Film-Tech

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Instructions

FOR
EQUIPMENT
Type

LUME-X LAMP
65000
12-1-75

65016-3 (16mm version)
with heat filter glass

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STRONG ELECTRIC
87 CITY PARK AVE., TOLEDO, OHIO

PREFACE

THIS IS A REFLECTOR TYPE direct current projection lamp using a xenon bulb as the light source and operated with the electrodes in the horizontal position.

THE REFLECTOR is a deep ellipse type, and fixed position, designed to operate at 21 inches from the projection film line.

ONLY THE SPECIAL POWER SUPPLIES manufactured by Strong Electric can be used with the Lume-X projection lamp.

XENON BULBS designed for horizontal operation should be used in the Lume-X lamphouse. A partial list of the xenon bulbs presently adaptable for use are listed on one of the following pages, together with a table showing the adapters required for each bulb. Contact your dealer or the factory regarding the use of bulbs, other than those listed.

ADAPTERS for use with the Osram XBO-1000 watt and XBO-1600 watt bulbs are furnished with each lamphouse. Others must be ordered thru your dealer from the factory. If the order states which bulb will be used then the lamphouse will be supplied with the adapters for the bulb specified.

A TERMINAL STUD, located on the anode air duct, is provided to permit use of xenon bulbs with anode leads. The bulb and the lamphouse anode lead must both be connected at the same point on the stud.

ADJUSTMENT CONTROL for the xenon bulb is located at the rear of the lamphouse. The adjustments are for the horizontal, vertical and focus control of the xenon bulb.

THIS LAMP is equipped with an ammeter and a running time meter. The ammeter indicates the operating current of the lamp. The running time meter indicates the number of hours the lamp has been operated.

THE CURRENT CONTROL, located behind the plug button on the rear of the lamphouse, permits adjustment of the lamp amperage without making a manual correction at the power supply. This feature is compatible only with the power supplies designed to operate with the current control circuit in the lamphouse. With other power supplies, the current adjustment for the xenon bulb must be made at the power supply. See your power supply manual for additional instructions.

THE LAMP BLOWER internally wired in the lamp, operates on 115V. AC and is required to keep the seals on the bulb at a safe operating temperature. This blower will operate continuously until power is turned off at the main line switch to the power supply.

THE AIR FLOW SWITCH in the lamphouse prevents ignition of the xenon lamp if the blower is not operating.

A TOGGLE SWITCH to permit either automatic or manual operation is located on the rear of the lamphouse.

A LAMP POWER SWITCH, located on the rear of the lamphouse, is provided for bulb ignition in the manual operation mode.

A NEGATIVE LENS to provide even coverage on the screen, is supplied with each lamphouse.

IF AT ANY TIME you have a suggestion, or desire aid in securing anticipated results, please feel free to write directly to STRONG ELECTRIC, P.O. Box 1003, 87 City Park Ave., Toledo, Ohio 43697.

SAFETY PROCEDURES

THE XENON BULB has high internal pressure. Therefore extreme care should be taken when handling the bulb. Refer servicing to qualified service personnel. To minimize any danger, the following rules should be followed.

1. CAUTION: BULB EXPLOSION HAZARD. Relamping to be done only by QUALIFIED service personnel with protective clothing and face shield.

2. Turn power off at main line switch before removing the lamphouse cover.

3. The bulb shall be inserted into the lamphouse while still encased in its protective cover when possible. This cover should be removed only after all the necessary cable connections have been made and the lamphouse cover is to be replaced. When removing the bulb from the lamphouse, it should be encased in the cover.

4. This lamphouse is for indoor use when properly vented to the outside atmosphere.

5. The xenon bulb when outside the lamphouse must be encased in its plastic protective cover.

6. Clean the bulb only after it has cooled to room temperature. Never touch the glass envelope of the bulb; fingerprints will burn in and dull the bulb. If fingerprints are made, they should carefully be removed with methyl alcohol and cotton.

7. Wait at least 20 minutes for the bulb to cool after turning off the power before removing lamphouse cover.

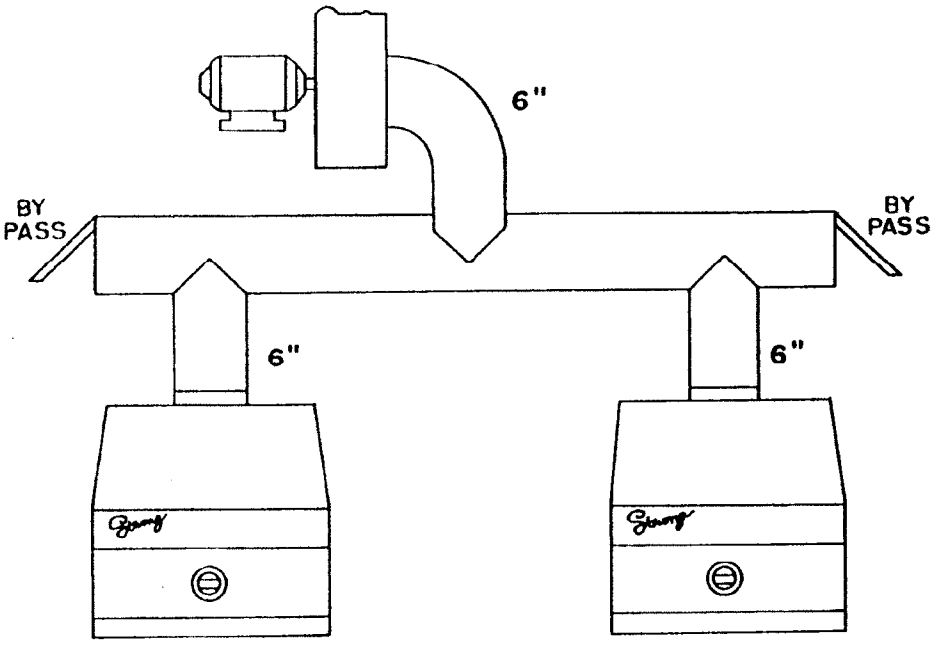
8. Never look directly at the ignited bulb - TO DO SO MAY CAUSE BLINDNESS.

9. When possible encase the bulb in its protective cover when cleaning the lamphouse interior.

10. Dispose of expended bulbs that are beyond warranty in the following manner. Wrap the bulb with several layers of canvas or heavy cloth and smash with a hammer before depositing in a refuse container.

EXHAUST SYSTEM INSTALLATION

THE EXHAUST STACK of this lamphouse is designed to fit a six inch diameter pipe. This size pipe must be used through the complete exhaust system and installed to eliminate any possibility of down draft.



THE EXHAUST FAN must be capable of removing 750 lineal feet of air per minute at each lamp (150 CFM).

WIRING INSTALLATION

THE LAMPHOUSE LEADS must be connected to the power supply as shown on the installation diagram.

CONNECT THE TWO HEAVY ASBESTOS LEADS to the D.C. leads in the power supply. Polarity must be observed. Connect the red (+) to the positive terminal. Connect the black (-) to the negative terminal.

THE CONTROL CIRCUIT LEADS must be connected to the terminal strip located in the power supply housing. Leads #2, 4, 5 and 6 are the AC circuit leads between the lamphouse and power supply.

LEADS #32, 33 and 34 are the current control leads between the lamphouse and power supply. These three leads are connected only to those power supplies that are designed for remote current control from the lamphouse. Generally, the power supplies that are equipped with a dial switch and/or tap panels do not have the capability of remote adjustment. On these models, current adjustment must be made at the power supply by use of the dial switch and/or tap panel. See your power supply manual for further instructions.

CONNECT AS FOLLOWS:

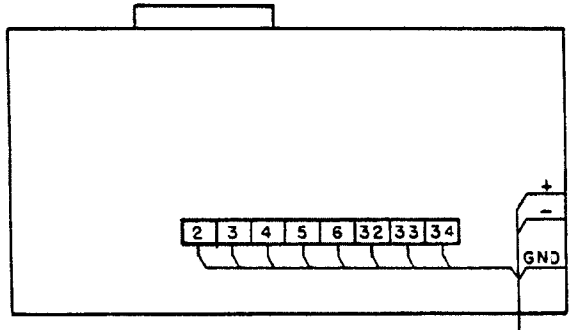
Brown	- #2	Yellow	- #6
Pink	- #3	Grey	- #32
Orange	- #4	Purple	- #33
Blue	- #5	White	- #34

CONNECT THE GROUND (Gnd) LEAD (#8 AWG) to the terminal located on the power supply housing.

THE LAMPHOUSE is wired for "Man-Auto" operation. The circuit connections are only required at the Power Supply. See the Lamphouse-Power Supply interconnection diagram and the Power Supply Schematic for the correct installation in a "Manual-Auto" System.

ALL LEADS may be run in conduit or greenfield if desired or if required by local code. This may also be necessary as shielding to prevent electrical interference from feeding into the theatre sound system.

LAMPHOUSE - POWER SUPPLY INTER-CONNECTION DIAGRAM



COLOR CODE

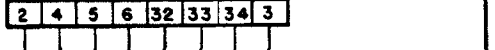
BROWN	2
PINK	3
ORANGE	4
BLUE	5
YELLOW	6
GREY	32
PURPLE	33
WHITE	34
GREEN	GROUND
RED	DC POS.
BLACK	DC NEG.

GREENFIELD 1/4" BY CUSTOMER

14 THW

3

6



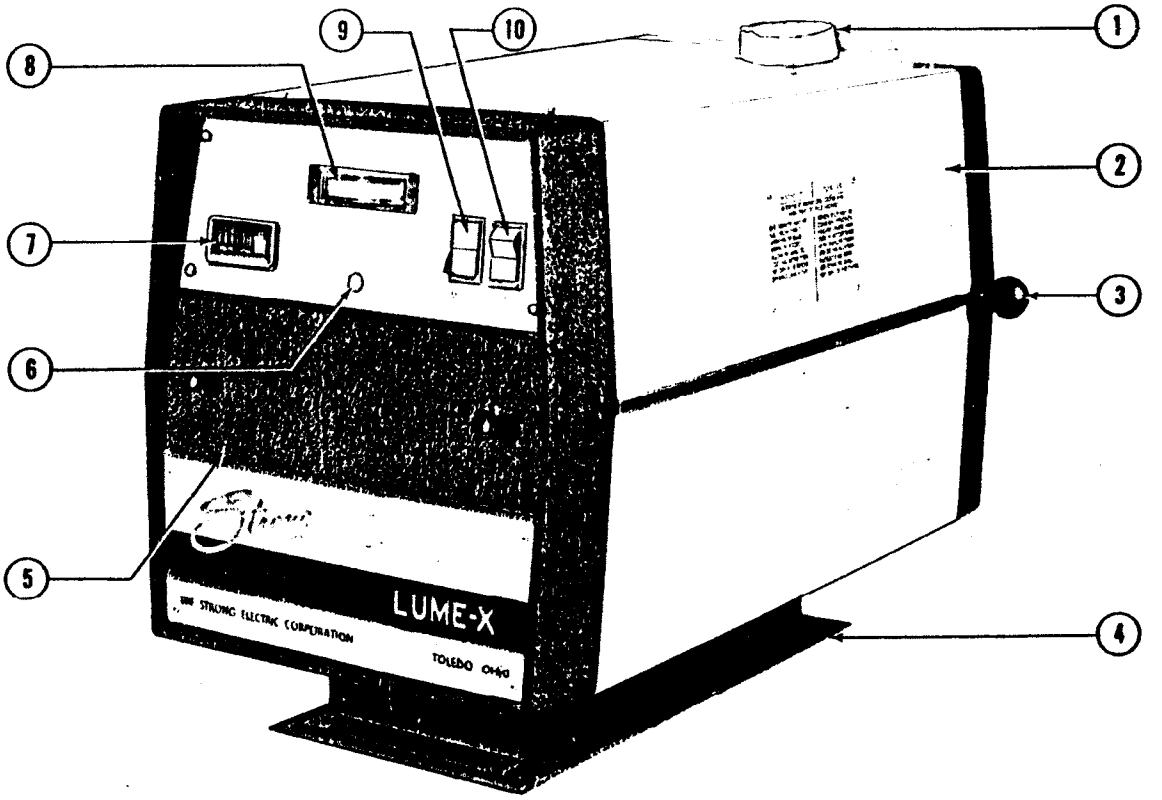
REMOTE-AUTO CONTACT 5 AMP BY CUSTOMER

GROUND 8 AWG

T1 TRANS

L1 CHOKE

Plate 2867



1. Exhaust Stack (NOT PRESENT ON 16MM VERSION)
2. Top Cover, Lamphouse
3. Douser, HAND
4. Adapter Plate (SLOTS CUT IN 16MM VERSION)
5. Cover Panel, Bulb Adj.
6. Current Control
7. Elapsed Time Meter
8. Ammeter
9. Man. -Auto Switch
10. Power Switch (On-Off)

NOTE: The current control is located behind the plug button.

