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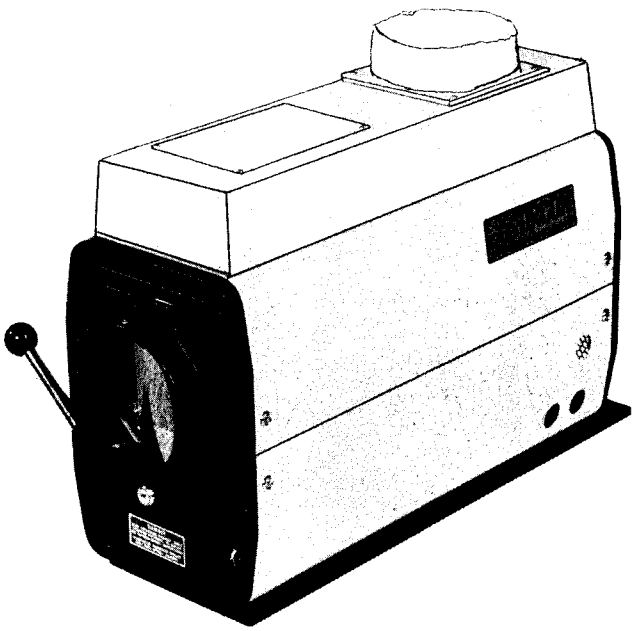
D113198G

OPERATING INSTRUCTIONS

FOR

XH-16S AND XH-30S LAMPHOUSE



Optical Radiation Corporation
1300 Optical Drive, Azusa, CA 91702 • (213) 969-3344 • TWX 910-584-4851

REVISED JULY 1981

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SECTION 1 - INTRODUCTION

1.1 SCOPE

Provided in this manual are installation, operation and maintenance instructions for the Model XH-16S and XH-30S Orcon Xenon Lamphouses. These systems are manufactured by Optical Radiation Corporation (ORC), Azusa, California U.S.A. When requesting information, always furnish model and serial numbers.

1.2 GENERAL DESCRIPTION

The Model XH-16S and XH-30S Xenon Projection Lamphouses are designed for use with various external power supplies.

The XH-16S system, when used with a 1600 Watt xenon bulb, has an output of 20,000 lumens at a nominal current of 65 amperes (when using a f/1.7 projection lens). The XH-30S lamphouse used with a 2500 Watt xenon bulb, has an output of 30,000 lumens at a maximum current of 90 amperes. When properly aligned, a screen brightness distribution of not less than 75 percent is assured.

The basic lamphouse as delivered is set up for 35mm projection operation. An optional adapter is available for 70mm projection. An eight-inch optical centerline is standard. The optional lamphouse mounting plate adapts the lamphouse to a nine-inch optical centerline and allows direct mounting to most projector pedestals.

1.3 OPTICAL SYSTEM

The optical system includes a xenon bulb mounted horizontally in a metal aspheric reflector. The reflector collects the

emitted light from the bulb and reflects it through a dichroic filter to the projector's aperture. A manually operated douser is located inside the lamphouse just before the dichroic filter (see Figure 1-1).

1.4 XENON BULB (XL1000W, XL1600W, XL2000W, XL2500W)

The xenon bulb is manufactured by Optical Radiation Corporation and is specifically designed for stable operation over a wide current range.

1.5 REFLECTOR

The reflector is a complex aspheric surface made of electro-formed nickel and coated with aluminum. It is good for the life of the system and does not require replacement in the event of a bulb explosion.

1.6 DOUSER

The built-in douser is operated by a handle on the right side of the lamphouse (see Figure 1-1). The douser is provided to close off light to the projector while the xenon bulb is operating.

1.7 DICHROIC FILTER

The dichroic filter reduces film damaging infrared radiation from reaching the projector's aperture. The system is, therefore, capable of providing ample light to the screen without use of special aperture cooling techniques in standard applications.

1.8 MOUNTING PLATE (OPTIONAL)

For 35 or 70mm projection, it is recommended that an optional swivel mounting plate be used. This mounting plate attaches to the bottom of the lamphouse and adapts the lamphouse to the standard nine-inch optical centerline (see Figure 3-3).

1.9 BLOWER TIME DELAY CIRCUIT (OPTIONAL) (ORC P/N 1135087)

Once the system has been energized, the blower time delay circuit is activated. When the lamphouse is shut off and the bulb extinguished, the blower time delay circuit provides power to the lamphouse cooling blower for a period of time up to approximately five minutes, and then automatically de-energizes. The time of extended blower operation is dependent on the length of time the lamphouse was energized. This feature provides additional forced air cooling to the bulb after shut down.

1.10 LAMPHOUSE CONTROLS AND INTERLOCKS

The lamphouse controls are located on the rear panel (see Figure 1-1) for easy access. The system display lights consist of power on and interlock warning indications.

The controls are designed for manual or automated use with the various power supplies.

Two circuit breakers on the control panel provide circuit overload protection. A 0.5 amp breaker protects the igniter circuit and a 5 amp breaker protects the blower and control circuits.

The cover interlock switch prevents operation of the lamphouse if the top wrap is removed. The snout interlock prevents

operation of the lamphouse if the key lock front snout is not secured.

The air flow interlock switch prevents operation if the cooling blower fails.

1.11 LAMPHOUSE SPECIFICATIONS

BULB	DC CURRENT (AMPERES)	LUMEN OUTPUT*	POWER (WATTS)	FIELD UNIFORMITY
XL1000W	50	14,000	1000	
XL1600W	65	19,000	1600	
XL2000W**	85	24,000	2000	75% min.
XL2500W**	90	30,000	2500	

* OPEN APERTURE, f/1.7 PROJECTION LENS

** USED IN XH-30S LAMPHOUSE ONLY

1.12 INTERCONNECTING CABLES

Pre-cut interconnecting cables are available to allow connection of all wiring between the lamphouse and power supply. Cable assembly 1136557-5 consists of two D.C. cables and a power cord for hook-up of the high current lamp connections and power supply contactor controls (see sections 3.6 and 3.9) in the XH-16S lamphouse. Assembly 1136557-3 is for use with the XH-30S lamphouse. Standard cable length is eight feet with longer lengths optionally available.

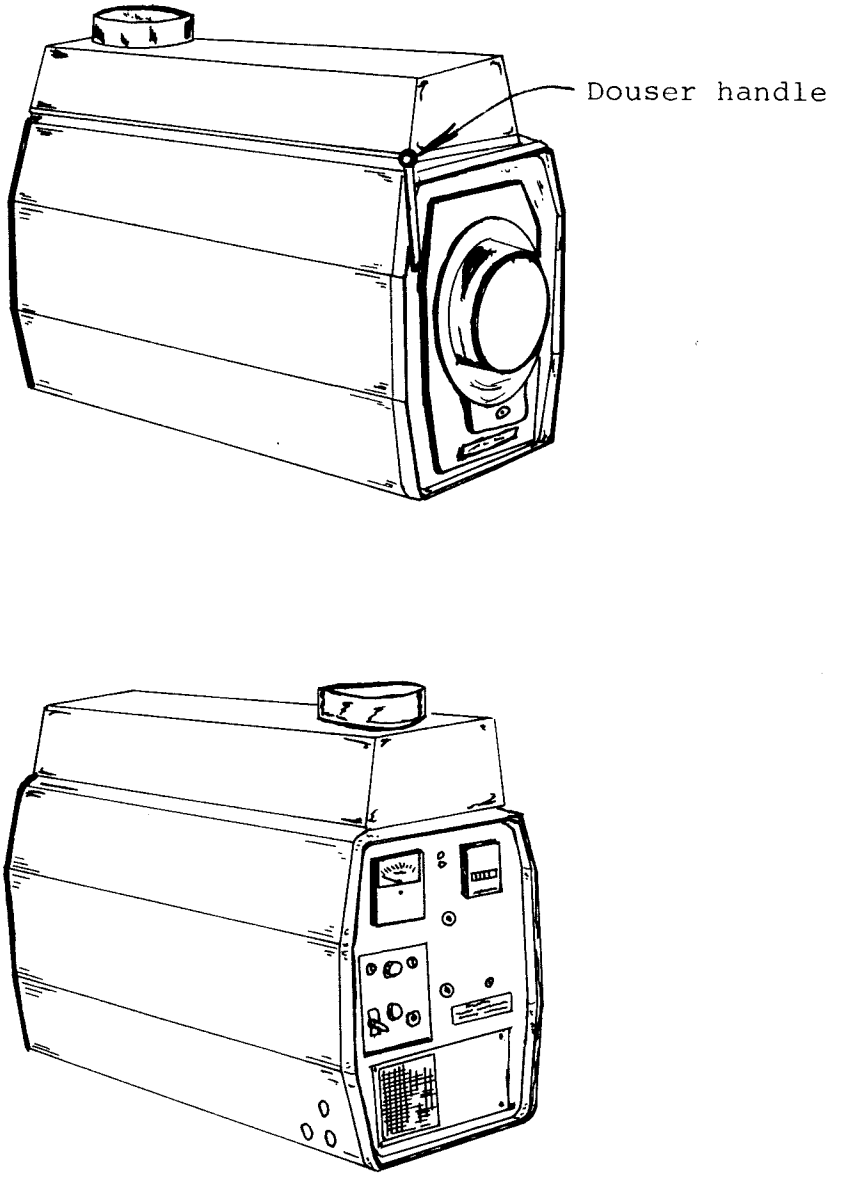


Figure 1-1 Lamphouse

1.13 REMOTE DOUSER (OPTIONAL)

A solenoid actuated remote controlled shutter (douser) is available as an option on the XH-16S lamphouse in place of the hand operated douser described in paragraph 1.6. The shutter is open when de-energized and is closed by closing a 115VAC signal at the appropriate terminals in the lamphouse.

- READ AND UNDERSTAND ALL INSTRUCTIONS -

2.1 **WARNING**

The above "WARNING" when appearing in this manual means: INSTALLATION, OPERATING AND MAINTENANCE PROCEDURES, PRACTICES, ETC., WHICH MAY RESULT IN PERSONAL INJURY OR LOSS OF LIFE IF NOT CAREFULLY FOLLOWED.

2.2 **CAUTION**

The above "CAUTION" when appearing in this manual means: INSTALLATION, OPERATING AND MAINTENANCE PROCEDURES, PRACTICES, ETC., WHICH MAY RESULT IN DAMAGE TO EQUIPMENT IF NOT CAREFULLY FOLLOWED.

2.3 NOTE

The above "NOTE" when appearing in this manual means: INSTALLATION, OPERATING AND MAINTENANCE PROCEDURES, PRACTICES, ETC., WHICH ARE ESSENTIAL TO EMPHASIZE.

2.4 SAFETY

2.4.1 Before attempting to make any connections or service to the system, make certain all power is disconnected from main power line.

2.4.2 Care must be taken as burns can occur from touching hot parts. Before servicing, wait at least 10 minutes for system to cool down.

2.4.3 Always disconnect all power from the system when not in use.

2.4.4 When taking any voltage measurements, caution should be exercised. Always avoid contact between any current carrying part of the system or power source and the human body.

2.4.5 When it is necessary to be exposed to or handle the xenon bulb, follow the necessary precautions outlined below.

WARNING

The xenon bulb is under extreme pressure and subject to possible explosion.
Do not view unenclosed bulb unless protective face mask is worn.
Bulb should never be handled outside its protective container or covering unless protective clothing consisting of (see Figure 2-1):

1. A quilted ballistic nylon jacket covering the body from below the groin to the neck including the arms to the wrist;
   ORC Part Number 1136349-3
2. A protective face shield extending below the neck area;
   ORC Part Number 1136349-5, and
3. Vinyl coated, knit lined gloves;
   ORC Part Number 1136349-7

is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

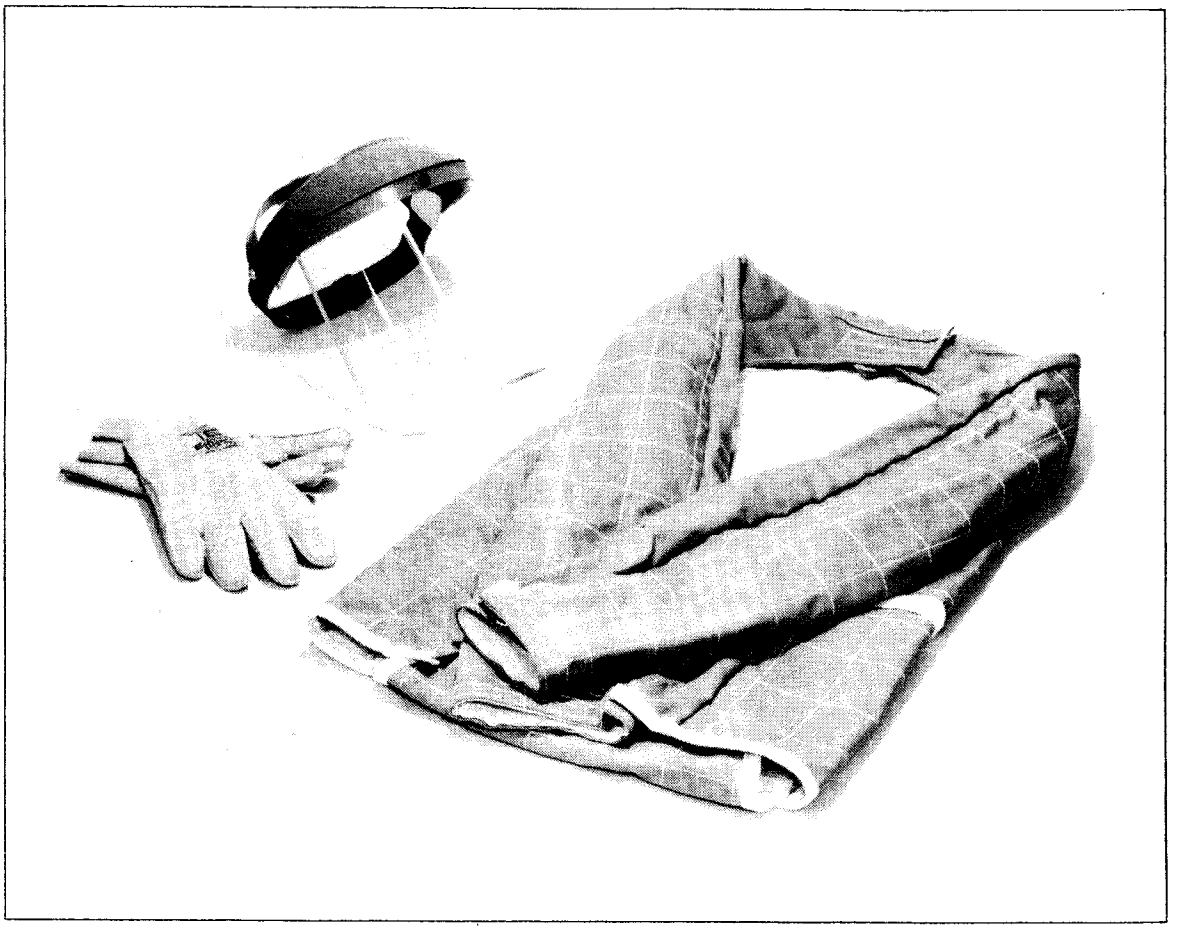


Figure 2-1

2.4.6 When installing the power source to the system, be certain that a ground wire is connected from the stud labeled "ground" and power source.

SAVE THESE INSTRUCTIONS

SECTION 3 - INSTALLATION

3.1 RECEIVING-HANDLING

Remove packing material from around the lamphouse and inspect for freight damage.

Any claims for damage or loss occurring in transit must be filed by the buyer with the carrier. Copies of the bill of lading and freight bill will be furnished on request.

Table 3-1 is a list of installation hardware included with each lamphouse.

3.2 INSTALLATION HARDWARE

Table 3-1

1 EACH	3/32 HEX KEY (SHORT ARM)	
1 EACH	3/16 PLAS-T-KEY	
1 EACH	9/64 HEX KEY (SHORT ARM)	
3 EACH	AIR FLOW TEST STRIPS (P/N 1126538)	
1 EACH	FACE MASK	XH-30S LAMPHOUSE ONLY
1 PAIR	GLOVES	XH-30S LAMPHOUSE ONLY
1 EACH	1/8 HEX KEY (SHORT ARM)	
1 EACH	CATHODE ADAPTER (P/N 1121700-1)	XH-16S ONLY

3.3 REMOVAL OF LAMPHOUSE FROM CONTAINER

Slit top of container along taped seam and remove lamphouse from container.

3.4 INSTALLATION OF LAMPHOUSE TO MOUNTING PLATE

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 3-3):

a. Remove two 1/4-20 x 3/4 LG flat head screws which secure plates together during shipment.
b. Insert four 1/4-20 x 2" slotted 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 5-3), tighten all nuts securely.

NOTE

Once base plate is secured, it will not have to be readjusted during the life of the installation.

3.5 LAMPHOUSE INSTALLATION - MECHANICAL

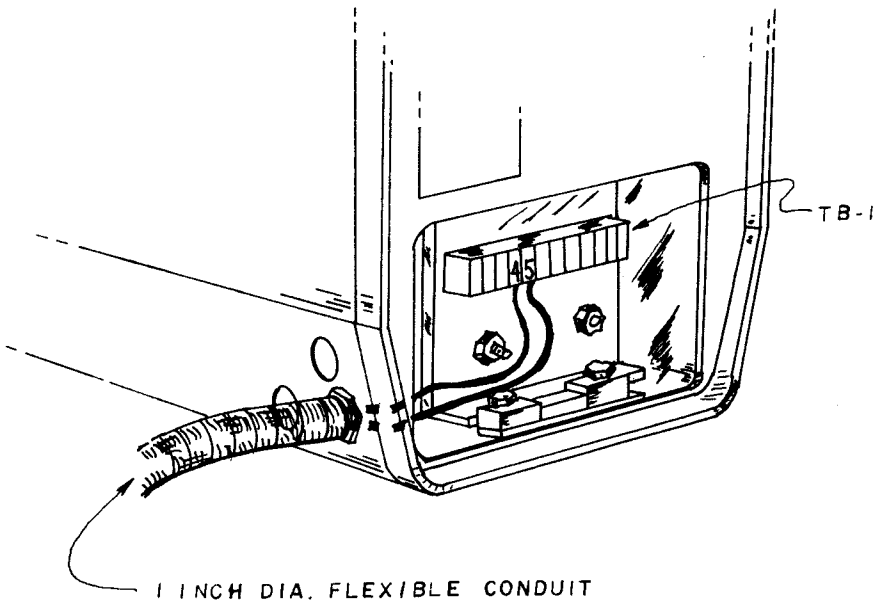
The optional lamphouse mounting plate is designed to fit the

track of a standard 35/70mm projector pedestal (see Figure 3-3). The working distance from the aperture to the front bulkhead of the lamphouse is seven and one-half inches (see Figure 5-1).

