Inverted Microscope

OM900

Instruction Manual

Please read the instructions carefully before operating

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CONTENTS

SAFETY

- Disassembling the microscope may cause an electric shock or damage to the instrument. Do not disassemble any parts of the microscope not mentioned in the instruction manual. In case of a problem with the microscope, contact Omâno.com, a professional repairman, or the manufacturing factory.
- Do not touch the bulb while microscope is in use. Bulb will become very hot when in use. Allow bulb to cool before replacing. To prevent fire, do not place combustibles near the bulb.
- To avoid electric shock or damage to the instrument, unplug the microscope before replacing the bulb. Use only the prescribed halogen or fluorescent bulb. Wear gloves, or cover the bulb with a protective sleeve. Do not touch the glass part of the bulb.
- Turn off and unplug the microscope before moving.
- Microscope should be kept at temperatures between 0°C-40°C/32°F-104°F, with a maximum humidity of 85%.
- Do not place the microscope in direct sunlight or under direct indoor light. This environment can influence the quality of the specimen imaging.
- Avoid dust. When not in use, cover the microscope with a dust cover.
- Keep microscope on a level and sturdy surface.

Parts List

(1) 0M900 microscope

(3 each) Brightfield Objectives: 10x PL L,

25x PL L,40x PL L

(1) Phase contrast objective: 10x PL L PHP

(includes one 10x annulus ring)

