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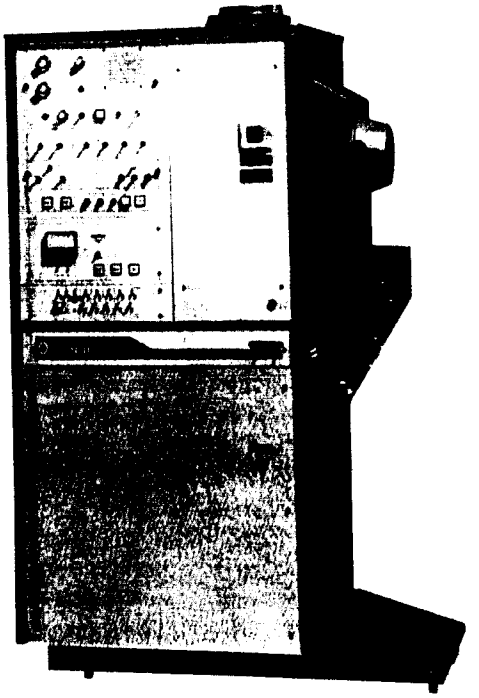
OPERATING INSTRUCTIONS

FOR
ORCON II THEATRE CONSOLE



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REVISED MARCH 1978

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SECTION 1 - INTRODUCTION

1.1 SCOPE

This manual provides installation, operation and maintenance instructions for the basic Orcon II Theatre Console. The system consists of a xenon lamphouse and power supply integrated into a compact cabinet (see Figure 1.1). Operation of the optional circuit breaker panel is included in this manual. Instructions for the optional ORCON sound system and automation system are contained in separate manuals. The system is manufactured by Optical Radiation Corporation (ORC), Azusa, California. When requesting information, always furnish serial and model numbers.

1.2 GENERAL DESCRIPTION

The Orcon II Theatre Console is a complete modular theatre system packaged into a single pre-wired cabinet. The console system consists of a xenon light source with power supply and optional circuit breaker panel, sound system, and automation system allowing full control of all theatre functions from one location. Each optional system is modular to provide maximum flexibility in meeting the requirements of the user.

The basic console is designed to accept most popular 35mm projectors by mounting directly to the front of the cabinet, thereby eliminating need of a separate pedestal. Electrical wiring required at installation is minimized by providing a pre-wired unit with all necessary external connections made in a single easily accessible junction box.

The optical system consists of a horizontal-type xenon bulb and metal reflector assembly mounted in a vertical configuration. This arrangement combines the advantages of greater light output with greatly increased bulb life.

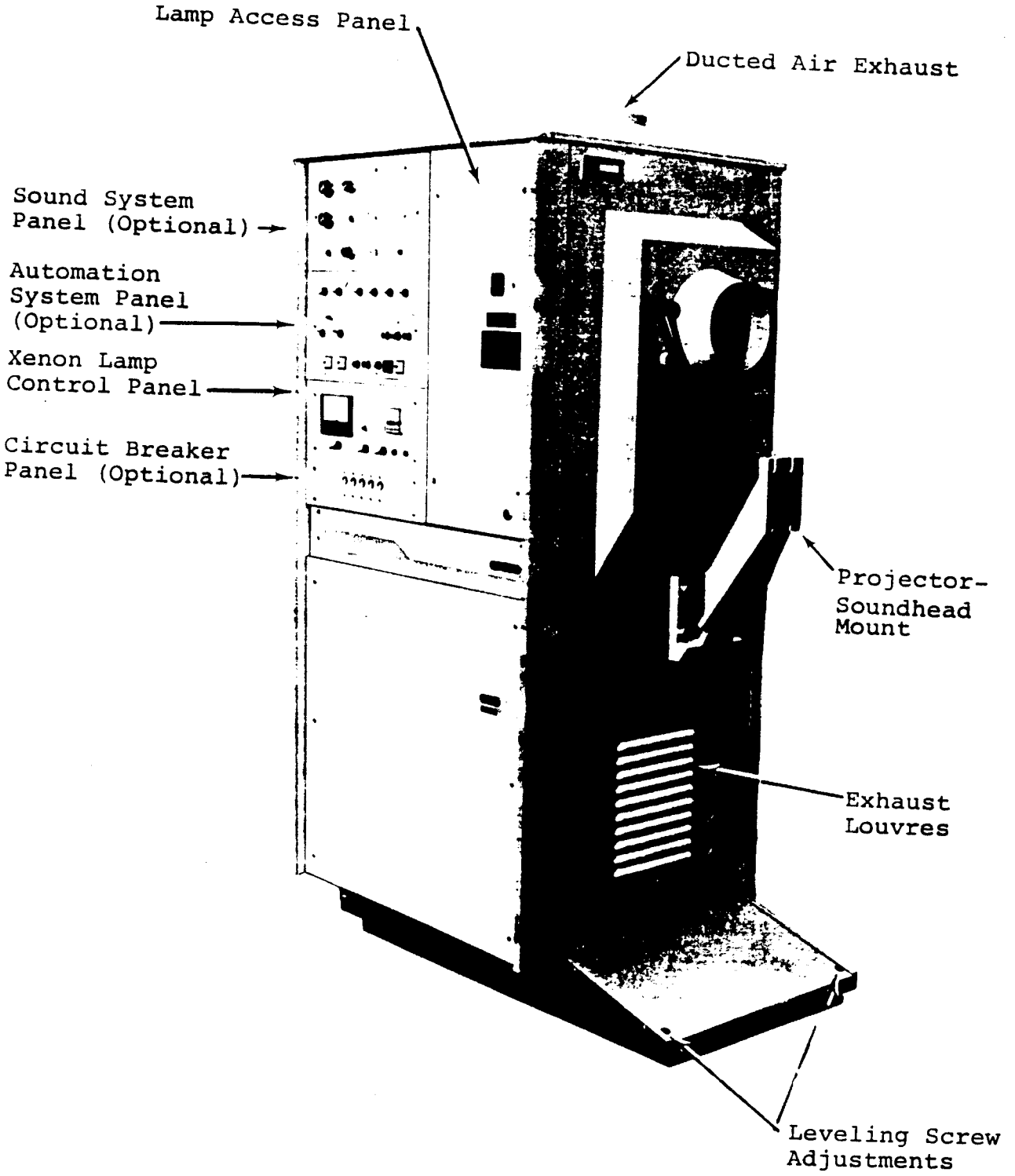


FIGURE 1-1
ORCON II Console

1.3 OPTICAL SYSTEM

The optical system includes a xenon bulb mounted vertically in a metal aspheric reflector which collects the emitted light from the bulb and reflects it upwards to a flat "folding" mirror mounted at a fixed 45° angle. The folding mirror directs the light horizontally out of the console through a snout to the projector aperture. A manually operated douser is located inside the console directly behind the snout (see Figure 1-2).

The reflector is a complex aspheric surface made of electroformed 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.

On the 1000 Watt system, the folding mirror, which simply "folds" the light beam, is a treated glass sheet. Its front surface is coated with an enhanced aluminum film for maximum reflectivity and its rear surface is bonded to a heat sink. All higher wattage systems use a similar mirror with the exception that the coating on the front surface is a dichroic "cold" mirror coating. This coating reflects visible light, but passes most of the film damaging infrared light through the glass to the heat sink. The systems are therefore capable of providing ample light to the screen without use of special aperture cooling techniques.

The built-in douser is operated by a handle on the right side of the console, beside the snout. The douser is provided to close off light to the projector while the xenon bulb is on.

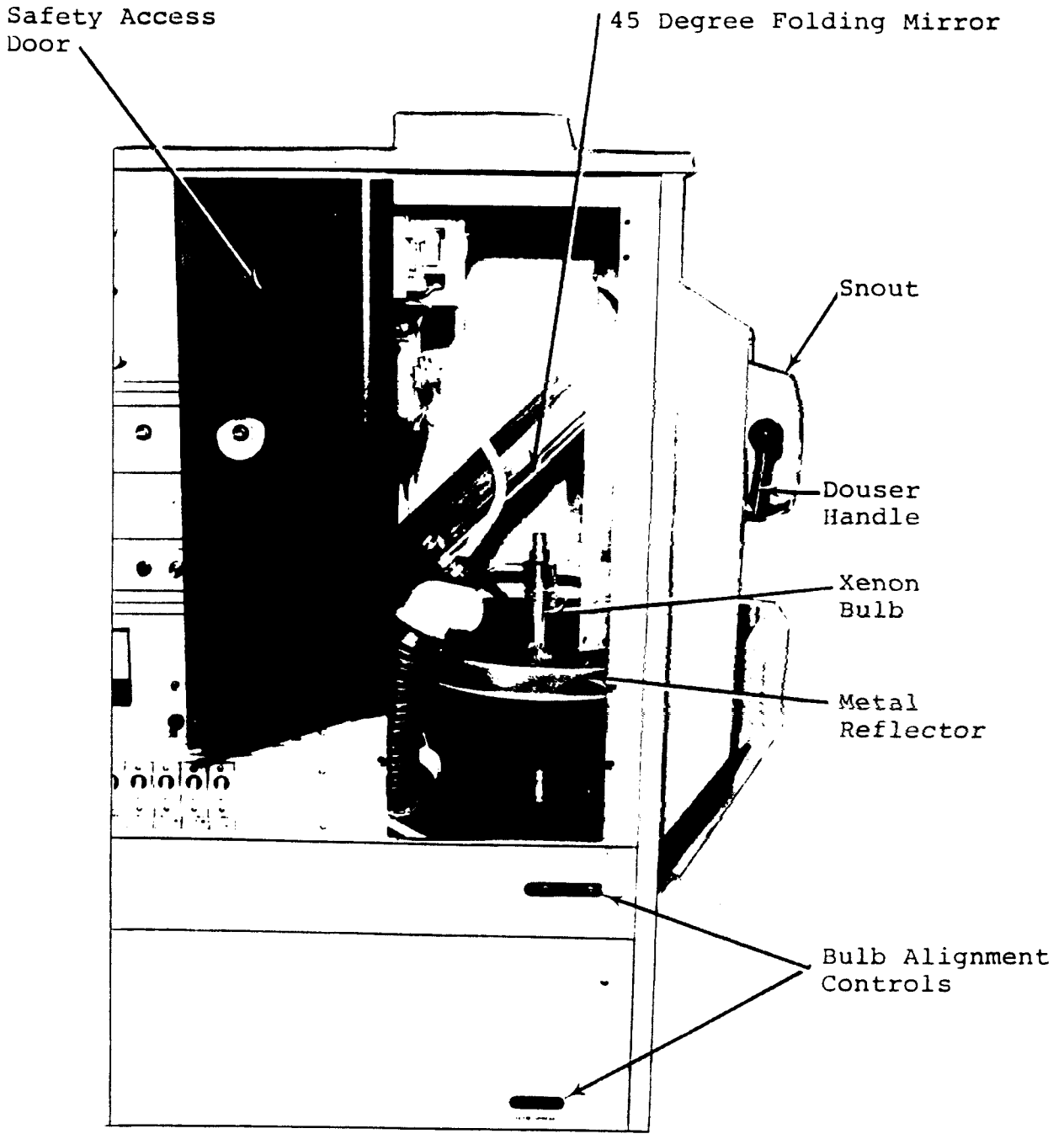


FIGURE 1-2

Optical System

1.4 1000 WATT SYSTEM

The Model V1000 is recommended for theatre screens up to 32 feet wide.* This system uses the ORCON XL-1000W xenon bulb. An ORCON XPS-10 power supply is located at the bottom of the console.

The XPS-10 (see Figure 4-3) is comprised of a power contactor, an input inductor, a single phase power transformer, a silicon rectifier with capacitive filter, an output filter choke, and an open circuit voltage boost circuit.

This power supply is designed for maximum reliability by utilizing rugged electro-magnetic components while maintaining a low ripple output for long bulb life and flicker-free presentation. The XPS-10 is designed to operate 1000 Watt xenon bulbs.

Current adjustment from 30 to 50 amperes can be made by changing the coarse "high" and "low" taps and the five fine adjustment taps on the input inductor in series with the main power transformer primary wiring.

1.5 1600 WATT SYSTEM

The Model V1600 is recommended for theatre screens from 32 to 40 feet wide* and uses the ORCON XL-1600W xenon bulb. An ORCON XPS-16 power supply is located at the bottom of the console.

This power supply is essentially the same as the XPS-10 power supply with the exceptions that it is forced air cooled and is designed to operate 1600 Watt xenon bulbs.

*using f/1.7 lens and screen with gain of 1.5

The main power components are rated for the higher current levels. Current adjustment from 40 to 65 amperes DC can be made by changing the coarse "high" and "low" taps and the five fine adjustment taps on the input inductor in series with the main power transformer primary winding.

1.6 2000 WATT SYSTEM

The Model V2000 is recommended for screens from 40 to 48 feet wide* and uses either an ORCON XL-2000W or XL-2500W xenon bulb. An ORCON XPS-20 power supply is located at the bottom of the console.

The ORCON XPS-20 (see Figure 4-6) contains a power contactor, a single phase power transformer, a full wave silicon rectifier, an L-C ripple filter and an open circuit voltage boost circuit.

This power supply is designed for maximum reliability by utilizing rugged electromagnetic components while maintaining a low ripple output for long bulb life and flicker free presentation. Current adjustment from 55 to 85 amperes can be made by changing the three coarse (X, Y, Z) taps and the three fine (1, 2, 3) taps on the primary winding of the main power transformer.

1.7 3000 WATT SYSTEM

The Model V3000 is recommended for screens from 48 to 55 feet wide* and uses either an ORCON XL-2500W or XL-3000W xenon bulb. The power supply located at the bottom of the console is either a single phase ORCON Model XPS-30 or a three phase ORCON XPS-45.

*using f/1.7 lens and screen with gain of 1.5

The ORCON XPS-30 (see Figure 4-6) is similar to the XPS-20 with the exception that it is forced air cooled and the main power components are rated for the higher current levels necessary to operate at 3000 Watts. Current adjustment from 65 to 100 amps can be made by changing the three coarse (X, Y, Z) taps and the three fine (1, 2, 3) taps on the primary winding of the main power transformer.

The ORCON XPS-45 is described in Section 1.8.

1.8 4500 WATT SYSTEM

The Model V4500 is recommended for screen widths in excess of 55 feet and uses the ORCON XL-4500W xenon bulb. An ORCON XPS-45 power supply is located at the bottom of the console.

The XPS-45 (see Figure 4-9) contains a power contactor, a three phase main power transformer, a three phase silicon rectifier, a capacitive filter, an open circuit voltage boost circuit, and a cooling blower.

The power supply is designed for maximum reliability by utilizing rugged electromechanical components. Three phase input power results in a low ripple output for long bulb life and flicker free presentation. Current adjustment from 80 to 150 amperes can be made by changing the four coarse (W, X, Y, Z) and four fine (1, 2, 3, 4) taps on the primary winding of the main power transformer.

1.9 SYSTEM SPECIFICATIONS

(Less Sound and Automation Options)

Table 1-1. System

SYSTEM Specification	V1000 (1000W)	V1600 (1600W)	V2000 (2000W)	V3000 (3000W)	V4500 (4500W)
Input Voltage	(see Table 3-3)				
Power Supply	XPS-10	XPS-16	XPS-20	XPS-30 XPS-45	XPS-45
Xenon Bulb	XL-1000W	XL-1600W	XL-2000W XL-2500W	XL-2500W XL-3000W	XL-4500W
Lumen Output (Open shutter, maximum rated current, 35mm f/1.7 projection lens	14,000	20,500	26,000	38,000	57,500
Light Distribution	75% UNIFORM FIELD FLATNESS FOR ALL MODELS				
Screen Size	To 32'	32-40'	40-48'	48-55'	over 55'
Nominal overall console dimensions (less projector) (DxWxH in inches)	←——38x25x64——→ (all units)				
System weight (less projector, sound & automation options)	370 lbs.	375 lbs.	435 lbs.	440 lbs.	445 lbs.

1.10 SYSTEM ACCESSORIES

1.10.1 Focus Tool

A 3/16" hex wrench with a plastic handle is used to rotate the three xenon bulb adjustment shafts which position the bulb in the mirror.

Table 1-2. Power Supply

POWER SUPPLY Specification	XPS-10	XPS-16	XPS-20	XPS-30	XPS-45
Input Voltage	208/230VAC 1 phase 60 Hz	208/230VAC 1 phase 60 Hz	208/230VAC 1 phase 60 Hz	208/230VAC 1 phase 60 Hz	208/230VAC 3 phase 60 Hz
Maximum Input Current	12 amps	16 amps	25 amps	30 amps	30 amps
Input Power	1.5 KW	2.0 KW	3.4 KW	4.9 KW	6.5 KW
DC Current Rip.	3% rms	3% rms	3% rms	3% rms	1% rms
DC Current Range	30-50 amps	40-65 amps	55-85 amps	65-100 amps	80-150 amps
Power Supply Wt.	70 lbs.	75 lbs.	135 lbs.	140 lbs.	145 lbs.

1.10.2 Xenon Bulb Installation/Removal Tool (P/N 1145648)
(XL-1000W and XL-1600W Bulbs Only)

The protective bulb installation/removal tool is a cylindrical transparent plastic device which fits over the bulb. It is constructed to provide a means of installing and removing the smaller xenon bulbs without physically handling the quartz surface while providing a protective cover over the bulb to minimize the danger of explosion during installation. The tool is comprised of a tube, two end caps, a retaining clamp, an anode collar and a cathode wing nut retainer.

1.10.3 Xenon Bulb Safety Handling Cover (P/N 1135517)
(XL-2000W thru XL-4500W Bulbs Only)

The safety handling cover is a protective device installed around the xenon bulb to provide a means of installing and removing the

larger xenon bulbs without physically handling the quartz surface while providing a protective cover over the bulb to minimize the danger of explosion during installation.

1.10.4 Hex Wrenches

A 1/8" hex wrench is provided to remove and replace the retaining collar which holds the installation/removal tool captive around the bulb (XL-1000W and XL-1600W bulbs only). The collar should be secured in place whenever handling the bulb. A 9/64" hex wrench is provided with the V1000 and V1600 systems to secure the anode bulb connection in the lamp compartment. A 5/32" hex wrench is provided to lock down the mirror assembly after initial alignment with the projector and to lock the cathode stud of the xenon bulb into the receptacle beneath the electro-formed reflector. A 3/32" hex wrench is provided to tighten the anode connector to the bulb in the lamphouse and to lock the cathode adapter to the XL-2000W, XL-2500W and XL-3000W xenon bulbs.

1.10.5 Bulb Adapters

Table 1-3 is a listing of the adapters to be used with the XL-1000W through XL-4500W bulbs.

Table 1-3. Bulb Adapters

Bulb Model Number	Cathode Adapter	Cathode Adapter Length	Anode Connector	Anode Connector I.D.
XL-1000W - XL-1600W	1121700-3	3.78"	1133629	7/16"
XL-2000W - XL-3000W	1121237	1.81"	1111693-1	3/8"
XL-4500W	none req.		1111693-1	3/8"

1.10.6 Soundhead Adapters

Soundhead adapters are aluminum blocks to be placed between the projector and projector mount on the console to provide the correct spacing between the console and projector soundhead. Widths of 1/4 inch, 1/2 inch, and 1 inch are available in combination to provide the proper spacing for any soundhead (see Table 3-2).

1.10.7 Leveling Pad (P/N 1134465)

Four leveling pads are provided for each console to be placed under the support legs. The pads prevent marring of the floor and provide a firm base on irregular floors.

1.10.8 Access Door Key

The access door key permits authorized personnel to gain entry to the bulb compartment in the console.

1.10.9 Face Shield and Gloves

A protective face shield and gloves are provided for use in installation and removal of the XL-2000W - XL-4500W xenon bulbs.

1.10.10 Console Alignment Turnbuckle (P/N 1134889) (Optional)

The console alignment turnbuckle is a factory tool used for initial installation only. It is positioned between the console mount and base to provide an easy, precise means of adjusting the console and projector for proper alignment with the screen.

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

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

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

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

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

3.1 RECEIVING-HANDLING

Remove all packing material from around the console and remove the console from its shipping pallet. Inspect for damage which may have been caused by shipping. Any claims for loss or damage that may have occurred in transit must be filed by the buyer with the carrier. A copy of the bill of lading and freight bill will be furnished upon request. Table 3-1 is a list of installation hardware included with each console.

