



EM-20 Series

Turret Stereo

INSTRUCTION MANUAL



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Introduction

With your purchase of an MT-10 series range stereo microscope you have chosen for a quality product. The EM-20 range microscopes are developed for use at schools and laboratories.

The stereo microscope consists of two separate microscope tubes which are combined as a unit, in order to focus them simultaneously on the object. Each tube has prisms, achromatic objectives and a widefield eyepiece in order to obtain a large, flat field of view. Both eyes are looking at the object under a different angle to reach a deep stereoscopic image.

The maintenance requirement is limited when using the microscope in a decent manner.

This manual describes the construction of the microscope, how to use the microscope and maintenance of the microscope.

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Construction of the Microscope

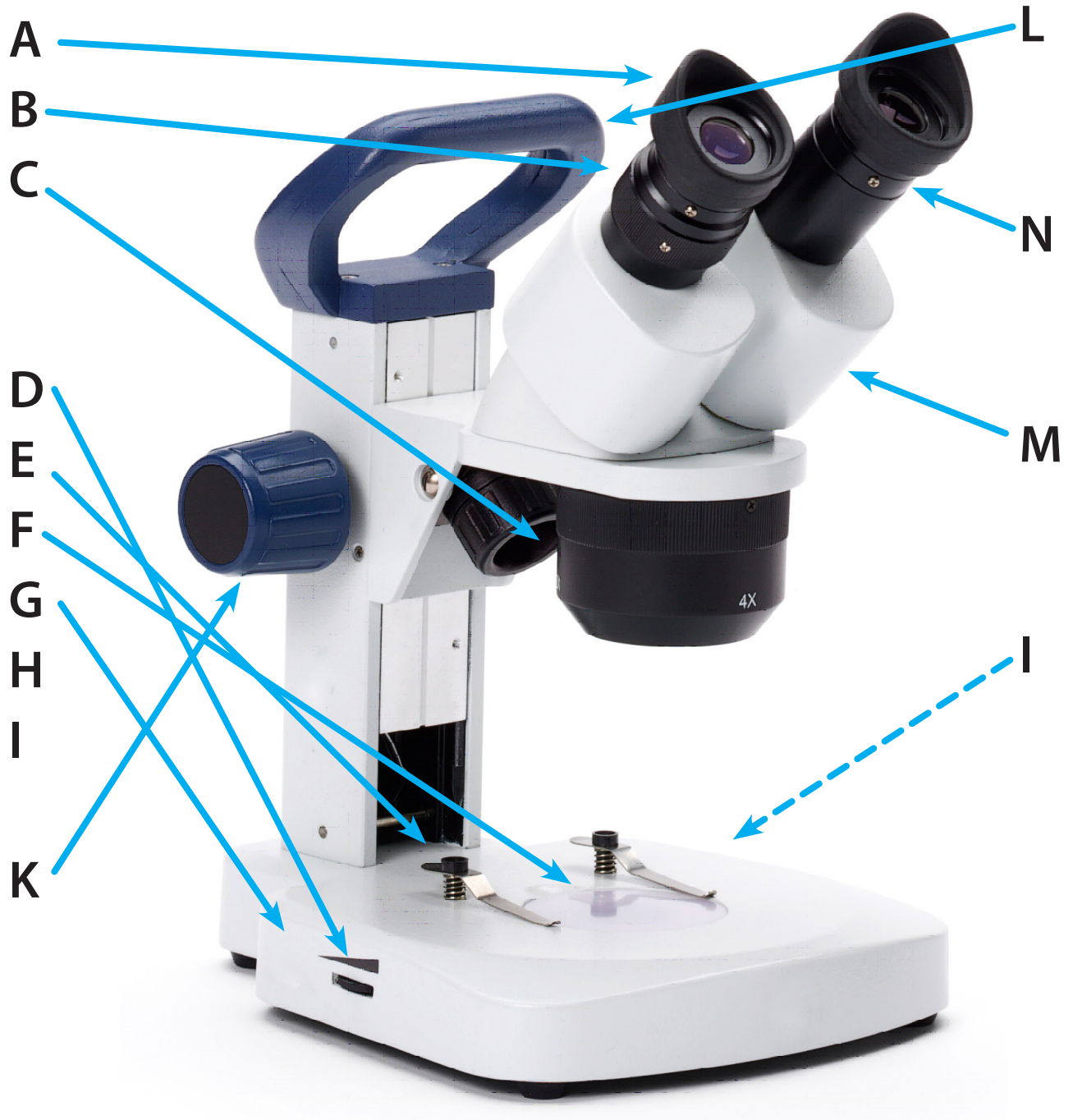
The names of the several parts are listed below and are indicated in the picture on the next page:

- A) Eyeshade**
- B) Diopter adjustment**
- C) Revolver (objective changer)**
- D) Illumination adjustment**
- E) Object clip**
- F) Stage plate**
- G) Stand foot with built-in illumination**
- H) Pillar**
- I) On/off switch**
- J) Incident illumination**
- K) Focusing knob**
- L) Handle**
- M) Prism housing**
- N) Widefield eyepiece**

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Functions of the Microscope

The stand consists of a stand arm (C), stand base and an object stage (G).