(2) Eyepieces: 10X

(2) Eyepieces: 16X

(2) Bedplates

(1) Annular diaphragm slab

(3) Filters: blue, green, and frosted white

(2) Spare Bulb

(1) Instruction manual

(1) Dust cover

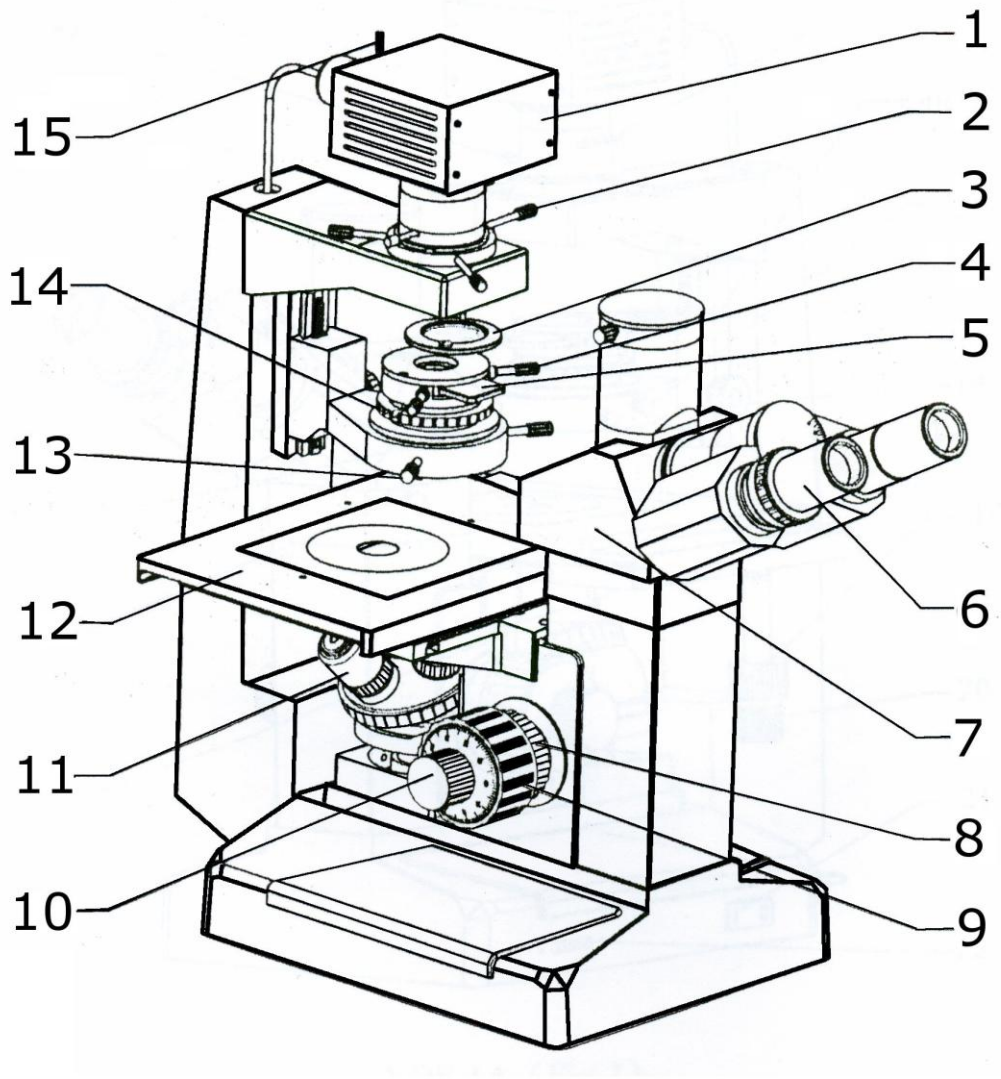
Features

The Omano OM 900 Inverted Biological Microscope incorporates the best optical technology, engineering and craftsmanship from around the world, but at a price that is thousands of dollars less than comparable inverted microscopes, elsewhere.
Inverted microscope design extends the benefits of the light microscope by enabling you to observe micro-organisms in a large container under more natural conditions. Large specimens such as tissue cultures, precipitates, sediment and reactions are all well-suited for inverted microscopes. Since the specimen is protected from the light heat, the sample life can be extended while a container cover also helps reduce evaporation while still allowing for gas exchange.
For example, you could take a sample of pond "scum" and observe it over a period of several weeks. It would probably still sustains life although the character of that life would probably change significantly over time from when it was first collected. During this period, as the environment in the petri dish changed, the life that it could support would change, but there still would be a great deal of varied life.
By adapting your camera to the trinocular system you could photograph the biological specimen you see or video tape progressive changes over time.
The Omano OM900 accommodates a variety of glass and plastic culture vessels and flasks up to 2mm thickness and 100mm height.

- Five possible levels of magnifications: 100x, 160x, 250x, 400x, and 640x
- Eyepiece set included: wide field 10x (F.N. 18mm) and wide field 16X (F.N. 11mm)
- Rotatable viewing head inclined 45°
- Four plan achromatic long working distance DIN objectives
- Brightfield objectives (Three) 10x/0.25 N.A. /8.1mm W.D., 25x/0.4 N.A./4.8mm W.D., 40x/0.6 N.A./3.3mm W.D.
- Phase contrast objective (One) 10x/0.25 N.A. / 8.1mm W.D. (Includes 10x Phase Annulus Ring)
- Trinocular port increases functionality by adding photographic/video capability
- Centering telescope for phase contrast function
- Above-stage long working distance (30mm) condenser, 0.4 N.A., with iris diaphragm, swing-out filter holder, and phase annulus ring slot with ring centering knobs
- Condenser centering system for precise positioning of condenser over objective

- Rack & pinion steel gears for precision condenser movement vertical to the stage
- Oversized mechanical X-Y movable stage: 200mm x 152mm
- Low position X-Y stage movement control - range of movement 78mm (X-Direction) x 36mm (Y-Direction)
- Coaxial fine and coarse focusing knobs for left and right hand
- Coarse adjustment range 20mm
- Fine adjustment division 0.002mm
- Tension adjustable coarse focusing
- Variable controlled 6V/20W Halogen illumination with iris diaphragm and light lens movement regulation
- 110 volt AC electrical supply
- 55-75mm inter-pupillary for distance adjustment between eyes
- Diopter control for vision correction
- ISO 9002 quality control standards
- Durable metal alloys and reagent resistant finish
- Includes three filters: blue, green, frosted white
- Instrument Weight: 22+ LBS
- Instrument dimensions: 17" high, 17" long, 8" wide
- Molded Styrofoam shipping container for maximum protection
- Limited Lifetime Warranty

ASSEMBLY



1. Lamp box	9. Coarse focusing knob
2. Lamp box holding screw	10. Fine focusing knob
3. Filter Base	11. Objective
4. Annular diaphragm adjustment screw	12. Stage
5. Annular diaphragm slab	13. Condenser adjustment
6. Eyepieces	14. Aperture diaphragm swivel
7. Trinocular port	15. Lamp holder adjustment handle
8. Tensional adjustment ring	

