

# Film-Tech

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OPERATING  
MANUAL  
XPS-10S & XPS-16S  
POWER SUPPLY



Optical Radiation Corporation

OPERATING  
MANUAL  
XPS-10S & XPS-16S  
POWER SUPPLY

REVISED MARCH 1978

D113199B



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**SHEET REVISIONS**

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**Optical Radiation Corporation**  
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1.1 SCOPE

Provided in this manual are installation, operation and maintenance instructions for the models XPS-10S and XPS-16S Orcon Xenon Power Supplies. These supplies 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

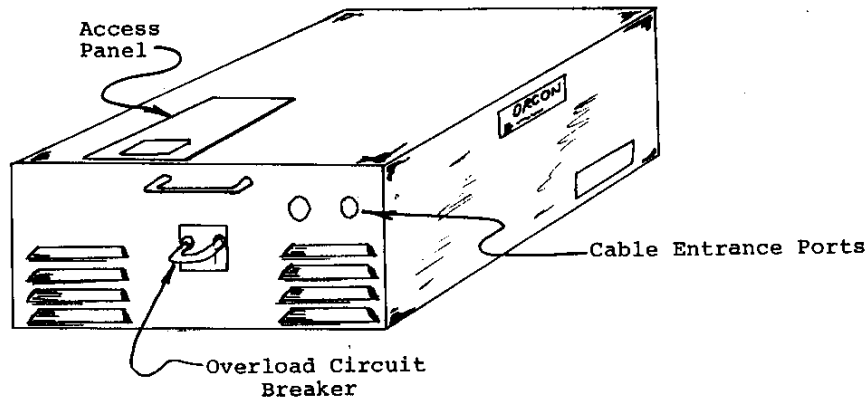
The Model XPS-10S and XPS-16S Xenon Power Supplies are designed for use with various Orcon Lamphouses.

1.3 MODEL XPS-10S

The XPS-10S (see Figure 1.1) is comprised of a power contactor, an input inductor, a single phase power transformer, a silicon rectifier with capacitive filter, an output filter choke, an open circuit voltage boost circuit, and a forced air blower. 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-10S is designed to operate 1000 Watt xenon lamps.

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





Power Supply  
Figure 1.1

1.4 MODEL XPS-16S

This power supply is essentially the same as the XPS-10S power supply with the exception that it is designed to operate 1600 Watt xenon lamps. 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 incremental taps on the input inductor in series with the main power transformer primary winding.

1.5 POWER SUPPLY SPECIFICATIONS

Power Supply Specification	XPS-10S	XPS-16S
Input Voltage	208/230V, 1Phase, 60Hz	208/230V, 1Phase, 60H
Maximum Input Current	12 Amps	16 Amps
Input Power	1.5 KW	2.0 KW

Power Supply Specification	XPS-10S	XPS-16S
Output Power	1.0 KW	1.6 KW
Output DC Current Range	30-50 Amps	40-65 Amps
DC Current Ripple	3% RMS	3% RMS
Nominal Overall Dimensions (DxWxH in inches)	17x15x9.5	17x15x9.5
Power Supply Weight	75 lbs	80 lbs

- 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 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

3.1 RECEIVING-HANDLING

Remove all packing material from around the power supply and carefully inspect for damage that 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 on request.

When requesting information concerning the equipment, be sure to furnish stock, serial and model numbers.

3.2 INSTALLING POWER SUPPLY

A good installation is essential if the power supply is to provide satisfactory and dependable service. Proper component operating temperatures are maintained by the air stream produced by the power supply blower. Therefore, the power supply should be located so that the air passing through the front and rear of the power supply is not restricted. The back of the power supply should be located at least four inches from the wall so that the air passage from the blower will not be blocked and access to the power overload circuit breakers is not incumbered.

The power supply should be located in an area where a minimum amount of dust or dirt will be drawn into the air stream. Preventive maintenance will consist of periodically removing the cover and blowing out the dust accumulation inside the power supply. For this reason, it is desirable to locate the unit so that the cover can be easily removed without obstruction.

The distance between the power supply and lamphouse is not critical as long as adequate conductor size is used to prevent any noticeable voltage drop.

The input AC control and DC power enters the back of the unit as shown in Figure 3-1.

### 3.3 PRIMARY POWER TO POWER SUPPLY

The power supply is designed to operate on 208 or 230 volts 60 Hz, single phase AC power. These power supplies should be operated from a separately fused or circuit breaker protected branch circuit.

