.com

We highly recommend you study this manual thoroughly before operating the microscope and that you keep it on hand for future reference.

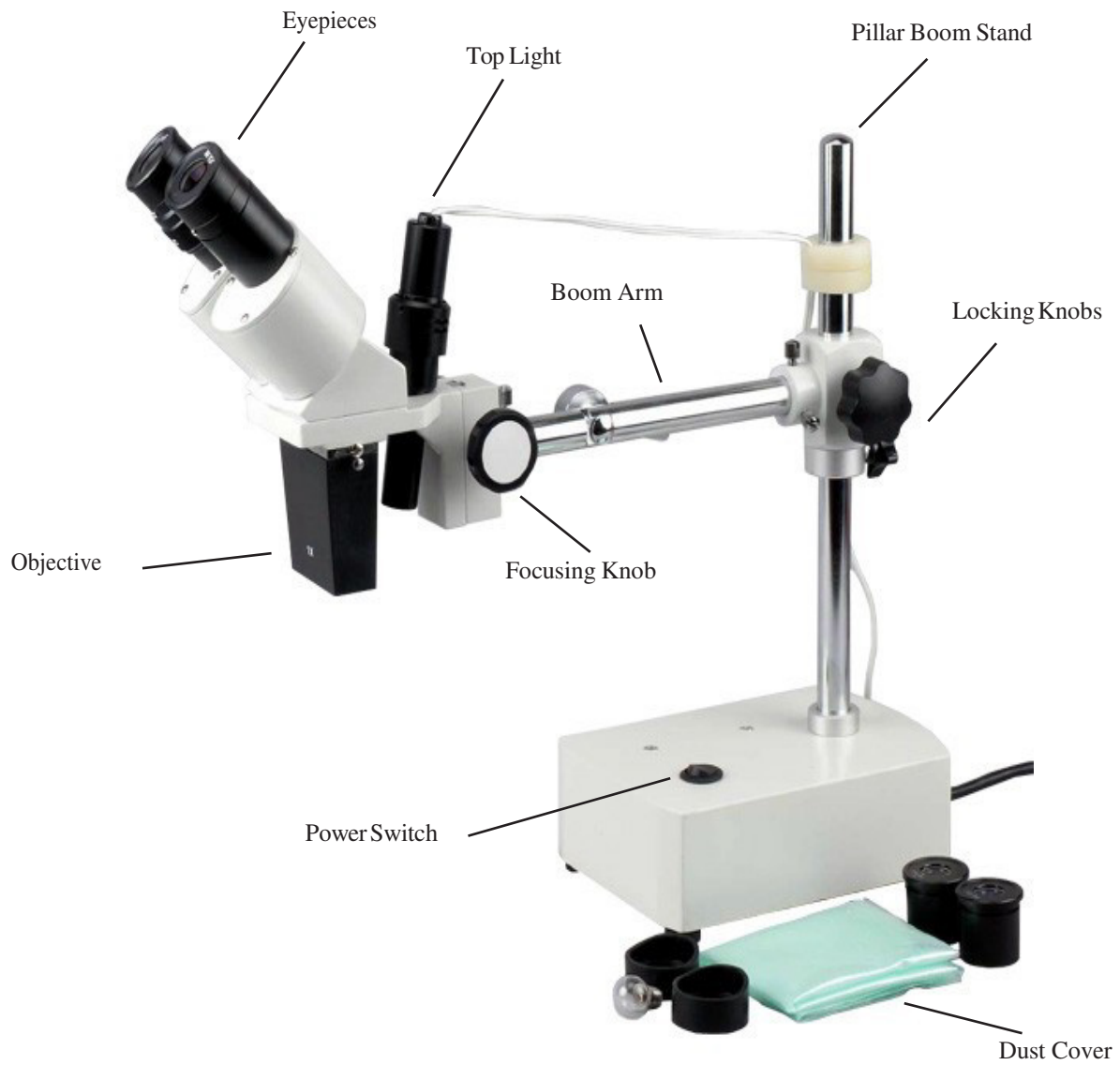
If you have additional questions or need assistance, please send us an email at:

info@amscope.com

Safety Precautions

1. As the microscope is a precision instrument, always handle it with care, avoiding impact or abrupt movement during transportation. Do not shake the package.
2. Do not place the microscope in direct sunlight or in high heat. Keep it indoors in a dry and clean place with temperatures between 32-100 degrees F (0-40 degrees C), and in maximum relative humidity of 85%.
3. Avoid touching the lenses on the objectives and the eyepieces so that oil and dirt from your fingerprints do not obstruct your view.
4. Before turning the power on, make sure that the power supply voltage is consistent with the voltage of your microscope (for units with built in illumination).