Table 3-1. Installation Hardware

ITEM MODEL	V1000	V1600	V2000	V3000	V4500
#8-32 Tri-Wing Screwdriver	x	x	x	x	x
3/16" T-Handle Allen Hex Wrench	x	x	x	x	x
1/8" Short Arm Hex Wrench	x	x			
9/64" Short Arm Hex Wrench	x	x			
3/32" Short Arm Hex Wrench			x	x	x
5/32" Short Arm Hex Wrench	x	x	x	x	x
Face Shield			x	x	x
Protective Gloves			x	x	x
Access Door Key	x	x	x	x	x
4 ea Leveling Pad (P/N 1134465)	x	x	x	x	x
Lamp Adapter (P/N 1121237)			x	x	
Lamp Adapter P/N 1121700-3)	x	x			
2 ea Soundhead Adapter Plates (P/N 1134732-1 shipped standard)	x	x	x	x	x
4 ea 3/8-16 x 3 1/2 Hex Bolts	x	x	x	x	x
4 ea 3/8 Flat Washers	x	x	x	x	x

3.2 PRE-INSTALLATION CHECKS

The alignment of the 45° folding mirror can most easily be checked

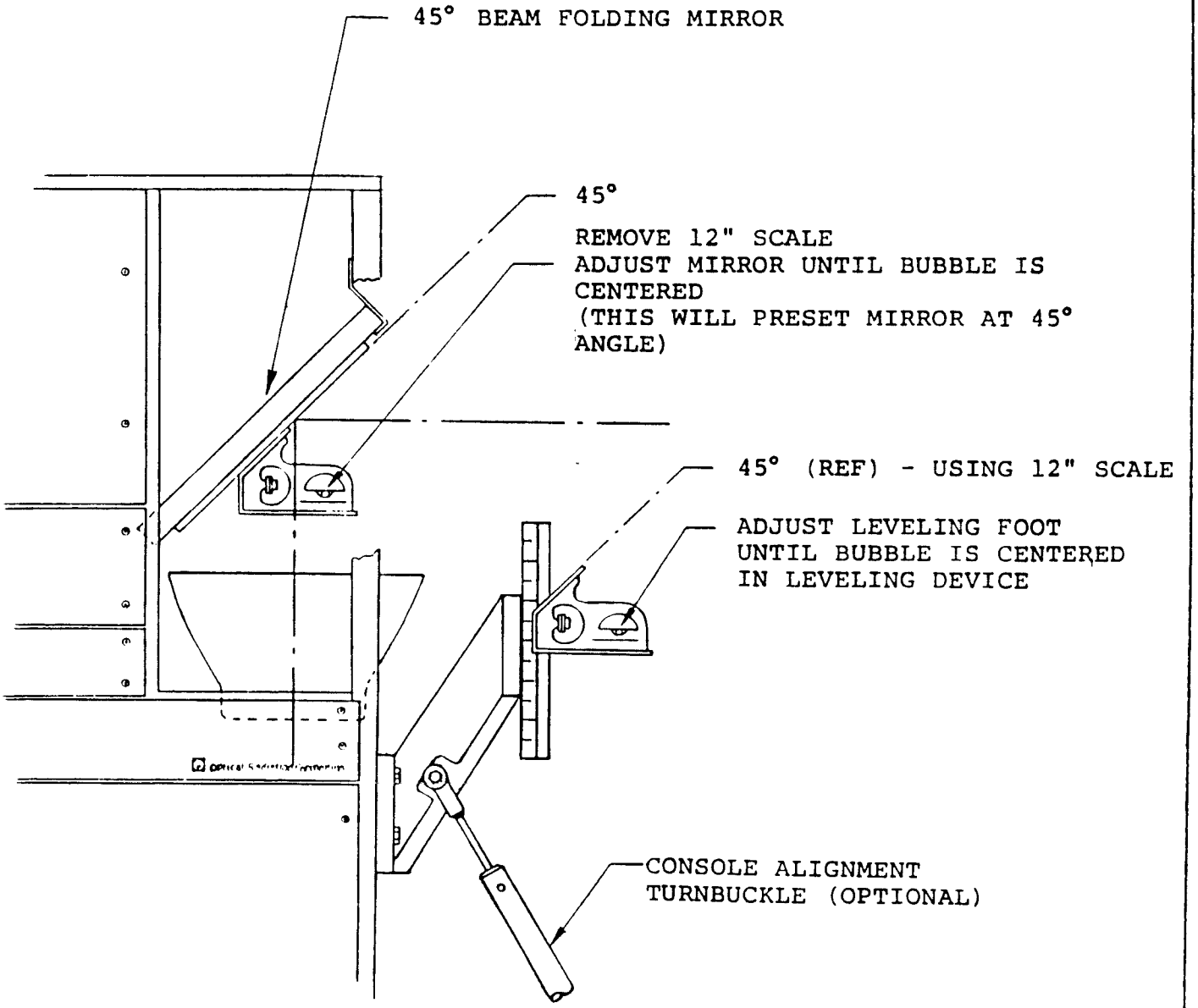


FIGURE 3-1

45° MIRROR ALIGNMENT

INDEXED TO PROJECTOR/SOUNDHEAD MOUNT

before the projector/soundhead assembly is installed on the console. The alignment is verified with the use of the console alignment turnbuckle and a combination level (see Figure 3-1).

3.3 MECHANICAL INSTALLATION

Before moving the console into position, the projector should be installed on the projector/soundhead mount. Adapter blocks are required to space the projector and soundhead for the proper mounting distance between the console and the projector aperture plate. Table 3-2 contains a list of popular projector/soundhead combinations and the corresponding adapter blocks necessary for proper mounting. The correct mounting distance from the front bulkhead of the console to the aperture is 13 inches (see Figure 3-2).

Adapter blocks should be aligned to the soundhead mounting holes and taped in place before mounting. Then the two top mounting bolts should be started into the soundhead casting before mating the casting to the mount. Slots have been provided in the mount to accept these two mounting bolts and allow quick, initial location of the projector/soundhead (see Figure 3-3A). The lower bolts may then be installed, and after ensuring that the projector is not cocked with respect to the console (Figure 3-3B), all four bolts can be tightened.

The console is then ready to be moved into position.

It is strongly recommended that the console be vented to an external exhaust. The external exhaust should draw a minimum of 500 cubic feet of air per minute. The console exhaust accepts standard six inch air conditioning duct.

TABLE 3-2 ADAPTER BLOCK SPACING

REQUIREMENTS FOR PROJECTOR/SOUNDHEAD

PROJECTOR	SOUNDHEAD	SPACING	USE ADAPTER BLOCK PART NUMBER(S)
SIMPLEX 35	SIMPLEX	2.00 in.	(2) 1134732-1
CENTURY	CENTURY	2.00 in.	(2) 1134732-1
SIMPLEX 35	RCA	2.00 in.	)2) 1134732-1
WESTREX	WESTREX	2.00 in.	(2) 1134732-1
SIMPLEX 35	RCA MI-9030	2.00 in.	(1) 1145411-1* (1) 1145411-3
SIMPLEX 35	RCA MI-9050	2.00 in.	(1) 1145411-1* (1) 1145411-3
BALLANTINE	BALLANTINE	4.00 in.	(4) 1134732-1**
MOTIOGRAPH	MOTIOGRAPH	CONSULT FACTORY	
BAUER	BAUER	CONSULT FACTORY	
NORELCO	NORELCO	NOT APPLICABLE	
CINEMECCANICA	CINEMECCANICA	NOT APPLICABLE	

*Supplied with (4 ea.) 1 in. lg. 1/2-13 hex bolts
(3 ea.) 1 in. lg. 3/8-16 hex bolts
(4 ea.) 1 1/2 in. lg. 3/8-16 hex bolts
(4 ea.) 3/8 flat washers

**Supplied with (4 ea.) 5 1/2 in. lg. 3/8-16 hex bolts
(4 ea.) 3/8 flat washers

Unless otherwise specified, supplied with
(4 ea.) 3 1/2 in. lg. 3/8-16 hex bolts
(4 ea.) 3/8 flat washers

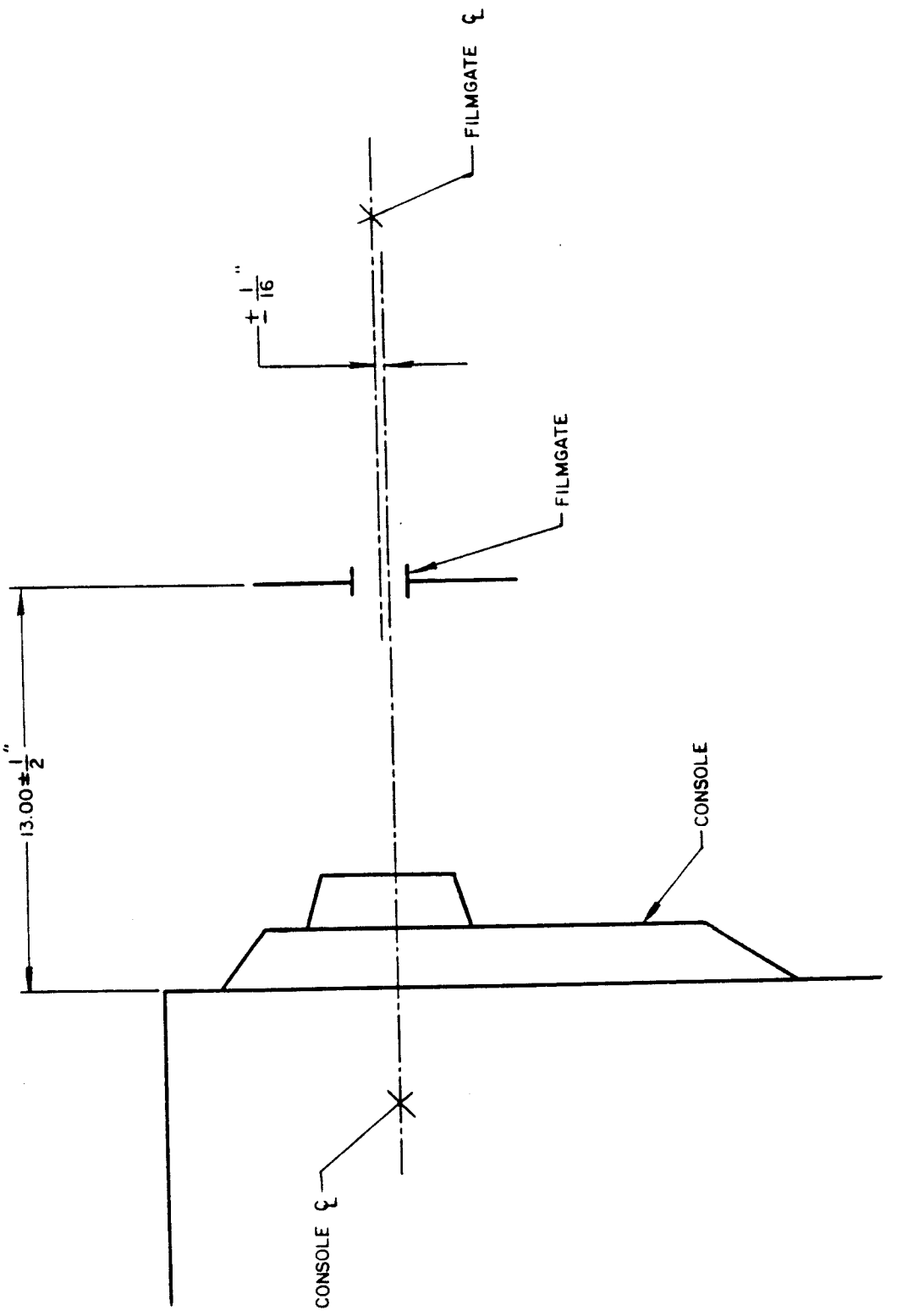


FIGURE 3-2. Projector/Console Alignment Location

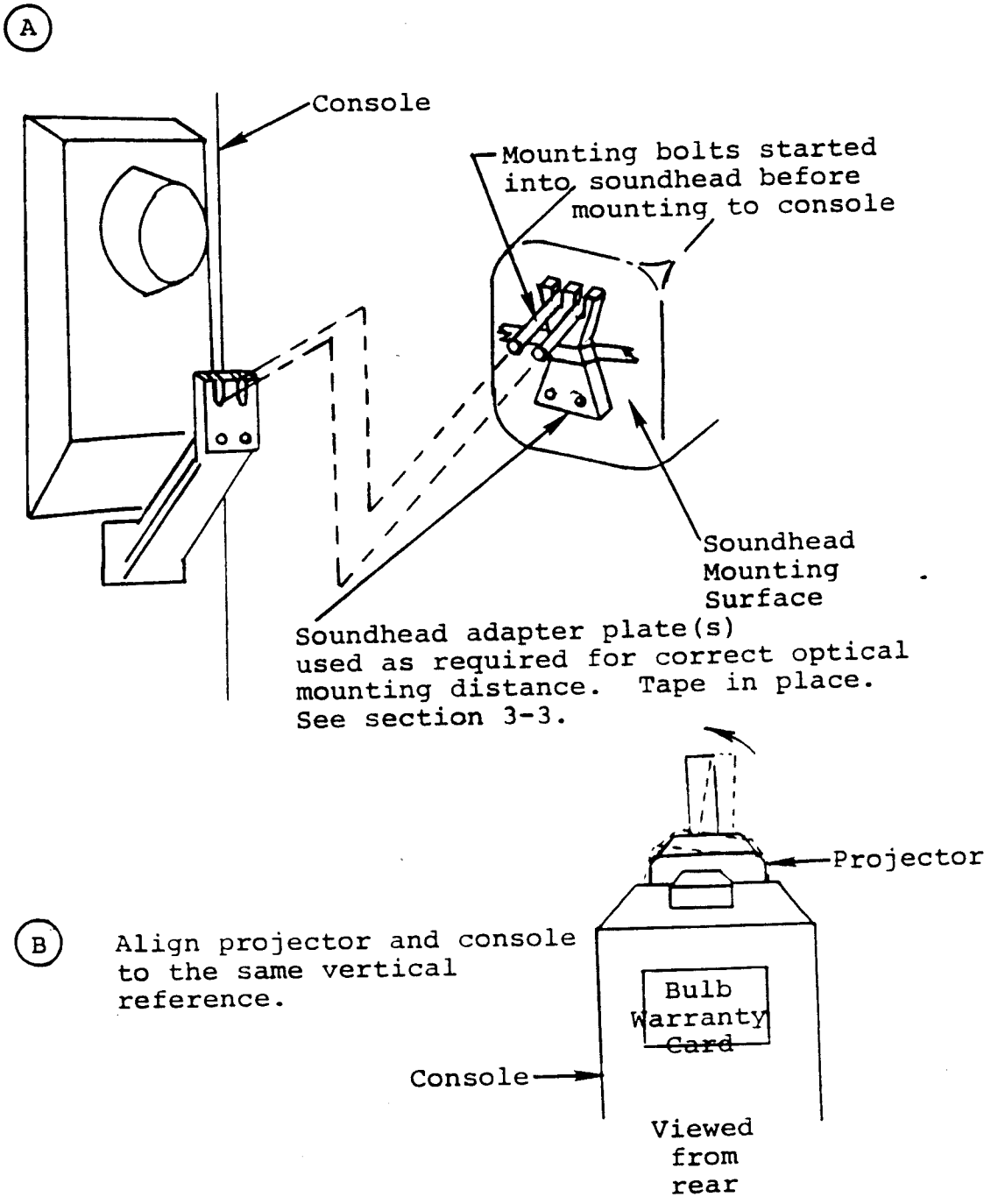


FIGURE 3-3

Mounting Projector To Console

3.4 ELECTRICAL INSTALLATION - BASIC CONSOLE WITH CIRCUIT BREAKER PANEL

The basic console has been pre-wired to minimize installation time. The junction box is located behind the lower non-operating side console panel.

Required current ratings for various input voltage configurations are listed in Table 3-3. Pictorial diagrams show the necessary hook-up for all common 208 VAC or 230 VAC power sources in Figures 3-4 through 3-8.

To connect power, remove the lower non-operating side panel and locate terminal blocks TB-1 and TB-2 in the junction box. Select the proper figure (3-4 through 3-8) for the power source to be connected in the console and wire connections to TB-1 and TB-2 as shown. Knock-outs have been provided below the projector/-soundhead mount for conduit installation from a wall trough. On systems without automation, the 115 VAC projector motor power should be wired to the right side of TB-2 at terminals 2-5 (115V) and 2-10 (115V common).

Additional knock-outs through the console have been provided beside the snout and below the projector and changeover douser. It is recommended that all external wiring be protected by conduit in accordance with prevailing electrical safety codes.

If the console is to be wired to an external automation system, remote control of the lamphouse is available by connections to the light side of TB-2, terminals 2-14, and 2-15. Providing a continuous remote closure across these terminals will energize the lamp on circuitry as the terminals are wired in parallel with the "LAMP ON" switch on the lamp control panel. For remote control, the switch must be left in the off position. For local control, the switch can be placed in the on position which will energize the lamp on circuitry regardless of automation commands. The voltage taps on the power components in the DC power supplies must be adjusted to match the input voltage. All systems are shipped with tap wiring set for the low/medium power range. See Section 4.4.1, 4.5.1, or 4.6.1 for tap adjustment procedure

TABLE 3-3. Maximum Input Current Ratings (Amperes)

SYSTEM	208V, 3φ, 4 wire (w/neutral) See Fig. 3-4			208/240V, 3φ, 3 wire (w/o neutral) and with 115V See Fig. 3-5				230V, 3φδ, with center tap on φB & φC See Fig. 3-6			230V, 1φ, 3 wire (w/neutral) See Fig. 3-7		208/240V, 1φ, 2 wire and 115V See Fig. 3-8		
	φA	φB	φC	φA	φB	φC	115V	φA	φB	φC	Lines A	Lines B	Lines A	Lines B	115V
V1000 (1000W)	32*	27+	10	12	12	0	45‡	12	32*	25+	32*	37+	12	12	45‡
V1600 (1600W)	36*	27+	10	16	16	0	45‡	16	36*	25+	36*	41+	16	16	45‡
V2000 (2000W)	45*	40+	10	25	25	0	45‡	25	45*	25+	45*	50+	25	25	45‡
V3000 (3000W) w/XPS-30	50*	45+	10	30	30	0	45‡	30	50*	25+	50*	55+	30	30	45‡
V3000 (3000W) w/XPS-45	45*	40+	35	25	25	25	45‡	25	45*	50+	N.A.		N.A.		
V4500 (4500W)	50*	45+	40	30	30	30	45‡	30	50*	55+	N.A.		N.A.		

NOTES:

All systems equipped with circuit breaker option.

* - These current values allow for a projector motor surge of 15 amps. Steady-state motor operating current is typically 10 amps less.

\+ - These current values assume 15 amp load on convenience outlet.

2 0 X ... 3-PHASE, 4-WIRE (WITH NEUTRAL)

POWER INPUT

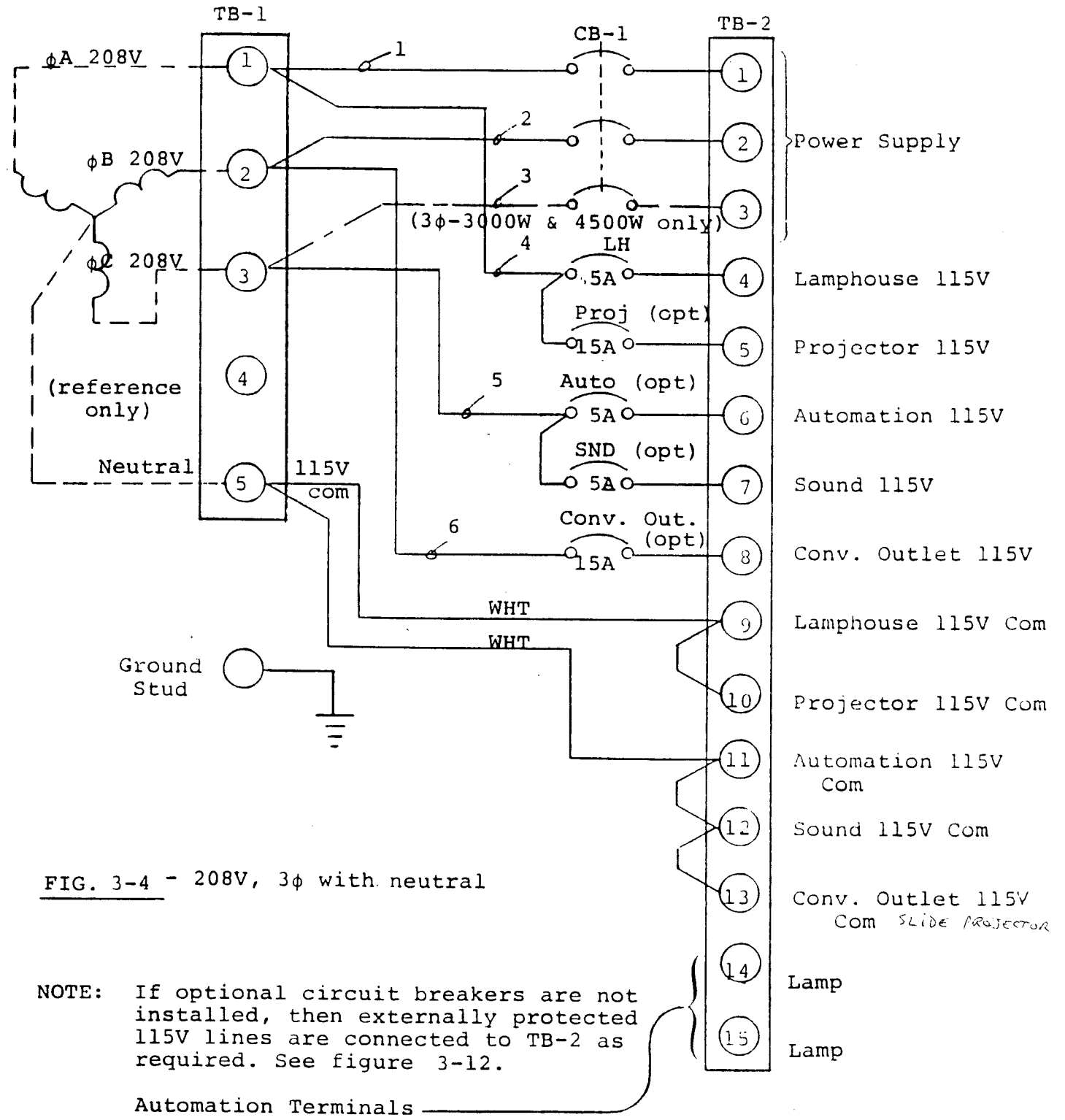


FIG. 3-4 - 208V, 3φ with neutral

NOTE: If optional circuit breakers are not installed, then externally protected 115V lines are connected to TB-2 as required. See figure 3-12.

