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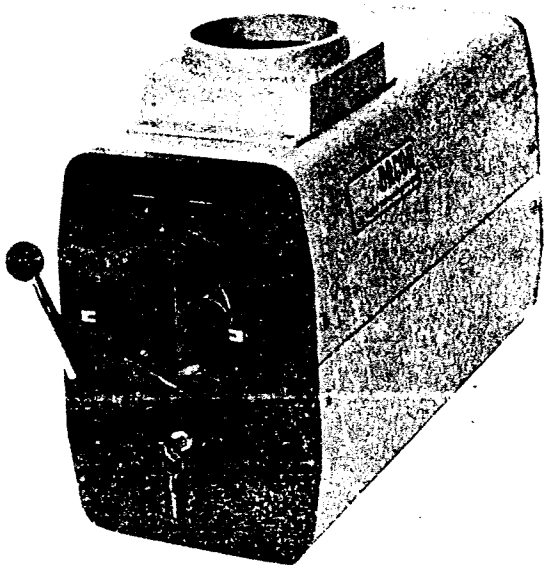
EFFECTIVE FOR SERIAL NUMBER AG00101 UP

OPERATING INSTRUCTIONS

MODEL 2500C
XENON LAMPHOUSE
AND POWER SUPPLY



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REVISED SEPTEMBER 1974

RECORD OF REVISIONS

This document is applicable to the Model 2500C Xenon Lamphouse and Power Supply, Serial Number AG00101 and up.

PAGE NUMBER	EFFECTIVE DATE	CHANGE DESCRIPTION
i through iii	September 1974	Revised table of contents
iv	May 1973	
1-1 through 1-5	May 1973	
1-6	September 1974	Revised to reflect new hinged front bulkhead cover.
1-7	May 1973	
1-8	September 1974	Photo revised to show new hin front bulkhead cover.
1-9	May 1973	
1-10	September 1974	Revised to reflect new hinged front bulkhead cover.
1-11	May 1973	
2-1 thru 2-6	May 1973	
2-7 thru 2-8	September 1974	New procedure for installing dichroic filter. Revised to reflect new hinged front bulk head cover.
2-9 thru 2-10	May 1973	
2-11 thru 2-14	September 1974	Bulb installation procedure revised.
3-1 thru 3-4	May 1973	
3-5	September 1974	"Note" revised to reflect new hinged front bulkhead cover.
3-6 thru 3-7	May 1973	
4-1 thru 4-6	September 1974	New alignment procedure
5-1	September 1974	Procedure for motor maintenanc revised.
5-2 thru 5-3	September 1974	Bulb replacement procedure revised.
5-4 thru 5-10	May 1973	
5-11 thru 5-12	September 1974	Power Supply and lamphouse schematic revised.
6-1	September 1974	Bulb warranty revised.

RECORD OF REVISIONS (CON'T)

PAGE NUMBER	EFFECTIVE DATE	CHANGE DESCRIPTION
7-1	May 1973	
Dwg. No. 1151662	Revision F	
Dwg. No. 1141664	Revision F	
Dwg. No. 1141663	Revision P	
Dwg. No. 1153377	Revision B	Replaced Drawing No. 1140894
Dwg. No. 1141665	Revision C	
Dwg. No. 1141666	Revision A	
Dwg. No. 1141661	Revision H	
Dwg. No. 1133494	Revision B	Replaced Drawing No. 1141036-3
Dwg. No. 1141132	Revision E	
Dwg. No. 1150604	Revision K	
Dwg. No. 1140954	Revision C	
Dwg. No. 1141114	Revision M	
Dwg. No. 1140786	Revision K	
Dwg. No. 1132179	Revision F	

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CAUTION/WARNINGS

The following definitions apply to WARNINGS, CAUTIONS and NOTES found throughout this manual.

WARNING

INSTALLATION, OPERATING AND MAINTENANCE PROCEDURES, PRACTICES, ETC., WHICH WILL RESULT IN PERSONNEL INJURY OR LOSS OF LIFE IF NOT CAREFULLY FOLLOWED.

CAUTION

INSTALLATION, OPERATING AND MAINTENANCE PROCEDURES, PRACTICES, ETC., WHICH WILL RESULT IN DAMAGE TO EQUIPMENT IF NOT CAREFULLY FOLLOWED.

NOTE

Installation, operating and maintenance procedures, practices, etc., which are essential to emphasize.

SECTION 1 - INTRODUCTION

1-1 GENERAL

This technical manual provides installation, operation and maintenance instructions for the ORCON Xenon Light Projection System, Model 2500C. The system is manufactured by Optical Radiation Corporation (ORC), Azusa, California, and is fully compatible with any 35mm motion picture projection system. When requesting information concerning the system, always furnish Serial and Model numbers.

WARNING

BE SURE TO READ ALL THE INSTRUCTIONS BEFORE ATTEMPTING TO OPERATE THE LAMPHOUSE OR POWER SUPPLY. DAMAGE TO EQUIPMENT OR INJURY TO PERSONNEL MAY RESULT IF ALL INSTRUCTIONS ARE NOT CAREFULLY FOLLOWED.

WARNING

DO NOT REMOVE XENON BULB FROM PROTECTIVE CONTAINER UNTIL READY FOR INSTALLATION. THE XENON BULB IS HIGHLY PRESSURIZED AND SUBJECT TO POSSIBLE RUPTURE.

1-2 DESCRIPTION/SPECIFICATIONS

The Model 2500C ORCON Projection System consists of a Model RPS-X25 solid-state regulated DC power supply and a Model 2500C xenon projection lamphouse. The two units are electrically interconnected by a 9-foot insulated cable. The cable is permanently attached to the power supply and connected to the lamphouse by a connector. All necessary power and control cables for operation of the units are contained within this cable, thus eliminating the need for an outside electrical contractor to provide additional wiring. The power supply operates from either a 115 or 208/230 VAC, 60 Hz (single phase, three wire) power source and provides the necessary power to operate the high intensity xenon bulb. When ordering a system, always specify input power requirements so that field modification will not be required.

The Model 2500C uses an X-2500 or X-4000 xenon bulb and requires 30-amp circuit breakers when operating at 115 VAC, or 15-amp circuit breakers when operating at 208/230 VAC. For 208/230 VAC operation, a separate 115 VAC power cord with 5-amp circuit breaker protection is required for operation of the fans and control circuits. Table 1-1 is the system specifications.

Table 1-1. System Specifications

ITEM	CHARACTERISTIC
Input Current (when operating from 115 VAC):	23 Amps @ 65 Amps DC
Input Current (when operating from 230 VAC):	12 Amps @ 65 Amps DC
Weight	
Power Supply:	79 Pounds
Lamphouse:	35 Pounds
Current Range:	45 to 70 Amps
Current Ripple:	Less than 1%
Current Regulation:	Less than 2%
Operating Current:	65 Amps
Operating Voltage:	22 ± 1 V
Average Lamp Life:	2,000 Hours (1,500 Hours Warranted)
Luminous Output:	20,000*
Screen Brightness:	Uniform 75% field flatness

*Open shutter aperture using an f/1.7 lens.

1-3 Power Supply (See figure 1-1)

The power supply is set at the factory for 230 VAC operation unless otherwise specified. Voltage taps are provided on the main transformer for operation between 110 and 125 VAC or 208 and 250 VAC. If low or high voltage conditions exist at the installation, the taps can be easily changed to provide optimum performance. (See paragraph 2-3 for procedure for changing taps.)

Located on the front panel are four fuses: FS1 is a 5-amp fuse used to protect the control circuit; FS2 and FS3 are 15-amp fuses which are located on each leg of the incoming single phase 230 VAC power line when system is operating from 208/230 VAC; FS4 is a 30 amp fuse located on the incoming power line when system is operating at 115 VAC.

The power supply is current regulated to provide steady light output independent of incoming line voltage fluctuations and changing bulb characteristics caused by aging. Current regulation is accomplished by means of a transistorized solid-state current regulator which is in series with the DC current to the bulb. Voltage across a sensing resistor, also located in series with the DC line current to the bulb, provides the regulating signal to the solid state regulator. The current regulator provides a 2 percent current regulation for up to 25 percent variation to the incoming line voltage. This maintains long bulb life by protecting it from being overdriven,

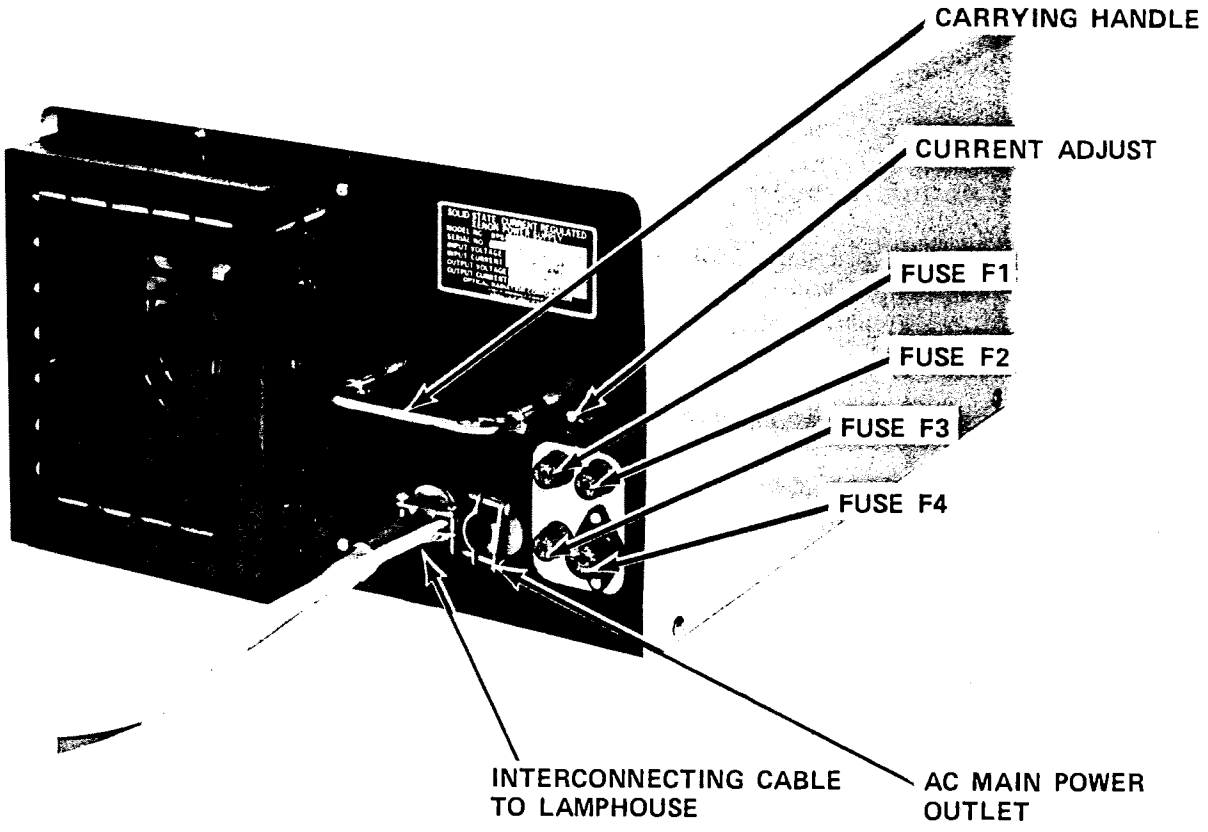


Figure 1-1. Power Supply

and provides constant screen brightness for optimum projection quality. The current regulator also acts as a solid-state filter to reduce current ripple to less than 0.5 percent RMS to provide flickerless light.

A current adjust potentiometer, located on the front of the power supply, sets the current control point while the system is in operation. Current is continuously adjustable from 45 to 70 amps. Extended ranges are available upon request. The power supply is set at the factory so that when the current adjust potentiometer is adjusted to maximum current output, bulb current will not exceed 70 amps under any operating condition. The current adjust potentiometer allows the projectionist to tailor the screen brightness for optimum viewing. Components within the power supply are protected against high voltage transients during lamp starting, and operate well below their rated values to provide reliable and maintenance-free service.

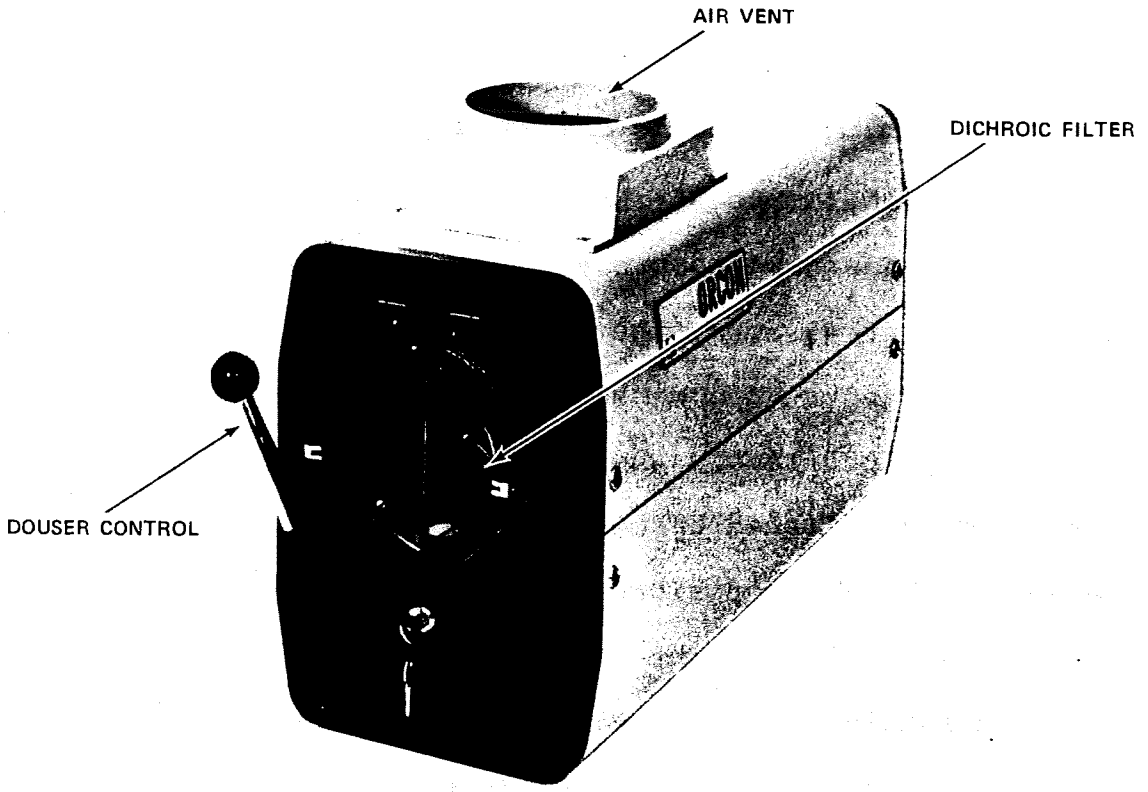
The power supply operates by receiving a command signal from the lamphouse which occurs when all safety interlocks are closed. Ignition of the bulb is a "one-switch" operation. When the power ON switch is actuated, the fan starts, the power contactor closes and power is provided to establish the necessary DC open circuit voltage across the xenon bulb. The value of open circuit voltage is approximately 150 VDC. When the proper value of voltage is reached, the high voltage RF ignition circuit is triggered and the xenon gas between the electrodes is ionized. After ionization occurs, the power source provides the necessary backup DC voltage for sustained bulb operation. The ignition time after actuation of the main switch is approximately four seconds. An interlock is provided to prevent bulb ignition or to extinguish the bulb whenever the hinged front bulkhead cover is not closed and locked.

1-4 Xenon Projection Lamphouse (See figure 1-2)

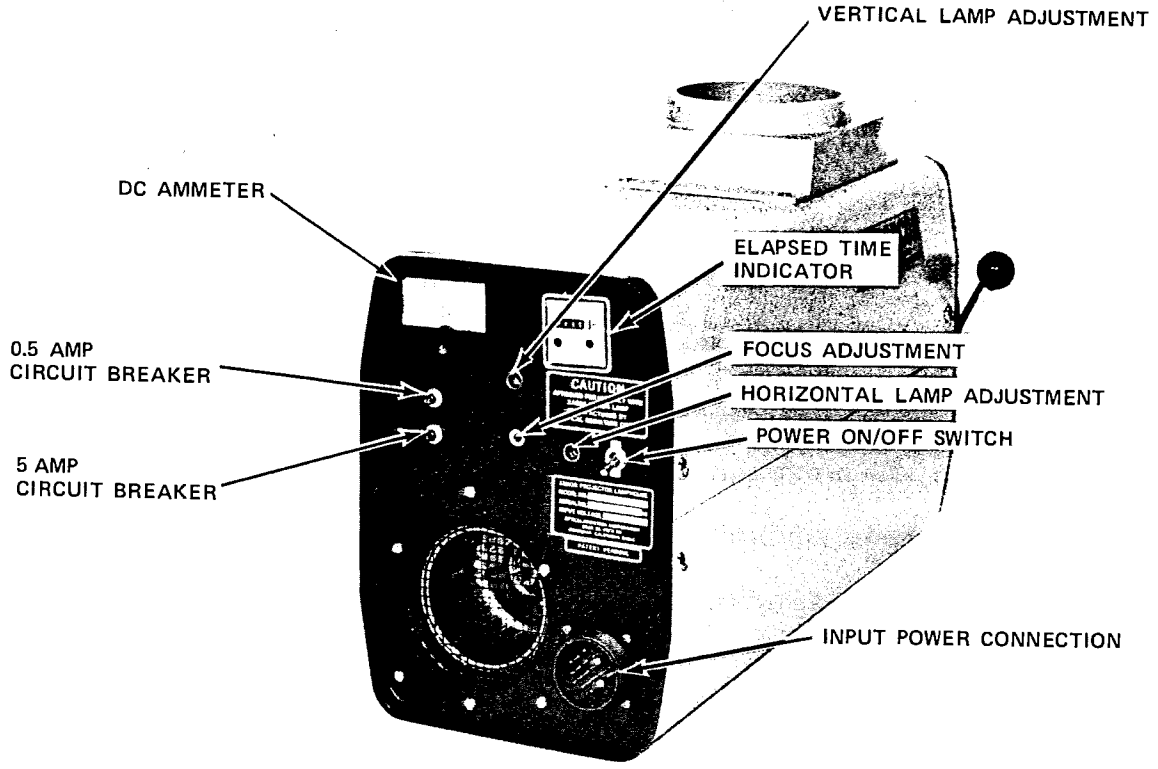
The xenon projection lamphouse is a compact and highly efficient integrated system designed to provide maximum light output. At a nominal current of 45 amps, the Model 2500C has a light output of 12,000 lumens; and at a nominal current of 65 amps, has a light output of 20,000 lumens when projected through an f/1.7 lens. This is accomplished by means of an aspheric reflector which has been especially designed by advance computer techniques to provide maximum energy light transfer to the projection aperture while maintaining the highest quality of brightness distribution on the screen. The brightness distribution on the screen is free of any hot spots and maintains a gradual fall-off from the center to the edge. With the system properly aligned, a minimum screen brightness distribution of 75 percent should result.

The lamphouse contains a horizontally mounted, ozone-free xenon bulb which has a life expectancy of over 2,000 hours. When the lamphouse is used in an approved manner and with the ORC power supply, the bulb is warranted for 1500 hours. The bulb is constructed of high quality quartz which prevents transmission of the energy in wavelength bands, thus making it ozone free. The latest sealing and electrode design has been incorporated into the bulb, resulting in a bulb which is extremely rugged and reliable.

Additionally, the bulb is designed for stable operation over a wide current range and requires no external magnetic fields for stabilization.



FRONT VIEW



REAR VIEW

Figure 1-2. Xenon Projection Lamphouse

Surrounding the bulb is a high performance reflector which collects 85 percent of the light generated by the bulb and accurately projects it to the projector film gate. The reflector is a complex aspheric surface made of electroformed nickel and coated with aluminum. The rugged reflector is essentially good for the life of the system. Even in the case of an abrupt bulb failure, the reflector does not require replacement.

A hot mirror dichroic filter is mounted in front of the lamphouse to eliminate film damaging infrared radiation. The filter reflects the infrared rays away from all critical components within the lamphouse, and transmits only the visible light to the film gate.

A forced air cooling system is incorporated into the lamphouse to provide the proper environmental conditions for safe operating temperature of the bulb and critical electronic components. With this forced air cooling and the use of ozone free xenon bulbs, the need for venting the lamphouse to the outside is eliminated.

A built-in douser protects the film, film gate and lens from heat when the lamphouse is running in the standby mode. The douser control is located at the front of the lamphouse.

The lamphouse contains several safety features for protection of the equipment and operating personnel. These include an interlock switch which de-energizes the system when the hinged front bulkhead cover is not closed and locked, and an air-flow switch which de-energizes the system if the built-in cooling fan fails.

For convenience and safety, bulb focusing and alignment is accomplished by three easily accessible adjustments located at the rear of the lamphouse. The horizontal and vertical adjustments center the light beam on the screen, while the focus adjustment is used to properly focus the beam for the greatest light distribution and intensity. Focusing and alignment is only required when installing a new bulb or if the installation is changed.

Also located at the rear is an elapsed time indicator for monitoring lamp running time, and a DC ammeter for monitoring lamp current. The bulb automatically ignites when the power switch is turned ON. This prolongs bulb life by eliminating over-ignition common in manually ignited systems.