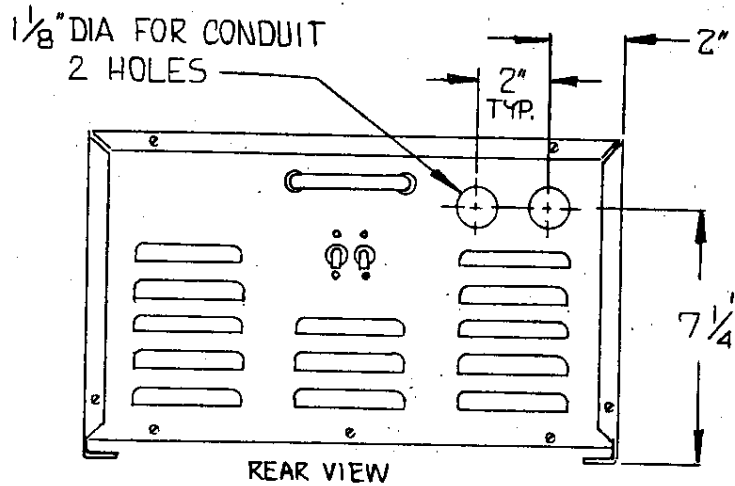


Figure 3-1  
Cable Entrance Ports, XPS-10S, XPS-16S Power Supplies

Primary power connections are made to the two line terminals, L1 and L2, on terminal board 1. The interconnecting terminal board is located directly beneath the access door on the top panel of the power supply. A standard size conduit hole is provided on the back panel next to the access door to allow bringing the two primary power leads and ground into the power supply. The primary leads should be enclosed in solid or flexible conduit to meet the necessary electrical codes (see Figures 3-1, 3-2, & 3-3).

Ensure the ground wire is connected to the terminal labeled GRD (ground), TB1-1 on the interconnecting terminal board. Refer to Table 3-1 for recommended primary wire and fuse sizes.

	Primary Wire Size - AWG	Fuse Size - Amps
XPS-10S	No. 12	20
XPS-16S	No. 10	30

Table 3-1  
Recommended Primary Wire and Fuse Sizes

**WARNING**

BE SURE THE GROUND WIRE IS CONNECTED TO THE GROUND TERMINAL IN THE LINE DISCONNECT SWITCH BOX. IF NOT, CONNECT IT TO A GROUNDING ROD, WATER PIPE, OR USE WHATEVER GROUNDING PROCEDURE THAT IS ACCEPTABLE TO THE LOCAL ELECTRICAL CODE AND INSPECTION. THE STUD, LABELED "GRD", IS CONNECTED TO THE POWER SUPPLY CHASSIS. DO NOT CONNECT ANY OF THE LINE LEADS TO THIS TERMINAL AS THIS WILL RESULT IN A HOT CHASSIS.

The power supply can be connected to either a 208VAC or 230VAC primary voltage source. Compensation is made by setting the high/low coarse current adjust tap to the appropriate terminal of TB-1 as shown in Figure 3-3. Fine current adjustment is made by setting the fine current adjust tap from TB2-1 (minimum) to TB2-5 (maximum) (see tap adjustment procedure, Section 4.4).