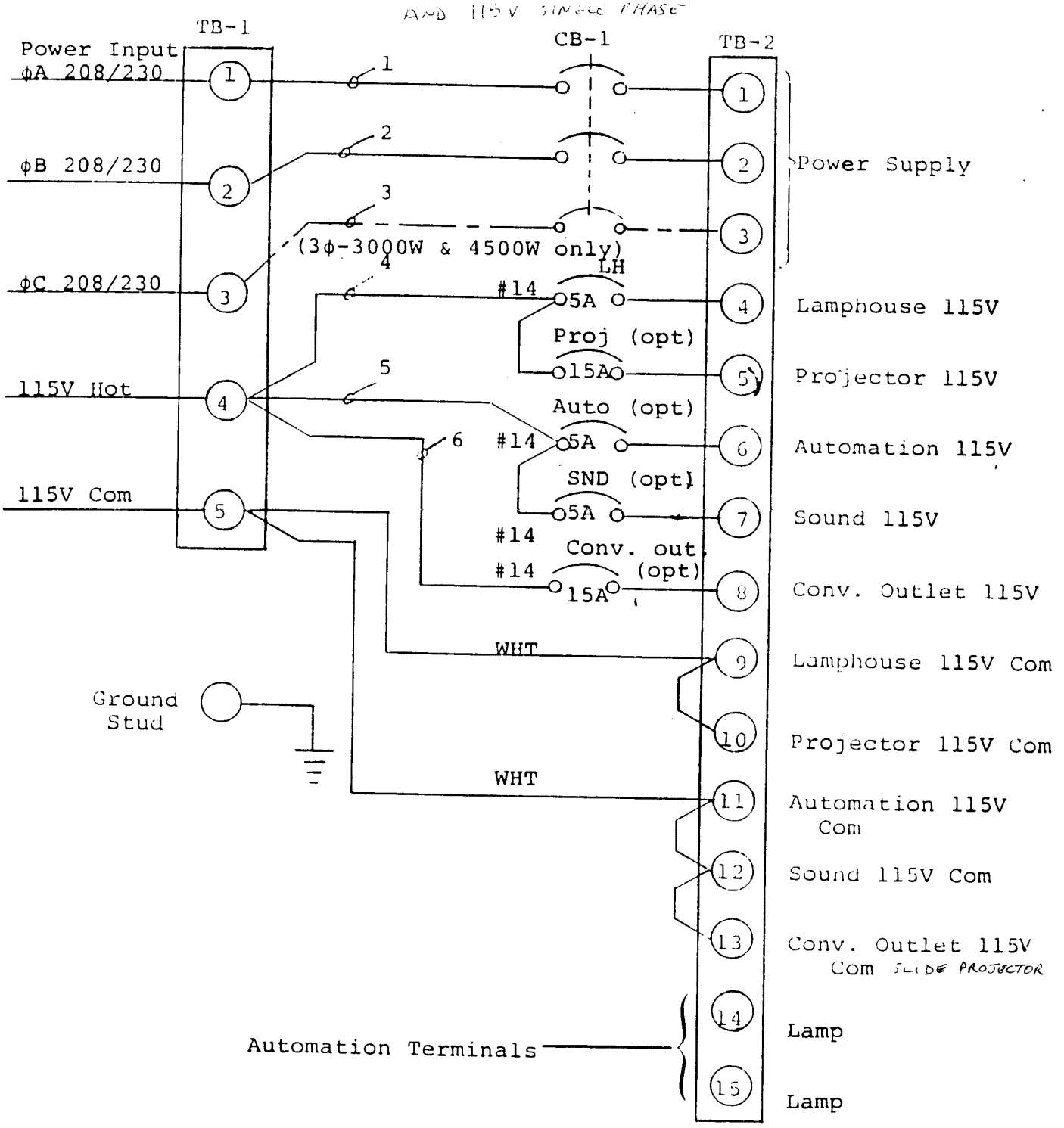


FIG. 3-5 208/230V, 3φ, 3 wire (w/o neutral) and 115V, 1φ

NOTE: If optional circuit breakers are not installed, then externally protected 115V lines are connected to TB-2 as required. See figure 3-12.

3.5 ELECTRICAL INSTALLATION - AUTOMATION & SOUND OPTIONS

Primary power for the automation and sound modules should be provided as shown in Figures 3-4 through 3-8. Interconnecting wiring to theatre equipment is described in detail in the manuals covering the sound and automation system options.

3.6 ELECTRICAL INSTALLATION - BASIC CONSOLE WITHOUT CIRCUIT BREAKER PANEL

It is necessary to provide external circuit breaker protection on the basic console system without the circuit breaker panel option. A terminal board is provided behind the upper non-operating side panel for connection of 115 VAC control power. Power connection for 208/230 VAC input to the power supplies must be made directly to the power supply terminals (see Figures 3-9, 3-10, 3-11, and 3-12).

3.7 INITIAL BULB INSTALLATION (XL-1000W - XL-1600W)

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 unenclosed bulb unless protective face mask is worn. Bulb should never be handled outside its protective container or covering unless protective clothing consisting of gloves, protective face shield extending below the neck area, and heavy material jacket is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

1000 WATT AND 1600 WATT POWER SUPPLIES

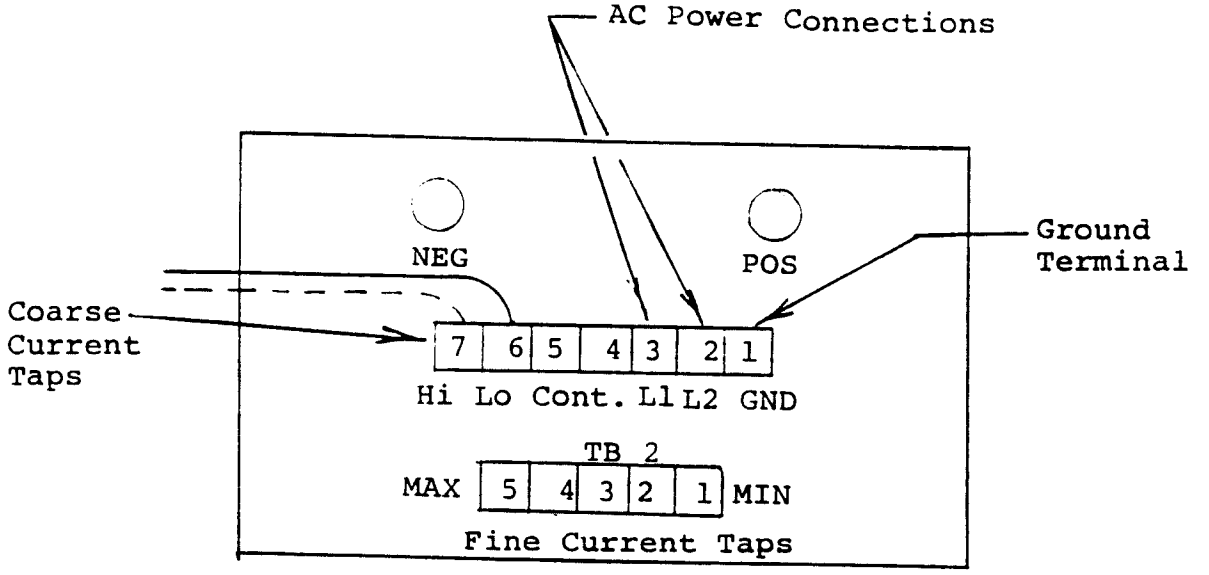
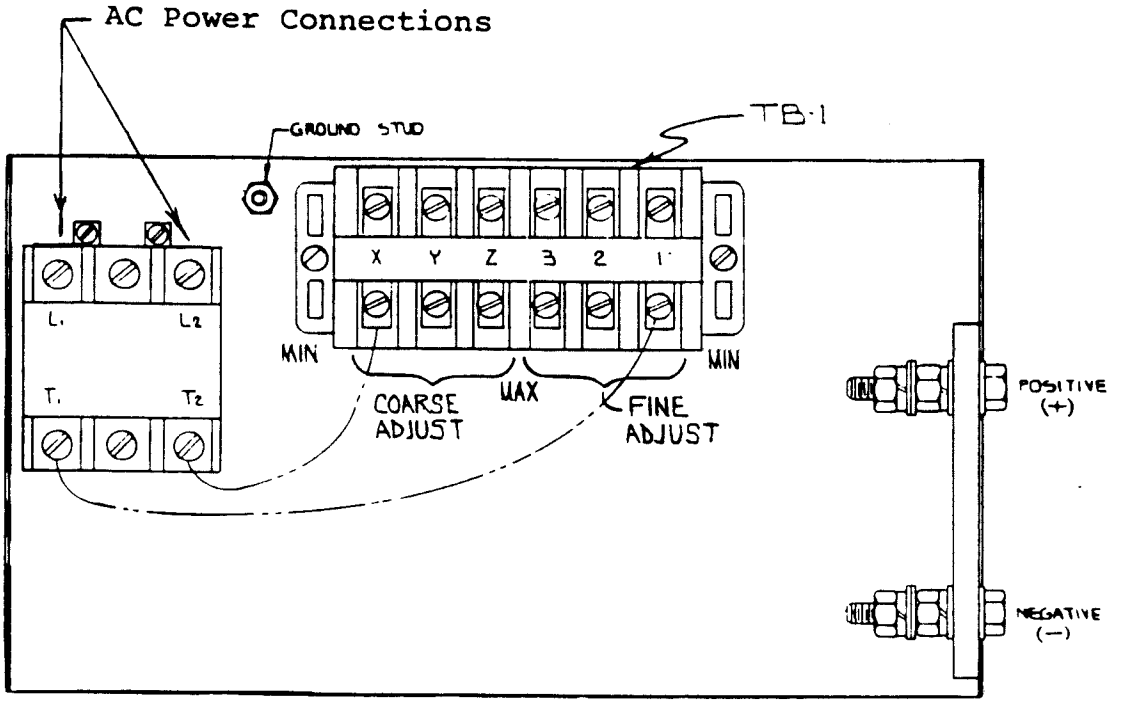


FIGURE 3-9. Interconnection Terminals - XPS-10 and XPS-16 Power Supply



2000 WATT AND 3000 WATT POWER SUPPLIES

FIGURE 3-10. Interconnection Terminals - XPS-20 and XPS-30 Power Supply

4500 WATT Power SUPPLY

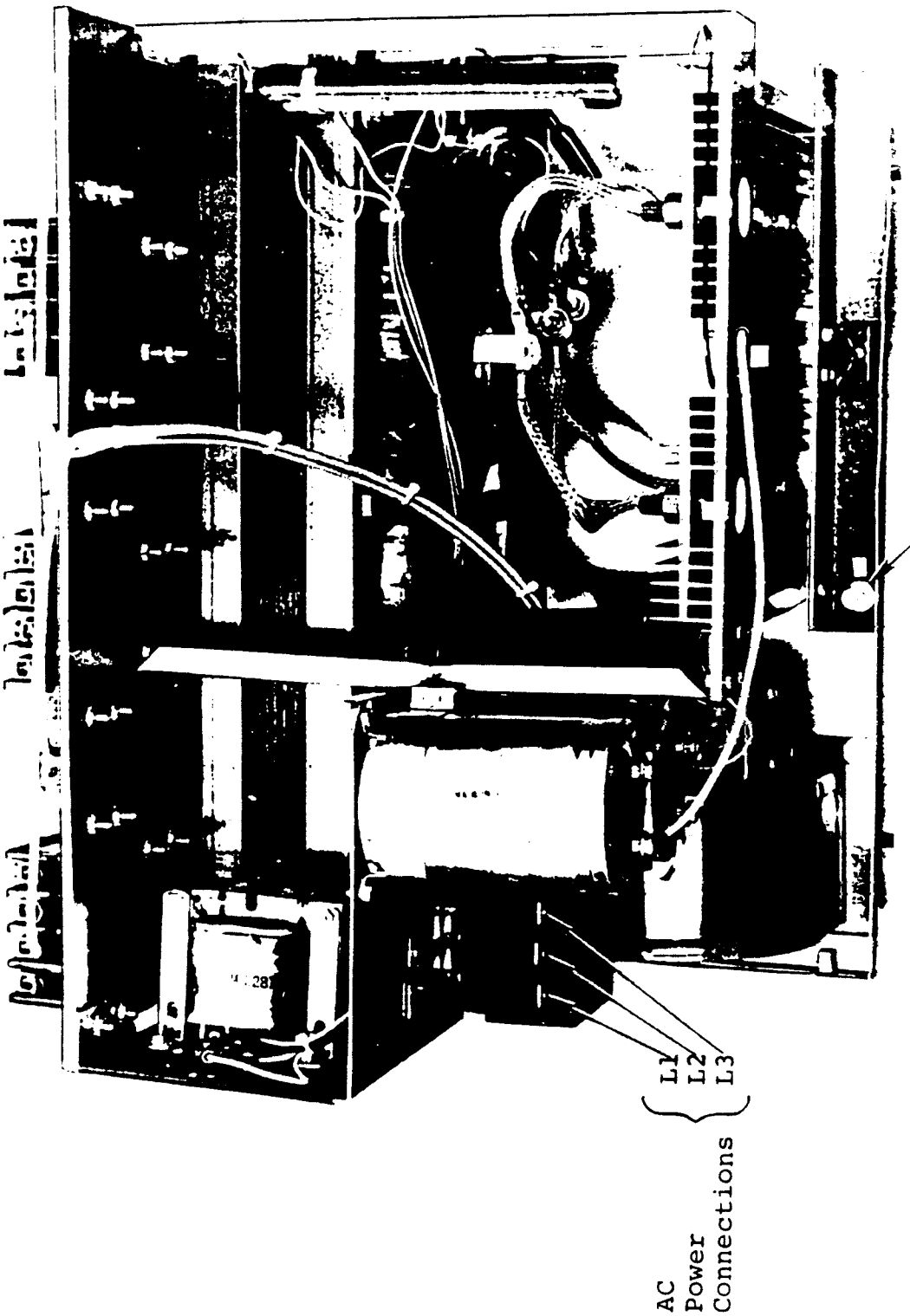
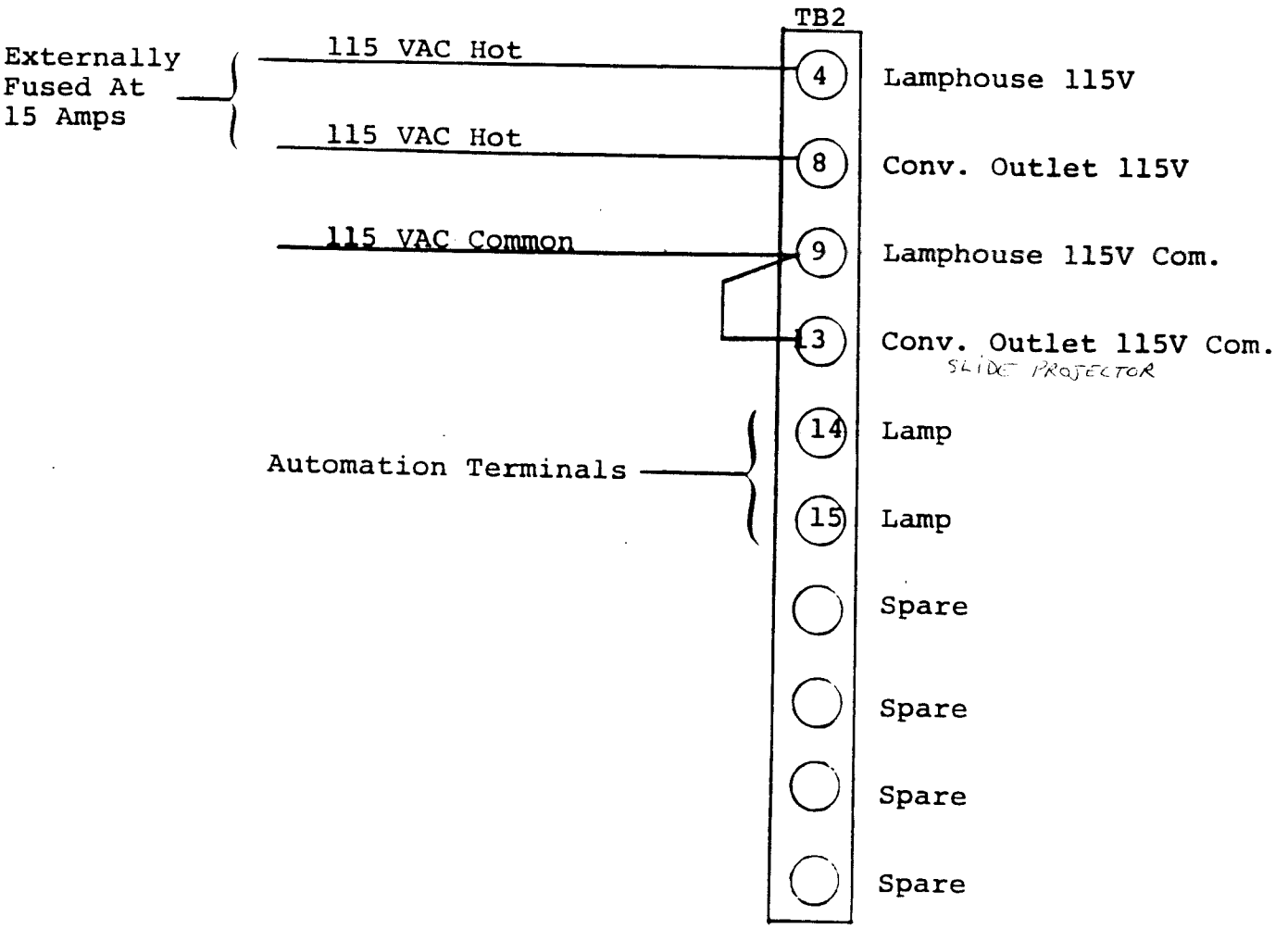


FIGURE 3-11. Interconnecting Terminals XPS-45 Power Supply



The 208/230 VAC as required is wired directly to the "LINE" terminals in the power supply. See figs. 3-9 thru 3-11. External overload protection is required.

FIGURE 3-12

Hook-Up Wiring For Systems Without Circuit Breaker Panel Option

a. Unlock the lamp access panel with the key which has been attached to the douser handle for shipment.

b. Take out the four screws from the lamp access panel (see Figure 1-1) and remove the panel from the console.

c. Remove the two retaining screws from the safety door located behind the lamp access panel and swing it open.

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 cathode (-) end of the bulb.

e. Find the cathode adapter (P/N 1121700-3) in the box of installation hardware and thread it on to the cathode fitting of the xenon bulb until snug.

f. 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. Locate the plug below the snout on the front panel of the console and snap it out of the access hole. Tighten the 5/32 inch hex head cap screw located in the hole until the xenon bulb is firmly secured. Replace the plug in the access hole.

g. 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.

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

i. Place the anode connector over the anode stud of the bulb and carefully tighten the hex set screw in 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 to the bulb.

