

Swift M9 Series Microscope

Care and Use Manual



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SWIFT OPTICS

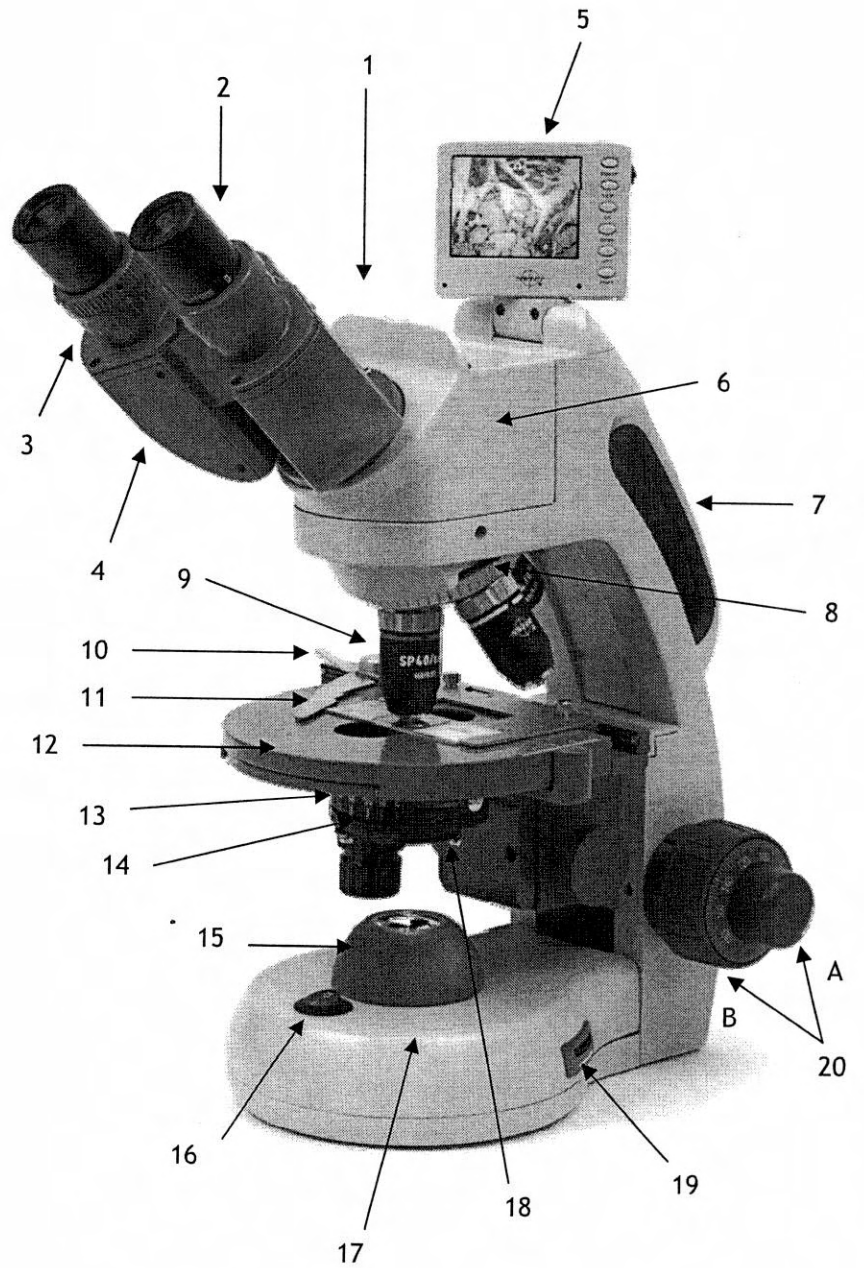
Enduring quality since 1926



SWIFT M9 SERIES

Your Swift M9 microscope is an instrument of precision, both optically and mechanically and will last a lifetime with a minimum amount of maintenance. It is built to the highest and most rigid optical and mechanical standards and has many built-in features to insure durability and high performance in the hands of both student and professional users.

The Swift M9 Series combines traditional microscopy with advanced technology. This microscope is equipped with superior optics offering bright clarity and crisp resolution, Siedentopf Binocular head for ergonomic viewing, and durable construction to withstand the rigors of a busy clinical practice or lab. Also available with Monocular Head. Additional features include a built-in, 3 Mega pixel digital camera for capturing digital stills or "real-time" video; internal media card reader/writer to save captured images; and a built-in (2.5 inch) LCD screen for shared viewing. The Swift Nine Digital also offers USB, RCA and S-Video outputs for direct connection to computer, TV monitor and video/LCD projectors.