When the lamphouse is used with a Norelco (or other non-standard) projector system, observe a working distance of seven and one-half inches and an optical centerline of nine inches. Special adapters are available from Optical Radiation Corporation to match non-standard projectors.

3.6 ELECTRICAL CONNECTION - CONTACTOR CONTROLS

Connect two 18 AWG (min.) wires from the power supply contactor to terminals four and five on TB-1 in lamphouse. (Use lower conduit hole on side of lamphouse.) See Figure 3-2.



(Leave sufficient cable length to swivel lamphouse)

Figure 3-2

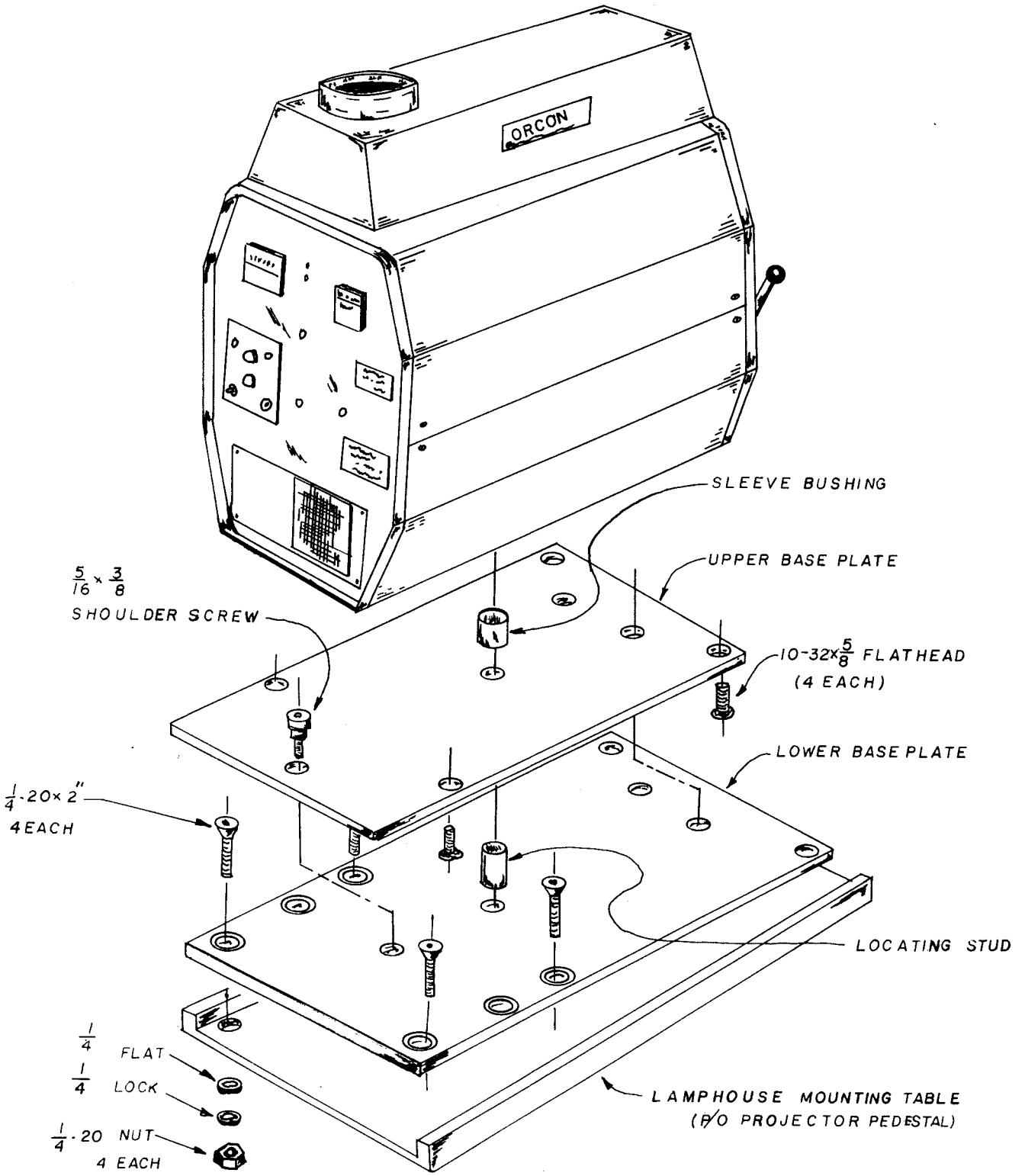
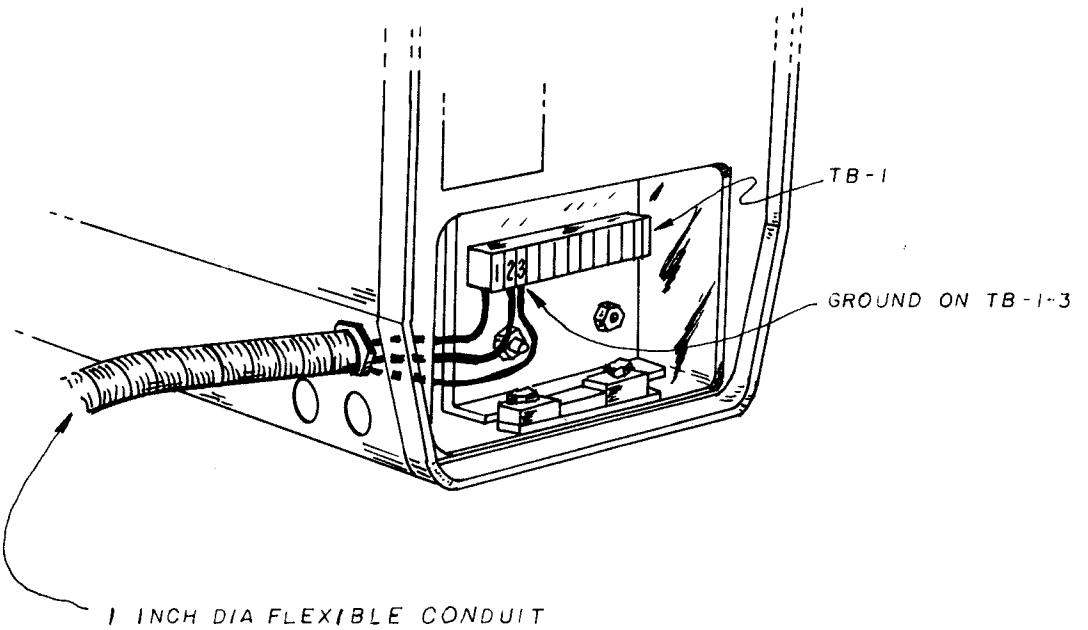

ORCON
SLEEVE BUSHING
UPPER BASE PLATE
5/16 x 3/8
SHOULDER SCREW
10-32x5/8 FLATHEAD
(4 EACH)
LOWER BASE PLATE
1/4-20x2"
4EACH
LOCATING STUD
1/4 FLAT
1/4 LOCK
1/4-20 NUT
4 EACH
LAMPHOUSE MOUNTING TABLE
(P/O PROJECTOR PEDESTAL)

FIGURE 3-3

3.7 CONTROL AC POWER TO LAMPHOUSE

Connect 115 VAC power (No. 18 AWG wire min.) to terminals one and two of TB-1 (see Figure 3-4a). Route wires through conduit on side of lamphouse before making electrical connections.



(Leave sufficient cable length to swivel lamphouse)

Figure 3-4a

NOTE

Some area safety codes may require that the 115 VAC power to the lamphouse be obtained from the same source as the power supply primary voltage. Two wiring arrangements noted below will comply with such a requirement.

3.7.1 NEUTRAL LINE

A 208/230 volt source with a neutral line from which 115 VAC is obtained is wired as shown in Figure 3.4b. Care must be taken to make sure primary source wiring has a true neutral (208 WYE) or tap (230 DELTA) line.

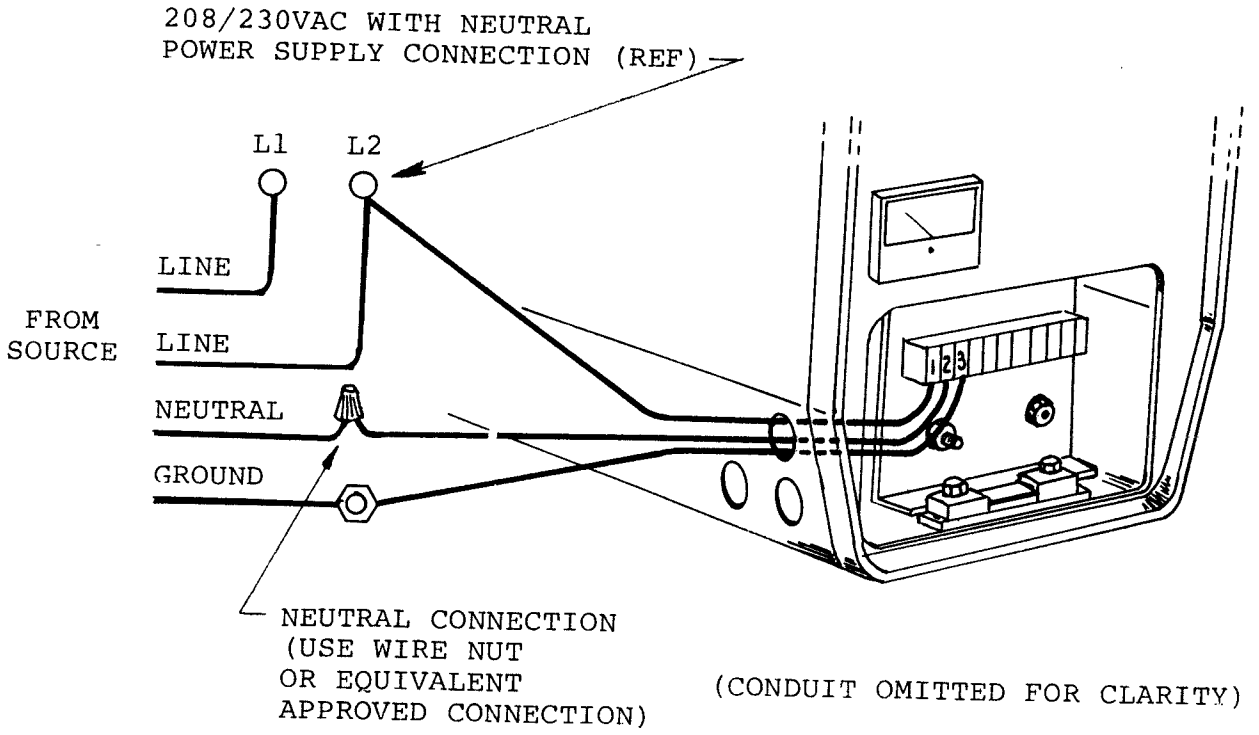


Figure 3-4b

3.7.2 ISOLATION TRANSFORMER

A 230 volt source without a neutral line requires an approved 208/230 VAC to 115 VAC step-down isolation line transformer with minimum capacity of 600 volt-amps at 60 Hz. See Figure 3-4c.

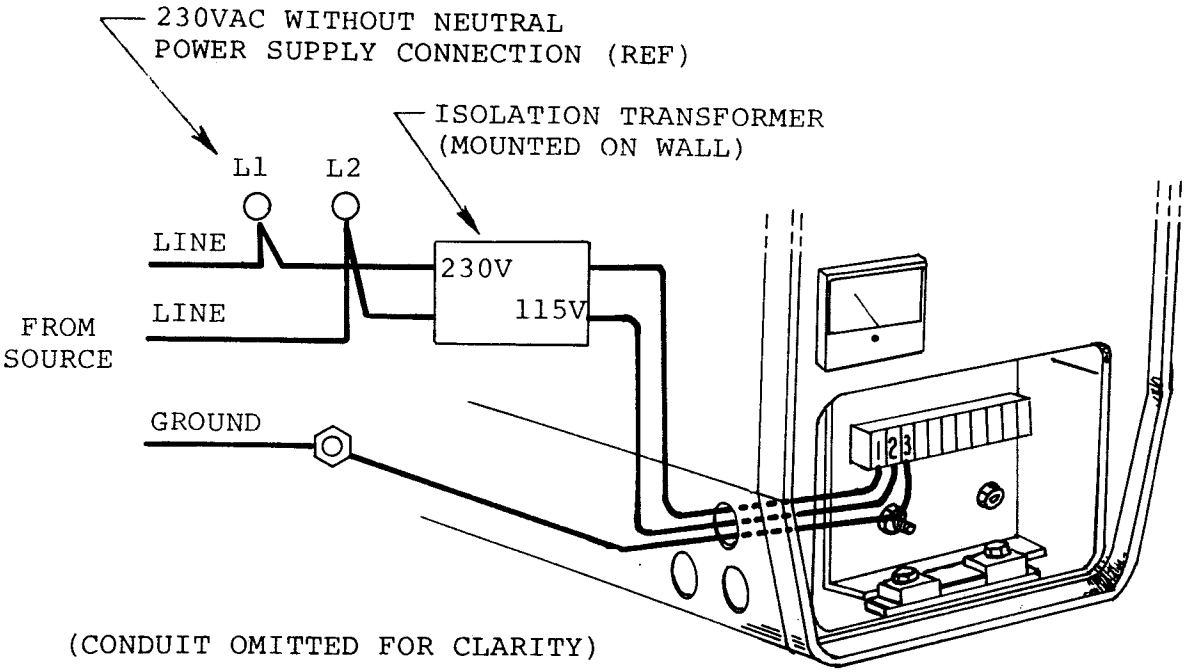


Figure 3-4c

3.8 AUTOMATION

Terminals six and seven of TB-1 in the lamphouse are provided for use with an external automation system. These terminals are wired directly across the lamphouse "POWER ON" switch. To control the lamphouse power-on function from a remote location, an isolated, sustained contact closure across TB1-6 and TB1-7 is necessary. Reference lamphouse schematic (Section 6). The automation control wires can be brought into the lamphouse through the lower access hole on the side of the lamphouse.

3.9 OPTIONAL REMOTE DOUSER

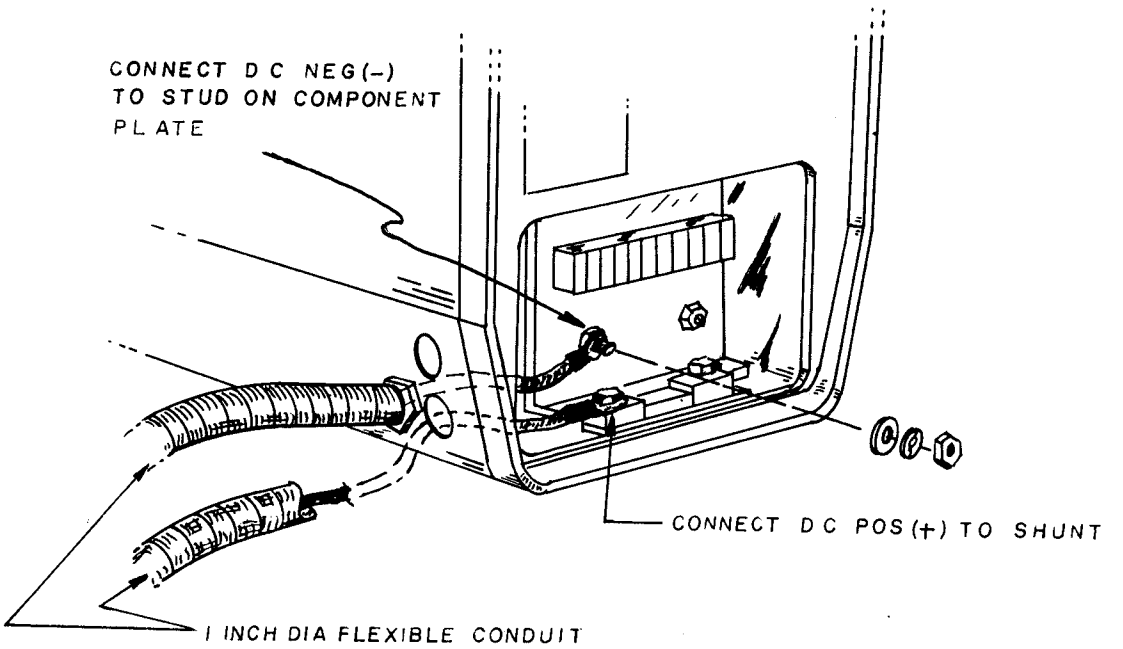
Terminals six and eight of TB-1 in the lamphouse are used for operation of the solenoid operated douser circuit when installed. The douser is open when de-energized. To close the douser from a remote location, an isolated, sustained contact closure across TB1-6 and TB1-8 is necessary. Reference optional douser circuit wiring diagram (Section 6).

3.10 DC POWER CABLES/LAMPHOUSE

Connect DC power to terminals shown in Figure 3-5. See power supply manual for power supply connections. Table 3-2 lists recommended power cable size.

CAUTION

Be sure correct polarity is observed or ignition will immediately destroy the bulb when power is applied.



(Leave sufficient cable length to swivel lamphouse)

Figure 3-5

TABLE 3-2

LAMPHOUSE MODEL	MAXIMUM BULB CURRENT	RECOMMENDED WIRE SIZE DC CONNECTIONS
XH-16S XH-30S	65 ADC 90 ADC	#4 AWG #2 AWG

3.11 EXHAUST DUCT

It is recommended that the lamphouse be vented to a minimum six-inch diameter external exhaust duct. An external exhaust fan capable of 300 CFM minimum output is required for proper system cooling.