CAUTION

Make sure front lead from igniter to bulb is not touching any part of mirrors or high voltage arcing and shorting may occur. Make sure PVC air tubes are pointed toward the bottom of the bulb connection.

j. Close the safety door and secure it with two screws.

k. The lamp access panel will be replaced after initial optical alignment is verified.

3.8 INITIAL BULB INSTALLATION (XL-2000W thru XL-4500W)

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 unenclosed bulb unless protective face mask is worn. Bulb should never be handled outside its protective container or covering unless protective clothing consisting of gloves, protective face shield extending below the neck area, and heavy material jacket is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

a. Unlock the lamp access panel with the key which has been attached to the douser handle for shipment.

b. Take out the four screws from the lamp access panel (Figure 1-1) and remove the panel from the console.

c. Remove the two retaining screws from the safety door located behind the lamp access panel and swing it open.

d. (V3000 and V4500 systems only) Locate the ceramic stand-off mounted to the heat shield wrap on the operator side of the console. Remove the safety wire connection from the stand-off and place the safety wire so that it hangs behind the reflector.

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

f. (XL-2000W - XL-3000W bulbs only) Find the cathode adapter (P/N 1121237) in the box of installation hardware and attach it to the cathode (-) fitting of the xenon bulb with a 3/32 inch hex wrench. The fittings on the bulb are sized to prevent installing the bulb backwards.

g. Loosen the two ties on the wrap, but do not remove the wrap.

h. 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 (and adapter) are seated against the mating surface. Locate the plug below the snout on the front panel of the console and snap it out of the access hole. Tighten the 5/32 inch hex head cap screw located in the hole until the xenon bulb is firmly secured. Replace the plug in the access hole.

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

j. (V3000 and V4500 systems only) Slip the safety wire fitting over the anode (+) stud of the bulb and secure the loose end to the stand-off from which it was removed.

k. Connect the front lead to the bulb. Attach the anode connector in place over the anode stud with a 3/32 inch hex wrench.

CAUTION

Make sure front lead from ignitor to the bulb is not touching any part of mirrors or high voltage arcing and shorting may occur. Make sure PVC air tubes are pointed toward the bottom of the bulb connection.

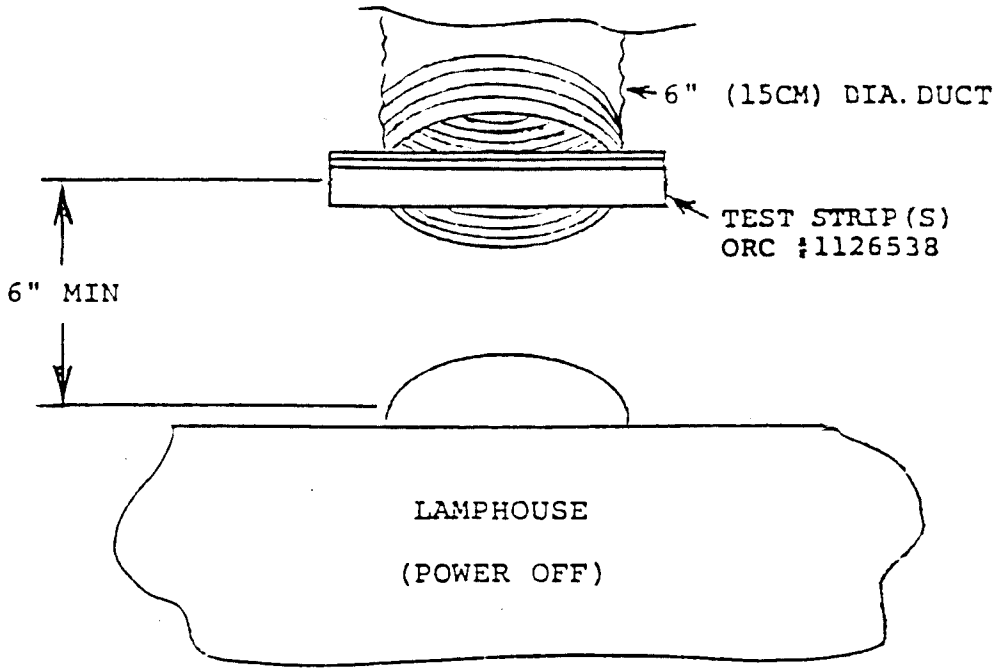
l. Close the safety door and secure it with two screws. Check that the plastic wrap has been removed.

m. The lamp access panel will be replaced after initial optical alignment is verified.

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 the sketch on page two. Refer to the table 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 <u>not</u> placed side by side.) and that it is not necessary to tape them together.

Optical Radiation Corporation	SIZE A	CODE IDENT NO. 33030	DOC. NO. D113217	
	SCALE		REV	SHEET 1 OF 2



NUMBER OF STRIPS	AIRFLOW 6" DIAMETER	MAXIMUM LAMP POWER
1	100 L/SEC / 200 CFM	1600 WATTS
2	150 L/SEC / 300 CFM	3000 WATTS
3	200 L/SEC / 400 CFM	4500 WATTS

Optical Radiation Corporation	SIZE A	CODE IDENT NO. 33030	DOC. NO. D113217	
	SCALE		REV	SHEET 2 OF 2

4.1 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 the console.

4.2 DESCRIPTION OF CONTROLS-CIRCUIT BREAKER PANEL (OPTIONAL) (See Figures 1-1 and 4-1 for Location)

4.2.1 LAMPHOUSE

The "LAMPHOUSE" circuit breaker (five amps) controls 115 VAC to the lamphouse blowers and the xenon lamp control panel. The "POWER" indicator on the control panel lights when the "LAMPHOUSE" circuit breaker is closed.

4.2.2 RECTIFIER

The "RECTIFIER" circuit breakers are two or three ganged breakers which control the 208 or 230 VAC lines to the power supply. The following table lists the current rating of the "RECTIFIER" circuit breakers for the various systems.

Console Model	Power Supply	Circuit Breaker Rating
V1000	XPS-10	2 POLE 15A
V1600	XPS-16	2 POLE 20A
V2000	XPS-20	2 POLE 25A
V3000	XPS-30 or XPS-45	2 POLE 30A or 3 POLE 30A
V4500	XPS-45	3 POLE 30A

4.2.3 PROJ

The "PROJ" (projector) circuit breaker (15 amps) controls 115 VAC to junction box terminal TB2-5 for connection to the projector motor.

4.2.4 AUTO SYSTEM

The "AUTO (automation) SYSTEM" circuit breaker (five amps) controls 115 VAC to the optional automation system.

4.2.5 SOUND SYSTEM

The "SOUND SYSTEM" circuit breaker (five amps) controls 115 VAC to the optional sound system.

4.2.6 CONV OUTLET

The "CONV (convenience) OUTLET" circuit breaker (15 amps) controls 115 VAC to the four convenience outlet jacks located on the non-operating side of the console.

4.3 DESCRIPTION OF CONTROLS - XENON LAMP CONTROL PANEL (See Figures 1-1 and 4-2 for Location)

4.3.1 POWER

The "POWER" indicator is lit whenever the "LAMPHOUSE" circuit breaker is closed.

4.3.2 LAMP

The "LAMP" toggle switch, when closed, provides 115 VAC to the power supply contactor and ignitor control circuitry, and lights the "LAMP ON" indicator if the "LAMPHOUSE" circuit breaker is closed. When an automation system is used, closure across the automation lamphouse terminals in the junction box parallels the function of the "LAMP" switch.

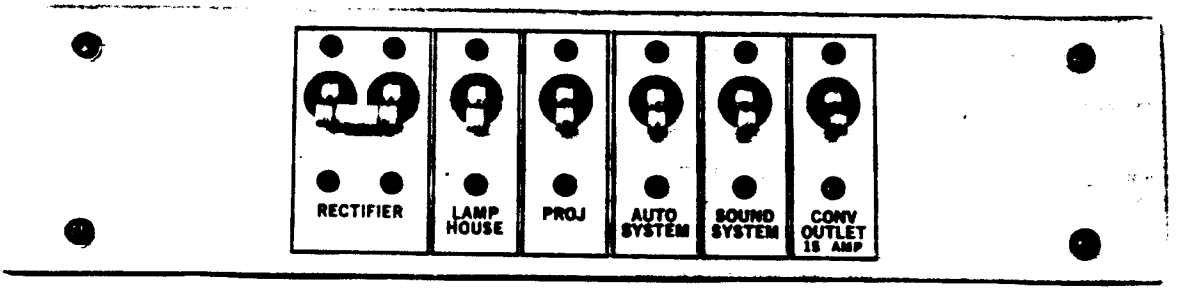


FIGURE 4-1

Circuit Breaker Panel

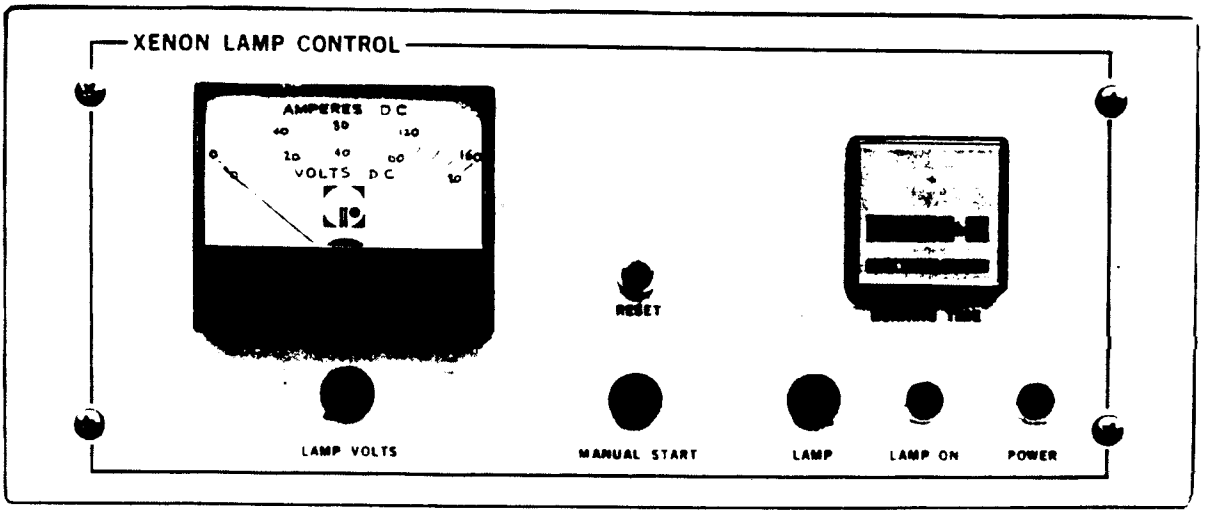


FIGURE 4-2

Xenon Lamp Control Panel

4.3.3 LAMP ON

The "LAMP ON" indicator is lit by closure of the "LAMP" switch or closure across the automation lamphouse terminals in the junction box, provided the door interlock switch and air flow sensor switch (3000 and 4500 Watt systems only) are both closed.

4.3.4 MANUAL START

The "MANUAL START" momentary toggle switch is used only as an emergency override if the automatic bulb ignition circuit fails to start the xenon bulb.

CAUTION

Do not operate the "MANUAL START" switch unless necessary. When using the switch, activate for approximately one second. Prolonged closure decreases the life of the electrodes within the bulb.

4.3.5 RESET

The "RESET" circuit breaker protects the ignitor circuit from overload.

4.3.6 LAMP VOLTS

The "LAMP VOLTS" momentary toggle switch controls the function of the meter above it. The meter indicates DC amps to the bulb when the switch is in its normal position. Activating the switch to the upper position switches the meter circuitry to read voltage across the bulb.

4.3.7 RUNNING TIME

This meter indicates hours of operating time of the system. It is energized whenever the "LAMP ON" indicator is lit.

4.4 DESCRIPTION OF CONTROLS - 1000 WATT AND 1600 WATT POWER SUPPLIES (See Figure 4-3)

The power supply contactor is controlled by the "LAMP" toggle switch on the Xenon Lamp Control Panel. Power to the contactor terminals is first routed through the "RECTIFIER" circuit breakers on the circuit breaker panel.

4.4.1 Current Control Taps

> Before changing current taps on these sytems, disconnect system power at the main breaker or fuse box and be certain that the "RECTIFIER" circuit breaker in the circuit breaker panel is turned off.

Access to the current control taps is gained by removing the lower panel on the operating side. The following is a general procedure for adjusting the bulb current taps.

a. Remove power to the console.

b. Remove the lower panel on the operator side of the console and locate the interconnecting terminal board on the power supply (see Figure 4-3).

c. Coarse adjustment of current is set by positioning the associated tap wire on TB1-6 (low) or TB1-7 (high). See Figure 3-9.

d. The minimum fine current setting is obtained by fastening the tap wire to TB2 terminal 1.

e. Bulb current can be increased incrementally by repositioning the tap wire from TB2 terminal 1 through TB2 terminal

1000 WATT AND 1500 WATT [illegible]

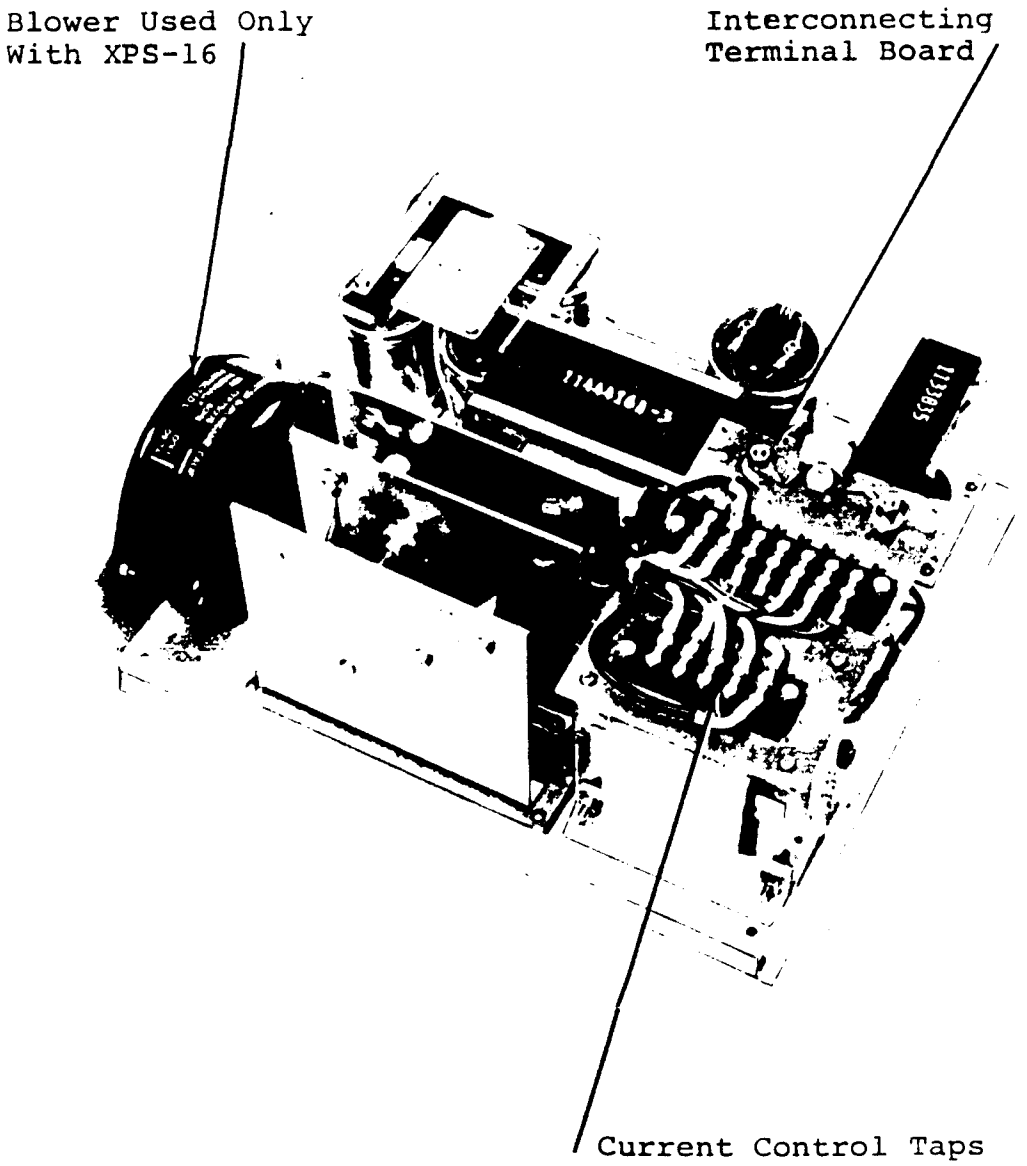


FIGURE 4-3

XPS-16 Power Supply (Similar To XPS-10)

5. The current range of the XPS-10 supply is approximately 30 to 50 amps while the XPS-16 output varies from approximately 40 to 65 amps. Figures 4-4 and 4-5 show typical bulb current versus tap positions for the two supplies.

4.5 DESCRIPTION OF CONTROLS - 2000 WATT AND 3000 WATT POWER SUPPLIES (See Figure 4-6)

The power supply contactor is controlled by the "LAMP" toggle switch on the Xenon Lamp Control Panel. Power to the contactor terminals is first routed through the "RECTIFIER" circuit breakers on the circuit breaker panel.

4.5.1 Current Control Taps

WARNING

Before changing current taps on these systems, disconnect system power at the main breaker or fuse box and be certain that the "RECTIFIER" circuit breaker in the circuit breaker panel is turned off.

Access to the current control taps is gained by removing the lower panel on the operating side. The following is a general procedure for adjusting the current taps.

a. Remove power to the system.

b. Remove the lower panel on the operator side of the console and locate terminal board TB-1 (see Figure 4-6).

c. The coarse current adjust tap should be attached to TB1-X for low current operation, TB1-Y for medium current operation, or TB1-Z for higher output (see Figure 3-10).

d. The minimum current setting on the fine adjust current taps is obtained by fastening the associated tap wire to TB1 terminal 1 (see Figure 3-10).