1-5 ACCESSORIES

1-6 Focus Tool

The focus tool is a hex head wrench with a handle, especially designed for focusing the projector lamphouse.

1-7 Xenon Bulb Installation/Removal Tool

The protective bulb installation/removal tool is a cylindrical

transparent device which fits over the bulb at the front of the projector lamphouse. It is constructed so that bulb removal and replacement can be easily accomplished without physically handling the bulb. Bulb mounting hardware is contained within the heavy-duty bulb removal tool.

1-8 Allen Wrenches

A 9/64 Allen wrench is provided to aid in tightening the anode connector in the lamphouse. The 1/8 Allen wrench is used for removing the collar from around the xenon bulb.

1-9 Mounting Plate

For 35mm projection, it is recommended that an optional swivel mounting plate be used. This mounting plate attaches to the bottom of the lamphouse and provides the standard 9-inch optical centerline. The bulb focus tool is used to remove the indexing bolt on the rear of the plate for swiveling out of the way. This is extremely helpful for installation, bulb replacement, and lamphouse maintenance.

SECTION 2 - INSTALLATION

2-1 RECEIVING-HANDLING

Remove all packing material from around the unit and carefully inspect for damage which may have been caused by shipping. Any claims for loss or damage that may have occured in transit must be filed by the buyer with the carrier. Copy of bill of lading and freight bill will be furnished upon request if required. Table 2-1 is a list of installation hardware included with each lamphouse.

Table 2-1. Installation Hardware

1 each	3/16 Plas-T-Key
1 each	9/64 Allen Hex Key (Short Arm)
1 each	3/32 Allen Hex Key (Short Arm)
1 each	1/8 Allen Hex Key (Short Arm)
4 each	1/4-20 x 2" Flathead Screws
4 each	1/4 SAE Flat Washers
4 each	1/4 Lock Washers
4 each	1/4-20 Hex Nuts
1 each	1/4 Xcelite No. 8 (Special Tool)
1 each	5N13 Hunter 3/32 (Special Tool) X4000 bulb only

2-2 MECHANICAL INSTALLATION

Installation of the ORCON lamphouse and power supply will vary with the type of projection system used. Individual conversion kits are available for installing the lamphouse to any projection system. Instructions for installing lamphouse are included with the conversion kit. See paragraph 2-8 for procedure for installing lamphouse to standard 35mm motion picture projectors. The power supply can be mounted in any convenient location remote from the lamphouse. Install power supply in a location where there is adequate free air flow to prevent overheating of unit.

2-3 ELECTRICAL HOOKUP, POWER SUPPLY

The power supply is factory wired for 230 VAC, 60 Hz operation. The Model 2500C requires 12 amps 230 VAC service and a separate 5 amp 115 VAC source when operating at 230 VAC. It is recommended that three-wire conductor be used for fabricating the main power cord. A strain relief connector is provided to secure the main power cord to the power supply. Voltage taps are provided on the power transformer and are factory set for operation between 110 to 125 VAC, or 220 to 250 VAC operation. See table 2-2 for recommended wire size and fuse protection.

Table 2-2. Recommended Wire Size and Fuse Protection

MODEL NO.	WIRE SIZE		FUSE OR BRANCH CIRCUIT BREAKER	
	230/280V	115V	230/280V	115V
RPS-X25	#12	#8	30 Amp	60 Amp

2-4 115 VAC Operation

The following is the installation procedure for 115 VAC operation:

a. Cut a piece of three-wire conductor to proper length for hookup between power supply and AC power source.

b. Strip the outer jacket of the conductor back approximately ten inches and strip each wire back approximately 1/2 inch. Solder a lug onto the ground conductor wire.

c. Remove power supply cover by removing six screws, and lifting cover off.

d. Run individual conductors through access hole in power supply, and secure strain relief.

e. Connect the end of the 115 VAC power line to terminals 5 and 6 on terminal board No. 1 (see figure 2-1).

f. Hook the ground lug to the ground stud next to the filter capacitors.

g. Change taps on power transformer (TB4) as shown in figure 2-2, for 115 VAC operation, medium power.

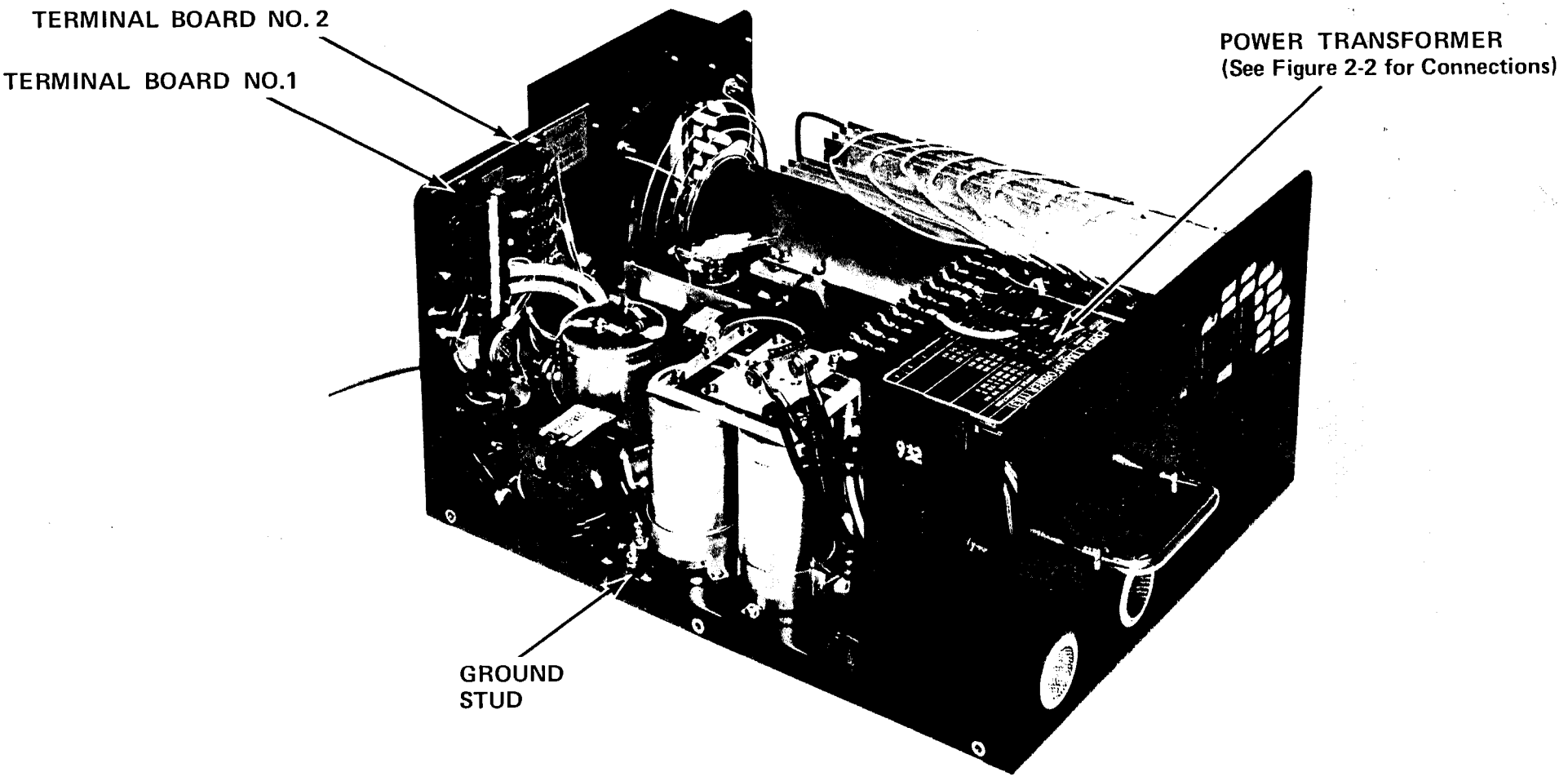


Figure 2-1. Power Supply, Cover Removed, Electrical Hookup

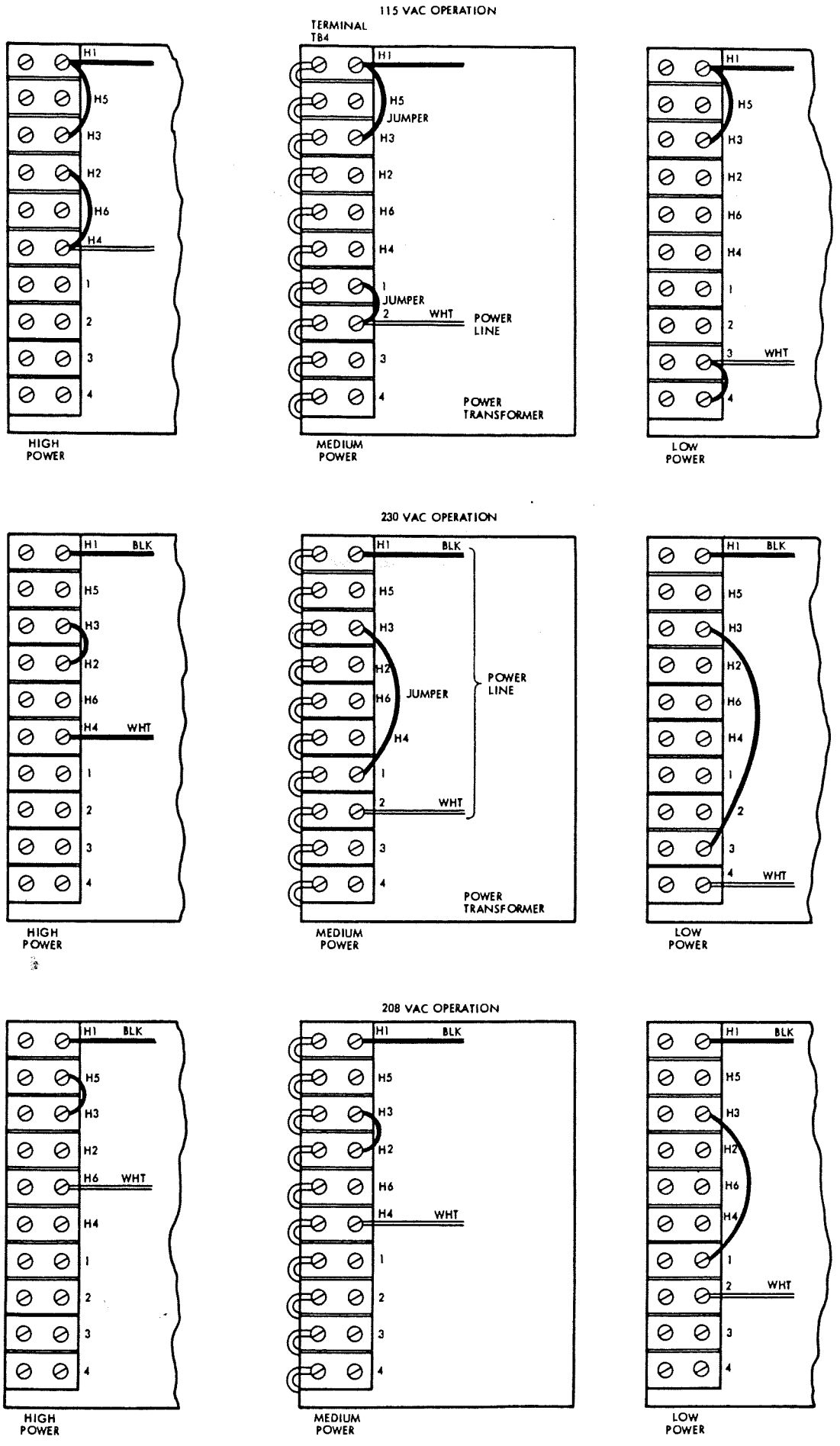


Figure 2-2. Power Transformer Taps

h. Secure cable to power supply by tightening the strain relief.

i. Install jumpers (No. 16 wire) from TB 1-5 to TB 2-5 and from TB 1-6 to TB 2-6 (see figure 2-1).

j. Replace power supply cover, and secure with six screws.

k. The free end of the power cable can now be terminated in a twist lock, 30 amp plug, or connected directly to a 115 VAC power source.

WARNING

DO NOT OPERATE POWER SUPPLY WITH COVER OFF.

2-5 230 VAC Operation

The following is the installation procedure for operation from a 230 VAC power source:

NOTE

Unit is factory wired for 230 VAC operation.

a. Perform procedures outlined for 115 VAC operation, steps a through d.

b. Check that large power transformer (TB 4) is wired as shown in figure 2-2, for 230 VAC operation, medium power.

c. Connect the end of the 230 VAC power cord to terminals 3 and 4 on terminal board No. 1 in power supply (see figure 2-1).

d. Connect ground lug to ground stud located next to the filter capacitors.

e. Secure cable to power supply by tightening the strain relief.

f. Install a 15 amp, 3-wire 115 VAC power cord and connect it to TB 2-5 and TB 2-6. Connect ground lead to ground stud.

g. Replace power supply cover and secure with six screws.

h. Connect the 15 amp cord to any convenient 115 VAC source.

i. The free end of the cable can be terminated in a standard 230 VAC, three-prong 20 amp twist lock plug, or connected directly to a 230 VAC power source.

WARNING

DO NOT OPERATE POWER SUPPLY WITH COVER OFF.

2-6 ELECTRICAL HOOKUP, LAMPHOUSE

The lamphouse is compatible for 115 VAC operation, or 208/230 VAC operation. No electrical wiring changes are required.

2-7 INSTALLATION OF DICHROIC FILTER (See Drawing 1133494-3)

The dichroic filter should be installed before installing the bulb. This is accomplished as follows:

CAUTION

WEAR WHITE COTTON OR LINEN GLOVES WHENEVER HANDLING FILTER GLASS. FINGER CONTACT WITH GLASS SURFACE WILL LEAVE BODY OIL MARKS WHICH WILL IMPAIR PERFORMANCE AND CAUSE FRACTURE OF THE GLASS AS A RESULT OF HEAT SPOTS CAUSED BY LOCAL ABSORPTION OF THE ENERGY FROM THE LIGHT SOURCE.

a. While holding the filter glass at an angle in a bright light, observe for any unusual stains. If stains are noticed, clean with a mild hand soap and water or an ammonia base household cleaner in an aerosol can. Rinse well with cold water and dry with Kleenex or equivalent if a mild soap is used. If ammonia cleaner is used, dry well with Kleenex after application; no water is required.

b. Use key to unlock front bulkhead. Swing front bulkhead door open to horizontal position.

c. Remove filter clips (Item 4), screws (Item 5), filter retainers (Item 6), and screws (Item 7). Filter segments should be installed with coated side facing light source. A black mark is painted on the uncoated side of the filter and should face towards the projector when installed.

d. Slide both filters in place, install clips (Item 4) and tighten clip screws (Item 5).

e. Install retainers (Item 6) and tighten screws (Item 7).

f. Close front bulkhead door and secure with key lock.

2-8 INSTALLATION OF LAMPHOUSE TO MOUNTING PLATE (35mm PROJECTORS)

The ORCON Mounting Plate (MP) should be used in all 35mm projector installations. The plate is designed to simplify the initial installation and to provide speedy bulb replacement when required. Install the mounting plate and lamphouse on the projector pedestal as follows (see figure 2-3):

a. Remove two 1/4-20 x 3/4 flat head screws which secure the upper and lower mounting plates together.

b. Insert four 1/4-20 x 2" Allen flat head screws through lower base plate.

c. Lay lower base plate on pedestal allowing screws to protrude into pedestal base.

d. Install four 1/4" flat washers and four 1/4" lock washers onto bolts and secure with four 1/4-20 nuts. Nuts should be finger tight only so that lower base plate can be moved freely back and forth within the channels of the projector base.

e. Normally, when ordered, the upper base plate is shipped installed to the lamphouse. If not installed, assemble the upper base plate to the bottom of the ORCON lamphouse using four 10-32 x 5/8" flat head screws, and tighten securely.

f. Place the assembled lamphouse and upper base plate carefully onto the locating stud on the lower plate and temporarily insert the 5/16" x 3/8" Allen shoulder screw through the upper plate, into the threaded hole on the lower plate.

g. After optical alignment has been accomplished, (see Section 4) tighten all nuts securely.

NOTE

Once base plate is secured, it will never have to be adjusted during the life of the installation.

2-9 SYSTEM ELECTRICAL INTERCONNECTIONS

The following is the procedure for electrically interconnecting the power supply and lamphouse:

a. Remove applicable fuse holders from power supply and

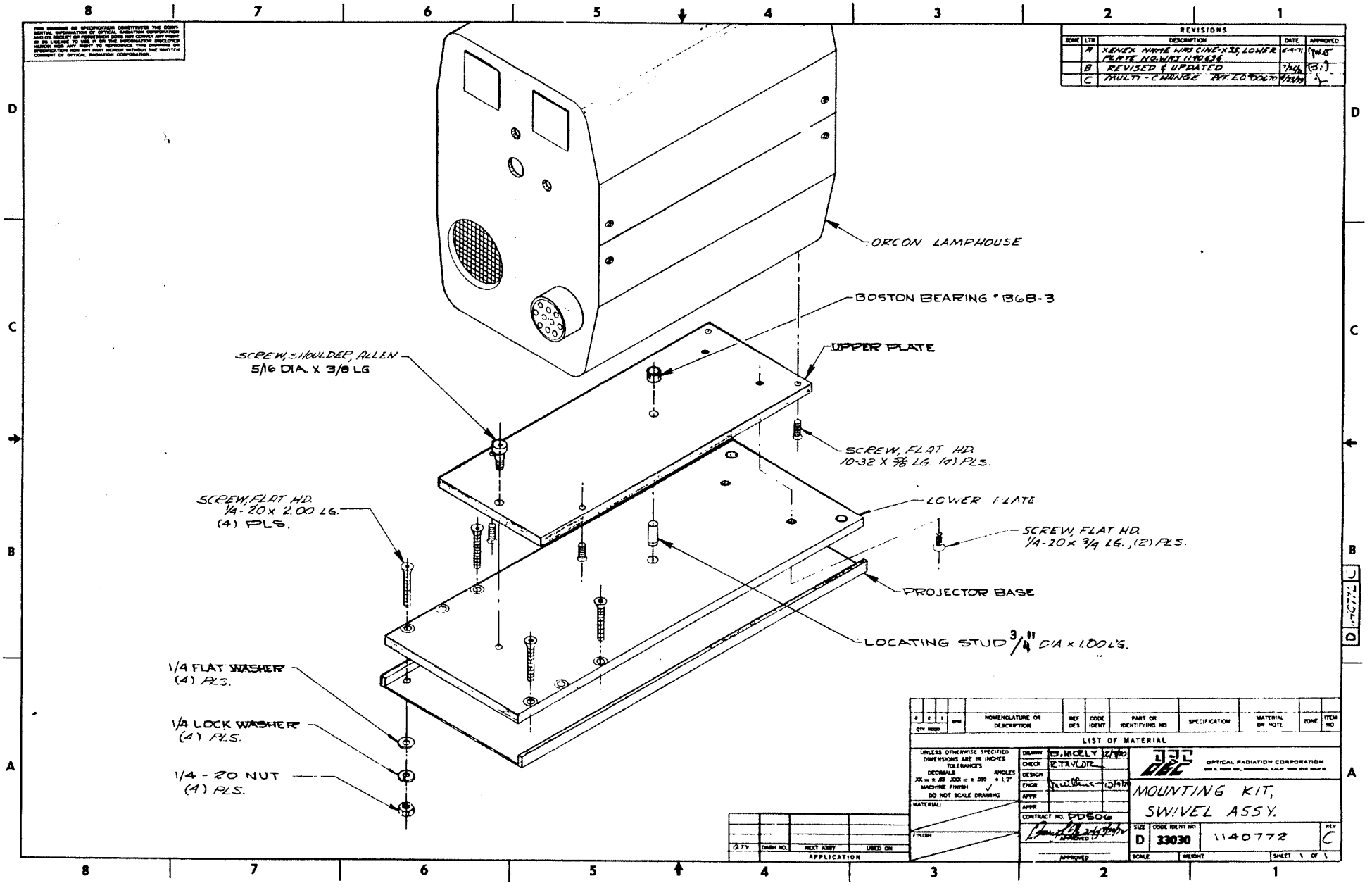


Figure 2-3. 35mm Mounting Kit Swivel Assembly

verify that proper fuses are installed FS1 (5A) and FS4 (30A) for 115 V operation, and FS1 (5A), and FS2, FS3 (15A) for 230 V operation.

b. Turn power switch on lamphouse to the OFF position.

c. Connect interconnecting cable from power supply to receptacle at rear of lamphouse.

CAUTION

CONNECTOR IS KEYED FOR MATING WITH LAMPHOUSE RECEPTACLE. MAKE SURE CONNECTOR AND RECEPTACLE MATE BEFORE SCREWING TOGETHER TO PREVENT CROSS THREADING.

2-10 INSTALLATION OF BULB

WARNING

MAKE SURE POWER IS DISCONNECTED TO LAMPHOUSE BEFORE ATTEMPTING TO INSTALL BULB.

The xenon bulb is packaged separately inside a transparent bulb installation tool. Always use included tool when installing or removing bulb.