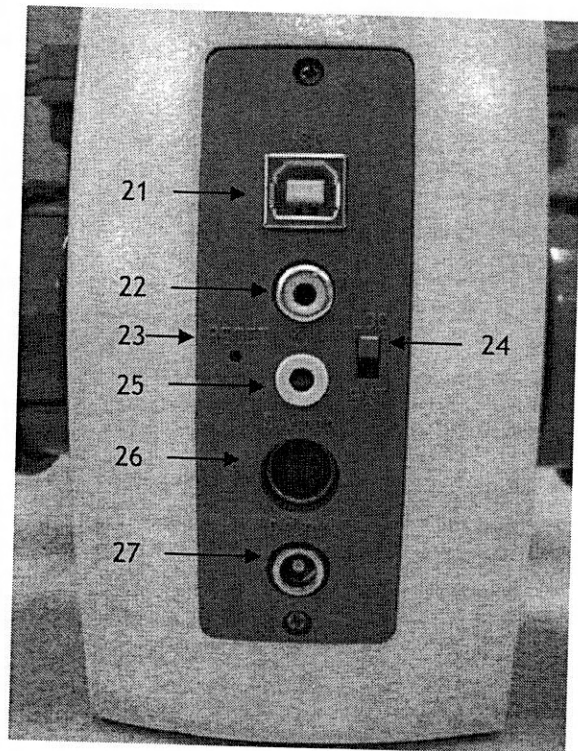
Swift M9 Series

PARTS LIST

1. Head
2. Eyepiece(s)
3. Diopter Adjustment
4. Siedentopf Binocular Head
5. Built-in, LCD Screen
6. Built-in, 3 Mega pixel Camera
7. Arm
8. Revolving Nosepiece
9. Objectives
10. Finger Clip Lever
11. Finger Clip
12. Built-in Mechanical Stage
13. NA 1.25 Abbe Condenser (not shown)
14. Iris Diaphragm
15. LED Illuminator Assembly
16. On/Off Switch
17. Base
18. Swing-out Defusing Filter
19. Illuminator Rheostat (Dimmer Switch)
20. Coaxial Controls
 - A. Fine Focus Control
 - B. Coarse Focus Control

PARTS LIST (cont.)

- 21. USB Output
- 22. RCA Video Output
- 23. Reset Button
- 24. LCD or Video Output Selector Switch
- 25. Audio Jack
- 26. S-Video Output
- 27. Power Supply Input



UNPACKING INSTRUCTIONS

The Swift M9 microscope will arrive in two containers to accommodate the custom configurations available. Assembly is required before use. This includes the attachment of the objectives to the turret and the eyepieces to the Binocular head.

The Swift M9 microscope is packaged separately:

- Container One - Microscope Stand, eyepieces (only for Binocular Head), USB 2.0 cable, RCA cable, Ear phones, dust cover, charger and software package.
- Container Two - Objective Kit

COMPONENTS OF THE MICROSCOPE

HEAD - the casting which contains the refracting prism and the monocular tube which holds the eyepiece (with set screw).

SIEDENTOPF - a binocular head design where the interpupillary adjustment (increasing or decreasing the distance between the eyepieces) is achieved by twisting the eyepiece tubes in an up and down arc motion similar to binoculars. The entire binocular assembly can also be rotated 180 degrees to gain an extra 2" in microscope height to accommodate diverse users.

MONOCULAR - a microscope head with a single eyetube and eyepiece.

EYEPIECES - the upper optical element that further magnifies the primary image of the specimen and brings the light rays in focus at the eyepoint.

DIOPTER ADJUSTMENT - located on the left eyepiece of the binocular head and is designed to help compensate the difference between the user's eyes.

NOSEPIECE - the revolver that carries the objectives. The nosepiece must click into place for the objectives to be in the proper alignment.

OBJECTIVES - the optical systems which magnify the primary image of the instrument. Magnifications are typically 4X, 10X, 40XRD and 100XRD.

BASE - the housing and platform of the instrument to which the arm is attached. The base stands on rubber feet and contains the illuminator assembly.

ARM - the vertical column (attached to the base) which supports the stage, and contains the coarse and fine adjusting knobs and mechanism. Located on the back of the arm is a panel with an array of connectors covering both video, audio and power.

STAGE - the table of the microscope where the slide is placed for viewing. This component moves upward and downward when the focusing knobs are turned. The stage of the Swift Nine Digital has a built-in mechanical stage with a below-stage ergonomic "X" and "Y" axis controls. A finger clip holds the slide securely and is designed to be a slow return holder to provide protection to the specimen.

CONDENSER - the function of the condenser is to provide full illumination to the specimen plane and to enhance the resolution and contrast of the object being viewed. The standard condenser of the Nine Series has a Numerical Aperture of 1.25 with filter carrier and iris diaphragm and is mounted in a sub-stage focusing assembly that can be raised or lowered for precise light control.

IRIS DIAPHRAGM - a multi leaf round shaped device similar to a camera shutter, with lever, installed under the condenser. By moving the lever back and forth, the iris diaphragm opens and closes, increasing and decreasing the contrast of the specimen. If the image is "washed out" the iris diaphragm is opened too wide. If the image is too dark the iris is not open wide enough. An appropriate opening can be obtained with minimal experimentation on normal scopes, but the Nine Series condenser assembly has marked positions for each magnification. These are recommended settings for each of the power ranges.

ILLUMINATION - the M9 Series uses a low voltage Light Emitting Diode (LED) with rechargeable lithium battery and a charger in either 120 volt or 220 volt current configuration.