SE400



Definition of Parts

Adjustable Trinocular Port

Threaded port with adjustable length of attachment of digital or video camera

Boom Stand

Stand for the microscope that allows the head to be moved in physical space in various directions

Continuous Zoom

A microscope head with a knob to change magnification through a range

Dimmer

Controls the amount of light that escapes from the illumination source

Diopter

Allows the focus to be perfected for both eyes, independent of each other

Fixed Power

Microscope head whose objectives are pre-set at certain levels and changed by rotating the objective

Focusing Knob

Used to move the microscope head vertically to bring the sample into focus

Frosted Glass Plate

A clear plate with frosted finish to provide a bottom light source for translucent samples

Gooseneck Illuminator

Illuminator independent of the unit that allows movement of one or two necks for controlled lighting

Head Lock Screw

Screws the microscope head into place

Magnification Knob

Changes the magnification of the lenses on a continuous zoom microscope

Microscope Head

Contains the objective lens, eyepiece ocular tubes, and prisms used to magnify

Ocular Tube

Tube designed to hold the eyepieces or camera in place

Opaque Stage

Opaque plate to provide a contrasting background for viewing a sample with ease

Ring Light

An illuminator that mounts directly onto the objective to emit even light on the sample below

Simul-Focal Microscope Head

Head containing a focus adjustment for a trinocular port camera to simultaneously to match the eyepieces

Table Stand

A stand which sits on the table and holds the head directly above the sample without moving

Assembly

1. First, take the styrofoam container out of the cardboard carton and lay it on its side, paying attention to which side is labeled up. Remove the tape and open the container carefully so as to avoid dropping and damaging the optical items. Check carefully to ensure that all parts and accessories are intact.
2. Check the packing list to ensure that you've received all items.
 - Stereo Microscope Body & Stand
 - 5x Widefield Eyepieces (X models only)
 - 10x Widefield Eyepieces (Typically these come on the microscope)
 - 15x Widefield Eyepieces (Y models only)
 - 20x Widefield Eyepieces (Z models only)
 - Dust Cover
 - Tungsten Light Source
 - Tension Adjustment Wrench
3. Remove the microscope body from the box and remove the plastic protective covering. The body of the microscope is composed of the head of the microscope and the base.
4. Insert the vertical pillar into the base if not already installed. Wrap the cable around the top to avoid slack in the cable if desired.
5. Insert the boom into the joint and secure. Attach light to the head via inserting it in the rear of the head of the microscope.
6. Remove the eyetube caps and drop the desired eyepieces into the eyepiece ocular tubes. Be sure to avoid touching the lens to ensure no artifacts appear in your image.
7. Remove the cap from the objective lens.
8. Plug in the microscope and turn it on.

Setting Up

1. Once you have placed your sample on the base below the objective, center the sample as best as possible. A slide is neither needed nor required for a stereo microscope, although they can be used if desired. If using a slide, use the stage clips to hold it in place.
2. Select which magnification setting you would like to achieve by using the 10x eyepieces for the 10x setting, or using one of the other eyepieces included with an X, Y, or Z model.
3. With both eyes open, look into the eyepieces. Adjust the interpupillary distance by holding the eyepiece tubes and rotating the eyepiece tubes either towards or away from each other until only one circle of light is seen by both eyes.
3. Focus the microscope on the sample by using the focusing knob on the arm of the microscope.
4. Center the object in the field of view once you have achieved focus.

Attaching a Camera

1. Remove the eyepiece from the microscope. You may need to unscrew the locking screw on the microscope ocular tube to remove the eyepiece.
2. Slide in the 23mm to 30.5mm adapter included with your CMOS camera.
3. Insert the camera into the 23mm side of the adapter.

Maintenance/Precautions

- All glass surfaces must be kept clean. Fine dust on the optical surface should be blown off using a hand blower or gently wiped off with a soft lens paper tissue/nonabrasive lint free cloth.
- Carefully wipe off oil or fingerprints on the lens surfaces using tissue moistened with a small amount of lens cleaner (we recommend Sparkle brand optical cleaner).
- Do not use Sparkle to clean other elements of the microscope. Use a neutral detergent on any plastic or painted surfaces.
- Do not assemble or disassemble the microscope's electrical components yourself without advisement from one of our technicians. Doing so will void your warranty unless by advisement of one of our technicians to do so.
- After use, cover the microscope with the provided dust cover.
- Keep your AmScope microscope in a dry, clean location in order to prevent rust or other damages.