WARNING

BULB SHOULD NEVER BE HANDLED OUTSIDE OF ITS PROTECTIVE CONTAINER OR COVERING UNLESS PROTECTIVE CLOTHING CONSISTING OF CHROME LEATHER GLOVES, PROTECTIVE FACE SHIELD EXTENDING BELOW THE NECK AREA, AND QUILTED BALLISTIC NYLON JACKET IS WORN. THE INSTRUCTIONS REGARDING PROTECTIVE CLOTHING ARE SUBJECT TO CHANGE BY ANY LOCAL OR FEDERAL SPECIFICATIONS WHICH TAKE PRECEDENCE.

2-11 X-2500 Xenon Bulb

a. Loosen shoulder bolt on mounting plate and pivot lamphouse clear of projector.

b. Use key to unlock front bulkhead door and to disengage the power interlock (microswitch). Swing door upward to provide clearance for bulb installation.

c. Remove wing nut, washer, and cap restraining bar from bulb installation/removal tool containing xenon bulb.

d. Remove orange end cap from installation/removal tool (cathode, threaded end of bulb).

e. Screw bulb adapter onto cathode end of bulb while bulb is still secured inside of installation/removal tool.

f. Insert installation/removal tool (with bulb inside) through front opening of lamphouse and through center opening in mirror until stud end of bulb adapter is captured inside of cathode holder. Tighten set screw in cathode holder using the furnished 3/32 Allen wrench tool.

g. Using a 1/8" Allen wrench, loosen set screw on collar located around anode end of bulb. Remove collar.

h. Remove installation/removal tool from bulb by pulling straight off.

WARNING

DO NOT VIEW BARE BULB AND DO NOT EXERT BENDING PRESSURE ON BULB WHEN REMOVING INSTALLATION/ REMOVAL TOOL.

i. Install anode clamp and cable over anode end of bulb making sure there is no cable stress on the clamp. Tighten set screw in clamp with a 3/32 Allen wrench tool. Ensure anode cable is not too close to shutter or high voltage arcing may occur.

j. Lower front bulkhead door into place and secure by locking. Remove key. Pivot lamphouse back to projector and secure shoulder bolt on mounting plate. System is now ready for operation.

2-12 X-4000 Xenon Bulb

a. Loosen shoulder bolt on mounting plate and pivot lamphouse clear of projector.

b. Use key to unlock front bulkhead door and to disengage the power interlock (microswitch). Swing door upward to provide clearance for bulb installation.

c. Remove air deflector from aid duct located at bottom of mirror housing. Failure to do so may cause early bulb failure. See Drawing No. 1141666.

WARNING

LEAVE PROTECTIVE PLASTIC WRAP ON BULB UNTIL INSTALLED. LOOSEN STRING TIE ENDS BEFORE INSTALLING BULB.

d. Place cathode end of bulb (small end) through front opening in lamphouse, through center opening of mirror until stud end of bulb is captured inside cathode holder. Tighten set screw in cathode holder using the furnished 3/32 Allen wrench tool.

e. Special anode front lead is used on X-4000 bulb. Install anode clamp and cable over anode end of bulb making sure there is no stress on the clamp. Tighten set screw in clamp with 3/32 Allen wrench tool. Ensure anode cable is not too close to shutter or high voltage arcing may occur.

WARNING

WEAR PROTECTIVE CLOTHING BEFORE REMOVING PROTECTIVE PLASTIC WRAP ON BULB. FACE MASK, GLOVES AND HEAVY COAT SHOULD BE WORN.

f. Remove protective wrap from bulb.

g. Lower front bulkhead door into place and secure by locking and removing key. System is now ready for operation.

SECTION 3 - OPERATION

3-1 GENERAL

Once installation is complete, the system is ready for operation and alignment. The following is a general description of the controls and displays on both the lamphouse and power supply.

3-2 LAMPHOUSE (See Figure 1-1)

3-3 System Start Switch

When operated with the RPS-X25 power supply, actuating the POWER ON switch with the 5 amp circuit breaker closed, will do the following:

a. Start blower motor in lamphouse.

b. Upon interlock closure, contactor in power supply will close.

c. Bulb ignition will occur after the proper open circuit voltage has been reached (approximately 4 seconds).

d. Elapsed time indicator will register hours on bulb.

3-4 Automation Controls (External)

Provides same function as "System Start Switch". If lamphouse is hooked up for automation with the ORC AP kit, POWER ON switch

on the lamphouse must be in the up (ON) position since the automation switch is wired in series with the main POWER ON switch. If it is desired to run the lamphouse using the POWER ON switch, it is necessary to close the contacts on the automation package in order for the lamphouse to operate.

3-5 Manual Start Switch Module (Non-standard, Available as Factory Special)

Used as an emergency switch in case the automatic ignition circuit fails to ignite the bulb. To operate, momentarily press switch located at rear of lamphouse.

CAUTION

DO NOT USE THE MANUAL START SWITCH UNLESS NECESSARY. WHEN USING THE SWITCH, DEPRESS FOR APPROXIMATELY ONE SECOND. PROLONGED CLOSURE DECREASES THE LIFE OF THE ELECTRODES WITHIN THE XENON BULB.

3-6 Ammeter

Meter which indicates DC current to xenon bulb.

3-7 Elapsed Time Indicator

Indicator which indicates total number of hours of system operation. Primary function is to monitor the number of hours on the bulb in the system. Bulb warranty card should be used in conjunction with elapsed time indicator. Refer to Section 6 for detailed instruction.

3-8 Vertical Focus Adjustment

Actuation of this adjustment moves the beam image up or down in the vertical direction on the screen. It provides precise final adjustment to achieve even light distribution on the top and bottom of the screen.

3-9 Horizontal Focus Adjustment

Actuation of this adjustment moves the beam image horizontally on the screen. It provides precise final adjustment to achieve even light distribution on the sides of the screen.

3-10 Axial Focus Adjustment

Actuation of this adjustment moves the bulb along the optical axis. This adjustment controls the size of the light image on the screen. When the bulb is properly located on this axis, the light beam will fill the screen.

3-11 POWER SUPPLY

3-12 Power Overload Circuit

The power overload circuit provides protection against overloading of the power source's main components. In the event of a continued overload or abnormal bulb current drain, a voltage sensing overload circuit (located on the printed circuit board)

detects this overload condition and causes K3, overload protection relay, to open. The internal contacts of the relay are connected in series with the primary contactor coil (W1) and the interlocks in the lamphouse. Thus, if the current overload circuit detects an overload condition, the opening or tripping of the relay (K3) causes the primary contactor to open, suspending lamp current output. The main power switch (S1) on the lamphouse must be turned off and reset to ON before the primary contactor of the power source can be energized.

3-13 Current Adjust Potentiometer

The current adjust potentiometer is a screwdriver adjustment located on the front of the power supply. The potentiometer controls the bulb current output from the minimum to maximum (see table 1-1) of the operating range. The operator can set the exact current required for his application by using this one control. Because this type current control is a continuous contact type, it may be adjusted while the bulb is operating without danger of damage to the lamphouse or power supply.

3-14 SYSTEM START UP

After installation is complete, the system is ready for start-up operations as follows:

CAUTION

MAKE SURE AIR FLOW INLET AND EXHAUST ARE NOT RESTRICTED. THE AIR FLOW SWITCH WILL SHUT OFF SYSTEM IF ADEQUATE AIR FLOW IS NOT AVAILABLE.

a. Hook up power cord on power supply to applicable power source.

b. Adjust current adjust potentiometer to fully counter-clockwise position.

c. Close douser on lamphouse and activate main switch on lamphouse to ON position. Bulb will automatically ignite.

CAUTION

DO NOT OPERATE WITH LAMPHOUSE DOUSER CLOSED FOR EXTENDED PERIODS OF TIME. BULB OVERHEATING WILL RESULT.

NOTE

If hinged cover on front bulkhead is not closed and locked, bulb will not ignite. The front cover must be secured in order to activate the door interlock switch. An air flow interlock switch is also provided which completes the bulb ON circuitry when blower is on.

d. Check the ampere input on the amp meter located on the lamphouse. Bulb current should not exceed 60 amps with a new bulb.

e. If starting current does not meet the values listed in Step d., adjust current adjust potentiometer clockwise until the desired ampere input is obtained.

NOTE

The nominal current after warm-up is 65 amps and the range of adjustment is approximately 45 to 70 amps. The X-2500 and X-4000 xenon bulbs should be set at no more than 60 amps when new to allow for increased current adjustment (to a maximum of 65 amps) as the bulb ages. Warranties will not apply if these currents are exceeded.

f. If bulb current ranges specified in NOTE above cannot be obtained by adjusting current adjust potentiometer, turn power switch OFF and perform the following:

1. Remove six screws securing power supply cover and remove cover.

2. If range was below specifications, change taps on power transformer (TB 4) to high power setting as shown in figure 2-2.

3. If range was above specifications, change taps on power transformer to low power setting as shown in figure 2-2.

4. Replace power supply cover and secure with six screws.

5. Readjust current adjust potentiometer until proper ampere output is obtained.

3-15 SHUT DOWN PROCEDURE

Close lamphouse douser and turn lamphouse power switch OFF.

CAUTION

FILM IN PROJECTOR MAY BURN IF PROJECTOR IS STOPPED WHILE LAMPHOUSE IS ENERGIZED. ANY TIME PROJECTOR IS STOPPED, CLOSE LAMPHOUSE DOUSER FIRST FOR FILM PROTECTION.

SECTION 4 - OPTICAL ALIGNMENT

4-1 GENERAL

The optical alignment of the system can be easily accomplished once the lamphouse is positioned properly with respect to the optical axis of the projection lens. In general, the following setup is the same for 16mm or 35mm projectors.

4-2 ALIGNMENT PROCEDURE

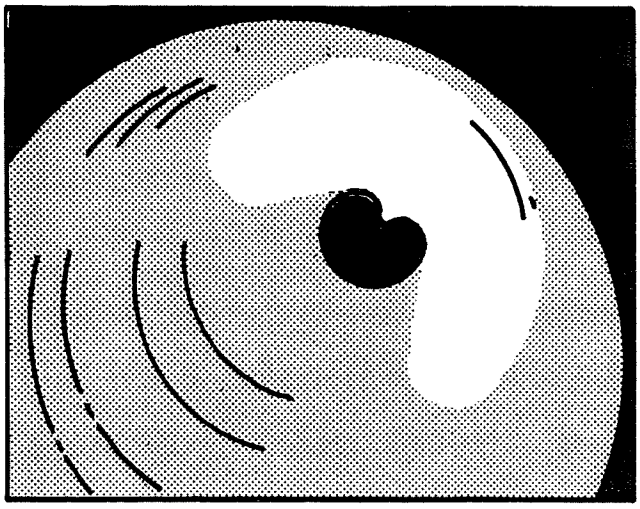
NOTE

No optical alignment tools or devices are required if the following instructions are carefully followed.

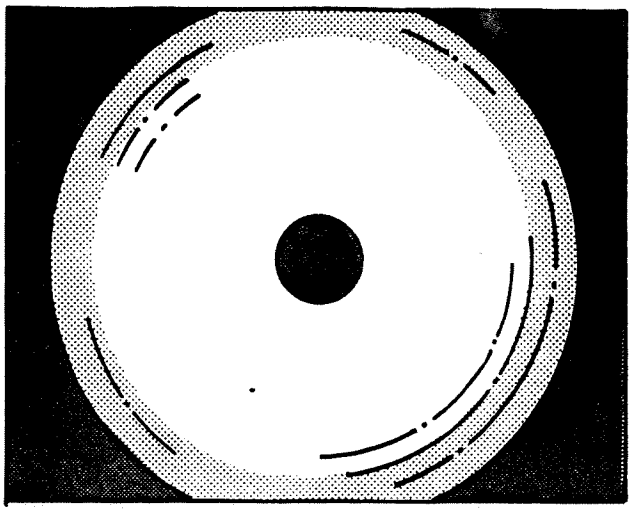
a. Remove socket head bolt from upper mounting plate. Swivel lamphouse and upper base plate around so that it is at a right angle to the direction of the screen.

b. Turn on lamphouse and open douser to direct light from the lamphouse onto the side wall of the projection room. Set current to minimum to prevent damage to optical elements.

c. Insert focusing tool into the center adjustment hole (FOCUS ADJUST, see figure 1-1), and adjust until the light pattern on the wall resembles a target with a small dark "bullseye" in the approximate center, surrounded by gray rings (see figure 4-1A). Adjust the horizontal and vertical bulb adjustments (see figure 1-1) to set the dark bullseye symmetrically in the center of the gray rings (see figure 4-1B). Turn the center focus adjust clockwise until the dark bullseye just disappears. The bulb is now aligned with respect to the lamphouse mirror.



A



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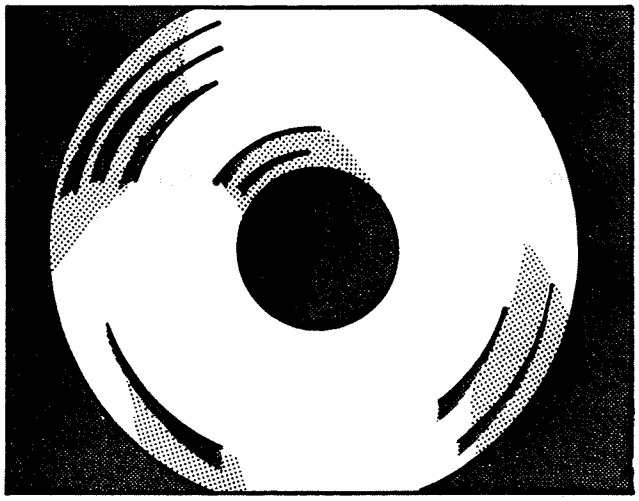

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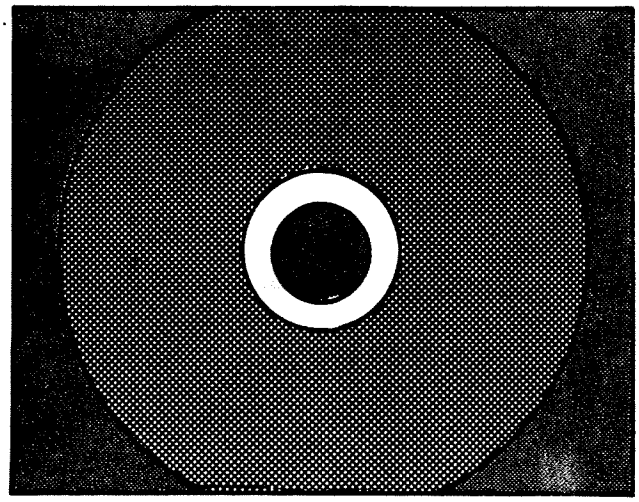
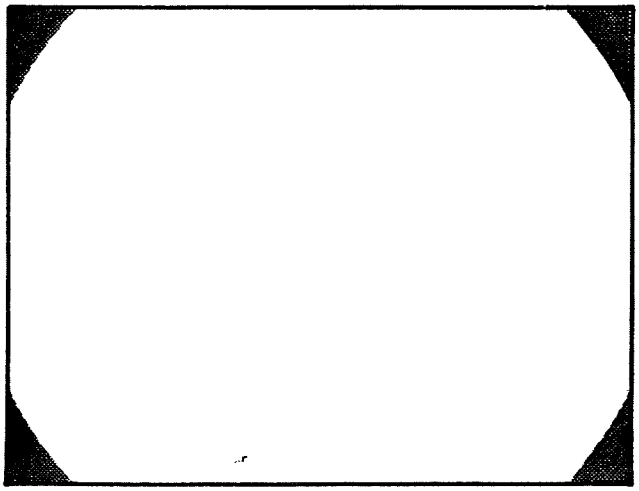
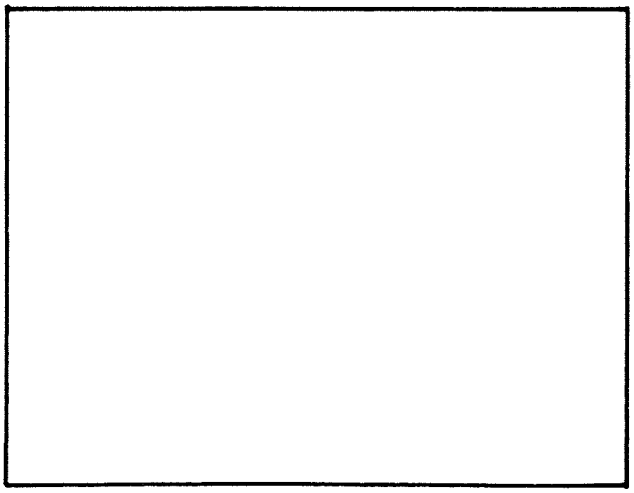


D



E



F

Figure 4-1. Alignment Procedure

d. Close the lamphouse douser and swivel the lamphouse into its normal operating position on the projector pedestal with the front bulkhead of the lamphouse approximately 8 to 8-1/2 inches (6-3/4 to 7-1/4 inches for 16mm) from the aperture plate of the projector (see figure 4-2).

e. Remove projector lens; start projector and open lamphouse douser and changeover douser. The "target" pattern should now appear on the screen.

NOTE

DO NOT readjust the horizontal and vertical bulb adjustments during the following alignment procedures.

f. Center the dark "bullseye" again (see figure 4-1B) by physically moving the lamphouse table on the projector pedestal up or down as required. If no adjustment is provided, it may be necessary to place shim washers between the lower base plate and the lamphouse table until the desired height is established. If precise centering of the "bullseye" cannot be obtained by moving the lamphouse, repeat steps a through c to be sure the bulb is centered in the mirror.

g. Adjust the center focus adjust counterclockwise until the outer rings begin to converge toward the bullseye. Move the rear of the lamphouse until the bullseye is centered within the outer rings (see figure 4-1C).

h. Adjust the center focus adjust clockwise until the outer rings converge toward the bullseye to form a dark collar around the

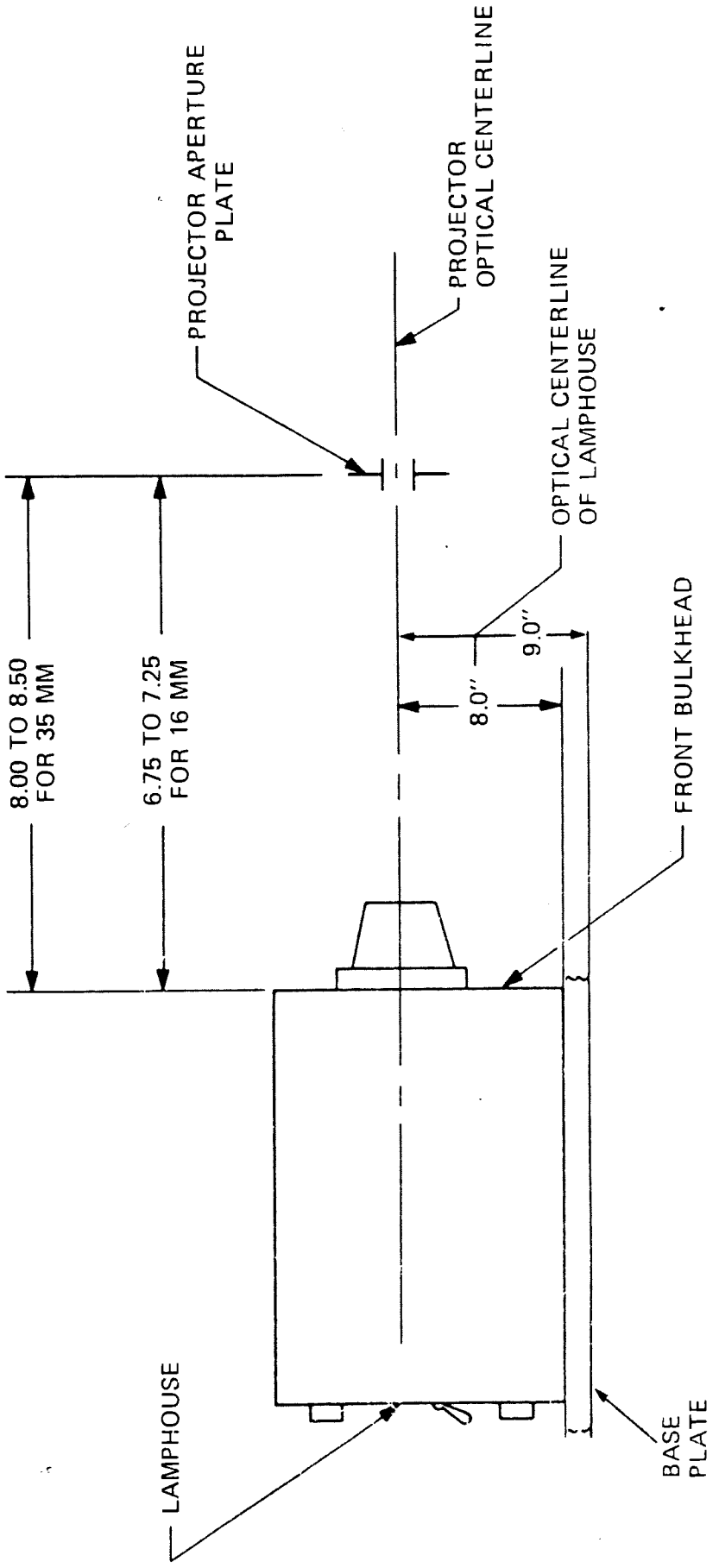


Figure 4-2. Lamphouse/Projector Alignment

bullseye and adjacent ring of light. Adjust the front of the lamphouse to center the bullseye adjacent ring of light within the outer rings (see figure 4-1D).

i. Repeat steps g and h until no further adjustment is necessary to center the bullseye within the adjacent ring of light. After the bullseye has been centered, set center focus adjust half way between the above two alignment positions used in steps g and h.

j. Close the douser and insert projection lens in projector. Open douser, focus projection lens, and adjust center focusing adjustment to obtain a bright spot on the screen.