COAXIAL CONTROLS - the coaxial focusing system combines both the coarse and fine focus into one knob located on both sides of the microscope. The clutch mechanism is equipped with a safety slipping feature (which comes in to play at either end of the focus range) as a protection for the brass rack and steel pinion gears. The

control is designed for a continuous operation over the range of the stage movement.

COARSE FOCUS - the coarse focus control knobs move the stage up or down to bring the specimen into focus. The movement is achieved by two large knobs on the sides of the arm. In order to prevent gear damage, the focus control is equipped with a slip clutch that allows slippage at both ends of the focusing range. The system is also furnished with a tension control to prevent "stage drift".

FINE FOCUS - the fine focus control knobs bring the specimen into sharp focus.

PHASE CONTRAST - The phase contrast microscope reveals fine detail in transparent objects which possess very little contrast. Unstained living organisms and cells can be studied without destroying the specimen or changing its composition by using fixing and staining reagents. Before the advent of phase contrast such specimens could only be examined in transmitted light by closing down the substage condenser diaphragm to a small aperture. The narrow cone of illumination produced diffraction with destruction of detail.

OTHER IMPORTANT TERMINOLOGY

COMPOUND MICROSCOPE - a microscope having a primary magnifier (the objective) and a second (the eyepiece) to both conduct light, amplify magnification and convert the image into a field of view easily seen by the human eye.

PARFOCAL - a term applied to objectives and eyepieces that require little or no focus adjustment when switching from one power to another. The objectives on your Digital Nine Series microscope are parfocalized during manufacturing so that only a slight movement or no movement at all of the fine focus control is required when change is made from high to lower powers.

NUMERICAL APERTURE (NA) - a mathematical formula devised by Ernst Abbe for the direct comparison of dry and all types of immersion objectives for resolving power. Numerical Aperture (NA) is the sine of half the angular aperture of the objective multiplied by the refractive index of the medium between the front lens of the objective and the cover glass on the slide.

WORKING DISTANCE - the distance from the lens of the objective to the cover slip on the slide, when the specimen is in focus.

FOCAL LENGTH - parallel rays of light after refraction through a lens will be brought to a focus at the focal point. The distance from the optical center of the lens to the focal point is the focal length or focus.

FIELD OF VIEW - the actual circular area seen through the eyepiece.

EYE POINT or **EYE RELIEF** - the distance from the eye lens of the eyepiece to your eye where a full field of view is seen.

DIN - (Deutsche Industrial Norman) was originated as a West German standard of interchangeability. It is not a quality standard but one of commonality.

RESOLUTION or **RESOLVING POWER** - the ability of a lens to define the details of the specimen at a maximum magnification. This is governed by the NA (Numerical Aperture) of the lens. For example, a 40X objective with NA 0.65 has a maximum resolving power of 650X, equal to 1000 times the NA. This rule of $NA \times 1000$ is true of all achromatic objectives.

"COATED" LENS - in attempting to transmit light through glass, much of the light is lost through reflection. Coating a lens increases the light transmission by reducing or eliminating reflection, thus allowing more light to pass through.

USING YOUR SWIFT M9 SERIES MICROSCOPE

Once you have learned the terminology and purpose of each component of the microscope, use of the microscope is simple and enjoyable. By following these easy steps, you will be able to begin studying the specimen quickly and easily.

1. Open the "finger clip" of the mechanical stage by holding the "finger clip lever," and carefully place the slide against the fixed side and back edge of the mechanical stage. Now slowly release the "finger clip lever" allowing the "finger clip" to hold the slide in place.
2. Align the specimen under the objective lens by using the adjustment knobs under the mechanical stage. The bottom knob moves the slide from right/left while the top knob adjusts the

slide from front/back. These knobs allow for precise movement and scanning of the slide.

3. Rotate the nosepiece to place the lowest power objective (4XD) over the specimen. Be sure the objective "clicks" into position.

If you do not have a Swift Nine Digital with Binocular Head please omit step 4-5.

4. Adjust the interpupillary distance of the Siedentopf Binocular Head for a comfortable view. Align the barrels of the binocular head to create one perfect circle, by moving the barrels in an arc motion.
5. For additional focus on the Binocular Head, use the left eye diopter adjustment to correct the differences between the user's eyes. Set the adjustable left eye diopter at zero. Then focus, with the coaxial focusing knob, your right eye (close your left eye). Now using your left eye, adjust the diopter ring until a clear image is seen (close your right eye). Now the binocular head is set for you to observe the specimen.
6. While viewing through the eyepiece, rotate the coarse focus knob to bring the specimen into focus. This should be done slowly and carefully.
7. For additional contrast of the specimen, open the iris diaphragm to its largest aperture. If additional contrast is required to permit accurate viewing of the specimen, the diaphragm should be slowly closed until the details of the specimen are sharply defined. Be careful not to close the aperture too much. Although you may be achieving a higher contrast the fine structure of the image maybe destroyed. Reducing the aperture does increase contrast and depth of focus, but it also reduces resolution and introduces diffraction. The aperture must be adjusted for each objective.

