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THE USE AND CARE OF SWIFT STEREO 80

WIDEFIELD MICROSCOPE

SWIFT®

*Compiled from the writings of George H. Needham,
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YOUR SWIFT STEREO 80 WIDEFIELD MICROSCOPE

The Swift Series 80 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 80 incorporates features, exclusive with this series, to enhance and provide maximum versatility of the instrument for classroom use.

Your Series 80 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 M80 is covered by the most liberal warranty available, and is backed by a highly selective organization of microscope specialists.

MODELS

Cat. No.	Objectives	Amplifying	Eye-pieces	Illumination	Magnification
M81	1×, 2×		W10×	None	10×, 20×
M81B	1×, 2×		W10×	Incident & Trans-Base	10×, 20×
M82	1×, 2×	1.5×	W10×	None	10×, 15×, 20×, 30×
M82B	1×, 2×	1.5×	W10×	Incident & Trans-Base	10×, 15×, 20×, 30×
M83	1×		W15×	None	15×,
M83B	1×		W15×	Incident & Trans-Base	15×,
M84	1×	1.5×	W15×	None	15×, 22.5×
M84B	1×	1.5×	W15×	Incident & Trans-Base	15×, 22.5×
M85	1×, 3×		W10×	None	10×, 30×
M85B	1×, 3×		W10×	Incident & Trans-Base	10×, 30×

M86	1×, 3×	1.5×	W10×	None	10×, 15×, 30×, 45×
M86B	1×, 3×	1.5×	W10×	Incident & Trans-Base	10×, 15×, 30×, 45×
M88	2×, 4×		W10×	None	20×, 40×
M88B	2×, 4×		W10×	Incident & Trans-Base	20×, 40×
M89	2×, 4×	1.5×	W10×	None	20×, 30×, 40×, 60×
M89B	2×, 4×	1.5×	W10×	Incident & Trans-Base	20×, 30×, 40×, 60×

Additional accessories may be added or substituted as follows:

- MA662 Huygenian eyepieces 10x, eyepoint 8.5mm
- MA750 Widefield eyepieces W10x, eyepoint 15.5mm
- MA753 Widefield eyepieces W10x, eyepoint 18mm
- MA752 Widefield eyepieces W15x, eyepoint 13mm
- MA754 Widefield eyepieces W20x, eyepoint 14mm
- MA727 Widefield eyepieces W10x, eyepoint 24mm
- MA610 1.5x Amplifying lens
- MA637 Screw-in cover glass

FEATURES OF YOUR SWIFT M80 STEREO MICROSCOPE

Optical System: No mirrors are used in Swift optical systems; only the highest quality prisms are used. All optical surfaces are hard coated to reduce reflection and increase light transmission.

Eyepieces: Your M80 stereomicroscope is corrected to a standard mechanical tube length of 160mm. This means any of the many Swift eyepieces may be utilized. Note the various W10x eyepieces, of different eyepoints. This means that whether you wear spectacles or not, there is an eyepiece exactly right for your vision.

The M80 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: On models M83, M83B, M84, and M84B, magnification is fixed and can only be increased by substituting eyepieces of higher magnification, or by the installation of the MA610 amplifying lens, which multiplies magnification by 1.5 times. Other models in Series M80 have 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 MA610, 1.5x 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 M80, with the suffix "B" following the model number, incorporate this exclusive tri-illumination system. The type of illuminant 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 M80 series microscopes is scale No. MA758, 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 M80 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 M80 STEREO MICROSCOPE

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. If your M80 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 M80 MICROSCOPE

Scale No. MA758 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 80, 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.

PHOTOMICROGRAPHY

Two types of photographic attachments are available for use with your M80 stereomicroscope.

Swift MA8814, Polaroid (R) unit is complete and includes a special eyetube to replace the right eyetube of your M80 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 MA8814 camera assembly accompany each unit.

For 35mm photomicrography, the Swift MA873 photo attachment includes a built-in W10x photographic eyepiece, special eyepiece tube to replace the right eyepiece tube, and accepts adapters to fit most popular 35mm single lens reflex cameras. Request Swift Bulletin 68-5-SD for a complete listing of available adapters.

SPECIAL PURPOSES

If you intend to perform soldering operations, on small parts, while viewing them through your M80 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 MA637 cover glass screws into the threaded portion of the nosepiece of your M80 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 is a 20 watt, bayonet mount. Reorder Swift MA724 bulb for replacement. The bulb in the base which provides transillumination is a 10 watt, bayonet mount. Reorder Swift MA725 bulb for replacement.

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

The lower bulb may be replaced by carefully laying your M80 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.

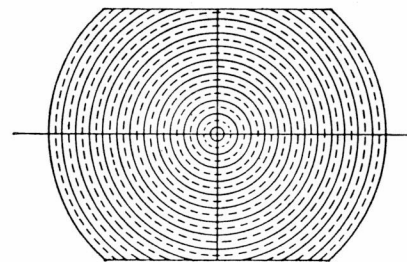
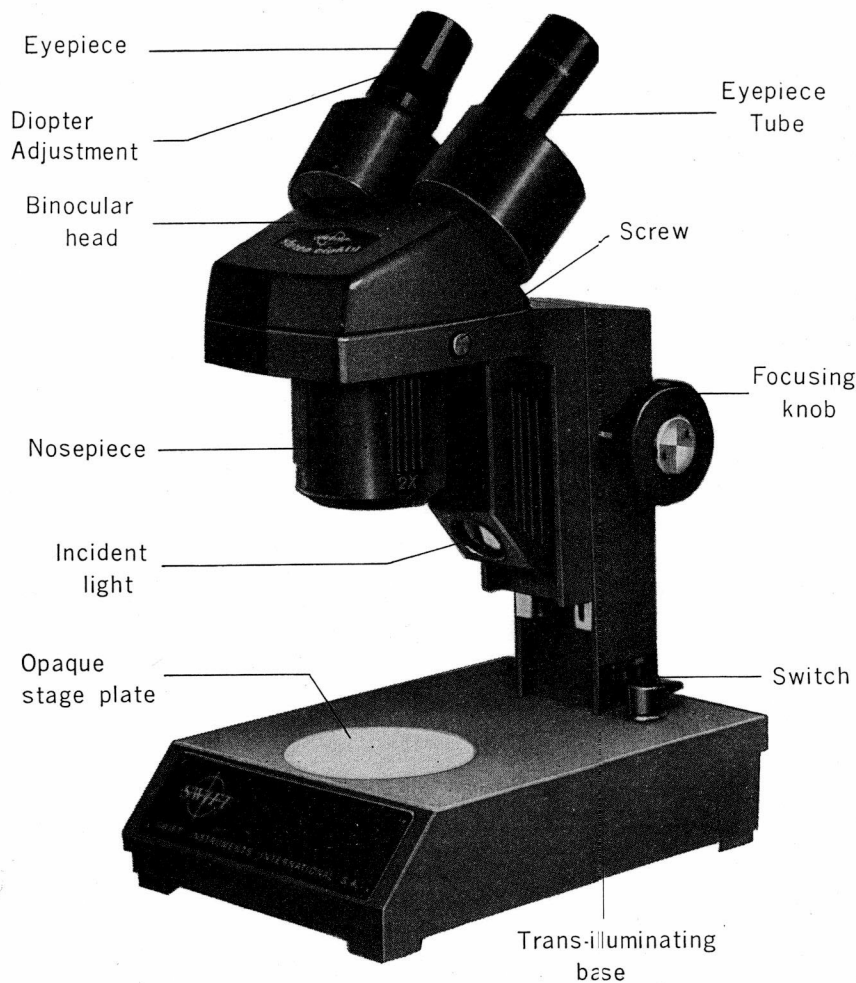
CLEANING

Eyepieces should be cleaned as often as necessary to main-

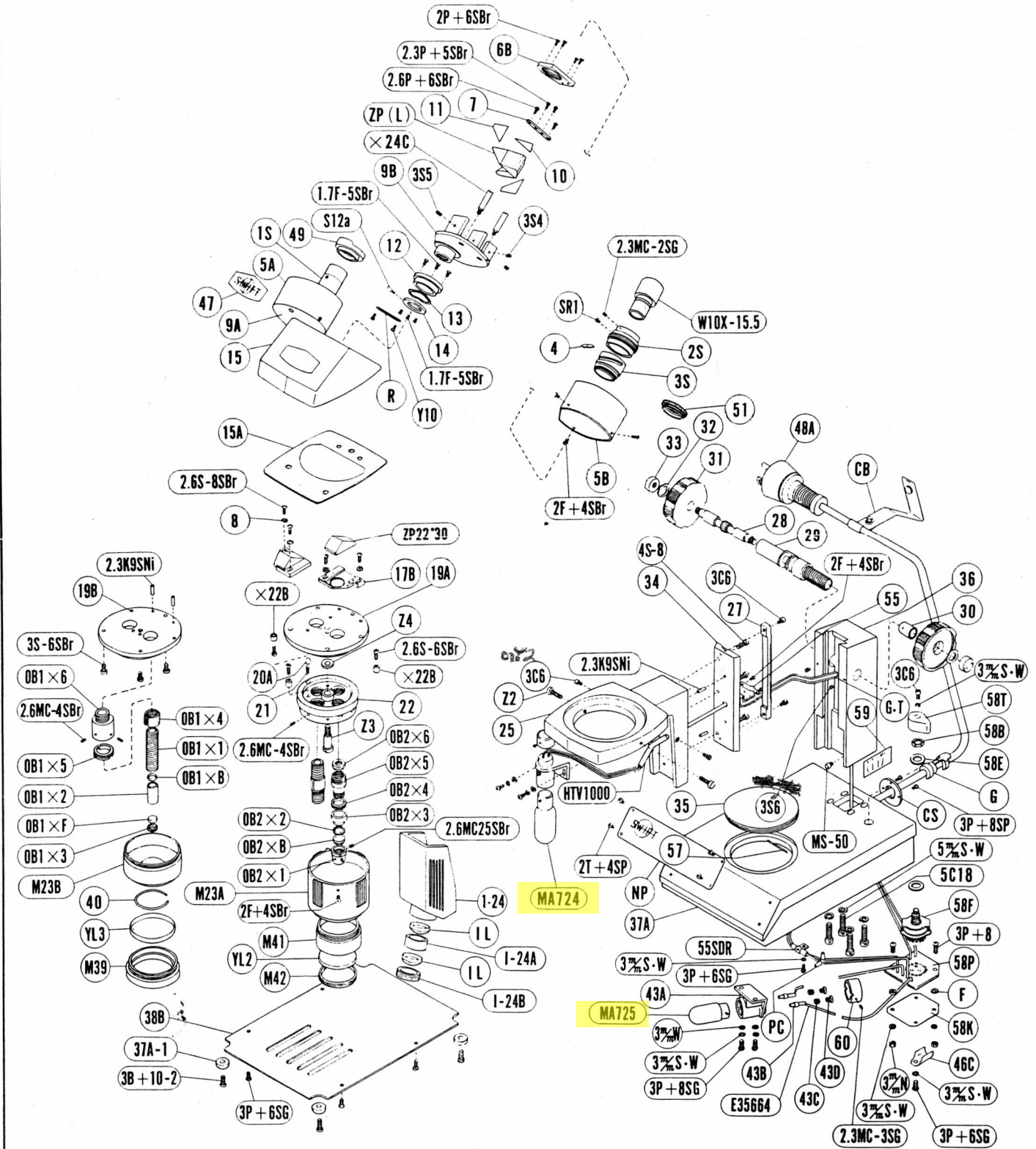
tain them in good condition to allow easy viewing. Clean the eyepieces by brushing away dust particles, using a soft, camel's hair brush, then moistening the lens by breathing onto it. Wipe the lens carefully with good quality lens tissue folded several times. If dirt or other foreign matter still remains, 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 M80 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.



STEREO 80 SERIES



PARTS LIST

Parts Number	Description	Parts Number	Description
2S	Eyepiece Tube, left	2.6S-6 SBr	Screw
2.3MC-2SG	Screw	X22B	Nosepiece Stopper
SR-1	Screw	22	Nosepiece
3S	Inner Tube	X22B	Nosepiece Stopper
4	Metal	20A	Objective Stopper
51	Plug	21	Spring
5B	Rotator Cover, left	2.6MC-4SBr	Screw
2F+4 SBr	Screw	Z3	Screw
2P+6SBr	Screw	OB2X 6	Frame
6B	Connecting Plate	OB2X 5	Frame
2.3P+5 SBr	Screw	OB2X 4	Ring
2.6P+6 SBr	Screw	OB2X 3	Frame
7	Prism Pressing Plate	OB2X 2	Ring
11	Prism Side Plate	OB2X B	Lens
10	Prism Side Plate	OB2X 1	Lens Frame
ZP (L)	Prism	2.6MC-2.5SBr	Screw
X24C	Prism, Support	M23A	Objective Cover
3S5	Screw	2F+4 SBr	Screw
3S4	Screw	M41	1.5X Lens Frame
9B	Rotator, left	YL2	1.5X Lens
1.7F-5 SBr	Screw	M42	Retainer Ring
12	Rotator Metal	2.3K9SNi	Knock Pin
13	Spring Washer	19B	Rotator Seat
14	Metal Ring	3S-6 SBr	Screw
S12a	Screw	OB1X 6	Frame
1.7F-5 SBr	Screw	2.6MC-4SBr	Screw
Y10	Screw	OB1X 5	Ring
R	Link	OB1X 4	Ring
49	Eyeshield	OB1X 1	Lens Frame
1S	Eyepiece Tube, right	OB1X B	Lens
5A	Rotator Cover, right	OB1X 2	Spacer Ring
9A	Rotator, right	OB1X F	Lens
15	Prism Housing	OB1X3	Ring
47	Name Plate	M23B	Objective Cover
15A	Dust Cover	40	Piano Wire
2.6S-8SBr	Screw	YL3	Glass
8	Washer	M39	Glass Frame
ZP 22°30'	Prism	33	Nut
17B	Prism Seat, left	32	Spring Washer
19A	Rotator Seat	31	Knob
Z4	Washer	28	Pinion

PARTS LIST

Parts Number	Description	Parts Number	Description
29	Pinion Metal	5m/m S.W	Spring Washer
36	Arm	5C18	Screw
30	Metal Ring	58F	Rotary Switch
3C6	Screw	3P+8	Screw
27	Rack	58P	Print Circuit
4S-8	Screw	F	Fibre Washer
34	Dove Slide	58K	Print Circuit Cover
55	Cord Clamp	46C	Earth Rag
2F+4 SBr	Screw	3m/m S.W	Spring Washer
2.3K9 SNi	Knock Pin	3P+6 SG	Screw
3C6	Screw	3m/m N	Nut
Z2	Screw	3m/m S.W	Spring Washer
25	Pod	2.3MC-3SG	Screw
MA724	Bulb 20 W	60	Socket Cap
I-24	Lamp Case	43D	Nut
IL	Lens	43C	Spring
I-24A	Spacer Ring	E35664	Cord
IL	Lens	43B	Shaft
I-24B	Ring	3P + 8SG	Screw
HTV1000	Vinyl Tube	3m/m S.W	Spring Washer
GT	Tube	3m/m W	Washer
2T+4SP	Screw	MA725	Bulb 10 W
NP	Mark Plate	43A	Socket
37A	Base	3P+6SG	Screw
57	Piano Wire	3m/m S.W	Spring
35	Stage Glass	55SDR	Cord Stopper
MS-50	Screw	PC	Plastic Connector
3S6	Screw	38B	Bottom Plate
GB	Rail	37A-1	Rubber Shoes
48A	3-wire UL Cord	3B+10-2	Screw
BG	Cord Band	3P+6SG	Screw
3C6	Screw		
3m/m S.W	Spring Washer		
58T	Knob		
58B	Nut		
58E	Washer		
59	Indication Plate		
G	Grommet		
3P+8SP	Screw		
CS	Cord Stopper		