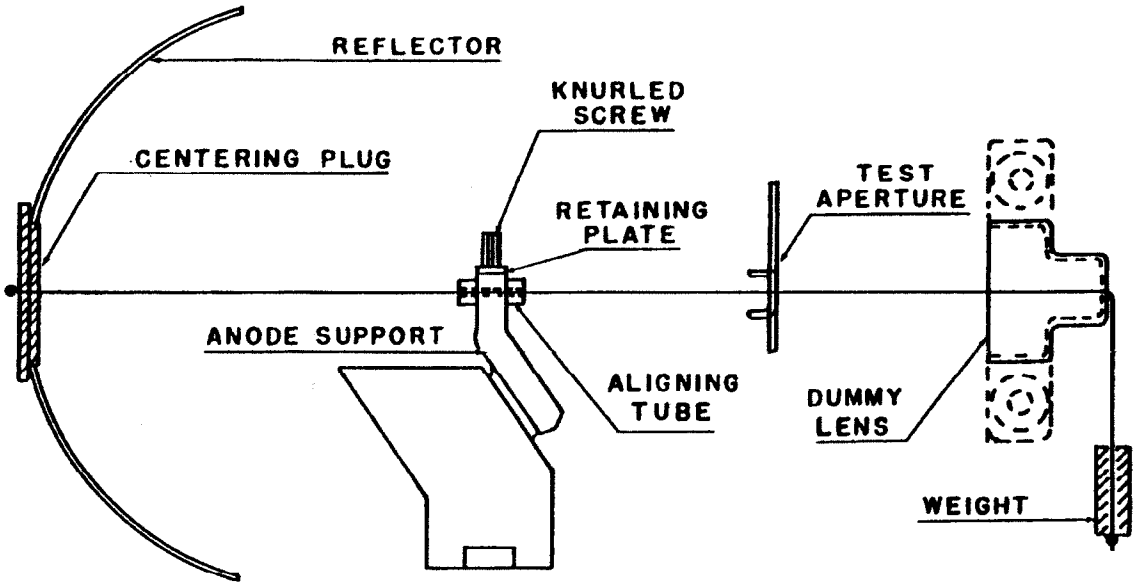
35mm INSTALLATION

REMOVE THE TOP COVER from the lamphouse with the special wrench provided.

ATTACH the Lamphouse and Adapter to the projector table with the 1/4-20 Hex Hd. Cap Screws and Nuts provided. Leave these screws loose enough to permit movement of the lamphouse for final alignment.

POSITION THE LAMPHOUSE on the projector table with the small hole in the center of the reflector at 21" from the aperture or film line.

WITH A XENON PROJECTION LAMP it is imperative that the optical system is aligned exactly with the projector optical system in both the vertical and horizontal planes.



ONE ALIGNING KIT is furnished with each pair of xenon lamphouses to provide an accurate and reliable method of optical alignment. Optimum screen results can ONLY be obtained by careful use of this aligning kit.

OPEN THE FIRE SHUTTER and fasten it so it cannot fall shut. Turn the projector mechanism by hand to clear the shutter blades.

OPEN THE LAMPHOUSE DOUSER and loosen the two knurled screws on the retaining plate at the front (anode) bulb support. A slot is provided on one side of this plate so the screws do not have to be removed. Pivot this plate to one side and place the small aligning tube, (flat plate to the top), in the front support. Pivot the retaining plate back into position and tighten the thumb screws to hold the small aligning tube in place.

IF THE LUME-X lamphouse is ordered from the factory, equipped for 2000 or 2500 watt operation, it is necessary to replace the Aligning Tube illustrated, with the Aligning Plate, which must be fastened to the support yoke with the two thumb screws. This plate then serves the same purpose for alignment as the Aligning Tube. With this exception, the aligning procedure is identical for all lamps.

REMOVE THE PROJECTION LENS and insert the dummy lens barrel with the weight and string as shown on the illustration. Position the centering plug in the back of reflector and secure the string at the rear of this plug. Place the test aperture in position and close the film gate to hold the test aperture in position.

ALIGN THE LAMP so the string passes through the exact center of the aligning tube (aligning plate) in the front (anode) support and the test aperture plate. Tighten the screws and nuts holding the lamp to the projector table.

MANY PROJECTOR BASES have adjustable lamphouse tables so the lamp can be brought into correct optical alignment with the projector aperture and lens. On those that are not adjustable, the lamp must be centered by using shims or washers between the projector table and the adapter base to obtain optical alignment with the projector aperture and lens.

NEGATIVE LENS INSTALLATION

AFTER ALIGNMENT with the projector install the two lower retaining clips, for the lens, on the tapped pads on the douser support casting. Do not tighten the thumb screws.

PLACE THE NEGATIVE LENS under the two lower retaining clips. THE FLAT SURFACE OF THE LENS MUST BE PLACED TOWARDS THE REFLECTOR.

INSTALL THE TWO UPPER CLIPS. The Lens must float loosely in the clips to compensate for expansion of the lens when the lamp is operating. With the back of the reflector set at the recommended 21 inch working distance, the front of the lens should be 10 inches from the projector aperture.

CLEAN THE LENS with a lens cleaner that has been approved for use on coated projection lens, to remove all finger prints and dust before igniting the bulb.

CONVERSION INSTRUCTIONS

REFER TO THE TABLE OF ADAPTERS in this manual for the parts required to convert to a different rated bulb or a bulb from another manufacturer. The critical aligning instructions below apply only when the parts item 6 or 9 must be changed.

1. The lamphouse and projector must be precisely aligned as instructed in the manual before interchanging any of the support yokes items 6 or 9.

2. After the correct alignment has been obtained, then remove the aligning fixture and the support yoke. Install the new support yoke, but do not tighten the retaining screws.

3. Place the aligning plate item 5 or aligning tube item 12 on the appropriate support yoke and secure item 4 retaining plate to the yoke with item 3 thumb screws. Replace the string aligning fixture used for the initial lamphouse and projector alignment with the string running through the aligning plate or aligning tube.

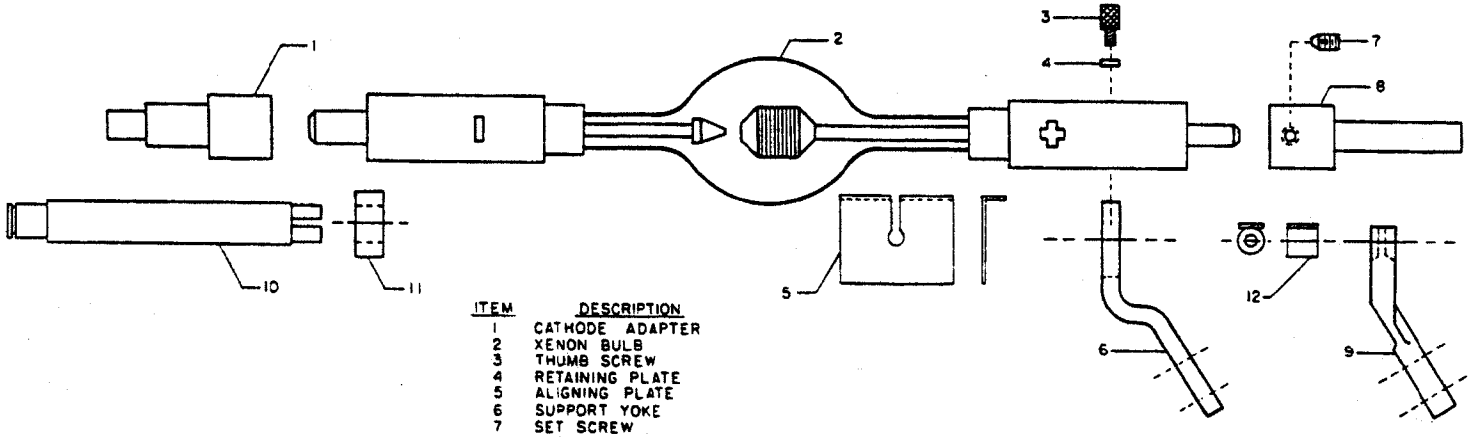
4. Adjust the anode support yoke item 6 or 9, to center the string in the hole in the aligning plate or center of the hole in the aligning tube. Tighten the two screws holding the support yoke. The yoke must be set accurately to locate the optical axis of the bulb with the reflector.

5. Remove the string aligning fixture and install the xenon bulb as instructed in the manual. Use the correct retaining plate item 4, to hold the bulb down in the support yoke.

TO REPLACE THE CATHODE SUPPORT item 10, remove item 11 contact located inside the lamphouse on the end of the support. Remove the bulb adjustment cover panel to permit access to the retaining ring on the end of the cathode support. Remove this ring and pull the support out through the back of the lamphouse. Reverse this procedure to replace the new cathode support. Use the correct part number contact item 11 with the replacement cathode support.

WHEN ADAPTERS or extensions for the bulbs are required, the adapters must be assembled to the bulb before insertion in the lamphouse and while the bulb is still in its protective case. Be very careful to not put any strain on the quartz envelope when assembling the adapters on the bulb.

LUME-X XENON LAMP ADAPTERS

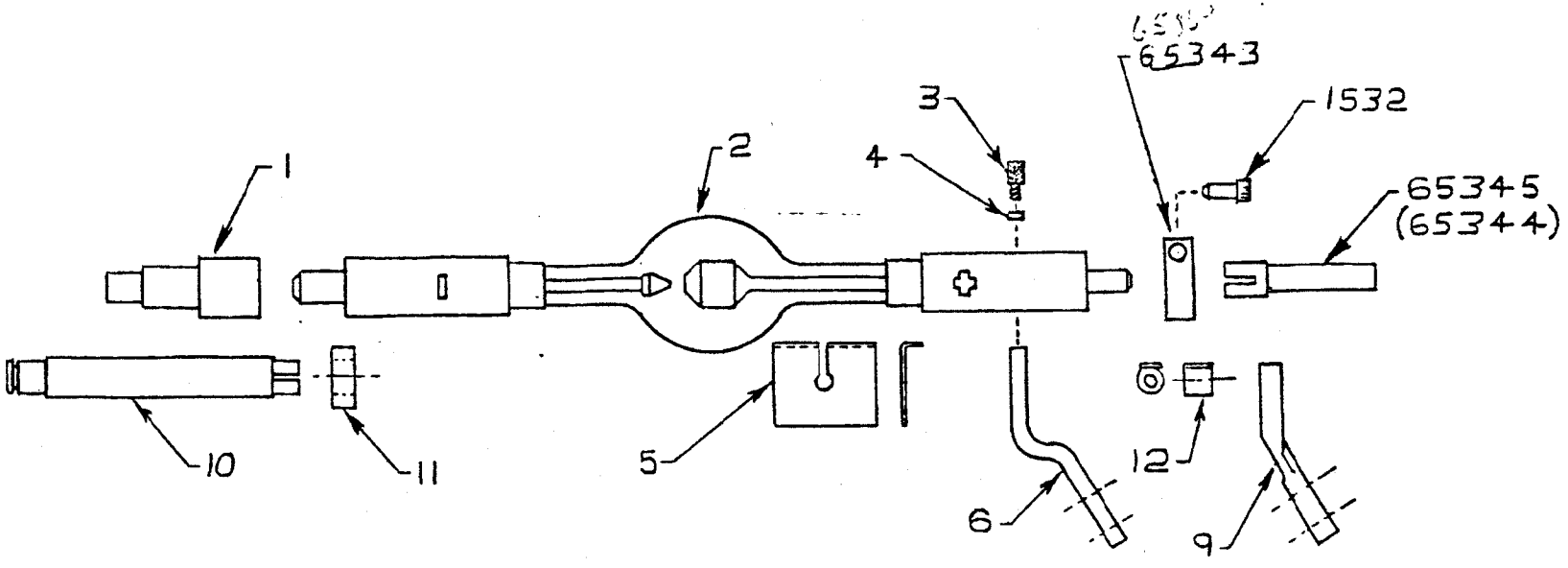


ITEM	DESCRIPTION
1	CATHODE ADAPTER
2	XENON BULB
3	THUMB SCREW
4	RETAINING PLATE
5	ALIGNING PLATE
6	SUPPORT YOKE
7	SET SCREW
8	ANODE ADAPTER
9	SUPPORT YOKE INCLUDED WITH STANDARD LAMPHOUSE
10	CATHODE SUPPORT
11	CATHODE CONTACT
12	ALIGNING TUBE

