

Eco D-ELS-4 Stereo Microscope

Instruction Manual



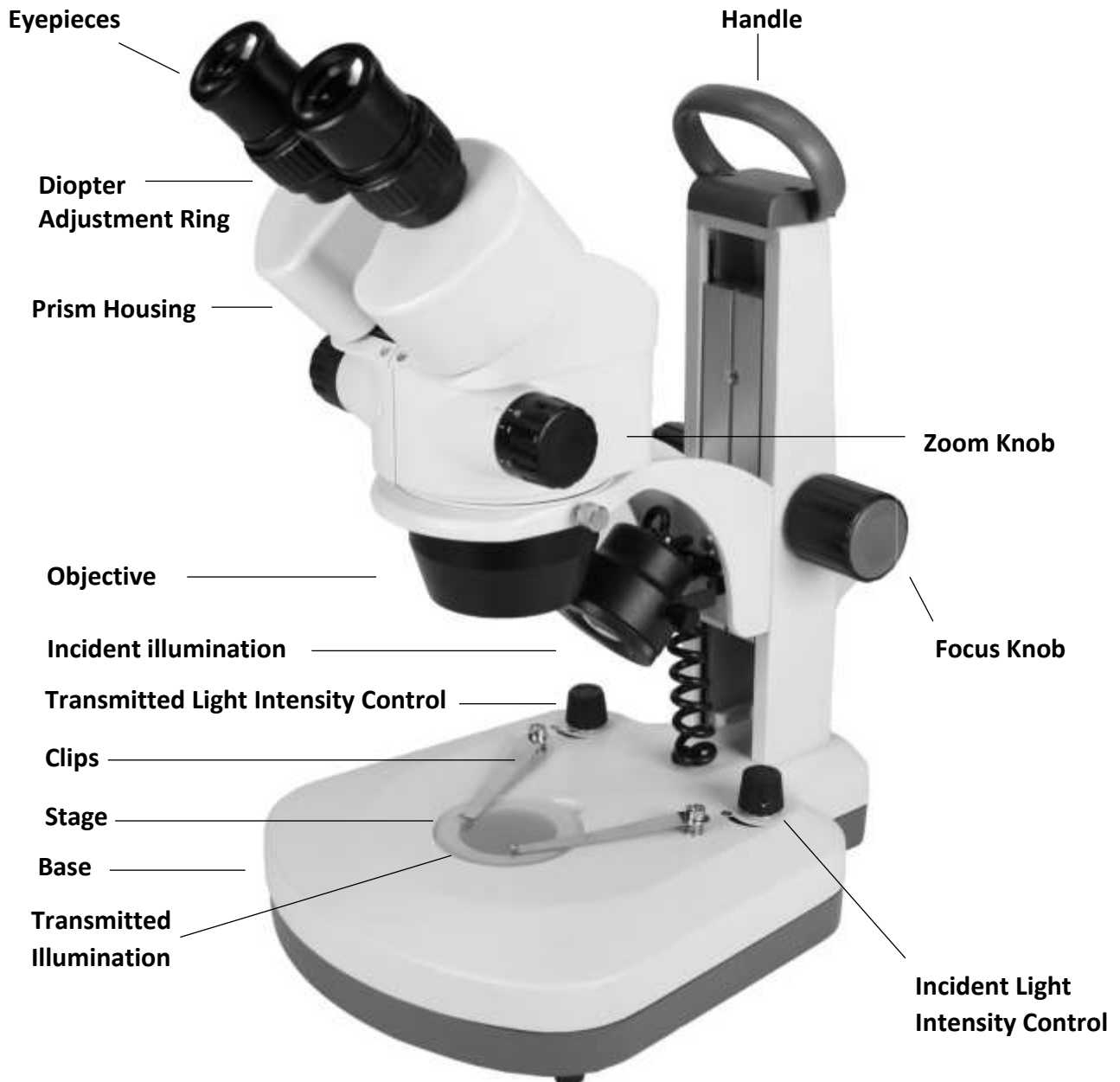
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1. Application

Designed for a widespread usage in the electronic industry, for the assembling and testing of precision instruments, dissections in biology or for observation and research work. At the same time this product is suitable for schools, scientific research, factories, engraving work, geology, archaeology or just for the use at home.