CAUTION

DO NOT ALLOW LIGHT FROM LAMPHOUSE TO STRIKE THE PROJECTION LENS FOR MORE THAN A FEW SECONDS AT A TIME. OPEN THE LAMPHOUSE DOUSER, MAKE AN ADJUSTMENT WHILE OBSERVING THE RESULTS ON THE SCREEN AND THEN CLOSE THE DOUSER TO PERMIT THE LENS TO COOL. PROLONGED EXPOSURE OF THE LENS TO THE INTENSE LIGHT FROM THE LAMPHOUSE WITHOUT FILM BEING RUN THROUGH THE PROJECTOR CAN DAMAGE THE LENS.

k. If the bright spot is not in the center of the screen, readjust the lamphouse or horizontal and vertical bulb adjustments slightly to center the pattern. Adjust the center focus adjustment clockwise until the light fills the screen with the exception of the four dark corners (see figure 4-1E) which should be of equal size.

l. If the four dark corners are not of equal size, repeat step k.

m. Adjust the center focus adjust clockwise until the screen is filled with light, evenly distributed, with no dark corners (see figure 4-1F). Set the current control to provide the desired light level on the screen. Do not exceed the maximum safe bulb current (see paragraph 3-1).

n. Tighten the four bolts that fasten the lamphouse base to the pedestal.

NOTE

Once the system is properly aligned, no adjustments will be necessary until a new bulb is installed. After installation of a new bulb, adjustment of the three lamp focus adjustments is required to again achieve optimum alignment.

SECTION 5 - MAINTENANCE

WARNING

BEFORE ATTEMPTING TO CHANGE PARTS OR MAKE REPAIRS, BE SURE THAT THE POWER SOURCE IS COMPLETELEY DISCONNECTED FROM THE MAIN POWER LINE.

WARNING

CAUTION SHOULD BE EXERCISED IN TAKING VOLTAGE MEASUREMENTS WHEN TROUBLE SHOOTING THE UNIT. ALWAYS AVOID CONTACT BETWEEN ANY PART OF THE HUMAN BODY AND ANY CURRENT CARRYING PART OF THE POWER SOURCE.

5-1 FAN MOTOR

The fan motor should be lubricated with light machine oil every six months.

5-2 CONNECTORS

Electrical connections (i.e., circuit boards and connectors) should be checked periodically to ensure good contact and eliminate any possible heating at contact areas.

5-3 CLEANING POWER SUPPLY

Periodically blow out the power supply using clean, dry compressed air.

5-4 CLEANING OPTICS

It is recommended that at least twice annually the reflector and negative lens be cleaned to maintain high screen brightness. In cleaning the optics, the following steps should be taken:

a. Remove bulb from lamphouse as described in paragraph 5-5.

b. With a soft bristled brush, gently brush larger particles off the optics surface.

c. Clean optics with a mild hand soap and water or an ammonia base household cleaner in an aerosol can. Rinse well with cold water (if cleaned with soap and water) and dry (or wipe) with Kleenex or equivalent.

WARNING

DO NOT CLEAN OPTICS WITH BULB IN SYSTEM

5-5 REPLACEMENT OF BULB.

WARNING

BEFORE REMOVING XENON BULB, ALLOW 15 MINUTES TO COOL DOWN. WHEN HOT, LAMP IS UNDER HIGHER INTERNAL PRESSURE AND SUBJECT TO EXPLOSION. OBSERVE CAUTION WARNINGS IN FRONT OF MANUAL.

5-6 X-2500 Xenon Bulb

a. Loosen shoulder bolt on mounting plate and pivot lamphouse clear of projector. Use key to unlock front bulkhead door and swing door up to provide clearance for bulb replacement.

WARNING

DO NOT VIEW BARE BULB AND DO NOT EXERT BENDING PRESSURE ON LAMP WHEN REMOVING.

b. Loosen set screw in anode clamp and remove anode clamp and cable from anode end of bulb.

c. Place installation/removal tool over bulb and secure anode end with orange cap and collar. Tighten set screw in collar with 1/8" Allen wrench.

d. Loosen set screw in cathode holder using 3/32 Allen wrench tool and pull installation/removal tool (containing bulb) out of lamphouse.

e. Unscrew and remove bulb adapter from cathode end of lamp.

f. Place orange cap over cathode end of bulb and bulb installation/removal tool, and secure in place with washer, cap restraining bar, and wing nut. If bulb is still within warranty, return to Optical Radiation Corporation for replacement (see section 6).

g. Insert new bulb as described in Section 2.

5-7 X-4000 Xenon Bulb

a. Loosen shoulder bolt on mounting plate and pivot lamphouse clear of projector. Use key to unlock front bulkhead door and swing door up to provide clearance for bulb replacement.

WARNING

THE BULB IS UNDER EXTREME INTERNAL PRESSURE. WEAR PROPER PROTECTIVE CLOTHING BEFORE REMOVING BULB FROM LAMPHOUSE. FACE MASK, GLOVES, AND HEAVY COAT SHOULD BE WORN.

b. Loosen set screw in anode clamp and remove anode clamp from anode end of bulb.

c. While supporting end of bulb with hand, loosen set screw in cathode holder using 3/32 Allen wrench tool.

d. Carefully remove bulb from lamphouse and install plastic wrap around bulb. If bulb is still within warranty, return to Optical Radiation Corporation (see Section 6).

e. Insert new bulb as described in Section 2.

f. Focus bulb as described in Section 3.

5-8 TROUBLE SHOOTING

Whenever lamphouse fails to operate properly, consult wiring diagrams, figures 5-1 and 5-2, Trouble Shooting Chart, Table 5-1, and Voltage Chart Table 5-2, as an aid in locating the possible trouble. The following is the sequence of events which take place when the lamphouse is energized. Refer to the schematic diagrams (figures 5-1 and 5-2) to trace the sequence of events.

When the ON/OFF switch (S3) on the lamphouse is placed in the ON position, power is applied to the blowers and elapsed time

indicator. The blower in the lamphouse closes an air flow switch (S2) as its impeller approaches running speed. An electrical path is now provided through the air flow switch (S2), through the lamphouse interlock (S1) through power supply thermal switch S1 and overload relay (K3) contacts 6 to 5 to energize contactor (W1). Contactor (W1) when energized provides the line voltage to the input of the power transformer (T1). T1 has two secondaries: One winding provides a precharge voltage for starting the xenon bulb, and the other winding provides lamp current after the arc has been established. When contactor (W1) closes, T1 applies approximately 240 VAC to pins No. 12 and 13 of the printed circuit board. This AC voltage, after going through a series resistor and bridge rectifier, begins charging capacitor (C8). Capacitor (C8) charges to 150 VDC in approximately four seconds, at which time the zener diode VR2 conducts and energizes relay (K1). The contacts of K1 close to apply 115 VAC to the ignitor transformer (T2). The output of T2 (about 5KV) breaks down the spark gap (E1). T3 then steps this pulse up to 20 KV which arcs across the electrodes inside the xenon bulb. The initial arc allows capacitor (C8) (which has been precharged to 150 V) to discharge through the xenon bulb causing heavy ionization of the xenon gas. The main secondary winding of T1, having been rectified, filtered and regulated, now maintains the bulb arc.

Table 5-1. Trouble Shooting Chart

Symptom	Probable Cause	Remedy
1. Bulb does not operate when switched on; fans do not operate.	1.1 Fuse F1 (5 amp) blown.	1.1 Replace fuse.
	1.2 Automation control circuit disconnected or inoperative. (This applies only to a lamphouse provided with automation control.)	1.2 Check automation connector and associated wiring.
	1.3 Housing interlock or bulb access interlock open.	1.3 Secure all housing screws. Be sure front bulb access is locked.
	1.4 115 VAC power source circuit breaker tripped.	1.4 Reset circuit breaker.
	1.5 Defective toggle switch.	1.5 Replace toggle switch.
2. Bulb flashes but does not remain on.	2.1 Defective xenon bulb.	2.1 Replace bulb.
	2.2 Loose connection in DC current circuit (CR1-CR4, CR5).	2.2 Visually inspect all the heavy DC wiring for loose connections, especially at CR5 to transistor bank. Retighten as required.
	2.3 Defective diode (CR1-CR5).	2.3 Replace defective diodes.
	2.4 Overload protection relay tripped.	2.4 Set power switch S1 on lamphouse to off and reset.
3. Bulb does not flash. Ignitor protection circuit breaker CB2 does not trip.	3.1 CR6 bridge rectifier defective.	3.1 Check for 150 volts open circuit voltage across C8 in about 4 seconds. If OK, proceed to next step 3.2.

Table 5-1. Trouble Shooting Chart (Cont.)

Symptom	Probable Cause	Remedy
	3.2 Ignitor relay failure.	3.2 Try to manually start the bulb with a momentary jumper across the contacts of K1. If it starts, the K1 relay or zener diode VR1 may be defective.
	3.3 Shorted blocking diode (CR5).	3.3 Check voltage on both sides. See figure 5-1 and table 5-2.
	3.4 T-2 primary open (ignitor circuit).	3.4 Check resistance values of primary (disconnect J2 and P2). Resistance should be about 30Ω.
	3.5 208 or 230 VAC source power circuit breaker.	3.5 Reset breaker.
	3.6 Contactor W1 (ACC-220-U) defective.	3.6 Replace contactor.
	3.7 Air flow switch air vane has fallen off the micro switch.	3.7 Replace vane.
	3.8 Defective air flow switch.	3.8 Replace air flow switch.
. Bulb does not flash; gniter protection circuit reaker (5A) does trip.	4.1 Defective igniter circuit, component SP-1 or T2.	4.1 Reset circuit breaker. If circuit breaker continues to trip, disconnect the spark gap. If the circuit breaker still trips, then T2 is bad. If not, then replace SP-1.

Table 5-1. Trouble Shooting Chart (Cont.)

ymptom	Probable Cause	Remedy
. Bulb ignites normally ut igniter protection ircuit breaker trips while amp is on.	5.1 Zener Diode (VR2) in power supply shorted.	5.1 Replace diode (VR2)
	5.2 Contacts of ignitor relay (K1) in power supply shorted.	5.2 Replace relay (K1).
. Bulb runs at excessive urrent; no current control.	6.1 Power supply circuit board defective.	6.1 Replace PC board.
	6.2 Shorted Q9 (emitter to collector).	6.2 Replace Q9.
. Bulb runs at low current; o current control.	7.1 Defective power supply circuit board.	7.1 Replace circuit board.
	7.2 Defective current control potentiometer.	7.2 Replace current control potentiometer.
	7.3 Defective Q9.	7.3 Replace Q9.
	7.4 Transistors in the transistor bank are shorted and their fuses are blown.	7.4 Replace the defective transistor and fuses.
. Not possible to obtain aximum bulb current.	8.1 Low line voltage.	8.1 Minimum AC line voltage for proper operation @ 40 amps with a 21 volt lamp is approximately 108 V. Reset the taps on TB3 of the large power transformer.

Table 5-1. Trouble Shooting Chart (Cont.)

Symptom	Probable Cause	Remedy
	8.2 Open rectifier diode.	8.2 Replace defective diode.
9. Bulb ignites almost instantly; i.e., does not wait the normal five or six seconds.	9.1 Zener diode VR1 (on relay KL) shorted, or defective relay.	9.1 Note that operation under these conditions will likely cause the high voltage transformer in the front of the unit to remain on and burn itself out. Replace diode VR1 and high voltage transformer if burned out.
10. Unit operates normally for a time, then the bulb goes out. Circuit breaker does not trip. Unit returns to normal operation after cooling down.	10.1 Thermal overload on CR5 heat sink tripped due to air passage blockage. 10.2 Defective thermal overload switch.	10.1 Check for dirt accumulation in the air path and particularly in the air duct. 10.2 Replace switch.
11. Bulb flickers and/or goes out especially at low current. Bulb re-ignites and repeats the above.	11.1 Unstable bulb.	11.1 Replace bulb.

Table 5-2. Test Voltages

TEST POINTS	
A & B	30 VAC No Load 25 VAC Full Load
C & D	0-150 VDC in about 4 seconds; this voltage used to charge C8 and to energize relay K1. K1 energizing starts ignition sequence.
E & F	2 VDC with Bulb at Full load Current 7 VDC with Bulb at Minimum Current
G & H	115 VAC, 208 or 230 VAC depending on input power.
I & J	30 VDC Open circuit voltage 75 VDC Bulb on
F & C	Approximately 140 V (C is pos) before bulb ignites. Approximately 1 V (F is pos) after bulb ignites.

* All readings taken with a 20,000 Ohm/V DC 5,000 Ohm/V AC

NOTE:
Refer to figure 5-1 for Test Points.

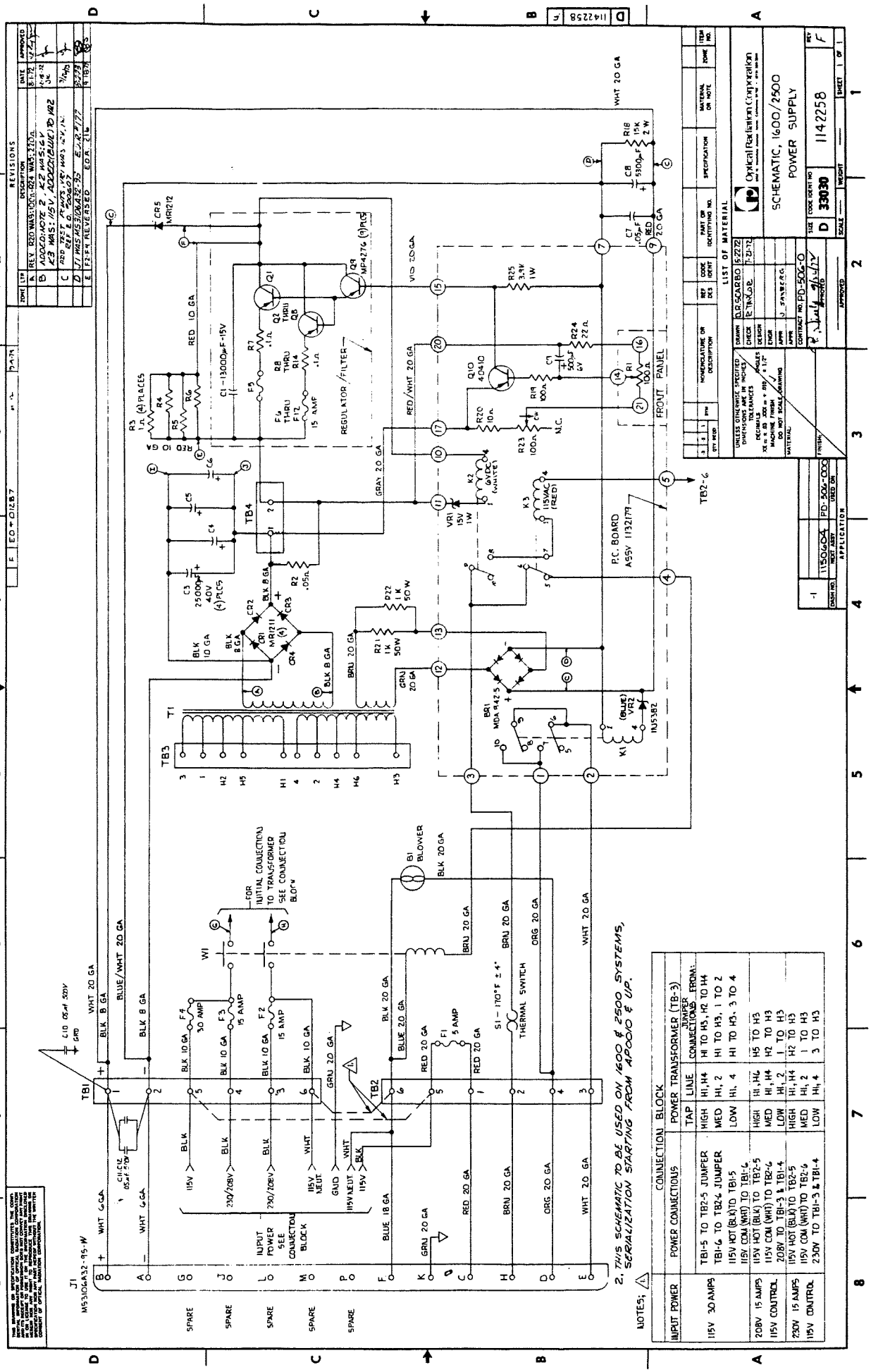
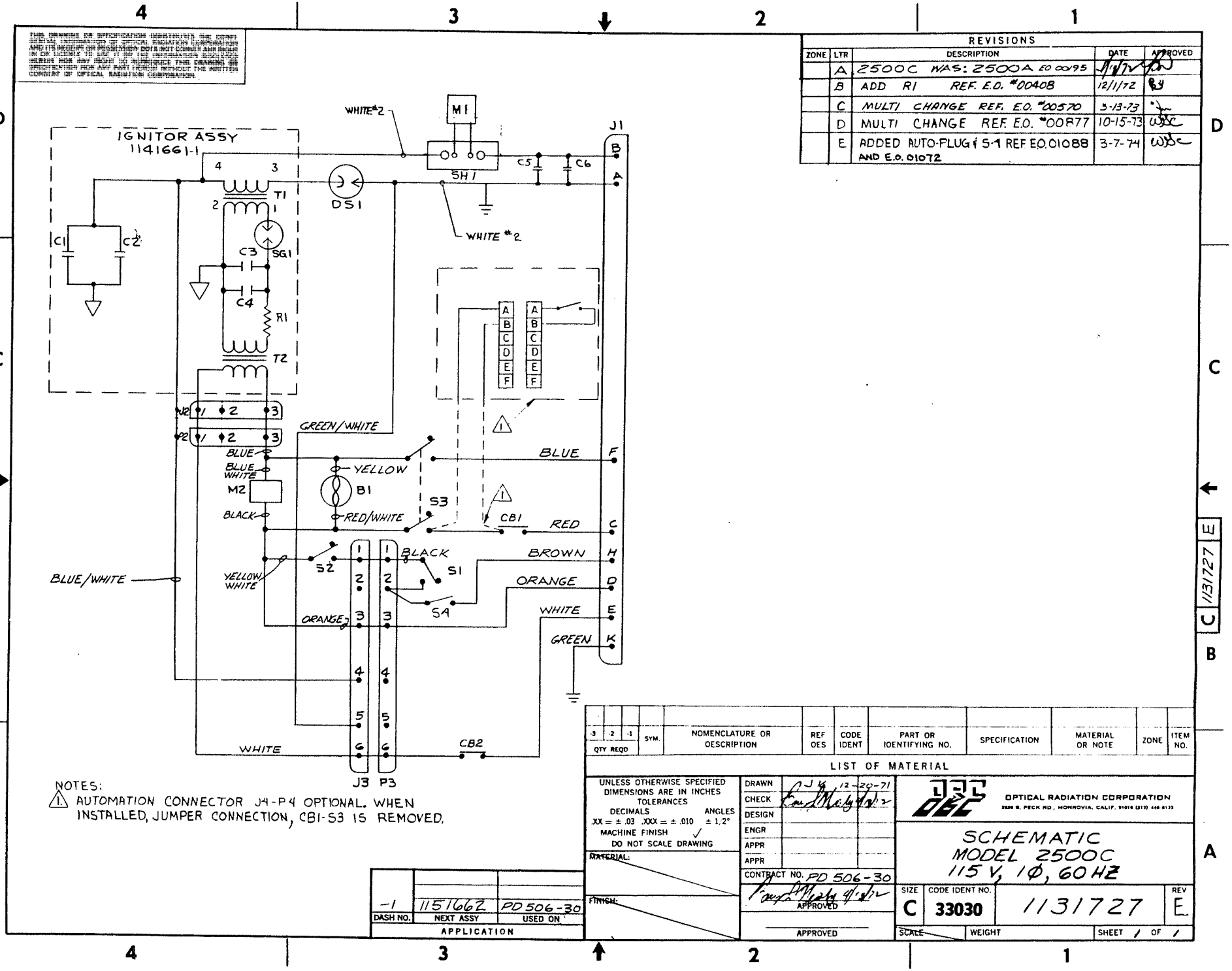


Figure 5-1. Power Supply Schematic



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	2500C WAS: 2500A E.O. 00095		
	B	ADD R1 REF. E.O. #00408	12/1/72	
	C	MULTI CHANGE REF. E.O. #00570	3-13-73	
	D	MULTI CHANGE REF. E.O. #00877	10-15-73	
	E	ADDED AUTO-PLUG J-1 REF E.O. 01088 AND E.O. 01072	3-7-74	

QTY REQD -3	-2	-1	SYM.	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX = ± .03 .XXX = ± .010
ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING

MATERIAL:
FINISH:

DRAWN J.K. 12-20-71
CHECK
DESIGN
ENGR
APPR
APPR
CONTRACT NO. PD 506-30
APPROVED
APPROVED

OPTICAL RADIATION CORPORATION
3620 S. PECK RD., MONROVIA, CALIF. 91016 (213) 446-8133

SCHEMATIC
MODEL 2500C
115 V, 1Φ, 60 HZ

SIZE	CODE IDENT NO.		REV
C	33030	1131727	E

SCALE | WEIGHT | SHEET 1 OF 1

DASH NO.	NEXT ASSY	USED ON
-1	1151662	PD 506-30

APPLICATION

Figure 5-2. Xenon Projector Lamphouse, Schematic Diagram

SECTION 6 - BULB WARRANTY

The bulb warranty on the xenon bulb will not be honored unless the necessary forms are completed.