Tube

The EM-20 models are equipped with a 45 degrees inclined tubes.

Optical specifications of the MT-30/MT-90 series range

All models are equipped with paired widefield 10x eyepieces (N).

Depending on the model there are:

1x/3x objectives mounted in one revolving nosepiece.

2x/4x objectives mounted in one revolving nosepiece.

1x/2x/3x objectives mounted in one revolving nosepiece.

1x/2x/4x objectives mounted in one revolving nosepiece.

Total magnification is calculated by multiplying the magnification of the eyepieces with the magnification of the objectives. The eyepieces are locked in the tubes by means of a small screw.

Object stage

The EM-20 stereo microscopes are equipped with an transparent object stage and 2 object clips. All models have a transmitted and a incident LED illumination.

Focusing

With the focusing knobs (K) the object can be sharply focussed.

The working distance (distance between front of objectives to top of object) is about 60 mm.

Revolver of Dual Magnification models

These models are equipped with 2 pairs of achromatic objectives mounted in one revolver (objective changer). By turning this nosepiece another magnification is set. Turn the nosepiece until it clearly "clicks" into position.

Revolver of Triple Magnification models

These models are equipped with 3 pairs of achromatic objectives mounted in one revolver (objective changer). By turning this nosepiece another magnification is set. Turn the nosepiece until it clearly "clicks" into position.

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Illumination

All models have a transmitted (diascopic) and incident LED illumination.

With use of the potentiometer switch (D) the illuminators can be adjusted in intensity and both illuminations can be used simultaneously.

With the switch (I) the illuminations can be switch IN and OUT.

Tension adjustment

When the system lowers itself by its own weight, the tension of the focusing knob (K) should be adjusted. This is done by turning the two focusing knobs in opposite (clockwise or counterclockwise) directions

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Preparing the Microscope for Use

Take the stereo microscope out of its packing and put it on a firm stable table

Insert the plug of the power supply adapter into the mains supply and switch on the illumination with the On/off switch (I) and place the eyeshades onto the eyepieces. Sit comfortably down behind the microscope and take a relaxed position while viewing through the eyepiece.

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Working with the Microscope

- Place an object onto the object plate and adjust the height of the holder randomly with the screw (P) at the backside of the stand.
- Adjust the interpupillary distance by moving both prism housings (M) towards each other until one round image is seen with both eyes.
- Focus the specimen by means of the focusing knobs (K) on both sides of the holder.
- For normal observation both tubes should have the same length, but to adjust any difference between the two eyes, proceed as follows: focus sharply on a flat specimen, only using the right eye, looking through the right eyepiece. Now look through the left eyepiece, only with the left eye and focus the specimen with the diopter adjustment ring on the left tube.

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Maintenance and Cleaning

Always place the dustcover over the microscope after use. Keep the eyepiece and objectives always mounted on the microscope to avoid dust entering the instrument.

Cleaning the optics

When the eyepiece lens is dirty it can be cleaned by wiping a piece of lens paper over the surface (circular movements). When this does not help put a drop of xylol or alcohol on the lens paper. Never put xylol or alcohol directly on the lens!

When dirt is clearly visible in the field of view it resides on the lowest lens of the eyepiece. By using the Allen-key the eyepiece can be removed from the tube. Clean the outside of the lens.

In case there is still dust visible please check if the dust is in the eyepiece by turning it. If this is the case remove the lowest lens carefully from the eyepiece and clean it.

Caution

- Cleaning cloths containing plastic fibers can damage the coating of the lenses!

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Maintenance of the stand

Dust can be removed with a brush. In case the stand or stage plate is really dirty the surface can be cleaned with a non-aggressive cleaning product.

Charging the batteries

At first use, the batteries should be charged. Connect the cable of the charger to the inlet at the back side of the microscope base, and connect the charger to the mains supply. The first charging will take about 20 hours to reach full capacity.

Exchanging the batteries

Caution: Always remove the power adapter from the mains supply before changing the bulb!

- Remove the battery compartment cover from the bottom plate.
- Replace the 3 batteries (AA type) in the correct order and place the battery cover back again.