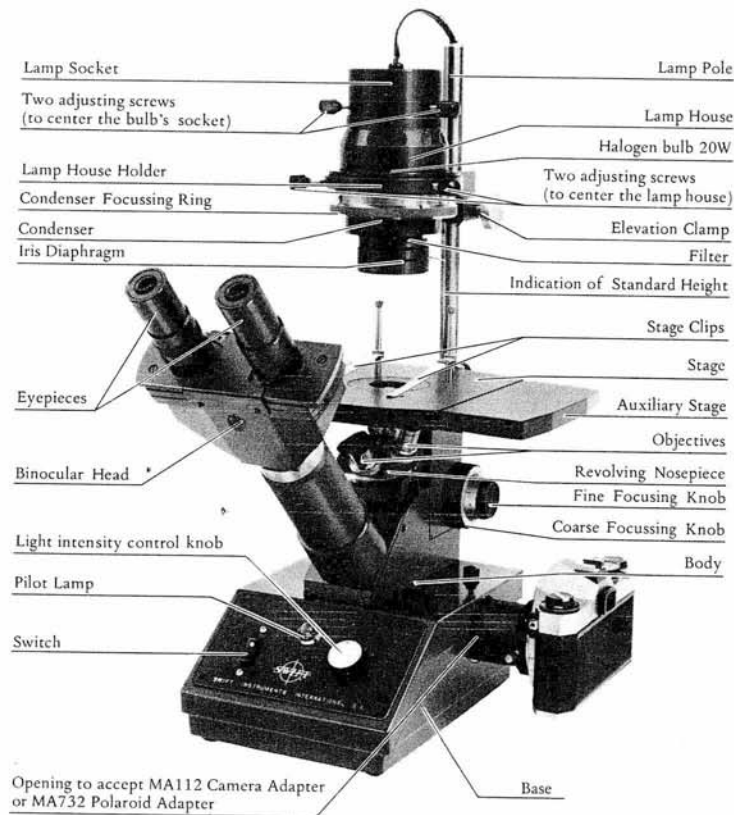


USE AND CARE OF SWIFT SERIES MICROSCOPE M 100PF TISSUE CULTURE



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SWIFT Tissue Culture Microscope Series M100PF

Inverted tissue culture microscopes are used in cancer research, urology, histology, serology, microbiology, water pollution and other areas.

Use of which permits examination of tissue cultures, plankton, living protozoa and other biological specimen in petri dishes, flasks, ampoules and test tubes.

The SWIFT Tissue Culture Microscope is easily adapted to phase contrast and/or polarizing microscopy by specific configuration or accessories.

We Feature:

- 1) Image – Erect and natural.
- 2) Stage – Large and sturdy 180mm X 150mm with two 150mm X 65mm extension plates.
- 3) Illumination – A brilliant, variable intensity controlled in base transformer powered, 6 Volt – 20 Watt centerable Halogen bulb, is incorporated in the lamp housing with centerable focusing condenser lens, filter carrier and iris diaphragm. The complete illuminator housing is mounted on a standard, height indexed, lamp housing support pole, on which the housing unit may be positioned to accommodate various culture containers.
- 4) Focusing – Coaxial coarse and fine focus system, coarse adjustment 12mm, fine adjustment graduated in 240 equal parts, one turn of fine focus 0.7mm.
- 5) Heads – Binocular or monocular, angled at 45°, with eyepoint approximately 335mm above table surface for comfortable viewing.
- 6) Optics – W10x – 15.5mm eyepiece, 4x, 10x and LWD 20x with LWD 40x objectives available. Phase configuration is optional as are polarizing features.

Assembly Instructions

A. Installing Illuminator to Stand

- 1) Insert banana plugs, one at a time and push through bracket. Photo 1.
- 2) Position pole by matching the center of the thumb screw with the hole or detent in the pole. Photo 1.
- 3) With pole correctly positioned, tighten thumb screw securely, then lock firmly by tightening set screw (located directly beneath thumb screw) with an Allen wrench. Photo 2. Insert banana plugs into receptacles located at back of base.

B. Installing Body to Microscope Base

- 1) Match the position of the slotted pin on body (located on the inner diameter of the mounting flange) to the groove on the body tube.
- 2) Holding body in alignment, turn the retaining ring clockwise to securely connect the components. Photo 3.

Photo # 1

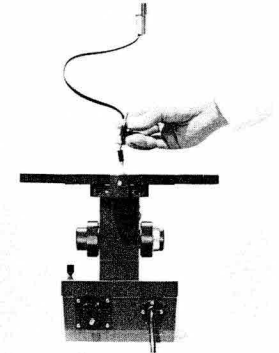


Photo # 2

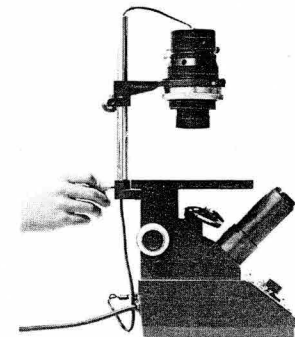
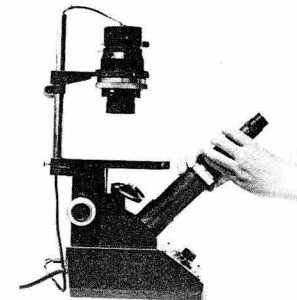


Photo # 3



C. Installing Objectives

- 1) Lower nosepiece completely by turning focusing knobs counterclockwise, then install each objective lens from the side, in numerical chronological order. Photo 4.