Upon installation of a new bulb, the Xenon Bulb Warranty Card must be filled out and returned to Optical Radiation Corporation. It is mandatory that all information on the card be completed. Shown below is a sample card which was included with delivery.

This card must be filled out and returned within 30 days after installation of the bulb to validate the warranty of your new xenon bulb.

XENON BULB WARRANTY CARD

USER'S NAME _____ DATE _____

COMPANY _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

BULB MODEL NO. _____ BULB SERIAL NO. _____

INSTALLED IN _____ LAMPHOUSE MODEL NO. _____

LAMPHOUSE SERIAL NO. _____

RUNNING TIME METER READING AT TIME OF INSTALLATION _____ HRS.

PURCHASED FROM _____

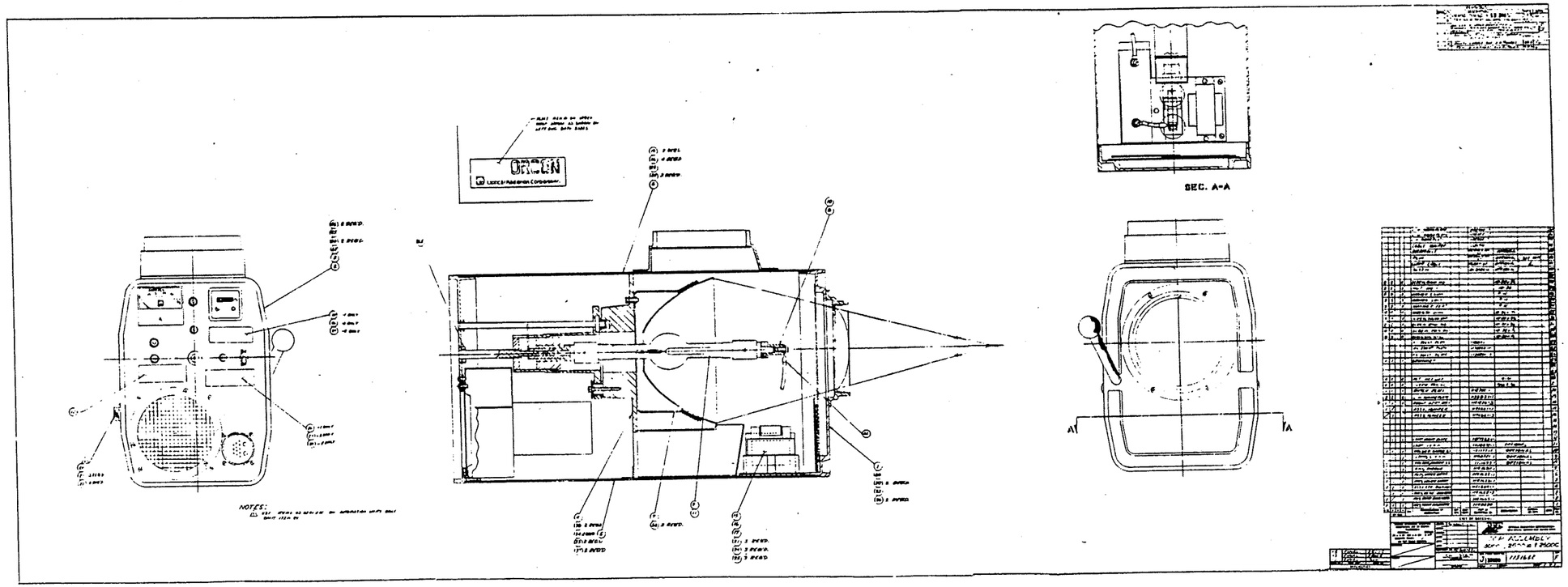
CITY _____

IMPORTANT: READ ALL INSTRUCTIONS IN OPERATING MANUAL BEFORE INSTALLING BULB

If the bulb has failed during the warranty period, the Xenon Lamp Warranty Claim form must be filled out and returned to Optical Radiation Corporation along with the defective bulb.

SECTION 7 - SPARE PARTS LIST

The following is the list of parts which comprise the Model 2500C Lamphouse and RPS-X25 Power Supply. When ordering replacement parts, please specify complete part number and quantity required. Consult your local dealer or write Optical Radiation Corporation for prices.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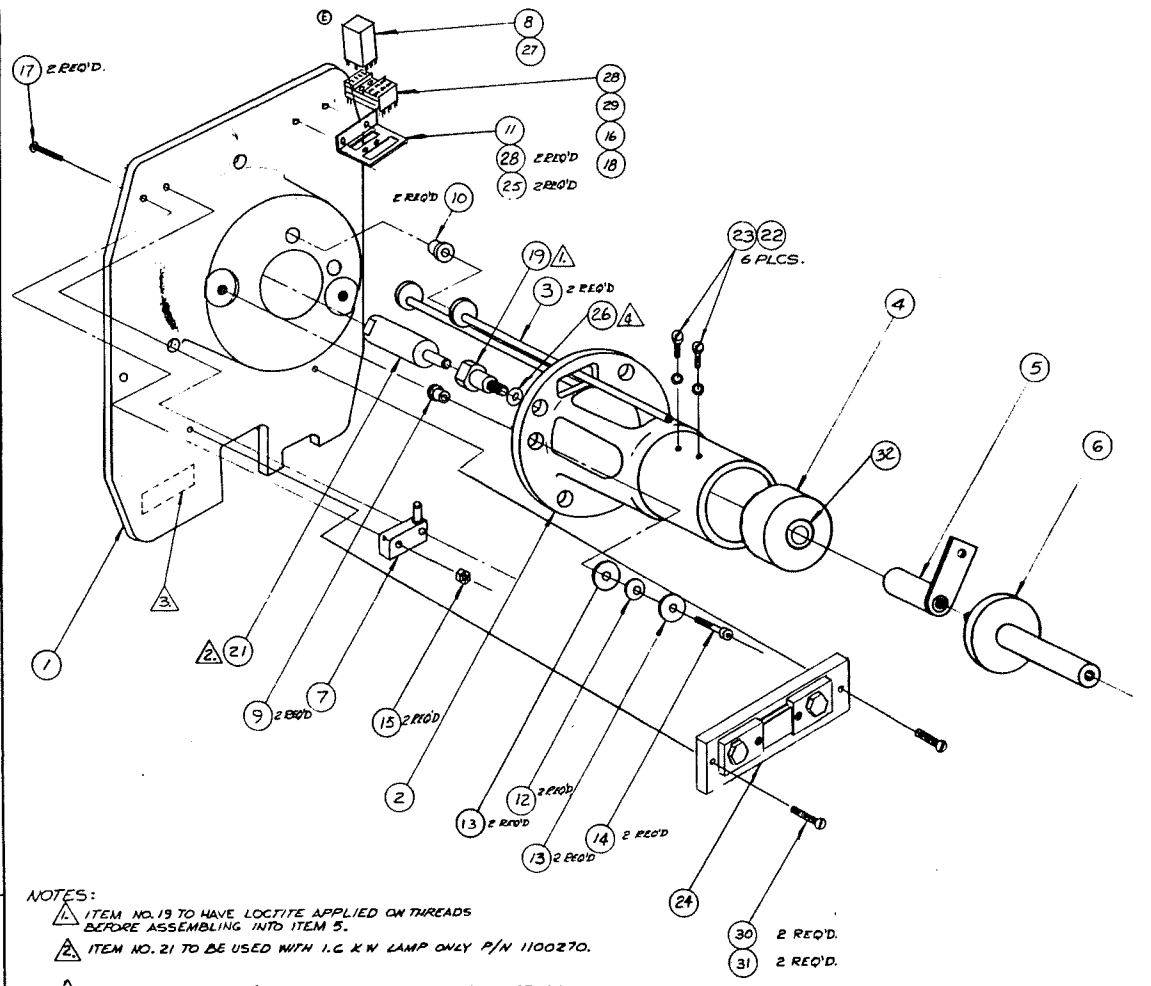


NOTES:

1. ITEM NO. 19 TO HAVE LOCTITE APPLIED ON THREADS BEFORE ASSEMBLING INTO ITEM 5.
2. ITEM NO. 21 TO BE USED WITH 1.C K W LAMP ONLY P/N 1100270.
3. RUBBER STAMP P/N 33030-1141664 USING WHITE INK APPROX. WHERE SHOWN. COVER WITH VARNISH.
4. USE ITEM 26 WHEN INSTALLING ITEM 19 TO OBTAIN PROPER LOCATION.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	F	ITEM 4 WAS 1100164-1, ITEM 28 WAS 6-32, ADDED ITEMS 26 & 32	4/18/73	

LIST OF MATERIAL

QTY REQD	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
1		BUSHING			B1016-12	BOSTON			32
2		HEX-KEPS, NUT 33			10-32				31
2		SCREW, PAN HD.			10-32X 5/8				30
1		RELAY SOCKET			A10-1	POTTER & BRUMFIELD			29
3		SCREW PAN HD.			#4-40 X 3/16				28
1		DIODE, ZENER			1N5372	MOTOROLA			27
1		WASHER			5/16 BRASS				26
2		LOCK NUT			#4				25
1		SHUNT			PRO 0-150A				24
6		SCREW, PAN HD			8-32 x 1/2				23
8		WASHER, LOCK			#6				22
1		ADAPTER CATHODE			1121700-1				21
AR		LOCTITE							20
1		HOLDER CATHODE			1121695-1				19
1		WASHER, LOCK			#4				18
2		SCREW, PAN HD			#6-32X1/4 LG.				17
1		NUT, HEX			#4-40				16
2		LOCK, NUT			#6				15
2		SCREW, SOC HD			8-32 x 100 LG				14
4		WASHER, FLAT			1/4 O.D. X .19 I.D.				13
2		BELLVILLE WASHER			5808-36-25	SEASTROM			12
1		MTG. BRKT. RELAY SOCKET			1122822				11
2		FLANGE BUSHING			FB-68-3	BOSTON			10
2		FLANGE BUSHING			FB-1012-4	BOSTON			9
1		RELAY			R10E1-X23-S0K	POTTER & BRUMFIELD			8
1		MICRO SWITCH			BA2RQ1	MICRO SWITCH			7
1		END PLATE ASSY			1131656-1				6
1		BEARING SHAFT			1121660-1				5
1		BEARING HOLDER			1123294				4
2		CAM SHAFT ASSY			1120622-1				3
1		TUBE ASSY			1100165-1				2
1		CENTER BULKHEAD			1141654-1				1

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1151662-5	25006
1	-1	1151662-3	25008
1	-1	1151662-1	30003

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX ± .03 .XXX ± .010
ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING

MATERIAL:

FINISH:

DRAWN	J. K.	12-9-71
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

CONTRACT NO. PD506-30

APPROVED

APPROVED

OPTICAL RADIATION CORPORATION

CENTER BULKHEAD ASSY

SIZE	CODE IDENT NO.		REV
D	33030	1141664	F

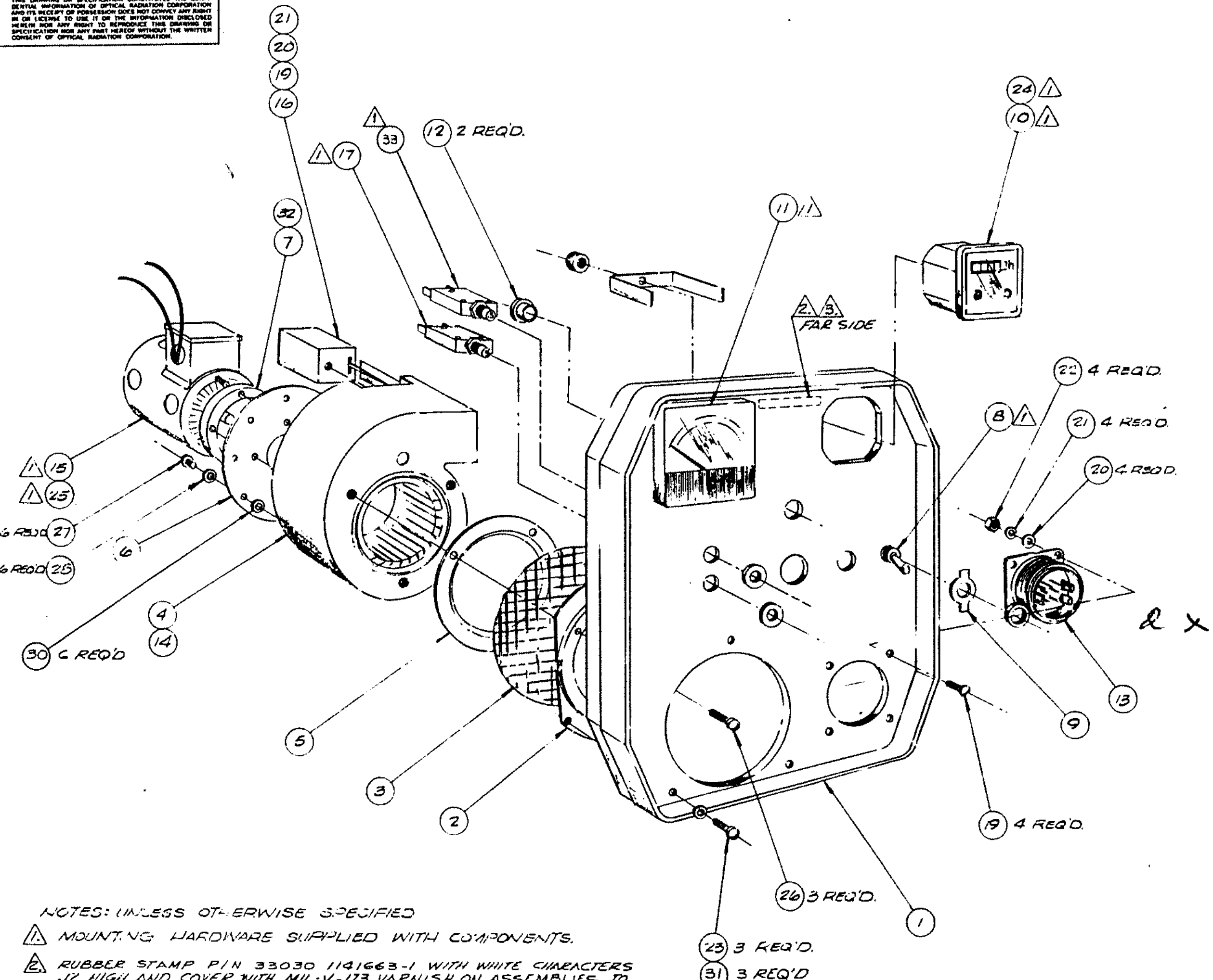
SCALE 1/2 WEIGHT SHEET 1 OF 1

D 1141664 F

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	M	ITEM 10 WAS 8X806 REF ECO C741 HISTORY 310-00747	4/11/…	
	N	INCORP E.O. 01118	8-25-74	
	P	INCORP E.O. 01160	5-11-74	

Replacement 3M548



NOTES: UNLESS OTHERWISE SPECIFIED

1. MOUNTING HARDWARE SUPPLIED WITH COMPONENTS.
2. RUBBER STAMP P/N 33030 1141663-1 WITH WHITE CHARACTERS .12 HIGH AND COVER WITH MIL-V-173 VARNISH ON ASSEMBLIES TO BE USED WITH 3000 & 2500C SYSTEMS.
3. RUBBER STAMP P/N 33030 1141663-3 WITH WHITE CHARACTERS .12 HIGH AND COVER WITH MIL-V-173 VARNISH ON ASSEMBLIES TO BE USED WITH 2500B SYSTEMS.

& X

QTY REQD -3	-2	-1	SYM.	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
/		1		CIRCUIT BREAKER			45-700-P	.5 AMP	E.T.A.		33
1		/		RING, SPACER			1131807-3				32
3		3		WASHER, LOCK				#10			31
6		6		WASHER, FLAT				#6			30
1		/		REAR PANEL CASTING			1141677-3 SHT 2				29
6		6		WASHER, N STAR				#6			28
6		6		SCREW, RD.HD.				6-32X3/8			27
3		3		SCREW, RD. HD				6-32X3/8			26
/		1		BLOWER MOTOR			3M043	115V, 60Hz	DAYTON		25
1		/		TIME METER			200-70NL7	230V, 50Hz.	ENGLER		24
3		3		SCREW, RD.HD				10-32X1/2			23
4		4		NUT, HEX				NO.6-32			22
5		5		WASHER, LOCK				NO 6			21
5		5		WASHER, FLAT				NO.6			20
5		5		SCREW, RD. HD.				6-32X1/2			19
1		/		CIRCUIT BREAKER			45-700-P	.25 AMP			18
2		1		CIRCUIT BREAKER			45-700-P	5 AMP	E.T.A.		17
1		1		AIRFLOW SWITCH			2A-1000		ROTRON		16
1		/		BLOWER MOTOR			3M071	230V, 60Hz	DAYTON		15
1		1		BLOWER, IMPELLER			S-42-29		DE-STA-CO		14
1		1		CONNECTOR			MS3102A32-9P				13
2		2		FLANGE BUSHING			FH-63-5		BOSTON		12
1		1		AMP METER			2025-19	0-150 AMP	HOYT		11
/		1		TIME METER			WZ 19/5	110V, 60HZ	CONTROL DYM.		10
1		1		SWITCH PLATE			Y01				9
1		1		TOGGLE SWITCH			2GL50-73	DPST	CARLING		8
/		1		RING, SPACER			1131807-1				7
1		1		PLATE, COVER			1121705-1				6
1		1		FLANGE, INLET			1131704-1				5
1		1		BLOWER, HOUSING			1141706-1				4
1		1		SCREEN			1141639-1				3
1		1		RETAINER, SCREEN			1141638-1				2
/		1		REAR PANEL CASTING			1141677-1 SHT 2				1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1151662-5	2500C
1	-3	1151662-3	2500B
1	-1	1151662-1	3000

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX = ± .03 .XXX = ± .010
ANGLES ± 1/2°
MACHINE FINISH √
DO NOT SCALE DRAWING

MATERIAL:
FINISH:

DRAWN	K.J.M.	7/15/71
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

CONTRACT NO. P2500-30

APPROVED

OPTICAL RADIATION CORPORATION

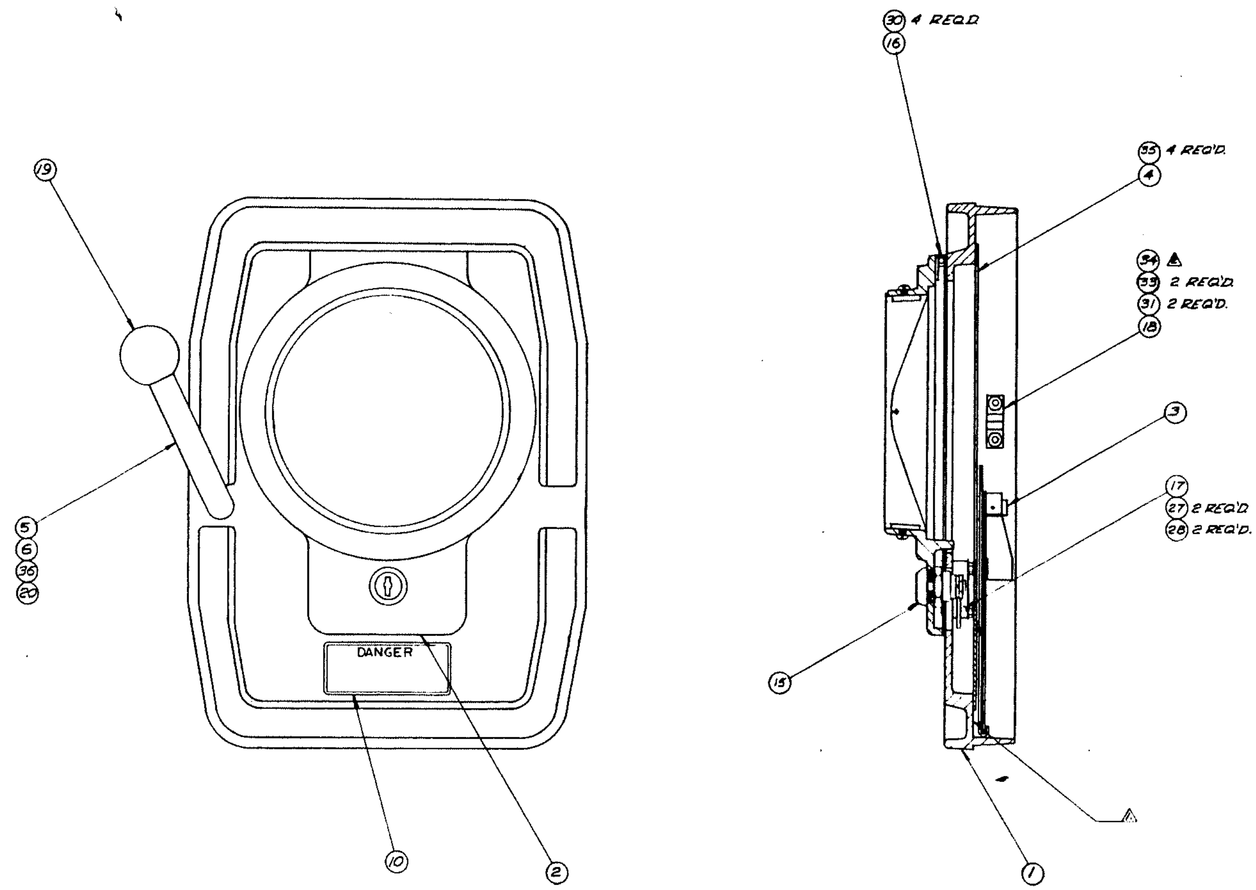
REAR BULKHEAD ASSEMBLY

SIZE D | CODE IDENT NO 33030 | 1141663 | REV P

SCALE | WEIGHT | SHEET 1 OF 1

D 1141663 P

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	REDRAWED: ITEMS 9, 8, 7, 50, F 31. REF EO. PO0736		
	B	ITEM 30 WAS FLAT HD. REF EO.		