3.11.1 INSTRUCTIONS FOR EXHAUST FAN AIRFLOW TESTING

The ORC #1126538 test strips are calibrated for use with a 6-inch diameter air duct which is standard for all ORC lamphouses. By determining how many strips can be supported, the air flow can be determined over the range of 200-400 CFM (cubic feet per minute). To test the air flow, remove the exhaust duct and hold it horizontally about 6 inches above the lamphouse. (The lamphouse fan should be off.) Hold the strip(s) up to the duct as shown in Figure 3-6. Refer to Table 3-3 to determine the CFM and maximum lamphouse power versus the number of strips that can be supported by the air flow. Note that the strips are to be stacked, (They are not placed side by side.) and that it is not necessary to tape them together.

TABLE 3-3 AIR FLOW TEST

NUMBER OF STRIPS	AIRFLOW 6" DIAMETER	MAXIMUM LAMP POWER
1	200 CFM (100 LITERS PER SECOND)	1600 WATTS
2	300 CFM (150 LITERS PER SECOND)	3000 WATTS
3	400 CFM (200 LITERS PER SECOND)	4500 WATTS

CAUTION

It is mandatory that a minimum flow of 300 CFM in the XH-30S lamphouse and 200 CFM in the XH-16S lamphouse be provided after compensation for head pressure losses in the exhaust ducting.

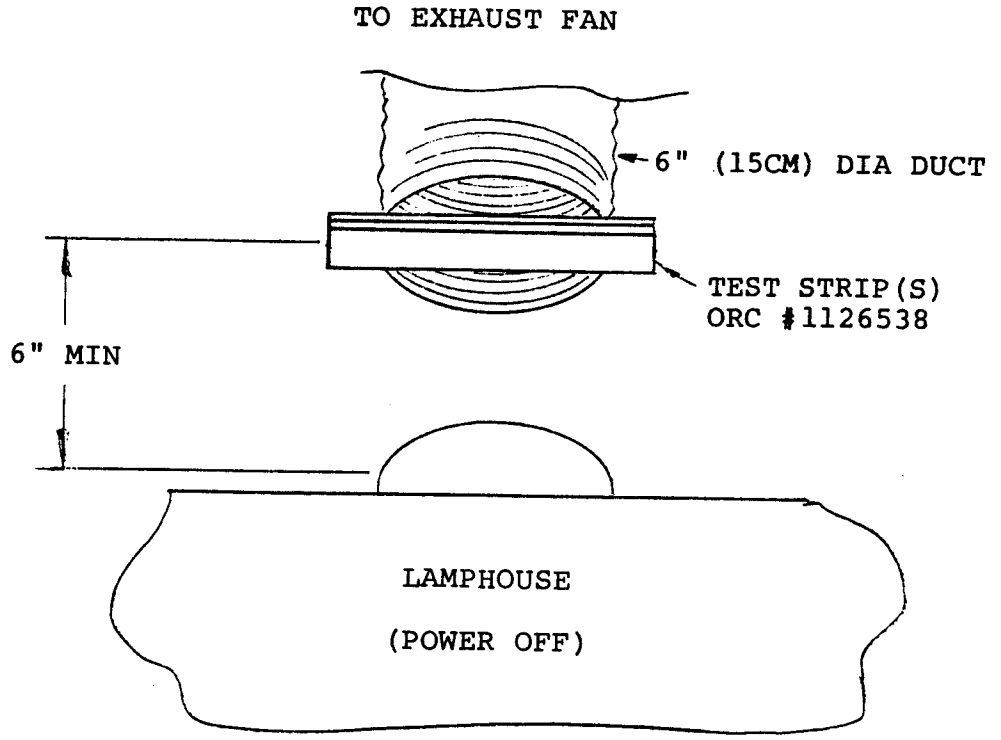


FIGURE 3-6
AIR FLOW TEST

3.12 INSTALLATION OF DICHROIC FILTERS (SEE DRAWING 1133494-3, SEC. 8)

Installation of the dichroic filter should take place before the bulb is installed. 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 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.

b. Use key to unlock front bulkhead. Swing up and open to a horizontal position.

c. Remove clips (Item 4) and screws (Item 5). Filter segments (Item 13) 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 retainers (Item 6) and tighten retainer screws (Item 7).

e. Install clips (Item 4) and tighten clip screws (Item 5).

f. Close front bulkhead and secure with key.

3.13 INITIAL BULB INSTALLATION (XL1000W AND XL1600W BULBS) (SEE FIGURE 3-6 OR 3-7)

WARNING

The xenon bulb is under extreme pressure and subject to possible explosion. Do not apply lateral pressure against the bulb during installation. Do not view un-enclosed bulb unless protective face mask is worn. Bulb should never be handled outside its protective container or covering unless protective clothing consisting of gloves, face shield and jacket, as specified in Section 2 of this manual, is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

NOTE

XH-30S LAMPHOUSES TO BE USED
WITH XL-1000W OR XL-1600W XENON BULBS

The XH-30S lamphouse is shipped with anode connector, ORC P/N 1124915 , as standard equipment. This connector is for use with the higher power Orcon xenon bulbs, 2000 to 2500 Watts. If the system is intended for use with a lower power Orcon bulb, such as the XL-1000W or XL-1600W, an optional anode connector, ORC P/N 1134986-3, and optional cathode connector, P/N 1121700-1, are required to hold the smaller bulb securely between the swivel bearings in the XH-30S lamphouse.

a. Swivel lamphouse away from projector to gain access through the front bulkhead door.

b. Unlock the front bulkhead door with the key which has been attached to the douser handle for shipment. Release the safety catch and swing door upward to allow clearance for bulb installation.

c. Remove upper wrap from lamphouse exposing focus tube assembly.

d. Take the xenon bulb with its installation/-removal tool from the carton and remove the wing-nut, retaining bracket, and red plastic end cap from the threaded (cathode) end of the bulb.

e. Find the cathode adapter, ORC P/N 1121700-1, included with the lamphouse hardware and thread it on to the cathode (-) fitting of the xenon bulb until snug.

f. (XH-30S Lamphouse Only) Locate the wing-nut on the anode support assembly and loosen to allow removal of the support with anode connector, ORC P/N 1134986-3 and set support assembly off to one side (see Figure 3-8).

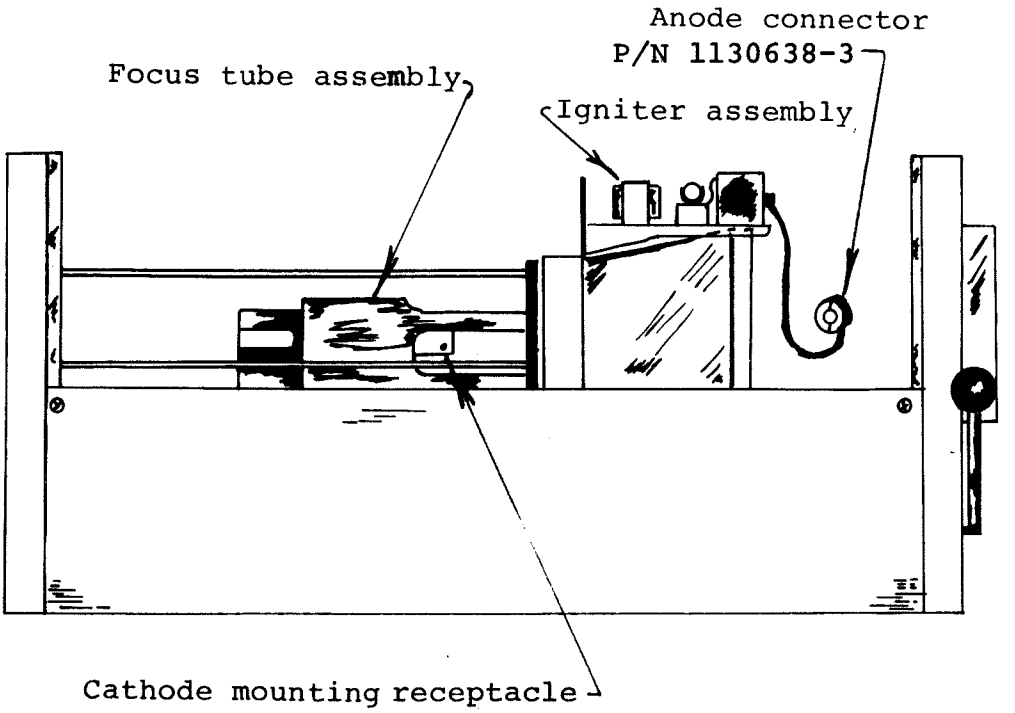


Figure 3-6. Inside Model XH-16S Lamphouse

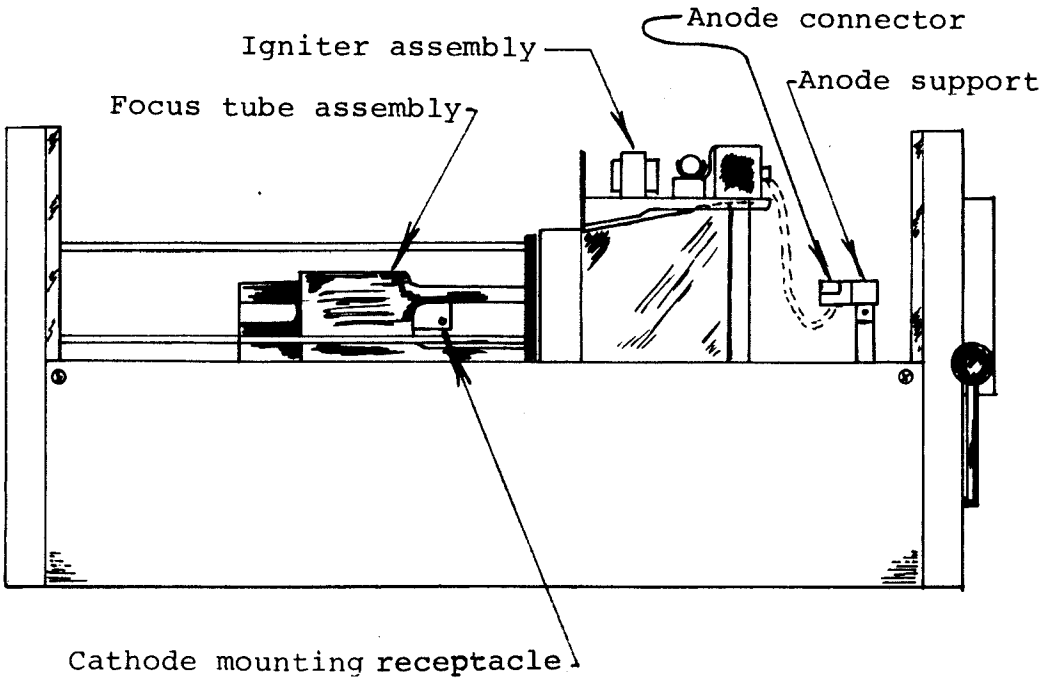


Figure 3-7. XH-30S Lamphouse

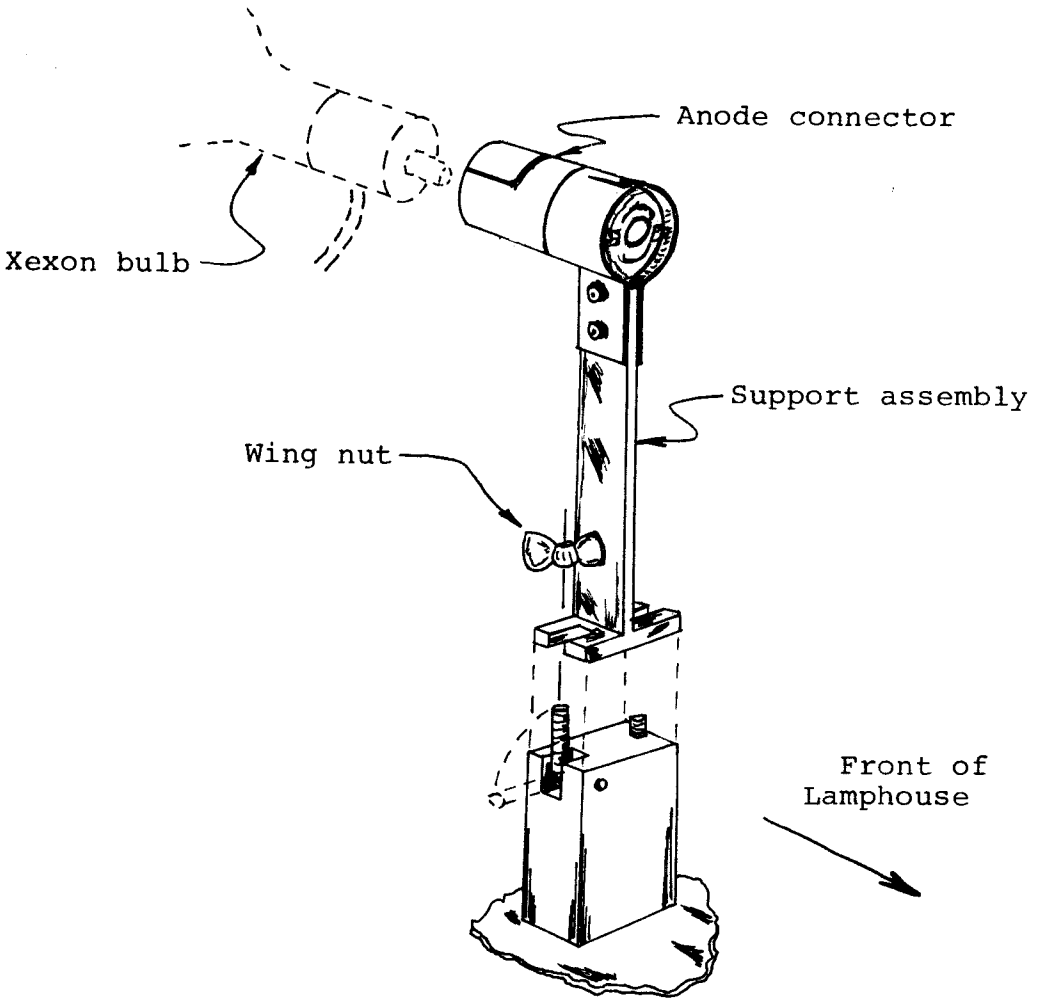

Anode connector
Xexon bulb
Support assembly
Wing nut
Front of
Lamphouse

Figure 3-8

g. With the bulb still contained within the bulb installation/removal tool, insert the bulb, cathode end with adapter first, into the opening at the center of the reflector. Carefully feed the adapter stud into its mating receptacle behind the reflector until the adapter is seated against the mating surface. Tighten the two set screws in the receptacle.

h. Carefully remove the collar holding the bulb installation/removal tool to the anode (+) fitting of the bulb with a 1/8 inch hex wrench.

CAUTION

Do not touch quartz surface of bulb with bare hands. Finger contact with bulb surface will leave body oil marks which could result in fracture or explosion of the bulb during operation. If the bulb becomes contaminated, it should be cleaned with pure alcohol. Wear protective clothing.

i. Remove the bulb installation/removal tool from the bulb. Do not exert any bending pressure on the bulb.

j. (XH-30S Lamphouse Only) Replace anode support assembly with anode connector ORC P/N 1134986-3 and tighten the retaining wing-nut.

k. Place the anode connector over the anode stud of the bulb and carefully tighten the socket screws on the connector with a 9/64" hex wrench. Support the end of the bulb with one hand while tightening so that lateral pressure is not applied on the bulb.

CAUTION

Make sure front lead from igniter to bulb is not touching any part of mirror or high voltage arcing and shorting may occur.

l. Lower front bulkhead door into place and secure by locking and removing key. Replace and secure upper wrap.

m. Swivel lamphouse back into position for operation and optical alignment.

3.14 INITIAL BULB INSTALLATION (MODEL XH-30S LAMPHOUSE ONLY, XL-2000W - XL2500W BULBS) (SEE FIGURE 3-7)

WARNING

The xenon bulb is under extreme pressure and subject to possible explosion. Do not apply lateral pressure against the bulb during installation. Do not view un-enclosed bulb unless protective face mask is worn. Bulb should never be handled outside its protective container or covering unless protective clothing consisting of gloves, face shield and jacket, as specified in Section 2 of this manual, is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

a. Swivel lamphouse away from projector to gain access through the front bulkhead door.

b. Unlock the front bulkhead door with the key which has been attached to the douser handle for shipment. Swing door upward to allow clearance for bulb installation.

c. Remove upper wrap from lamphouse, exposing focus tube assembly.

d. Take the xenon bulb with its protective plastic wrap in place from the carton.

e. At installation, loosen end string ties on plastic wrap. Unwrap ends of plastic wrap preparing it for easy removal once bulb is installed.

f. Locate the wing-nut on the anode support assembly and loosen to allow removal of the support with anode connector ORC P/N 1124915 and set support assembly off to one side (see Figure 3-8).

g. Insert the bulb, cathode (-) end first, into the opening at the center of the reflector. Carefully feed the cathode stud into its mating receptacle behind the reflector until the bulb is seated against the mating surface.

h. Replace anode (+) support assembly with anode connector ORC P/N 1124915 and tighten the retaining wing-nut.

i. Make certain shoulder of bulb is flush with cathode mounting receptacle, then tighten two set screws in mounting receptacle.

j. Firmly tighten set screws on anode end of bulb.

k. Attach anode lead from bulb to high voltage terminal of the igniter transformer. Tighten screw securely but be careful not to shear stud of high voltage terminal by applying excessive pressure.

CAUTION

Do not touch quartz surface of bulb with bare hands. Finger contact with bulb surface will leave body oil marks which could result in fracture or explosion of the bulb during operation. If the bulb becomes contaminated, it should be cleaned with pure alcohol. Wear protective clothing.

l. Carefully remove the plastic wrap from the bulb without pulling or exerting any bending pressure on the bulb.