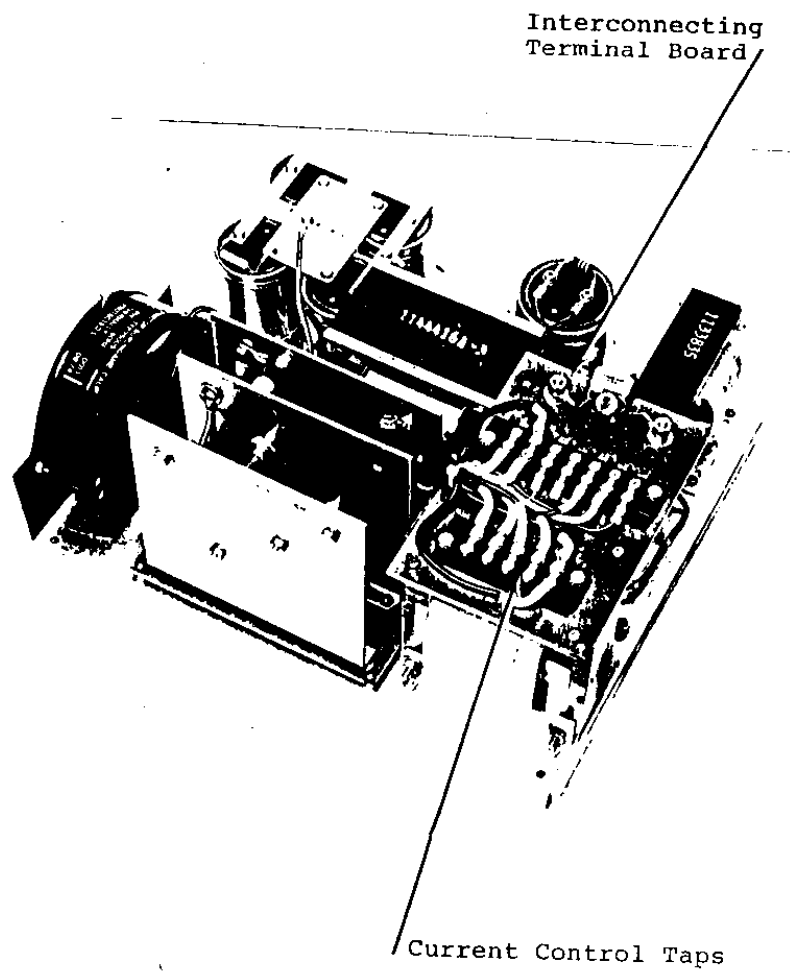


Figure 3-2  
Power Supply - Cover Removed



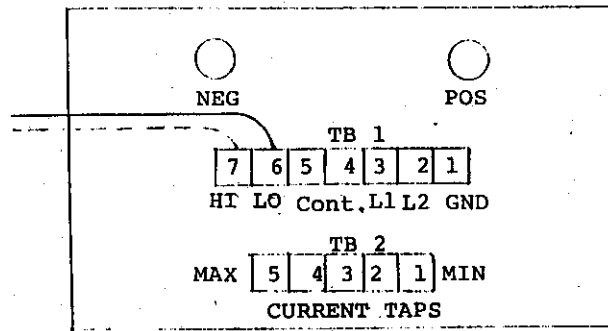


Figure 3-3

### 3.4 SECONDARY DC AND CONTROL CABLES

The minimum DC wire size recommended for the XPS-10S or the XPS-16S power supply is No. 6 AWG. If the power supply is to be located a considerable distance from the lamphouse, heavier gauge wire should be used to minimize losses in the wire. Do not use damaged or frayed cables.

The secondary cables are connected to the 1/4 inch positive and negative terminals on the interconnecting terminal board. These terminals should be kept clean and checked periodically to insure that connections are tight.

Both ends of the negative DC cable should be marked with black tape or similar marking to ensure proper polarity of the lamphouse and power supply connections.

**CAUTION**

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

Two No. 18 AWG control wires are required to connect 115VAC contactor power to TBl-4 and TBl-5 on the interconnection terminal board. An additional No. 18 AWG wire is required to connect system ground to TBl-1. These wires terminate in the lamphouse and are described in the lamphouse manual.

4.1 GENERAL

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

4.2 POWER SUPPLY OVERLOAD CIRCUIT BREAKERS

The power overload circuit breakers, located on the power supply rear panel, are two ganged breakers which control the 208 or 230 VAC single phase input lines to the XPS-10S or XPS-16S power supplies. The XPS-10S supply has 15 Amp breakers and the XPS-16S supply has 20 Amp breakers.

4.3 CONTACTOR OPERATION

The power supply contactor coil is controlled by 115VAC from the lamphouse. Input to the contactor terminals is controlled by the power overload circuit breakers on the supply.

4.4 TAP ADJUSTMENT PROCEDURE

**WARNING**

BEFORE CHANGING CURRENT ON THESE SYSTEMS,  
DISCONNECT SYSTEM POWER AT THE MAIN BREAKER OR  
FUSE BOX AND BE CERTAIN THE POWER SUPPLY  
CIRCUIT BREAKERS IN THE REAR PANEL ARE TURNED  
OFF.

Access to the current control taps is gained by removing the small access panel on the top cover of the supply. The following is a general procedure for adjusting the current taps.