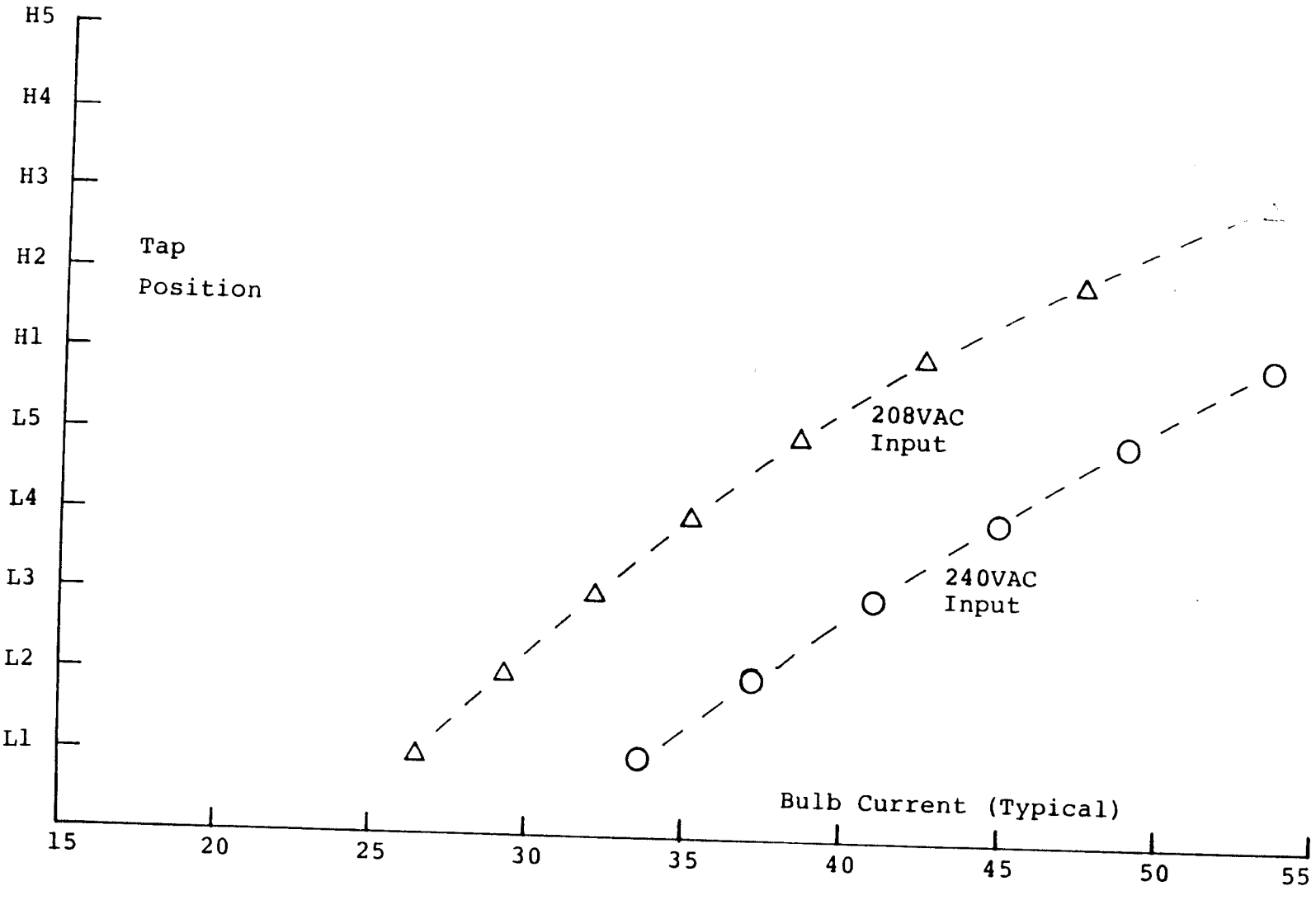


Figure 4-4. Tap Position Versus Typical Bulb Current (XPS-10)

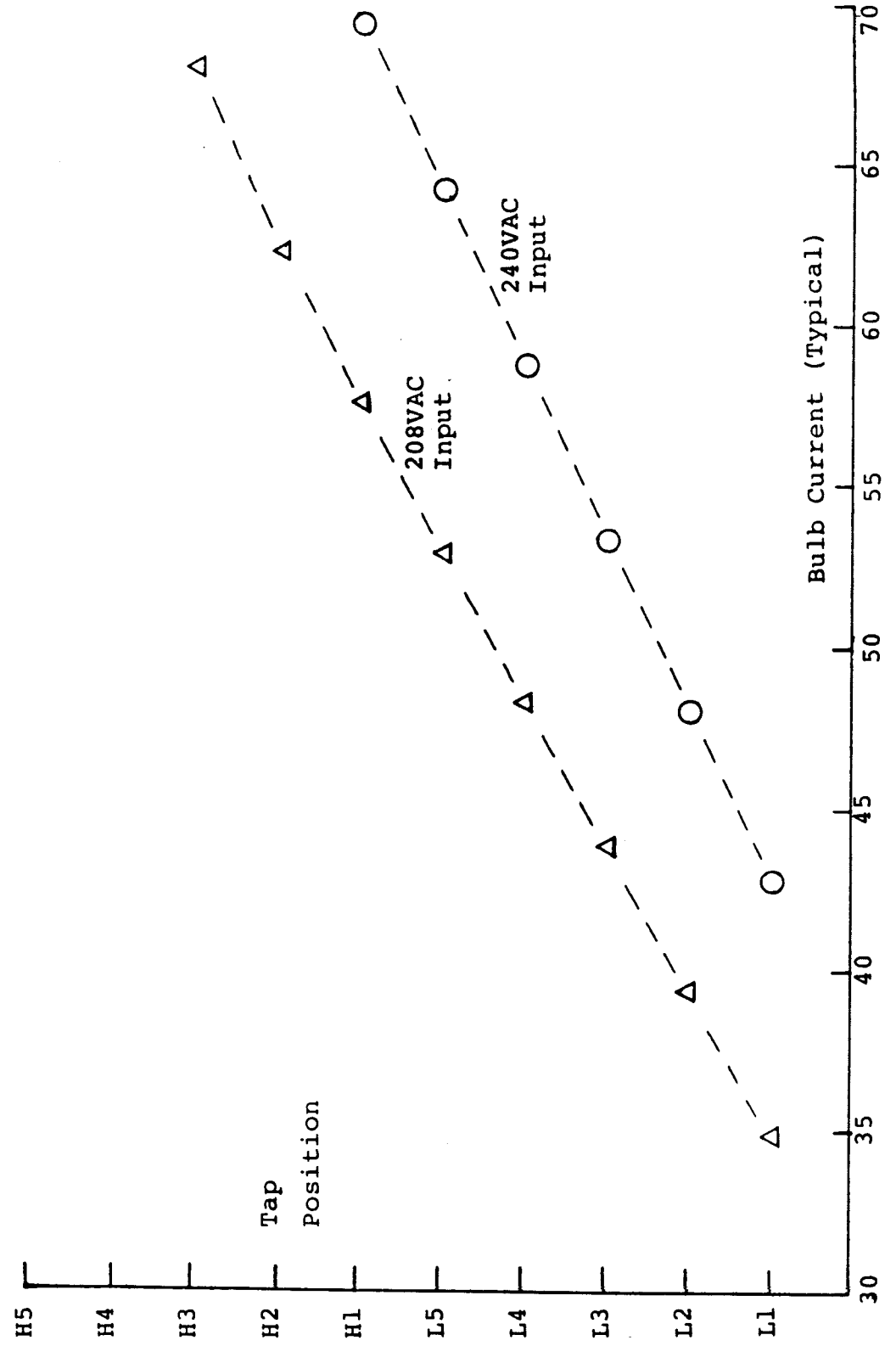


Figure 4-5. Tap Position Versus Typical Bulb Current (XPS-16)

2000 WATT AND 3000 WATT POWER SUPPLY

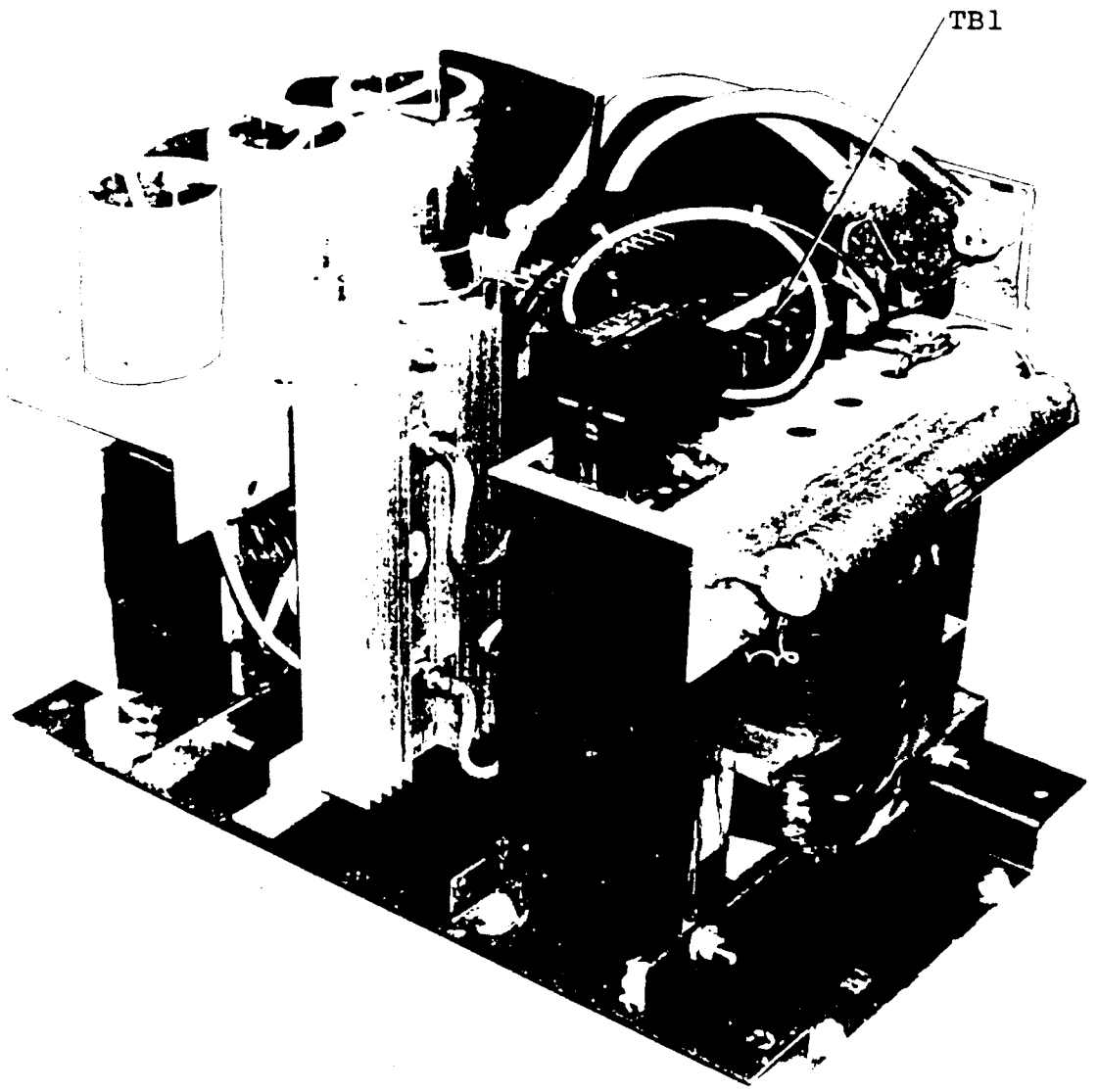


FIGURE 4-6
XPS-20 Power Supply (Similar to XPS-30)

e. Bulb current can be increased incrementally by repositioning the tap wire from TB1 terminal 1 through TB1 terminal 3. The current range of the XPS-20 supply is approximately 55 to 85 amps, while the XPS-30 output varies from approximately 65 to 100 amps.

Figures 4-7 and 4-8 show typical bulb current versus tap positions. Note that a one-step coarse adjustment is equivalent to four fine adjustment increments.

For initial alignment, it is recommended that the taps be set to the "X/1" position for 240 volt AC input, or the "Y/1" position for 208 volt input.

4.6 DESCRIPTION OF CONTROLS - 4500 WATT POWER SUPPLY (See Figure 4-9)

The power supply contactor is controlled by the "LAMP" toggle switch on the Xenon Lamp Control Panel. Power to the contactor terminals is first routed through the "RECTIFIER" circuit breakers on the circuit breaker panel.

4.6.1 Current Control Taps

WARNING

Before changing current taps on these systems, disconnect system power at the main breaker or fuse box and be certain that the "RECTIFIER" circuit breaker in the circuit breaker panel is turned off.

Access to the current control taps is gained by removing the lower panel on the operating side. The following is a general procedure for adjusting the bulb current taps.

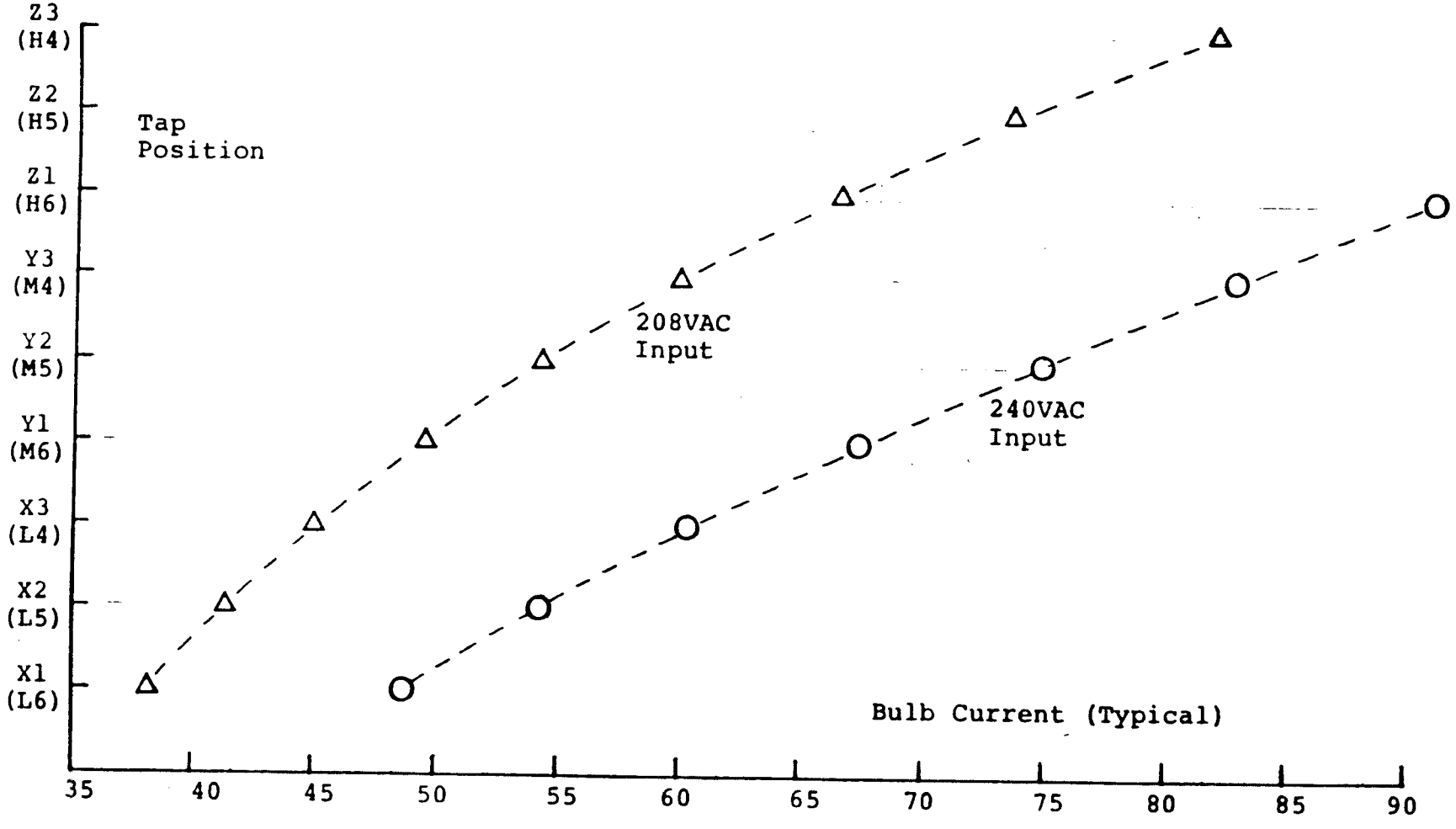


Figure 4-7 Tap Position Versus Typical Bulb Current (XPS-20)

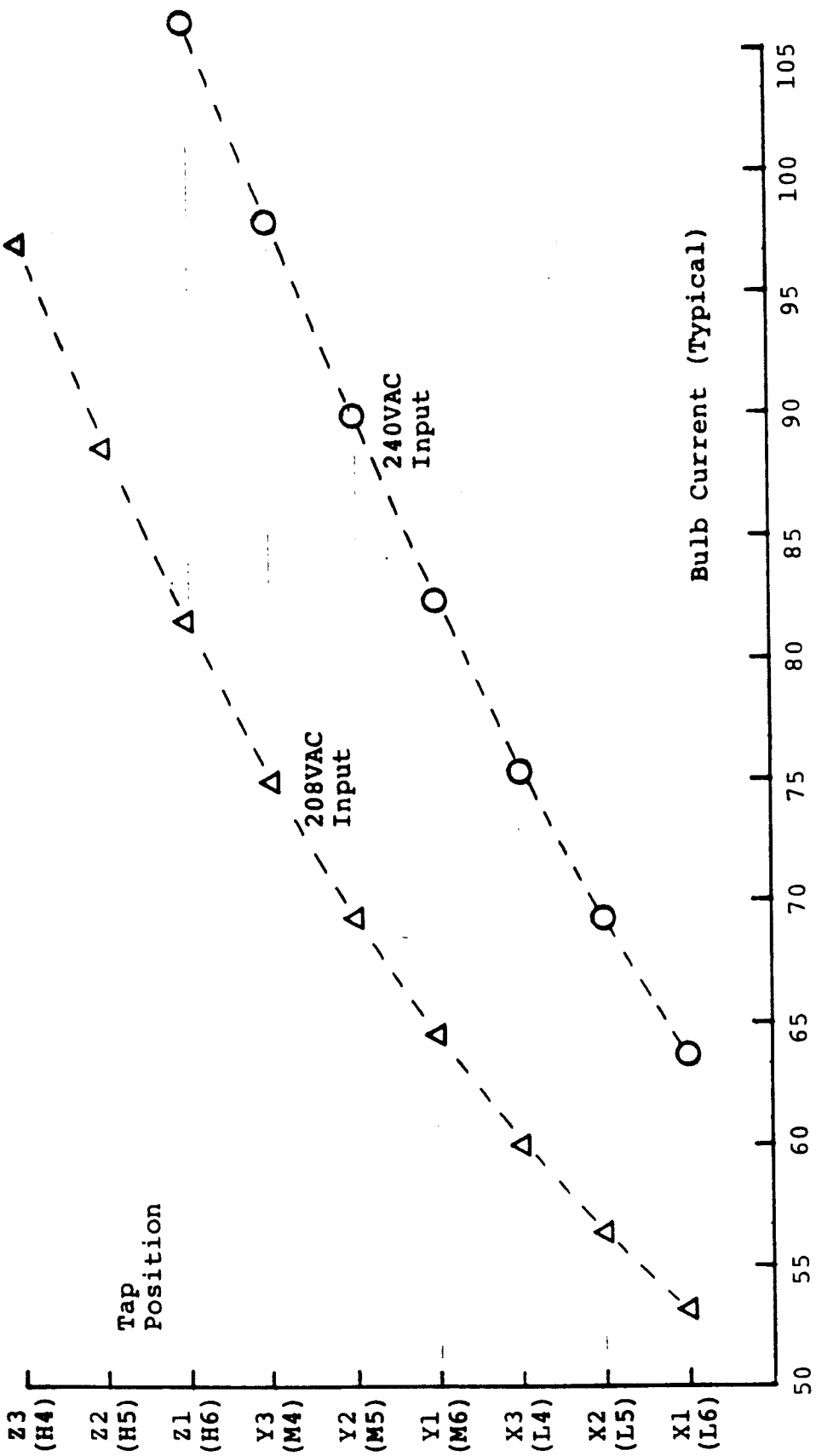


Figure 4-8. Tap Position Versus Typical Bulb Current (XPS-30)

4500 WATT POWER SUPPLY

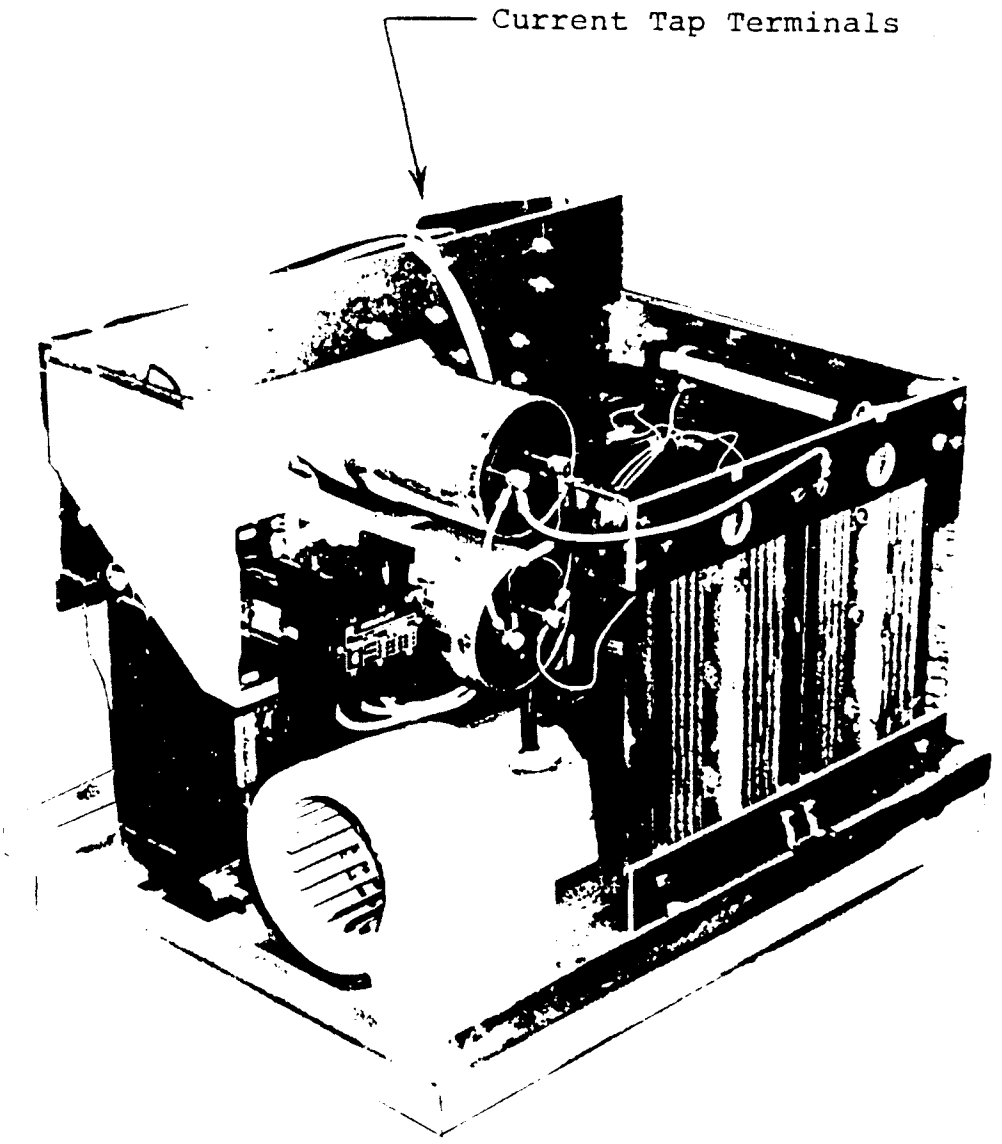


FIGURE 4-9

XPS-45 Power Supply

a. Remove power to the console.

b. Remove the lower panel on the operator side of the console and locate the current tap terminals above the main power transformer of the power supply (see Figure 4-9).

c. Coarse current changes are effected by moving each of the three wires to the appropriate letter on the "WXYZ" terminal taps. Note that "W" is the lowest current tap and "Z" is the maximum (see Figure 4-10).