CAUTION

Make sure front lead from igniter to the bulb is not touching any part of mirror or high voltage arcing and shorting may occur.

m. Lower front bulkhead door into place and secure by locking and removing key. Replace and secure upper wrap.

n. Swivel lamphouse back into position for operation and optical alignment.

SECTION 4 - OPERATION

4.1 GENERAL

The following is a general description of the controls and displays on the lamphouse.

4.2 LAMPHOUSE (SEE FIGURE 1-1)

4.3 CONTROL PANEL ASSEMBLY (SEE FIGURE 4-1)

NOTE

The functions noted below apply when lamphouse is properly connected to a power supply and with all interlocks and circuit breakers closed.

4.4 POWER ON SWITCH

When the POWER ON switch is engaged, it does the following:

a. Starts blower motor in lamphouse.

b. When air flow switch closes, power supply contactor is energized.

c. Bulb ignition will occur approximately 1-3 seconds after contactor closes (time required to reach open circuit voltage).

4.5 MANUAL START SWITCH

The MANUAL START switch is used as an emergency switch if the automatic ignition circuit fails to ignite the bulb.

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.

4.6 POWER INDICATOR LIGHT

The POWER INDICATOR LIGHT indicates power on.

4.7 AIR FLOW/INTERLOCK LIGHT

The AIR FLOW/INTERLOCK LIGHT indicates insufficient air flow, or open interlock switch.

4.8 CIRCUIT BREAKER (5 AMP) CB-1

CIRCUIT BREAKER (5 amp) protects against 115V input power overload.

4.9 CIRCUIT BREAKER (0.5 AMP) CB-2

CIRCUIT BREAKER (0.5 amp) protects ignitor circuit.

4.10 VOLTAGE TEST JACKS

The VOLTAGE TEST JACKS are for measurement of bulb voltage (DC).

4.11 BULB CURRENT METER

This meter indicates DC current to xenon bulb.

4.12 ELAPSED TIME INDICATOR

The ELAPSED TIME INDICATOR indicates the number of hours the system has been in operation. Its primary function is to determine bulb operation time as required on the Bulb Warranty Card. Refer to Section 7 for detailed instructions.

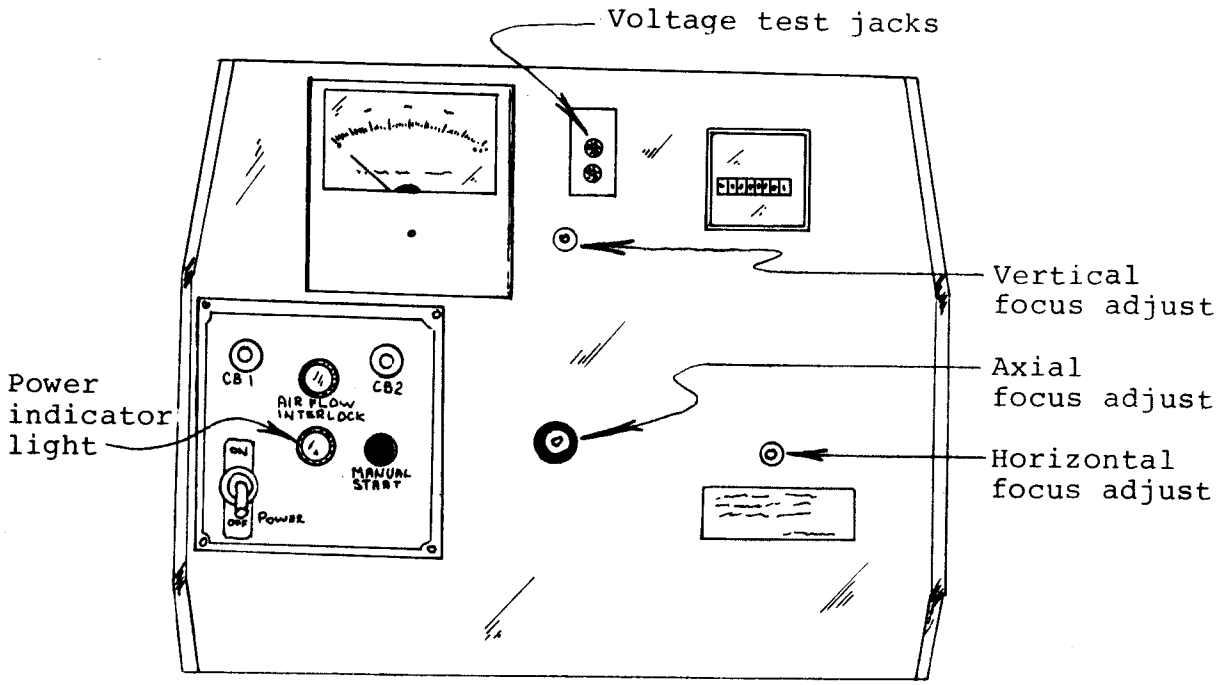


Figure 4-1. Control Panel

4.13 VERTICAL FOCUS ADJUSTMENT

This adjustment moves the beam image up or down in the vertical direction on the screen.

4.14 HORIZONTAL FOCUS ADJUSTMENT

This adjustment moves the beam image horizontally on the screen.

4.15 AXIAL (CENTER) FOCUS ADJUSTMENT

This adjustment moves the bulb along the optical axis, controlling the size of light image on the screen. See optical alignment section for details.

4.16 INITIAL SYSTEM START UP

Complete installation as outlined in Section 3. The following procedure describes the recommended method of initial system start up.

CAUTION

Make sure the external exhaust system is "ON" before igniting the xenon bulb.

a. Set the current control taps on the power supply for the minimum output current. Refer to power supply manual for tap adjustment procedure.

b. Turn off power-on switch in the control panel and apply primary power to the system.

c. Close the lamphouse douser.

d. Turn on the power supply circuit breaker. This applies power to the input terminals of the power supply contactor.

e. Turn on the power switch on the control panel. The power-on indicator on the panel should light and the power supply should energize. Within three seconds, the xenon bulb should ignite.

CAUTION

If the bulb does not automatically ignite, activate the MANUAL START switch for approximately one second. If the bulb still fails to ignite, recheck the start-up procedure, or refer to the trouble-shooting section of this manual.

If the bulb ignites (flashes) but does not remain lit, de-energize the power supply and set the current control taps to the next higher current position. Repeat the start-up procedure.

f. Energize the projector.

4.17 START-UP PROCEDURE - ALIGNED SYSTEM

After the system has been installed and aligned, subsequent start-ups are simplified. The following steps are recommended:

a. Apply primary power to the system.

b. Close the lamphouse douser.

c. Turn on the power supply circuit breaker. This applies power to the input terminals of the power supply contactor.

d. Turn on the power switch on the control panel. The lamp-on indicator on the panel should light and the power supply should energize. Within three seconds, the xenon bulb should ignite.

CAUTION

If the bulb does not ignite automatically, activate the MANUAL START switch for approximately one second. If the bulb still fails to ignite, recheck the start up procedure, or refer to the troubleshooting section of this manual.

e. Thread the projector.

f. Close the change-over douser, energize the projector, open the lamphouse douser, and then open the change-over douser to project light on the screen.

CAUTION

Never open the lamphouse douser unless the projector is running. Damage to the shutter, film, and the projection lens could result. Do not allow the light beam to strike the change-over douser for more than 60 seconds at a time. Do not operate the xenon bulb for extended periods of time with the lamphouse douser closed, especially at higher power operation.

4.18 MANUAL SYSTEM SHUT DOWN

The following procedure is recommended:

a. Close the lamphouse douser to protect the projector from damage after it is de-energized.

b. Shut the projector motor off.

c. De-energize the xenon bulb by switching the power switch off, and then open the RECTIFIER circuit breaker.

d. If the optional blower time-delay circuit is included in the lamphouse wiring, the lamphouse cooling blower will continue to operate for approximately four minutes to provide additional cooling to the bulb after shut down.

WARNING

REMOVE ALL POWER FROM THE SYSTEM BEFORE SERVICING.

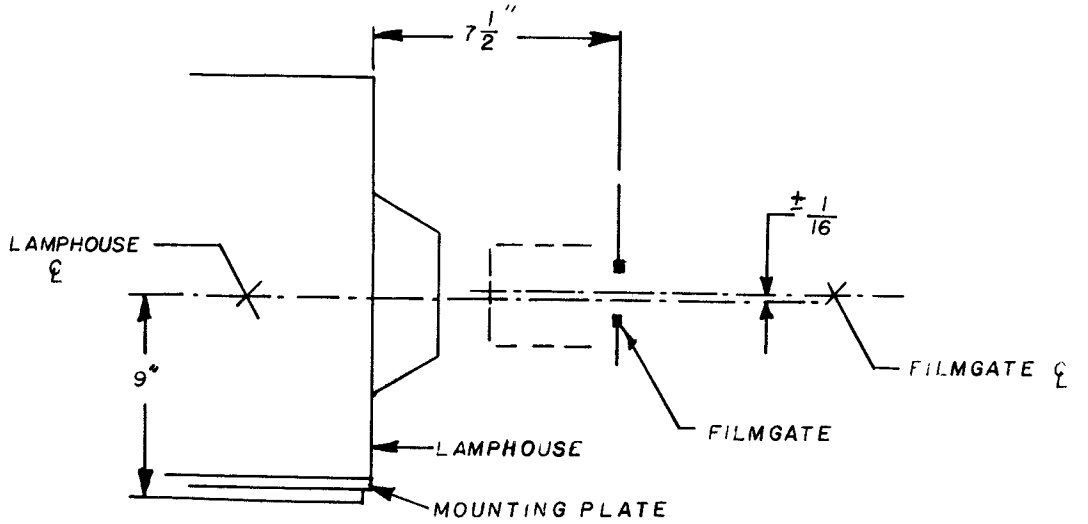
SECTION 5 - OPTICAL ALIGNMENT

5.1 GENERAL

Lamphouse must be aligned with the optical axis of the projector lens before alignment of the system can be accomplished.

5.2 INITIAL SET UP

Position lamphouse and projector film gate on approximately the same centerline ±1/16 inch (see Figure 5-1). Locate front of lamphouse approximately 7-1/2 inches from film gate.



Projector/Lamphouse Alignment Location

Figure 5-1

5.3 INITIAL OPTICAL ALIGNMENT PROCEDURE

Complete the initial start-up procedure outlined in Section 4.16. The following procedure describes the recommended method of initial optical alignment. Systems that have been previously aligned should be re-aligned as outlined in Section 5.4.

a. Remove the projection lens and film from the projector.

CAUTION

Never open the lamphouse douser unless the projector is running. Damage to the shutter, film, and the projection lens could result.

b. Remove shoulder screw 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.

c. Turn on lamphouse and open douser to direct light from the lamphouse onto the side wall of the projection room. The current should be set to minimum to prevent damage to optical elements.

d. Insert a 3/16 inch hex wrench into the center adjustment hole (AXIAL FOCUS ADJUST, see Figure 4-1), 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 5-2A). Adjust the horizontal and vertical bulb adjustments (see Figure 4-1) to set the dark bullseye symmetrically in the center of the gray rings (see Figure 5-2B). Turn the center focus adjust clockwise until the dark bullseye just disappears. The bulb is now aligned with respect to the lamphouse mirror.

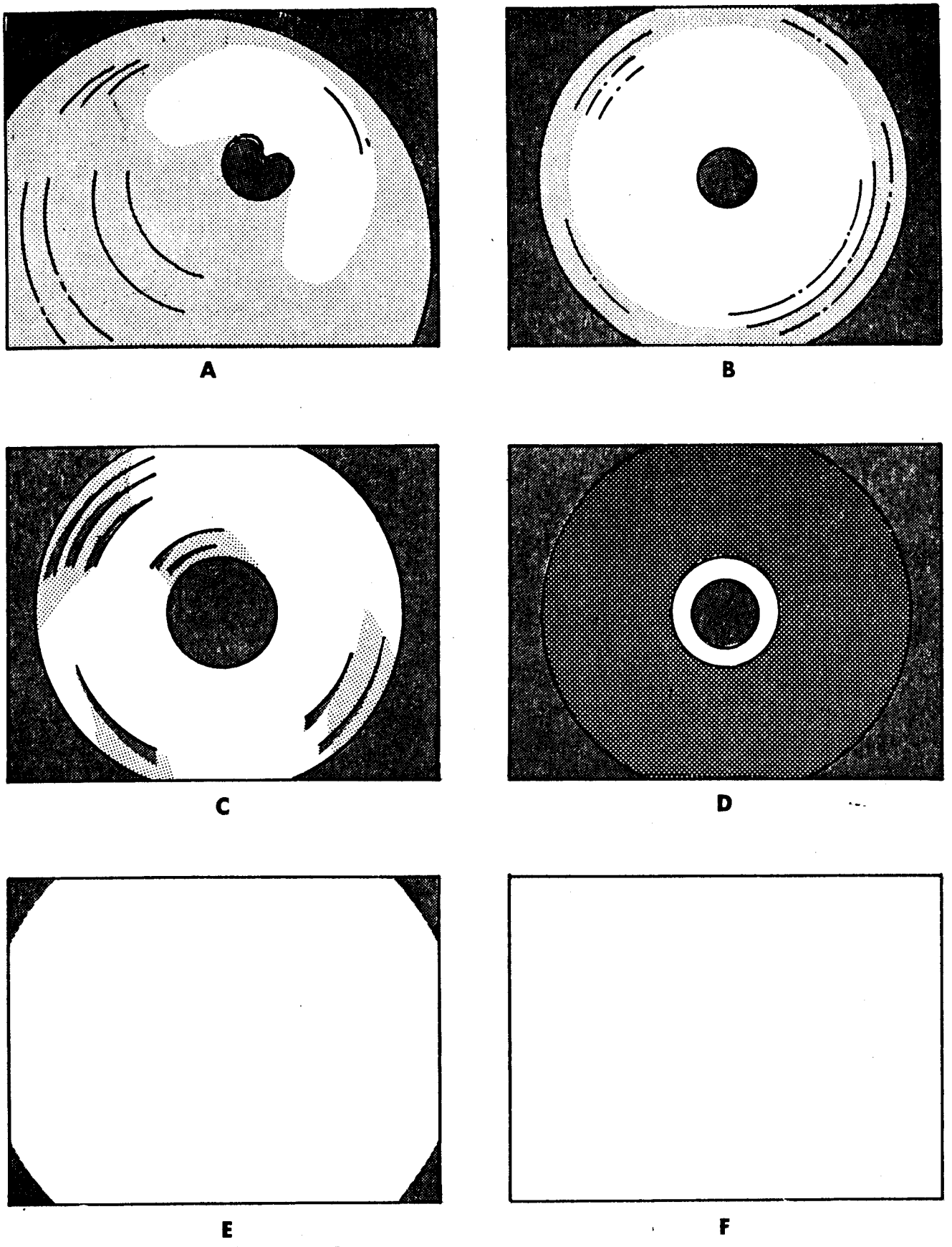


Figure 5-2. Alignment Procedure

e. 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 seven and one-half to eight inches from the aperture plate of the projector (see Figure 5-1).

f. Start projector and open lamphouse douser and change-over douser. The "target" pattern should now appear on the screen.

NOTE

DO NOT re-adjust the horizontal and vertical bulb adjustments during the following alignment procedures.

g. Center the dark "bullseye" again (see Figure 5-2B) 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.

h. Adjust the center (axial) focus adjust counter-clockwise 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 5-2C).

i. Adjust the center focus adjust clockwise until the outer rings converge toward the bullseye to form a dark collar around the bullseye and adjacent ring of light. Adjust the front of the lamphouse to center the bullseye and adjacent ring of light within the outer rings (see Figure 5-2D).

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

k. 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.

l. If the bright spot is not in the center of the screen, re-adjust 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 5-2E) which should be of equal size.

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

n. Adjust the center focus adjust clockwise until the screen is filled with light, evenly distributed, with no dark corners (see Figure 5-2F). Readjust the current setting to provide the desired light level on the screen. Do not exceed the maximum safe bulb current.

o. 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 (see realignment procedure).

5.4 OPTICAL REALIGNMENT

a. Remove the projection lens and film from the projector.

CAUTION

Never open the lamphouse douser unless the projector is running. Damage to the shutter, film, and the projection lens could result.

b. Start the system by completing steps in Section 4.16.

c. Current should be set to minimum to prevent damage to optical elements during alignment procedure.

d. Open the lamphouse douser to project a light pattern on the screen similar to that in Figure 5-2A. If necessary, adjust the center focus adjust control with a 3/16 inch hex wrench to obtain a small, dark "bullseye" in the approximate center.

e. Adjust the horizontal and vertical focus controls with a 3/16 inch hex wrench to obtain a symmetrical pattern similar to that in Figure 5-2B. DO NOT loosen the four bolts holding the lamphouse in place on the pedestal.

f. Close the lamphouse douser and replace the projection lens in the projector. Open the douser, focus the projection lens and adjust the center focus adjust control to obtain a bright spot on the screen.

CAUTION

Do not allow light from the 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.

g. Re-adjust the horizontal and vertical focus controls to center the bright spot. Adjust center focus adjust control clockwise until the light fills the screen with the exception of the four dark corners (see Figure 5-2E) which should be approximately equal in size.

h. Adjust the center focus adjust control clockwise until the screen is filled with light, evenly distributed, with no dark corners (see Figure 5-2F). Re-adjust the current setting to provide the desired light level on the screen. Do not exceed the maximum safe bulb current.

WARNING

OPEN THE BRANCH CIRCUIT OR MAIN DISCONNECT SWITCH OR REMOVE PRIMARY INPUT CIRCUIT FUSES BEFORE ATTEMPTING TO MAKE ANY INSPECTION OR PERFORM ANY WORK INSIDE THE LAMPHOUSE. PLACING THE POWER SWITCH IN THE "OFF" POSITION DOES NOT REMOVE VOLTAGE FROM THE POWER SWITCH TERMINALS INSIDE THE LAMPHOUSE.