MFGR WATTS NUMBER	OSRAM 1000 XBO 1000W HS-OFR	OSRAM 1600 XBO 1600W HS-OFR	OSRAM 2000 XBO 2000W HS-OFR	OSRAM 2500 XBO 2500W HS-OFR	HANOVIA 1000 993C0010	HANOVIA 1600 992C0010	HANOVIA 2000 L5330-000	HANOVIA 2200 995C0010
ITEM NO.								
1	65169	65169			65169	65169		
2	65168	65179	65182	65260	65247	65258	65273	65274
3	65152	65152	65152	65152	65152	65152	65152	65152
4	65151	65151	65184	65184	65151	65151	65271	65271
5			65196	65196			65272	65272
6			~~65195~~ 65267	65266			65267	65270
7	720	720			720	720		
8	65170	65170			65246	65170		
9	65117	65117			65117	65117		
10	65960	65960	65960	65924	65960	65960	65960	65924
11	~~65148~~ 65131	~~65148~~	~~65148~~	65265	~~65148~~	~~65148~~	~~65148~~ 65131	65265
12	65178	65178			65178	65178		

A TERMINAL STUD LOCATED ON THE ANODE AIR DUCT IS PROVIDED TO PERMIT USE OF XENON BULBS WITH AN ANODE LEAD. THE OSRAM 2000 WATT, STRONG PART 65255 AND OSRAM 2500 WATT, STRONG PART 65260 ARE BULBS WITH THE ANODE LEAD.

Plate 3002



OSRAM 1000 W, 1600 W, AND HANOVIA 1600 W. BULBS

ITEM #8 - PART 65170 IS REPLACED BY PARTS 65343 AND 65345.

ITEM #7 - PART 720 IS REPLACED BY PART 1532.

HANOVIA 1000 W. BULB

ITEM #8 - PART 65245 IS REPLACED BY PARTS 65343 AND 65344.

ITEM #7 - PART 720 IS REPLACED BY PART 1532.

NOTES REFER TO PLATE 3062

BULB INSTALLATION

CAUTION: OBSERVE ALL SAFETY PROCEDURES. Put on protective face mask. Wear clean cotton gloves to prevent marking the quartz envelope with fingerprints.

REMOVE THE TOP COVER of the lamphouse, by using the special wrench provided, to remove the four screws securing the cover.

THE ADAPTERS required to permit use of the Osram 1000 and 1600 watt bulbs are furnished with each lamphouse. Adapters for other rated bulbs and other manufacturers' bulbs are not supplied, unless the lamphouse is ordered from the factory equipped for a specific rating and manufacturer's bulb. See the preceding table of xenon lamp adapters. Check the capacity of your power supply before converting to a different current rated bulb.

WHEN ADAPTERS or extensions for the bulbs are required, the adapters must be assembled to the bulb before insertion in the lamphouse and while the bulb is still in its protective case. Be very careful to not put any strain on the quartz envelope when assembling the adapters on the bulb.

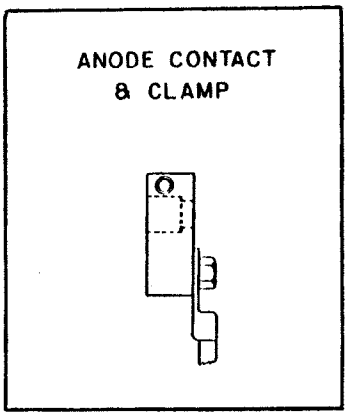
LOOSEN TWO SCREWS on the retaining plate at the front bulb support. A slot is provided on one side of this plate so screws do not have to be removed. Pivot plate to one side.

REMOVE THE PLASTIC PROTECTIVE COVER from the bulb only if necessary. Insert the bulb at the top of the lamphouse, between the reflector support and the front casting. Pass the cathode (-) end through the hole in the reflector.

INSERT THE BULB STEM OR ADAPTER into the rear support collet, up to the shoulder on the stem. The stem must be inserted as far as possible to permit full focus travel of the bulb. Tighten the socket head screw securely on the negative contact to insure a good connection. Form the negative lead so it will stay away from both the exhaust fan motor and the negative lead that runs along the bottom of the lamphouse to the negative terminal on the igniter. This is necessary to prevent the lead from arcing to the motor housing or the igniter negative lead during the high voltage ignition pulse. Arcing to either of these points will prevent ignition of the bulb.

PLACE THE ANODE (+) END of the bulb or adapter stem into the front bulb support, pivot the retaining plate to its closed position, tighten the two screws.

INSTALL THE ANODE (+) lead contact and clamp over the stem of the bulb only up to the shoulder on the contact as illustrated. Tighten the socket head screw to provide a good secure electrical connection. Lay the lead so it runs in front of the air duct and does not throw a shadow in the light beam.



A TERMINAL STUD, located on the anode air duct casting, has been provided to permit use of xenon bulbs with an anode lead in the Lume-X lamphouse. Remove the anode contact and clamp from the lamphouse anode lead. Attach the lamphouse lead and the bulb anode lead in contact with each other under the hex nut on one side of the terminal stud. The stud SHOULD NOT be used as a feed-thru terminal. Tighten this connection securely to prevent overheating.

IT IS RECOMMENDED that a program be established for a periodic check of tightness at all the electrical connections, particularly the contacts at the bulb, both positive and negative, and the adapters or extensions on the ends of the bulb. A loose contact at any one of these points will cause failure of the leads and contacts, and may destroy the bulb.

OPERATION

REMOVE THE PLASTIC COVER from the xenon bulb. Do not ignite the lamp with the cover on the bulb.

SECURE THE LAMPHOUSE COVER with the (4) special screws using the wrench furnished with the lamphouse. The cover must be secure in position to actuate the interlock switch and permit lamp ignition.

CLOSE THE LAMPHOUSE DOUSER and place the "Man-Auto" switch in the manual position.

TURN ON THE MAIN LINE SWITCH to energize the power supply. The lamp blower will start and the blower interlock switch will be actuated to permit lamp ignition. This lamp blower will operate continuously until the main line switch to the power supply is opened.

PLACE THE "ON-OFF" SWITCH in the "ON" position and the lamp will ignite. The lamp current should not exceed 75 amperes for the 1600 or 2000 Watt bulb, 55 amperes for the 1000 Watt bulb, or 100 amperes for the 2200 and 2500 Watt bulb. These ratings are approximate, check with the bulb manufacturer for specific maximum ratings.

DO NOT EXCEED at any time, the maximum current recommended by the xenon bulb manufacturer. Always adjust the current control on the lamphouse or at the power supply to first ignite the bulb at the low end of the recommended range. Then increase the current to the recommended initial range. Most power supplies have the capacity to over-drive any given rated bulb.

ADJUST THE CURRENT CONTROL on the back of the lamphouse to obtain the desired current as indicated on the ammeter. This feature is compatible only with the power supplies designed to operate with the current control circuit (R-2 and leads 32, 33, 34) in the lamphouse. With other power supplies, approved for use with the Lume-X lamphouse, current adjustment must be made by adjusting the dial switch and/or the tap panel on the power supply. See your power supply manual for additional instructions.

THE RECOMMENDED INITIAL CURRENT for the 1000 Watt bulb is 45 amperes, the 1600 Watt at 65 amperes, 2000 Watt at 65 amperes and the 2200 and 2500 Watt at 90 amperes. The current may be gradually increased to a maximum of 55 amperes for the 1000 Watt, to 75 amperes for either the 1600 or 2000 Watt and to 100 amperes for the 2200 and 2500 Watt bulb.

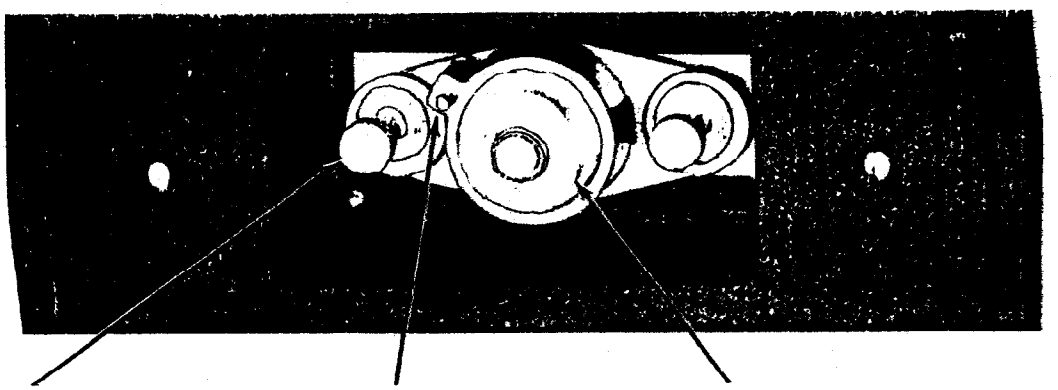
REMOVE THE REAR COVER PANEL (two pull type knobs) to expose the bulb position adjustment control.

THE CENTER SECTION of the control is a threaded member that focuses the bulb in relation to the reflector. Turning this adjustment moves the bulb in only one plane, into or away from the reflector. Turning this section clockwise moves the bulb away from the reflector. The small knurled screw to the left of this section can be tightened to lock the focusing mechanism, after the following procedures have been completed.

THE THUMB SCREWS on either side of the focusing control lock the horizontal and vertical adjustment mechanism in position.

REMOVE THE PROJECTION LENS, start the projector and open the lamphouse douser. Since a xenon light source can be focused to a small intense spot at the projection lens, do not operate the lamp without the projector running.

BULB ADJUSTMENT CONTROLS



THUMB SCREW FOCUS LOCK SCREW FOCUS ADJUSTMENT

TURN THE CENTER FOCUSING SECTION of the bulb position control until the smallest black spot obtainable is focused on the projection screen. It may be best to run this adjustment both directions to permit positive identification of the spot. The position of the spot may be to the right, left, top or bottom of the screen, not necessarily at the center.

LOOSEN THE TWO THUMB SCREWS, one on either side of the focusing section just enough to permit manual movement of the complete assembly. The bulb adjustment control will now move about these two thumb screws and as this control is shifted, the smooth shadow of the electrode can be seen extending beyond the projected hole in the reflector. The electrode shadow must be centered in the projected hole of the reflector.

MOVE THIS CONTROL SECTION around the two screws until the black spot is as round as possible to project. It may be necessary to again adjust the focus control to project a sharp spot. After the black spot is as even around the outside as possible to project, tighten the two thumb screws to lock this adjustment section. This adjustment has now centered the projected image of the electrode shadow and the hole in the reflector on the aperture and screen.

REPLACE THE PROJECTION LENS and turn the focus adjustment until the desired light distribution is projected to the screen.