- a. Remove power from the system.
- b. Remove the access panel on the top cover of the power supply and locate the interconnecting terminal board (see Figure 3-1).
- c. The high/low current adjust tap should be attached to TB1-6 for low current operation or TB1-7 for higher current operation (see Figure 3-3).
- d. The minimum current setting on the fine adjust current taps is obtained by fastening the associated tap wire to TB2 terminal 1 (see Figure 3-3).
- e. Bulb current can be increased incrementally by repositioning the tap wire from TB2 terminal 1 through TB2 terminal 5. The current range of the XPS-10S supply is approximately 30 to 50 Amps while the XPS-16S output varies from approximately 40 to 65 Amps.

Figures 4-1 and 4-2 show typical bulb current for the XPS-10S and XPS-16S power supplies, respectively.

For initial alignment, it is recommended that the taps be set to the "L/3" position for 240VAC input, or the "L/5" position for 208VAC input.

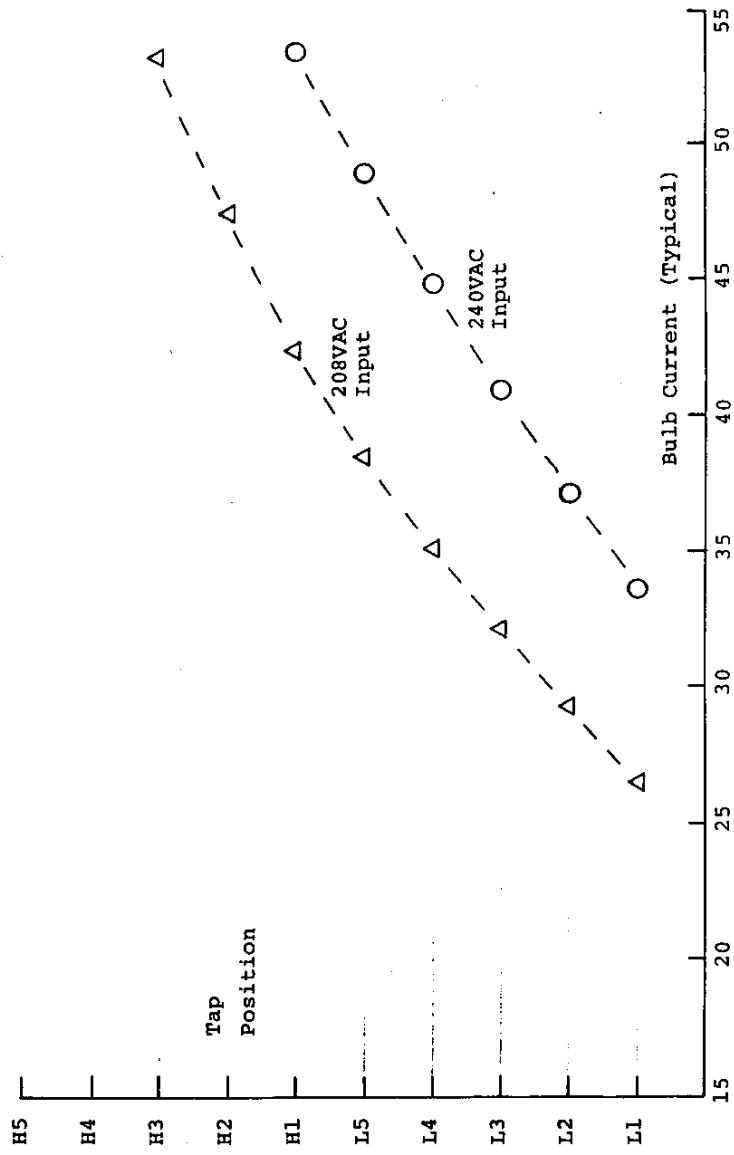


Figure 4-1. Tap Position Versus Typical Bulb Current (XPS-10S)