Figure 1

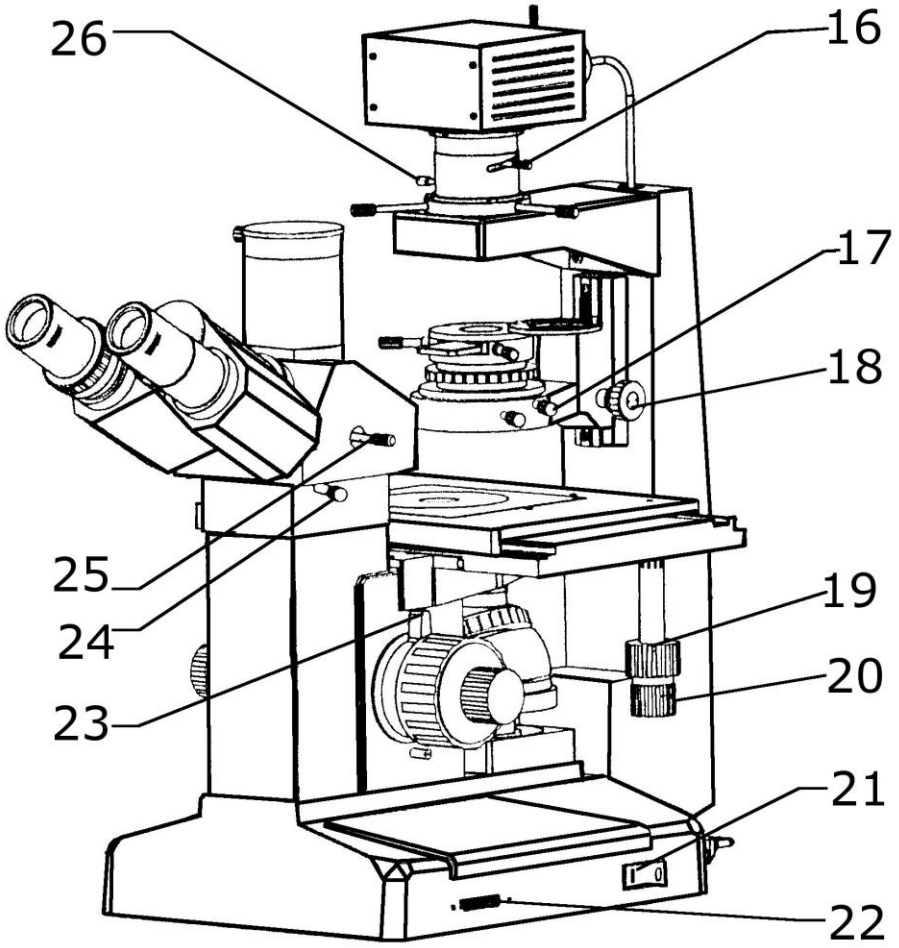
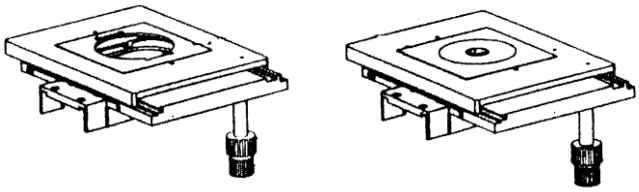


Figure 2

16. Collector adjustment handle	22. Light control
17. Condenser holding screw	23. Limit knob
18. Condenser up/down knob	24. Tube holding screw
19. Lengthwise movement knob	25. Observation or photograph lever
20. Cross movement knob	26. Field diaphragm adjustment screw
21. Power switch	

1. Refer to Figures 1 and 2 for assembly and operation
2. Remove from packaging and place on sturdy and level surface.
3. Install trinocular body on base and secure using thumbscrew (24).
4. Slide in eyepieces (6) into eyepiece tubes.
5. Lower the stage (12) by rotating the coarse focus adjustment (9) and remove the shipping foam.
6. You can use either of the stage plates as shown in Figure 3. Match their use to the specimen holder you are using.

Fig. 3



OPERATION

1. After assembly, plug the power cord in to an AC wall outlet and turn the power switch (21) to the '1' position.
2. Put a specimen on the center of the bedplate of the stage (12), and turn the 10x objective (11) into position (pointed directly at the bottom of the stage).
3. Adjust the light control knob (22) to obtain proper illumination. Note: It is not necessary to have the illumination of the lamp to full brightness to obtain proper image. Full brightness will shorten the life of the bulb.

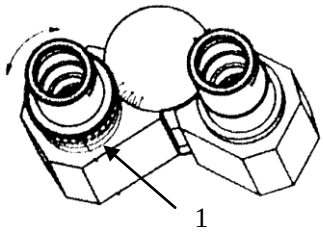


Fig. 4

4. Adjust the interpupillary distance by rotating the prism covers to obtain a single view through the eyepieces.(Fig. 4)
5. Adjust the position of the condenser light control (22) and the aperture diaphragm swivel (14) to obtain satisfactory illumination.
6. Adjust the coarse (9) and fine (10) focus to obtain a sharp image from the specimen.

Note: If one eye is not in focus, then focus using the right eye for a sharp image and then adjust the diopter ring (Fig. 4 #1) to obtain sharpness in left eye.

7. If the lamp is in need of adjustment, using Figure 5, the vertical thumbscrew (1) and the

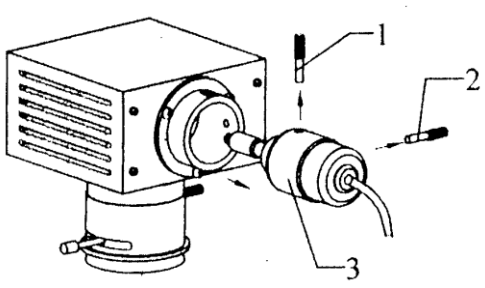


Fig. 5

horizontal thumbscrew (2) are used to adjust the centering of the light. Removal of

these thumbscrews allow for changing the bulb. Note: see the safety note about handling the bulb.