2. Nomenclature



3. Specifications

Model	D-ELS-4
Optical System	Greenough
Observation Angle	45°
Magnification Range (Standard)	0.7X – 4.5X
Zoom Ratio	1:6.4
Eyepiece	WF 10X / 20
Interpupillary Adjustment	55-75mm
Working Distance	98 mm
Mount Into The Holder	∅ 76
Electrical Specification	
Input	100V ~ 240V / 12W 50-60Hz
Output	Top LED: 3.5V 3W Max
	Bottom LED: 3.5V 3W Max
Fuse	250V T0.5A
Others	On/Off Power Supply
	Top LED Intensity Control
	Bottom LED Intensity Control

4. Operation

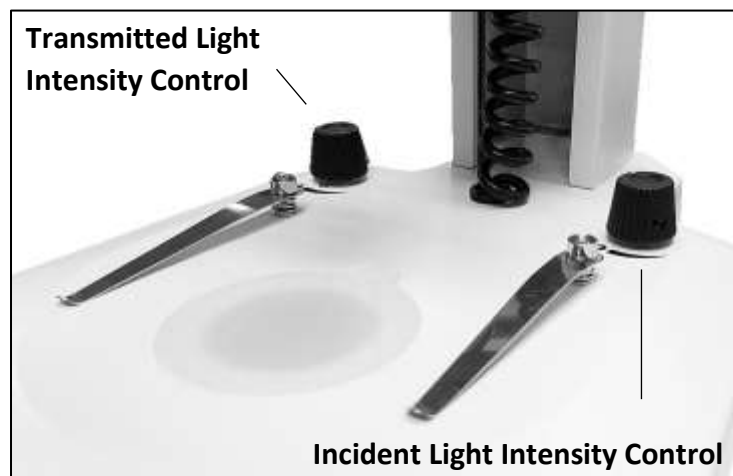
4.1 Working Environment

Avoid placing the instrument in locations exposed to direct sunlight, dust, vibration, high temperature and high humidity and where it is difficult to unplug the power supply cord.

- Indoor Use
- Dry place without dust, room temperature $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$

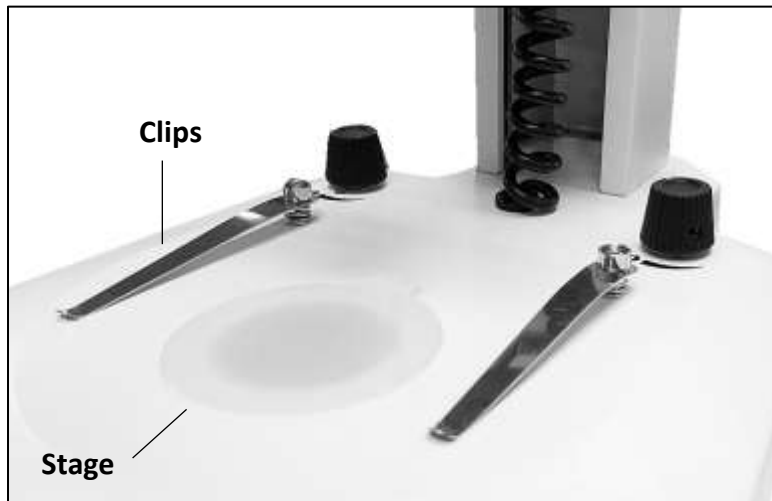
4.2 Light Intensity Control

Insert the power cord into the socket and turn on the power supply switch. The incident and transmitted light intensity can be adjusted by turning the knob on the top of the stand on the right and left hand side.



4.3 Select a Work Stage

An oblique plastic stage plate is provided with the microscope and can be installed directly in the base. This stage can be used for transparent or almost transparent samples. Stage clips are provided if a specimen slide (cover glass up), is used.



4.4 Sample Placement

Place the clean sample on the middle of the work stage, if necessary; press the sample into the clips.

4.5 Eyecups Usage

A pair of eyecups are provided with the microscope, ready for usage when they are needed. Just place the eyecups on the top of the outer edges of the eyepieces. The eyecups support the observer's eyes to stay in a fixed position. At the same time they ward astigmatism from entering the observer's field of view.