THIS ADJUSTMENT should not be disturbed until it is necessary to replace the xenon bulb. Then ONLY the procedure on obtaining a smooth round black spot may have to be repeated. Do not disturb or adjust the optical alignment of the lamphouse on the projector table.

REPLACE THE REAR COVER PANEL over the bulb adjustment control mechanism.

DUE TO MANUFACTURING TOLERANCES on the xenon bulb and normal aging, it may be necessary to operate one lamp at a little higher or lower current than the other to obtain equal light balance on the screen. This can be done by a slight adjustment of the current control located on the back of the lamp or at the power supply.

TO EXTINGUISH the arc, place the "ON-OFF" switch, on the back of the lamphouse, to the "OFF" position. The blower in the lamphouse will continue running until the main switch in the A. C. power line to the power supply is opened.

TO OPERATE this projection lamp in an automatic system, place the "Man-Auto" switch in the "Auto" position, the "ON-OFF" switch in the "ON" position, then the lamp can be turned "ON" or "OFF" from the remote switching station. Attach the automation ignition cue or tab on the film far enough in advance of the projection cue, to permit a few ignition pulses. The ignition pulse is timed at approximately one second intervals.

CAUTION: In either mode of operation it is necessary to break the main A. C. line to the power supply to stop operation of the lamphouse blower.

DAILY OPERATION in the "Manual" mode, after the above procedures have been followed, requires only that the main A. C. line switch to the power supply be placed in the "ON" position, then the lamp "ON-OFF" switch to the "ON" position and the bulb will ignite. Reverse this procedure for turning the lamp off.

SEE THE OPERATION SECTION of the power supply manual for instructions on adjusting the current range to a lower or higher output.

MAINTENANCE

THE XENON LAMP requires very little maintenance to keep it in good working order.

THE REFLECTOR should be cleaned periodically with a clean, soft, lint free cloth to remove any dust from the reflecting surface.

CHECK all electrical connections periodically for tightness, especially the D. C. leads at the xenon bulb and at the shunt and igniter.

THE XENON LAMPHOUSE does not require any lubrication other than at the blower. This should be lubricated with two or three drops of non-detergent motor oil once every four to six months. The lamphouse cover must be removed to expose the oil hole.

THE XENON BULB should be checked occasionally for presence of foreign material on the envelope. Any dirt or other foreign material should be removed promptly. CAUTION: Observe all safety procedures when working around the bulb.

THE INSIDE OF THE LAMPHOUSE and the fan blades should be cleaned periodically, depending on the dust conditions at each installation. The fan blades need cleaning to remove the build-up that accumulates over a period of time.

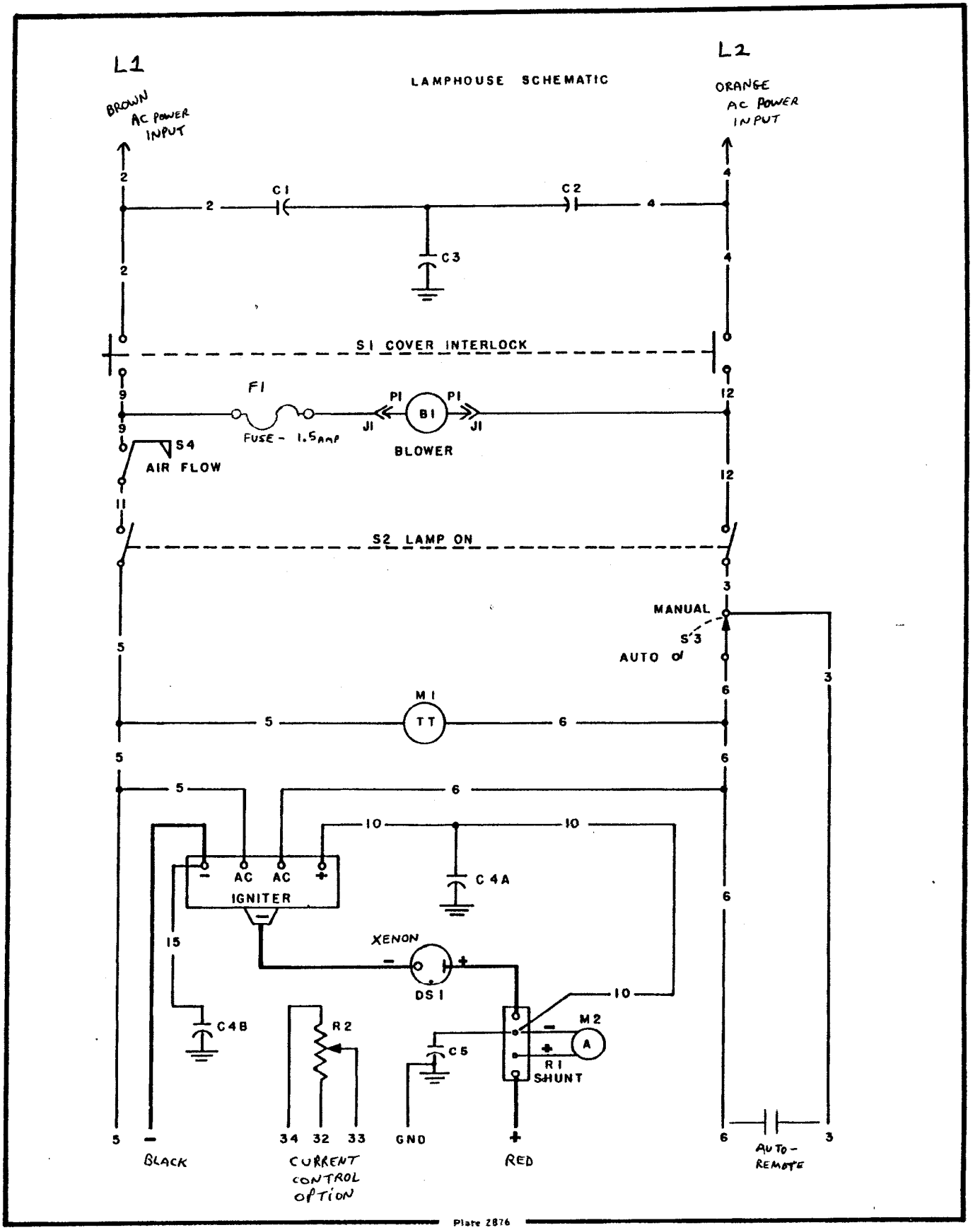

L1
L2
LAMPHOUSE SCHEMATIC
BROWN AC POWER INPUT
ORANGE AC POWER INPUT
C1
C2
C3
S1 COVER INTERLOCK
F1
FUSE - 1.5 AMP
P1
P1
J1
J1
B1
BLOWER
S4
AIR FLOW
S2 LAMP ON
MANUAL
S3
AUTO
M1
TT
IGNITER
AC
AC
C4A
XENON
DS1
C4B
R2
C5
M2
A
R1
SHUNT
BLACK
CURRENT CONTROL OPTION
GND
RED
AUTO-REMOTE

Plate 2876

PARTS LIST
WIRING DIAGRAM

Reference Designation	Part No.	Description
-	65999A	Igniter Assembly
B1	65932	Blower Assembly, 50/60 Hz.
C1 & C2	76132	Capacitor .005 MFD/600W VDC
C3	76133	Capacitor .01 MFD/400W VDC
C4A & C4B	80177	Capacitor 1.0-1.0 MFD/600W VDC
C5	81947	Capacitor .01 MFD/500W VDC
DS1	-	Xenon Bulbs (See table of bulbs & adapters)
M1	65119	Running Time Meter, 60 Hz.
M2	65142	Ammeter
R1	82167	Shunt, Ammeter, 150 AMP
R2	88122	Current Control Potentiometer (Early Models)
S1	80168	Interlock Switch, Cover
S2	81275	"ON-OFF" Switch, Rocker type
S3	81276	Man-Auto. Switch, Rocker type
S4	85109	Air Flow Switch
F1	39198	Fuse, 1.5 Ampere
-	39199	Fuse Holder

NOTE

If Fuse F1 and Fuse Holder are not present on your lamphouse, please add them to the wiring. They protect the lamphouse if the blower motor should short circuit.

TROUBLE CHART

NORMAL OPERATION

WHEN THE SWITCH in the main A.C. supply line to the power supply is placed in the "ON" position, the fan in the forced air cooled power supply will run (some power supplies are only convection cooled and do not have a fan) and the one in the lamphouse will run.

THE FAN in the lamphouse will close the airflow interlock switch, completing the circuit to the lamphouse "ON-OFF" switch.

WITH THE "AUTO-MAN" SWITCH in the "Man" position and the "ON-OFF" switch in the "ON" position, the A.C. line contactor in the power supply will pull in and energize the main transformer and silicon rectifiers supplying DC current to the igniter and bulb.

THERE WILL BE distinct audible high voltage arc ping at the arc gap in the igniter and at the xenon bulb. The bulb should ignite immediately after one or two of these high voltage pulses and the lamp current will adjust to the setting of the lamphouse current control or setting of the dial switch and taps in the power supply.

TROUBLE SHOOTING

IF THE XENON BULB does not ignite, observe the following operational sequences for assistance in locating and isolating the trouble area.

WHEN OPERATED WITH A POWER SUPPLY equipped with the red indicating light and the light is "ON" and the fan in the forced air cooled power supply is operating, the A.C. circuit in the power supply is trouble free up to the terminal block in the power supply.

WITH THOSE POWER SUPPLIES that are convection cooled and do not have the red A.C. power indicating light or fan and the following operational sequence does not occur, check the power supply to see that the A.C. circuit is energized and power is available at terminals (2) and (4) in the power supply. See your power supply manual for the circuit diagram.

AT THIS TIME the cooling fan in the lamphouse should run. If this does not occur the trouble is in either the cover interlock switch, the fan, a loose connection or a broken #2 or #4 lead. Check at this time for 115V. A. C. at the switch then the fan terminals #9 and #12 inside the lamphouse. The interlock switch must be manually actuated to energize the blower fan.

CAUTION: To prevent bulb ignition when checking the A. C. control circuit in the lamphouse, remove lead #10 from the igniter terminal block. Tape the terminal to prevent shorting out the circuit.

THE VANE on the air flow switch should raise, with the "Auto-Man" switch in the "Man" position and the "ON-OFF" switch in the "ON" position, the running time meter should start and indicate elapsed time. If this meter does not operate, check for continuity at the "Auto-Man" switch and "ON-OFF" switch.

A DEFECTIVE RUNNING TIME METER will not prevent bulb ignition.

WITH THE "ON-OFF" SWITCH, located on the rear of the lamphouse, in the "ON" position, you should hear a distinct high voltage arc ping at the spark gap in the igniter and see the flash of the xenon bulb, at the ammeter, as D. C. voltage is applied to the bulb electrodes.

IF THE HIGH VOLTAGE PING or flash at the ammeter is not apparent, check the "No Load" voltage between the lamphouse and power supply. Remove either lead #5 or #6 at the igniter to prevent bulb ignition and defeat the cover interlock switch. Check with a voltmeter across terminals #10 and #15 on the igniter terminal board (voltage 85-150 V. D. C., minimum of 85). If this voltage is not indicated, the problem is in the leads between the lamphouse and power supply or in the power supply. See the detailed trouble shooting section of the power supply for additional instructions. Replace leads #5 or #6 on the igniter before proceeding.

IF THE HIGH VOLTAGE ARC is audible at the lamphouse and the bulb does not flash, replace the bulb and attempt ignition with the new bulb.

IF THE HIGH VOLTAGE ARC is audible at the lamphouse, the flash of the bulb is visible in the ammeter and ignition of the bulb is not sustained, the problem area is in the power supply. See the trouble shooting section of the power supply manual for detailed instructions.

IF THE HIGH VOLTAGE ARC is not audible or the flash of the bulb visible, the trouble is in the igniter.