8. Adjustment of the field diaphragm is accomplished while using the 10x objective and after the specimen is seen clearly. Turn the field diaphragm adjustment handle (26) to diminish field diaphragm, then turn the condenser up/down knob (18) to gain the image of field diaphragm, then adjust condenser adjustment screw (13) to center field diaphragm and eyepiece diaphragm, turn field diaphragm adjustment handle to make field diaphragm less than eyepiece diaphragm.
9. Adjustment of condenser aperture diaphragm is accomplished by turning the aperture diaphragm swivel (14) to suit the numerical aperture of the condenser with the numerical aperture of the objective, in this way, one can gain satisfactory contrast and illumination.
10. Using the phase contrast.

- Adjust the field diaphragm according to step 6, make the long working distance condenser to move to corresponding position.
- Insert the annular diaphragm slab (5) in the condenser, and turn the aperture diaphragm swivel (14) to make aperture diaphragm maximum.
- Turn the corresponding multiple phase contrast objective to the working position.
- Take out one eyepiece, and insert the center telescope in the eyepiece tube and adjust it to make the image of the annular phase plane and annular diaphragm clear. (See Fig. 6)

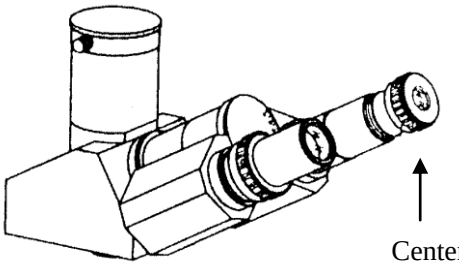


Fig. 6

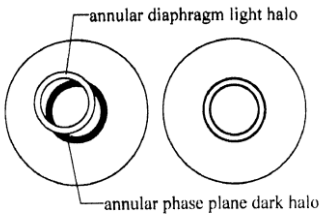


Fig. 7

- Adjust the annular diaphragm adjustment screw (4) to make annular diaphragm light halo and annular phase plane dark halo superimposed as shown in Figure 7 on the right circle.
- Take out the center telescope and insert the eyepiece to observe phase contrast. Note: It may be necessary to readjust the annular diaphragm when observing with phase contrast.

MAINTENANCE

1. When replacement of the lamp is necessary, be sure to turn off power and remove plug. Loosen thumbscrews (1 and 2 in Fig. 5) and remove lamp holder (3) from the lamp box (1). Pull out old bulb. Handle new bulb with gloves or tissue to keep from touching bulb. Oil from the skin left on the bulb will shorten bulb life. Install new bulb into socket. Check illumination and check for proper alignment of bulb (See Operation #7).
2. If fuse replacement is necessary, loosen screw top of fuse. Pull out the fuse, replace, and retighten fuse cap.
3. If dirt has settled on the lens, wipe it off gently with some lens paper. If alcohol is used, be careful not to let it penetrate through the lenses and dissolve the epoxy. Any dust settled on the lenses can be blown away with an air blower or wiped off with a clean soft camel hairbrush or similar.

2. In cleaning mechanical parts and applying non-corrosive lubricant, take special care not to touch the optical elements, especially the objective lenses.

3. Avoid high temperatures.

4. Put objectives and eyepieces into box after using, and keep them in a cool, shady and dry place, free from dust, fumes and moisture. If not stored in its box, cover with a hood to protect from dust.

5. Like other optical instruments, the microscope should be kept out of direct sunlight in a cool, dry place, free from dust, fumes and moisture. It should be stored in a case or covered with a hood to protect it from dust.

6. The microscope has been carefully tested and inspected. Please do not disassemble, but refer to a qualified technician.

Specifications

1. Eyepiece

Type	Magnification	Focus (mm)	Vision field's diameter (mm)
Wide field eyepiece	10X	25	18
Plan eyepiece	16X	15.6	11

2. Objective

Magnification	Numerical Aperture (N.A.)	W.D. (mm)	Thickness of object stage (mm)
10X	0.25	8.1	---
25X	0.40	4.8	0.12
40X	0.65	3.3	0.12
10X P.C.	0.25	8.1	---

3. Total magnifying powers

	Objectives		
Eyepieces	10x	25x	40x
10x	100x	250x	400x
16x	160x	400x	640x
	Total Magnification		

4. 6V20W illumination and adjustable brightness
5. Power is 110V AC
6. Binocular head

7. Attachable mechanical stage: size is 200mm X 152mm, moving range is 30×70

8. Long Working Distance Condenser (with phase contrast): N.A=0.4, working distance: 28mm
9. Interpupillary distance: 53~75mm
10. Minimum division of fine focusing: 0.002mm

NOTES: