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THE USE AND CARE OF SWIFT STEREO SM80

WIDEFIELD MICROSCOPE

SWIFT®

www.Swiftoptical.com
877-967-9438

YOUR SWIFT STEREO SM80 WIDEFIELD MICROSCOPE

The Swift Series SM80 microscope is a full size, well balanced, stereoscopic instrument producing an erect, three-dimensional image of unparalleled definition with a large, comfortable field of view.

The Series SM80 incorporates features, exclusive with this series, to enhance and provide maximum versatility of the instrument for classroom use.

Your Series SM80 stereomicroscope is built to the highest, most rigid optical and mechanical standards, and is the result of the continuing progress of Swift Instruments, Inc. to provide a durable, modern instrument to meet the exacting requirements of the classroom and laboratory.

Like all Swift microscopes, Series SM80 is covered by the most liberal warranty available, and is backed by a highly selective organization of microscope specialists.

MODULAR STEREO SERIES

Cat No.	Body	Eyepieces	Stand	Illuminator
SM81	1X, 2X	W 10X	SM80	None
SM81BF	1X, 2X	W 10X	SM80BF	Built-in
SM81-911	1X, 2X	W 10X	SM911	None
SM81-HBA	1X, 2X	W 10X	SM807-MA912 HBA-Pod	None
SM85	1X, 3X	W 10X	SM80	None
SM85BF	1X, 3X	W 10X	SM80BF	Built-in
SM85-911	1X, 3X	W 10X	SM911	None
SM85-HBA	1X, 3X	W 10X	MA807-MA912 HBA-Pod	None
SM88	2X, 4X	W 10X	SM80	None
SM88BF	2X, 4X	W 10X	SM80BF	Built-in
SM88-911	2X, 4X	W 10X	SM911	None
SM88-HBA	2X, 4X	W 10X	MA807-MA912 HBA-Pod	None

SPECIFICATION

Eyepiece	Model	SM81	SM85	SM88
	Objective	1X 2X	1X 3X	2X 4X
	Working Distance	105mm	76mm	60mm
W10X	Total Magnification	10X 20X	10X 30X	20X 40X
(F.N. 23)	Field of View	23mm 11.5mm	23mm 7.67mm	11.5mm 5.75mm
W15X	Total Magnification	15X 30X	15X 45X	30X 60X
(F.N. 15)	Field of View	15mm 7.5mm	15mm 5mm	7.5mm 3.75mm
W20X	Total Magnification	20X 40X	20X 60X	40X 80X
(F.N. 11.4)	Field of View	11.4mm 5.7mm	11.4mm 3.8mm	5.7mm 2.85mm
W5X	Total Magnification	5X 10X	5X 15X	10X 20X
(F.N. 22.5)	Field of View	22.5mm 11.25mm	22.5mm 7.5mm	11.25mm 5.63mm

ACCESSORIES

MZ815	Eyepiece W5X Eyepoint 11.7mm
MZ816R	Eyepiece W10X Eyepoint 12.4mm
MZ817	Eyepiece W15X Eyepoint 10.0mm
MZ818	Eyepiece W20X Eyepoint 9.9mm
MZ819	Eyeshields paired
MA718	1.5X Amplifying Lens
MA716	2X Amplifying Lens
MA912	Industrial Pod
MA788C	Circular fluorescent illuminator
MA719	Cover glass
MA6653W	Scale #111
MA6655W	Scale #333
MA6656W	Scale #444
MA6657W	Scale #555
MA6658W	Scale Whipple
MA6659W	Scale 10mm
MA8811W	Scale #999

FEATURES OF YOUR SWIFT SM80 STEREOMICROSCOPE

Optical System: All optical surfaces are hard coated to reduce reflection and increase light transmission.

The SM80 stereomicroscope has an easily adjusted interpupillary control to space the eyepieces exactly the proper distance apart for those whose eyes are very close together or very far apart.

Optical Body: The entire optical body is rotatable and permits the user to view the specimen from any point 360° around the stage. This is ideal in dissecting or manipulation of the specimen while it is imaged in the field of view.

Magnification Control: Series SM80 has two magnifications built-in, and magnification is increased or decreased merely by rotating the nosepiece from one stop to another. In addition, further magnification may be obtained by substituting eyepieces of higher magnification or the addition of the MA718 1.5x or MA716 2.0x amplifying lens.

Focus Controls: The focus knobs are located on both sides of the microscope and may be used with either hand. These controls incorporate a unique clutch system which prevents over or under-focusing. The rack travel is restricted by upper and lower limiters which prevent the body from traveling either low or high enough to disengage the pinion or contact the stage. When either limiter is contacted, further turning of the focusing knobs engages the clutch system, thus preventing damage to mechanical parts.

Illumination: All models of Series SM80, with the suffix "B" following the model number, incorporate this exclusive tri-illumination system. The type of illuminator is controlled by a rotary, four position switch located on the base of the microscope next to the upright arm. The position of the switch is listed as follows: "Off"; "T", which indicates trans-illumination from the base; "I", which indicates incident light from the upper illuminator, and "IT", indicating simultaneous operation of both illuminators.

The incident illuminator is used for opaque specimens, while the transilluminator effectively illuminates the internal structure of transparent specimens. Translucent specimens may be more accurately studied if both illuminators are operated simultaneously.

Note that the entire contrast plate is illuminated which prevents shadows and more evenly exposes the specimen.

All wiring is of the three-wire, grounded system and includes a molded plug, meeting the requirements of the most critical electrical and safety codes, and is tamper-proof.

Measuring Devices: Swift has available a wide variety of eyepiece micrometer scales. The most useful in SM80 series microscopes is scale No. MA8811W, which is graduated in increments of .001", and may be read direct when viewed at 20x. Swift eyepiece micrometers are designed to mount in Swift Widefield 10x eyepieces.

Note the eyetubes of your SM80 microscope. One tube is fixed, while the other is adjustable to compensate for differences in vision from one eye to the other. The W10x eyepiece with scale should be installed in the fixed, or non-adjustable eyetube.

OPERATING YOUR SERIES SM80 STEREOMICROSCOPE

1. Place the specimen onto the contrast plate and select the type of illumination. If the specimen is transparent, move the illuminator selector to "T"; if the specimen is opaque, move the selector to position "I".
2. Your SM80 is a model equipped with two built-in magnifications. Rotate the nosepiece one direction or the other as far as it will move. This will place one pair of objectives in alignment for viewing.
3. View through the eyepieces and rotate the focus controls to image the specimen sharply in the field of view.
4. Grasp the eyetubes and move them either closer together or farther apart, to see one field of view. Note, if two separate fields are observed, the eyetubes are too far apart and should be moved together; while if two overlapping fields are evident, the eyetubes are too close together and should be moved apart.
5. Close your left eye and adjust the focus controls to be sure the image is sharp, while viewing with the right eye only.
6. Close your right eye and, while viewing with the left eye only, adjust the diopter ring on the left eyetube to bring the image of the specimen into sharp focus.

The optical system is now adjusted to your particular vision.

MEASURING WITH YOUR SWIFT SERIES SM80 MICROSCOPE

Scale No. MA8811W is graduated in increments of .001", and may be read direct at 20x, that is, with W10x eyepieces and the 2x objectives in position. If you purchased this scale separately from the microscope, it is installed as follows:

1. Remove the W10x eyepiece from the right eyetube, the one without diopter ring. Note the eyepiece consists of an eyelens and field lens. The field lens is the unit in the lower portion of the eyepiece, and below this a shelf is visible.
2. Take the scale from its capsul by unscrewing the capsul. Note, also, the retaining wire spring supplied with the eyepiece scale.
3. Make sure the scale is free of dust and drop onto the shelf, from the bottom of the eyepiece, making sure the scale is right side up. Now, drop in the retaining wire spring and force tightly against the scale to lock same in place and securely on the shelf.
4. Return the eyepiece to the microscope and the specimen may be measured by focusing the microscope upon the specimen and counting the graduations superimposed in the field of view. Caution —— This scale may be read direct in .001" with only the 2x objective in position. If you

desire measurements at other magnifications, the value of the graduations of the scale must be recomputed as follows:

Place a vernier caliper, in thousandths of an inch, upon the stageplate and focus its graduations sharply in the field of view. Note, the eyepiece scale is now superimposed over the graduations of the vernier. By counting the number of graduations of the eyepiece scale that appear to fit between the graduations of the vernier, the value of the scale may be determined readily.

5. Compensating the eyepiece scale for accuracy: If the scale does not read accurately in .001" on the vernier when installed in a W10x eyepiece and used with the 2x objective on the Stereo SM80, the compensation should be corrected by an authorized Swift microscope agency. Microscopes ordered from the factory, with scales included in the eyepiece, are compensated, if necessary, at the factory without charge.

   For more information on eyepiece scales, ask for separate instruction manual "Measuring with Swift Microscopes (How to install and use Swift eyepiece scales)

PHOTOMICROGRAPHY

Two types of photographic attachments are available for use with your SM80 stereomicroscope.

Swift MZ8814, Polaroid (R) unit is complete and includes a special eyetube to replace the right eyetube of your SM80 stereomicroscope, camera back, bridge with compensating lens, copal shutter and timer, light trap, cable release and built-in W10x photographic eyepiece. Complete instructions for use of the MZ8814 camera assembly accompany each unit.

For 35mm photomicrography, the Swift MZ872D photo tube attachment is a special eyepiece tube fitting over the eyepiece and tube which accepts adapters to fit most popular 35mm single lens reflex cameras.

SPECIAL PURPOSES

If you intend to perform soldering operations, on small parts, while viewing them through your SM80 stereomicroscope, special care must be taken, as fluxes used in soldering emit rising vapors which could cause a film to coat the objective lenses, preventing further accurate viewing. A special, screw-in cover glass is available from Swift to guard against this, Swift MA719 cover glass screws into the threaded portion of the nosepiece of your SM80 stereomicroscope and effectively prevents dust, moisture and other contaminants from coming into contact with its internal optical components.

SERVICE

The bulb in the top illuminator, and the transillumination bulb in the base, are both 5 watt fluorescent bulbs. For replacement-reorder MA2202F.

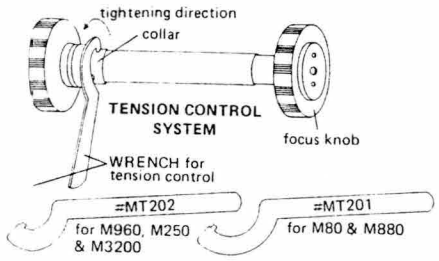
The upper bulb may be replaced by removing the screws found on each side of the illuminator housing.

The lower bulb may be replaced by carefully laying your SM80 onto its side, removing the screws that retain the insulator plate, and lifting off the plate. The bulb will then be exposed.

The focus tension adjustment is unique and exclusive, Swift patent No. 3,451,739, and is easily adjusted by using Swift Wrench No. MT201. This wrench fits the tension collar found on the focusing controls, between the knob and upright support. A clockwise turn of this collar moves it toward the upright support and increases tension, while a counter-clockwise turn moves the collar toward the knob and decreases tension.

TENSION CONTROL OF FUCUSING MOVEMENT

Illustrated below is the way to adjust the tension of the focusing movement, using C Wrench (MT201) enclosed with the microscope.



CLEANING

Eyepieces should be cleaned as often as necessary to maintain them in good condition to allow easy viewing. Clean the eyepieces by brushing away dust particles, using a soft, camel's hair brush, then moistening the lens by breathing onto it. Wipe the lens carefully with good quality lens tissue folded several times. If dirt or other foreign matter still remains, it may be necessary to use a mild solvent such as Xylol. Note, the lens tissue should be moistened, not saturated, with Xylol for cleaning, after which the lens should be dried, also with good quality lens tissue.

Painted surfaces should be cleaned frequently with mild detergent and a soft cloth.

Your Swift SM80 stereomicroscope is designed to function satisfactorily with only ordinary maintenance. The instrument should be periodically serviced by a qualified, authorized service technician, who will clean, relubricate and perform routine adjustments at that time. Unauthorized personnel should never disassemble lens assemblies or other precision components. For information regarding service, contact your authorized Swift dealer or write to: Swift Instruments, Inc., Technical Instrument Division, P. O. Box 562, San Jose, California 95106.

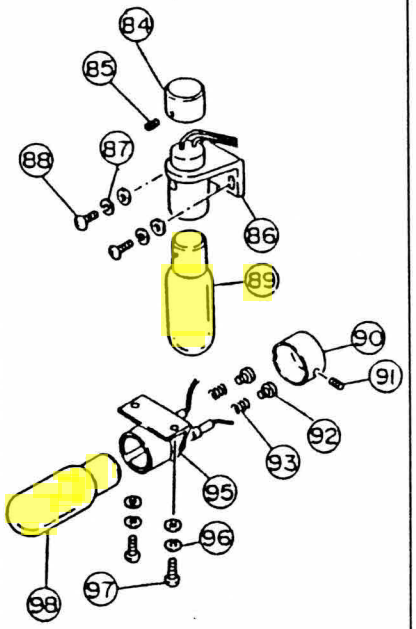
PARTS LIST

Part Number	Description	Part Number	Description
1	Screw	29	Knock Pin
2	Diopter Ring	30A	Coupling
3	Upper Tube	31	Knob
4	Lower Tube	32	Washer
5	Mirror Housing	33	Nut
6	Screw	34	Pinion
7	Screw	35A	Pinion Metal
8	Washer	36	Stage Glass
9A	Ring	37	Pin
10A-L/R	Plate(L&R)	38A	Base
11	Screw	39A	Switch (Twin)
12	Screw	40A	Indication Plate
13A	Mirror Seat		
14	Screw	42	Screw
15	Marking Plate	43	Connector
16	Screw	44	Ballast
17	Eyepiece Tube	45	Screw
18A-L/R	Cover(L&R)	46	Washer
19	Cover Metal	47	Marking Plate
20	Pod	48	Plate
21	Screw	49	Screw
22A	Arm	50	Socket
23A	Rack	51	Screw
24	Screw	52	MA2202F Lamp
25A	Dove Slide	53	Socket Seat
26	Metal Clip	54	Bottom Plate
27	Screw	55	Screw
28	Screw	56	Rubber Shoes

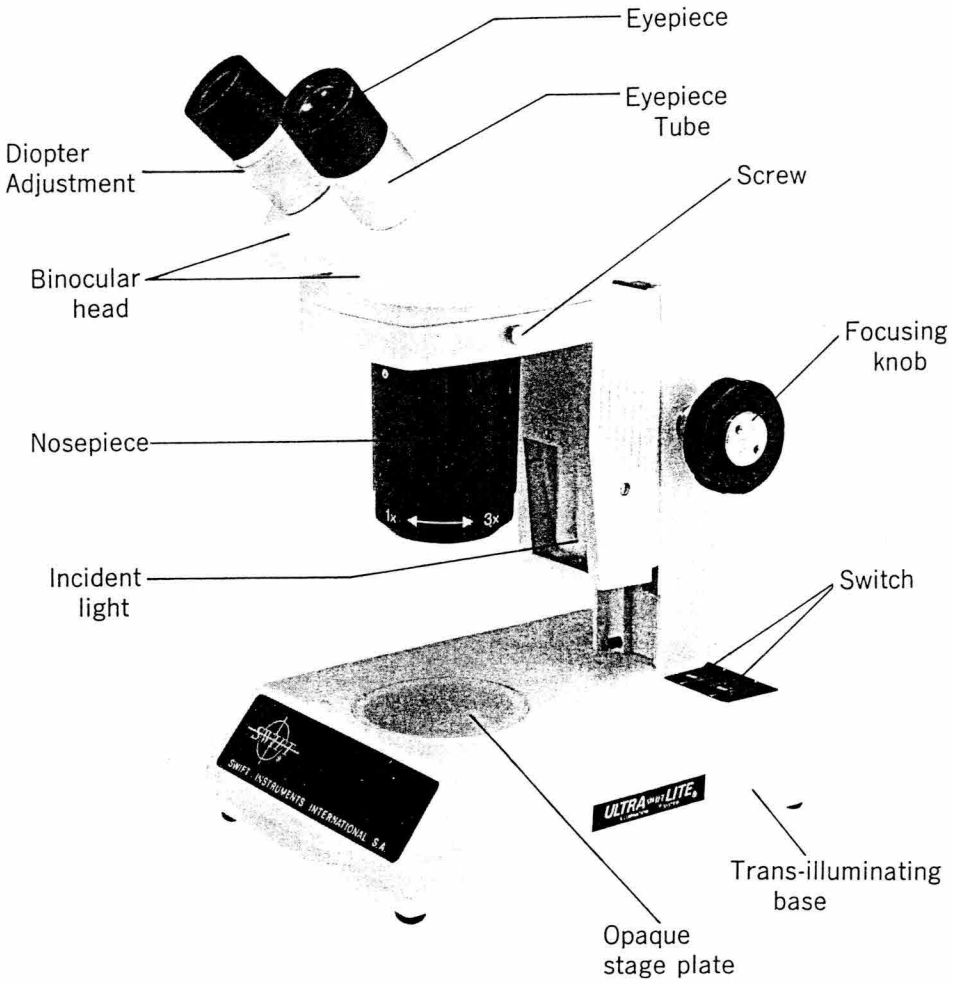
PARTS LIST

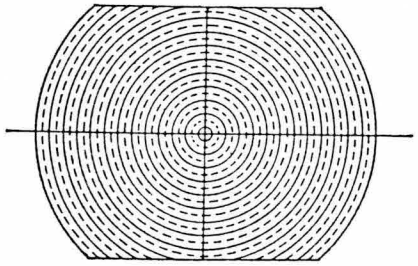
Part Number	Description
57	Screw
58	Lamp Housing
59	Screw
60	Plate
61	Nosepiece
62	Washer
63	Metal
64	Spring
65	Screw
66	Objective 2X
67	Lens Mount
68	Joint Plate
69	Washer
70	Ring
72	Lens Mount
73	Lens
74	Objective 1X
75	Lens Frame
76	Lens Mount
78	Screw M2.6 X 8
79	Objective Cover
80	Screw
81	Grommet
82	Cord
83	Objective Cover
84	Socket Holder
85	Screw

SM80B Stand



86	Socket
87	Washer
88	Screw
89	MA724 120V 20W Bulb
90	Screw
92	Screw
93	Spring
95	Socket
96	Washer
97	Screw
98	MA725 120V 10W Bulb
99A-L/R	Mirror Adjusting Plate
100A	Steel Ball
101A	Screw M3 X 10





STEREO SM80 SERIES