LUME-X
TROUBLE SHOOTING

CAUTION - HIGH VOLTAGE

THE SPARK GAP MUST BE SHORTED OUT WITH A SCREWDRIVER BEFORE ATTEMPTING TO BENCH TEST THE IGNITER ASSEMBLY. FOLLOW PROCEDURES OUTLINED IN MANUAL FOR IGNITER REPLACEMENT.

TROUBLE	CAUSE	TEST	REMEDY
Bulb fails to ignite. H. V. ping is audible & flash of bulb is visible.	Defective bulb.	H. V. flash in bulb is visible in ammeter housing.	Replace bulb.
Bulb fails to ignite. H. V. flash in bulb extremely weak.	Defective glass capacitor #65216 (65997) in igniter.	Visually inspect for oil leakage in back of igniter and/or check for crack in capacitor seal. Test capacitor with checker.	If defective, replace capacitor. Rating .01 MFD 20KVDCW
	See Power Supply Trouble Shooting under "Bulb Does Not Light (bulb flashes)."		
Bulb fails to ignite although H. V. ping is audible, with no flash of arc in bulb.	Defective bulb.	----------	Replace bulb.
	High voltage leak from bulb lead to negative igniter lead.	----------	Keep igniter negative lead as far as possible from H. V. bulb lead.
	Defective glass capacitor #65216 (65997) in igniter	Visually inspect for oil leakage in back of igniter. Remove back cover of igniter and check for crack in capacitor seal. Test capacitor with capacitor checker.	Replace glass capacitor if defective. Rating .01 MFD 20 KVDCW

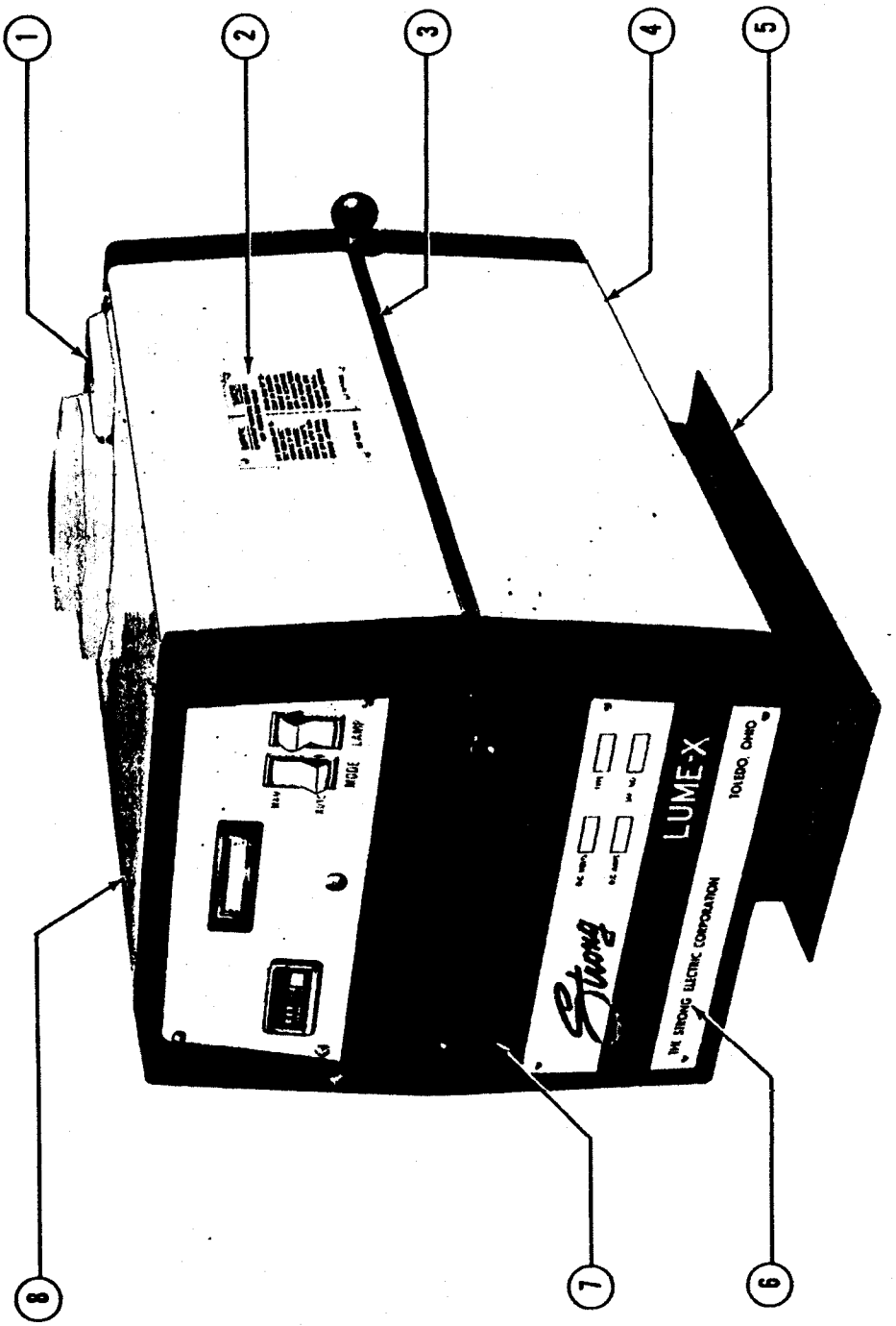
TROUBLE	CAUSE	TEST	REMEDY
Cont'd Bulb fails to ignite although H. V. ping is audible, with no flash of arc in bulb.	R2 shorting to back casting.	Check resistance between casting and wire #32 on R2. Rotate R2 to maintain clearance from casting.	If shorted replace R2.
	Ammeter shorting to casting.	Visually ascertain that red and black lead solder connections are not touching the ammeter support arm.	Move connection away from casting.
	65231 Silicon diode failure in igniter.	Test diode on megohm range of a megger. Meter should indicate high resistance in one direction, no resistance in opposite direction. Note: a standard multimeter cannot be used to test this diode.	If shorted, replace diode. Rating 15000 PRV Avg. forward current 25Ma
	Spark gap arcing to lamp housing.	Check for arc between back of igniter and lamp-house side.	If arc observed, replace 65241 rear cover on igniter.
No H. V. ping can be heard with power switch in "On" position. Man-Auto switch in "Man"position.	Loss of AC control voltage.	Check AC control circuit(2-4) from term. block in power supply through lamp interlocks back to term. 5&6 in power supply.	Replace defective component.

TROUBLE	CAUSE	TEST	REMEDY
Cont'd No. H. V. ping can be heard with power switch in "On" position. Man-Auto switch in "Man" position.	65231 silicon diode failure in igniter.	See above test for 65231.	If open replace diode.
	Wrong DC polarity to lamp.	Check polarity between (+) & (-) term. at igniter with voltmeter.	Connect lamp to power supply circuit correctly.
	CAUTION - HIGH VOLTAGE		
	High voltage diode failure on igniter capacitor.	Remove diode #65219 from assy. 65997. Test with meggar identical to 65231 diode test. Note: standard multimeter cannot be used to test this diode.	Replace diode. Rating 40000 PRV. Avg. forward current 10 Ma
	Defective PC board on igniter.	If neon glow lamp on PC board is not lit, check AC voltage at term. 5&6 on igniter term. strip(95-130V.) Check DC V. on term. 10 & 15 (85-150).	If voltage checks as noted, replace PC board.
	Defective PC board on igniter.	Check if neon glow lamp on PC board is lit.	If lamp is NOT lighted, replace PC board.
	Loose spark gap.	Make sure gap is making good connection.	

SPARK GAP MUST BE SHORTED OUT WITH SCREW-DRIVER BEFORE REPLACEMENT (see Fig. 3).

TROUBLE	CAUSE	TEST	REMEDY
Bulb goes out during operation.	(B1) blower in lamphouse.	Check for voltage, should be at least 100V. AC.	Lubricate if slow running, replace if defective. Clean dust & dirt from grill & Fan.
	(S4) air flow switch.	Check if vane on switch is actuating plunger. Check for voltage to term. 5 & 6 at igniter.	Adjust or replace switch.
	SEE POWER SUPPLY TROUBLE SHOOTING UNDER SAME HEADING.		
Bulb does not ignite and line contactor in power supply does not energize (red light on power supply lit).	S1 interlock switch, B1 blower, S4 airflow siwtch, S2 power switch, S3 switch in "Man" position.	Check lamphouse AC circuit for 100-115V. AC at each station.	Replace defective part.
If power supply does not have red light, check for 100-115V. at terminals 2 and 4 in power supply, then proceed with above test.	SEE POWER SUPPLY MANUAL.		
	Same as above with S3 switch in "Auto" position.	Same as above, also check "Remote" Contact at #3 & 6 in power supply.	Replace defective part.
	SEE POWER SUPPLY TROUBLE SHOOTING UNDER SAME HEADING.		

TROUBLE	CAUSE	TEST	REMEDY
Popping in theatre sound system as bulb ignites.	Defective capacitor on R. F. suppression assembly (C1, C2 & C3).	Remove & test with capacitor tester.	Replace defective capacitor or assembly.
	Leads between lamphouse and power supply not shielded.	----------	Shield leads.
	Defective capacitor C4A-C4B.	Same as above.	Replace capacitor.
Excessive light flicker.	Defective or aged bulb.	----------	Replace bulb. If trouble is not corrected see power supply trouble shooting.
Reduced light output.	Bulb aging.	----------	Increase current.
Extremely long duration between ignition pulses.	Low DC voltage to lamp.	Check DC no-load voltage on term. 10&15 of igniter board (85-150VDC).	If below 85V DC refer to power supply trouble shooting.
	Defective spark gap.	Audible "hissing" sound before bulb ignites.	Replace spark gap.
	Low A. C. voltage to lamp.	Measure A. C. voltage at #5 & 6 on igniter terminal block.	If below 95 VAC refer to power supply trouble shooting.
Igniter continues to fire after bulb ignites.	P. C. board failure.	----------	Replace P. C. board.


1
2
3
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MODE LAMP
LUME-X
TOLEDO, OHIO
THE STRONG ELECTRIC CORPORATION
Strong

FIGURE 1

PARTS LIST

Figure 1

Item	Part No.	Description
1	65118	Vent Casting
-	1311	Screw #8-32 x 3/8 Bd. Hd.
-	65159	Screen
-	65157	Baffle, Heat
2	81282	Caution Plate
	1639-2	Pop Rivet
3	65165	Trim Strip
4	65147	Lamphouse, Lower
-	1736-1	Screw #10-32 x 1/2" Holt Hd. (Special)
-	1715	Washer, Flat #10
5	65969	Adapter Assy. (9" Optical C_L)
-	685	Screw 1/4-20 x 3/8" Hex. Hd.
-	889	L'Washer 1/4" Shakeproof, Internal
6	65100	Name & Data Plate
-	1639-2	Pop Rivet
7	65968	Cover Assy., Bulb Adj.
-	65140	Cover Panel
-	65166	Plunger
-	65167	Grommet
8	65187	Top Cover
-	1716	Screw, Switch Actuator #10-24 x 5/8
-	797	Nut #10-24 Hex
-	1736-1	Screw #10-32 x 1/2" Holt Hd. (Special)
-	65149	Driver (tool) for 1736-1