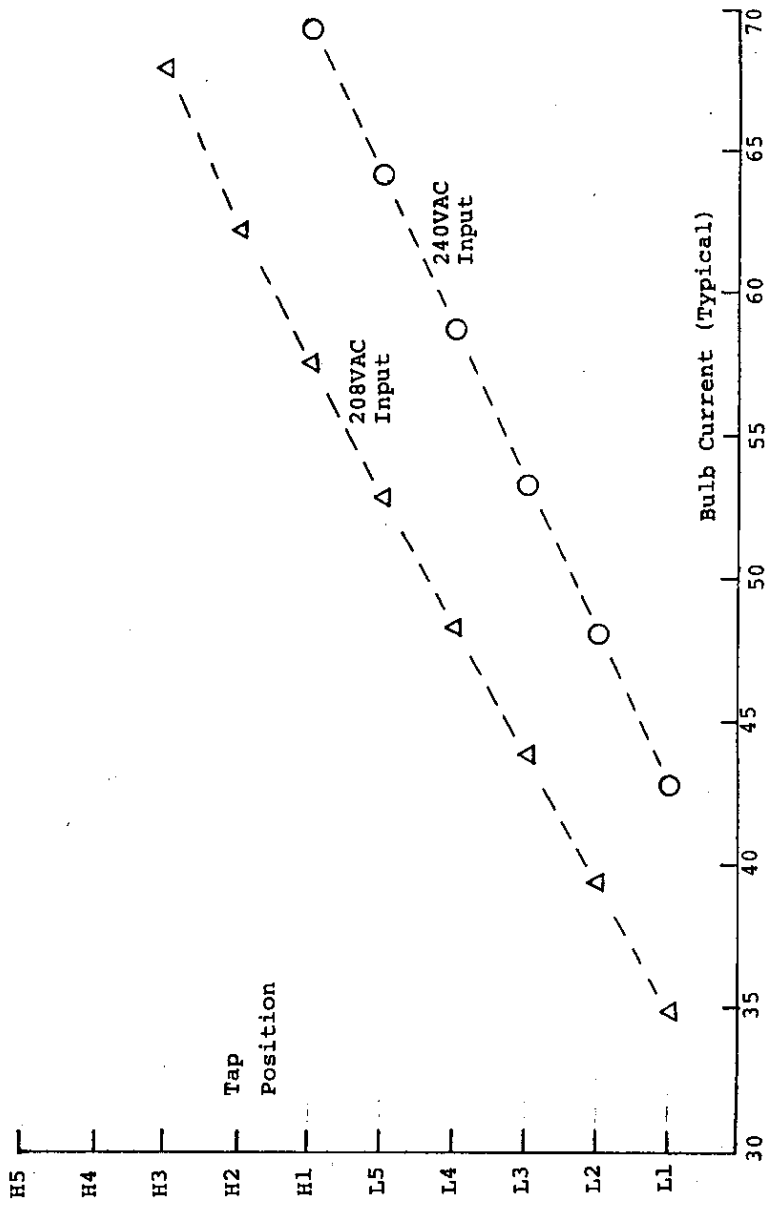


Figure 4-2. Tap Position Versus Typical Bulb Current (XPS-16S)

**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 POWER SUPPLY. PLACING THE POWER SWITCH IN THE OFF POSITION DOES NOT REMOVE VOLTAGE FROM THE POWER SUPPLY TERMINALS INSIDE THE POWER SUPPLY.

5.1 MAIN TRANSFORMER AND OTHER COMPONENTS

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

5.2 FAN MOTOR

The power supply is equipped with an exhaust fan and requires forced air for adequate cooling. The fan motor in the power supply is manufactured with lifetime lubricated sealed ball bearings and no attention is required.

5.3 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

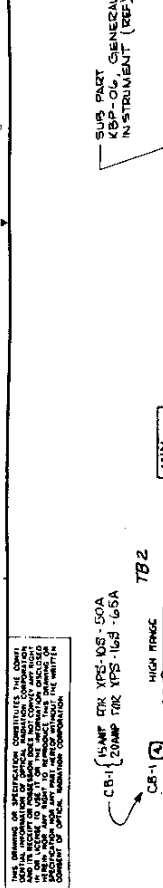
be used to clean the copper or aluminum connections. When chemicals are used to clean the copper or aluminum, they should be rinsed with hot water and covered with anti-oxidants, such as Mobilcote No. 203 or equivalent, to preserve the clean connections.