6.1 CLEANING OPTICS

It is advised that at least twice annually, the electroformed reflector and dichroic filter be cleaned. The following steps are recommended:

a. Remove the xenon bulb as outlined in Sections 6.2.1 or 6.3.1.

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

c. Dampen cotton with clean water and gently wipe the surface.

d. Gently clean the surface with cotton, dampened with soap and water, or "Glasswax" cleaner manufactured by Gold Seal Company, Bismarck, North Dakota.

e. Wipe the surfaces gently with cotton until free of streaks and residue.

f. Replace the xenon bulb as outlined in Sections 6.2.2 or 6.3.2.

6.2 REMOVAL AND REPLACEMENT OF XENON BULB (XL1000W-XL1600W BULBS)

WARNING

THE XENON BULB IS UNDER EXTREME PRESSURE AND SUBJECT TO POSSIBLE EXPLOSION. DO NOT APPLY LATERAL PRESSURE AGAINST THE BULB DURING REMOVAL OR INSTALLATION. DO NOT VIEW UNENCLOSED BULB UNLESS PROTECTIVE FACE MASK IS WORN. THE XENON BULB SHOULD NEVER BE HANDLED OUTSIDE ITS PROTECTIVE CONTAINER OR COVERING UNLESS PROTECTIVE CLOTHING CONSISTING OF GLOVES, FACE SHIELD AND JACKET, AS SPECIFIED IN SECTION 2 OF THIS MANUAL, IS WORN. THE INSTRUCTIONS REGARDING PROTECTIVE CLOTHING ARE SUBJECT TO CHANGE BY ANY LOCAL OR FEDERAL SPECIFICATIONS WHICH TAKE PRECEDENCE.

6.2.1 REMOVAL (See Figure 3-6 or 3-7)

a. Shut off power to the system. Swivel lamphouse away from projector to gain access through the front bulkhead door.

b. Unlock the front bulkhead door and swing door upward to allow clearance for bulb removal.

c. Remove upper wrap from lamphouse exposing focus tube assembly.

d. Locate the lamp installation/removal tool, ORC P/N 1145648, used to install bulb.

e. Carefully loosen the socket screws on the anode (+) connector with a 9/64 inch hex wrench. Support the end of the bulb with one hand so that lateral pressure is not applied on the bulb. Remove the anode connector from the anode stud of the bulb.

f. (XH-30S Lamphouse Only) Locate the wing-nut on the anode support assembly and loosen to allow removal of the support with anode connector, ORC P/N 1134986-3, and set support assembly off to one side (see Figure 3-8).

g. Install the bulb installation/removal tool over the bulb. Do not exert any bending pressure on the bulb. Rotate the tool carefully around the bulb until it slips over the indexing pins on the cathode (-) fitting (behind the mirror) and slips down over the anode stud. Locate the retaining collar. Place it over the stud and tighten the set screw with a 1/8 inch hex wrench.

h. Loosen the two set screws in the cathode receptacle behind the reflector. Carefully remove the xenon bulb with installation/removal tool in place, from the lamphouse.

i. Unthread the cathode adapter, ORC P/N 1121700-1, from the cathode fitting of the bulb. Replace the red plastic end cap, retaining bracket, and wing-nut on the installation/-removal tool.

j. Place the bulb in a suitable shipping carton for return to Optical Radiation Corporation for disposal, or warranty credit.

k. Clean lamphouse if necessary by vacuuming or using dry compressed air. Clean optics as outlined in Section 6.1.

6.2.2 REPLACEMENT (see Figure 3-6 or 3-7)

a. Take the xenon bulb to be installed from its shipping container and remove the wing-nut, retaining bracket, and red plastic end cap from the cathode end of the bulb installation/removal tool.

b. Find the cathode adapter, ORC P/N 1121700-1, and thread it on to the cathode (-) fitting of the xenon bulb until snug.

c. With the bulb still contained within the bulb installation/removal tool, insert the bulb, cathode end with adapter first, into the opening at the center of the reflector. Carefully feed the adapter stud into its mating receptacle behind the reflector until the adapter is seated against the mating surface. Tighten the two set screws in the receptacle.

d. Carefully remove the collar holding the bulb installation/removal tool to the anode (+) fitting of the bulb with a 1/8 inch hex wrench.

CAUTION

Do not touch quartz surface of bulb with bare hands. Finger contact with bulb surface will leave body oil marks which could result in fracture or explosion of the bulb during operation. If the bulb becomes contaminated, it should be cleaned with pure alcohol. Wear protective clothing.

e. Remove the bulb installation/removal tool from the bulb. Do not exert any bending pressure on the bulb.

f. (XH-30S Lamphouse Only) Replace anode support assembly with anode connector, ORC P/N 1134986-3, and tighten the retaining wing-nut (see Figure 3-8).

g. Place the anode connector over the anode stud of the bulb and carefully tighten the socket screws on the connector with a 9/64 inch hex wrench. Support the end of the bulb with one hand while tightening so that lateral pressure is not applied on the bulb.

CAUTION

Make sure front lead from igniter to bulb is not touching any part of mirror or high voltage arcing and shorting may occur.

h. Lower front bulkhead door into place and secure by locking and removing key. Replace and secure upper wrap.

i. Swivel lamphouse back into position for re-alignment (Section 5.4) and operation.

6.3 REMOVAL AND REPLACEMENT OF XENON BULB (MODEL XH-30S LAMPHOUSE ONLY,XL2000W - XL2500W BULBS)

WARNING

THE XENON BULB IS UNDER EXTREME PRESSURE AND SUBJECT TO POSSIBLE EXPLOSION. DO NOT APPLY LATERAL PRESSURE AGAINST THE BULB DURING INSTALLATION. DO NOT VIEW UN-ENCLOSED BULB UNLESS PROTECTIVE FACE MASK IS WORN. BULB SHOULD NEVER BE HANDLED OUTSIDE ITS PROTECTIVE CONTAINER OR COVERING UNLESS PROTECTIVE CLOTHING CONSISTING OF GLOVES, FACE SHIELD AND JACKET, AS SPECIFIED IN SECTION 2 OF THIS MANUAL, IS WORN. THE INSTRUCTIONS REGARDING PROTECTIVE CLOTHING ARE SUBJECT TO CHANGE BY ANY LOCAL OR FEDERAL SPECIFICATIONS WHICH TAKE PRECEDENCE.

6.3.1 REMOVAL (see Figure 3-6 or 3-7)

a. Shut off power to the system. Swivel lamphouse away from projector to gain access through the front bulkhead door.

b. Unlock the front bulkhead door and swing door upward to allow clearance for bulb removal.

c. Remove upper wrap from lamphouse, exposing focus tube assembly.

d. Locate the protective plastic wrap, ORC P/N 1135517, used to install the bulb.

e. Carefully place the plastic wrap around the bulb without pulling or exerting any bending pressure on the bulb.

f. Disconnect anode (+) lead from bulb to high voltage terminal of the ignitor transformer.

g. Loosen set screws on anode end of bulb.

h. Locate the wing-nut on the anode support assembly and loosen to allow removal of support with anode connector, ORC P/N 1124915 , and set support assembly off to one side. Support anode fitting of bulb with one hand until bulb is removed.

i. Loosen the two set screws in the cathode (-) receptacle behind the reflector. Carefully remove the xenon bulb, with protective plastic wrap in place, from the lamphouse.

j. Securely wrap protective plastic wrap around bulb and tighten end string ties.

k. Place the bulb in a suitable shipping carton for return to Optical Radiation Corporation for disposal, or warranty credit.

l. Clean lamphouse if necessary by vacuuming or using dry, compressed air. Clean optics as outlined in Section 6.1.

6.3.2 REPLACEMENT (see Figure 3.6 or 3.7)

a. Take the xenon bulb to be installed from its shipping container.

b. At installation, loosen end string ties on plastic wrap. Unwrap ends of plastic wrap preparing it for easy removal once bulb is installed.

c. Insert the bulb, cathode (-) end first, into the opening at the center of the reflector. Carefully feed the cathode stud into its mating receptacle behind the reflector until the bulb is seated against the mating surface.

d. Replace anode (+) support assembly with anode connector, ORC P/N 1124915 , and tighten the retaining wing-nut.

e. Make certain shoulder of bulb is flush with cathode mounting receptacle, then tighten two set screws in mounting receptacle.

f. Firmly tighten set screws on anode end of bulb.

g. Attach anode lead from bulb to high voltage terminal of the ignitor transformer. Tighten screw securely but be careful not to shear stud of high voltage terminal by applying excessive pressure.

CAUTION

Do not touch quartz surface of bulb with bare hands. Finger contact with bulb surface will leave body oil marks which could result in fracture or explosion of the bulb during operation. If the bulb becomes contaminated, it should be cleaned with pure alcohol. Wear protective clothing.

h. Carefully remove the plastic wrap from the bulb without pulling or exerting any bending pressure on the bulb.

CAUTION

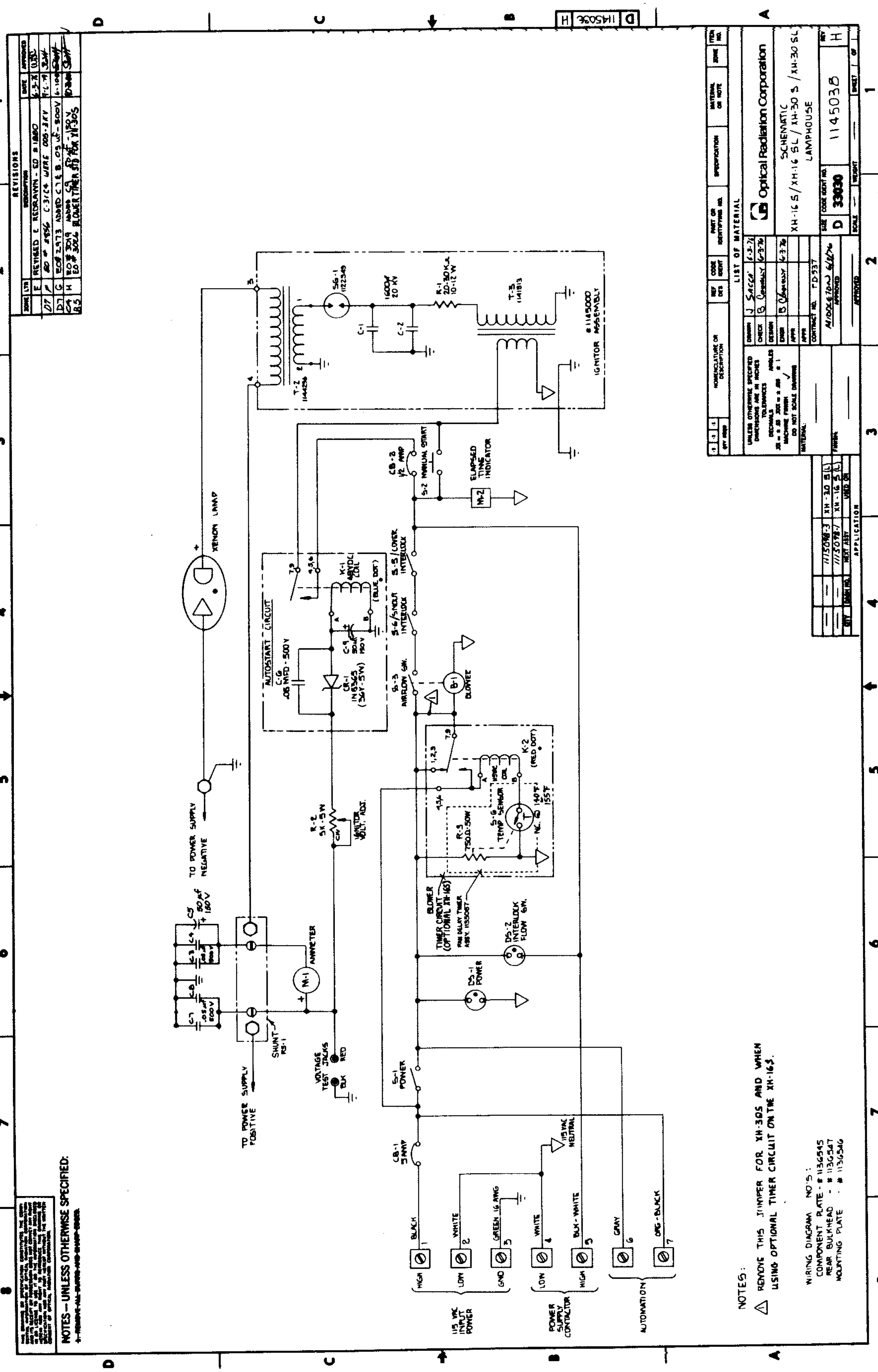
Make sure front lead from ignitor to the bulb is not touching any part of mirror or high voltage arcing and shorting may occur.

i. Lower front bulkhead door into place and secure by locking and removing key. Replace and secure upper wrap.

j. Swivel lamphouse back into position for re-alignment (Section 5.4) and operation.

6.4 TROUBLESHOOTING

If the lamphouse should fail to operate properly, consult the schematic diagram, Dwg. No. 1145038 or wiring diagrams 1136545, 1136546, 1136547 and 1137128 as a guide in determining the possible trouble. If the system malfunction cannot be isolated or corrected with the aid of the enclosed schematic diagrams and assembly drawings, it is recommended that the dealer be contacted to provide assistance.



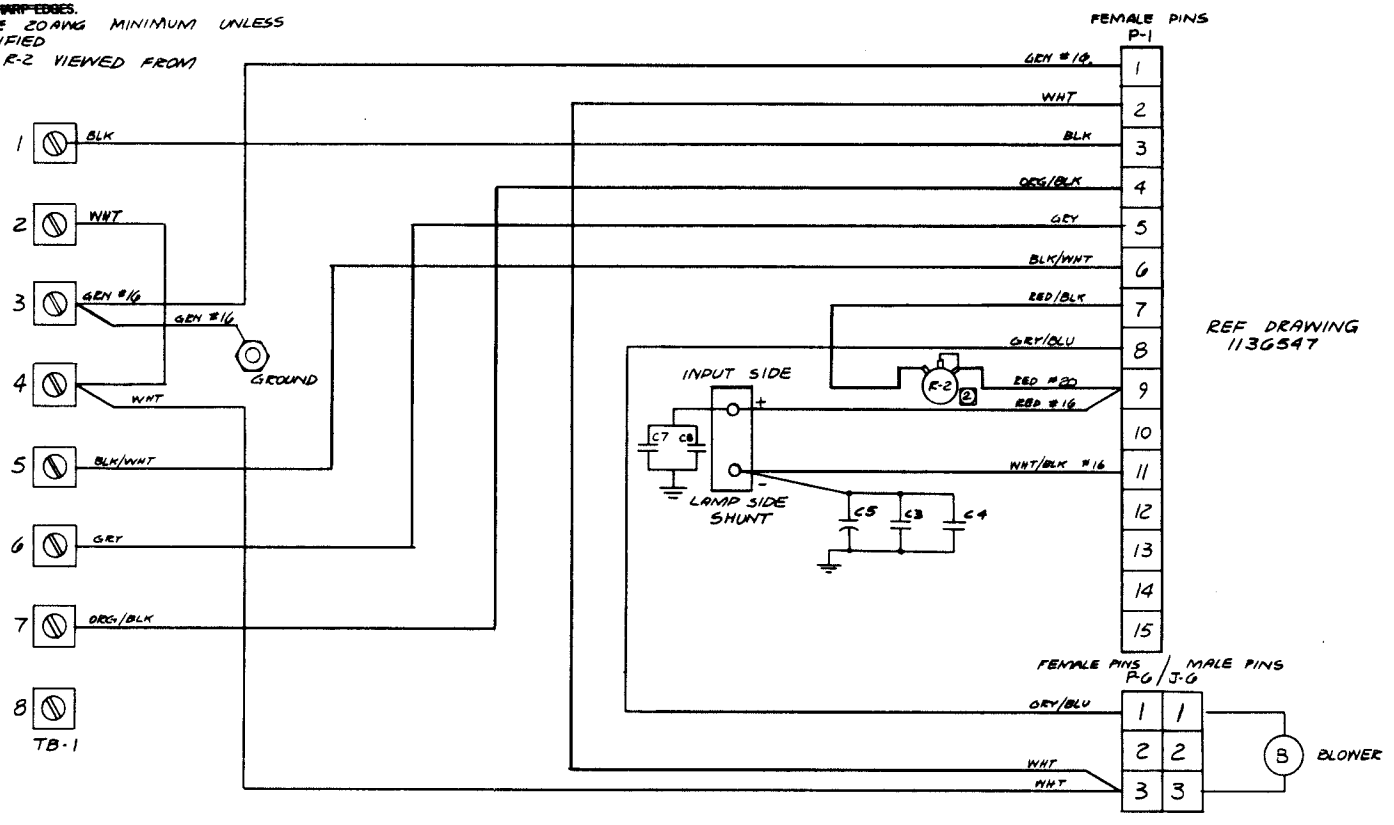
REVISIONS
Optical Radiation Corporation
SCHEMATIC
XH-16 S / XH-16 SL / XH-30 S / XH-30 SL
LAMPHOUSE
D 33030 1145038 H
LIST OF MATERIAL
XENON LAMP
TO POWER SUPPLY NEGATIVE
TO POWER SUPPLY POSITIVE
AMMETER
SHUNT
VOLTAGE TEST JACKS
RED
BLK
AUTOSTART CIRCUIT
IGNITOR ASSEMBLY
ELAPSED TIME INDICATOR
MANUAL START
INTERLOCK
AIRFLOW SW.
BLOWER
BLOWER TIMER CIRCUIT (OPTIONAL XH-16S)
TEMP SENSOR
POWER
INTERLOCK FLOW SW.
BLACK
WHITE
GREEN 16 AWG
WHITE
BLK-WHITE
GRAY
ORG-BLACK
HIGH
LOW
GND
115 VAC INPUT POWER
POWER SUPPLY CONTACTOR
AUTOMATION
115 VAC NEUTRAL
NOTES:
REMOVE THIS JUMPER FOR XH-30S AND WHEN USING OPTIONAL TIMER CIRCUIT ON THE XH-16S.
WIRING DIAGRAM NO'S:
COMPONENT PLATE - # 1136545
REAR BULKHEAD - # 1136547
MOUNTING PLATE - # 1136546
NOTES—UNLESS OTHERWISE SPECIFIED:

D113198

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	EO # 2164	3/9/77	
C2	B	EO # 2973 ADDED C7 & 8 .05μF-500V	6/10/80	Scott

NOTES — UNLESS OTHERWISE SPECIFIED:

1. ~~REMOVE ALL BURRS AND SHARP EDGES.~~
1. ALL WIRES TO BE 20AWG MINIMUM UNLESS OTHERWISE SPECIFIED
2. POTENTIOMETER R-2 VIEWED FROM BACK SIDE



FOR REFERENCE
SCHEMATIC # 1145038
ASSY # 1145031

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

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
			XH-16/30

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. Sacca'	12/20/76
CHECK		
DESIGN		
ENGR	(Wm D Connolly)	12/29/76
APPR		
APPR		
CONTRACT NO.	PD537	
	APPROVED	
	APPROVED	

Optical Radiation Corporation

WIRING DIAGRAM COMPONENT PLATE

SIZE	CODE IDENT NO.		REV
C	33030	1136545	B

SCALE — WEIGHT — SHEET 1 OF 1

7/80

D113198

6-11

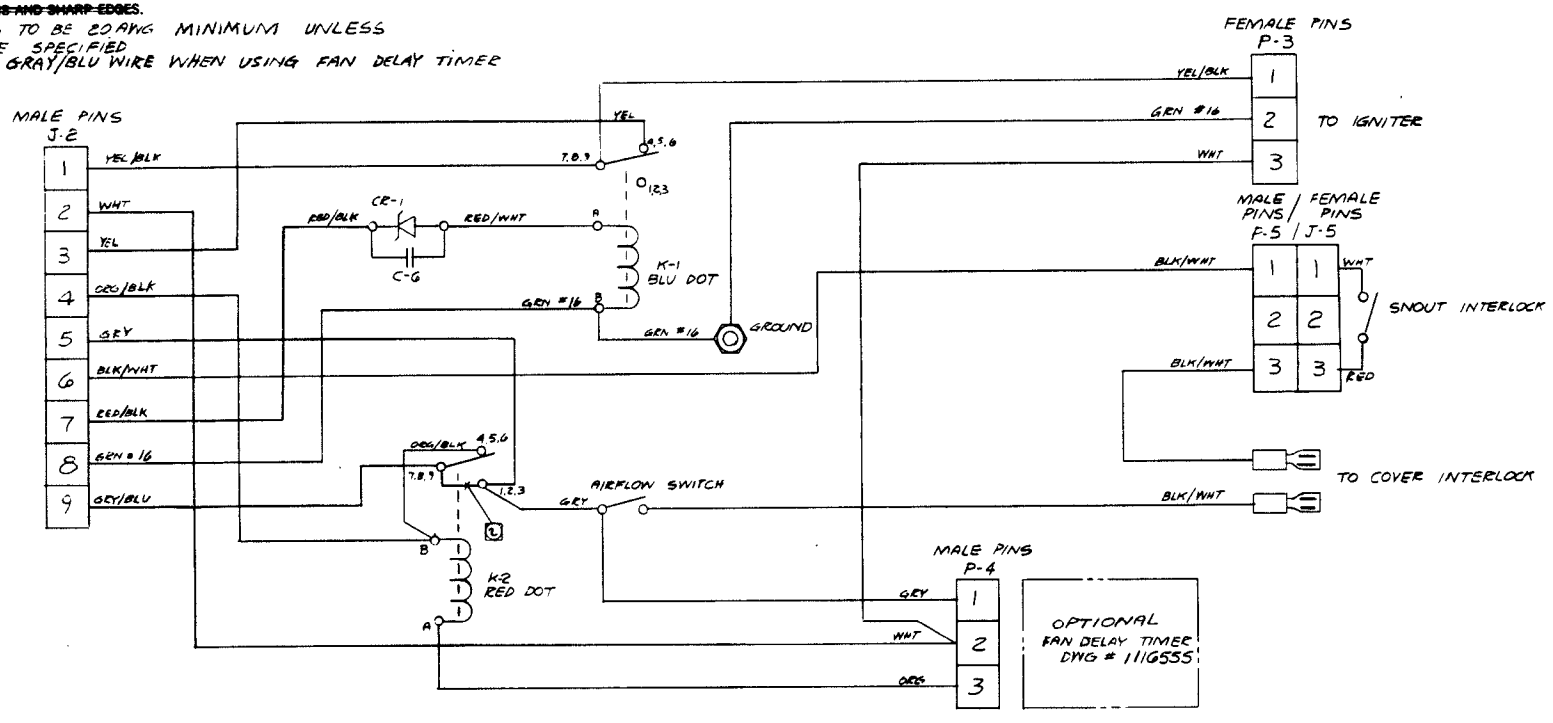
6/77

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

NOTES — UNLESS OTHERWISE SPECIFIED:

~~1. REMOVE ALL BURRS AND SHARP EDGES.~~

1. ALL WIRES TO BE 20 AWG MINIMUM UNLESS OTHERWISE SPECIFIED
2. CUT THIS GRAY/BLU WIRE WHEN USING FAN DELAY TIMER



FOR REFERENCE
SCHEMATIC : # 1145038
ASSEMBLY : # 1145086

QTY	DASH NO.	NEXT ASSY	USED ON
—	—	—	XH-16/30
APPLICATION			

3 2 1 QTY REQD	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. SACCA'	12/10/76
CHECK		
DESIGN		
ENGR	Wm D Connelly	12/29/76
APPR		
APPR		
CONTRACT NO. PD 537		

APPROVED

APPROVED

Optical Radiation Corporation

WIRING DIAGRAM
MOUNTING PLATE

SIZE	CODE IDENT NO.		REV
C	33030	1136546	N/C
SCALE —	WEIGHT —	SHEET 1 OF 1	

1136546 N/C

D113198

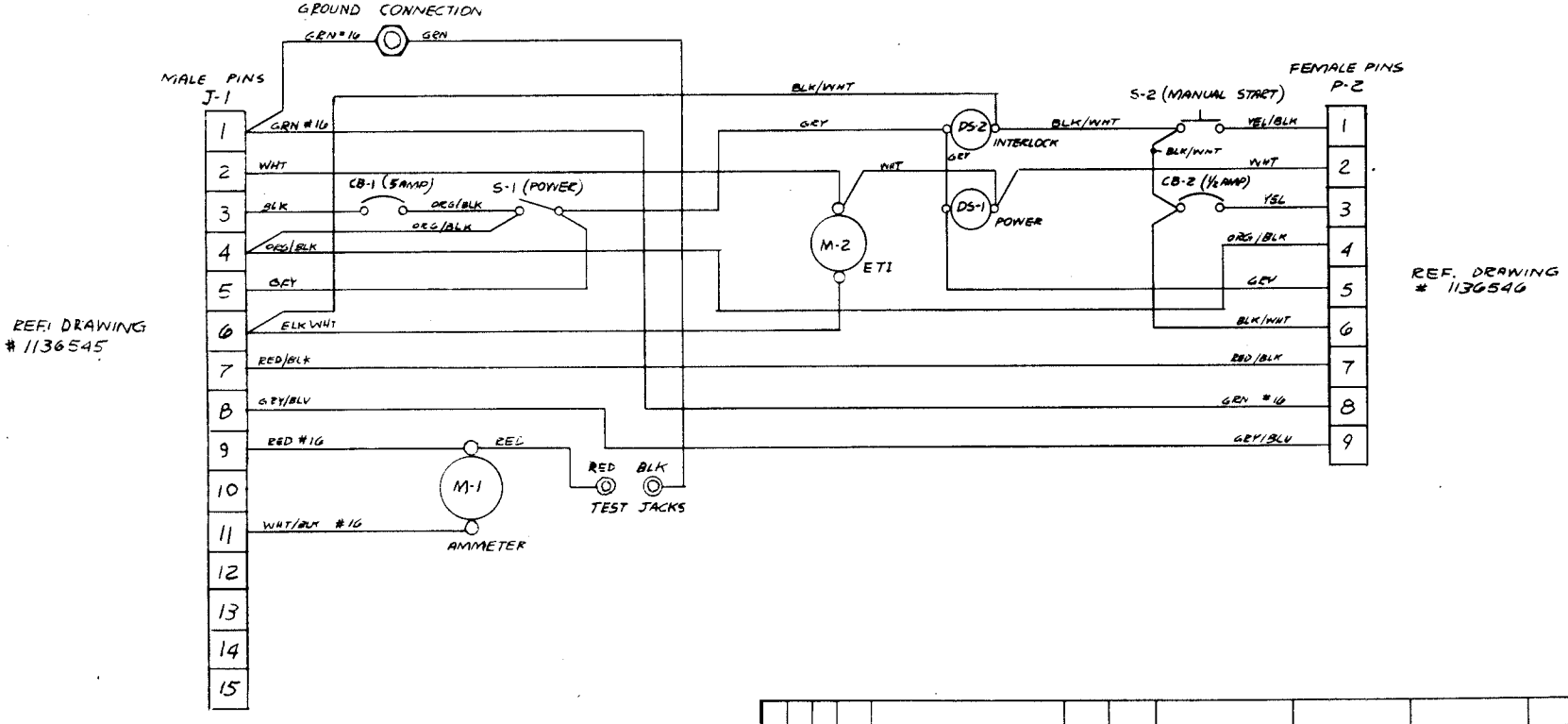
6-12

6/77

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

NOTES — UNLESS OTHERWISE SPECIFIED:

1. ~~REMOVE ALL BURRS AND SHARP EDGES.~~
   ALL WIRES TO BE 20 AWG MINIMUM UNLESS OTHERWISE SPECIFIED



FOR REFERENCE
SCHEMATIC # 1145038
ASSY # 1145093

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

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
—	—	—	XH-10/30

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. SACCA'	2/20/76
CHECK		
DESIGN		
ENGR	Wm J Connelly	12/29/76
APPR		
APPR		
CONTRACT NO.	PD537	

APPROVED

APPROVED

Optical Radiation Corporation

WIRING DIAGRAM
REAR BULKHEAD

SIZE	CODE IDENT NO.		REV
C	33030	1136547	N/C

SCALE | WEIGHT | SHEET OF

C 1136547 N/C

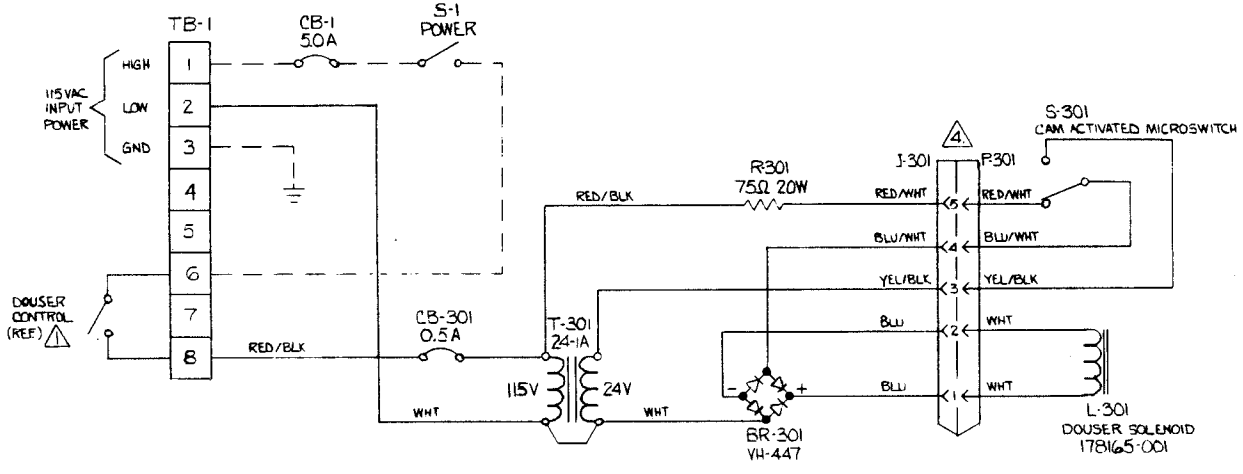
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

D1131198

NOTES — UNLESS OTHERWISE SPECIFIED:

~~1. REMOVE ALL BURRS AND SHARP EDGES.~~

1. SINGLE POLE SINGLE THROW SWITCH NOT SUPPLIED. 115VAC 3A RATING REQUIRED.
2. EXISTING WIRING SHOWN DASHED. REFERENCE WIRING DIAGRAM 1136545, SCHEMATIC 1145038, AND ASSEMBLY 1147129.
3. ALL WIRING NO. 20 AWG MINIMUM.
4. JACK IS FEMALE CONNECTOR WITH FEMALE PINS, PLUG IS MALE CONNECTOR WITH MALE PINS.



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

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
			XH-165

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	B CONNELLY	6-14-77
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

CONTRACT NO. PD 537-00

APPROVED

APPROVED

Optical Radiation Corporation

WIRING DIAGRAM
ADDITIONAL-REMOTE DOUSER OPTION
XH-165

SIZE	CODE IDENT NO.		REV
C	33030	1137128	

SCALE —— WEIGHT —— SHEET 1 OF 1

C 1137128

6-13

6/77

SECTION 7 - 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 lamp 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 lamp to validate the warranty of your new xenon lamp.

XENON LAMP WARRANTY CARD

USER'S NAME _____ DATE _____

COMPANY _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

LAMP MODEL NO. _____ SERIAL NO. _____

INSTALLED IN _____ MODEL NO. _____

SERIAL NO. _____

RUNNING TIME METER READING AT TIME OF INSTALLATION _____ HRS.

PURCHASED FROM _____

CITY _____

READ ALL INSTRUCTIONS BEFORE INSTALLING LAMP

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.

XENON LAMP

WARRANTY CLAIM FORM

To expedite warranty claims, please fill out the following as completely as possible and return with defective bulb to Optical Radiation Corporation:

1. Bulb Model No._____ Serial No._____
   Purchase Date_____

2. Equipment

   Lamphouse Type: Model No._____
   Serial No._____

3. Operating Conditions

   Accumulated Running Hours on Bulb_____

   Average ON Time_____ Average OFF Time_____

   Estimated Number of Ignitions_____

   Voltage at Failure_____ Current at Failure_____

4. Conditions Causing Reject or Return_____
   _____
   _____

5. Additional Information_____
   _____
   _____

Form Completed By_____ Title_____

Company_____

Address_____

Telephone No._____ Date_____

Return To:

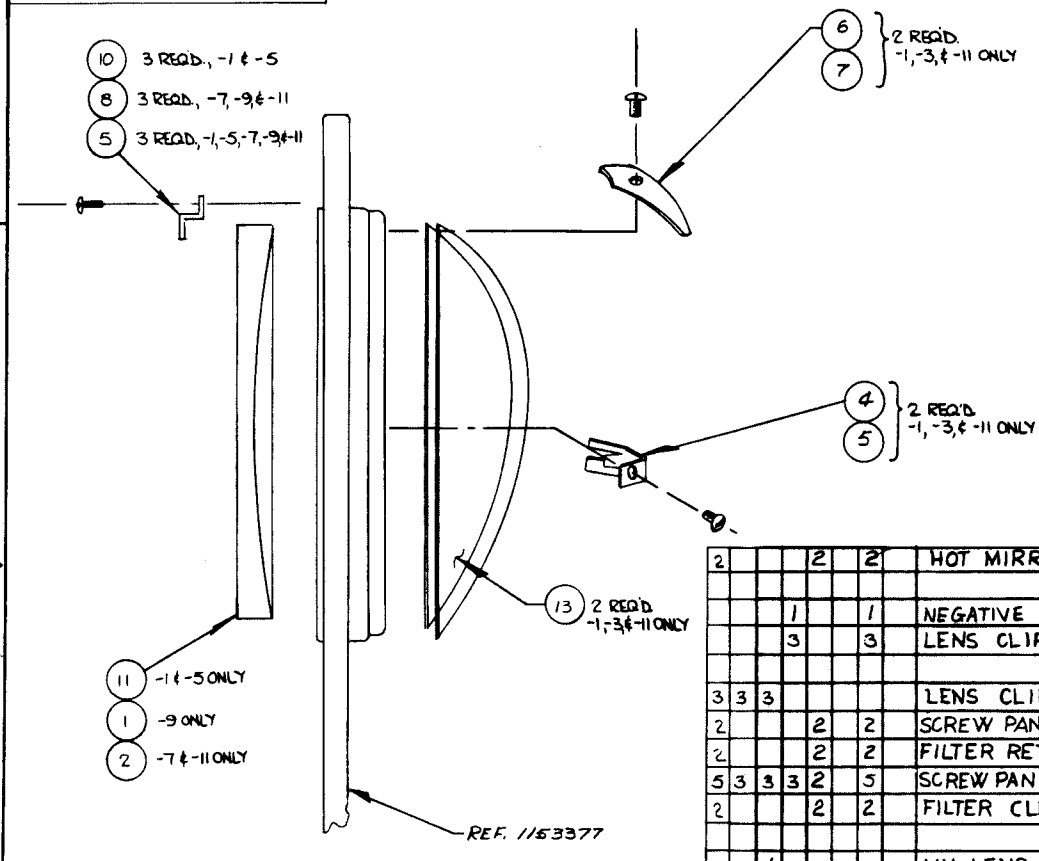
Optical Radiation Corporation

6352 N. Irwindale Avenue, Azusa, California 91702 • (213) 969-3344

SECTION 8 - LAMPHOUSE DATA/DRAWINGS

The following list and pages of assembly drawings contain the majority of parts used in the XH-16S and XH-30S lamphouses. When ordering spare or replacement parts, please specify complete part number, description, system to be used in, and quantity required. Consult your local dealer or Optical Radiation Corporation for prices.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	CORRECT POSITION OF NEGATIVE LENS, ZONE C9, EOR 00192	8/15/73	
	B	REVISED TABULATION REF EO 01111	3-15-74	
	C	EO #01476	5-10-75	
	D	EO 7334	10-18-77	



