

# BIOLOGICAL MICROSCOPE

## INSTRUCTION MANUAL | MS-160

**CARSON**<sup>®</sup>

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Ronkonkoma, NY 11779

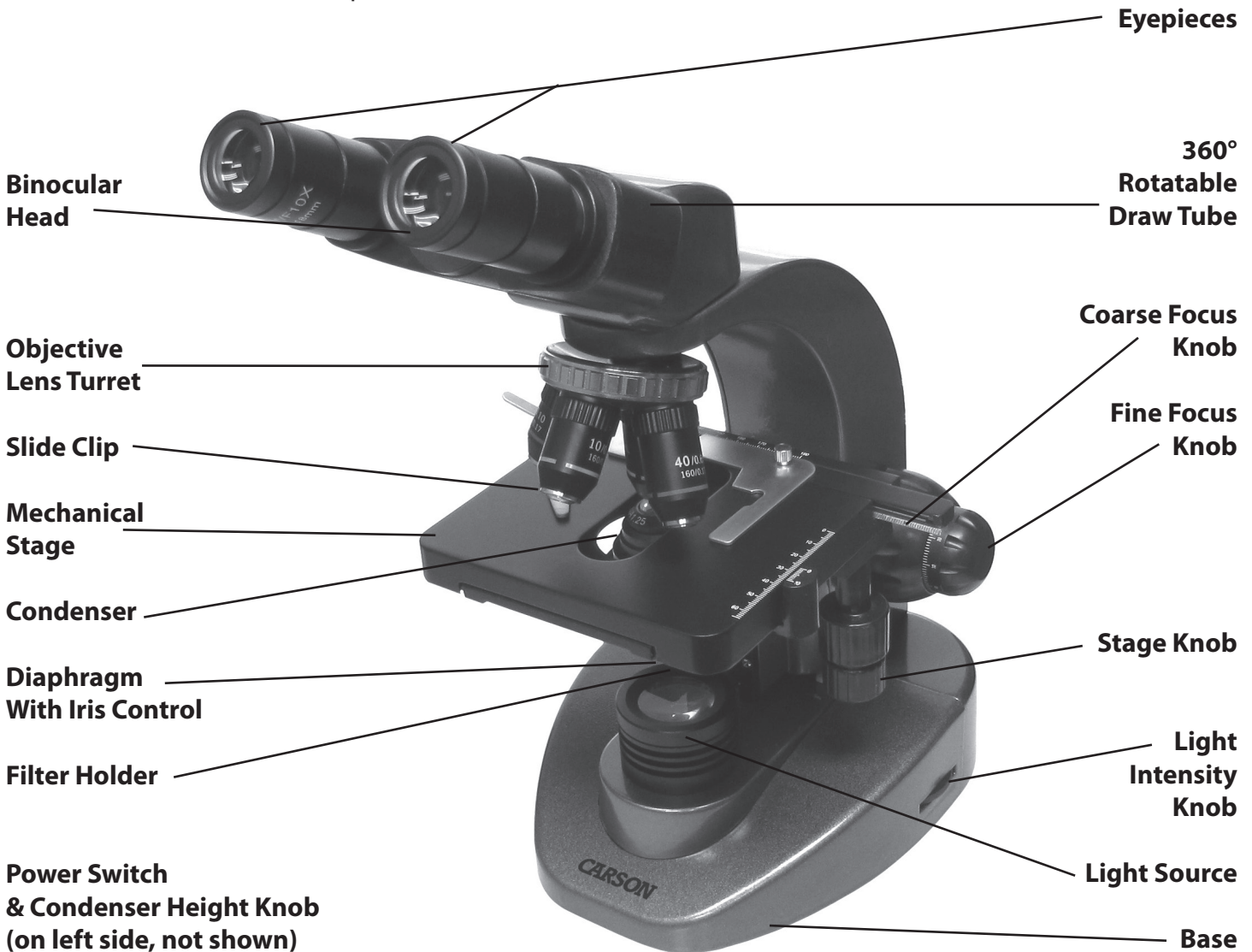
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### Standard Included Accessories:

10x and 16x Wide Field Eyepiece,  
Dust Cover, Blue Color Filter, Spare LED and Fuse



### Quick-Start Guide:

1. Place microscope on a secure surface.
2. Insert the first end of the power cord into the microscope's power port on the rear bottom side of the microscope, and plug the opposite end of the power cord into any standard 110V outlet.
3. Gently place the narrow end of each 10x eyepiece into each of the draw tubes in the binocular head of the microscope.
4. Turn on the light source by turning the power switch to the on position.
5. Rotate the objective lens turret so that the first objective lens (4x labeled by a red line) is perpendicular to the stage.
6. Position your desired slide on the mechanical stage and secure with slide clip. Use the stage knobs for front-back (top knob) and left-right motion (lower knob) until your area of interest is located in the center of the stage.

7. Focusing:
  - i. Look into the eyepiece and you should see a white field image.
  - ii. Adjust the distances between the two eyepieces by pulling the two parts of the binocular head apart or together until the two images merge.
  - iii. Gently adjust the focus knob until the image of the specimen comes into a crisp focus.
  - iv. Adjust light intensity on light sources to achieve best image.

**CAUTION:** Always take care when focusing, so that the objective lens does not collide down on the specimen, as you may cause damage to objective lens and/or specimen.

- v. Adjust the light intensity and/or the iris of the diaphragm as needed to achieve maximum contrast.

**CAUTION:** The condenser should ideally be located with 1-3 millimeters of the bottom of specimen slide. The height can be adjusted using condenser height knob. Be careful when adjusting that the that condenser does not collide with the specimen, as you may cause damage to condenser and/or specimen.

8. Magnification:

- i. To change magnification, rotate the objective lens turret so that the desired objective lens is perpendicular to the stage. Refocus as needed.
- ii. The 100x objective is only designed for oil immersion microscopy, wherein the specimen and objective lens are coated with immersion oils (not included).

<b>Eyepiece</b>	<b>Objective Lens</b>	<b>Total Magnification</b>
10x	4x	40x
10x	10x	100x
10x	40x	400x
10x	100x OIL	1000x OIL
16x	4x	64x
16x	10x	160x
16x	40x	640x
16x	100x OIL	1600x OIL

- iii. You may also switch the eyepieces to the included 16x eyepieces to increase the overall magnification.
9. Color filters may be used to enhance contrast, especially if using stained slides. To use the included blue color filter, rotate the filter holder (located under the diaphragm) outwards, place the filter flat inside the top part of the holder and then fully rotate the filter holder back into position.

## Care & Maintenance:

- Please take care when using our microscope. Try to avoid bringing your microscope into contact with any dirt, debris, dust or moisture. Place the dust cover the microscope when not in use.
- Cleaning:
  - For microscope body, unplug power and use a soft slightly damp cloth to clean dust or dirt.
  - For optical surfaces, such as the eyepiece lens or objective lens, use a slightly damp microfiber cloth or Carson's Lens Cleaners to gently remove dust or debris.
- When not in use for long periods, it is best to store your microscope in original package.
- When moving the microscope, hold by the metal neck or base of the microscope body. Do not hold by the eyepiece lens, draw tube, or objective turret.
- If the focusing or mechanical stage motion becomes stiff and hard to move, these mechanical sliding portions on the focusing track or the stage may be lubricated by using one or two drops of oil (not included).
- Make sure the power is off and the microscope is unplugged from the power socket.
- To replace fuse, open the bottom cover by first removing the six rubber screws and the door screws. Then remove the old fuse and replace with included spare. Replace bottom cover and screws.

## Carson MS-160 Microscope Specifications:

- Binocular Inclined Tube 30°, Rotatable 360°
- Total Magnification: 40X-1600X
- Coaxial Coarse and Fine Adjustment Knobs
- Eyepieces: WF10X, WF16X
- Objectives: 4X, 10X, 40X, 100X OIL (oil not included)
- Working Stage: Double Layer Mechanical Stage, 130 mm x 140 mm
- NA1.25 Abbe Condenser, with Iris Diaphragm and Filter Holder
- Illumination: 0.5W LED Electrical Illumination