IMPORTANT

When changing the "WXYZ" taps, all three wires must be connected to the same relative terminal (W, X, Y or Z). Failure to observe this rule will result in excessive bulb current ripple which will shorten bulb life.

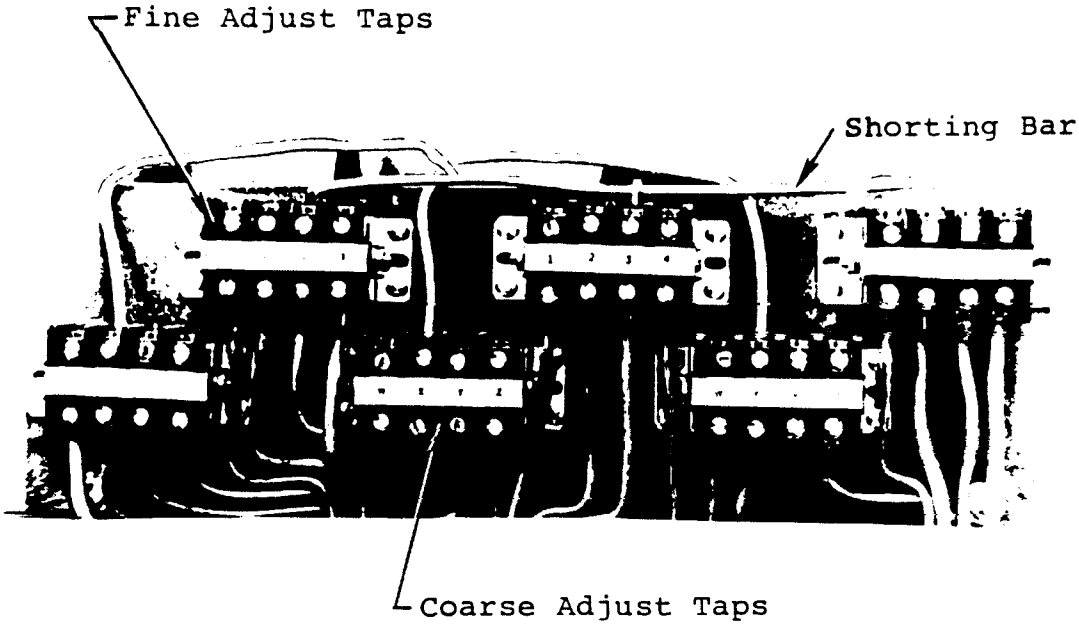


Figure 4-10. XPS-45 Tap Description

d. Fine current adjustments are made by moving the shorting bar on the "1, 2, 3, 4" terminal strips. The current increases with the higher numbers. Typical lamp current versus tap positions are shown in Figure 4-11. Note that a one-step coarse adjustment is equivalent to five fine adjustment increments.

For initial alignment it is recommended that the taps be set to the "W/1" positions for 240 volt AC input, or the "X/1" posititions for 208 volt inputs.

4.7 MIRROR ALIGNMENT CONTROLS

4.7.1 Reflector

The focus plate assembly contains the reflector and focus mechanism. The entire assembly is adjustable in the horizontal plane so the reflector may be positioned to center the folded light beam in the optical axis of the projector (see Figure 4-12). The assembly is secured by three 5/32" hex head cap screws located on opposite sides of the reflector. Loosening the cap screws slightly frees the assembly for adjustment. (It may be necessary to remove the upper panel on the non-operating side of the 4500 Watt console to gain access to the rear screw securing the focus plate assembly.)

4.7.2 Folding Mirror

The folding mirror is aligned at the factory. The procedure outlined in Section 3.2 and Figure 3.1 should be followed to verify that the mirror has not been jarred out of alignment during shipment. Adjustment of the folding mirror is discouraged unless the above procedure indicates that correction is necessary.

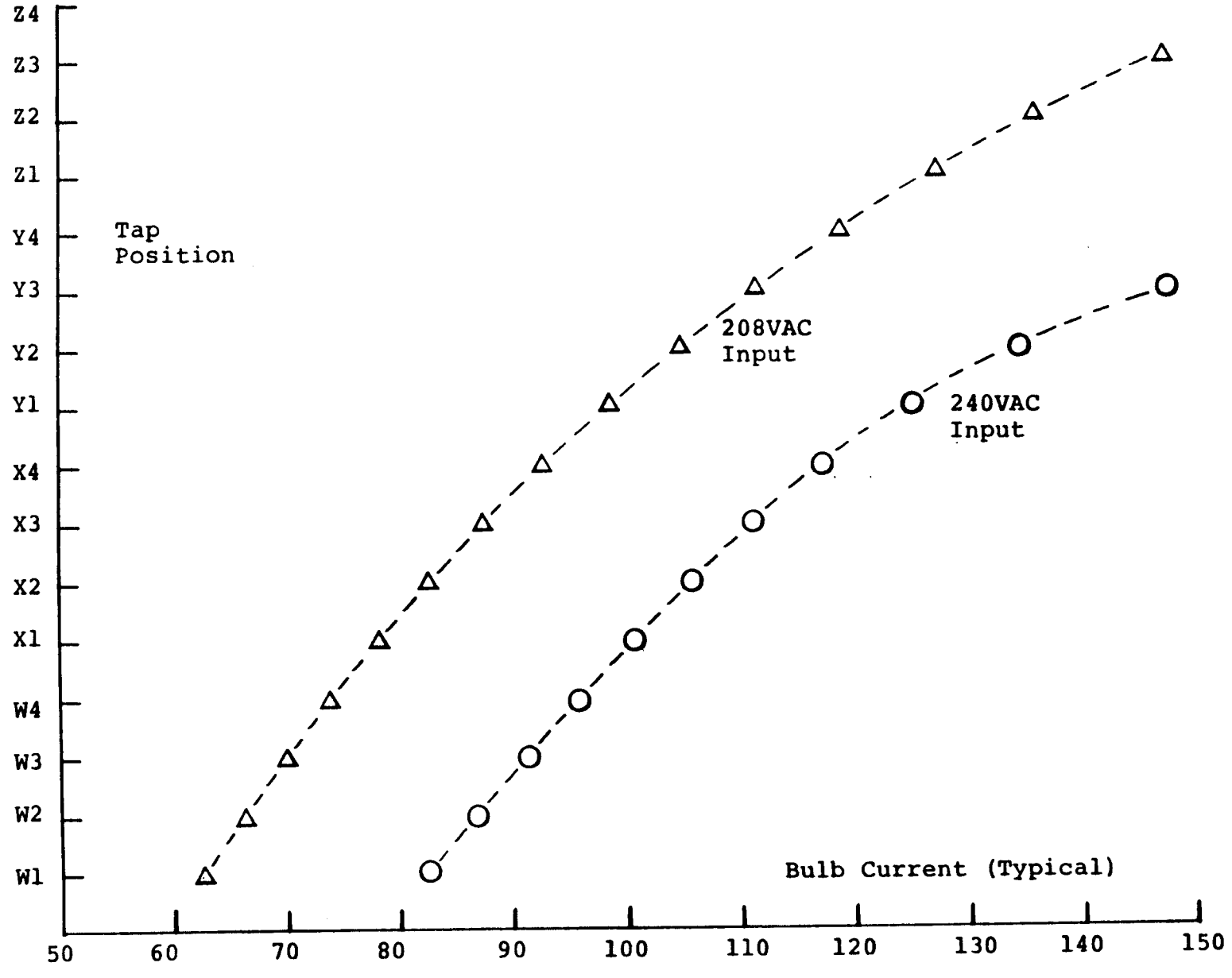


Figure 4-11. Tap Position Versus Typical Bulb Current (XPS-45)

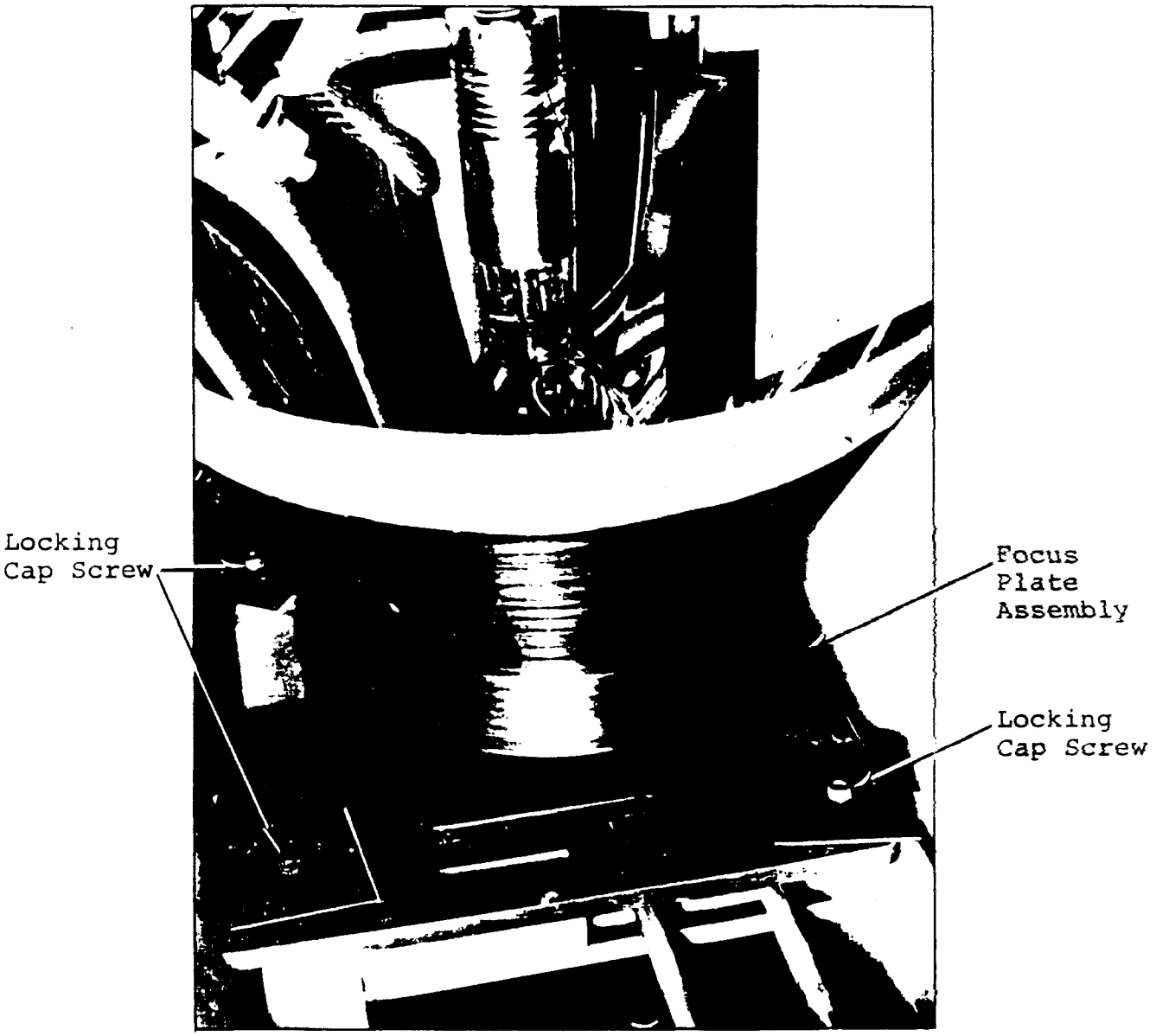


FIGURE 4-12

Focus Plate Assembly Adjustment

4.8 BULB ALIGNMENT CONTROLS

4.8.1 LAMP FOCUS

The two lateral "LAMP FOCUS" adjustments located below the lamp access panel on the operator's side of the console are used to center the bulb in the reflector. Directional arrows beside the adjustment shafts indicate the direction of movement of the bright image on the screen.

4.8.2 BEAM SPREAD

The "BEAM SPREAD" adjustment shaft is located below the "LAMP FOCUS" adjustment and is used to spread the bright image on the screen for desired uniformity. Counterclockwise rotation of the beam spread rod focuses the beam into a small bright spot on the screen.

4.9 INITIAL START-UP PROCEDURE

Complete installation as outlined in Sections 3.1 through 3.8. 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 supplies for the minimum output current. This minimizes the possibility of damaging the system optics due to misalignment. Refer to section 4.4.1, 4.5.1, or 4.6.1 for tap adjustment procedure.

b. Turn off all breakers in the circuit breaker panel and apply primary power to the system.

c. Close the console douser.

NOTE (continued)

If the bulb ignites (flashes) but does not remain lit, de-energize the system and reset the power supply current taps to the next higher "FINE ADJUST" tap.

i. Turn on the "PROJ" circuit breaker to energize the projector.

j. Turn on the "CONV OUTLET" to energize the four 115 VAC outlets on the non-operating side of the console.

k. Refer to section 5.2 for initial optical alignment procedure.

4.10 START UP PROCEDURE - ALIGNED SYSTEM

4.10.1 Manual Turn-On procedure

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

a. Turn all breakers in the circuit breaker panel OFF and apply primary power to the system.

b. Close the console douser.

c. Turn on the "LAMPHOUSE" circuit breaker. This applies power to the console blowers and lights the "POWER" indicator on the Xenon Lamp Control Panel.

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

e. Turn on the "LAMP" switch on the Xenon Lamp 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.

NOTE

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.

f. Turn on the "CONV OUTLET" to energize the four 115 VAC outlets on the non-operating side of the console.

g. The projector is energized by turning the "PROJ" circuit breaker on. Thread the projector.

h. Close the changeover douser, energize the projector, open the console douser, and then open the changeover douser to project light on the screen.

CAUTION

Never open the console 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 changeover douser for more than 60 seconds at a time. Do not operate the xenon bulb for extended periods of time with the console douser closed, especially on higher power systems.

4.10.2 Automation Turn On Procedure

a. Turn on all circuit breakers in the circuit breaker panel.

b. Consult the automation system manual for procedures in energizing the system.

4.11 MANUAL SYSTEM SHUT DOWN

The following procedure is recommended:

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

b. Shut the projector motor off by opening the "PROJ" circuit breaker.

c. De-energize the xenon bulb by switching the "LAMP" switch off, and then open the "RECTIFIER" circuit breakers.

NOTE

It is strongly recommended that the lamphouse blowers be left on for approximately 15 minutes after the xenon bulb has been extinguished.

d. Allow the xenon bulb to be cooled by the system blowers for 15 minutes and then open the "LAMPHOUSE" circuit breaker.

WARNING

Remove all power from the console before servicing.

SECTION 5 - OPTICAL ALIGNMENT

5.1 GENERAL

The console must be mechanically aligned as described in Sections 3.2 and 3.3. The snout of the console should be lined up roughly on the optical centerline of the projector as shown in Figure 3-2. Observe the 13 inch mounting distance.

5.2 INITIAL OPTICAL ALIGNMENT PROCEDURE

Complete the initial start-up procedure outlined in Section 4.9. The following procedure describes the recommended method of initial optical alignment.

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

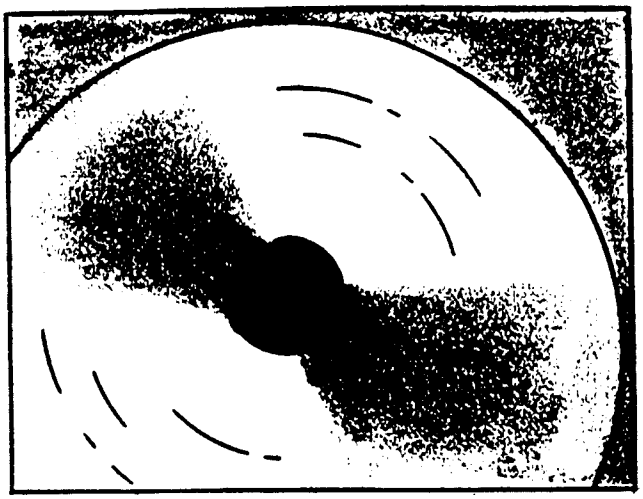
CAUTION

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

b. Open the changeover douser and the console douser to permit light on the screen. The image projected on the screen should look similar to that in Figure 5-1a. If necessary, adjust the "BEAM SPREAD" control with a 3/16 inch hex wrench to obtain the brightest image.

c. Adjust the "LAMP FOCUS" controls with a 3/16 inch hex wrench to obtain a dark bullseye in the approximate center of the screen (see Figure 5-1b).

d. Position the electroformed reflector to obtain the image shown in Figure 5-1c. This step is critical for proper alignment. The distance to the outer perimeter of the pattern should be equally spaced from the bullseye, and the intensity of



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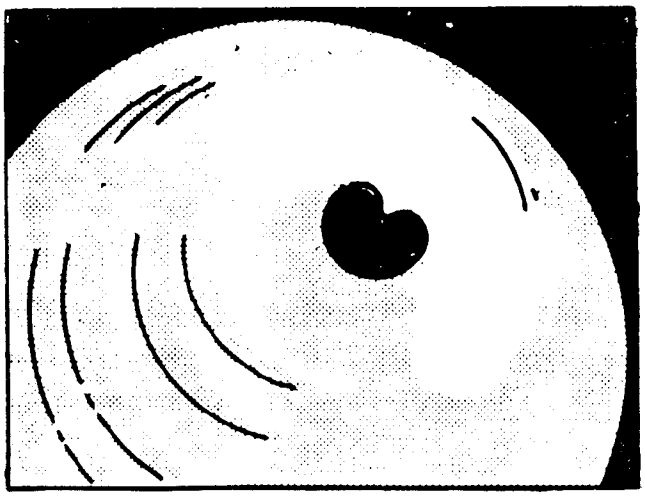

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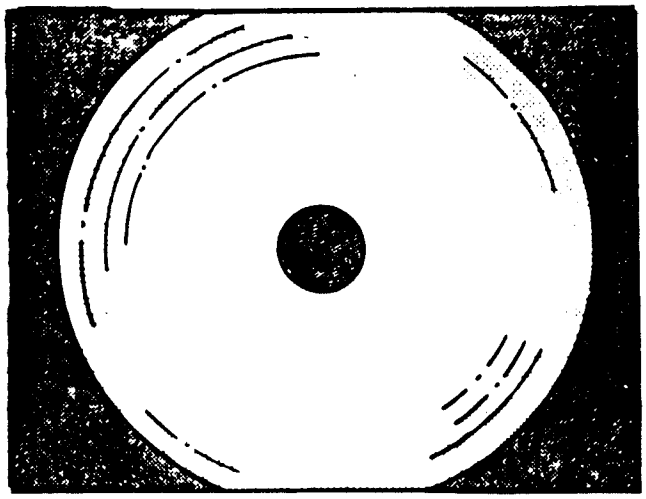

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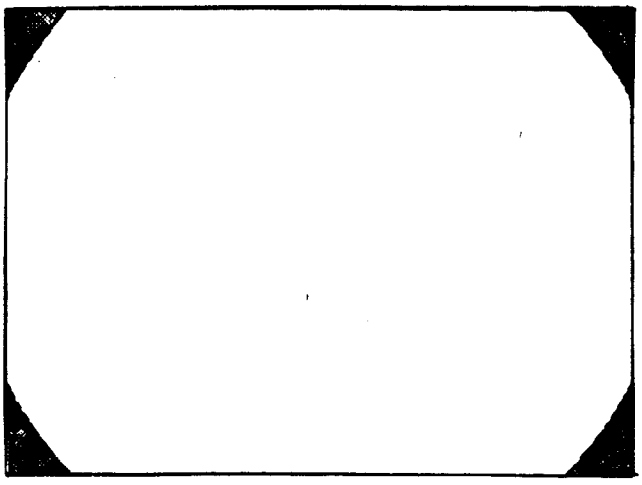

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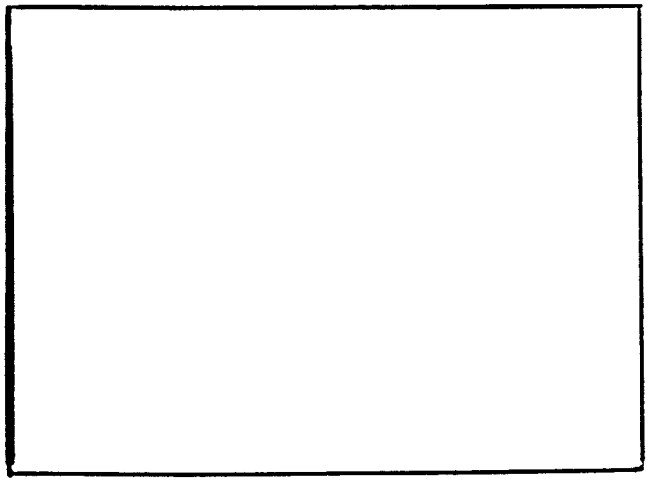


E

FIGURE 5-1

Optical Alignment

light around the bullseye should be equally distributed. The focus plate assembly should be positioned so that the "LAMP FOCUS" shafts are parallel with the front panel of the console. Re-adjust the "LAMP FOCUS" controls to get the clearest defined bullseye.

e. Close the console douser and replace the projection lens. Open the douser and focus the projection lens. Rotate the "BEAM SPREAD" control for a bright spot on the screen. Adjust the "LAMP FOCUS" controls and the reflector slightly to center the bright spot on the screen. The four dark corners should be of equal size (see Figure 5-1d).