QTY REQD -3	-2	-1	SYM.	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
2		2		HOT MIRROR			1100507-7				13
											12
	1			NEGATIVE LENS			1100514				11
	3			LENS CLIP			1123376-1				10
											9
3	3	3		LENS CLIP			1123376-3				8
2		2		SCREW PAN HD.				6-32X3/8LG			7
2		2		FILTER RETAINER			1110908				6
5	3	3	3	2	5		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	-3	1145098	PD537
1	A/R	1154135	PD506
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	1100179	1600

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	C.J. PEMMEL	6-5-73
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

CONTRACT NO. PD506
6-21-73
APPROVED
APPROVED

Optical Radiation Corporation

LENS KIT

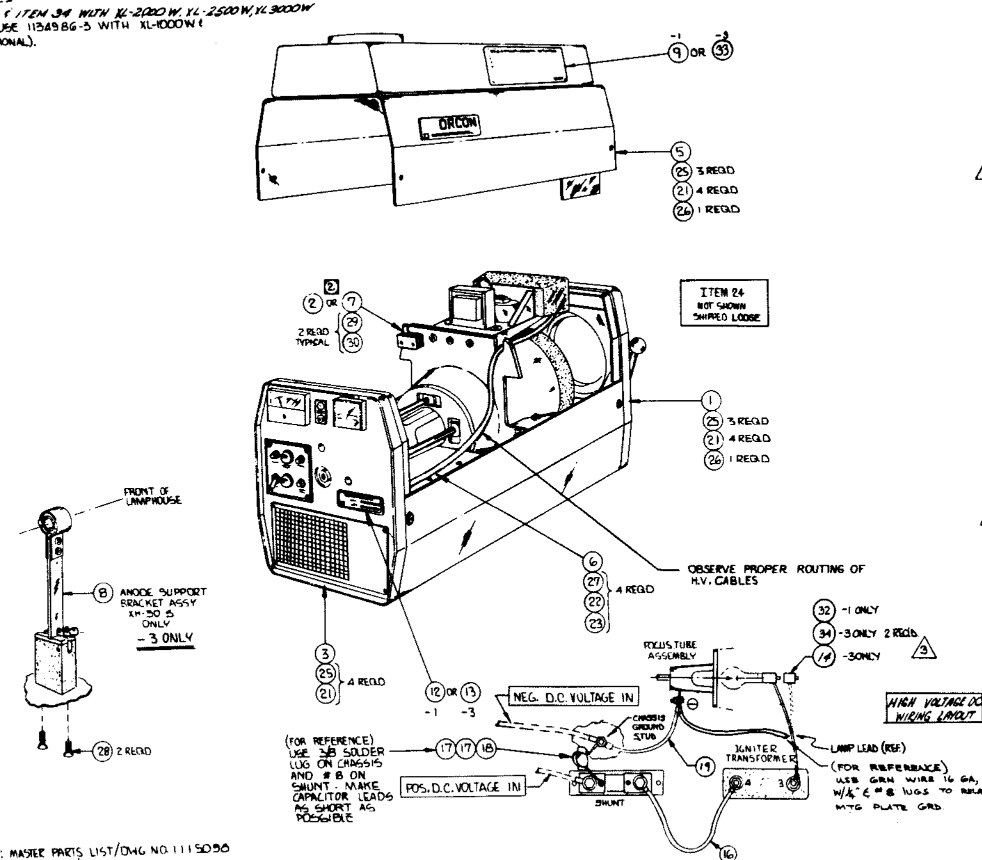
SIZE	CODE IDENT NO.		REV
C	33030	1133494	D

SCALE NONE WEIGHT SHEET 1 OF 1

D1113198
8-2
7/80
1133494 D

NOTES — UNLESS OTHERWISE SPECIFIED:
1. REMOVE ALL BURRS AND SHARP EDGES.
2 THESE CENTER BULKHEAD ASSEMBLIES ARE ALIKE EXCEPT FOR FOCUS TUBE ASSEMBLIES.
3 USE 112491S ITEM 14 & ITEM 34 WITH XL-2000W, XL-2500W, XL3000W LAMPS (STANDARD) — USE 1134986-3 WITH XL-1000W & XL-1600W LAMPS (OPTIONAL).

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	EO 1598	9.10.75	REN
	B	EO 1697	1.12.76	REN
	C	EO # 1880	6.1.76	
	D	EO # 1922	6.17.76	
	E	EO 2136 ADDED ITEM 19 ITEM 16 WAS LEAD D.C. POSITIVE	2.3.77 DUFFY	
	F	EO 2253	6.30.77	
	G	EO 2382	8.8.77	
	H	EO 2789		
B-5	J	EO 2974 ADDED GRN WIRE	6/9/80	
	K	EO 3026 ADDED 1145086-3 FOR -3		



REF: MASTER PARTS LIST/DWG NO 1115050
SCHEMATIC /1145038

QTY -3	QTY -1	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
									35
2	-	CAPSCREW HEX SOCKET				8-32 X 3/8			34
1	-	LAMPING INST. TAG.			1135828	XH-306			33
K	-	ANODE ADAPTER ASSY			1134986-3	XL-1000W, XL-1600W			32
									31
2	2	NUT-KEPS			NO.10-32				30
2	2	SCREW, PAN HD. PHIL			NO.10-32 X ¾				29
2	—	SCREW, FLAT HD. PHIL			NO.8-32 X ½				28
4	4	SCREW, PAN HD. PHIL.			NO.8-32 X ½				27
2	2	SCREW, TRI-WING			NO.10-32 X ½				26
10	10	SCREW, OVAL HD PHIL			NO.10-32 X ½				25
1	1	LENS KIT			1133494-3		SHIPPED LOOSE W/UNIT		24
4	4	WASHER, LOCK			NO.8				23
4	4	WASHER, FLAT			NO.8				22
12	12	WASHER, DECORATIVE			NO.10				21
									20
1	1	LEAD D.C.			1135109-2				19
1	1	CAPACITOR	C5		TVA 1414	50 MFD, 150V	SPRAGUE		18
2	2	CAPACITOR / DISC	C3 C4			.005 MFD/3KV	SPRAGUE		17
1	1	LEAD, D.C.			1135109-1				16
—	1	ANODE LEAD			1130638-3	XL-1000W, XL-1600W			15
1	—	ADAPTER ANODE 2K-3.0KW			112491S	XL-2000W—XL-3000W			14
R	—	SERIAL NO. TAG			1135327-3	XH-306			13
—	R	SERIAL NO. TAG			1135927-1	XH-165			12
									11
1	—	MTG. PLATE ASSY			1145086-3				10
—	1	LAMPING INSTRUCT. TAG.			1134988	XH-168			9
1	—	ANODE SUPPORT ASSY			1135107				8
1	—	CENTER BULKHEAD ASSY			1145043-3				7
—	1	MTG. PLATE ASSY			1145086-1				6
1	1	UPPER WRAP ASSY			1145094				5
1	1	LOWER WRAP ASSY			1145090				4
1	1	REAR BULKHEAD ASSY			1145093				3
—	1	CENTER BULKHEAD ASSY			1145043-1				2
1	1	FRONT BULKHEAD ASSY			1153377-3				1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-3	1145206-3	XH-305L
1	-1	1145206-1	XH-165L
1	-3	FINAL	XH-306
1	-1	FINAL	XH-168

APPLICATION

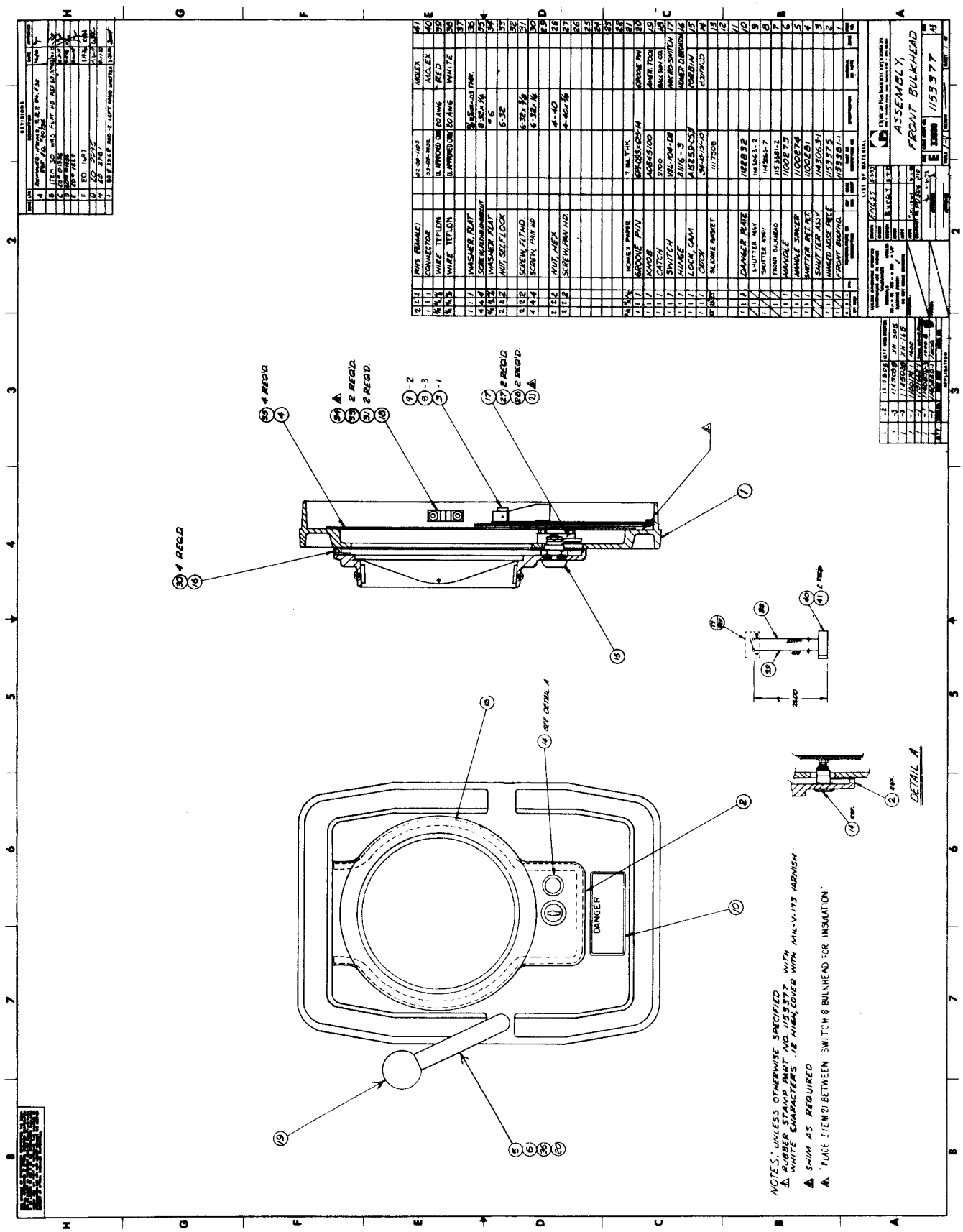
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: DECIMALS .XX = ± .03 .XXX = ± .010, ANGLES ± 1°. MACHINE FINISH ✓. DO NOT SCALE DRAWING.

DRAWN: R NICCUM 7.14.75
CONTRACT NO. PDS37
APPROVED 7-14-75

Optical Radiation Corporation

FINAL ASSEMBLY

SIZE D | CODE IDENT NO. 33030 | 1145098 | REV K
SCALE NONE | SHEET 1 OF 1


ASSEMBLY, FRONT BULKHEAD
1153177
DANGER
DETAIL A
NOTES: UNLESS OTHERWISE SPECIFIED
△ RUBBER STAMP PART NO. 1153177 WITH WHITE CHARACTERS. ▲ HINGE COVER WITH MIL-V-173 VARNISH
▲ SHIM AS REQUIRED
▲ PLACE ITEM 21 BETWEEN SWITCH & BULKHEAD FOR INSULATION

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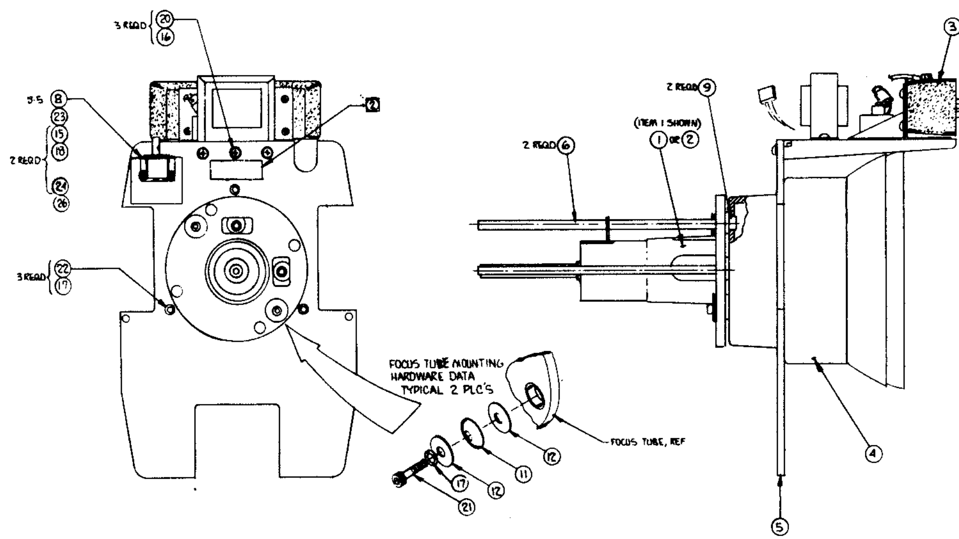
REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	EO1598	8-8-75	
	B	EO. 1697	11-2-76	
	C	EO. 1880	5-17-76	
	D	EO # 1923	6-17-76	
	E	EO # 1956	8-2-76	
	F	EO3060 ITEM 1 WAS 1134910-1		



QTY REQD -3	QTY REQD -1	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO
A/R	A/R		FISH PAPER			CUT 1 1/2 X 2				26
2	2		LOCK, WASHER SPLIT			#6				24
1	1		BRACKET, SWITCH			1125171				23
3	3		SCREW, SOC. HD. CAP			#10-32 X 5/8		CAD. PLATE		22
2	2		SCREW, SOC. HD. CAP			#10-32 X 1.00		CAD. PLATE		21
3	3		SCREW, SOC. HD CAP			1/4-20 X 3/4				20
										19
2	2		SCREW, PAN HD.			#6-32 X 1/2				18
5	5		WASHER, SPLIT LK.			#10		STAINLESS		17
3	3		WASHER, SPLIT LK.			1/4 CLEAR		STAINLESS		16
2	2		WASHER, FLAT			#6		STAINLESS		15
						-				14
										13
4	4		WASHER, FLAT			#10 CLEAR	1/400	CAD. PLATE		12
2	2		WASHER, BELLVILLE			6008-8500	58063625	SEASTROM		11
										10
2	2		BUSHING, FLANGED			4563-0370	FB-68-3	BOSTON		9
1	1		SWITCH	S-5		2952-1211	E69-00A	CHERRY		8
										7
2	2		CAM SHAFT ASSY			1125045				6
1	1		CTR BULKHD. - MACH.			1144975				5
1	1		MIRROR ASSEMBLY			1141650				4
1	1		IGNITER ASSEMBLY			1145000				3
/	1		FOCUS TUBE ASSY			1135074	XL-1600W LAMP			2
1	/		FOCUS TUBE ASSY			1231387	XVF LAMP			1

LIST OF MATERIAL

[2] STAMP PART NUMBER 1145043 WITH APPROPRIATE DASH NUMBER APPROXIMATELY WHERE SHOWN.