#### 5.4 TROUBLESHOOTING

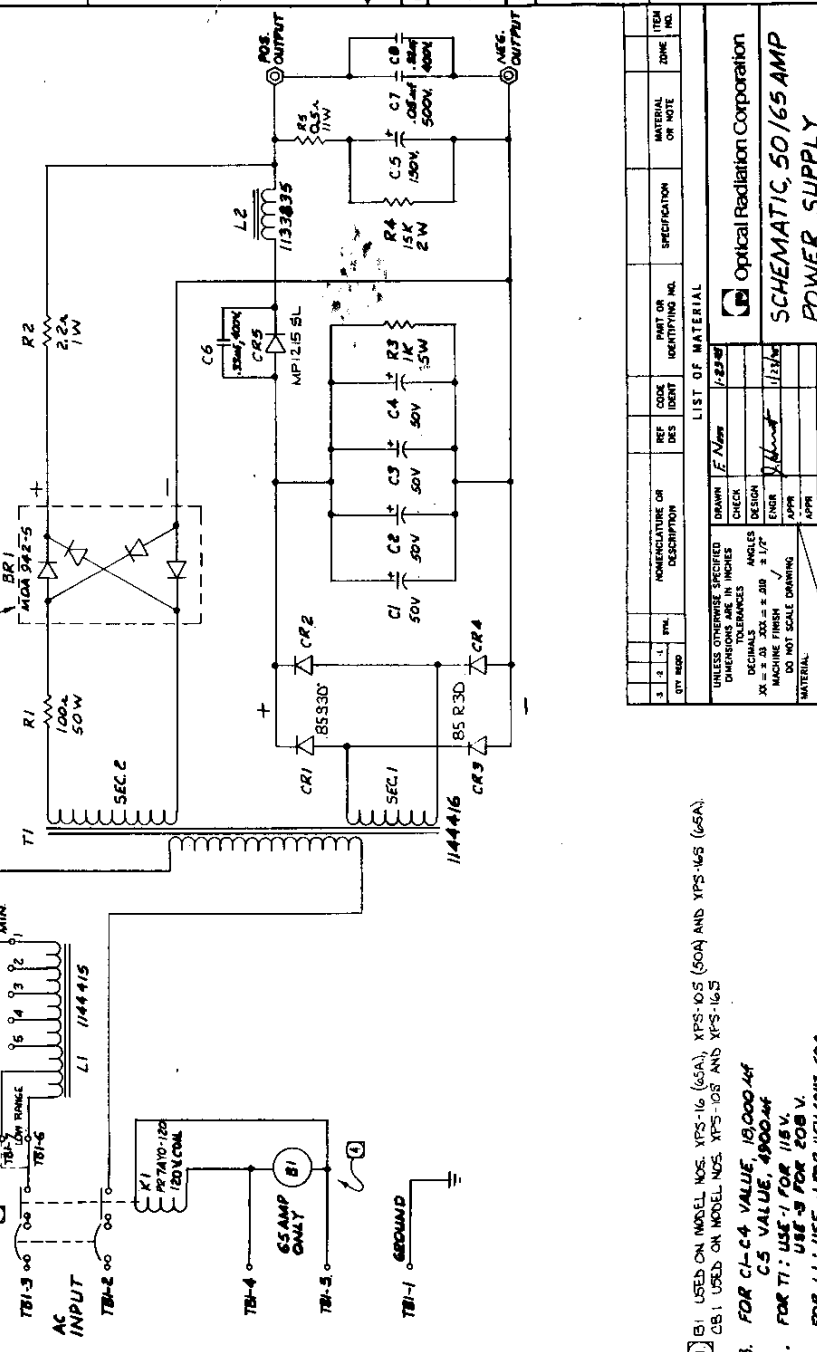
Whenever the power supply fails to operate properly, consult the schematic diagram, Dwg. No. 1134713, as a guide in determining the possible trouble. Consult lamphouse manual for troubleshooting procedures.



REVISIONS			
ZONE	DATE	DESCRIPTION	APPROVED
A	9-18-75	1) PARTS LIST CORRECTED TO REFLECT 100% PARTS LIST 2) PARTS LIST CORRECTED TO REFLECT 100% PARTS LIST 3) ADD RES. VALUE TO C5	[Signature]
B	5-25-76	REVISED	[Signature]
C	9-18-75	ADDED C.B.1 NOTE 4	[Signature]
D	3-3-76	ED #1772	[Signature]
E	4-18-76	N.S.M.C.	[Signature]
F	6-2-76	ED #1837	[Signature]



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D	3-3-76	ED #1772	[Signature]
E	4-18-76	N.S.M.C.	[Signature]
F	6-2-76	ED #1837	[Signature]