SE400 Series Specifications

Parts	Specifications	SE400-X	SE400-Y	SE400-Z
Extreme WF Eyepiece	WF5X	x		
	WF10X	x	x	x
	WF10X w/ Pointer			
	WF10X w/Reticle			
	WF15X		x	
	WF20X			x
	WF25X			
30 Degree Viewing Head	Binocular, Interpupillary Adjustment	x	x	x

Optional Accessories

Parts	Description	Model #	Purpose
Eyepieces	20x	EP20X30.5	Obtaining additional magnification powers
	25x	EP25X30.5	For obtaining additional magnification powers
	10x w/ Pointer	EP10X30.5P	For easier identifying of objects
	10x w/Reticle	EP10X30.5R	For measuring objects
Camera	CMOS Digital	MU035 (350k) MU130 (1.3mp) MU300 (3mp) MU500 (5mp) MU800 (8mp) MU900 (9mp) MU1000 (10mp)	To capture images, video, or view live display on a computer (PC/Mac OS X)
	Calibration Micrometer	MR400	To calibrate the camera software for on screen measurements

Technical Terms & Concepts

Total Magnification

Total magnification of a microscope is calculated by the magnification of the objective multiplied by the magnification of the eyepieces.

-Ex: (10x Eyepieces) x (4x Objective) = 40x Total Magnification

Field of View

Linear field of view of the eyepiece divided by the magnification of the objective

Numerical Aperture (N.A)

Calculated by $n \sin \alpha$ (max), the Numerical Aperture (N.A) is an important parameter that marks the features of the objective and condenser's image quality and resolution. The "n" is a refractive index of the medium (air or immersion cedar oil) between the objective lens and the specimen. The " α " is 1/2 of the angle between the aperture on the objective and path of light. The larger the N.A, the higher the resolution of the objective (and better quality of the image) is.

Object to Primary Image Distance

The distance between the object plane and the primary image plane. The conjugate distance is fixed.

Mechanical Tube Length

The distance between the objective shoulder and the ocular shoulder

Infinity

Infinity is an optic lens system that allows the entire field of view to be in focus at the same time, allowing for higher quality images to be displayed through the microscope. The focal distance is set to infinity between the objective and the eyepiece prism, also allowing filters to be inserted into the system more easily due to the parallel path of light, rather than focusing on a specific point.

Common Issues (Optical)

Symptom	Cause	Remedy
OPTICAL ISSUES		
Obstructions are observed in the field of view	Stains, dust, or dirt has accumulated on the specimen	Clean the slide or use a new specimen if sample is destroyed
	Stains, dust, or dirt have accumulated on the lenses	Clean the objective and eyepiece lenses
Unclear Image	Stain or dust has accumulated on the lens in the inlet of the head	Clean the lens with lens cleaner or a nonabrasive lint free cloth, as well as spray with compressed air
	The microscope head is not in the right position to be focused	Adjust the height of the microscope with the focusing knob on the focusing rack until image appears in focus. Note: Higher magnification will require the head to move closer, while lower will require more distance between the sample and the lens.
One side of the field of view is dark or the image moves while focusing	The specimen is not fixed	Secure the slide to the stage with clips or another manner so that the sample does not move
The field of view is not bright enough	The light source is not present	A light source must be used with this model microscope to view a sample (ring light, built in illuminator, or gooseneck illuminator)
	The light source is too dim	The light source used is not bright enough, or is set to too low of an intensity setting. Adjust setting to a higher or change light sources
	Stains, dust, or dirt has accumulated on the condenser, objective, eyepieces, or base lens	Thoroughly clean all lenses with lens cleaner or a lint free nonabrasive cloth

Common Issues (Mechanical)

Symptom	Cause	Remedy
MECHANICAL ISSUES		
Focus knob does not turn	The tension knob is too tight	Loosen it by adjusting the tension by grabbing both knobs on the focusing rack and twisting them in opposite directions.
Stage declines by itself	The tension knob is too loose	Loosen it by adjusting the tension by grabbing both knobs on the focusing rack and twisting them in opposite directions.
The focusing knob won't raise/lower the head	The focusing rack has reached the max travel distance in either direction	Move the focusing rack higher or lower on the pillar if using a stand with a pillar