NOTES: UNLESS OTHERWISE SPECIFIED
1. RUBBER STAMP PART NO. 1153377 WITH WHITE CHARACTERS .12 HIGH, COVER WITH MIL-V-173 VARNISH
2. SHIM AS REQUIRED

QTY REQD	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ITEM NO.
					41
					40
					39
					38
					37
1	WASHER, FLAT		3/8 x 5/8 OD - .03 THK.		36
4	SCREW, FLTHD. UNDERCUT		8-32 x 1/4		35
A/R	WASHER, FLAT		#6		34
2	NUT, SELFLOCK		6-32		33
					32
2	SCREW, FLTHD.		6-32 x 3/8		31
4	SCREW, PAN HD		6-32 x 1/4		30
					29
2	NUT, HEX		4-40		28
2	SCREW, PAN HD		4-40 x 3/16		27
					26
					25
					24
					23
					22
					21
1	GROOVE PIN	GPI-093 x 625-14		GROOVE PIN	20
1	KNOB	ADB45100		AMER. TOOL	19
1	CATCH	61181		SEARS	18
1	SWITCH	V3L-104-D8		MICRO-SWITCH	17
1	HINGE	B1116-3		HOMER D. BRONSON	16
1	LOCK, CAM	A15259-CSS		CORBIN	15
					14
					13
					12
					11
1	DANGER PLATE	1122832			10
					9
					8
					7
1	HANDLE	1100273			6
1	HANDLE SPACER	1100274			5
1	SHUTTER RET. PLT.	1100281			4
1	SHUTTER ASSY	1143063			3
1	HINGED NOSE PIECE	1153375			2
1	FRONT BULKHD.	1153381			1

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DRAWN: FNESS 5-3-73
DESIGN: BUCKLY 6-7-73
CONTRACT NO. PD306-010

Optical Radiation Corporation

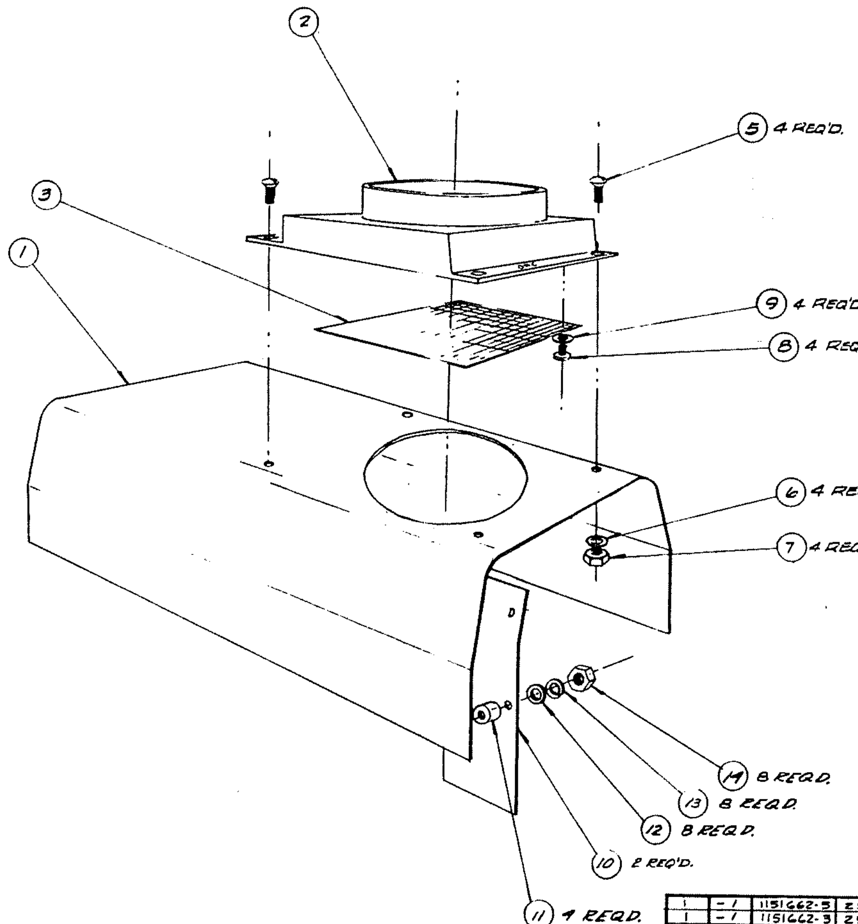
ASSEMBLY, FRONT BULKHEAD

SIZE F | CODE IDENT NO. 33030 | 1153377 | REV B

1	-1	1100178-1	146CC	
1	-1	1131462-1		
1	-1	1160830-1		
1	-1	1140830-1		

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	ADD: ITEMS 10,11,12,13,14	1-18-72	
	B	REF. E.O. #00578	5/14/73	
	C	REF. E.O. 01092	3-5-73	



QTY REQD	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
									17
									16
									15
8		NUT				8-32			14
8		WASHER, LOCK				#8			13
8		WASHER, FLAT				#8			12
8		SPACER			8522		H.H. SMITH		11
2		HEAT SHIELD			1131750				10
4		WASHER, FLAT				NO.6			9
4		SCREW, PAN HD.				6-32X1/4			8
4		NUT, HEX				10-32			7
4		WASHER, STAR				NO.10			6
4		SCREW, OVAL HD.				10-32X1/2			5
									4
1		SCREEN, FAN			1120971				3
1		EXHAUST HOUSING			1140956				2
1		UPPER WRAP			1141673				1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1151662-5	2500 C
1	-1	1151662-3	2500 B
1	-1	1151662-1	3000

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX = ± .03 .XXX = ± .010 ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING
MATERIAL:
FINISH:

DRAWN K.J.M. 7/19/71
CHECK
DESIGN
ENGR
APPR 6-1-72
APPR
CONTRACT NO. PD506-30
APPROVED 6-1-72

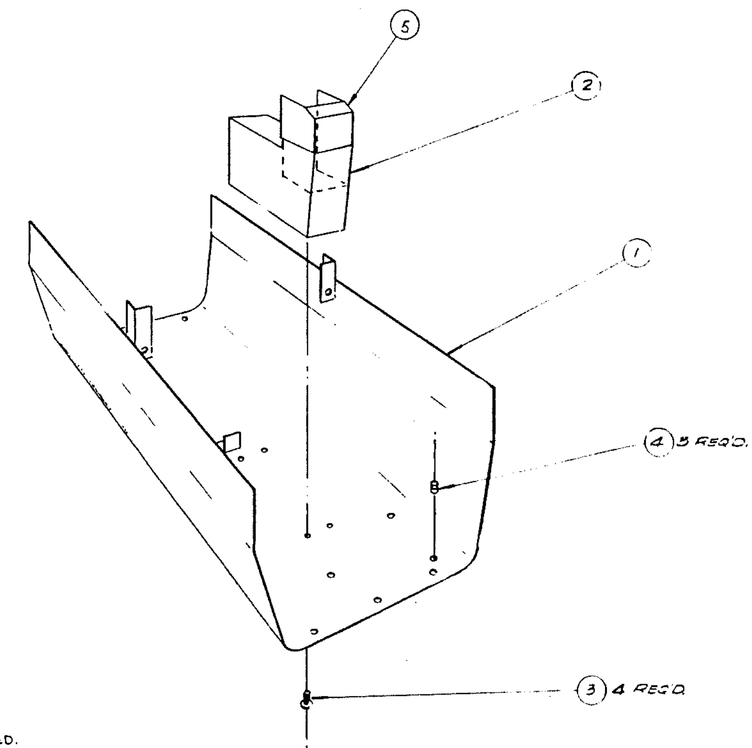
OPTICAL RADIATION CORPORATION

UPPER WRAP ASSEMBLY

SIZE D | CODE IDENT NO. 33030 | 1141665 | REV C
SCALE 1:1 | WEIGHT | SHEET OF 1

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	ADDED ITEM 5 & NOTE △ REF EO 01191	5-22-? JEK	



NOTES: UNLESS OTHERWISE SPECIFIED.

1. ITEM 5 TO BE INSERTED AS SHOWN INTO ITEM 2 OF THE LOWER WRAP ASSEMBLY WHEN THE LAMP HOUSE IS OPERATED WITH AN X2500 XENON BULB. ITEM 5 SHOULD BE REMOVED WHEN THE LAMP HOUSE IS OPERATED WITH X4000 XENON BULB.

LIST OF MATERIAL

-3	-2	-1	SYM.	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
		1		DEFLECTOR, AIR			1133568				5
		3		NUTSERT			9507-10	10-32	AVDEL		4
		4		SCREW, FT. SELF TAP				6-32X¼			3
		1		AIR DUCT			1141639				2
		1		LOWER WRAP			1141678				1

QTY REQD

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1151662-5	2500 C
1	-1	1151662-3	2500 B
1	-1	1151662-1	3000

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS: .XX = ± .03 .XXX = ± .010
ANGLES: ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING
MATERIAL:
FINISH:

DRAWN	K. J.M.	?/71
CHECK		
DESIGN		
ENGR		
APPR	[signature]	
APPR		
CONTRACT NO.	PD506-30	
APPROVED	[signature]	
APPROVED		

OPTICAL RADIATION CORPORATION

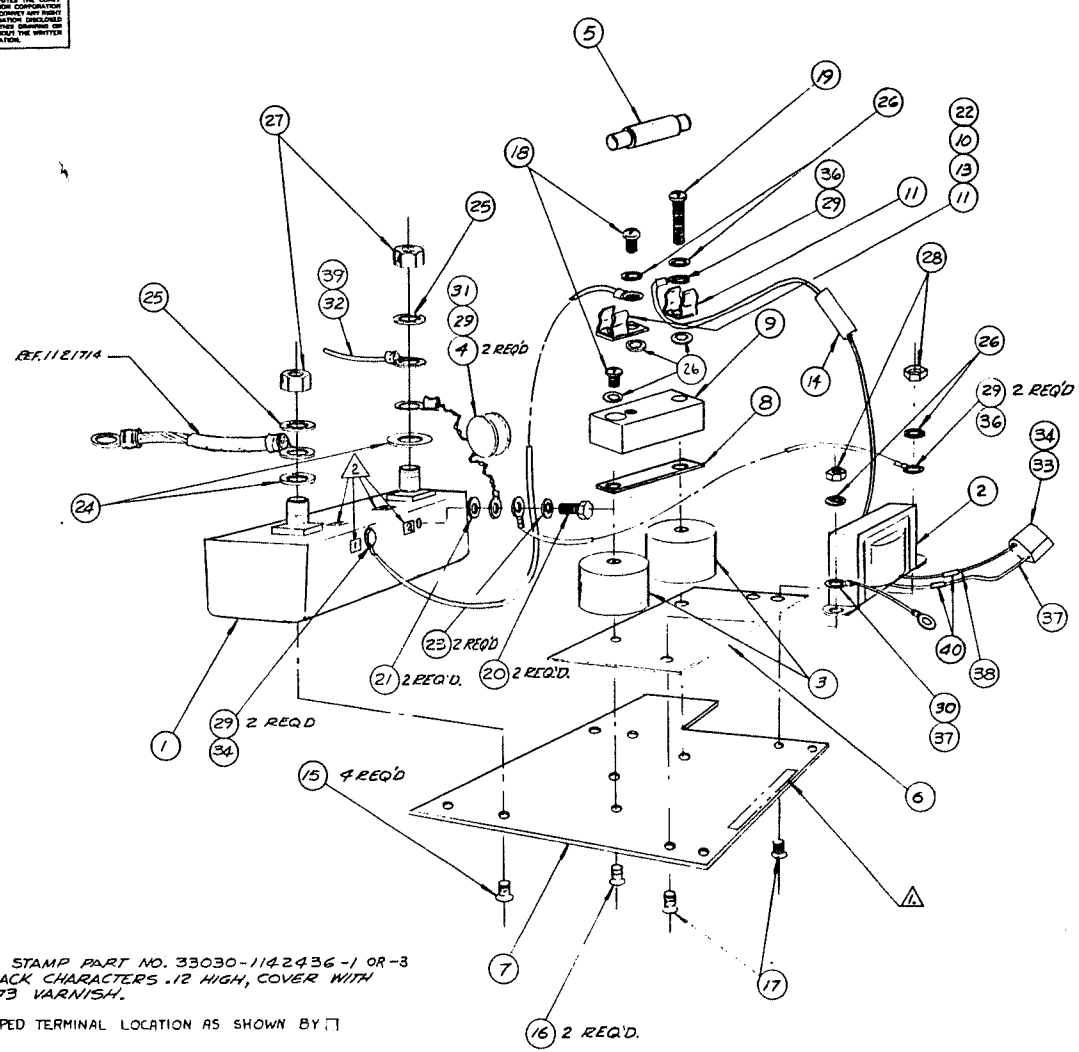
LOWER WRAP ASSEMBLY

SIZE: D | CODE IDENT NO: 33030 | 1141666 | REV: A

SCALE 1/1 | WEIGHT — | SHEET 1 OF 1

D 1141666 A

ZONE	LTR	REVISIONS DESCRIPTION	DATE	APPROVED
	—	ADD: ITEM 14 E.O. 00408	4/1/72	J. Hunt
	G	REMOVE NOTE 2, REMOVE ITEM 12 W L/M. ADD -3 COLUMN, CHANGE DWG # TO 1141661 WAS 1142436, ITEM 34 -1 QTY WAS 3 ADD ITEM 25 ADD DASH -3 TO NOTE 1, E.O. 00597	5/31/72	
	H	ADDED NOTE 2. REF. E.O. 01072	9/5/72	



NOTES:

1. RUBBER STAMP PART NO. 33030-1142436-1 OR -3 WITH BLACK CHARACTERS .12 HIGH, COVER WITH MIL-V-173 VARNISH.
2. INK STAMPED TERMINAL LOCATION AS SHOWN BY □

QTY REQD	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
1/16	1/16	SHRINK SLEEVING			.055 I.D. X .016 WALL		ARGUTUBE PLASTICS CO.		40
1/16	1/16	WIRE, BLUE/WHT.				20 AWG	WATL. WIRE		39
1/16	1/16	WIRE, BLUE				20 AWG	WATL. WIRE		38
1/16	1/16	WIRE, WHT.				20 AWG	WATL. WIRE		37
1/16	1/16	WIRE, H.V., BLK.			8899	18 AWG	BELDEN		36
1	/	TRANSFORMER, H.V.			1141813-3	230V, 50HZ			35
2	2	PINS, MOLEX			1190-M		WALDOM		34
1	1	CONNECTOR MOLEX			1396-P		WALDOM		33
1	1	LUG, INSUL. 3/8			RA 733	RED	T & B		32
1	1	LUG, INSUL. 3/8			RA 14-38	BLUE	T & B		31
1	1	LUG, INSUL. #8			RA 863	RED	T & B		30
6	6	LUG, INSUL. #10				BLUE	T & B		27
2	2	NUT, HEX				8-32			28
2	2	NUT, HEX			BRASS	3/8-16			27
7	7	WASHER INT. LOCK				#8			26
2	2	WASHER INT. LOCK			BRONZE	3/8			25
2	2	WASHER FL			BRASS	3/8			24
2	2	WASHER INT. LOCK				#10			23
1	1	WASHER FL.				#4			22
2	2	WASHER FL.			BRASS	#10			21
2	2	SCR. HEX SLOT HD.			BRASS	10-32 x 3/8			20
1	1	SCR. PAN HD.				8-32 X 1 3/8			19
2	2	SCR. PAN HD.				8-32 X 3/8			18
2	2	SCR. FL. HD.				8-32 X 1/2			17
2	2	SCR. FL. HD.				8-32 X 1/4			16
4	4	SCR. FL. HD.				10-32 X 3/8			15
1	1	RESISTOR			4866	30KΩ, 11W	OHMITE		14
1	1	POP RIVET				1/8 DIA			13
									12
2	2	FUSE CLIP			125002		LITTELFUSE		11
1	1	PLATE MTG			1112549				10
1	1	MTG. BLOCK S.G.			1122307				9
1	1	BRASS STRIP			1100258				8
1	1	MOUNTING PLATE			1141655				7
1	1	GRID PLATE			1100246				6
1	1	SPARK GAP			90(270)-4.0		SIGNALITE		5
2	2	CAPACITOR			306A-D50	.005pF, 3KV	SPRAGUE		4
2	2	CAPACITOR			715C009	1600 μμf, 20 KV	SPRAGUE		3
/	1	TRANSFORMER H. V.			1141818-1	115V, 60HZ			2
1	1	RF TRANSFORMER ASSY			1141641				1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-3	1151662-3	2500B
1	-1	1151662-5	2500C
1	-1	1151622-1	3000

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS XX = ± .03 XXX = ± .010 ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING
MATERIAL:
FINISH:

DRAWN	J.K.	9/20/72
CHECK		
DESIGN		3/12/70
ENGR		
APPR		
APPR		

CONTRACT NO. PD506-30

APPROVED 3-15-72

APPROVED

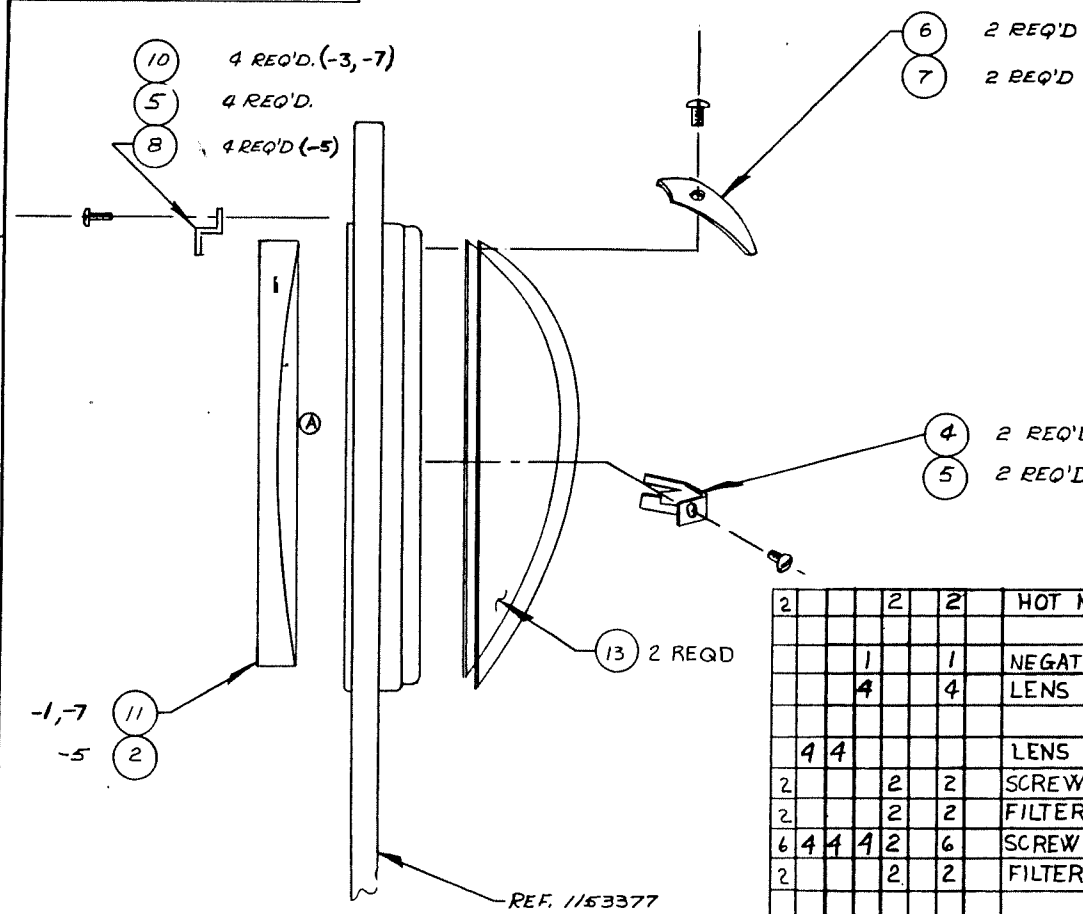
OPTICAL RADIATION CORPORATION

IGNITER ASSY
MODEL 3000

SIZE	CODE IDENT NO.		REV
D	33030	1141661	H

SCALE — WEIGHT — SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	CORRECT POSITION OF NEGATIVE LENS, ZONE C4, EOR 00192	8/15/73	
	B	REVISED TABULATION REF EQ 01111	3-15-74	



