

Film-Tech

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Instructions

**FOR
EQUIPMENT
Type**

SUPER TROUPER

19601

49010

51001

1-79

Carbon Arc Follow Spotlight

STRONG ELECTRIC
87 CITY PARK AVE., TOLEDO, OHIO

NOTICE

This manual contains many part numbers which are obsolete. It is provided by the manufacturer to serve as a reference **only**.

No commitment to supply any or all of the parts illustrated in this manual is implied by the manufacturer or his suppliers and dealers.

STRONG INTERNATIONAL
Omaha, Nebraska

PREFACE

THE STRONG SUPER TROUPER is a high intensity reflector type direct current follow spot and flood complete with automatic carbon arc lamp, variable focus projection optical system, a six-color boomerang, a flood masking device, a dimming control, and a separate D. C. power supply.

THE CARBONS REQUIRED ⁰⁵²¹ are a National 7mm x 12" Suprex Positive carbon, (Catalog No. L 0503) with a 6mm x 9" Orotip Negative carbon, (Catalog No. L 0563), or a Lorraine 7mm x 12" Orlux 541C Positive with a 6mm x 9" Orlux 545-20C Negative.

THE CORRECT LINE VOLTAGE and frequency required for the power supply is engraved on the nameplate located on the power supply at the dial switch. The 115 volt model should be plugged directly into any three wire grounded convenience outlet which is fused for 30 amperes. The 220 volt model should be fused for 15 amperes.

THE ELECTRICAL CAPACITY of this arc is automatically limited to burn between 41 and 44 amperes at 37 D. C. volts.

THE CARBON DRIVE MOTOR is a constant speed A. C. motor and does not control the position or burning rate of the carbons. The burning rate and position of the carbons, is controlled solely by the setting of the dial switch on the power supply.

POWER TO THE ARC is turned "ON" and "OFF" by the toggle switch located on the support pan (operator's side), just beneath the lamphouse.

THE EIGHT POSITION ROTARY TAP SWITCH on the power supply provides the means for manual compensation for commercial variations in the alternating current incoming line voltage. Set the switch at a position to supply 37 volts across the burning arc as indicated when the pointer is in the green zone on the meter.

TURN THE ROTARY TAP SWITCH clockwise if the meter hand is to the left of the green zone; turn it counterclockwise if the meter hand is to the right of the green zone.

IF AT ANY TIME you have a suggestion, or desire aid in securing anticipated results, please feel free to write directly to THE STRONG ELECTRIC CORPORATION, 87 City Park Ave., Toledo, Ohio.

INSTALLATION AND SETTING UP SPOTLIGHT

THE FOLLOW SPOT is shipped in sections which must be assembled.

ASSEMBLE the four base legs to the square section of the center tube, using the 3/8-16 x 2-3/4 inch hex head cap screws and 3/8 inch split ring lockwashers to secure each leg. Insert a leveling foot and locknut in each of the four legs and level the base before proceeding with the installation.

THE CASTERS in each of the four legs are furnished only for portability. To provide a rigid mounting these should either be removed or the leveling feet adjusted until the weight has been shifted from the casters to the leveling feet. For a permanent installation, remove the casters and leveling feet and bolt the angle brackets, on the end of the legs, to the floor or platform.

THE INNER TUBE and support yoke has three holes to permit adjusting the height of the system. The three holes are on four inch centers and will allow an optical center height of approximately 53 inches, 57 inches and 61 inches above floor level to the optical center of the lamphouse and lens system. The leveling feet may be adjusted through a two inch range. Insert the height location pin through the hole in the outer tube and one of the holes in the inner tube and secure with cotter pins.

THE HORIZONTAL SWING and vertical tilt locking knobs are on the right hand (operating) side of the yoke assembly. Tighten both of these locking devices securely before attempting to place the lamphouse and lens system on the support yoke.

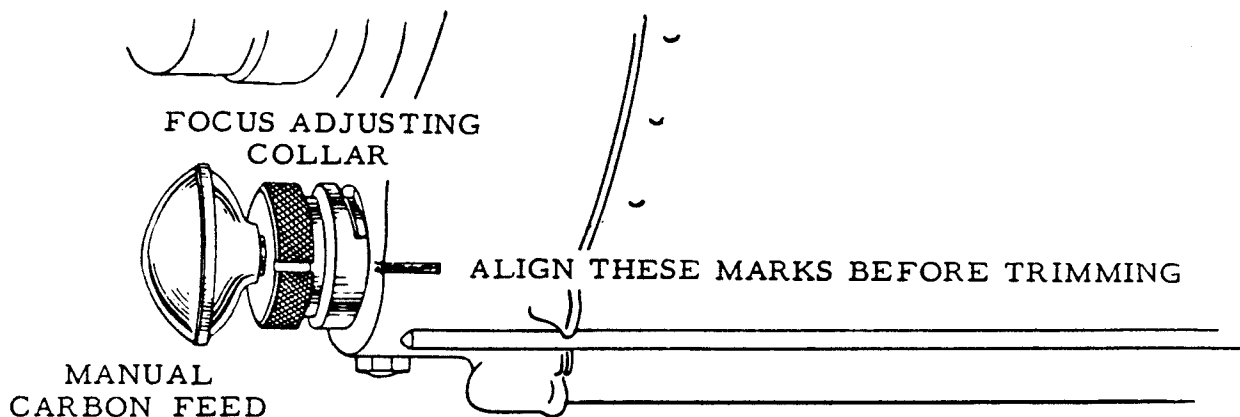
PLACE THE LAMPHOUSE and lens system on the yoke assembly, with the lens control knob to the right hand (operator's side), the same as the locking knobs on the yoke. Line up the four mounting holes in the bottom of the lamphouse and optical system support pan with the four mating holes in the support yoke and secure with the four 5/16-18 wing screws.

ATTACH THE LAMPHOUSE CABLE connector to the receptacle on the power supply. Secure the green ground lead to the ground terminal on the outside of the power supply housing.

PLUG THE A.C. LEAD CORD on the 115 V.A.C. model power supply into a three wire grounded convenience outlet which is fused for 30 amperes. The 220V. AC model can be plugged into an outlet that has been fused for 15 amperes.

OPERATION OF ARC LAMP AND POWER SUPPLY

TO TRIM THE LAMP, that is to insert the carbons and make all preliminary adjustments, first rotate the knurled focusing collar to its mid-position as indicated when the white guide line on the collar faces directly towards you, as shown below.



TURNING THE FOCUS ADJUSTING COLLAR is the manual means of moving the complete burner mechanism forward or backward as may later be necessary to bring the position of the positive arc crater to the exact focal point of the reflector. This operation is referred to as focusing the arc.

MAKE SURE THE POWER SWITCH, located on the support pan just beneath the lamphouse, is turned to the "OFF" position.

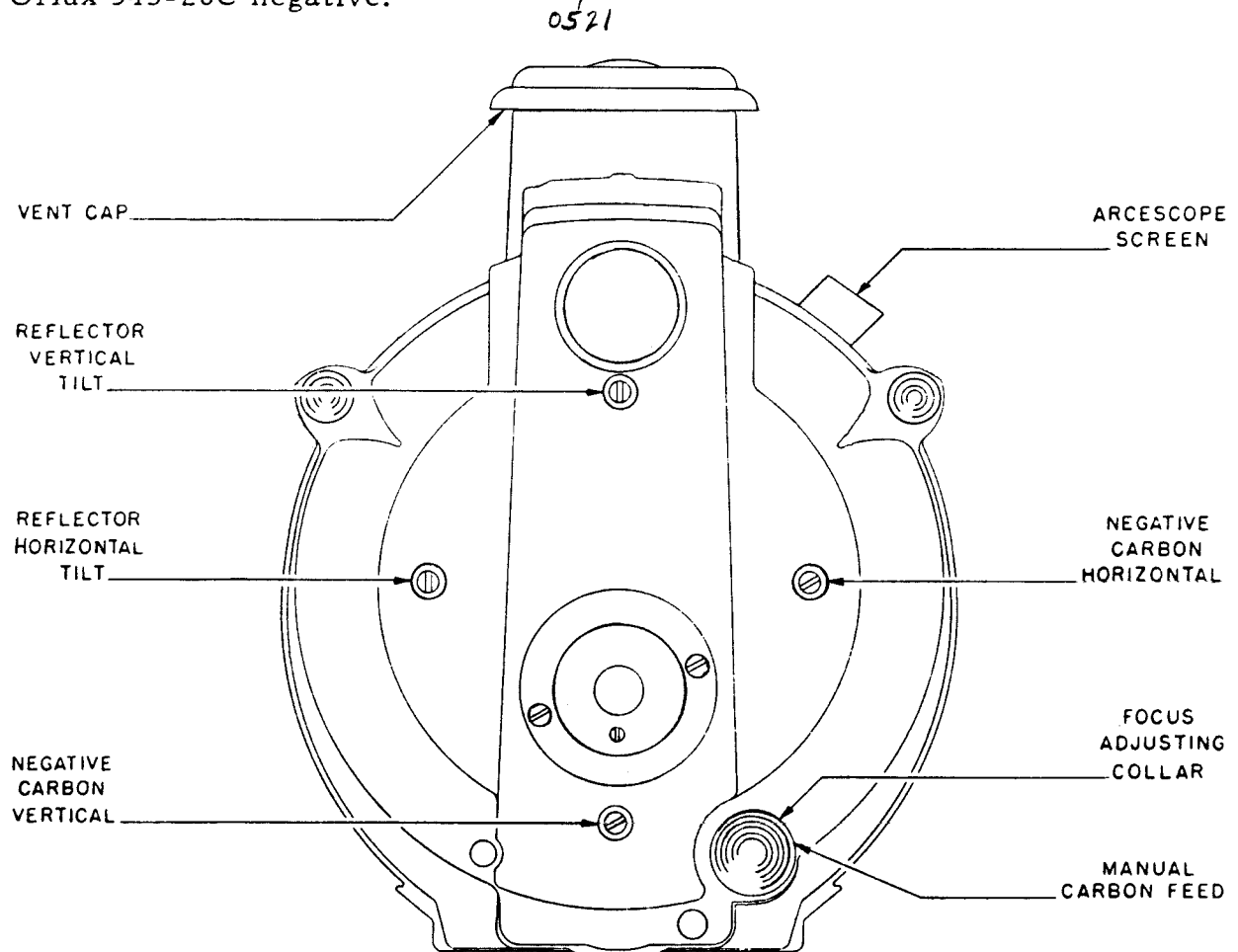
SEPARATE THE CARBON CARRIAGES to the full limit of their travel by gripping the carbon carriage handles and pressing down on the drive wires. When these drive wires are depressed, the carbon carriages are disengaged from the lead screw so that the carriages are free to slide forward or backward. Be sure that each drive wire is properly seated in a thread of the feed screw before inserting the carbons.

INSERT A POSITIVE 7mm x 12" LONG CARBON in the positive (front) carbon holder, setting the carbon back against the stop pin in the carbon clamp and with the pointed end of the carbon resting in the positive carbon guide.

THE NEGATIVE (SMALL) CARBON, 6mm x 9", goes in the negative (rear) carbon jaw and back as far as the stop pin in the carbon clamp. Raise the negative carbon release lever when inserting the carbon and then depress the lever firmly to secure the carbon in place.

INSERTING BOTH FULL LENGTH CARBONS to their respective stops, will automatically position the carbons 1/4" apart.