QTY	SYMBOL	DESCRIPTION	REF DES	CODE	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTE	ITEM NO.
1	CR1	85S30D	CR1					
1	CR2	85S30D	CR2					
1	CR3	85R30D	CR3					
1	CR4	85R30D	CR4					
1	CR5	MP12.5 BL	CR5					
1	C1	50V	C1					
1	C2	30V	C2					
1	C3	50V	C3					
1	C4	50V	C4					
1	C5	15K 2W	C5					
1	C6	100μF 50V	C6					
1	R1	100Ω 50W	R1					
1	R2	22Ω 1W	R2					
1	R3	1K 1/4W	R3					
1	R4	15K 2W	R4					
1	R5	100Ω 1/4W	R5					
1	L1	1144415	L1					
1	L2	1138835	L2					
1	T1	1144416	T1					
1	BR1	400V 3A 2-5	BR1					

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  
 DECIMALS TOLERANCES ANGLES  
 .XX .XX .XX ± .010 3/16°  
 MACHINE FINISH 1/16"  
 DO NOT SCALE DRAWING  
 MATERIAL: [Blank]
 CONTRACT NO. PD 816  
 DATE: 2-24-75  
 APPROVED: [Signature]  
 SCALE: 1:1  
 SHEET 1 OF 1

Optical Radiation Corporation  
 SCHEMATIC, 50/65 AMP  
 POWER SUPPLY  
 REV CODE IDENT NO. C 33030 1134713  
 REV F

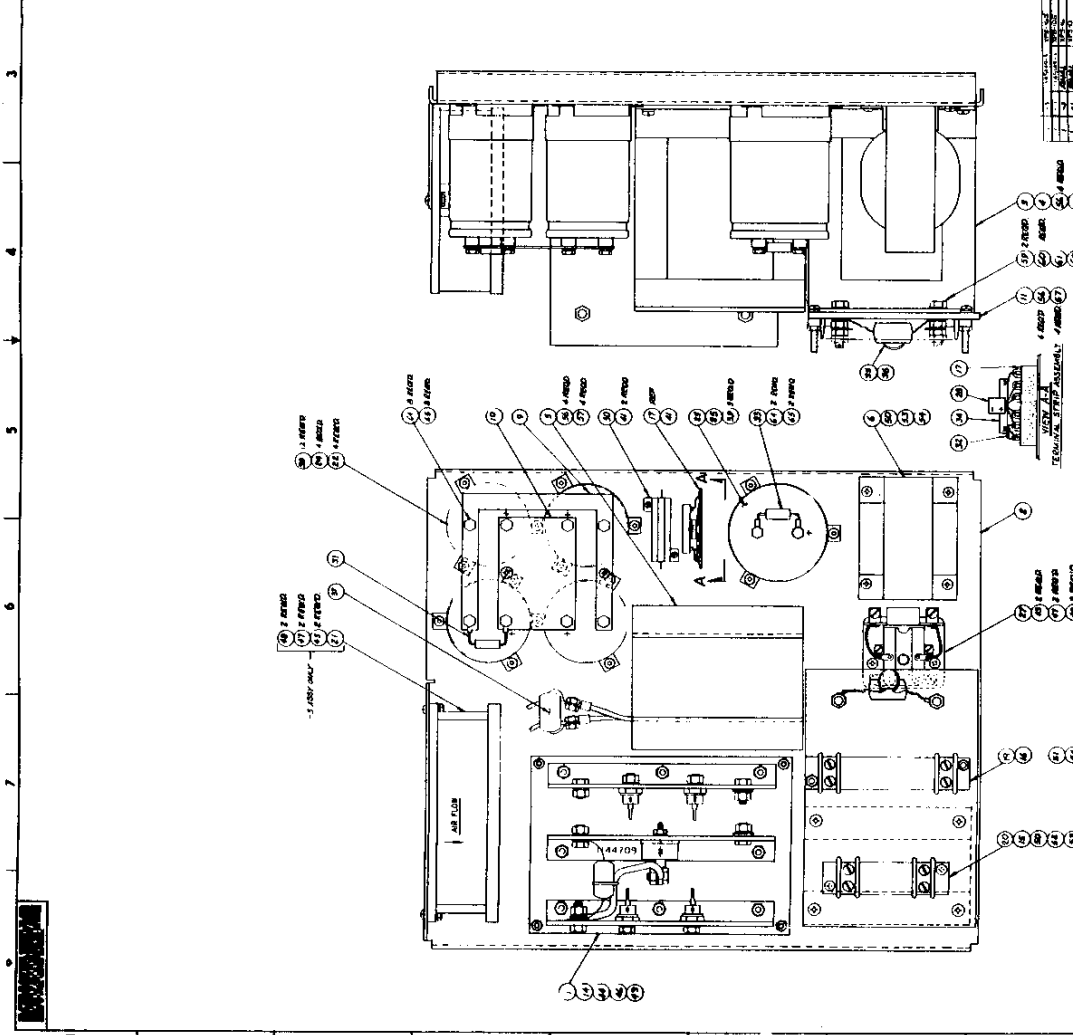
- NOTES:
1. FOR L1: USE -1 FOR 115V/60Hz, 50A.  
 USE -3 FOR 230V/60Hz, 65A.
  2. FOR T1: USE -1 FOR 115 V.  
 USE -3 FOR 208 V.
  3. FOR C1-C4 VALUE, 10,000.4uf  
 C5 VALUE, 4900.4uf
  4. B1: USED ON MODEL NOS. YPS-16 (USA), YPS-10S (50A) AND YPS-16S (USA).  
 C61: USED ON MODEL NOS. YPS-10S AND YPS-16S