-11	-9	-7	-5	QTY REQD .3	QTY REQD .2	QTY REQD .1	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
2				2		2		HOT MIRROR			1100507-7				13
															12
			1			1		NEGATIVE LENS			1100514				11
		4				4		LENS CLIP			1123376-1				10
															9
	4	4						LENS CLIP			1123376-3				8
2				2		2		SCREW PAN HD.				6-32X3/8LG			7
2				2		2		FILTER RETAINER			1110908				6
6	4	4	4	2		6		SCREW PAN HD.				4-40X1/4LG.			5
2				2		2		FILTER CLIP			1110909				4
															3
1		1						U.V. LENS			1130765	UNCOATED			2
	1							U.V. LENS			1130765	COATED, OPEN CENTER			1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-11	1152416	SPECIAL
1	-9	1152416	SPECIAL
1	-7	1153377	1000-1000B
1	-5	1153377	1000-1000B
1	-3	1153377	1000-3000
1	-1	110174	1600

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS XX = ± .03 XXX = ± .010 ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING
MATERIAL:
FINISH:

DRAWN	C. REMMEL	6-5-73
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

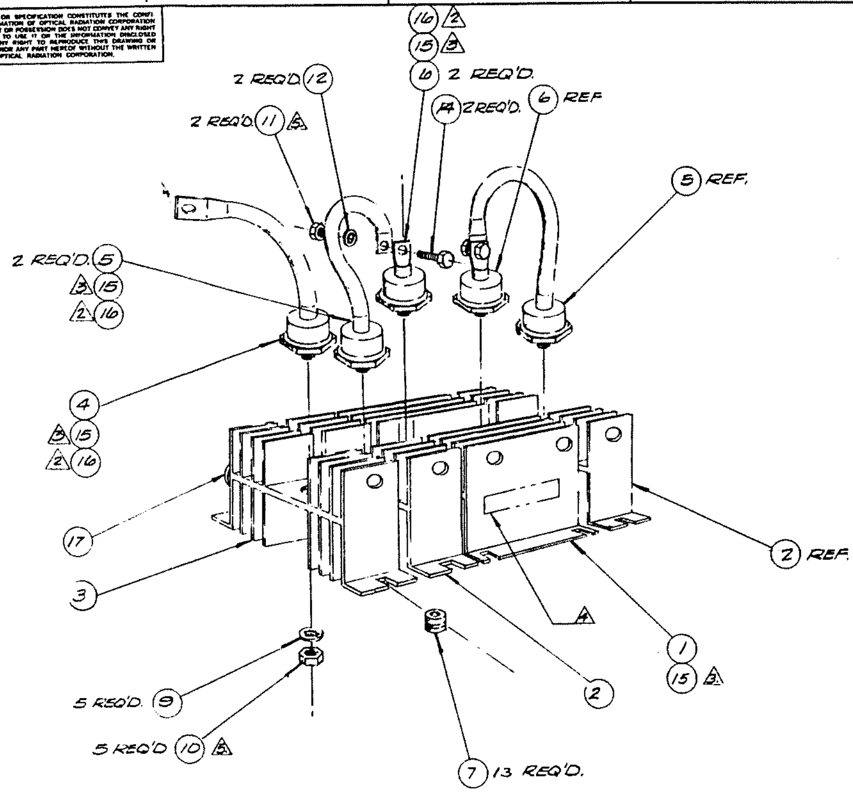
CONTRACT NO. PD506
APPROVED 6-21-73

Optical Radiation Corporation

LENS KIT

SIZE	CODE IDENT NO.		REV
C	33030	1133494	B

1133494 B



REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	CHG'D PICTURE OF HEAT SINKS. ADDED ITEM 17	2-23-71	B.J.
	B	ITEM 2 WAS QTY. 3. ITEM 7 WAS QTY 16 ITEM 11 WAS 10-32 NUT ITEM 12 WAS #10 SPLIT LOCK ITEM 13 WAS #10 FLAT WASHER ITEM 19 WAS 10-32x3/4 SCREW ADD: NOTES 4 & 5 ITEM 3 (REF. EO# 00130)	3-17-72	
	C	DELETED ITEM 8 ITEM 17 WAS: 300T 123 B211	4-13-72	
	D	DELETED NOTE 1 REF. EO.# 00274	7/1/72	
	E	UPDATE TO CORRESPOND WITH LATEST REVISIONS (1100256, 1100257) REF E.O.# 00604		

NOTES: UNLESS OTHERWISE SPECIFIED

2. APPLY ITEM NO. 16 TO ALL DIODE THREADS BEFORE INSTALLING.
3. APPLY ITEM NO. 15 TO ITEMS NO. 4, 5 & 6 AT MATING SURFACE OF DIODE BEFORE INSTALLING INTO HEAT SINK.
4. RUBBER STAMP PART NO. 33030-1141132-1 ASSY. WITH BLACK CHARACTORS .12 HIGH, COVER WITH MIL-V-173 VARNISH
5. TORQUE APPLIED TO ITEMS 10 & 11 TO BE A MIN. OF 25 INCH LBS. & MAX. OF 30 INCH LBS.

LIST OF MATERIAL

NOTE	QTY REQD -3	-2	-1	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
												21
												20
												19
												18
			1		THERMAL SWITCH			3001-T123-B211		ELMWOOD		17
2			1/16		LOCTITE			NO.73-21				16
3			1/16		THERMAL COMP.					WAKEFIELD		15
			2		SCREW, HEX HD.				1/4-20x5/8	BRASS		14
												13
			2		WASHER, LOCK, INT.				1/4	BRASS		12
			2		NUT, HEX				1/4-20	BRASS		11
			5		NUT, HEX				10-32			10
			5		WASHER, LOCK				#10			9
												8
			13		GROMMET, NYLON			103		WAKEFIELD		7
2 3			2		DIODE			MR1215SR		MOTOROLA		6
2 3			2		DIODE			MR1211SB		MOTOROLA		5
2 3			1		DIODE			MR1212SB		MOTOROLA		4
			1		HEAT SINK			1100257-3				3
			2		HEAT SINK			1100257-1				2
			1		HEAT SINK			1100256				1

APPLICATION

QTY.	DASH NO.	NEXT ASSY	USED ON
1	-1	1150604	PD506

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES DECIMALS .XX = ± .03 .XXX = ± .010 ANGLES ± 1/2° MACHINE FINISH √ DO NOT SCALE DRAWING

MATERIAL:

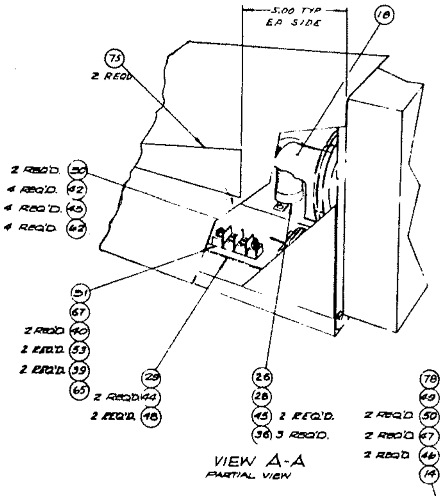
FINISH:

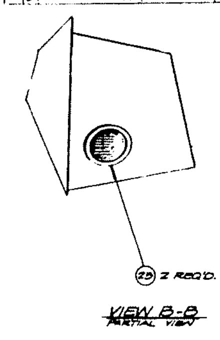
DRAWN	R.J.M.	1/25/71
CHECK	R. Taylor	
DESIGN		
ENGR		
APPR		
APPR		
CONTRACT NO.	PD506	
APPROVED		4-2-71

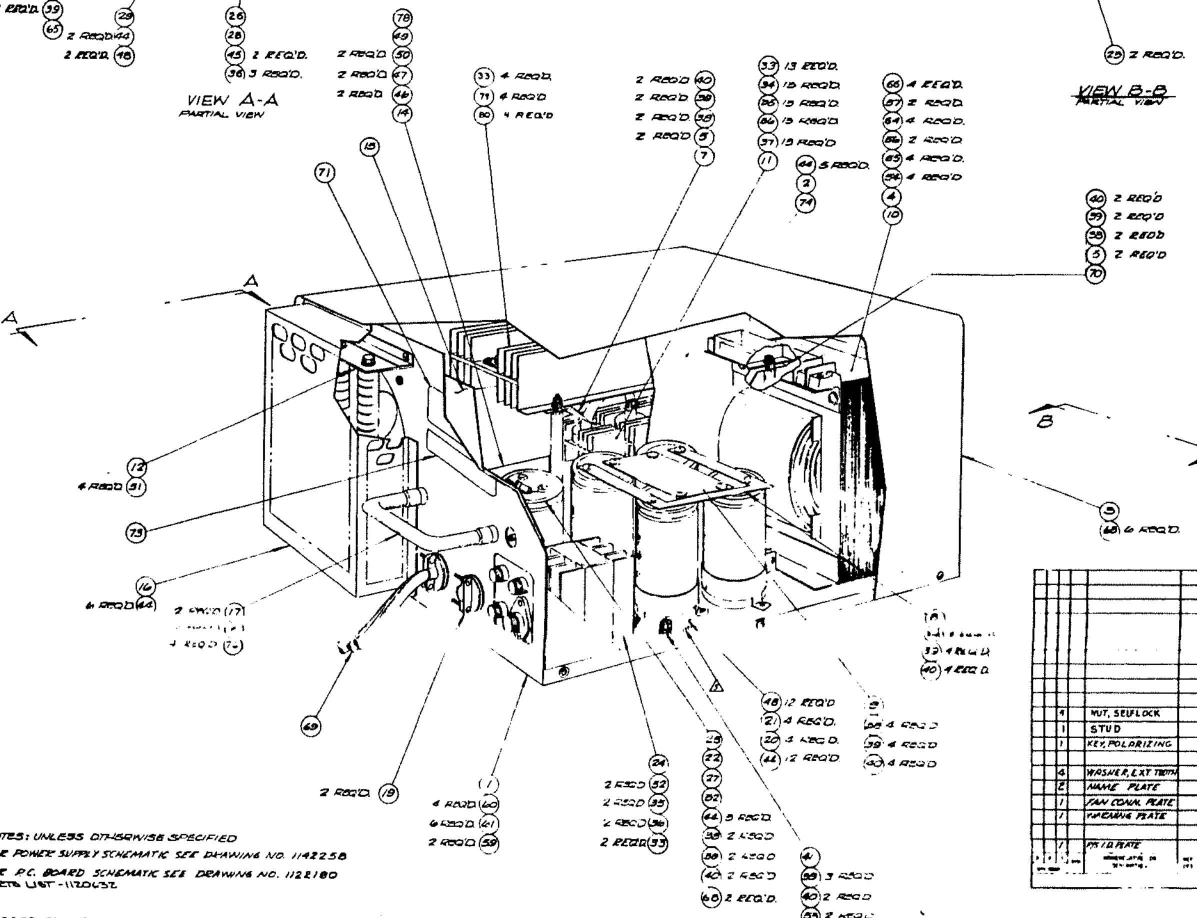
OPTICAL RADIATION CORPORATION

DIODE BANK ASSEMBLY

SIZE	CODE IDENT NO		REV
D	33030	1141132	E
SCALE ~	WEIGHT	SHEET 1 OF 1	







REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	ITEM 25 WAS 36D532-F750 DC 8A SPRAGUE CAP ADD ITEMS 35,64		BJ
	B	ITEM 22 WAS 1000Ω, 3W; ITEM 41 WAS QTY. 3; ADD: ITEMS 45, 46, 67, 68 & NOTE 2; REF. EO # 00137		BJ
	C	ITEM 7 WAS 1100298, QTY 2; ITEM 20 WAS: CAC600M-10 ADD: SPRAGUE; ITEM 23, WAS: 1086/KA; ITEM 30, WAS: 1KΩ; ITEM 37 ADD 2162 & H.H. SMITH; DELETE ITEM 64; ADD ITEM 69, QTY 1, CABLE ASSY 1130789		BJ
	C	CONT. ADD: ITEM 70, QTY 1, AIR BAFFLE PLATE 1100298-3; ITEM 44 QTY WAS: 28; ADD: CALLOUT FOR ITEMS 5, 38, 39 & 40. 2 REQD ITEM 70 REQD		
	D	INCL: ITEM 65 WAS RESISTOR-1KΩ, 2W; ADD: ITEMS 69, 71, 72, 73, 74; ITEM 57 WAS 10-32, ITEM 56 WAS WASHER; ITEM 50 WAS SPACER, NYLON, 8135, QTY. 1; ITEM 49 WAS SCREW, RND. HD, 6-32x1"; ITEM 48 WAS QTY 2; ITEM 47 WAS WASHER, FLAT #8; ITEM 46 WAS SCREW, RND HD. 8-32x3/8; ITEM 36 WAS QTY 16; ITEM 35 WAS QTY. 17; ITEM 33 WAS QTY. 1		BJ
	D	ITEM 22 WAS P/N OH1021; ITEM 20 WAS P/N 4586-1; ITEM 14 WAS P/N 1140787; ITEM 7 WAS QTY. 2; REVISED NOTE 1; ADD: NOTE 2., REF EO # 00274		RN
	E	REVISED PER E.O. # 00 686		
	F	ITEM 51 WAS 2-REQ. ADD ITEM 65. ITEM 61 WAS QTY 2, 10-32x3/8. ITEM 64 WAS QTY 2. ITEM 53 WAS QTY 2, ITEM 44 WAS QTY 26. ITEM 40 WAS QTY 16, ITEM 37 WAS QTY 17. ITEM 36 WAS QTY 15. ITEM 45 WAS -2		
	G	REMOVED ITEM 77, EO# 4 198		
	H	EXTENSIVE CHANGES REF E.O. 00871		
	J	DELETED ITEM 28 ADDED 71 REF EO 01161		
	K	EO #01C31		

LIST OF MATERIAL

QTY REQD	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ITEM NO.
1	AIR BAFFLE PLATE	1100298-3			70
1	CABLE ASSY	1130789			69
2	LUG, UNINSULATED	A 29		T & B	68
1	SCREW, FLT. HD.		10-32 x 1 1/8		67
4	NUT, HEX		1/4-20		66
1	SCREW, RD. HD		10-32 x 1"		65
4	WASHER, FLAT BRASS		1/4		64
6	SCREW, PH. TRUSS HD		10-32 x 3/8		63
4	NUT, HEX		4-40		62
6	RIVNUT		10-32		61
4	RIVNUT		1/4-20		60
2	GROMMET	2170			59
					58
2	NUT, HEX BRASS		1/4-20		57
2	SCREW, BRASS HEX HD		1/4-20 x 1/2		56
4	WASHER, LOCK		1/4		55
4	SCREW, HEX HD		1/4-20 x 5/8		54
4	NUT, HEX		10-32		53
2	SCREW, PAN HD		6-32 x 1/4		52
4	SCREW, RD HD		8-32 x 3/8		51
2	SPACER, ALUMINUM	8483	1/2 LG.	H.H. SMITH	50
1	RECEPTACLE, CARD EDGE	00-6422-022-980-002		ELCO	49
14	WASHER, LOCK STAR		#8		48
2	WASHER, INT. STAR		#4		47
2	SCREW, PAN HD.		4-40 x 3/8		46
2	SCREW, SELF TAP		6-32 x 3/8		45
27	SCREW, SELF TAP		8-32 x 3/8		44
4	WASHER, LOCK, SPLIT		#4		43
4	SCREW, FLAT HD.		4-40 x 3/8		42
1	SCREW, PAN HD		10-32 x 3/4		41
18	WASHER, LOCK STAR		#10		40
19	WASHER, FLAT		#10		39
14	SCREW, RD. HD.		10-32 x 3/8		38
9	WASHER, FIBER	2162	#6	H.H. SMITH	37
8	WASHER, LOCKSTAR		#6		36
18	WASHER, FLAT		#6		35
13	SCREW, RD. HD.		6-32 x 3/8		34
11	NUT, HEX		6-32		33
1	CAP CLAMP	VR12			32
1	TERMINAL BD	605-2502-2			31
2	RESISTOR	RH50	1KΩ, 50W	DALE	30
1	RESISTOR MTG. PLATE	1150945			29
1	CAP CLAMP	VR3			28
1	CAPACITOR	30GA-D50	.005M, 3KV		27
1	CAPACITOR	36D180G040-AC2A		SPRAGUE	26
1	CAPACITOR	26F1974M		G.E.	25
1	CONTACTOR	ACC 230-U	115VAC, 30AMP		24
2	VENT PLUG	XS 5116 2		CUT FREED	23
1	RESISTOR	OH1331	130Ω, 2W	OHMITE	22
4	CAPACITOR	36D700G-010CD2A		SPRAGUE	21
4	CAPACITOR BRKT.	4586-1		SPRAGUE	20
2	CABLE CLAMP	6624		T & B	19
1	FAN	FE-6L	200 CFM 2"	I.R.C.	18
2	HANDLE	1051-12		USECO	17
1	RESISTOR COVER	1140902			16
	[illegible]	[illegible]			15
	[illegible]	[illegible]			14
	[illegible]	[illegible]			13
1	RES. STRIP ASSY	40954			12
1	DIODE BANK ASSY	41152			11
1	POWER XFORMER	1140804			10
1	BUSS BAR	1100259-1			9
1	BUSS BAR	1100260			8
1	AIR BAFFLE PLATE	1100298-1			7
4	HANDLE SPACER	1100816			6
					5
1	WIRE CONN PLATE	1151155			4
1	P.S. COVER	1100186			3
1	P.S. SHROUD	1100180			2
1	CHASSIS ASSY	1100186			1

QTY REQD	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ITEM NO.
					90
					89
					88
					87
					86
					85
					84
					83
					82
4	NUT, SELFLOCK		6-32		81
1	STUD	1113704	6-32 x 1.00		80
1	KEY, POLARIZING	60-6422-31-24		ELCO	79
					78
					77
4	WASHER, EXT TOOTH		7/8		76
2	NAME PLATE	1152851-3			75
1	FAN CONN. PLATE	1131134			74
1	WARNING PLATE	1111389			73
					72
1	P.S. I.D. PLATE	1132918-1			71

NOTES: UNLESS OTHERWISE SPECIFIED

1. FOR POWER SUPPLY SCHEMATIC SEE DRAWING NO. 1142258
2. FOR P.C. BOARD SCHEMATIC SEE DRAWING NO. 1122180
3. PARTS LIST -1120632

⚠ RUBBER STAMP CHARACTERS 1/8 HIGH WHITE, COVER WITH VARNISH.

DO NOT SCALE DRAWING

DWN K.C.M. | CHK Elayton | APPD Richard

APPLICATION: FINAL

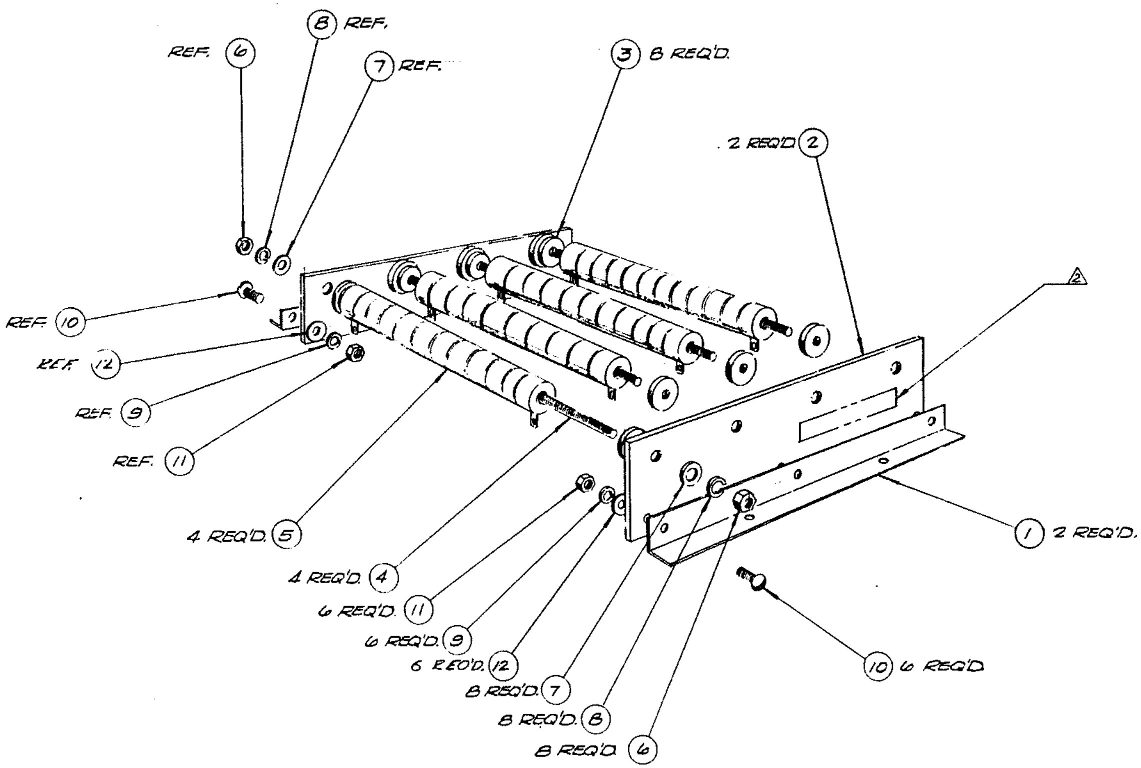
POWER SUPPLY ASSEMBLY

SIZE J | CODE IDENT NO. 33030 | DWG NO. 1150604 | REV K

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	ADD: NOTES 2 & 3 REF. EO # 00119	5-19-72	R.J
	B	ITEM 10 WAS 10-32 x 3/8 ADD: ITEM 12, REF. EO. 00159	7/18/72	B.J
	C	ITEM 5 WAS P/N 21[illegible] DEL: NOTES 1 & 5 REF. EO. # 00274	7/7/72	R.J

NOTES: UNLESS OTHERWISE SPECIFIED

2. RUBBER STAMP PART NO. 33030-1140954-1 ASSY. WITH BLACK CHARACTORS .12 HIGH, COVER WITH MIL-V-173 VARNISH



QTY REQD	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
6		WASHER, FLAT				# 10			12
6		NUT, HEX				#10-32			11
6		SCREW, RD. HD				10-32 x 1/2			10
6		WASHER, LOCK				#10			9
8		WASHER, LOCK				1/4			8
8		WASHER, FLAT				1/4			7
8		NUT, HEX				1/4-28			6
4		RESISTOR			06300 C	1 Ω, 100W	OHMITE		5
4		SCREW, RES STOR			1130919				4
8		RESISTOR SPACER			1130918				3
2		RESISTOR PLATE			1130917				2
2		RESISTOR MTG. BRKT			1130896				1

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX = ± .03 .XXX = ± .010
ANGLES ± 1°
MACHINE FINISH ✓
DO NOT SCALE DRAWING

MATERIAL:

FINISH:

DRAWN	K.J.M.	9/24/71
CHECK	E.Taylor	
DESIGN		
ENGR	R.J.	6/1/71
APPR		
APPR		
CONTRACT NO.	PC506	
APPROVED	R. Jiel	6/2/71

OPTICAL RADIATION CORPORATION

RESISTIVE BALLAST ASSEMBLY

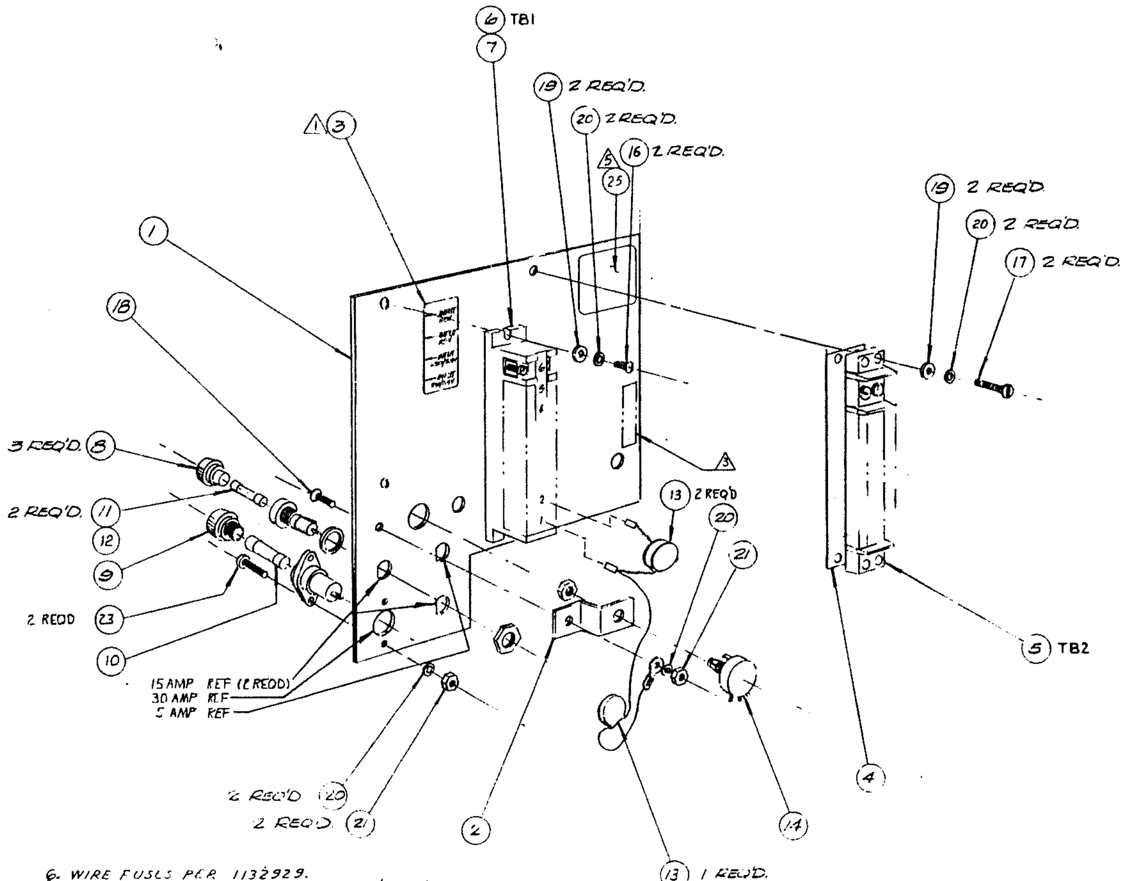
SIZE	CODE IDENT NO		REV
D	33030	1140954	C
SCALE ~	WEIGHT		SHEET 1 OF 1

APPLICATION			
QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1150604	PD506

D 1140954 C

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	K	ADD ITEM 12, ITEM 11 WAS QTY 3, REF. E.O. #00600 (MOSTLY E.O. #00625)	7/72	
	L	CHANGE ITEM 15, WAS QTY 3, ITEM 21 WAS QTY 5, ITEM 24 REMOVE ITEM 25 ADD. REF E.O. #00671	4/24/72	
	M	EO # 01287	7-9-74	
	N	EO # 01314	9-23-74	



Note	QTY REQD (-1)	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ITEM NO.
5	1	CAUTION PLATE	1112362			25
						24
	2	SCREW, PAN HD		6-32 X 1/2		23
	1	WIRE, LUG		#6	T46	22
	3	NUT, HEX		6-32		21
	7	WASHER, INTERNAL TOOTH		#6		20
	4	WASHER, FLAT		#6		19
	1	SCREW, FLAT HD.		6-32 X 3/8		18
	2	SCREW, PAN HD.		6-32 X 5/8		17
	2	SCREW, PH. RD. HD.		6-32 X 3/8		16
						15
4	1	POTENTIOMETER	RV4NAYSD101A	100-OHM TYPE J	ALLEN BRADLEY	14
	3	CAPACITOR	5GAS50	.05 µf, 500VDC	SPRAGUE	13
	1	FUSE	3AB-5 AMP.		LITTELFUSE	12
	2	FUSE	3AB-15 AMP.		LITTELFUSE	11
	1	FUSE	KLM 30		BUSSMAN	10
	1	FUSE HOLDER	HPC-30		BUSSMAN	9
4	3	FUSE HOLDER	HKP		BUSSMAN	8
	1	END SECTION	230		BUCHANNAN	7
	6	TERMINAL BLOCK	212		BUCHANNAN	6
	1	TERMINAL BOARD	6-142		CINCH JONES	5
	1	TERMINAL STRIP	MS6-142		CINCH JONES	4
1	1	INPUT PWR. TAG	111127			3
	1	POT HOLDER	1100262			2
	1	MOUNTING PLATE	1140654			1

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX = ± .03 .XXX = ± .010 ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING

DRAWN K.J.M. | CHECK R. Neely 3/4/72
CONTRACT NO. PD506

OPTICAL RADIATION CORPORATION

COMPONENT BD. ASSEMBLY

SIZE D | CODE IDENT NO. 33030 | 1141114 | REV N
SCALE 1:1 | SHEET 1 OF 1

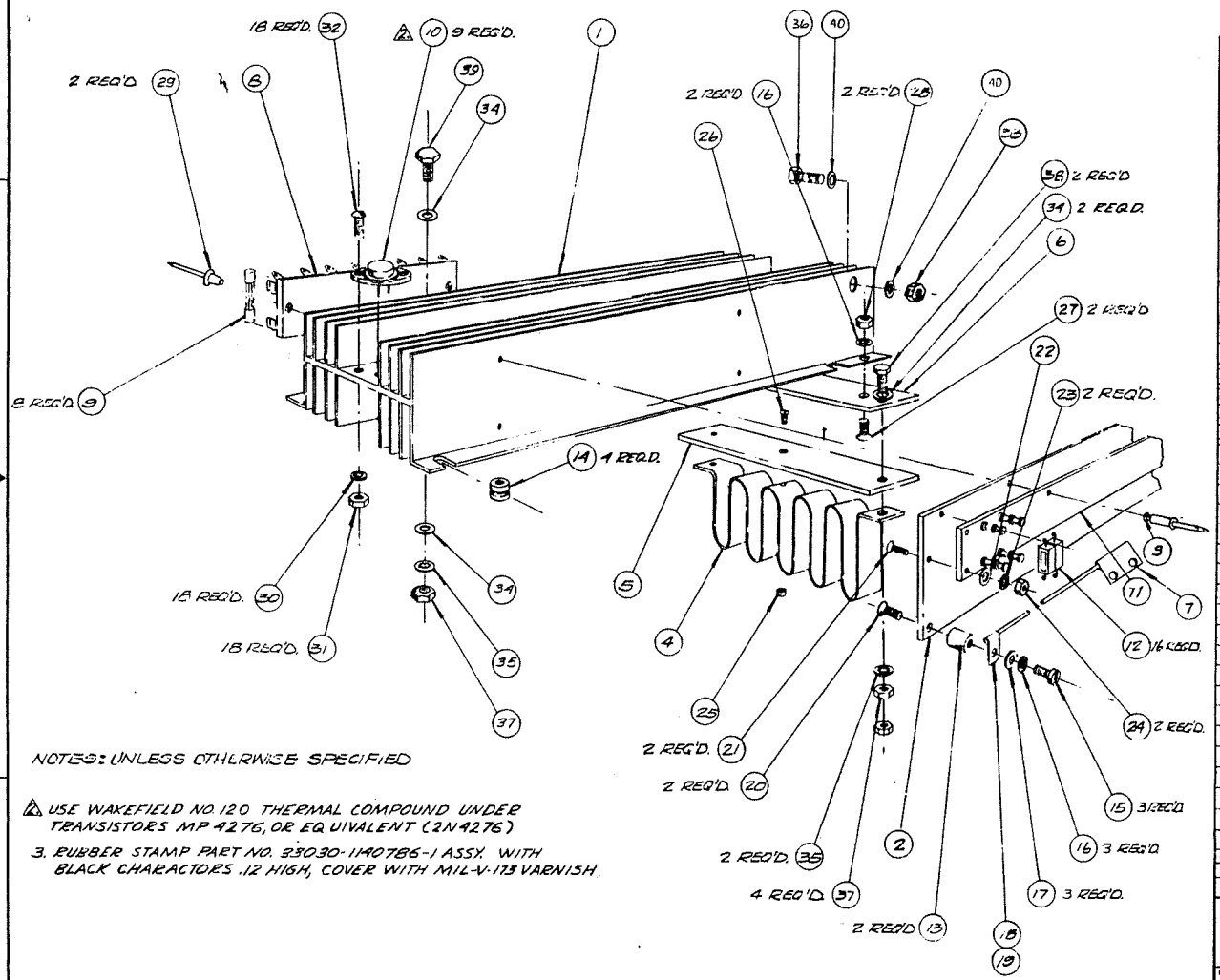
QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1150604	PD506

APPLICATION

NOTES: UNLESS OTHERWISE SPECIFIED

1. LOCATE ITEM NO. 3 ON TERMINALS 3 THRU 6 OF TB1.
3. RUBBER STAMP P/N 33030-1141114-1 ASSY. WITH BLACK CHARACTERS .12 HIGH, COVER WITH MIL-V-173 VARNISH
4. USE SUPPLIED HARDWARE FOR ATTACHING ITEM.
5. APPLY CAUTION PLATE (ITEM 25) TO MTG PLATE (ITEM 1), LOCATE BY LINING UP "4 & 5" ON PLATE TO 6 AND 5 ON TB2.
6. WIRE FUSES PER 1132929.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	H	E.O. # 005994 HISTORY E.O. # 00625	3/23/71	
	J	E.O. # 01009	4/22/71	
	K	E.O. # 01232	6/14/71	



NOTES: UNLESS OTHERWISE SPECIFIED

10 USE WAKEFIELD NO. 120 THERMAL COMPOUND UNDER TRANSISTORS MP 4276, OR EQUIVALENT (2N4276)

3. RUBBER STAMP PART NO. 33030-1140786-1 ASSY. WITH BLACK CHARACTORS .12 HIGH, COVER WITH MIL-V-173 VARNISH

QTY REQD	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
2		WASHER, INT STAR				1/4 - 20	BRASS		40
1		SCREW, HEX HD.				10-32 x 3/8			39
2		SCREW, HEX HD.				10-32 x 3/8	BRASS		38
5		NUT, HEX				10-32	BRASS		37
1		BOLT HEX HD				1/4-20 x 1/2	BRASS		36
3		WASHER, INT. STAR				#10	BRASS		35
3		WASHER, FLAT				#10	BRASS		34
1		HEX NUT				1/4-20	BRASS		33
18		SCREW, PAN HD.				6-32 x 1/2			32
18		NUT, HEX				6-32			31
18		WASHER, INT. STAR				#6			30
2		POP RIVET				#10			29
2		NUT, HEX				8-32			28
2		SCREW, FIT. HD				8-32 x 1/2			27
1		SCREW, FLAT HD.				4-40 x 3/8			26
1		NUTSERT				4-40			25
2		NUT, HEX				4-40			24
2		WASHER, INT STAR				#4			23
2		WASHER, FLAT				#4			22
2		SCREW, FLAT HD.				4-40 x 3/8			21
2		SCREW, FT. HD.				8-32 x 1/4			20
AR		TINNED, COPPER BRAID			Z92	#C NW4	ALPHA		19
1		LUG, FLANGE			C53	#10 WIRE, #16 STUD	T&B		18
3		WASHER, FLAT				#8			17
5		WASHER, INT STAR				#8			16
3		SCREW, PAN HD.				8-32 x 1/4			15
4		INSULATOR			103		WAKEFIELD		14
2		STAND-OFF, CERAMIC			2607		H.H. SMITH		13
16		RESISTOR			CP5	1.2, 5W	DALE		12
1		TERM. BD, CAMBIAN			1406-35-01-01		CAMBIAN		11
9		TRANSISTOR			MP4276	60 MP, 20 VCEO	MOTOROLA		10
8		FUSE			AGX-15	15 AMP	BUSSMAN		9
1		FUSE BLOCK			3570CB		LITTEL FUS		8
1		LUG, BRACKET			1112800		BRASS		7
1		BALLAST HOLD UPPER			1130904				6
1		BALLAST HOLD LOWER			1130905				5
1		BALLAST RIBBON			1130906				4
4		POP RIVET			AB4-5A				3
1		PHENOLIC PLATE			1100284				2
1		TRANSISTOR HEAT SINK			1100255				1

LIST OF MATERIAL

1	-1	1130604	P0506
QTY.	DASH NO.	NEXT ASSY	USED ON
APPLICATION			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: DECIMALS .XX ± .03, .XXX ± .010; ANGLES ± 1/2°. MACHINE FINISH ✓. DO NOT SCALE DRAWING.

MATERIAL:

FINISH:

DRAWN	K.J.M.	4/15/71
CHECK	R. TAYLOR	
DESIGN		
ENGR		
APPR		
APPR		
CONTRACT NO. P0506		
APPROVED		6/15/71
APPROVED		

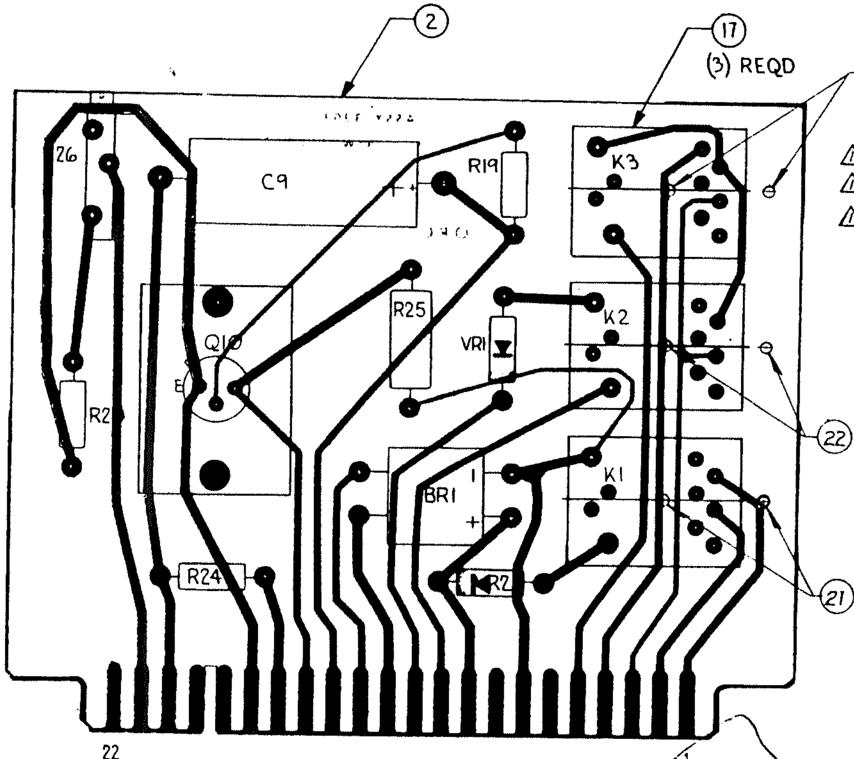
OPTICAL RADIATION CORPORATION

CURRENT REG. ASSEMBLY

SIZE	CODE IDENT NO.		REV
D	33030	1140786	K
SCALE —	WEIGHT	SHEET 1 OF 1	

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	REVISED RELAY NO.3	6-30-72	JD
	B	ITEM 5 WAS P/N 3005-P-101 ITEM 7 WAS P/N EB2215 ADD: ITEM 9 REF EO# 00274	7-16-72	BW
	C	ADD: ITEM 21, 22, & 23, & NOTE 1, (E.O.#00465) CUT .062 GAP BETWEEN PIN #18 & 19.	11/30/72	JTS
	D	ITEM 18 WAS R10-E3-X2-J5.0K EO 00497	1-22-73	
	E	ITEM 15 WAS 12V REF. E.O. #00539	2/19-73	
	F	ITEM 6 WAS 5% REF EOR 278	2-9-74	



NOTE:
⚠ COLOR CODE BOARD & RELAY'S AS SHOWN 1/8 DOT.

RPS-X 16/25 SMAP 00635

I ea w/ RELAYS

LIST OF MATERIAL

3	2	1	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
⚠		A/R		PAINT - RED			X7		PACTRA		23
⚠		A/R		PAINT - WHITE			X2		PACTRA		22
⚠		A/R		PAINT - BLUE			X18		PACTRA		21
		1		RELAY — 115 VAC	K3		R10-E1-Y2		P & B		20
		1		RELAY — 6 VDC	K2		R10-E1-Y2-S200		P & B		19
		1		RELAY	K1		R10-E1-X2-J5.0K		P & B		18
		3		SOCKET			9XR10-4		P & B		17
											16
		1		DIODE ZENER-15V, 1W	VR1		SZ 15V, 1W, 5%		SCHAUER OR EQUIV.		15
		1		DIODE ZENER	VR2		1N5382		MOTOROLA		14
											13
		1		CAPACITOR-500µF, 6V	C9		MTA500F6		MALLORY		12
		1		BRIDGE RECTIFIER	BR1		MDA 942-5		MOTOROLA		11
		1		TRANSISTOR	Q10		40410		RCA		10
		1		RESISTOR-10Ω, 1/2W, 5%	R20		EB1005				9
		1		RESISTOR-100Ω-1/2W-5%	R19		EB1015		A.B. OR EQUIV		8
		1		RESISTOR-22 Ω-1/2W-5%	R24		EB2205		A.B. OR EQUIV		7
		1		RESISTOR-3.9K-1W-10%	R25		GB3925		A.B. OR EQUIV		6
		1		POTENTIOMETER-100Ω, 1W	R26		3005P1-101		BOURNS		5
											4
		REF		SCHEMATIC			1122180				3
		1		DETAIL P.C. BOARD			1132178				2
		-1		ASSY P.C. BOARD			1132179				1

QTY REQD

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS .XX = ± .03 .XXX = ± .010
ANGLES ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING

MATERIAL

FINISH

DRAWN	D.R.SCARBO 5-9-72
CHECK	R. Taylor
DESIGN	
ENGR	
APPR	SAXBERG 5-9-72
APPR	SAXBERG 11-30-72
CONTRACT NO.	PD-506-0
APPROVED	5/10/72

OPTICAL RADIATION CORPORATION
1300 E. PECK RD., MONROVIA, CALIF. 91016 (213) 446-6177

ASSY, P.C. BOARD
1600 / 2500

SIZE	CODE IDENT NO.		REV
C	33030	1132179	F

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1150604	PD-506-0

APPLICATION

C 1132179 F