TWO PAIR OF CARBONS, for preliminary testing, are included with each lamp. Additional carbons should be purchased from any local Theatre Equipment Supply dealer. These carbons are identified as National Suprex 7mm x 12" positive, (Catalog No. L 0503) and 6mm x 9" Orotip "C" negative, (Catalog No. L 0563) or Lorraine 7mm x 12" Orlux 541C positive and 6mm x 9" Orlux 545-20C negative.



ALIGN THE NEGATIVE (back carbon) vertically and horizontally to bring both carbons in line, by means of the vertical and horizontal adjusting shafts shown on the illustration above.

UNTIL THE PROJECTIONIST is familiar with the lamp so that he may visually judge the 1/4" arc gap length, it is convenient to measure the 1/4" arc gap accurately by using the diameter of a negative carbon as a gauge since the diameter of a 6mm negative carbon is just 1/4".

TURN THE POWER CONTROL SWITCH to the "ON" position. This switch is located on the support pan just beneath the lamphouse.

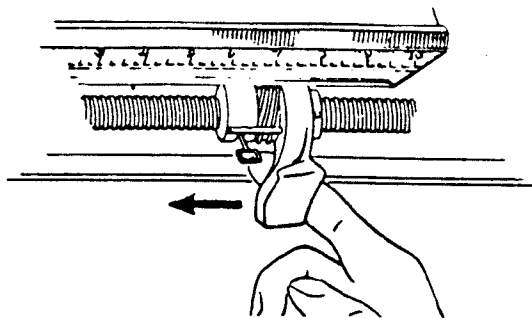
CAUTION: MAKE SURE BLOWER IS OPERATING BEFORE STRIKING ARC. The blower must operate to cool the color gels.

ADJUST THE D. C. OUTPUT VOLTAGE of the rectifier by turning the eight point rotary switch, right or left to bring the pointer on the meter directly over the green zone. This adjustment provides a manual means of correcting for any commercial variations in A. C. line voltage.

TO "STRIKE THE ARC" is a projectionist's term which refers to lighting the lamp according to the following instructions.

PLACE THE INDEX FINGER of the right hand on the positive carriage handle as shown in the next illustration.

THE TIPS OF THE CARBONS must then be brought into momentary contact to complete the D. C. electric circuit. Then the carbon tips are slowly separated 1/4" to establish the burning of the arc. This operation is performed by pressing the positive carriage handle forward and letting the handle slide back to its original position.



SOME EXPERIENCE IS NECESSARY to acquire the knack of striking the arc correctly. When the carbon tips are brought together they must not be held in actual contact for more than a fraction of a second before they are separated, otherwise the rush of current during the short circuit interval will blow the core material out of the positive carbon.

THIS CORE MATERIAL may then deposit on the front surface of the reflector and may cause the glass reflector to crack.

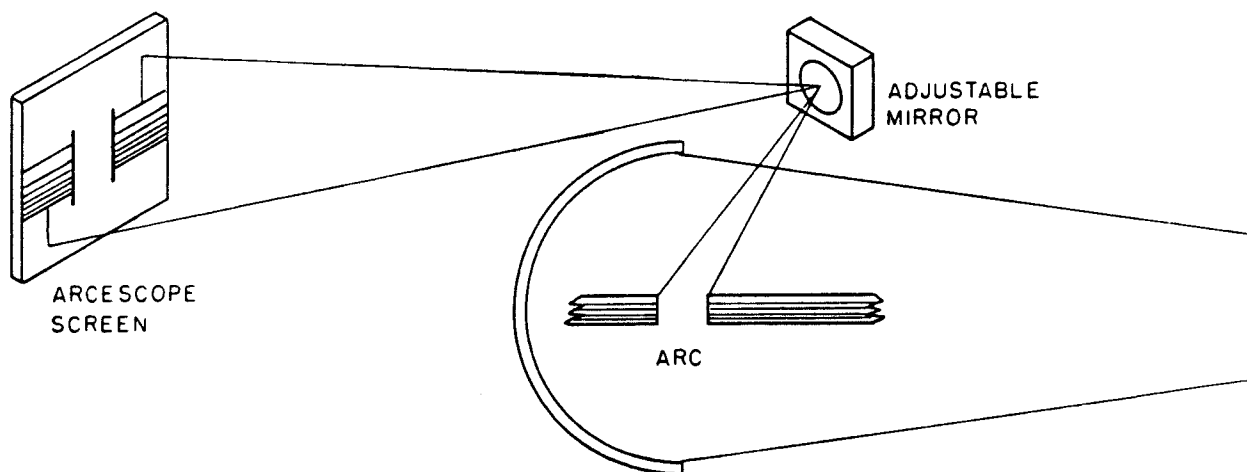
IN SEPARATING THE CARBON TIPS the first 1/16" should be done very quickly, then the remainder of the 1/4" distance more slowly. It should take about as long as it takes to say "sixteen millimeter" to complete the entire operation, otherwise the arc may go out before it has time to heat the carbons.

AFTER THE ARC HAS BURNED ABOUT ONE MINUTE and its burning has settled down, the meter should be observed to see that the pointer is still in the green zone. If the pointer has dropped below the green zone as a result of a drop in A. C. line voltage, the rotary switch may have to be turned up a point or two to correct for this A. C. line voltage drop.

FOCUS THE ARC by means of the focus adjusting collar to bring the image of the incandescent carbon tips to the witness lines on the arc imager card on the rear of the lamphouse.

THE INTENSITY AND COLOR of the projected light depends to a large extent on the positioning of the arc in relation to the lamphouse reflector.

PROJECT THE LIGHT TO THE STAGE and turn the focus adjusting control to attain the brightest, clear white light. Align the reflector by means of the vertical and horizontal reflector adjustment shafts on the back of the lamp. The correct adjustment will be indicated when there are no dark sides at the projected spot.



ADJUSTMENTS OF THE ARCESCOPE should be made only after the arc and reflector adjustments have resulted in a clear brilliant projected spot. Then the adjustable mirror should be tilted to bring the image of the burning carbon tips to the black witness lines on the arcoscope screen.

EXACT ARC FOCUS and proper arc gap length are assured after the arcescope has once been set by simply maintaining the images of the burning carbon tips at these arcescope lines.

IF THE ARC GAP becomes either wider or narrower than the distance between the witness lines on the arc imager screen, it indicates that the meter on the power supply should be checked to see if the rotary switch needs to be changed to compensate for a change in line voltage.

IF A SHORT GAP PERSISTS over a period of time, it may be necessary to advance the dial switch a step or two and operate with the hand of the meter slightly above the green zone.

IF A LONG GAP PERSISTS over a period of time, it may be necessary to retard the dial switch a step or two and operate with the hand of the meter slightly below the green zone.

THE CARBON DRIVE MOTOR is a constant speed A. C. motor and does not control the position or burning rate of the carbons. A bind in the carbon drive system will either stop the motor or slip the clutch on the lead screw and cause the arc gap to become greater than normal. This condition cannot be overcome by changing the setting of the rotary switch on the power supply, the cause of the bind must be determined and cleared before the setting of the switch will become effective.

ONCE THE ROTARY SWITCH has been set to maintain the proper arc gap and position on the imager screen, the only thing that would effect the burning of the arc, may be rapid or extreme variations in the A. C. supply voltage to the power supply or possible defective carbons.

DUE TO VARIATIONS between carbon trims, a slight adjustment of the Focus Adjusting Collar may have to be made during the burning of a complete trim of carbons, to focus the arc in relation to the reflector. This condition will be visually apparent in either the intensity or color of the projected spot and also in the position of the carbons on the imager screen.

IF THE CARBONS are hard to strike and it is difficult to maintain the arc, except with a narrow gap, then check the position of the pointer on the green zone meter. If this condition cannot be corrected by changing the rotary switch on the power supply, then test the silicon rectifier in the power supply for a defective diode.

OPERATION OF OPTICAL SYSTEM

THE IRIS CONTROL is the front lever which projects through the top of the optical system housing. When this lever is to the left, looking at the spotlamp from the rear, the largest aperture is obtained. Smaller apertures are obtained as the lever is moved to the right.

THE SPOT SIZE CONTROL handle is located on the right side of the optical system just above the base pan. A variation of spot sizes can be obtained by moving the spot size control from one extreme to the other.

THE MAXIMUM FLOOD SPOT is obtained with the iris control lever to the left for the large aperture and with the spot size control handle moved as far as possible toward the rear.

SMALLER SIZED SPOTS are projected as the spot size control handle is moved forward. Most of the spot sizes needed will be produced with the iris in its maximum open position.

FOR A "HEAD SPOT" or any spot size smaller than can be obtained with the spot size control handle in its extreme forward position, shift the iris control lever to the right for a smaller aperture. The iris control lever should always be returned to its extreme left position before the spot size control handle is again moved to obtain larger spots.

THE MASKING SHUTTER LEVER is the middle lever projecting through the top of the optical system housing. The masking shutter blades are operated by this lever to shape the projected spot to a rectangle or strip spot.

THE DISENGAGED POSITION of the masking shutter lever is to the extreme right and varying degrees of masking to complete cutoff are obtained by moving the lever to the left.

THE DIMMING CONTROL & DOWSER is the rear lever projecting through the top of the optical system housing. This lever controls the intensity of light from complete fadeout when the lever is to the left, to normal intensity when the lever is to the right.

THE SPOT FOCUSING CONTROL is located on the operator's side of the optical system base pan (forward end) and is used to adjust the optical system for the length of throw. When making an adjustment the iris control handle should be to the left and the spot size control handle moved about 5" from the extreme front position, then rotate the spot focusing control until the sharpest edge is obtained on the projected spot.

HANDLING THE SPOTLIGHT

GENERALLY THE BEST POSITION for operation is to stand at the center of the spotlamp on the right hand side, although angle of tilt and size of porthole may alter the position for most convenient and effortless operation.

ONE HAND SHOULD BE KEPT on the spot size control handle as the spot can thus be both directed and changed in size instantly.

THE EASE with which the spot size control handle can be operated is controlled by the Friction Brake Screw on the large lens carriage. The Friction Brake Screw Adjustment is readily accessible by removing the color filters from the boomerang and moving the large lens carriage back to where the Friction Brake Screw Adjustment is just below the Boomerang Housing. Then loosen the locknut and turn the adjustment screw clockwise to increase friction and counter-clockwise to decrease friction. Be sure to tighten the locknut after adjustment is made.

OPERATION OF COLOR BOOMERANG

THE COLOR BOOMERANG is equipped with 6 color filters and an ultra-violet filter. The ultra-violet filter arm can be used for an extra color slide. Order part number 51864 to replace U. V. holder part 51926.

ADDITIONAL FILTER HOLDERS are available from the factory at a nominal cost. Order by part numbers 51376 and 51928. One of each is required to make up one assembly.

TO OPERATE INDIVIDUAL COLOR FILTERS, raise the desired lever pull to the uppermost position. A rocker catch located in the color disc housing holds the filter in position.

TO RELEASE A COLOR, simply depress the filter release button or engage another color filter, thus releasing the previous color automatically.

TO REMOVE A FILTER HOLDER for inserting a new filter, open the hinged top of the color disc housing and lift out the desired filter holder.

GELATINE FILTERS cut to 9" diameter are required and are secured in the Filter Holders by means of the round head paper fasteners.

CAUTION: WHEN REPLACING COLOR FILTERS in the boomerang, the less dense colors should be placed in the holders towards the rear (towards arc) of the spotlight, and those of greater density should be placed in holders nearer the front (away from arc) of the spotlight.

MAINTENANCE

KEEP THE REFLECTOR CLEAN. Wipe the reflector with a dry cloth each time carbons are changed.

ANY ACCUMULATION OF WHITE SCUM on the glass reflector which cannot be removed with the cloth, should be cleaned from the surface by using a small pad of steel wool. The glass reflector can be polished vigorously with the steel wool without harming the surface.

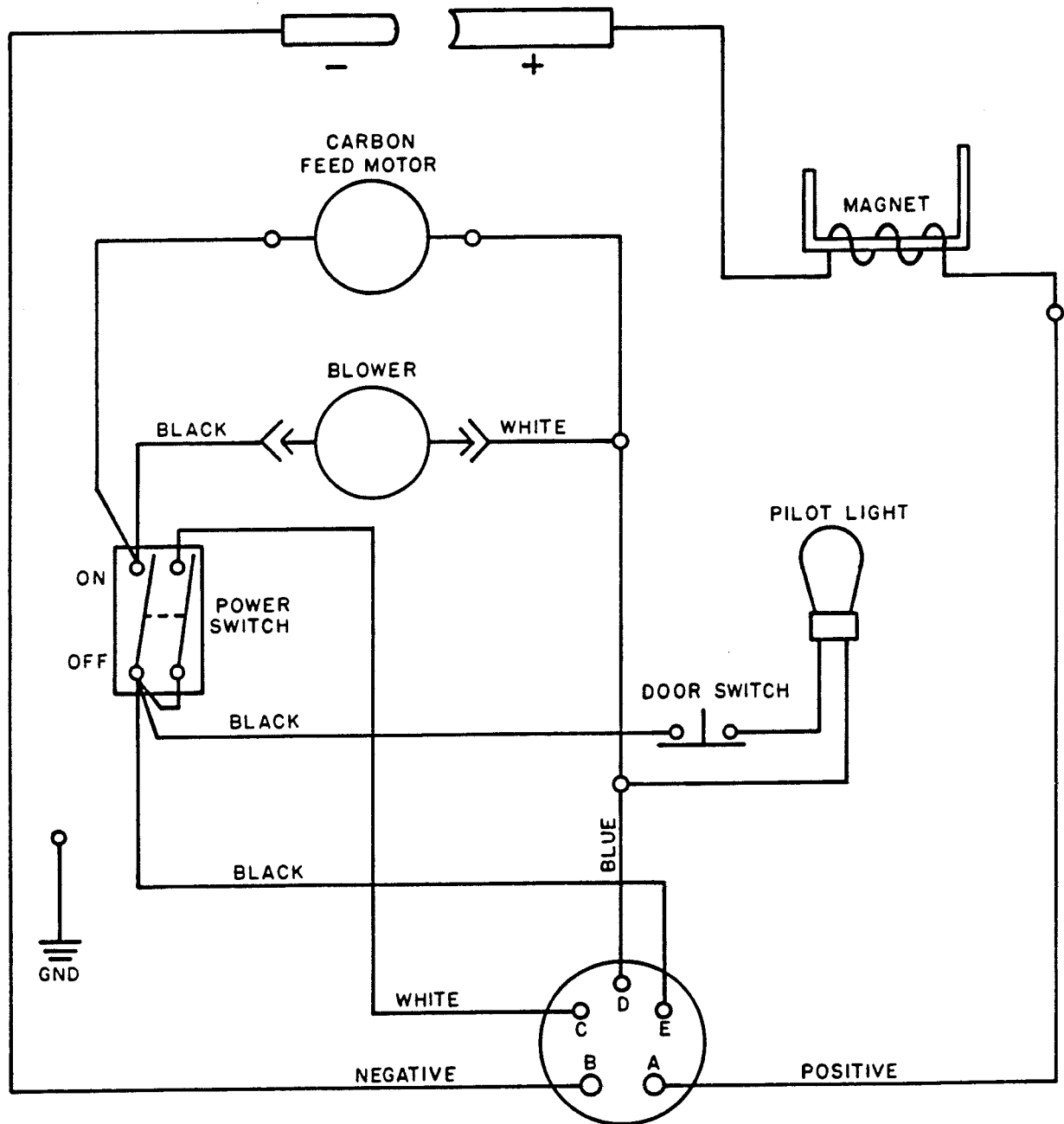
CARBON AND COPPER PARTICLES which may occasionally adhere to the glass reflector surface may be scraped off with a flexible razor blade so that these specks will not hinder polishing.

TO CLEAN THE SMALL LENS, remove the aperture cover plate, then use a good grade of alcohol and a piece of lens tissue (facial tissue can be used as a substitute) and gently wipe both sides of the lens until a clean surface is obtained.

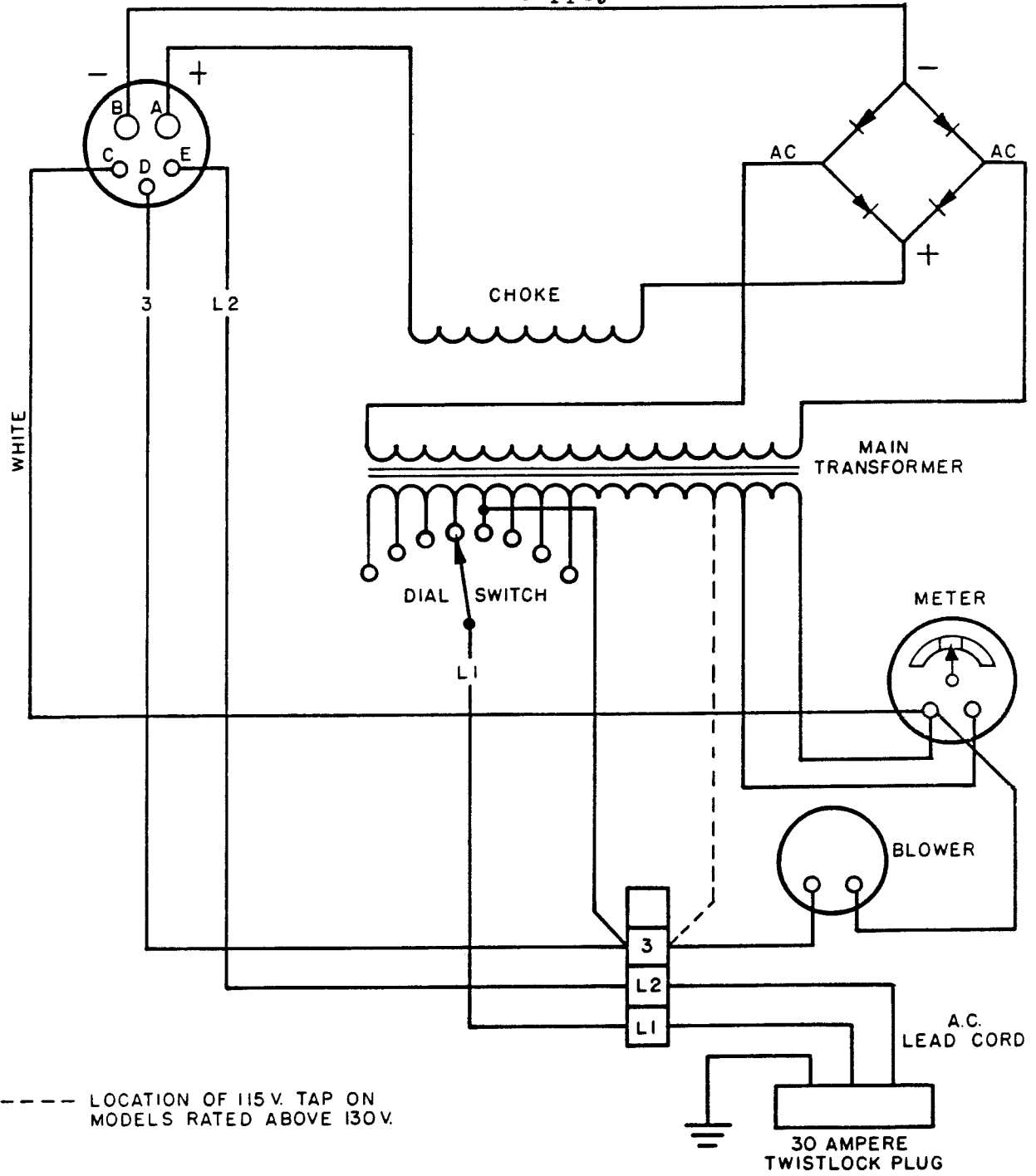
THE BACK SURFACE OF THE LARGE LENS can readily be cleaned by opening the hinged top cover of the color disc housing, removing a few color disc holders and sliding the large lens carriage to the rear position.

TO CLEAN THE FRONT SURFACE OF THE LARGE LENS, slide the lens carriage to the full forward position. The front surface is now readily accessible through the front of the housing.

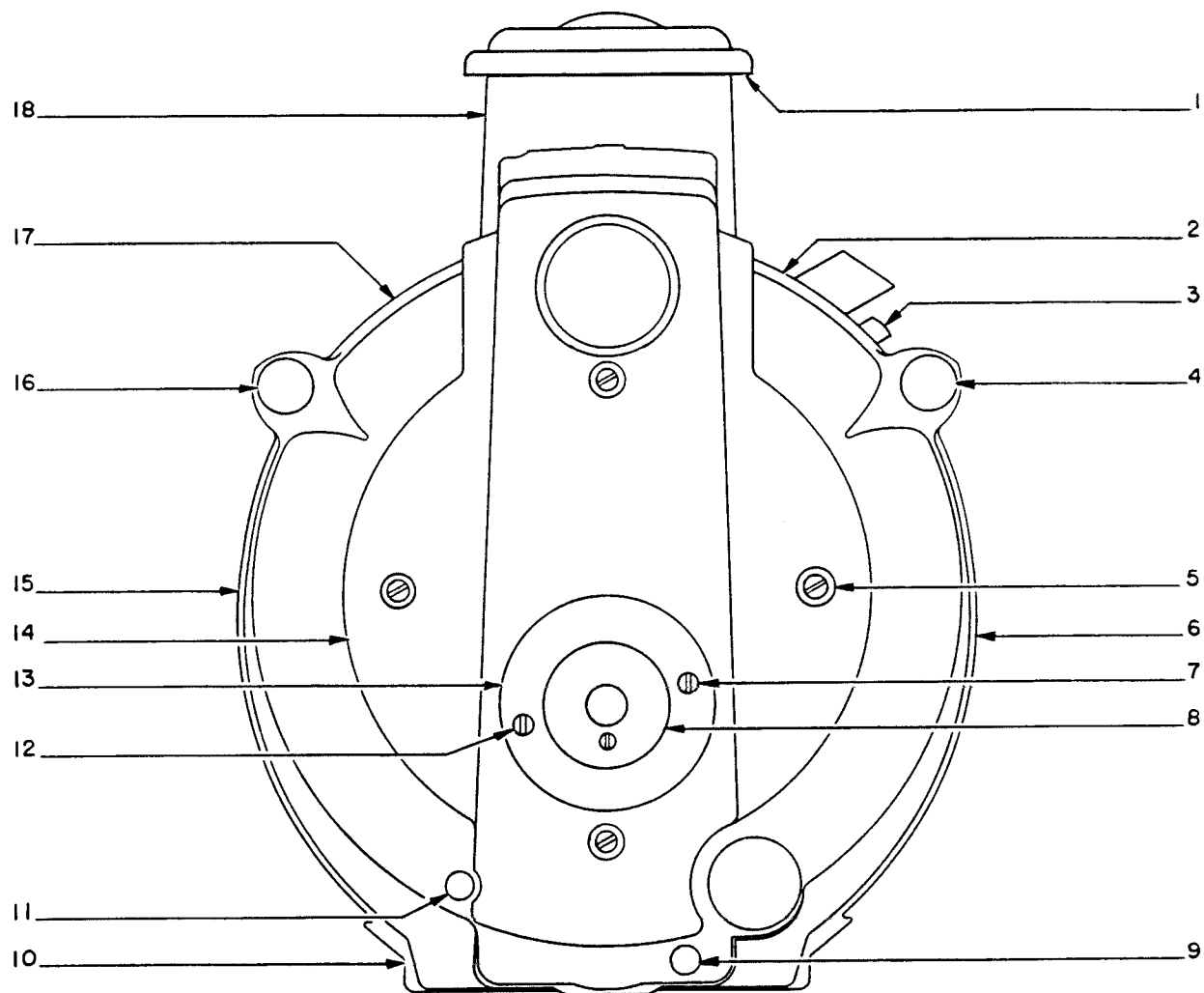
Lamphouse
WIRING DIAGRAM



WIRING DIAGRAM
Power Supply



----- LOCATION OF 115 V. TAP ON
MODELS RATED ABOVE 130V.



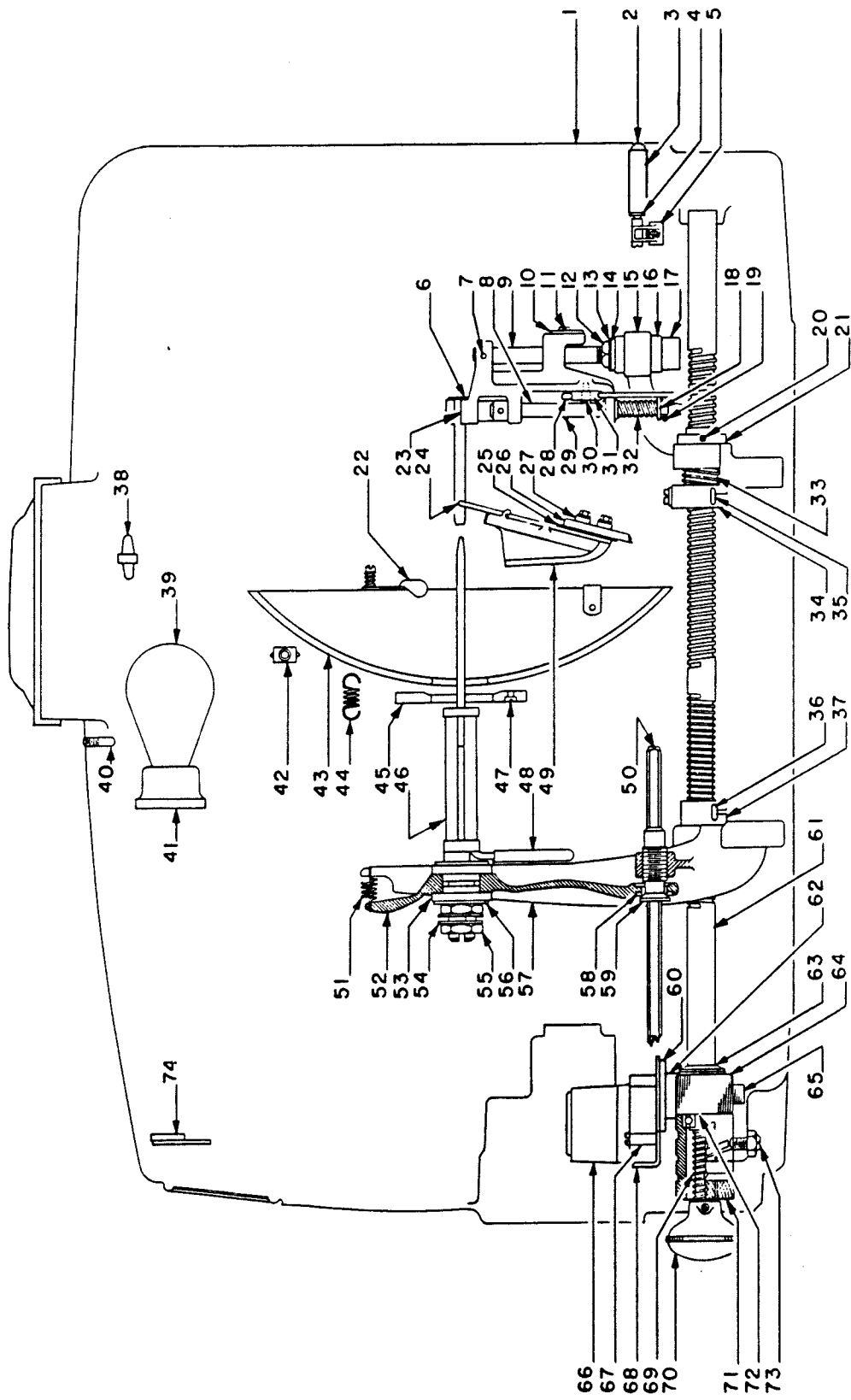
PARTS LIST

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	19330	Vent Cap
-	891-A	L'Washer #6 Shakeproof
-	1312	Screw #8-32 x 1/2" Pan Hd.
2	19614	Top Side Panel, Right Hand
-	1307	Screw #10-32 x 3/8 Pan Hd.
-	800	Nut #10-32 Hex
-	19003-B	Side Trim Strip
-	19005-A	Trim Bolt
3	19026	Door Stop
-	800	Nut #10-32 Hex
4	19605	Hinge Rod
-	1747	Bolt, Hinge Rod 3/8-16 x 3" Hex Hd.
-	19332	Lifting Strap
-	19637	Cap
-	19638	Washer
5	19337	Adjusting Rod
-	90234	Retaining Ring
-	963-A	Washer 17/32 O. D. x .316 I. D.
6	19852	Door Assy. (Right Hand)
-	19042	Window Frame
-	11041	Window Glass
-	12031	Retaining Clip, Glass
-	505	Screw 1/4-20 x 3/8" Fil. Hd.
-	14577	Friction Washer, Door
7	1758	Screw #10-32 x 4-1/2" Rd. Hd.
8	19326	Name Plate
-	253	Screw #8-32 x 3/16" Fil. Hd.
9	19604	Guide Rod
-	1080	Set Screw (Special)
10	19602	Base Pan
-	277	Screw #8-32 x 1/2" Oval Hd.
-	795	Nut #8-32 Hex
-	891-A	L'Washer #8 Shakeproof
11	19603	Slide Rod
-	1080	Set Screw (Special)
-	19333	Stop Collar, Pos. Carriage
-	774	Set Screw 1/4-20 x 1/4" Hdless Cup Pt.
12	1757	Screw #10-32 x 3-1/2" Rd. Hd.
13	19639	Cover Plate
14	19517	Back Casting

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
15	19334	Cover Panel, Left
-	1304	Screw #8-32 x 5/16" Pan Hd.
16	19605	Hinge Rod
-	1747	Bolt, Hinge Rod 3/8-16 x 3" Hex Hd.
-	19332	Lifting Strap
-	19637	Cap
-	19638	Washer
17	19335	Top Side Panel, Left Hand
-	1304	Screw #8-32 x 5/16" Pan Hd.
-	19003-B	Trim Strip
-	19005-A	Trim Bolt
18	19601	Top Casting
-	488	Screw 1/4-20 x 3/8" Flat Hd.
-	492	Screw 1/4-20 x 3/4" Flat Hd.

Parts Not Listed or Illustrated

19612	Ash Pan
19611	Support Rods, Ash Pan
49871	Cable Assy., Lamphouse to Power Supply
49285	Connector, Cable Assy.
19338	Name Plate, Reflector Horizontal Adj.
19339	Name Plate, Reflector Vertical Adj.
19340	Name Plate, Negative Horizontal Adj.
19341	Name Plate, Negative Vertical Adj.



PARTS LIST

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	19327	Front Casting
2	907	Acorn Nut #10-24
3	19624	Handle, Door
4	14030	Roller, Door Latch
5	19037-A	Door Latch
6	1513-10	Pin Carbon Stop
7	14013	Set Screw
8	19976	Positive Jaw Clamp
9	19074	Positive Jaw Post
10	21414	Wire Clamp
11	255	Screw #8-32 x 5/16" Fil. Hd.
12	24402	Nut, Positive Post
13	854	Washer 3/8" Flat
14	890	L'Washer 3/8" Internal Shakeproof
15	53102	Positive Carriage
-	513	Screw, Pos. Carriage Stop 1/4-20 x 1-1/4 Hex Hd.
-	805A	Nut 1/4-20 Hex
-	17235	Wire Clamp, Flat
-	14119-A	Wire Clamp, "L" Shape
-	179	Screw #6-32 x 1/4" Fil. Hd.
-	892	L'Washer #6 Shakeproof
16	24403	Bushing, Insulating
17	21405	Insulator
-	24410	Spring
-	24405	Nut
-	19082	Washer
18	963A	Washer 17/32 O. D. x .316 I. D.
19	919	Cotter Pin 1/16 x 1/2"
20	710	Set Screw #8-32 x 1/8" Hdless Cup Pt.
21	14416	Nut
22	19915	Reflector Frame Assy.
-	17979	Release Trigger Assy.
-	10306	Reflector Spring
-	10317	Sleeving
23	19073	Positive Jaw Casting
24	19974	Positive Steadyrest
25	5038	Insulation
26	19063	Steadyrest Bracket
-	773	Set Screw 1/4-20 x 3/8" Hdless Cup Pt.
27	1086-C	Bushing, Lava
-	835	Washer, Brass 1/4 x 9/16

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
-	876	L'Washer 1/4" Split Ring
-	693	Screw 1/4-20 x 7/8" Hex Hd.
-	48126	Insulating Washer 9/16" O. D. x 21/64 I. D.
-	48126A	Insulating Washer 9/16" O. D. x 25/64 I. D.
28	19068	Positive Jaw Roller
29	19070	Screw, Pos. Jaw
30	17223	Screw, Pos. Jaw Cam
31	19977	Positive Jaw Cam
32	5072	Spring
33	14417	Spring, Arc Striker
34	19016	Bushing, Arc Striker
35	14409A	Positive Drive Wire
-	543	Screw 1/4-20 x 3/8" Bd. Hd.
36	14203A	Negative Drive Wire
-	507	Screw 1/4-20 x 1/2" Fil. Hd.
-	835	Washer, Flat 1/4"
37	14209A	Negative Carriage Bushing
-	1080	Set Screw 1/4-28 x 5/16 Dog Pt.
38	1972	Arc Imager Assy.
-	179	Screw #6-32 x 1/4" Fil. Hd.
-	793	Nut #6-32 Hex
-	892	L'Washer #6 Shakeproof
39	24012	Pilot Light Bulb (115V.)
-	53162	Pilot Light Bulb (230V.)
40	19565	Reflector Steadying Pin
-	1520	Set Screw 3/8-16 x 1/4" Allen Hd.
41	10066	Pilot Light Receptacle
-	896	Fibre Washer 5/8" O. D. x 3/16" I. D.
-	891A	L'Washer #6 Shakeproof
-	258	Screw #8-32 x 1/2" Fil. Hd.
-	795	Nut #8-32 Hex
-	19041	Bracket, Pilot Light
-	505	Screw 1/4-20 x 3/8" Fil. Hd.
42	10036	Pilot Light Switch & Cord
-	14569	Lock Nut
-	19533	Cover Plate, Switch
-	1382	Screw #6-32 x 3/16" Bd. Hd.
43	4077	Reflector, Glass
-	4228	Reflector, Metal
44	10309	Spring
45	10303	Insulator, Reflector Carriage
-	19531	Reflector Carriage
-	10206	Adjusting Screw
-	14312	Fibre Washer, 1" O. D. x 11/16 I. D.
-	17132-A	Magnet
-	510	Screw 1/4-20 x 7/8" Fil. Hd.

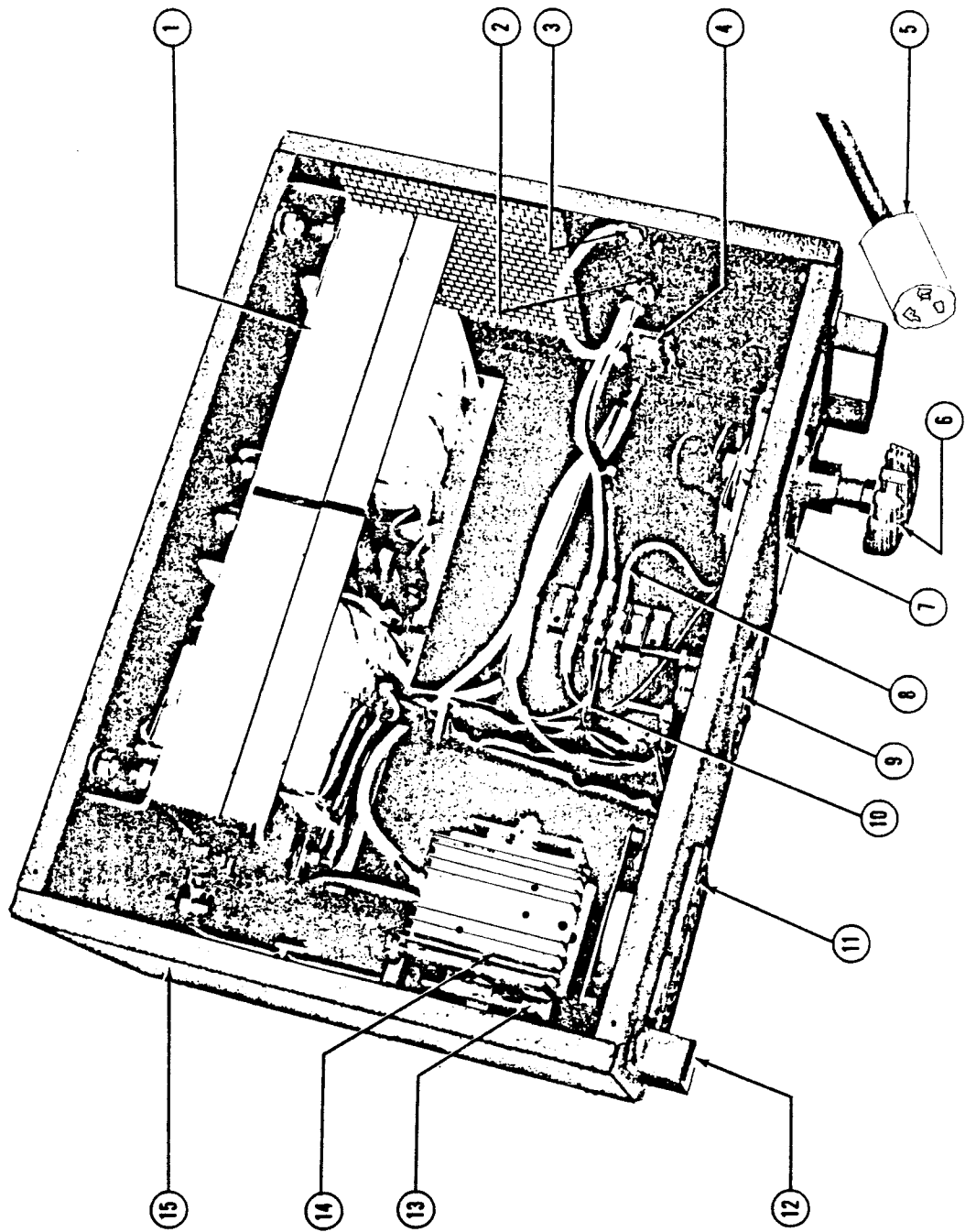
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
-	1195	Wire Clamp, Double
-	254	Screw #8-32 x 1/4" Fil. Hd.
-	19868	Lead Wire, Pos. Jaw & Magnet
46	10972-X	Negative Jaw with Insulators & Nuts
-	10972	Negative Jaw
47	258	Screw #8-32 x 1/2" Fil. Hd.
48	10230	Handle, Neg. Carbon Eccentric
49	19062	Ash Receiver
50	19337	Adjusting Rod, Reflector & Neg. Carbon
-	90234	Retaining Ring
-	963A	Washer 17/32 O. D. x .316 I. D.
51	10309	Spring
52	14202-A	Negative Spider
53	10203	Insulator, Neg.
54	10222	Washer, Negative Jaw
55	10220	Nut, Clamp
56	10204	Washer, Negative Jaw
57	19044	Negative Carriage
58	14312	Fibre Washer 1" O. D. x 11/16 I. D.
59	10206	Adjusting Screw
60	19344	Mounting Flange
-	1548	Screw #6-32 x 3/8" Socket Hd.
-	1553	Washer #6 Flat
61	53999	Lead Screw Assy.
-	53998	Lead Screw and Stud
62	90385	Bearing, Drive Shaft
63	10074	"D" Washer, Lead Screw (1-1/4" O. D.)
64	14867-A	Lead Screw Gear
65	19345	Drive Shaft
-	710	Set Screw #8-32 x 1/8" Hdless
-	19347	Retaining Ring
66	19863	Drive Motor (115V. 60 Hz)
-	19870	Drive Motor (115V. 50 Hz)
67	19642	Motor Spacer Bushing
-	186	Screw #6-32 x 7/8 Fil. Hd.
-	793	Nut #6-32 Hex
-	892	L'Washer #6 Shakeproof
68	19641	Mounting Bracket, Motor
-	385	Screw #10-24 x 1/2" Fil. Hd.
-	797	Nut #10-24
-	1344	L'Washer #10 Shakeproof
69	10080	Spring
70	14989A	Knob
-	713	Set Screw #8-32 x 5/16 Hdless Cup Pt.
71	14991	Focus Adjusting Screw Assy.
72	10075	"D" Washer 7/8" O. D.

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
73	14068	Set Screw
-	809	Nut 3/8-16 Hex
74	48184	Frame, Image Card
-	1305	Screw #6-32 x 1/4" Bd. Hd.
-	19640 19643	Image Card

NOTE

Order #19978 for complete positive jaw assembly. Consists of items #6 through #19, #23 and #28 through #32.

POWER SUPPLY



POWER SUPPLY
PARTS LIST

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	49010-BA	Transformer Banked Assy. (order replacement by type and serial number marked on nameplate of the power supply)
	1315	Screw 5/16-18 x 5/8" Hex Hd.
	807	Nut 5/16-18 Hex
	853	Washer 5/16" Flat
	877	L'Washer 5/16 Split Ring
2	61126	Bushing, Strain Relief
3	1487	Ground Screw 1/4-20 x 7/8 Hex Hd.
	889	L'Washer 1/4" Shakeproof
	852	Washer 1/4 Flat
	881	L'Washer 1/4" Split Ring
	806A	Nut 1/4-20 Hex
4	49868	Receptacle & Leads
	49284	Receptacle
	1473	Screw #6-32 x 1/2" Pan Hd.
5	61996	A. C. Lead & Plug Assy. #10/3 AWG (115 V. AC)
	61102	Plug, 30 Amp, Twistlock (115 V. AC)
	61983	A. C. Lead & Plug #10/3 AWG (230V. AC)
	61115	Plug 30 Amp. (230V. AC)
6	61971	Dial Switch & Lead Assy.
	543	Screw 1/4-20 x 3/8 Oval Bd. Hd.
	15008	Bearing
	807	Nut 5/16-18 Hex Hd.
	15035	Spring, Shaft
	61967	Contact Fingers & Lead
	15489	Switch Body & Inserts
	61122	Spacer, Knob & Shaft
	61973	Knob & Shaft
7	49200	Name Plate
	1639-2	Pop Rivet
8	49872	Tap Lead #3
9	33002	Meter
	184	Screw #6-32 x 5/8" Fil. Hd.
10	88113	Terminal Block
	49386	Insulation Strip
	1312	Screw #8-32 x 1/2" Pan Hd.
11	45227	Blower (50/60 Hz)
	83131	Grill
	1763	Screw #6-32 x 1" Pan Hd.

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
	61127	Mounting Clips
	49869	Lead Cord & Cap
12	88208	Handle
	542	Screw 1/4-20 x 3/4" Oval Bd. Hd.
	876	L'Washer 3/16" Split Ring
	805	Nut 1/4-20 Hex
13	61107	Mounting Bracket, Bridge Rectifier
	1304	Screw #8-32 x 3/16 Pan Hd.
14	61101	Silicon Bridge Rectifier
	687	Screw 1/4-20 x 1/2" Hex Hd.
	805	Nut 1/4-20 Hex
15	49873	Case
	49383	Cover
	1311	Screw #8-32 x 3/8" Pan Hd.
	49384	Base Plate
	49100	Plate, Supply Line
	1639-2	Rivet 1/8" Dia.

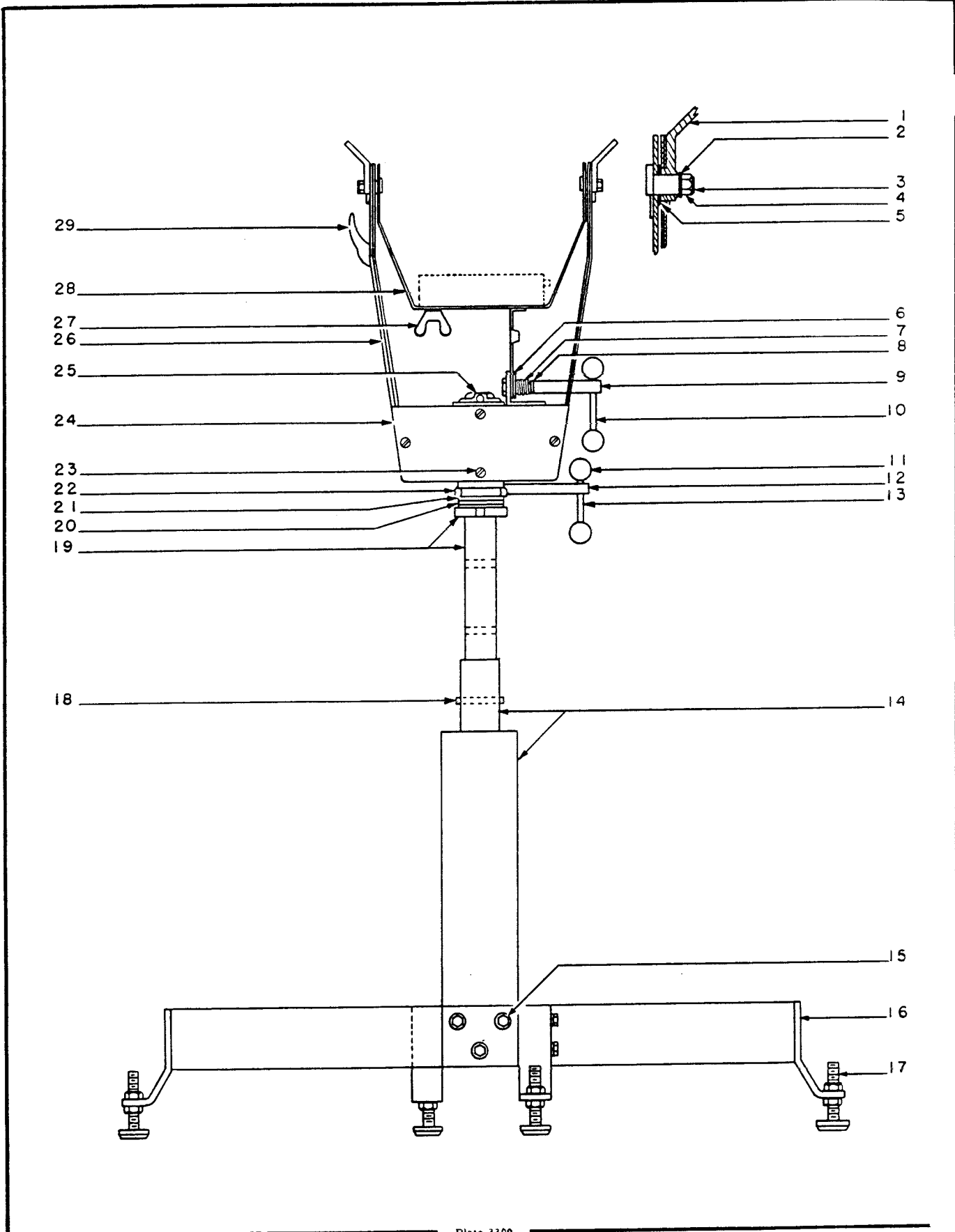
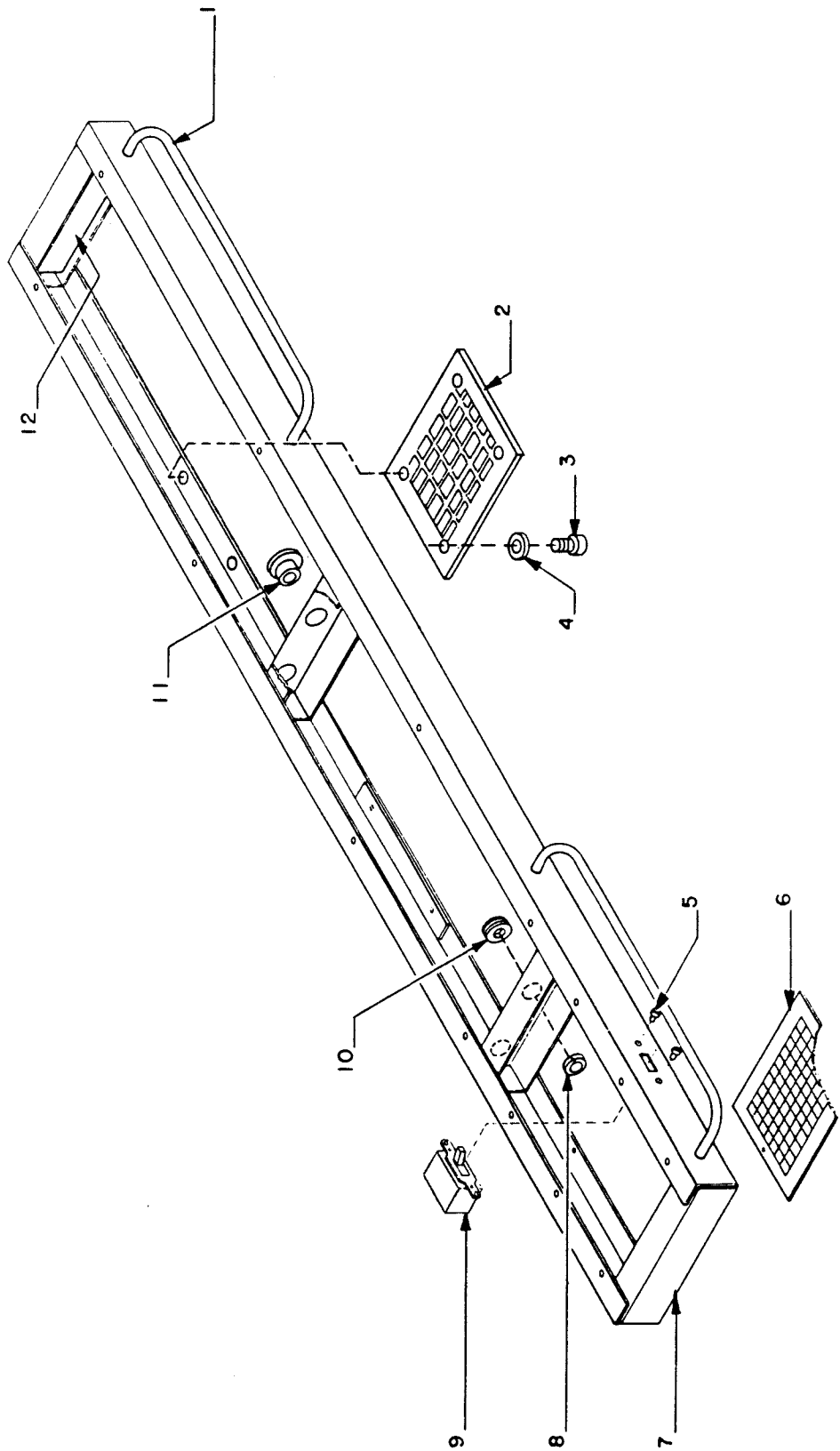


Plate 3309

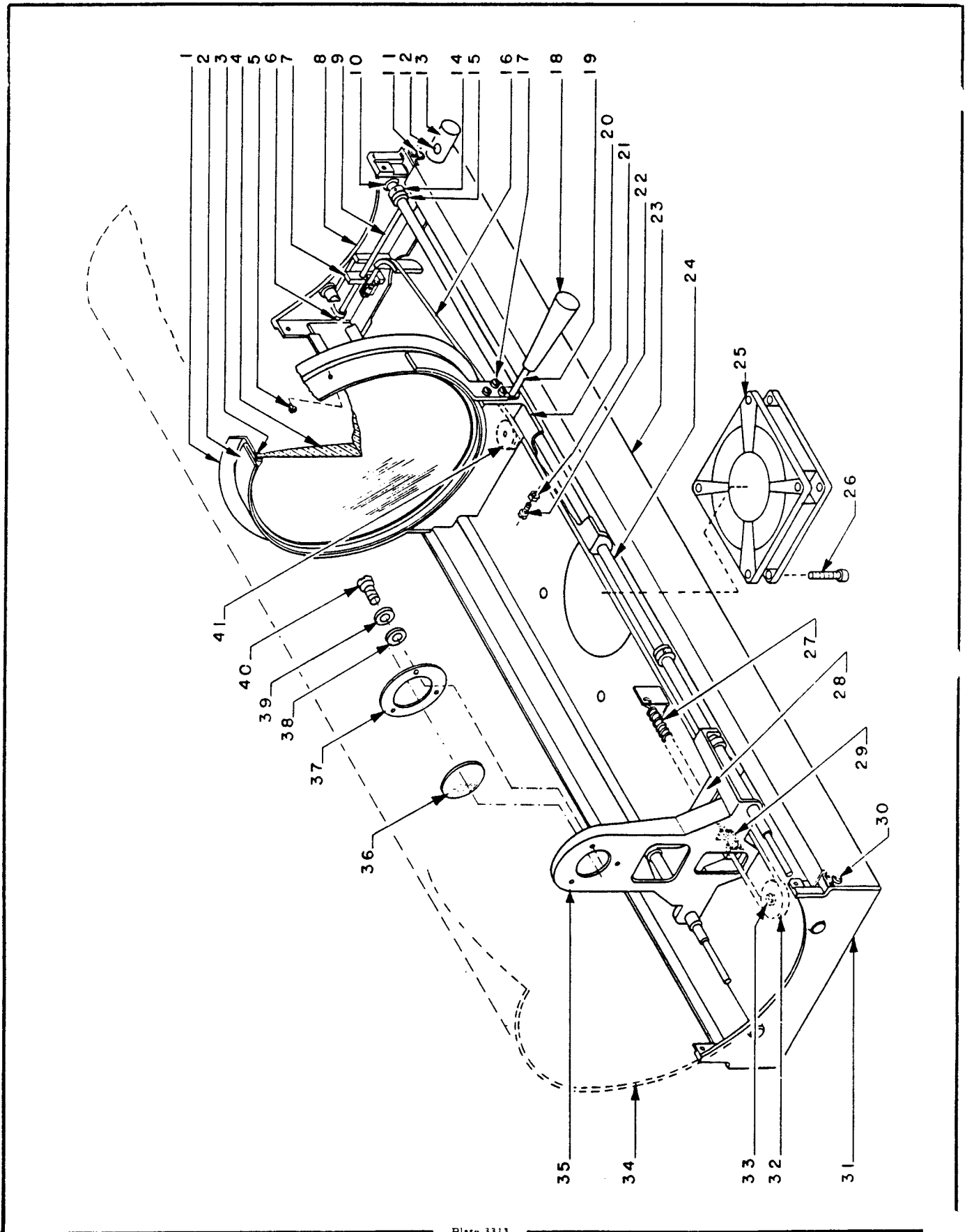
PARTS LIST

Item	Part No.	Description
1	49943	Lifting Strap
2	854	Washer 3/8" Flat
3	49120	Bolt, Tilt Axis
4	1319	Nut 3/8-16 Lock
5	2411	Washer .640 I. D. x 1-1/4 O. D.
6	49126	Clamp Plate
7	49125	Spring, Clamp
8	49124	Bushing
9	49223	Shaft, Clamp
10	49130	Handle
11	10048	Knob
12	49290	Shaft, Swivel Clamp
-	49291	Plate, Swivel Stop
-	1523	Bolt, 3/8-16 x 2-1/2" Square Hd.
13	49130	Handle
14	83799	Column Assy. , Outer
15	83297	Bolt, Leg
-	878	L'Washer 3/8" Split Ring
16	83797	Leg
-	49208	Caster (not shown)
17	49226	Adjustable Foot
-	992	Nut 1/2-13 Hex
18	83294A	Pin, Height Adjustment
19	83794	Column Assy. , Inner
20	83113	Bearing, Needle
21	83114	Race, Needle Bearing
22	49213	Clamp Collar, Swivel
-	687	Screw, 1/4-20 x 1/2" Hex Hd.
-	876	L'Washer 1/4" Split Ring
23	1307	Screw #10-32 x 3/8" Pan Hd.
24	49224	Cover Plate
25	83112	Collar Inner Tube
-	1759	Set Screw 1/4-28 x 3/8" Dog Pt.
26	83770	Yoke Assy.
27	1525	Thumb Screw 5/16-18 x 3/4"
-	1502	L'Washer 5/16" Shakeproof
-	853	Washer 5/16" Flat
28	49955	Saddle & Quadrant Assy.
29	83341	Cable Clamp
-	689	Screw 1/4-20 x 5/8" Hex Hd.



PARTS LIST

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	49342	Hand Rail
-	877	L'Washer 5/16" Split Ring
-	1346	Screw 5/16-18 x 1/2" Hex Hd.
2	51805	Blower Guard Grill
3	1508	Screw #6-32 x 3/8" Pan Hd.
4	1494	L'Washer #6 Shakeproof
5	1306	Screw #6-32 x 5/16" Pan Hd.
6	49245	Switch Cover Plate
-	1305	Screw #6-32 x 1/4" Pan Hd.
7	51808	Lamp & Lens Support Pan
8	969	Hog Ring
9	5411	Switch
-	45164	Switch Insulator
10	69125	Bushing
11	49347	Bushing
12	51609	Counter Weight
-	616	Screw 5/16-18 x 1" Hex Hd.
-	877	L'Washer 5/16" Split Ring



PARTS LIST

Item	Part No.	Description
1	51417	Retainer, Large Lens
2	51914	Ring Assy., Large Lens
3	51418	Mounting Rubber, Lens
4	51408	Lens, Large 11" Dia.
5	253	Screw #8-32 x 3/16" Fil. Hd.
6	919	Cotter Pin 1/16" x 1/2"
-	831	Washer #10 Flat Brass
7	51133	Adjusting Block, Lens Focus
-	179	Screw #6-32 x 1/4" Fil. Hd.
-	892	L'Washer #6 Shakeproof
8	51352	End Casting, Front
9	51454	Screw, Focus Adjusting
10	48127	Ring, Retaining
11	541	Screw 1/4-20 x 1/2" Oval Pan Hd.
12	51202	Set Screw, Adj. Knob
13	51168	Knob, Focus Adj.
14	51114	Collar, Slide Rods
-	720	Set Screw #10-32 x 3/16" Allen Cup Pt.
15	51479	Rubber Bumper
16	51910	Ribbon Assy.
17	381	Screw #10-24 x 3/8" Fil. Hd.
-	894	L'Washer #10 Split Ring
18	51509	Handle, Large Lens
19	51441	Shaft, Large Lens
-	51428	Retaining Ring
20	51350	Support Casting, Large Lens Carriage
21	1754	Nut 1/4-20 Hex Nylon
22	1752	Screw 1/4-20 x 1" Hex Hd. Nylon
23	51807	Base Pan Assy.
24	51453	Slide Rods
25	45227	Blower
-	51804	Blower Lead
26	191	Screw #6-32 x 1-3/4" Fil. Hd.
-	892	L'Washer #6 Shakeproof
27	51162	Spring, Ribbon Tension
28	51354	Support Bracket, Slide Rods
29	51120	Retaining Clip, Spring & Ribbon
-	1304	Screw #8-32 x 5/16" Pan Hd.
-	891	L'Washer #8 Shakeproof
-	919	Cotter Pin 1/16" x 1/2"

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
30	541	Screw 1/4-20 x 1/2" Pan Hd.
31	51353	End Casting, Rear
32	51157	Pulley, Large
33	51160	Stud, Pulley
34	51937	Housing, Lens Mechanism
-	51879	Rubber Light Shield (on Lens Housing)
-	23059A	Strong Insignia
-	51459	Super Trouper Insignia
35	51351	Support Casting, Small Lens
36	51101	Lens, 2" Dia. x 2-1/2" Focal Length
37	51169	Retaining Ring, Small Lens
38	827	Washer, Brass #6 Flat
39	892	L'Washer #6 Shakeproof
40	180	Screw #6-32 x 5/16" Fil. Hd.
41	51158	Pulley, Small
-	51160	Stud, Pulley

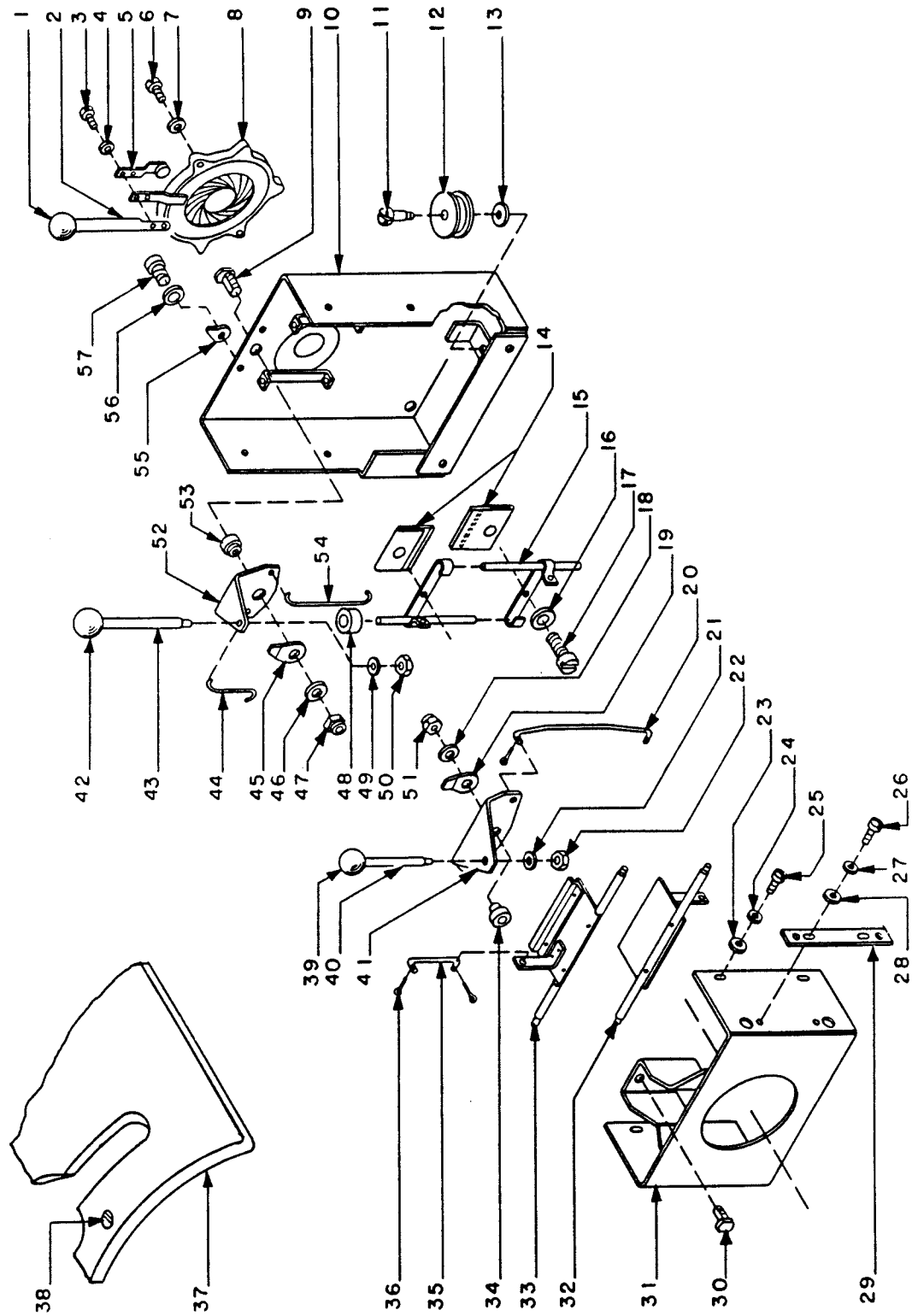


Plate 3316

PARTS LIST

Item	Part No.	Description
1	10048	Knob
2	51451	Shaft, Iris
3	180	Screw #6-32 x 5/16" Fil. Hd.
4	892	L'Washer #6 Shakeproof
5	51978	Friction Spring & Button
-	51229	Friction Pad
6	184	Screw #6-32 x 5/8" Fil. Hd.
7	892	L'Washer #6 Shakeproof
8	51979	Iris
9	51226	Stud
10	51911	Support Plate, Aperture
11	51160	Stud, Pulley
12	51157	Pulley, Large
13	830	Washer #8 Brass Flat
14	47191	Masking Blade
15	47982	Slide Assy., Masking Blades
16	886A	L'Washer #8 Split Ring
17	253A	Screw #8-32 x 3/16" Fil. Hd.
18	853	Washer 1/4" S. A. E.
19	51156	Friction Plate
20	51425	Rod, Long; Fadeout
21	876	L'Washer, 1/4" Split Ring
22	805	Nut 1/4-20 Hex
23	831	Washer #10 Brass
24	1344	L'Washer #10 Shakeproof
25	378	Screw #10-32 x 1/4" Fil. Hd.
26	378	Screw #10-32 x 1/4" Fil. Hd.
27	1344	L'Washer #10 Shakeproof
28	831	Washer #10 Flat Brass
29	51443	Retaining Strip, Fadeout
30	51226	Stud
31	51908	Support Assy., Fadeout
32	51917	Blade Assy., Lower
33	51916	Blade Assy., Upper
34	51153	Bushing, Spacer
35	51426	Pull Rod, Short, Fadeout
36	919	Cotter Pin 1/16" x 1/2"
37	51357	Cover Plate
38	541	Screw 1/4x 20 x 1/2" Oval Bd. Hd.
39	10048	Knob
40	51450	Shaft Fadeout Mech.

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
41	51427	Bracket, Fadeout Handle
42	10048	Knob
43	51452	Shaft, Masking Blades
44	51498	Pull Rod, Short, Masking Blade
45	51156	Friction Plate
46	853	Washer 5/16" Flat
47	1406	Nut 5/16-18 x 1/4" Flexlock
48	M-AL-64	Spacer
49	876	L'Washer 1/4" Split Ring
50	805	Nut 1/4-20 Hex
51	1406	Nut, Flexlock 5/16-18 x 1/4" Thick
52	48406	Masking Blade Handle Bracket
53	51153	Spacer Bushing
54	51497	Pull Rod, Long Masking Blade
55	2621-A	Clip
56	891	L'Washer #8 Split Ring
57	254	Screw #8-32 x 1/4" Fil. Hd.

NOTE

- 51909A Aperture Plate, Masking Blades & Iris, consists of items 1 through 17, 42 through 50 & 52 through 57.
- 51915 Fadeout Mech. & Blades, consists of items 18 through 36, 39 through 41 and item 51.

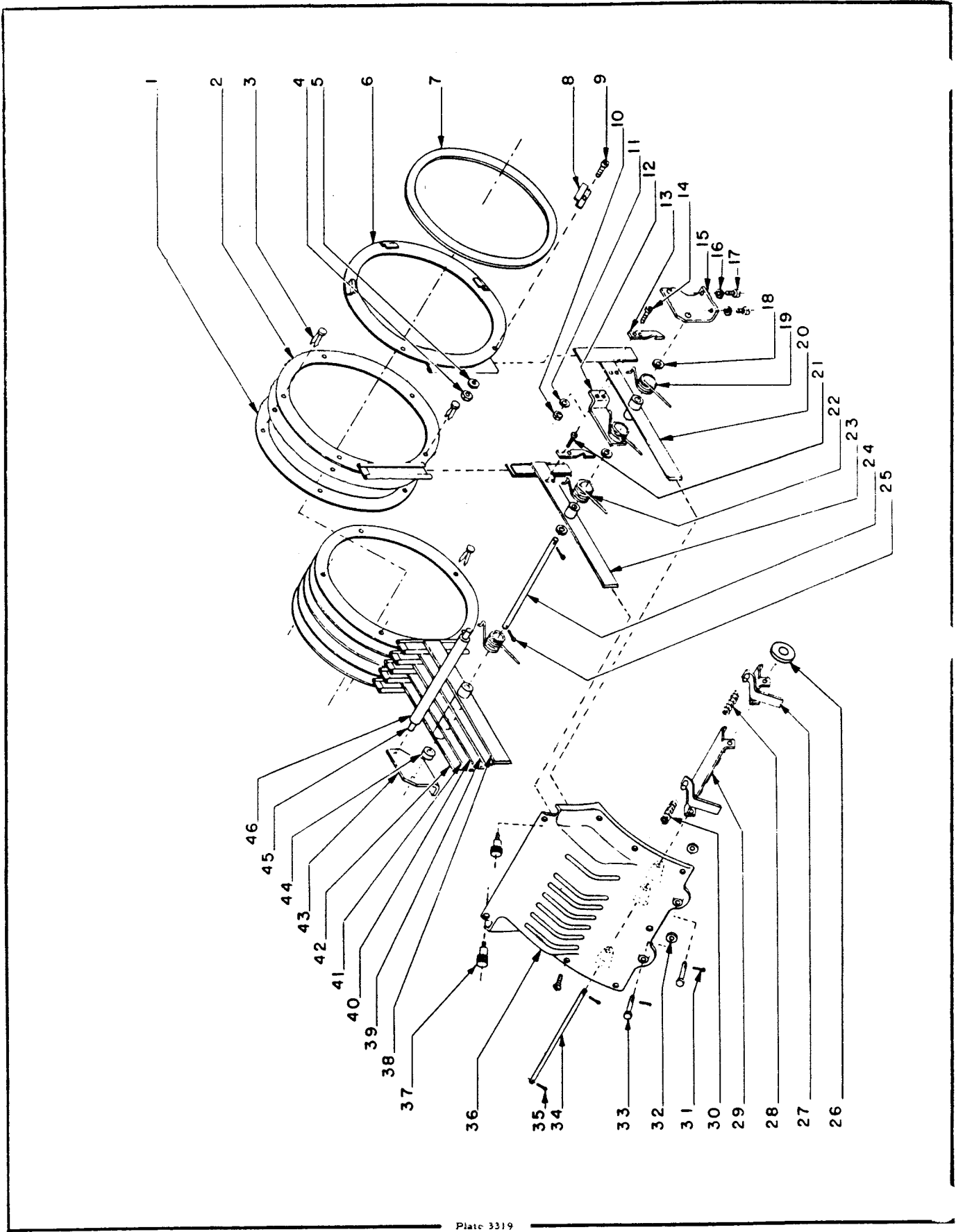


Plate 3319

PARTS LIST

Item	Part No.	Description
-	51939	Color Boomerang & U. V. Filter Assy.
1	51376	Cover Plate, Color Disc
2	51928	Main Plate & Slide Assy.
3	1456	Fastener, Paper #2 Rd.Hd.
4	793	Nut #6-32 Hex
5	892	L'Washer #6 Shakeproof
6	51926	Main Plate & Slide Assy., Ultra Violet
7	51192	Lens, Ultra Violet
8	51406	Clip, U. V.
9	180	Screw #6-32 x 5/16" Fil.Hd.
10	795	Nut #8-32 Hex
11	886	L'Washer #8 Split Ring
12	51404	Support Arm
13	51396	Catch
14	220	Screw #8-32 x 1/2" Rd.Hd.
15	51379	Bracket, Right Hand
16	894	L'Washer #10 Split Ring
17	315	Screw #10-24 x 1/2" Rd.Hd.
18	51398	Washer, Nylon
19	51402	Spring, U. V. Filter
20	51927	Arm Assy., U. V.
21	255	Screw #8-32 x 5/16" Fil.Hd.
-	886	L'Washer #8 Split Ring
22	51465	Spring, Color Disc
23	51929	Arm Assy. (6-11/16)
24	51403	Shaft, Color Disc
25	919	Cotter Pin 1/16" x 1/2"
26	866	Washer #10 Flat S. A. E.
27	51922	Rocker Catch Assy., Short
-	51506	Rubber Pad, Short
28	17219	Spring
29	51923	Rocker Catch Assy., Long
-	51505	Rubber Pad, Long
30	90473	Spring, Color Release
31	919	Cotter Pin 1/16" x 1/2"
32	51467	Washer, Color Release Button
33	51397	Button, Color Release
34	51395	Shaft, Rocker Catch
35	1475	Cotter Pin, 1/16 x 3/8"

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
36	51356	Cover, Boomerang Housing
-	277	Screw #8-32 x 1/2" Oval Hd.
37	51166	Retaining Screw, Boomerang Cover
38	51930	Arm Assy. (6-3/16)
39	51931	Arm Assy. (5-11/16)
40	51932	Arm Assy. (5-3/16)
41	51933	Arm Assy. (4-11/16)
42	51934	Arm Assy. (4-3/16)
43	51378	Bracket, Left Hand
44	51399	Spacer
45	51400	Shaft, Stop
46	51401	Rubber Stop

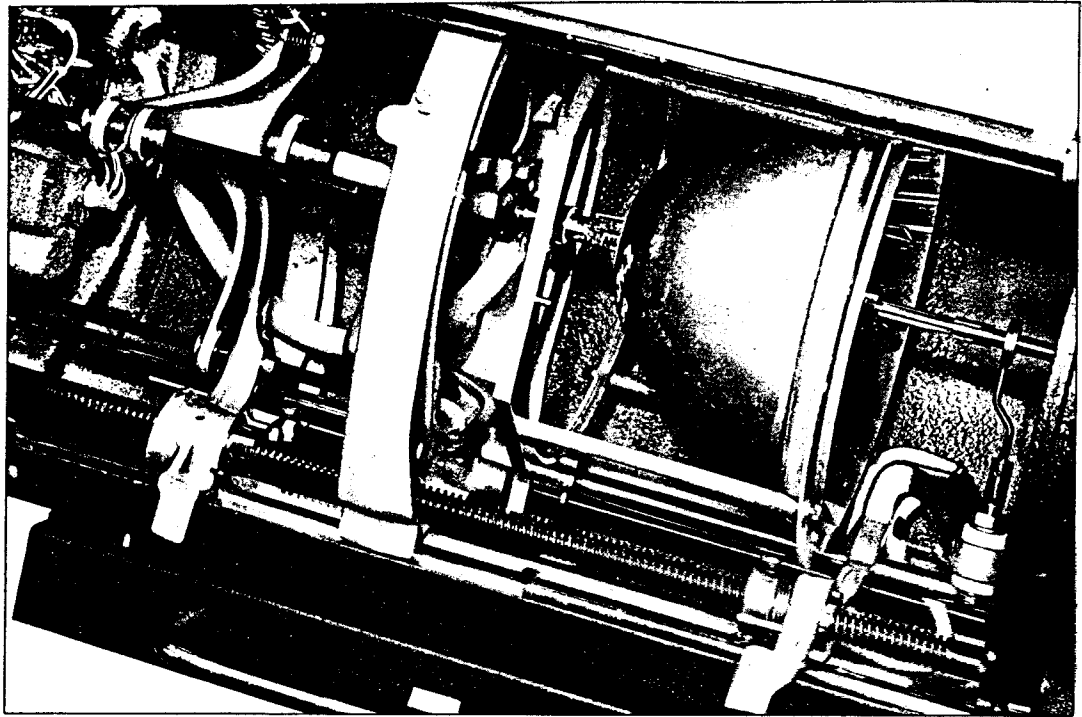
Parts Not Shown

51913	Boomerang Housing & Hinge
51479	Rubber Bumper Pad (7" x 8")
1304	Screw #8-32 x 5/16" Pan Hd.
795	Nut #8-32 Hex
891	L'Washer #8 Shakeproof
51355	Boomerang Housing Support Casting (Rear)
275	Screw #8-32 x 3/8" Oval Hd.
51864	Auxiliary Color Holder (to replace U. V. unit)

Xenon Conversion Kit



Follow with
the leader



Light Data 1.0 kW Variable Lens System Performance at Various Distances

Throw In Feet	MAXIMUM FLOOD @ 60% COVERAGE		SMALL SPOT @ 72% COVERAGE		MIN. SPOT DIA. WITH IRIS	
	Diameter Feet	Foot Candles	Diameter	Foot Candles	Diameter	Foot Candles
100	20 ft.	73.8	7.8 ft.	500.7	19 in.	500.7
140	28 ft.	37.6	10.8 ft.	255	26 in.	255
200	40 ft.	18.4	15.5 ft.	125	35 in.	125
240	48 ft.	12.8	18.7 ft.	86.9	41 in.	86.9
280	56 ft.	9.4	21.8 ft.	63.8	47 in.	63.8
320	64 ft.	7.2	24.8 ft.	48.9	53 in.	48.9
360	72 ft.	5.6	28.0 ft.	38.6	59 in.	38.6
380	76 ft.	5.1	29.5 ft.	34.6	62 in.	34.6
400	80 ft.	4.6	31.0 ft.	31.2	65 in.	31.2

Light Data 1.6 kW Variable Lens System Performance at Various Distances

Throw In Feet	MAXIMUM FLOOD		SMALL SPOT		MIN. SPOT DIA. WITH IRIS	
	Diameter Feet	Foot Candles	Diameter	Foot Candles	Diameter	Foot Candles
100	20	103.0	7.8 ft.	700.0	19.0 in.	700.0
200	40	25.8	15.5 ft.	175.0	35.0 in.	175.0
280	56	13.1	21.8 ft.	89.3	47.0 in.	89.3
360	72	7.9	28.0 ft.	54.0	59.0 in.	54.0
400	80	6.4	31.0 ft.	43.7	65.0 in.	43.7
440	88	5.3	34.1 ft.	36.2	83.6 in.	36.2
520	104	3.8	40.3 ft.	25.9	98.8 in.	25.9
560	112	3.3	43.4 ft.	22.3	106.4 in.	22.3
600	120	2.9	46.5 ft.	19.4	114.0 in.	19.4

For Strong Carbon ARC Super Trouper

The Strong Super Trouper Conversion Kit permits simple conversion from carbon arc to Xenon. The kit includes a long lasting 1000 or 1600 watt Xenon Bulb. The kit is designed for quick and efficient field conversion of carbon arc Super Trouper spotlights to horizontal Xenon operation.

Lamphouse

Once converted, the lamphouse utilizes a deep ellipse cold metal reflector.

The kit furnishes bulb mounts which are assembled to the existing carbon feed castings. The negative carbon positioning controls on the rear of the lamphouse adjust the bulb horizontally and vertically. The carbon feed lead screw functions as a bulb focus adjustment device.

Shock Mount

A specially designed bulb support permits transporting the spotlight with the bulb installed.

Strong International
1712 Jackson Street
Omaha, Nebraska 68102
(402) 342-4444
Telex: 484481
(Western Union)

Control Panel

The lamphouse control panel is equipped with an on/off dual switch for easy ignition. An ammeter on each lamphouse allows for convenient monitoring of lamp current. A Running Time Meter on the lamphouse presents the operator with a tabulation of the number of hours the lamp has been in operation.

Actual net light increases 10% with 1 kw, 30% with 1.6 kw as the coverage increases from 50% to 70%.

Product Features

- "Cold" Metal Reflector Prolongs Bulb Life
- Igniter Mounts Inside Lamphouse — Power Supply Can Be Remotely Located
- Continuous Operation
- Eliminates Arc Adjustment
- Lowers Maintenance Cost
- Eliminates Smoke and Soot
- Eliminates Carbon Replacement

Specifications

Electrical

- 1000 Watt Xenon Bulb System; Input Line 115 V. AC, 16 Hz, 1 Phase. Approximate Line Draw 27.5 Amp. Sustaining, Fuse for 30 Amp. at 125 V.
- 1600 Watt Xenon Bulb System; (Optional) Requires Change of Existing Power Source. Input Line 208/230 V, 60 Hz, 1 Phase. Approximate Line Draw 16 Amps. Sustain-

ing. Fuse for 30 Amp. at 220 V.

- 1800 Hour Xenon Bulb Warranty
- Bulb Operation Elapsed Time Meter and Ammeter on Lamphouse
- Color Temperature 5600° Kelvin \pm 200
- Uninterrupted Operation

Over 30 years in the business

All Strong Super Trouper Conversion Kits leave the factory only after extensive inspection and stringent standards. These standards of performance are a result of over 30 years of experience in the spotlight theater and touring business.

Strong International fully supports spotlight owners and its dealer network by maintaining a complete parts inventory.



Strong International
1712 Jackson Street
Omaha, Nebraska 68102