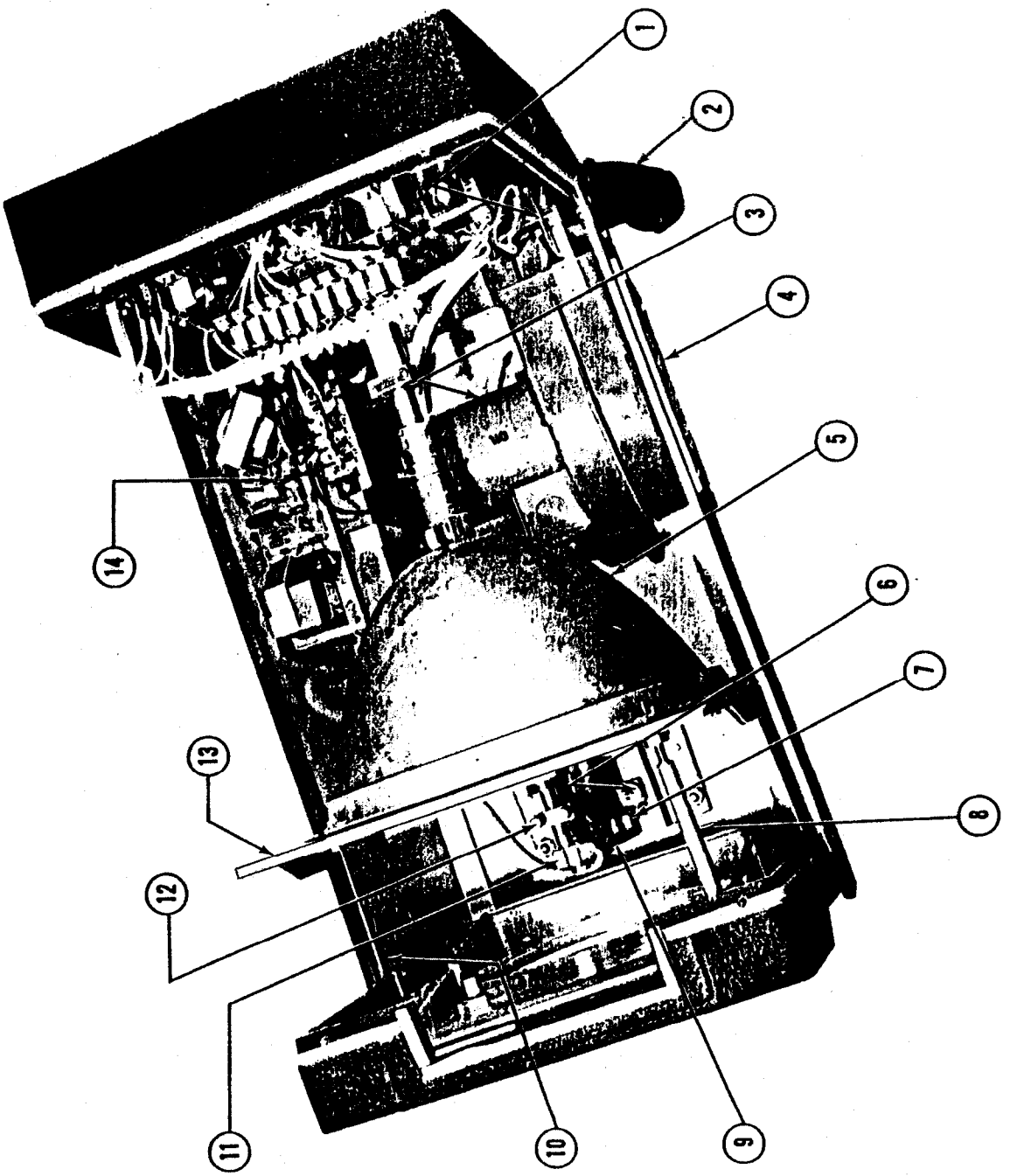


FIGURE 2

39968 CABLE ASSEMBLY, LAMP TO STRONG POWER SUPPLY
39879 CABLE ASSEMBLY, LAMP TO IREM POWER SUPPLY
SUBSTITUTE

PARTS LIST

Figure 2

Item	Part No.	Description
1	85109	Switch, Air Flow
-	1565	Screw #4-40 x 3/4 Rd. Hd.
-	1343	L'Washer #4 Shakeproof
-	65158	Bracket, Switch
-	1639-2	Rivet
2	81143	Connector 90°
-	65965	Cable Assy. (Lamp to Power Supply) STRONG
3	65932	Blower Assy. with Gasket
-	1312	Screw #8-32 x 1/2" Bd. Hd.
-	65138	Gasket
4	65971	Frame & Grill Assy.
-	1304	Screw #8-32 x 1/4" Bd. Hd.
5	65936	Reflector
-	1737	Screw #10-32 x 5/8" Hex Hd.
-	1507	Nut #10-32 Tinnerman
6	65171	Bushing, Shouldered
-	262	Screw #8-32 x 1" Fil. Hd.
-	1582	Washer #8 Flat
7	65261	Stud, Anode Connector
-	805A	Nut, 1/4-20 Hex
-	876	L'Washer 1/4" Split Ring
* 8	65164	Tie Rod
-	805	Nut 1/4-20 Hex
9	65115	Air Duct, Anode
-	65175	Insulator Plate
10	65155	Inner Heat Shield (Right)
-	65156	Inner Heat Shield (Left)
-	1304	Screw #8-32 x 5/16" Bd. Hd.
11	65148	Anode (+) Contact & Clamp
-	1735	Screw #8-32 x 1/2" Hex, Socket Hd.
-	687	Screw 1/4-20 x 1/2" Hex Hd.
-	881	L'Washer 1/4" Split Ring
-	65948	Anode (+) Lead
12	65152	Thumb Screw
-	65151	Retaining Plate
* -	65117	Support Yoke, Anode (+), (1000-1600W.) (See preceding table of Bulbs & Adapters)
-	1567	Screw #10-24 x 1/2" Bd. Hd.
13	65114	Support Casting, Reflector
-	691	Screw 1/4-20 x 3/4 Hex Hd.
-	876	L'Washer 1/4" Split Ring
-	805	Nut 1/4-20 Hex

Item	Part No.	Description
14	65999-A	Igniter (See Fig. #3)
-	468	Screw #10-32 x 7/8" Hex Hd.
-	800	Nut #10-32 Hex
-	1715	Washer #10 Flat
-	875	L'Washer 3/16" Split Ring
-	65248	Strap, Hold-down

*65164 Do not attempt to adjust the setting of this tie rod. The position of the reflector is optically set at the factory.

*65117 Do not change the position of this support yoke. This part is set optically at the factory, with the reflector. See the table of bulbs and adapters for conversion instructions.

IGNITER IMPROVEMENTS

THE IGNITER DESIGN has been changed to simplify field inspection, test and replacement of various components. The capacitor and diode assembly item 5 is not encapsulated with the RF and current coil item 12 as in the original igniter.

IF REPLACEMENT of the original potted assembly is determined necessary, then the replacement will consist of items 4 through 13, order #65998-X. Item 3 must be salvaged and replaced on the new potted assembly. All mounting screws must be tightened securely. The stand-off item 13 acts as an electrical feed-through for the circuit board assembly item 3.

ALL ITEMS identified on this igniter illustration are replaceable. Observe polarity when replacing a diode. The capacitor in item 5 is oil filled and in a glass shell. Handle very carefully to prevent cracking of the glass.

LATER MODELS of the Lume-X igniter do not have the six place terminal block as shown. This was replaced with a five place block and the ground lead removed. When replacing the igniter in a system with a ground lead to the igniter in the lamphouse cable, fold the ground lead back and tape the end.

THIS IGNITER will hold a charge, therefore care must be observed when handling it. After removing it from the lamphouse, discharge by placing an insulated screwdriver across the spark gap, item 11. This element is located behind the insulating plate at the back of the igniter.

MAKE CONTACT with the screwdriver on the diode end first, then short to opposite end of the spark gap.

A REPAIR-EXCHANGE POLICY has been established at Strong Electric to cover the printed circuit board assembly. Request detailed information regarding cost and procedures from your dealer.

Figure 3

1	65999A	Igniter
2	------	See details in lower photo.
3	65992	Circuit Board Assy.
4	65991	Top Plate Assy.
5	65997	Capacitor, Diode & Bracket Assy.
6	65231	Silicon Diode (15000 PRV)
7	65239	Bottom Plate
8	65200	Bracket
9	65241	Rear Cover
10	65234	Retaining Strap, Spark Gap
11	65237	Spark Gap
12	65926	RF and Current Coil, Potted Assy.
13	65232	Spacer

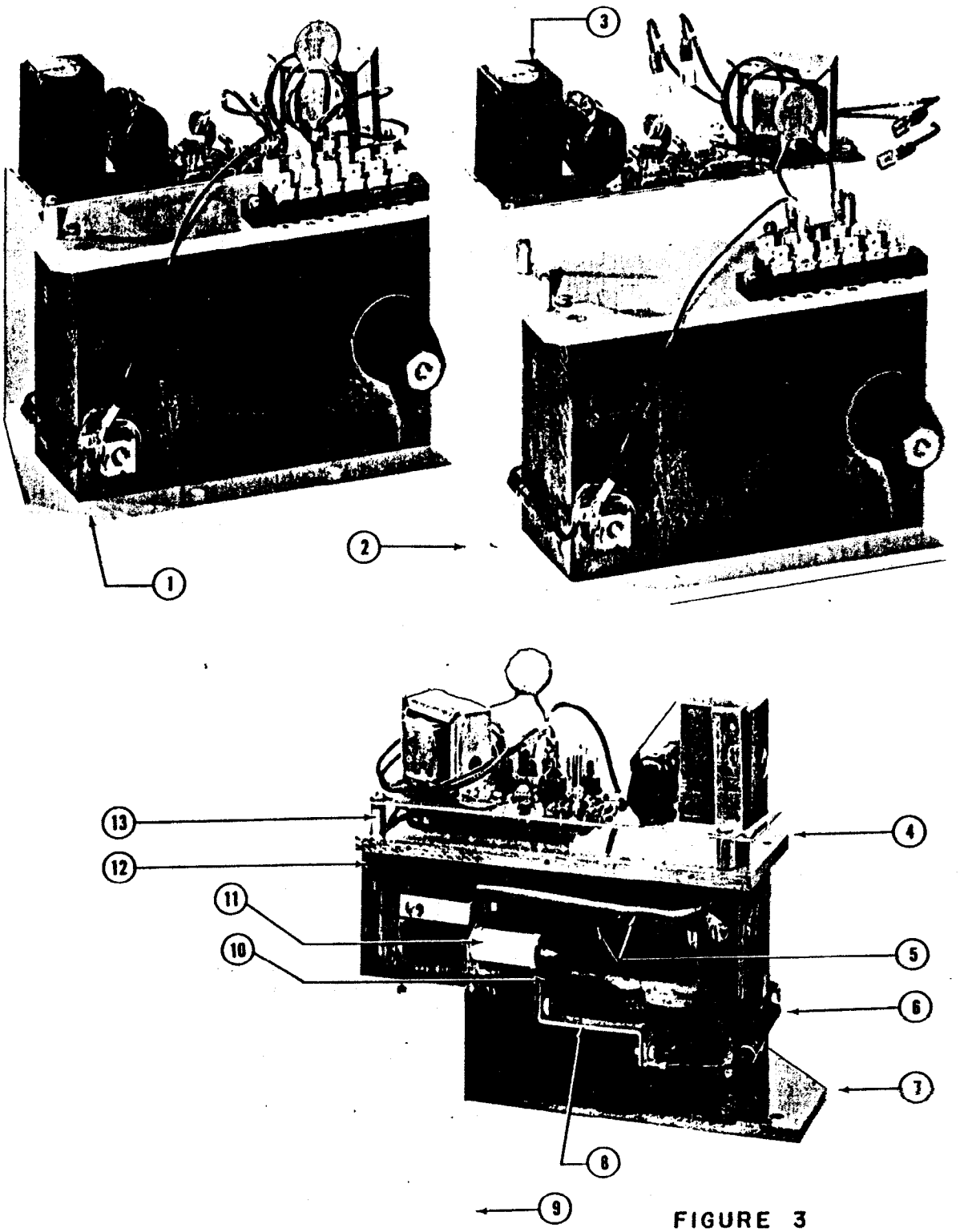
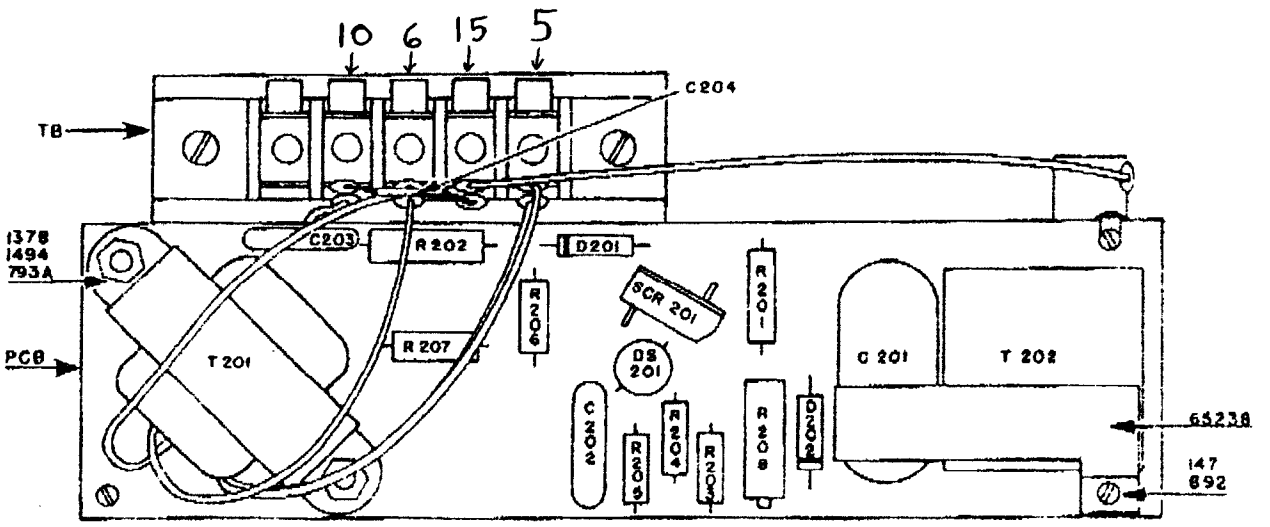


FIGURE 3

Plate 3076

65999-A COMPLETE IGNITER ASSEMBLY

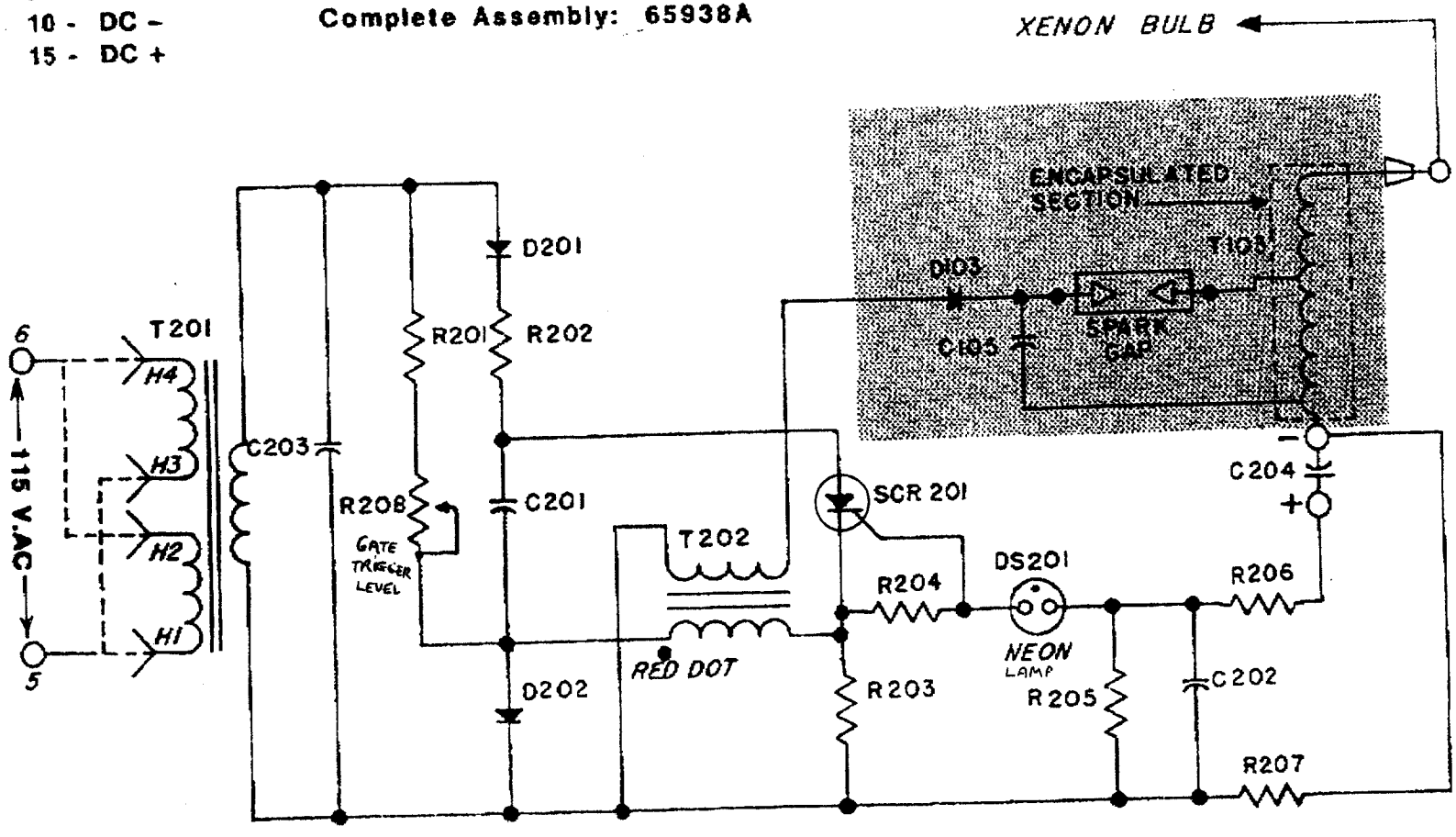


IGNITER PRINTED CIRCUIT BOARD
PARTS LIST

Item	Part No.	Description
-	65992-B	Printed Circuit Board Assy.
TB	65268	Barrier Strip, 5 Terminal
-	65391	Mounting Bracket, Barrier Strip
-	65269	Marker/Insulation Strip
-	320	Screw, 10-32 x 3/4"
C201	65204	Capacitor, 3 MFD, 400V.
C202	65222	Capacitor, .68 MFD, 100V.
C203	79127	Capacitor, .01 MFD, 1000V.
C204	65950	RF Bypass Capacitor Assy.
D201, 202	65223	Silicon Diode, IN 2071
DS201	65224	Neon Glow Lamp
SCR201	65225	Silicon Controlled Rectifier
T201	65993	Isolation Transformer
-	1378	Screw, 6-32 x 3/8"
-	1494	#6 Lockwasher, Bronze
-	793A	6-32 Hexnut
-	828	#6 Flatwasher
T202	65220	High Voltage Pulse Transformer
R201	65226	Resistor, 82K Ohm
R202	65227	Resistor, 400 Ohm
R203, 205	65228	Resistor, 33K Ohm
R204	65229	Resistor, 1000 Ohm
R206, 207	65250	Resistor, 16K Ohm
R208	65348	Trim Pot, 100K Ohm
-	65238	Transformer Bracket
-	147	Screw, 6-32 x 1/4"
-	892	#6 Lockwasher
PCB	65221	Printed Circuit Board

5 - AC
6 - AC
10 - DC –
15 - DC +

Ref. Desig. (100) in 65998X Igniter Box
Ref. Desig. (200) on 65992B Circuit Board
Complete Assembly: 65938A



IGNITION CIRCUIT
Xenon Super Trouper

IGN. MD

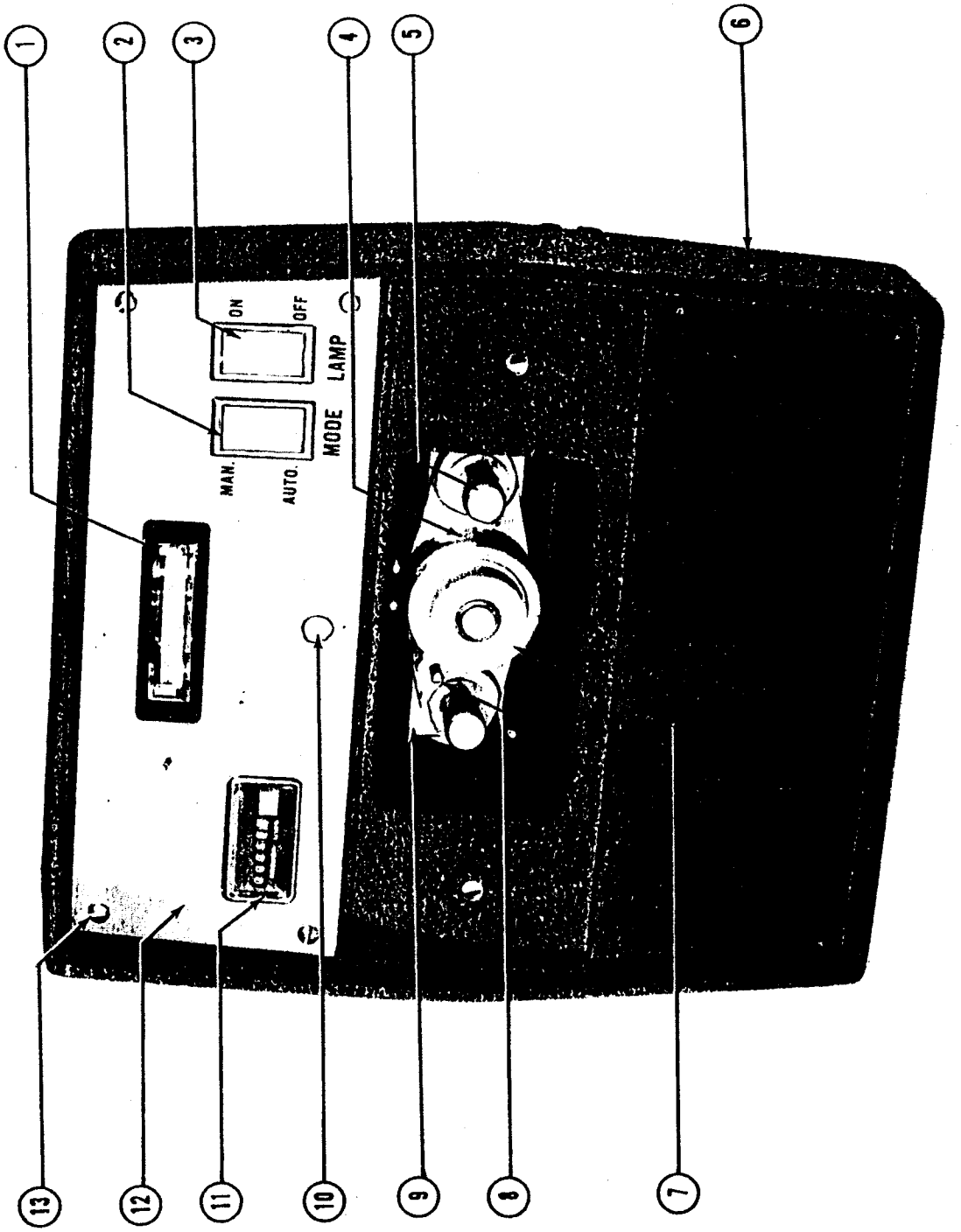


FIGURE 4

PARTS LIST

Figure 4

Item	Part No.	Description
1	65142	Ammeter
*2	81276	Switch "Man-Auto"
** 3	81275	Switch "On-Off"
4	65116	Bulb Adjustment Casting
5	65132	Thumb Screw
-	65150	Washer, Flat
6	65112	Lamphouse, Rear Casting
7	65959	Focus Screw & Bearing
-	90416A	Retaining Ring
8	65153	Knurled Screw
-	65154	Ball
9	65133	Plate
10	76329	Plug Button (Current Control)
11	65119	Elapsed Time Meter & Bracket
12	65143	Panel, Instrument
13	1382	Screw #8-32 x 3/16" Bd. Hd.

* Marked "LAMP ON-OFF" on 65016-3 16mm version
** Marked "PROJECTOR ON-OFF" on 65016-3 16mm version

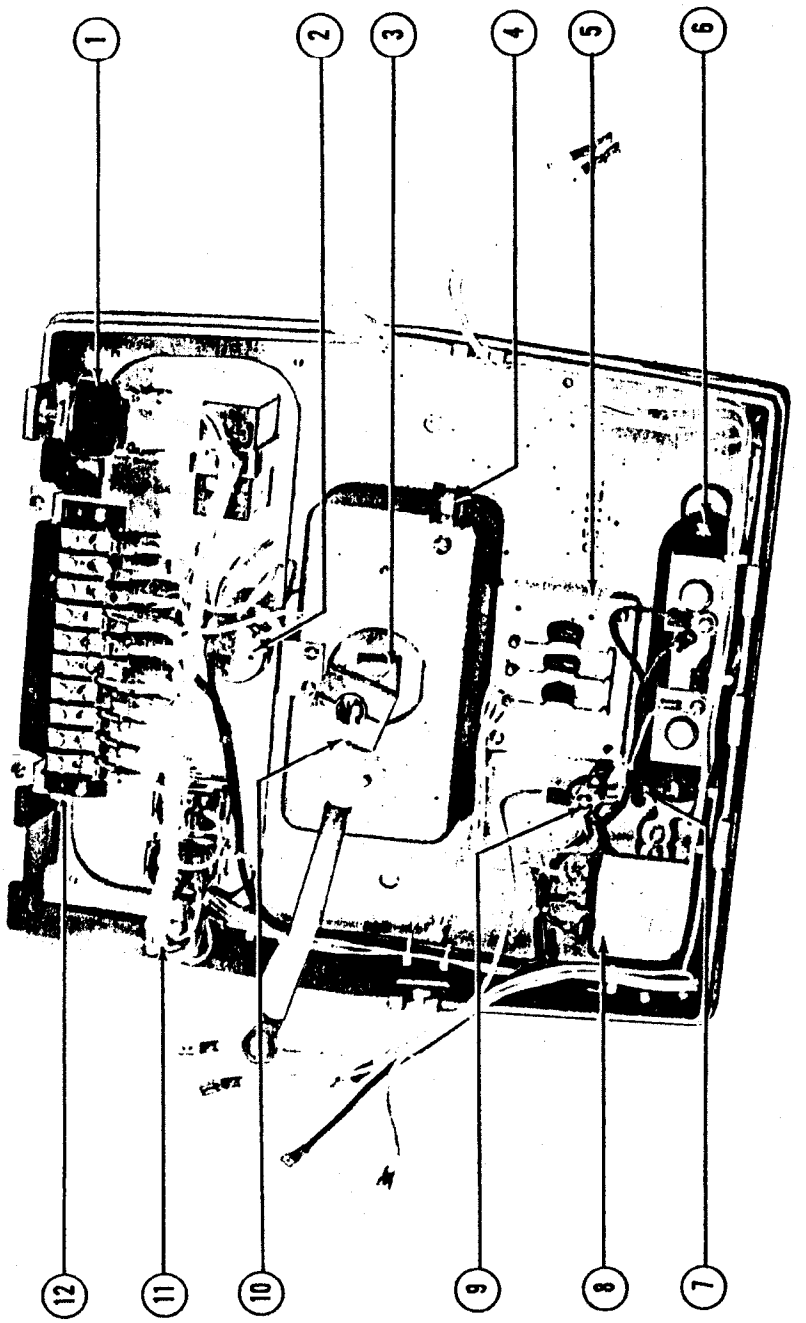


FIGURE 5

PARTS LIST

Figure 5

Item	Part No.	Description
1	80168	Switch, Cover Interlock
-	1741	L'Washer 7/16" Shakeproof
-	65185	Bracket, Switch Mounting
-	254	Screw #8-32 x 1/4" Fil. Hd.
-	891A	L'Washer #8 Shakeproof
2	88122	Current Control
-	65180	Bracket, Current Control
-	255	Screw #8-32 x 5/16" Fil. Hd.
-	886-A	L'Washer #8
-	65176	Insulator Washer
3	65960	Cathode Support Assy. (See preceding table of Bulbs & Adapters)
4	M4361	Cable Clamp
-	377	Screw #10-24 x 1/4" Fil. Hd.
5	76988	Suppression Assy.
-	76132	Capacitor (C1 & C2)
-	76133	Capacitor (C3)
-	76196	Plate
-	1702-1	Stand-Off
-	255	Screw #8-32 x 5/16 Fil. Hd.
-	891A	L'Washer #8 Shakeproof
6	82167	Shunt (R1)
-	385	Screw #10-24 x 1/2" Fil. Hd.
-	875	L'Washer 3/16 Split Ring
7	81947	Capacitor Assy. (C5)
8	80177	Capacitor (C4A & C4B)
-	375	Screw #10-24 x 3/16 Fil. Hd.
-	885	L'Washer #10 Shakeproof
9	79131	Ground Terminal
-	381	Screw #10-24 x 3/8" Fil. Hd.
10	65966	Negative (cathode) Lead Assy.
-	65131	Contact & Clamp
-	1532	Screw #8-32 x 7/8" Socket Hd. Cap
-	685	Screw 1/4-20 x 3/8" Hex Hd. Cap
-	876	L'Washer 1/4" Split Ring
11	65956	Harness Assy., Lamphouse
12	65134	Terminal Board
-	182	Screw #6-32 x 7/16" Fil. Hd.
-	65160	Mounting Bracket
-	255	Screw #8-32 x 5/16" Fil. Hd.
-	891A	L'Washer #8 Shakeproof

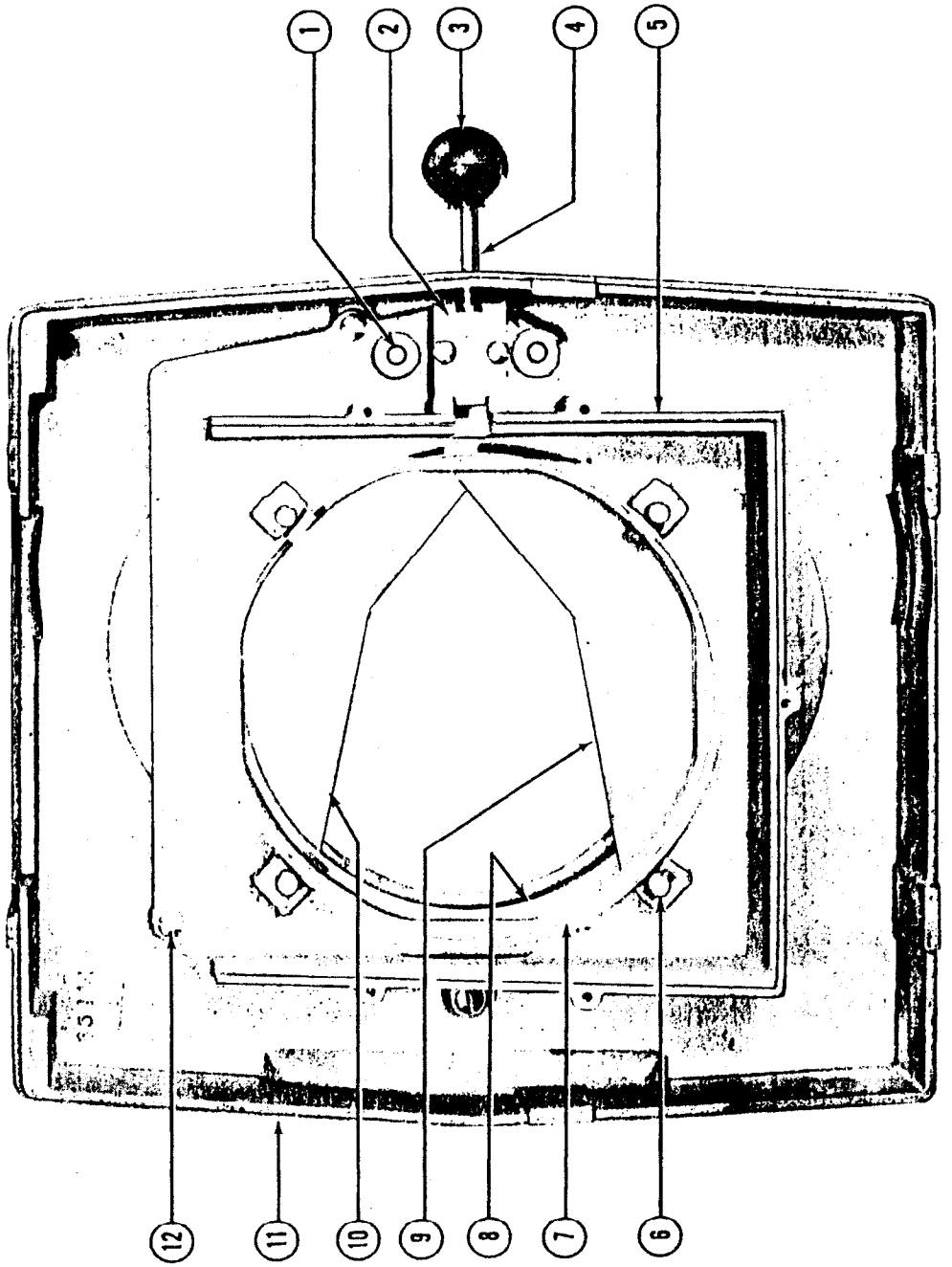


FIGURE 6

PARTS LIST

Figure 6

Item	Part No.	Description
1	65139	Bearing Stud
-	64167	Retaining Ring
2	65127	Stop Plate, Douser Block
-	1304	Screw #8-32 x 5/16" Bd. Hd.
-	65963	Actuating Block, Douser
3	10048	Knob
4	65125	Shaft, Douser
5	65113	Support, Douser & Neg. Lens
6	65152	Thumb Screw
-	65244	Lens Clip
-	891A	L'Washer #8 Internal
7	65243	Negative Lens
8	65257	Separator, Douser Blade
-	1304	Screw #8-32 x 5/16" Bd. Hd.
9	65973	Douser Blade, Lower
10	65972	Douser Blade, Upper
11	65111	Front Casting
12	313	Screw #10-24 x 7/16 Rd. Hd.
-	885	L'Washer #10 Shakeproof Internal

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

Strong Electric Corporation

Strong Model No.	Xenon Bulb Wattage	OSRAM Model No.
	Super Lume-X	
39000 Series	700 watt	XBO 700W/HS OFR
	1000 watt	XBO 1000W/HSC OFR**
	1600 watt	XBO 1600W/HSC OFR**
	2000 watt	XBO 2000W/H OFR(N-C)*
	2000 watt	XBO 2000W/HS OFR***
	2500 watt	XBO 2500W/HS OFR
	Lume-X	
65000-1,2,3,4	1000 watt	XBO 1000W/HS OFR
	1600 watt	XBO 1600W/HS OFR
	2000 watt	XBO 2000W/H OFR(NC)
65000-5 & Up	1000 watt	XBO 1000W/HSC OFR**
	1600 watt	XBO 1600W/HSC OFR**
	2000 watt	XBO 2000W/H OFR(N-C)*
	2500 watt	XBO 2500W/HS OFR
65001 Series	700 watt	XBO 700W/HS OFR
	1000 watt	XBO 1000W/HSC OFR**
	1600 watt	XBO 1600W/HSC OFR**
	2000 watt	XBO 2000W/H OFR(N-C)*
	2500 watt	XBO 2500W/HSC OFR

NOTES:

*Magnetic stabilization is required when using the XBO 2000W/H OFR in the Lume-X, Highlight, or Super Lume-X lamphouses. If not provided, the following kits can be obtained from Strong:

- For 65000 and 65001 Series lamphouse: Kit No. 65847
- For 39000 Series lamphouse: Kit No. 39962

**HSC bulbs require an anode adaptor (No. 1600-3) available through OSC.

***Can be used in lamphouses that are set up for the XBO 2500W/HS OFR.