1. ASSEMBLE PER ORC WORKMANSHIP MANUAL STANDARDS.

NF

APPLICATION

QTY	DASH NO.	NEXT ASSY	USED ON
1	-3	1145098-3	XH-305
1	-1	1145098-1	XH-165

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. NICCUM	7-3-75
CHECK		
DESIGN	R.	7-14-75
ENGR		
APPR		
APPR		
CONTRACT NO.	PD537	
APPROVED		7-8-75
APPROVED		

Optical Radiation Corporation

CENTER BULKHEAD ASSY

SIZE	CODE IDENT NO		REV
D	33030	1145043	F

SCALE HALF WEIGHT — SHEET 1 OF 1

D 1145043 F

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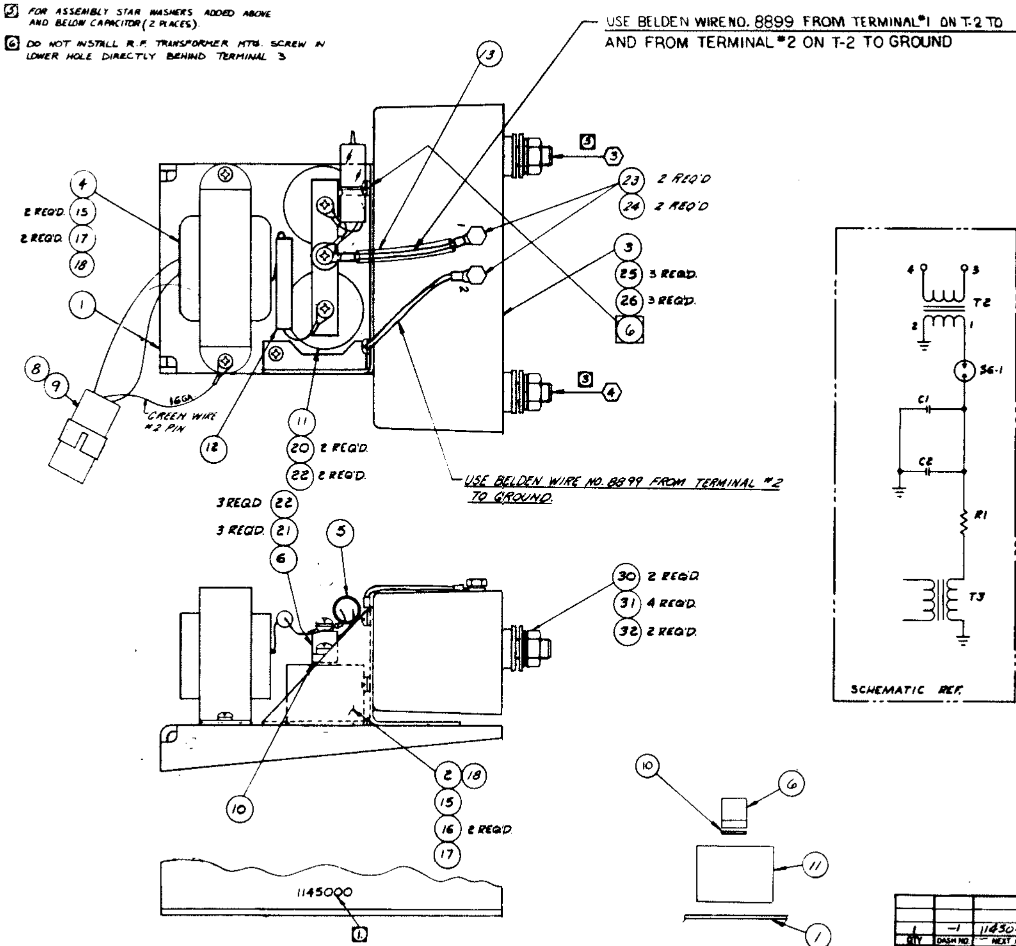
NOTES:
1. INK STAMP P/N 1145000 IN AREA SHOWN.
2. ASSEMBLE PER ORC WORKMANSHIP MANUAL STANDARDS.
3. TERMINAL NO'S. IDENTIFIED BY ⬡
4. USE UL APPROVED TERMINAL LUGS.
5. FOR ASSEMBLY STAR WASHERS ADDED ABOVE AND BELOW CAPACITOR (2 PLACES).
6. DO NOT INSTALL R.F. TRANSFORMER MTG. SCREW IN LOWER HOLE DIRECTLY BEHIND TERMINAL 3

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	E.O. 1697	1.9.76	RZN
	B	E.O. 1880	5.17.76	WDC
	C	E.O.		
	D	E.O. # 2204	5-3-77	JCH
	E	E.C. # [illegible]	7-7-7	F.N.
	F	EO # 2983 ITEM 25 & 26 [illegible]	7/19/80	[illegible]
	G	EO# 3068 MODIFIED HARDWARE	11-18-80	[illegible]



QTY REQD 3	2	1	SYM	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO
		2		WASHER, LOCK				3/8	BRASS		32
		2		WASHER, FLAT				3/8	BRASS		31
		2		NUT, HEX				3/8-16	BRASS		30
											29
											28
											27
		3		WASHER, LOCK				#10			26
		3		SCREW, PAN HD.				10-32X 1/2			25
		2		WASHERS, INT. STAR				#10	BRASS		24
		2		SCREW, HEX HD.				10-32X 3/8	BRASS		23
		7		WASHER, LOCK				#8			22
		3		SCREW, PAN HD.				8-32X 3/8			21
		2		SCREW, PAN HD.				8-32X 1/4			20
		3		WASHER, LOCK INT				#8			19
		3		WASHER. FLAT				#6			18
		3		WASHER, LOCK				#6			17
		2		SCREW, FLAT HD.				8-32X 3/8			16
		3		SCREW, PAN HD.				6-32X.375			15
											14
		1		TYGON TUBING				1/4 OD X 1/8 I.D. [illegible]			13
		1		RESISTOR			2585-3035	30K, 11W	OHMITE		12
		2		CAPACITOR			2021-6Y01	1600PF, 20KV	SPRAGUE		11
		1		BUSS BAR			2292-3010	5002-Z-17	SEASTROM		10
		2		PINS			1190 M		MOLEX		9
		1		CONNECTOR			1396-P		MOLEX		8
											7
		1		INSULATOR SPARK GAP			1111681				6
		1		SPARK GAP ASSY			1122349				5
		1		TRANSFORMER			1141813-1				4
		1		R.F. TRANSFORMER			1144296				3
		1		TRANSFORMER BRKT.			1134997				2
		1		PLATFORM IGNITOR			1134999				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
MATERIAL
FINISH

DRAWN F.N. 6-16-75
CHECK
DESIGN
ENGR
APPR
APPR
CONTRACT NO. PD 537
APPROVED 6-30-75

Optical Radiation Corporation

IGNITOR ASSEMBLY

SIZE D | CODE IDENT NO 33030 | 1145000 | REV G
SCALE 1-1 | WEIGHT — | SHEET 1 OF 1

QTY	DASH NO	NEXT ASSY	USED ON
1	-1	1145043	XH-1068, XH-502

APPLICATION

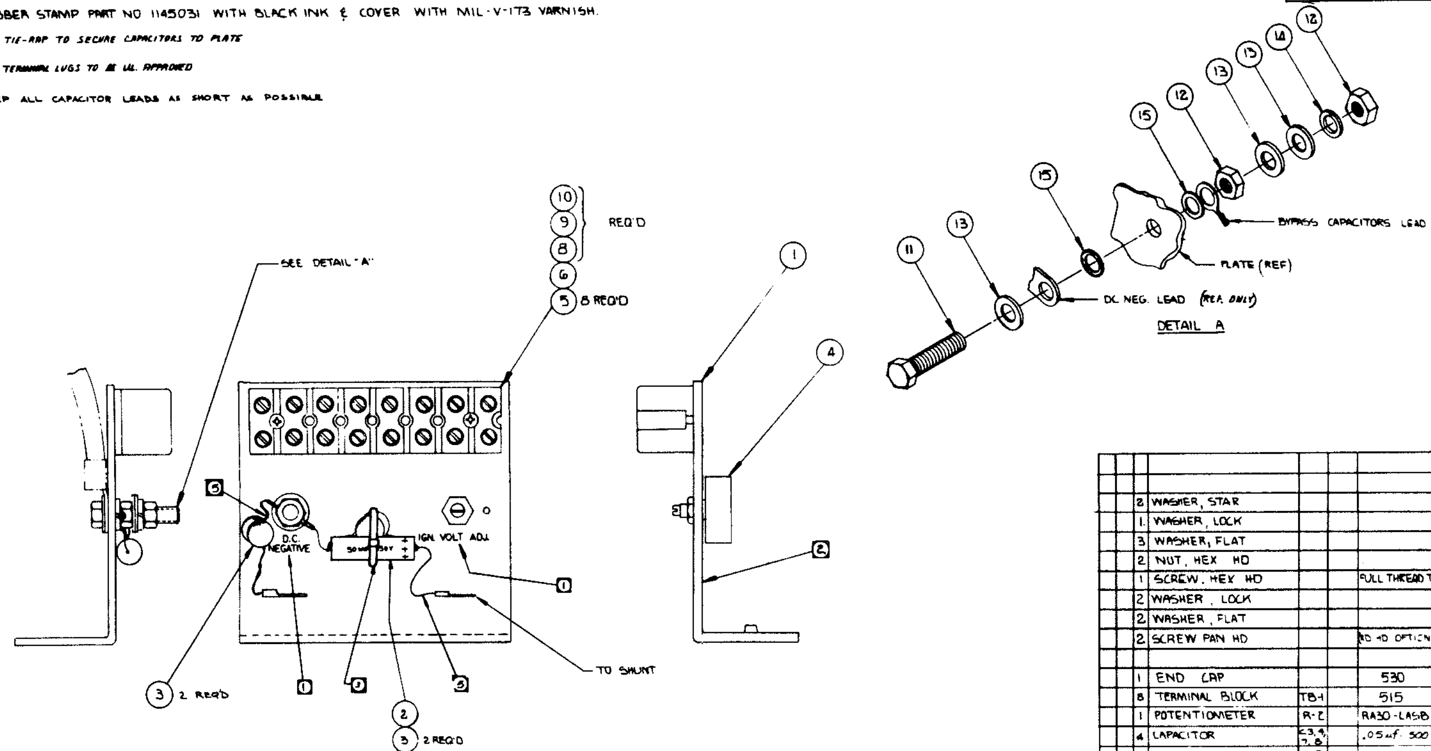
D 1145000 G

NOTES—UNLESS OTHERWISE SPECIFIED:

1. RUBBER STAMP WITH BLACK INK & COVER WITH MIL-V-173 VARNISH.
2. RUBBER STAMP PART NO 1145031 WITH BLACK INK & COVER WITH MIL-V-173 VARNISH.
3. USE TIE-RAP TO SECURE CAPACITORS TO PLATE
4. ALL TERMINAL LUGS TO BE UL APPROVED
5. KEEP ALL CAPACITOR LEADS AS SHORT AS POSSIBLE

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	D	REVISED & REDRAWN ED 1880	5-27-76	U.SC.
	E	EO # 1316	[illegible]	[illegible]
	F	EO # 2084	[illegible]	[illegible]
	G	EO # 2133 - DUFFY -	8-2-77	JEM
B6	H	EO # 2856 ITEM 3 WAS .005 3KV	[illegible]	[illegible]
B6	J	EO # 2973 ITEM 3 QTY WAS 2; ADD NOTE 5	[illegible]	[illegible]



REFERENCE DWG'S.
SCHEMATIC 1145038
WIRING DIAGRAM 1136545

QTY REQD	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
2	WASHER, STAR				3/8	BRASS		15
1	WASHER, LOCK				3/8	BRASS		14
3	WASHER, FLAT				3/8	BRASS		13
2	NUT, HEX HD				3/8-16	BRASS		12
1	SCREW, HEX HD			FULL THREAD TYPE	3/8-16 x 1 1/2	BRASS		11
2	WASHER, LOCK				# 6			10
2	WASHER, FLAT				# 6	SS		9
2	SCREW PAN HD			(RD HD OPTIONAL)	6-32 x 3/8	SS		8
								7
1	END CAP			530		BUCHANAN		6
8	TERMINAL BLOCK	TB-1		515		BUCHANAN		5
1	POTENTIOMETER	R-2		RA30-LASB-502A	5KΩ-5W	CTS		4
4	CAPACITOR	C3,4,7,8		.05 μf 500V		SPRAGUE		3
1	CAPACITOR	C-5		50 μf 150V		SPRAGUE		2
1	COMPONENT PLATE			1134962				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

DRAWN	J. SACCO	5-27-76
CHECK		
DESIGN		
ENGR	J. MIDDLETON	6-1-76
APPR		
APPR		
CONTRACT NO.	PD 537	

Optical Radiation Corporation

COMPONENT PLATE ASSEMBLY

SIZE D | CODE IDENT NO. 33030 | 1145031 | REV J

SCALE 1-1 | WEIGHT | SHEET 1 OF 1

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1145090	XH-300
1	-1	1145090	XH-165

APPLICATION

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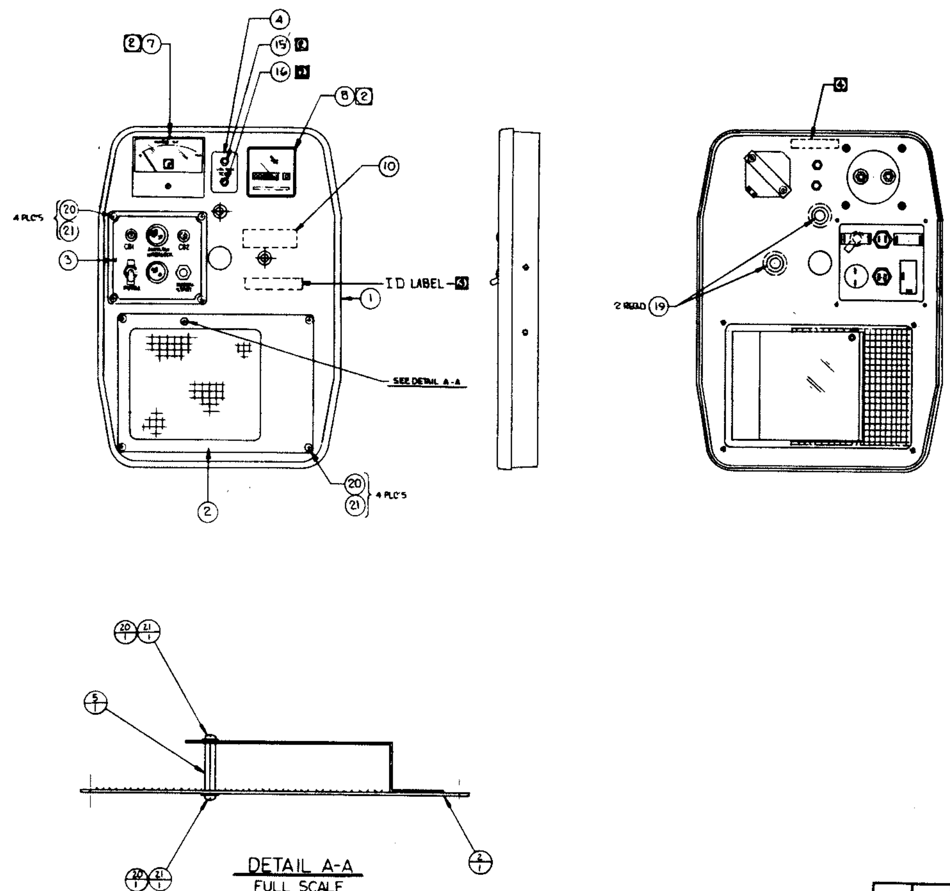
NOTES — UNLESS OTHERWISE SPECIFIED:
1. REMOVE ALL BURRS AND SHARP EDGES.
2. SUPPLIED WITH MOUNTING HARDWARE.
3. TAG TO BE PLACED APPROXIMATELY WHERE SHOWN.
4. STAMP PART NUMBER 1145093 APPROX. AS SHOWN.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	EO-1598	9-10-75	
	B	EO-1697	12-2-76	
	C	EO 1800	6-1-76	
	D	EO #	7-2-76	
	E	EO # 2726	4-17-79	
	F	ADDED DETAIL A-A	5-4-80	
	G	EO 3060 ADDED ITEM 10		



-4	-3	-1	NOMENCLATURE OR DESCRIPTION	REF DES	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ZONE	ITEM NO.
	10	10	WASHER, SPLIT LOCK			NO.6	SST			21
	10	10	SCREW, PAN HD. PHIL			6-32 X 3/8	SST			20
	2	2	BUSHING			FB-68-6		BOSTON		19
										18
										17
	1	1	TEST JACK, BLACK			2211-0511	1506-103	H.H. SMITH		16
	1	1	TEST JACK, RED			2211-0510	1506-102	H.H. SMITH		15
										14
										13
										12
										11
	1		LAMPHOUSE CAUTION PLATE			1130953-25				10
	1		ID PLATE			1135927-3				9
	1	1	RUNNING TIME METER 60Hz			2479-1116	WZ4B/5 110V	CONTROL DYNAMICS		8
	1	1	AMPERE METER, 0-150AMP			2476-1525	2025-17	HOYT		7
		1	ID PLATE			1135927-1				6
	1	1	SPACER			5822-A001	8427	H.H. SMITH		5
	1	1	PLATE, VOLTAGE TEST			1134982-1				4
	1	1	CONTROL PANEL			1135205				3
	1	1	SCREEN GUARD			1134965				2
	1	1	REAR BULKHEAD, MACH			1144977				1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-3	1145098-3	YH-303
1	-1	1145098-1	YH-165

APPLICATION

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

DRAWN R. MCCUM 7-11-75
CHECK
DESIGN
ENGR
APPR
APPR
CONTRACT NO. PD 537
APPROVED 7-14-75

Optical Radiation Corporation

REAR BULKHEAD ASSEMBLY

SIZE D | CODE IDENT NO. 33030 | 1145093 | REV G

SCALE HALF | WEIGHT — | SHEET 1 OF 1

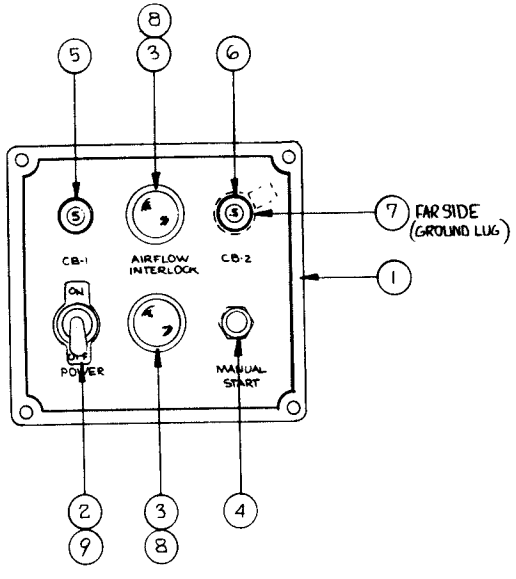
D 1145093 G

D113198

8-9

7/80

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	E.O. 1880	5-17-76	W&C
	B	2229	6-1-77	[illegible]



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					INDICATOR PLATE	-		Y O 1		CHARLES SWITCH		9
2					LAMP	-		B2-A	120V	G.E		8
1					LUG	-		TN 18-38	3/8 LUG	BURNDY CORP		7
1					CIRCUIT BREAKER	CB-2		45-700-P	.5 AMP	ETA		6
1					CIRCUIT BREAKER	CB-1		45-700-P	5 AMP	ETA		5
1					PUSH BUTTON SW.	S-2		3D05-5P		ROBERT SHAW		4
2					INDICATOR LIGHT	DS-1 DS-2		95-0463-0931-331		DIALCO		3
1					SWITCH, TOGGLE	S-1		82600	SPST	ARROW HART		2
1					CONTROL PANEL	-		1134980				1

LIST OF MATERIAL

QTY	DASH NO.	NEXT ASSY	USED ON
1	-1	1145093	XH-308
1	-1	1145093	XH-169

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	R. NACCUM	9-10-75
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

CONTRACT NO. PD 537

9/11/75 APPROVED

APPROVED

Optical Radiation Corporation

CONTROL PANEL ASSY.

SIZE	CODE IDENT NO.		REV
C	33030	1135205	8

SCALE FULL | WEIGHT — | SHEET 1 OF 1

1135205 C 8

ORC

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