D. Install Eyepices.

- E. Position switch on base to "off" and variable light intensity control knob to "3". Attach electric lead cord to a 117 Volt - 120 Volt A.C. source.

- F. Place the center ring (concave surface down) into the center of stage opening.

- G. Place stage clips (front lip up) onto stage clip pins and turn pins into threaded holes at back of stage. Photo 5.

- H. Insert filters into the slotted opening of lamp housing when required.

- I. Install stage plate extensions to each side of permanent stage when needed. Photo 6.

Photo # 4

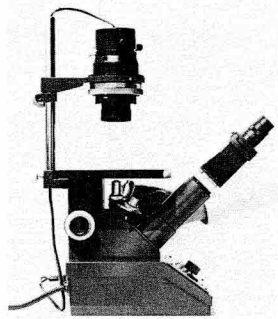


Photo # 5

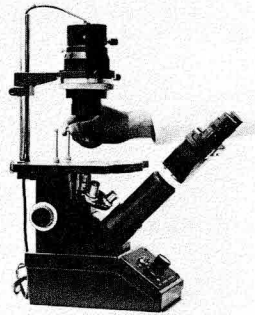
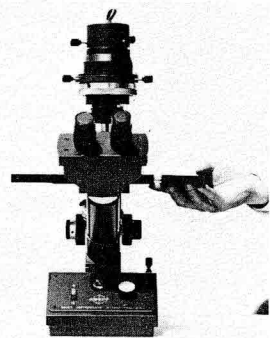


Photo # 6



Instructions: (Refer to drawing)

- 1) Snap switch on, pilot light will glow. Adjust lamp intensity control to #5 position.
- 2) Set height of the lamp housing by securing the bottom of the elevation clamp at the standard height indication mark located on the lamp pole.
- 3) Turn the condenser focussing ring to match the blue dot on the housing (position is correct when blue dot is just exposed below the focussing ring).
- 4) A) Place the frosted white filter in position (opening located in lower lamp housing) and remove one eyepiece.
B) Position 10x objective into optical path by revolving nosepiece and view the iris diaphragm by looking down the eyepiece tube. Adjust iris diaphragm to 3/4 open. Focus the microscope to obtain a sharp outline of diaphragm aperture.
C) Center the iris diaphragm by manipulating the two lower adjusting screws on the lamp housing. When the edges of the diaphragm just touch the edge of the field equally the iris diaphragm is correctly centered. Refer to Figure #1.

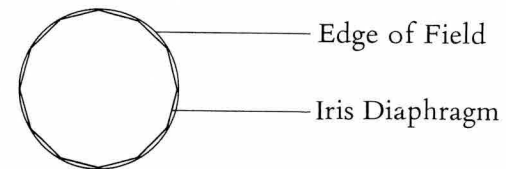


Fig. #1

- 5) Replace the eyepiece, remove the filter and focus the microscope until the lamp filament is clearly defined in the field of view. Center filament image as shown in Fig. #2 by manipulating two upper adjusting screws on lamp housing.

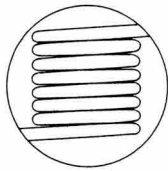


Fig. #2

- 6) Position the 10x objective into the optical path and focus the microscope on a specimen.
- 7) Adjust the interpupillary distance (adjustable from 50mm - 70mm). Make any necessary diopter adjustment and focus microscope.
- 8) A frosted white filter must be used to illuminate the full field when the 4x objective is used.

Phase Contrast

- 1) Replace brightfield objectives with phase objectives and thread Phase Annulus Ring into lamp housing.
- 2) Turn condenser focussing ring to match the blue dot on the housing (position is correct when blue dot is just exposed below focussing ring).
- 3) Position the 10x Phase Objective into the optical path by revolving the nosepiece.

- 4) Remove eyepiece and install centering telescope in eyepiece tube. Focus the telescope to achieve a sharp image of the dark ring in the objective and the bright ring in the Phase Annulus.
- 5) If the bright and dark rings are not aligned (concentric and superimposed) adjust the bright ring by horizontal manipulation of the Phase Annulus Ring, as in Figure #3 (improved delineation of rings may be obtained by placing lens tissue over stage aperture during observation).