NA 0.25 for 10XD
NA 0.65 for 40XRD
NA 1.25 for 100XRD

The iris diaphragm is not intended to control the brightness of the illumination but induce contrast of the specimen by diffracting light rays.

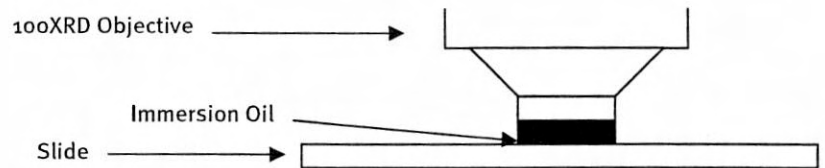
8. Use the fine focus control to complete the focus and produce the sharpest image.

- Now you can rotate the nosepiece to higher magnification objectives. The objectives are parfocalized so that once the lowest objective (4XD) is focused, only a slight turn of the fine focusing knob is required when changing to 10XD, 40XRD and 100XRD objectives.

OIL IMMERSION

It is desirable to use immersion oil with the 100XRD objective. Oil generates a fine resolution and brightness of the image viewed through the microscope. Drop a tiny amount of oil onto the slide prior to focusing with the 100XRD objective (between the slide and the objective tip). It is essential to thoroughly clean the objective tip after use. Please contact Swift Optics or your authorized Swift dealer for the appropriate immersion oil to use.

IMPORTANT: The focal distance of the 100XRD and 40XRD objective to the slide surface is very close and although the 40XRD objective on the Nine Digital is sealed to prevent immersion oil contamination, it is a good practice to avoid dragging the 40XRD objective through an oiled slide.



PHASE CONTRAST

The phase contrast microscope reveals fine detail in transparent objects which possess very little contrast. Unstained living organisms and cells can be studied without danger of artifacts produced by killing, fixing or staining reagents. Before the advent of phase contrast such specimens could only be examined in transmitted light by closing down the substage condenser diaphragm to a small aperture. The narrow cone of illumination produced diffraction with destruction of detail. The Nine Digital can be outfitted with a multi phase system (MA10056) that includes a set of Plan Phase objectives and special pre-centered phase condenser carousel. Please refer to the detailed instruction sheet enclosed with each phase kit for proper installation and use.

PARTS AND ACCESSORIES

Your Swift M9 Series microscope is designed and constructed for long term durability. Accessories are available to further enhance its use, and others are under development.

EYEPIECE REPLACEMENTS

MA10505	W10XD, 20mm Eyepieces (pair)
MA10500	W10XD, 20mm Eyepiece (single)
MA10501	W10XD, 20mm Eyepiece with micrometer scale (single)

OBJECTIVE REPLACEMENTS

MA10021	4XD Semi-Plan
MA10031	4XD Plan
MA10022	10XD Semi-Plan
MA10032	10XD Plan
MA10052	10XD Phase Plan
MA10023	40XRD Semi-Plan
MA10033	40XRD Plan
MA10053	40XRD Phase Plan
MA10024	100XRD Semi-Plan
MA10034	100XRD Plan
MA10054	100XRD Phase Plan

MA10056	Swift M9 Complete Phase System includes: 4X Plan, 10XRD Phase Plan, 40XRD Phase Plan and 100XRD Phase Plan Objectives; Multi Phase Disc Carousel; and Green Contrast Filter
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USING YOUR SWIFT M9 LCD SCREEN

SPECIFICATIONS

3.0 Mega pixel CMOS Chip
PICTURE SIZE - (H x V) 2048 x 1536 pixel
COLOR DEPTH - 24 bit
Electronic shutter
Fixed lens (Baso KMOS-3 glass)
Diaphragm ratio F3.0
16MB Built-in memory
EXTERNAL MEMORY - Supports up to 3GB SD card which supports
DOS FAT 12/FAT16 file system
WHITE BALANCE - Automatic or Manual
EXPOSURE CONTROL - Automatic or Manual
Automatic Power Shutoff Mode

IMAGE CAPTURE

HIGH - 2048 x 1536
MEDIUM - 1600 x 1200
LOW - 1280 x 1024
High (Q95) Compression ratio 4-5
Standard (Q85) Compression ratio 8-12
JPEG Compression Format

VIDEO CAPTURE

320 x 240
Routine (Q50) Compression ratio 15-17
EMS MEMORY - 32 megabit

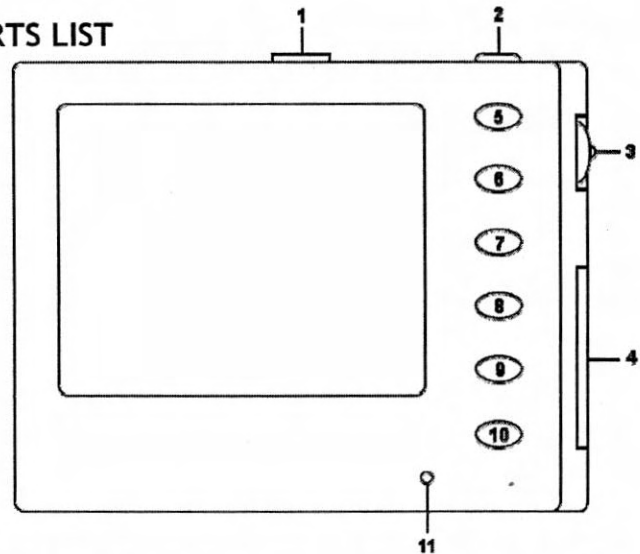
USB VIDEO

24 frames / second
HIGH - 640 x 480
LOW - 320 x 240

OUTPUT

Composite Video
S-Video
USB V2.0 interface
MSDC supports Windows Me, Windows 2000 & Windows XP.
SIDC (for Windows XP only)