CAUTION

Do not allow light from the console 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 console without film running through the projector can damage the lens.

f. Rotate the "BEAM SPREAD" adjust clockwise until the screen is filled with light. Minor adjustment of the "LAMP FOCUS" controls may be necessary to obtain balanced light intensity on the screen (see Figure 5-1e).

g. Lock the focus plate assembly in place by tightening the three hex head cap screws with a 5/32 inch hex wrench (see Figure 4-12).

h. Close the console douser and depress the "LAMP" toggle switch to OFF. Remove the adhesive tape used to close the door interlock.

i. Replace the lamp access panel with four screws. Adjust the current setting to provide the desired light level

on the screen. Do not exceed the maximum safe bulb current. Current adjustment procedures are outlined in Sections 4.4.1, 4.5.1, and 4.6.1.

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 lamp focus and beam spread adjustments is all that is required to again achieve optical alignment (see realignment procedure).

5.3 OPTICAL RE-ALIGNMENT

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

CAUTION

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

b. Adjust the bulb current to a low power setting to minimize the possibility of damage to the optical elements due to misalignment. Current adjustment procedures are outlined in Sections 4.4.1, 4.5.1, and 4.6.1.

c. Start the system by completing steps a through e in Section 4.10.1.

d. Energize the projector by closing the "PROJ" circuit breaker.

e. Open the console douser to project a light pattern on the screen similar to that in Figure 5-1b. If necessary, adjust the "BEAM SPREAD" control with a 3/16 inch hex wrench to obtain a small dark "bullseye" in the approximate center.

f. Adjust the "LAMP FOCUS" controls with a 3/16 inch hex wrench to obtain a symmetrical pattern similar to that in Figure 5-1c.

g. Close the console douser and replace the projection lens in the projector. Open the douser, focus the projection lens, and adjust the "BEAM SPREAD" control to obtain a bright spot on the screen.

CAUTION

Do not allow light from the console 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 console without film being run through the projector can damage the lens.

h. Re-adjust the "LAMP FOCUS" controls to center the bright spot. Adjust the "BEAM SPREAD" control clockwise until the light fills the screen with the exception of the four dark corners (see Figure 5-1d) which should be approximately equal in size.

i. Adjust the "BEAM SPREAD" control clockwise until the screen is filled with light, evenly distributed, with no dark corners (see Figure 5-1e). Re-adjust the current setting to provide the desired light level on the screen. Do not exceed the maximum safe bulb current. Current adjustment procedures are outlined in Sections 4.4.1, 4.5.1, and 4.6.1.

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 of the console. Placing the power switch in the OFF position DOES NOT remove voltage from the power switch terminals inside the console.

6.1 CLEANING OPTICS

It is advised that at least twice annually, the electroformed reflector and folding mirror 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 (XL-1000W - XL-1600W)

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, protective face shield extending below the neck area, and heavy material jacket is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

6.2.1 Removal

a. Shut off power to the system and unlock the lamp access panel.

b. Take out the four screws from the lamp access panel and remove the panel from the console.

c. Remove the two retaining screws from the safety door located behind the lamp access panel and swing it open.

d. Support the upper end of the bulb with one hand and loosen the hex set screw in the anode connector with a 9/64 inch hex wrench. Remove the connector.

e. Carefully place the bulb installation/removal tool over the bulb and rotate it until it seats down completely over the bulb.

f. Install the steel collar over the anode stud and tighten the set screw with a 1/8 inch hex wrench.

g. Locate the snap plug below the snout on the front panel of the console and snap it out of the access hole. Loosen the cap screw in the access hole with a 5/32 inch hex wrench. Do not remove the cap screw.

h. Carefully lift the bulb contained within the bulb installation/removal tool out of the console. Remove the adapter from the cathode end of the bulb.

i. Replace the red plastic end cap, retaining bracket, and wing nut and place the bulb and tool back in a shipping carton for return to Optical Radiation Corporation for disposal or warranty credit.

6.2.2 Replacement

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

b. Thread the cathode adapter 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 recepticle behind the reflector until the adapter is seated against the mating surface. Tighten the hex head cap screw located in the access hole with a 5/32 inch hex wrench until the xenon bulb is firmly secured. Replace the snap plug in the access hole.

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. Place the anode connection over the anode stud of the bulb and carefully tighten the hex set screw in 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 to the bulb.

CAUTION

Make sure front lead from igniter to bulb is not touching any part of mirrors or high voltage arcing and shorting may occur. Make sure air tubes are pointed toward the bottom of the bulb connection.

g. Close the safety door and secure it with two screws.

h. Replace the lamp access panel with four screws.

Optical re-alignment of the system is accomplished in accordance with Section 5.3.

6.3 REMOVAL AND REPLACEMENT OF XENON BULB (XL-2000W - XL-4500W)

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,

WARNING

(continued)

protective face shield extending below the neck area, and heavy material jacket is worn. The instructions regarding protective clothing are subject to change by any local or federal specifications which take precedence.

6.3.1 Removal

a. Shut off power to the system and unlock the lamp access panel.

b. Take out the four screws from the lamp access panel and remove the panel from the console.

c. Remove the two retaining screws from the safety door located behind the lamp access panel and swing it open.

d. Support the upper end of the bulb with one hand and loosen the hex set screw in the anode fitting with a 3/32 inch hex wrench. Remove the fitting and front lead.

e. (V3000 and V4500 systems only) Remove the safety wire from the ceramic stand-off mounted to the heat shield wrap on the operator side of the console. Slip the safety wire off the anode stud of the bulb and allow it to hang behind the reflector.

f. Locate the plastic wrap used to install the bulb and carefully place it around the bulb.

g. Locate the snap plug below the snout on the front panel of the console and snap it out of the access hole. Loosen the cap screw in the access hole with a 5/32 inch hex wrench. Do not remove the cap screw.

h. Carefully lift the bulb contained within the plastic wrap out of the console. On XL-2000W - XL-3000W bulbs, remove the adapter from the cathode end of the bulb.

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

6.3.2 Replacement

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

b. (XL-2000W - XL-3000W bulbs only) Place the cathode adapter on the cathode fitting of the bulb and secure it with a 3/32 inch hex wrench. The fittings on the bulb are sized to prevent installing the bulb backwards.

c. Loosen the two ties on the wrap, but do not remove the wrap.

d. Insert the bulb, cathode end first, into the opening at the center of the reflector. Carefully feed the cathode stud into its mating receptacle beneath the reflector until the bulb (and adapter) are seated against the mating surface. Tighten the 5/32 inch hex head cap screw in the access hole on the front panel until the xenon bulb is firmly secured. Replace the snap plug in the access hole.

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

f. (V3000 and V4500 systems only) Slip the safety wire fitting over the anode stud of the bulb and secure the loose end to the stand-off from which it was removed.

g. Connect the front lead to the bulb. Attach the anode connector in place over the anode stud with a 3/32 inch hex wrench.

CAUTION

Make sure the front lead from igniter to bulb is not touching any part of mirrors or high voltage arcing and shorting may occur. Make sure PVC air tubes are pointed toward the bottom of the bulb connection.

h. Close the safety door and secure it with two screws. Check that the plastic wrap has been removed.

i. Replace the lamp access panel with four screws. Optical re-alignment of the system is accomplished in accordance with Section 5.3.

6.4 POWER SUPPLIES

6.4.1 Main Transformer and Other Components

Clean the components inside the power supply with dry, compressed air.

6.4.2 Blower Motor

The XPS-16, XPS-30 and XPS-45 power supplies are equipped with an exhaust blower and require forced air for adequate cooling. The blower in the XPS-16 supply is manufactured with lifetime lubricated sealed ball bearings and no attention is required. The blower in the XPS-30 and XPS-45 supplies has lubricated bearings that should be re-oiled sparingly every six months with S.A.E. 20 or other light gear oil.

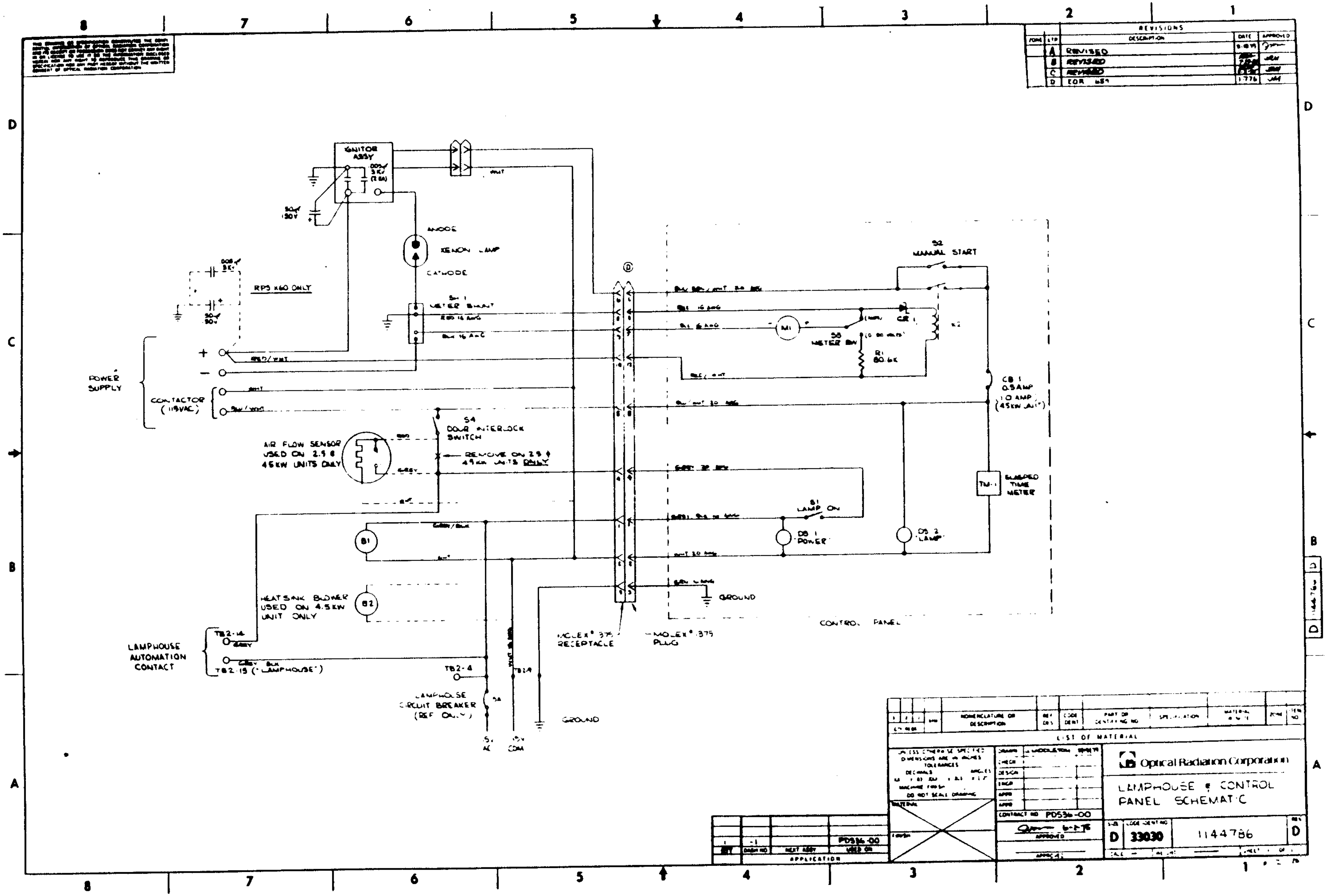
6.5 PRIMARY POWER AND SECONDARY LEADS

Periodically check primary and secondary leads for tightness. The cables should be inspected frequently. Repair all breaks in the insulation or replace the cables.

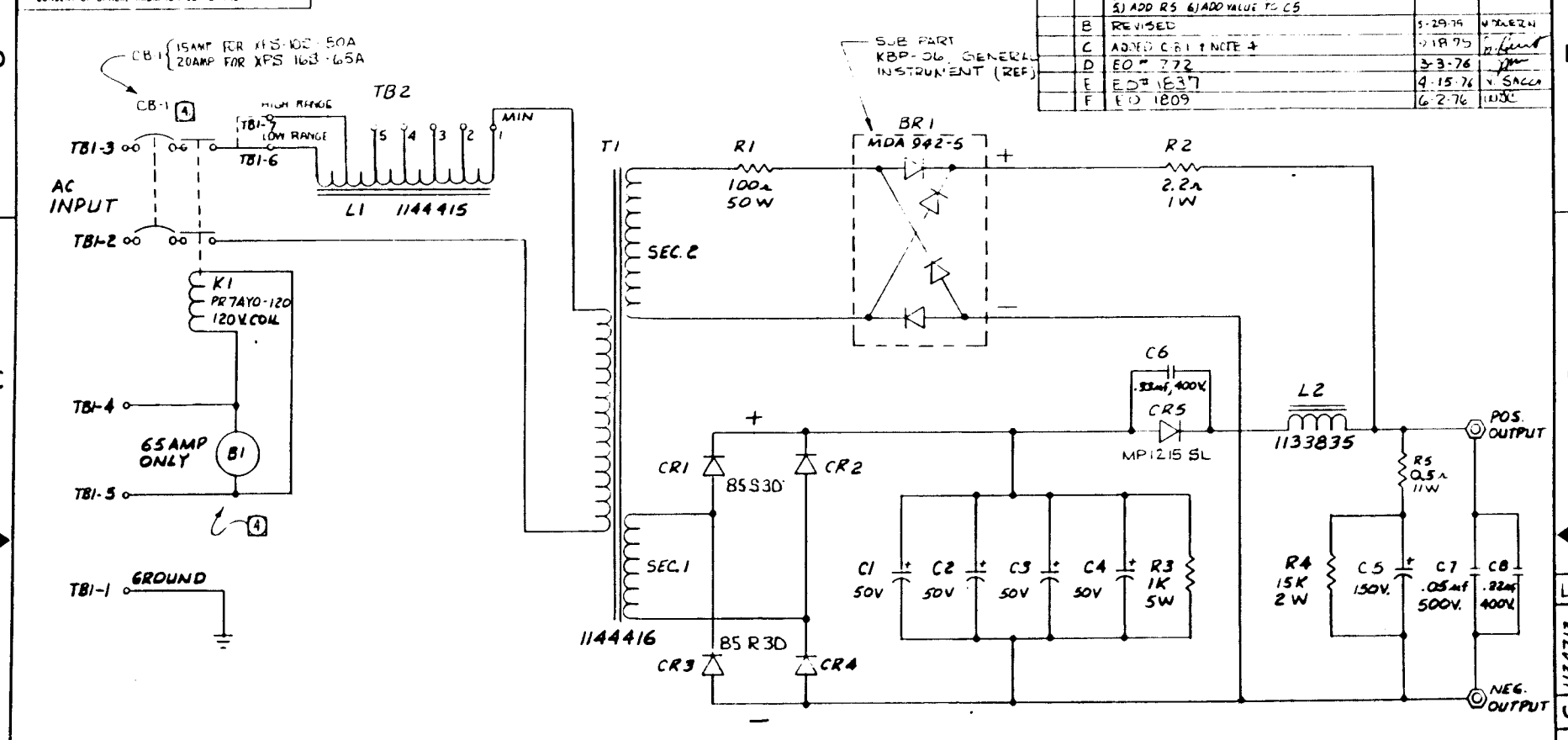
Periodically check the secondary terminal connections to determine whether or not the connections are heating. If heating is occurring, take the connections apart and clean the metal. A chemical cleanser, such as Cameo or Brillo, should be used to clean the copper or aluminum connections. When chemicals are used to clean the copper or aluminum, they should be rinsed with hot water and covered with anti-oxidants, such as Mobilcote No. 203 or equivalent, to preserve the clean connections.

6.6 TROUBLESHOOTING

Should the console system fail to operate properly, consult the system schematic diagrams on the following pages as a guide in determining the possible trouble.


REVISIONS
A REVISED
B REVISED
C REVISED
D EOR 459
IGNITOR ASSY
ANODE
XENON LAMP
CATHODE
RPS X60 ONLY
SH 1 METER SHUNT
POWER SUPPLY
CONTACTOR (115VAC)
S4 DOOR INTERLOCK SWITCH
AIR FLOW SENSOR USED ON 2.5 & 4.5KW UNITS ONLY
REMOVE ON 2.5 & 4.5KW UNITS ONLY
HEATSINK BLOWER USED ON 4.5KW UNIT ONLY
LAMPHOUSE AUTOMATION CONTACT
TB2-14
TB2-15 ("LAMPHOUSE")
TB2-4
LAMPHOUSE CIRCUIT BREAKER (REF ONLY)
GROUND
MOLEX® 375 RECEPTACLE
MOLEX® 375 PLUG
S2 MANUAL START
K2
CR 1
M1
S3 METER SW
R1 80.6K
CB 1 0.5 AMP 1.0 AMP (45KW UNIT)
ELAPSED TIME METER
TM 1
S1 LAMP ON
DS 1 POWER
DS 2 LAMP
CONTROL PANEL
LIST OF MATERIAL
Optical Radiation Corporation
LAMPHOUSE & CONTROL PANEL SCHEMATIC
PD536-00
D 33030 1144786 D
APPLICATION

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	1) R1 100Ω 50W 2) R2 2.2Ω 1W 3) IN1183A 4) IN1183AR 5) ADD R5 6) ADD VALUE TO C5	5-19-75	
	B	REVISED	5-29-75	
	C	ADDED CB1 & NOTE 4	5-19-75	
	D	ECO # 772	3-3-76	
	E	ECO # 1837	4-15-76	
	F	ECO 1809	6-2-76	



4 B1 USED ON MODEL NOS. XPS-16 (65A), XPS-10S (50A) AND XPS-16S (65A)
CB1 USED ON MODEL NOS. XPS-10S AND XPS-16S

3. FOR C1-C4 VALUE, 18,000 mf
C5 VALUE, 4900 mf
2. FOR T1: USE -1 FOR 115V.
USE -3 FOR 208V.
1. FOR L1: USE -1 FOR 115V, 60HZ, 50A.
USE -3 FOR 230/208V, 60HZ, 50A.
USE -5 FOR 230/208V, 60HZ, 65A.

NOTES:

QTY	DASH NO	NEXT ASSY	USED ON
1	—	—	XPS 10S/XPS-16S
1	—	—	XPS 10/XPS-16

APPLICATION

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 ANGLES
XX = ± .03 XXX = ± .010 ± 1/2°
MACHINE FINISH ✓
DO NOT SCALE DRAWING
MATERIAL
FINISH

DRAWN	E Nunn	1-23-75
CHECK		
DESIGN		
ENGR		1-23-75
APPR		
APPR		

CONTRACT NO PD 536
APPROVED 1-24-75
APPROVED

Optical Radiation Corporation

SCHEMATIC, 50/65 AMP POWER SUPPLY

SIZE	CODE IDENT NO		REV
C	33030	1134713	F

SCALE — WEIGHT — SHEET 1 OF 1

1134713 C

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	DELETED TB-2	5-22-76	WSC

TB-1

X ⑥
Y ⑤
Z ④
3 (H) ③
2 (M) ②
1 (L) ①

C-1 THRU C-3
4900MFD, 150V

C-1 C-2 C-3

R-2
1.5K
25W

D-1 MR1215SL
D-2 MR1215SLR
D-3 MR1215SL
D-4 MR1215SLR

L-1 L-2

C-4
.005MFD
1KV

C-5
.68MFD
200V

D.C. OUTPUT
MAX D.C. OUTPUT
2200 WATTS, 80 AMPERES

\+ −

D-5
IN4004

D-6
IN4004

R-1
100Ω
175W

NOTE: INPUT CURRENT (AC) VARIES UP TO A MAX OF 25 AMPERES.