4.6 Focusing, diopter adjustment and Interpupillary distance adjustment D-ELS-4 stereo microscope:

4.6.1 Focusing

- A. Adjust zoom control knobs (located on both sides of head) so that the lowest magnification number “.7” (magnification markings are located on right knob) is positioned at arrow marker. Lower magnifications have larger fields of view, making it easier to position and locate area to be viewed.
- B. Place a flat object or specimen slide (cover glass up), on stage plate.
- C. Position focusing knobs in the center of focusing range.
The height of viewing head can be adjusted up or down on the post in order to focus on difference sized objects.
While looking through microscope, move viewing head up or down until object can be seen in approximate focus.
- D. Both eyepieces have knurled diopter adjustment rings. Rotate both left and right diopter so that the diopters are all the way down.
- E. Adjust zoom control to the highest magnification by aligning the number “4.5” (magnification markings located on right hand zoom knob) is positioned at arrow marker.
- F. While looking through right eyepiece with one eye, rotate focusing control knob until specimen comes into sharp focus through right eyepiece.
- G. Adjust zoom control knob to the lowest magnification (.70).
- H. Adjust the right diopter until the image is sharp. Do not change the focusing knob position.
- I. Without changing the position of the focusing knob, adjust the left eyepiece diopter until you obtain a sharp image in left eyepiece. The image should now be sharp throughout the zoom power range.



4.6.2 Interpupillary Adjustment

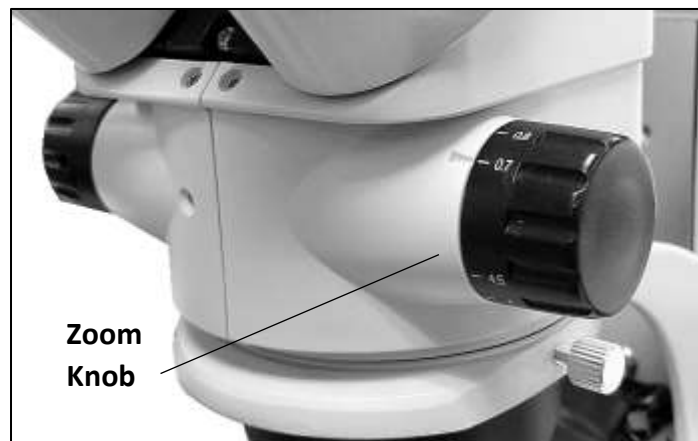
This permits each user to adjust spacing between eyepieces in order to accommodate distance between their eyes. While looking through the microscope eyepieces with both eyes grasp eyepiece tube housings with both hands and rotate them on their axis, moving eyepieces apart or together until a full field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



4.7 Changing Magnification

Select the desired magnification strength by adjusting the zoom knob. Total magnification used can be calculated using the following equation:

Total Magnification = Eyepiece magnification X Zoom magnification X Objective Lens magnification.



5. Maintenance and Care

5.1 Do not disassemble

- Disassembly may significantly affect the performance of the instrument, and result in electric shock or injury and will void the terms of the warranty.
- Never attempt to dismantle any parts other than described in this manual. If you notice any malfunction, contact your microscope supplier.

5.2 Cleaning the microscope

5.2.1 Lenses and filters

- To clean lens surfaces or filters, first remove dust using an air blower. If dust still persists, use a soft/clean brush or gauze.
- A soft gauze or lens tissue lightly moistened with a mixture of alcohol and ether (ratio: alcohol: 3 and ether: 7) should be used to remove grease or finger prints.
- Do not use same area of gauze or lens tissue to wipe more than once.

5.2.2 Cleaning of painted or plastic components

- Do not use organic solvents (thinners, alcohol, ether, etc.) Doing so could result in discoloration or in the peeling of paint.
- For stubborn dirt, moisten a piece of gauze with diluted detergent and wipe clean.
- For plastic components, only moisten a piece of gauze with water and wipe clean.

5.3 Disinfecting the Microscope

- Follow the standard procedures for your laboratory.

5.4 When not in Use

- When not in use, cover the instrument with vinyl dust cover and store in a place low in humidity where mold is not likely to form.
- Proper handling of the microscope will ensure years of trouble free service.
- If repair becomes necessary, please contact your microscope dealer.