LCD PARTS LIST



* The LCD/Video Output selector switch on the back panel must be set to LCD in order to view images on the LCD screen. Set the switch to EXT to view images using the RCA or S-Video output. A reset button on the back panel can also be pressed while the microscope is powered on using a pin or paperclip to reset the entire digital system in case of minor interruptions in performance.

1. Screen latch release, releases the screen when it is closed
2. Capture button, takes a still image, or starts or stops capturing video
3. Menu / Zoom 3-direction button, press for menu / ok, push up for zoom in push down for zoom out
4. SD card Slot, external memory expansion slot
5. Power button, turns on and off the camera and LCD screen
6. View button, switches between live video and stored image viewer
7. Up button, used to control the menu
8. Down button, used to control the menu
9. Left button, previous menu or previous image in viewer mode
10. Right button, next menu or next image in viewer mode
11. Indicator light, blinks red to acknowledge menu changes

MENU FUNCTIONS

CAPTURE SETTINGS

SINGLE - Still Image capture

SELF TIMER - Still Image capture with 10 sec timer delay

VIDEO 320 x 240 - Capture a high resolution movie with audio

VIDEO 192 x 144 - Capture a lower resolution movie with audio

AUDIO - Capture audio only, using the built-in microphone

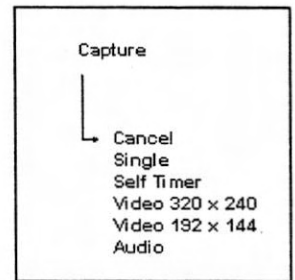


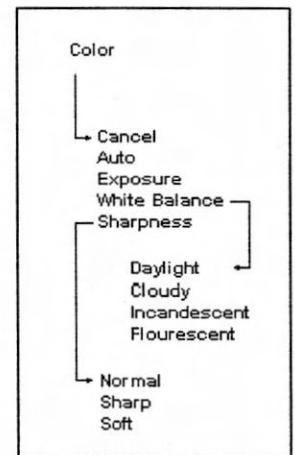
IMAGE SETTINGS

AUTO - Allows the camera to control the image settings

EXPOSURE - Press the menu button to manually adjust the exposure. The exposure can be adjusted from -1.5 to 1.5 in increments of 0.3

WHITE BALANCE - Press the menu button to manually change the white balance setting. There are 4 different white balance presets: daylight, Cloudy, Incandescent, and Fluorescent.

SHARPNESS - Press the menu button to manually change the sharpness. There are 3 different Sharpness presets: Normal, Sharp and Soft.



RESOLUTION SETTINGS

2048 x 1536 - highest resolution setting, gives better images, but takes more storage memory

1600 x 1200 - medium resolution

1280 x 1024 - lowest resolution setting, uses less memory per image

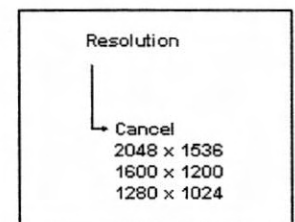
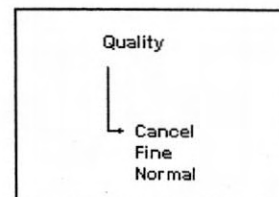


IMAGE QUALITY SETTINGS

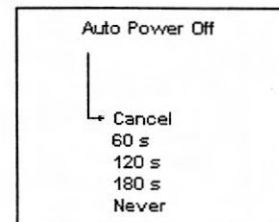
FINE - Uses the Q85 Compression Ratio 8-12, provides better images but larger files

NORMAL - Uses the Q95 Compression Ratio 4-6, provides smaller files at the cost of image quality.



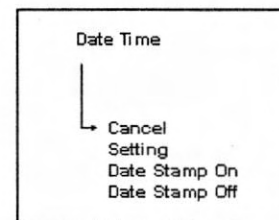
AUTO SHUTOFF SETTINGS

The idle shutoff timer can be set to 60s, 120s, 180s or Never to remain on regardless of idle time.



DATE AND TIME SETTINGS

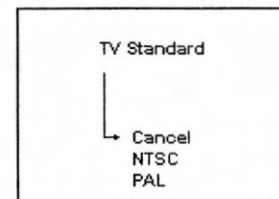
The date and time stamp can be turned on and off and is set using a YYYY MM DD date style date



TV OUT SETTINGS

NTSC - the standard TV format used in the United States

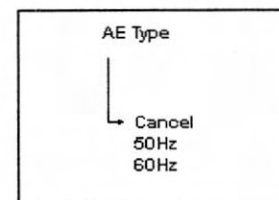
PAL - the standard TV format used in Europe



AE TYPE SETTINGS

50 Hz

60 Hz

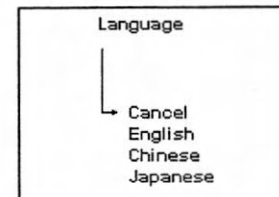


LANGUAGE SETTINGS

English

Chinese

Japanese



COMMON PROBLEMS IN MICROSCOPY

If you have a problem, you may be able to correct it yourself. Here are a few common problems and easy solutions you may want to try before calling for service.

WARNING - When working on the electrical systems, checking exposed wires or replacing components; make sure to unplug the electrical cord.

CAUTION - Never disassemble mechanical or optical components. This servicing should only be done by an authorized Swift technician. The Limited Lifetime Warranty will be null and void if disassembled by a non-Swift dealer.

A. **PROBLEM** - The RCA or S-Video output jacks are not working

CORRECTION - Make sure the video output selector switch is set to EXT.

B. **PROBLEM** - The LCD screen powers on then the screen turns Blank

CORRECTION -

1. Make sure the video output selector switch is set to LCD.
2. The LCD screen will not operate when there is insufficient battery power. Recharge the microscope.
3. Reset the electronic system by pressing the reset switch while the microscope is powered on.

C. **PROBLEM** - The LCD screen is blue when the microscope is connected to a computer with a USB cable

CORRECTION - The USB port is designed to automatically override the LCD screen video output when a USB cable is connected. Unplug the USB cable from the USB port and the video image will appear on the LCD screen

D. **PROBLEM** - Illumination "hot spots" and uneven brightness in the field of view

CORRECTION -

1. Is the swing-out defusing filter closed over the iris diaphragm
2. Is the Abbe condenser in the correct position
3. Is your objective and nosepiece in the click stop position

E. **PROBLEM** - Image appears "washed out" or weak

CORRECTION -

1. Slowly close the iris diaphragm.
2. Objective lens is dirty. See "Care and Cleaning" Section
3. Eyepiece is dirty. See "Care and Cleaning" Section

F. PROBLEM - Hairs or dust seem to be moving in the image

CORRECTION - The iris diaphragm is not open wide enough. Slowly open the iris diaphragm to increase the size of the opening allowing for additional illumination.

G. PROBLEM - Unable to bring specimen into focus with any objective

CORRECTION - Eye lens of the eyepiece is partially unscrewed. Remove the eyepiece and screw the two sections together.

H. PROBLEM - Image of the specimen goes out of the focus all by itself.

CORRECTION - Tighten the collar found on the spindle of the right focus knob using the tension wrench (included with the Nine Series).

I. PROBLEM - Focusing knobs turn with difficulty even with tension-collar loosened.

CORRECTION - Microscope should be disassembled by qualified, authorized repairman, cleaned and re-lubricated.

J. PROBLEM - The LCD screen does not display information in English

CORRECTION - Turn on the LCD screen. Press the black menu button on the side of the LCD screen to access the menu screen. Press the right arrow button 8 times. Press the up or down arrow button to highlight the 2nd item in the list. Press the menu button on the side of the screen to save the changes.

CARE AND CLEANING

The power switch should be turned off or unplugged when the microscope is not in use. The Swift M9 microscope is equipped with an indicator light behind the illuminator assembly that lights green when the microscope is powered on.

CLEANING - the front lens of the objectives (particularly the 40XRD and 100XRD) should be cleaned after use. First brush with a soft, camel hair brush or blown off with air pressure from a rubber

syringe, to remove dust particles. Then wipe gently with a soft lens tissue, moistened with Xylene or clean water and dry with a clean lens paper immediately following.

CAUTION - Objectives should never be disassembled by the user. If repairs or internal cleaning should be necessary, this should only be done by qualified, authorized repairman.

The eyepiece(s) may be cleaned in the same manner as the objectives, except in most cases Xylene will not be required. In most instances breathing on the eyepiece to moisten the lens and wiping dry with a clean lens tissue is sufficient to clean the surface. Lenses should never be wiped while dry as this will surely scratch or otherwise mar the surface of the glass.

The finish of the microscope is hard epoxy and is resistant to acids and reagents. Clean this surface with a damp cloth and mild detergent.

Periodically, the microscope should be disassembled, cleaned and lubricated. This should be done only by a qualified, authorized repairman.

DUST COVER AND STORAGE - All microscopes should be protected from dust by a dust cover when not in use or in storage. A dust cover is the most cost-effective microscope insurance you can buy. Ensure that the storage space is tall enough to allow the microscope to be placed into the cabinet or onto a shelf without making undue contact with the eyepieces. Never store microscopes in cabinets containing chemicals, which may corrode your microscope. Also, be sure that the objectives are placed in the lowest possible position and the rotating head is turned inward and not protruding from the base. Microscopes with mechanical stages should be adjusted toward the center of the stage to prevent the moveable arms of the mechanical stage from being damaged during storage in the cabinet.

Information may be obtained from your authorized Swift dealer or by contacting Swift Optics directly:

Swift Optics, 800.523.4544 or www.swiftoptics.com

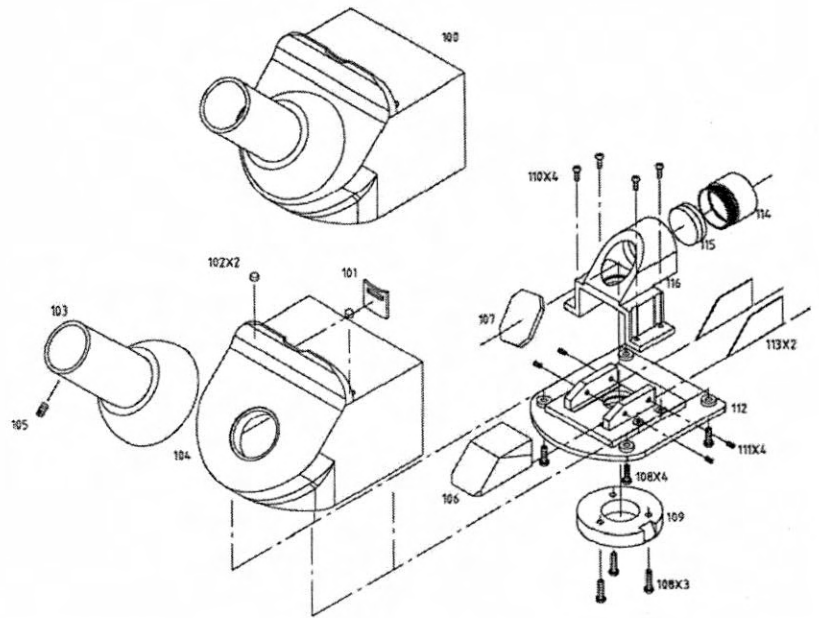
SWIFT LIMITED LIFETIME WARRANTY

Subject to normal use. The Swift Optics Lifetime Warranty assures that the microscope is guaranteed against defects in material and workmanship for the life of the product. The LCD screen and electronic components, excluding the illumination system on the Swift Nine Digital Series, are covered by a three year warranty. Damage resulting from repair by unauthorized parties or damage due to accident, alteration, misuse or abuse is not covered. Warranty service is provided by Swift Optics Authorized Technicians; determination of warranty is at the technician's discretion.

Defective products covered by the warranty will be repaired free of charge when they are returned, postpaid, to Swift Optics Headquarters in San Jose, California. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Limited to USA.

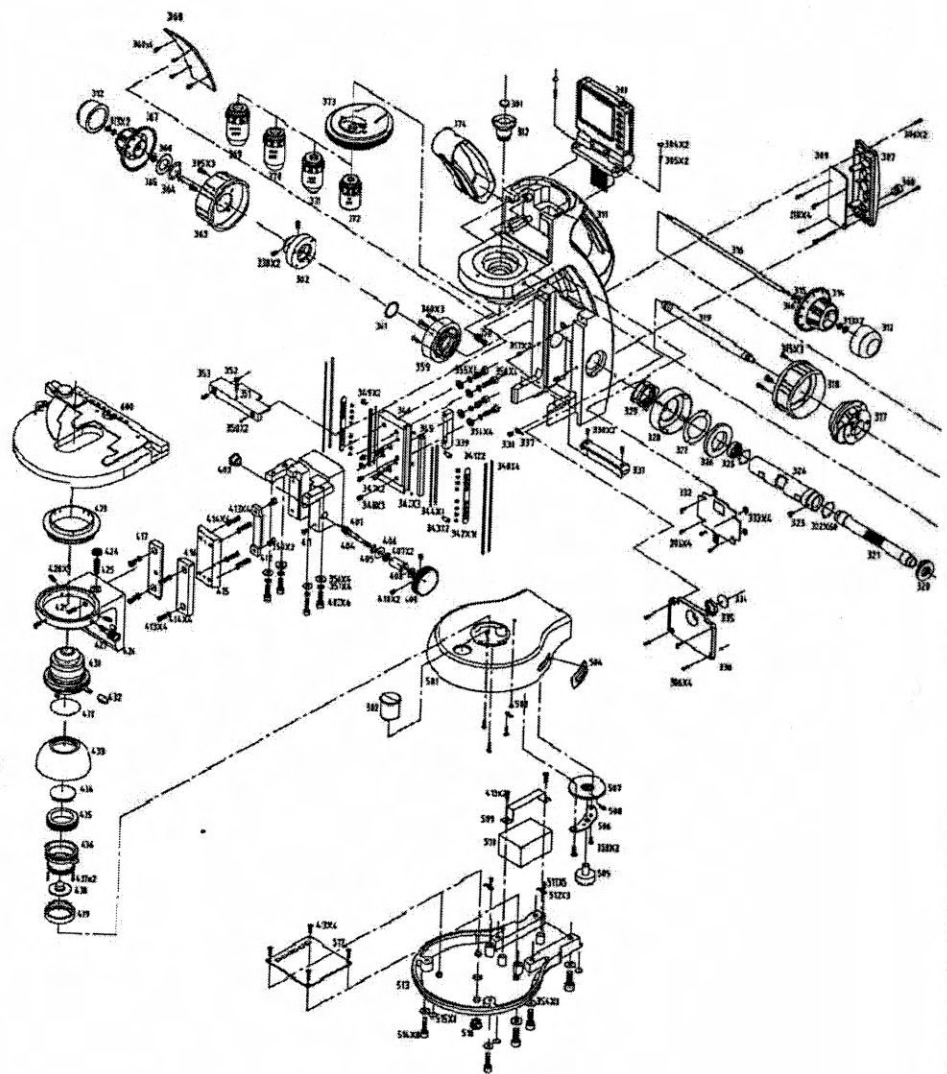
Part Number	Description	Part Number	Description
100	Bino. Gemal Assembly	124	Outside Eyepiece Tube
101	Retainer	125	Screw
102	Retainer	126	Screw
103	Auxiliary Lens	127	Screw
104	Connected Ring	200	Bino. Head Prism Set
105	Wave Washer	201	Shelter Board
106	Connector	202	Protection Plate
107	Mirror	203	Bino. Head Cover
108	Screw	204	Glued Prism
109	Right Prism Cover	205	Lens
110	Columnar Lens Retainer	206	Mirror
111	Columnar Lens	207	Screw
112	Right Lens Tube	208	Screw
113	Screw	209	Screw
114	Eyepiece Tube	210	Wave Washer
115	Screw	211	Plate
116	Screw	212	Adj. Tube
117	Wave Washer	213	Glued Lens
118	Prism	214	Lens Holder
119	Left Prism Cover	215	Auxiliary Lens
120	Scale Plate	216	Retainer
121	Left Lens Tube	217	Fixing Ring
122	Inside Eyepiece Tube	218	Washer
123	Reading Ring	219	Screw

Swift M9 Series Monocular Head



Part Number	Description	Part Number	Description
100	Mono. Head	109	Fixing Ring
101	Shelter Board	110	Screw
102	Protection Plate	111	Screw
103	Tube	112	Prism Holder
104	Prism Cover	113	Plate
105	Screw	114	Adj. Ring
106	Glued Prism	115	Glued Lens
107	Mirror	116	Lens Holder
108	Screw	201	Eyepiece

Swift M9 Series Body



Part Number	Description	Part Number	Description
301	Mirror	332	CMOS Sensor Assembly
302	Screw	333	Insulating Washer
303	LCD Screen Assembly	334	Filter
304	Cover Plate	335	Filter Holder
305	Screw	336	Sensor Cover
306	Screw	337	Welding Plate
307	Rear Panel	338	Screw
308	Charging Socket	339	Rack
309	PCB Part	340	Steel Wire Guide
310	Screw	341	Ball Holder
311	Arm	342	Steel Ball
312	Fine Adj. Knob Cover	343	Screw
313	Nut	344	Steel Wire Guide
314	Left Fine Adj. Knob Assembly	345	Block
315	Washer	346	Guide
316	Fine Adj. Shaft	347	Screw
317	Gear-box	348	Screw
318	Left Coarse Adj. Knob	349	Screw
319	Sleeve	350	Screw
320	Gear	351	Screw
321	Pinion	352	Nut
322	Steel Ball	353	Cover
323	Screw	354	Washer
324	Sleeve	355	Washer
325	Nut	356	Screw
326	Sleeve	357	Screw
327	Wave Washer	358	Screw
328	Lock Holder	359	Holder
329	Lock Ring	360	Screw
330	Screw	361	Washer

Part Number	Description	Part Number	Description
362	Holder	423	Center Ring
363	Right Coarse Adj. Knob	424	Nut
364	Wave Washer	425	Screw
365	Washer	426	Condenser Holder
366	Washer	427	Screw
367	Ring Fine Adj. Assembly	428	Screw
368	Cover	429	Screw
369	Objective	430	Condenser
370	Objective	431	Filter
371	Objective	432	Knob Cover
372	Objective	433	Collector Cover
373	Nosepiece	434	Lens
374	Mat	435	Retainer
401	Holder	436	Connector
402	Screw	437	Screw
403	Stopple	438	LED PCB
404	Condenser Pinion	439	Retainer
405	Spring Plate	501	Top Bottom
406	Washer	502	Switch
407	Washer	503	LED Indicator
408	Sleeve	504	Dimmer Frame
409	Knob Assembly	505	Dimmer
410	Screw	506	Connector Plate
411	Screw	507	Dimmer Knob
412	Condenser Rack	508	Screw
413	Screw	509	Holder
414	Condenser Rack	510	Battery
415	Plate	511	Screw
416	Guide	512	Wire Clamp
417	Guide	513	Bottom Base

Part Number	Description
514	Screw
515	Rubber Foot
516	Plastic Cover
517	Charging PCB
600	Mechanical Stage

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