INPUT

208/237V
1Ø, 60HZ

L2 T2
L1 T1

115V
60HZ

GROUND WIRE

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. NUCCUM	6-27-75	
CHECK			
DESIGN			
ENGR		6-27-75	
APPR			
APPR			
CONTRACT NO.	P6537		
		6-30-75	
APPROVED			
APPROVED			

QTY	DASH NO	NEXT ASSY	USED ON

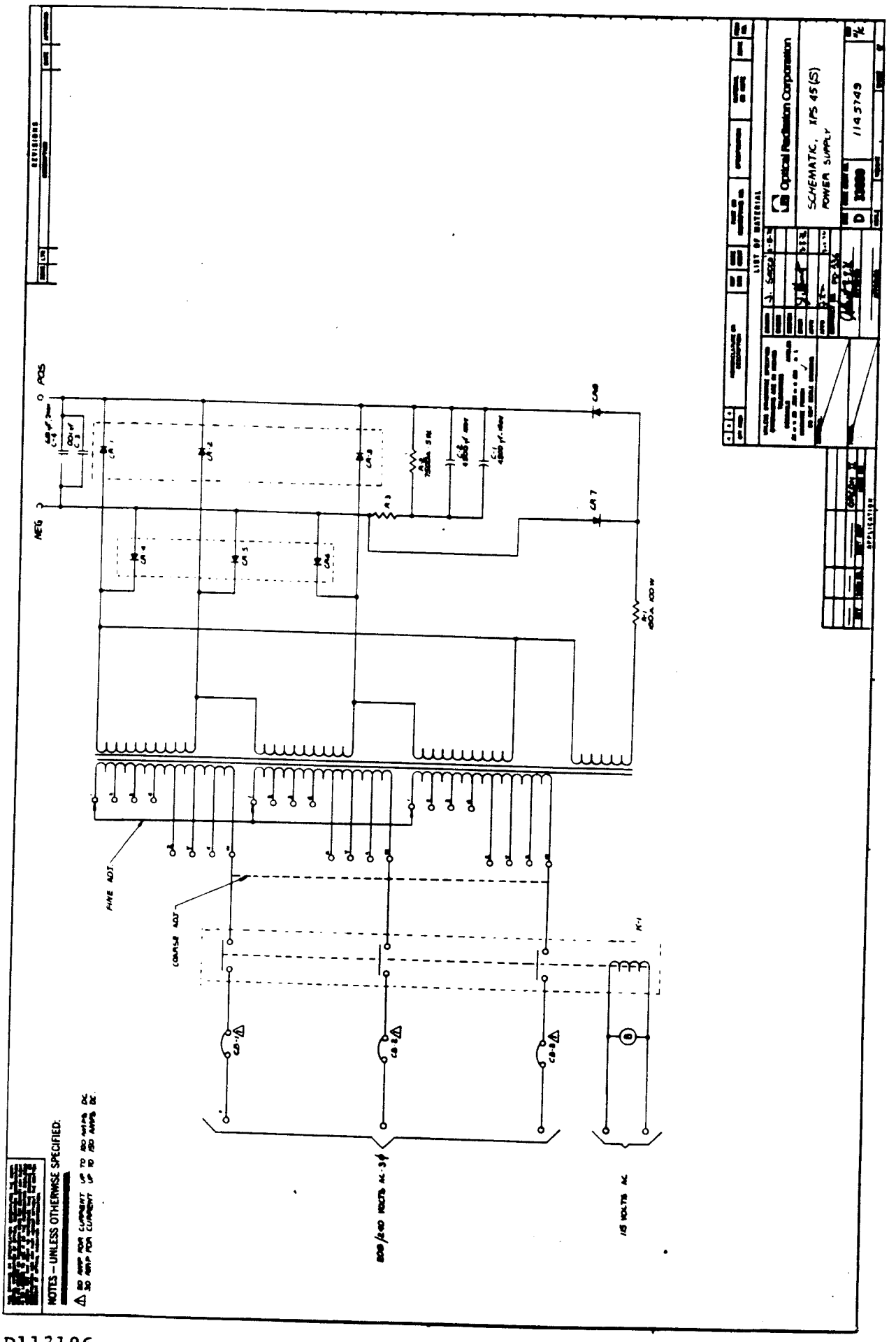
APPLICATION

Optical Radiation Corporation

SCHEMATIC
2 KW POWER SUPPLY

SIZE	CODE IDENT NO		REV
B	33030	1125029	A

SCALE — WEIGHT — SHEET 1 OF 1


Optical Radiation Corporation
SCHEMATIC, IPS 45(S)
POWER SUPPLY
1145749
NOTES – UNLESS OTHERWISE SPECIFIED:
FINE ADJ
COARSE ADJ
115 VOLTS AC

The lamp 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 _____

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 _____

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:

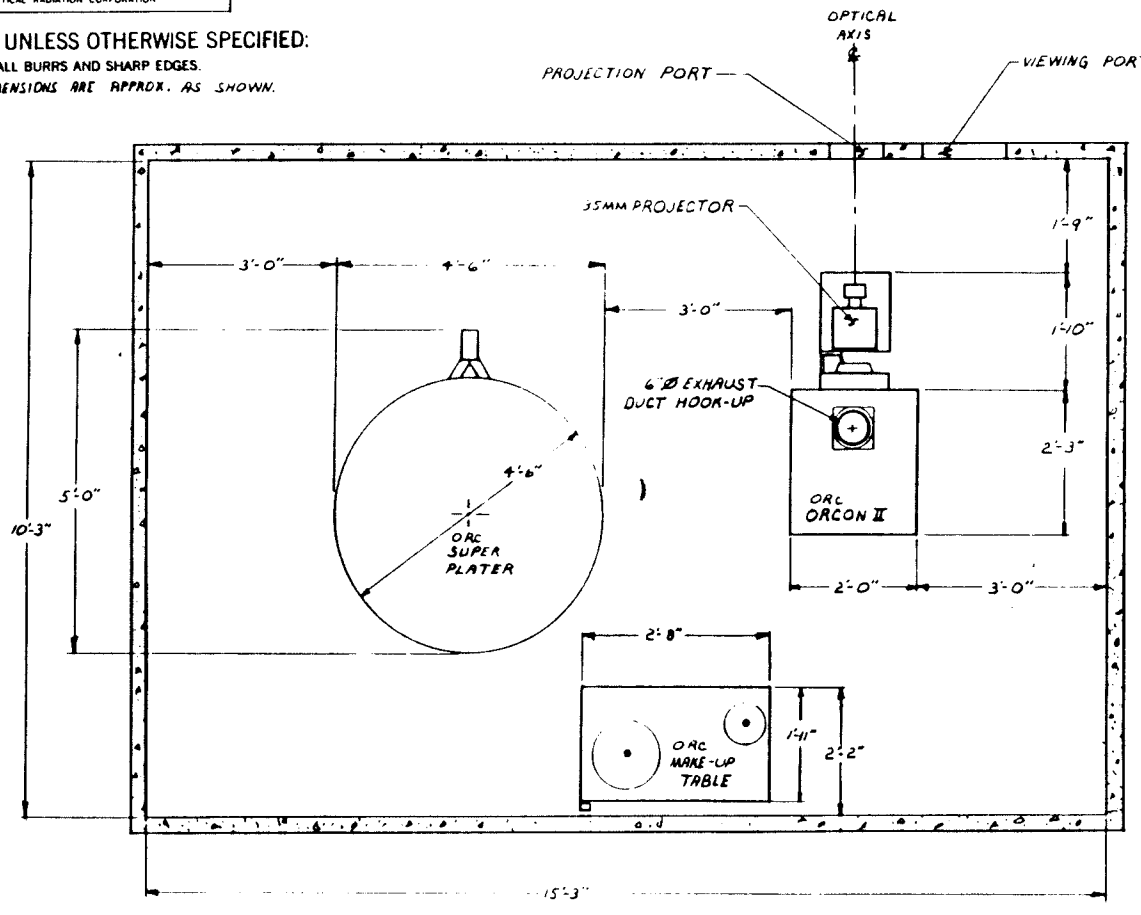
Optical Radiation Corporation

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

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

NOTES — UNLESS OTHERWISE SPECIFIED:

1. REMOVE ALL BURRS AND SHARP EDGES.
2. ALL DIMENSIONS ARE APPROX. AS SHOWN.



BOOTH PLAN VIEW

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

QTY	DASH NO	NEXT ASSY	USED ON
—	-1	END ITEM	ORCON II

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	DUFFY	4-30-76
CHECK		
DESIGN		
ENGR		
APPR	MIDDLETON	4-30-76
APPR		

CONTRACT NO. PD-536

APPROVED

APPROVED

Optical Radiation Corporation

INSTALLATION DRAWING ORCON II
CONSOLE & PLATTER

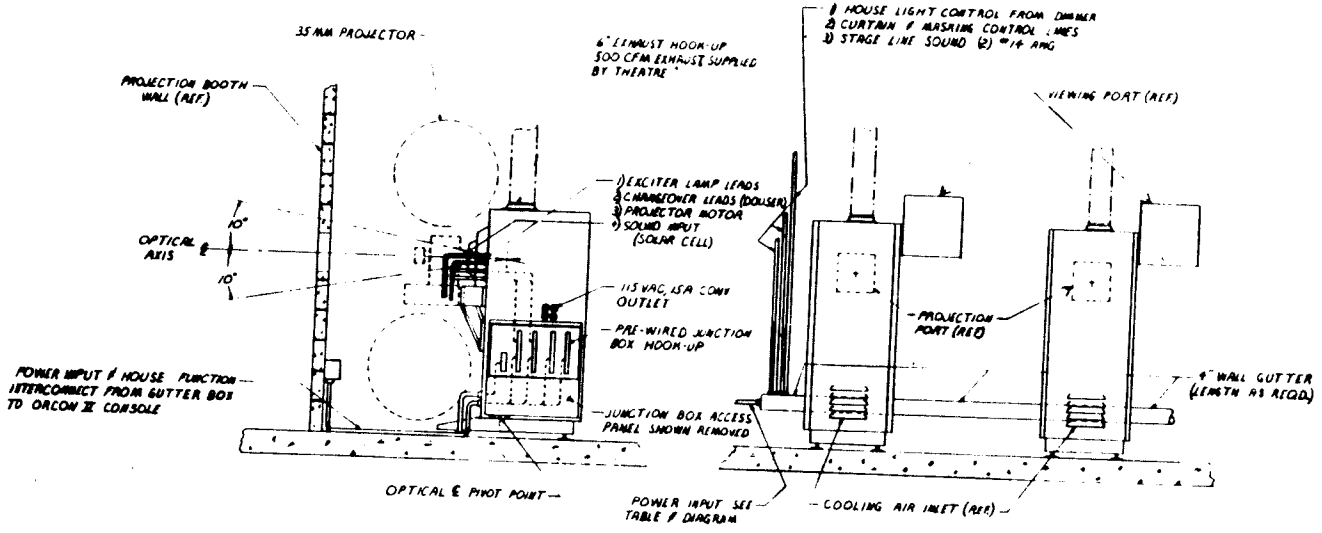
SIZE	CODE IDENT NO		REV
C	33030	1136506	N/C

SCALE 1/2" = 1" WEIGHT — SHEET 1 OF 1

C 1136506 N/C

NOTES — UNLESS OTHERWISE SPECIFIED:

1 REMOVE ALL BURRS AND SHARP EDGES



REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

LIST OF MATERIAL

QTY	NOMENCLATURE OR DESCRIPTION	REV SYS	CODE IDENT	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR GRADE	STOCK SIZE	ITEM NO.

DRAWN	DUFFY	10-6-76	
CHECK			
DESIGN			
ENGR			
APPD			
APPD			

CONTRACT NO. PO 576

APPROVED

APPROVED

QTY	DASH NO.	NEXT ASSY	USED ON
-1	62-7 YOKE	PO 576	

APPLICATION

Optical Radiation Corporation

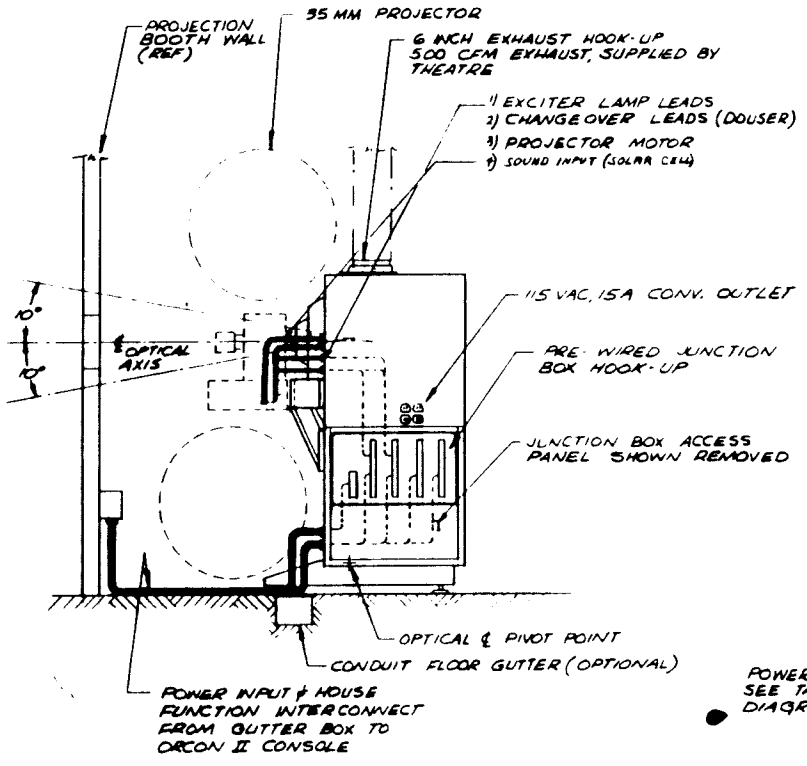
DUAL INSTALLATION

ORCON II

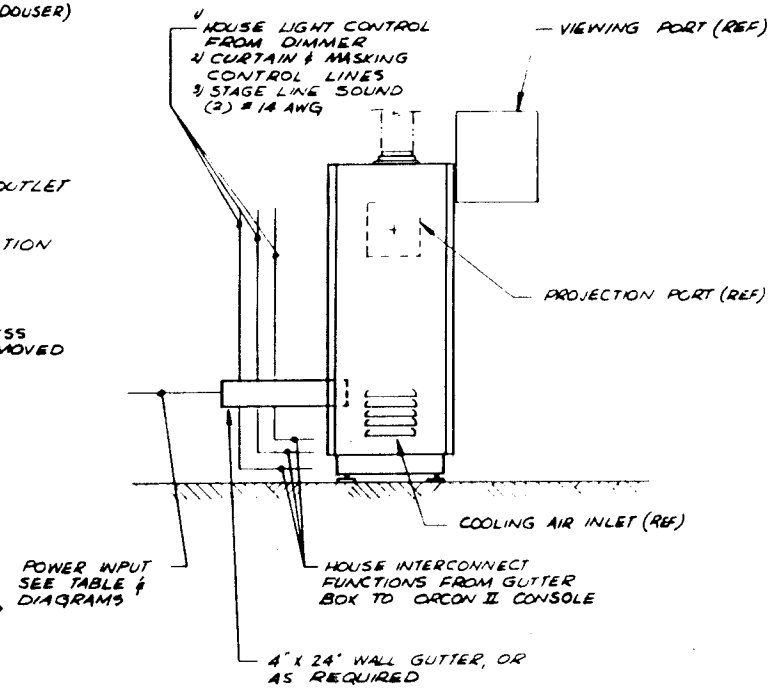
SIZE	CODE IDENT NO.	DRAWING NO.	REV
D	33030	1146471	A

SCALE 1/4" WEIGHT SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



SIDE VIEW
(NON-OPERATOR SIDE)



BACK VIEW

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

QTY	DASH NO	NEXT ASSY	USED ON
			P0536

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. Middleton	5/28/79
CHECK		
DESIGN		
ENGR		
APPR		
APPR		

CONTRACT NO. P0536

J. Middleton
APPROVED 5/29/79

APPROVED

Optical Radiation Corporation

INSTALLATION, ORCON II THEATRE CONSOLE

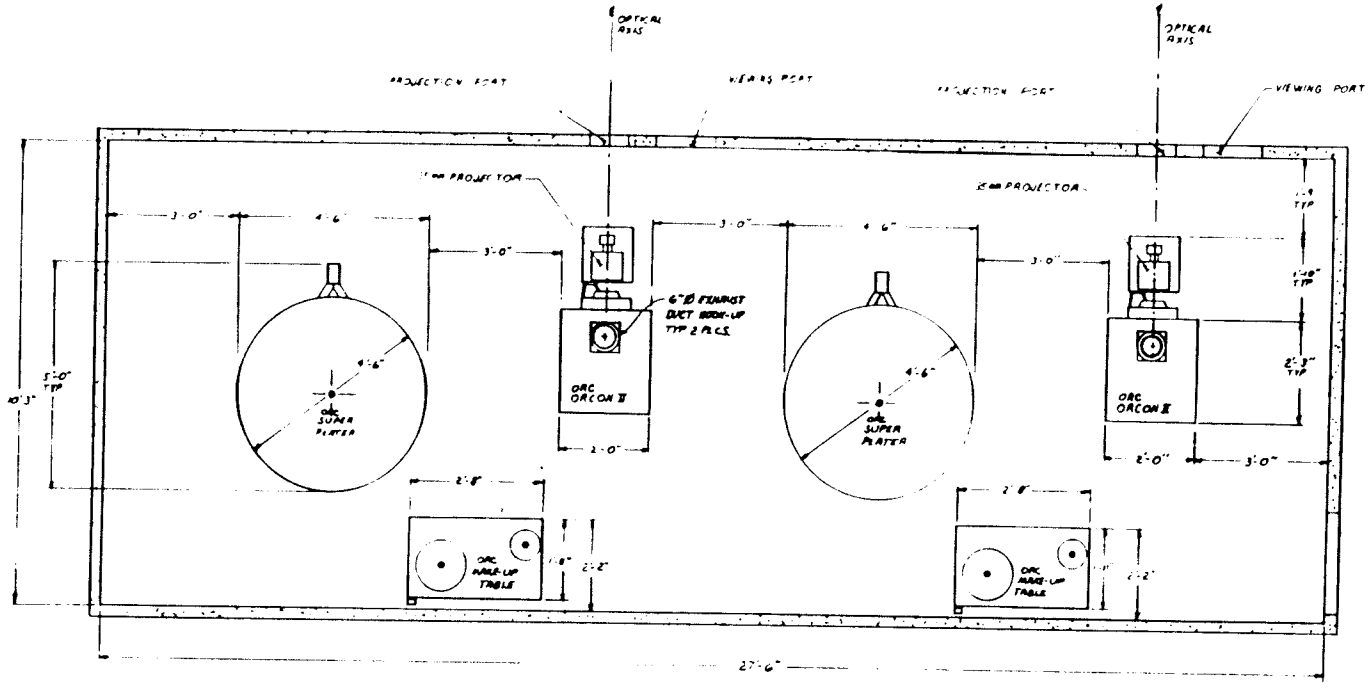
SIZE	CODE IDENT NO		REV
C	33030	1134941	M/C

SCALE 1/16"=1" | WEIGHT | SHEET 1 OF 1

C 1134941

NOTES — UNLESS OTHERWISE SPECIFIED:

1. REMOVE ALL BURRS AND SHARP EDGES.
2. ALL DIMENSIONS ARE APPROX. AS SHOWN



BOOTH PLAN VIEW

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

LIST OF MATERIAL

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

QTY	DASH NO.	END ITEM	ORCON II
—	-1	NEXT ASS'Y	VSEO OH
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	DUFFY	9 30 76
CHECK		
DESIGN		
ENGR		
APPR	M SKELTON	10 76
APPR		
CONTRACT NO	FO-536	

APPROVED

APPROVED

Optical Radiation Corporation

DUAL INSTALLATION DRAWING
ORCON II CONSOLE & PLATTER

SIZE	CODE IDENT NO		REV
D	33030	1146507	4c

SCALE 3/4" = 1' WEIGHT — SHEET 1 OF 1