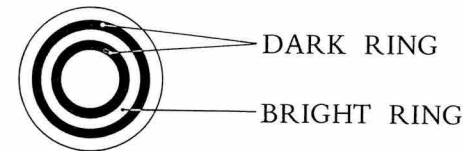


Fig. #3

- 6) Remove centering telescope and reinstall the eyepiece.
- 7) Position the 20x (also 40x) phase objective into the optical path by revolving the nosepiece and RESET position of condenser by turning the focussing ring to match the two dots (green and red). Position is correct when the dots are just exposed below the focussing ring (almost fully extended).
- 8) Repeat steps #4, 5 and 6 if necessary.

Polarization

- 1) Thread the polarizer into the lamp housing.
- 2) Place analyzer over eyepiece.
- 3) Rotate for desired effect or polarization.

M100PF TISSUE CULTURE SERIES

AFTER PROPER FILAMENT ALIGNMENT MAKE CERTAIN TO POSITION THE 31mm DIAMETER WHITE DIFFUSED FILTER INTO THE FILTER HOLDER BENEATH THE LAMP LOCATED IN THE UPPER HOUSING.

Photographic Procedure

Polaroid

1. Insert MA733 Polaroid film pack back and assembly into the opening on the side of the base, insert all the way and tighten thumb screw.
2. Install focussing screen in camera back.
3. Set up microscope with slide or specimen to be photographed. Focus specimen through eyepieces.
4. Set shutter speed dial to (T) exposure position. Pull out light shield, open shutter, view screen with magnifier lens, then refocus very precisely while viewing screen so the image is in sharp focus.
5. Without touching focussing controls on the microscope, adjust binocular head to give a sharp focus at your particular I.P.D. plus any correction for abnormal eye sight. Note the position of both the I.P.D. scale and diopter scales on both eyepieces. By repeating these settings, the focus at the film plane of the camera will be the same as seen by you through the eyepieces.

NOTE: Any change in any of these settings will affect the focus at the film plane and cause fuzzy pictures.

35mm Photography

Use MA112 camera adapter. Attach camera to MA112 adapter using a "T" System Adapter for your particular camera. The focussing procedure is the same as for the polaroid camera back, except that a focussing screen is not required. Sharp focus is obtained by viewing the image through the Penta Prizm of the reflex camera.

M100PF Series

Tissue Culture Microscopes

- M101PF Binocular – W10x-15.5mm, 4x, 10x, LWD 20x
M102PF Monocular – W10x-15.5mm, 4x, 10x, LWD 20x
M103PF Binocular Phase – W10x-15.5mm, 4x, P10x,
LWD P20x
M104PF Monocular Phase – W10x-15.5mm, 4x, P10x,
LWD P20x

Accessories

- | | |
|---------|--|
| MA611 | 4x Objectives |
| MA612 | 10x Objectives |
| MA105 | LWD 20x Objectives |
| MA106 | LWD 40x Objectives |
| MA107 | Phase 10x Objectives |
| MA108 | LWD Phase 20x Objectives |
| MA109 | LWD Phase 40x Objectives |
| MA110 | Annular Phase Diaphragm |
| MA111 | Polarizing Set |
| MA749 | W10x-15.5mm Eyepiece |
| MA500 | BD Mechanical Stage |
| MATC102 | Blue Filter |
| MATC103 | Green Filter |
| MATC104 | White Filter |
| MA780 | Bulb 6 Volt 20 Watt Halogen bulb |
| MA101 | Pilot Bulb |
| MATC-B | Binocular Body |
| MATC-M | Monocular Body |
| MA690 | Centering Telescope |
| MA733 | Polaroid Film Pack Back-Bridge Shutter & Adapter |
| MA112 | 35mm Adapter for Photo Base |

Specifications

Eyepiece W10x-15.5mm – pair
 Objectives 4x, 10x and LWD 20x
 Head Binocular 45°, 160mm tube length
 Focussing Rack and Pinion – working distance 20mm
 Nosepiece Quadruple – revolving
 Stage Main – 180mm X 150mm extensions: (2) 65 X 150mm
 Illuminator 6 Volt – 20 Watt Halogen bulb working distance – lamp house – 140mm working distance – condenser – 23mm
 Filters Blue, green and white
 Transformer Built-in base – on/off switch variable 3-8 Volts
 Weight Approximately 20 pounds

Optical Specifications

		Eyepiece		Magnification	W10x
		Objective		Focal Length	250 mm
				Field of View	18.0
4x	N.A.	0.15	Compound Magnification	40x	
	Focal Length	28.7	Actual Field	4.5	
	Working Distance (air)	16.0	Depth of Focus	72.0 (u)	
10x	N.A.	0.25	Compound Magnification	100x	
	Focal Length	15.6	Actual Field	1.8	
	Working Distance (air)	6.8	Depth of Focus	25.2 (u)	
LWD 20x	N.A.	0.40	Compound Magnification	200x	
	Focal Length	8.3	Actual Field	0.9	
	Working glass Distance (air)	4.0 2.60	Depth of Focus	8.2 (u)	
LWD 40x	N.A.	0.65	Compound Magnification	400x	
	Focal Length	4.3	Actual Field	0.45	
	Working glass Distance (air)	2.3 1.50	Depth of Focus	2.9 (u)	