SECTION 6 - POWER SUPPLY DATA/DRAWINGS

The following list and pages of assembly drawings contain the majority of parts used in the XPS-10S and XPS-16S power supplies. 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.

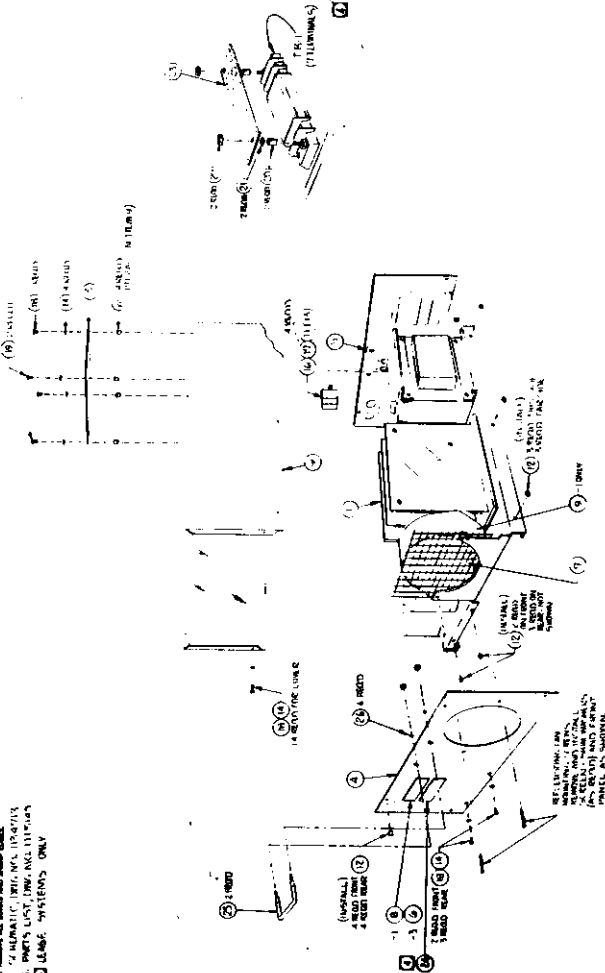


QTY	DESCRIPTION	UNIT	REF
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1	COVER PLATE	PCB	5
1	COVER PLATE	PCB	6
1	COVER PLATE	PCB	7
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1	COVER PLATE	PCB	100



D113199 6-3 6/76

**NOTES - UNLESS OTHERWISE SPECIFIED:**  
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 10. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.



**REVISED**

NO.	DATE	BY	REVISION
1	11/15/54	...	...
2	12/1/54	...	...
3	1/15/55	...	...
4	2/1/55	...	...
5	2/15/55	...	...

**LIST OF MATERIAL**

NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	...	...	...	...
2	...	...	...	...
3	...	...	...	...
4	...	...	...	...
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11	...	...	...	...
12	...	...	...	...
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14	...	...	...	...
15	...	...	...	...
16	...	...	...	...
17	...	...	...	...
18	...	...	...	...
19	...	...	...	...
20	...	...	...	...
21	...	...	...	...
22	...	...	...	...
23	...	...	...	...
24	...	...	...	...
25	...	...	...	...
26	...	...	...	...
27	...	...	...	...
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31	...	...	...	...
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34	...	...	...	...
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40	...	...	...	...
41	...	...	...	...
42	...	...	...	...
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**Optical Radiation Corporation**

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**REVISIONS**

NO.	DATE	BY	REVISION
1	...	...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...