Film-Tech

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INSTRUCTION MANUAL

XENON POWER SUPPLY

4 - 7 kW

TYPE 62-84000

STRONG INTERNATIONAL, Inc.
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PREFACE

The Strong International switching power supply Type 62-84000 is designed to operate a xenon bulb in all cinema lighting applications for Strong lamphouses. This unit will operate all xenon bulbs rated from 4000 to 7000 watts throughout their full operating ranges (29 - 49 V.DC, 90 - 160 A.DC). The power requirement for this unit is 208/230 (200 - 240) volts AC, 30 ampere, three phase, 50/60 Hz.

Incoming line power is transformed from 208/230 volt alternating current to a low voltage, high current DC output. The incoming AC line is filtered to eliminate noise and is then converted to DC. This DC voltage is switched on and off by a solid state switching circuit, and converted to a 25 kHz. square wave. The square wave is fed into output transformers to provide low voltage and high current. Rectifiers convert the 25 kHz. signal to DC, and the output is filtered to eliminate noise and ripple. Output to the xenon bulb is controlled through use of (2) potentiometers (coarse and fine).

A control transformer reduces the incoming line to 120 V.AC to power the lamphouse igniter and blower(s). A separate three ampere circuit breaker protects the control circuit in the event of a lamphouse component malfunction.

The high speed cooling fan operates on 24 V.DC and acts as a bleeder to drain the capacitors after the bulb is extinguished. A thermal switch protects the field effect transistors and the output diodes. This switch will open and interrupt operation of the power supply if internal temperatures exceed 190° Fahrenheit (88° Celsius). The switch will automatically close and restore operation when the excessive heat dissipates.

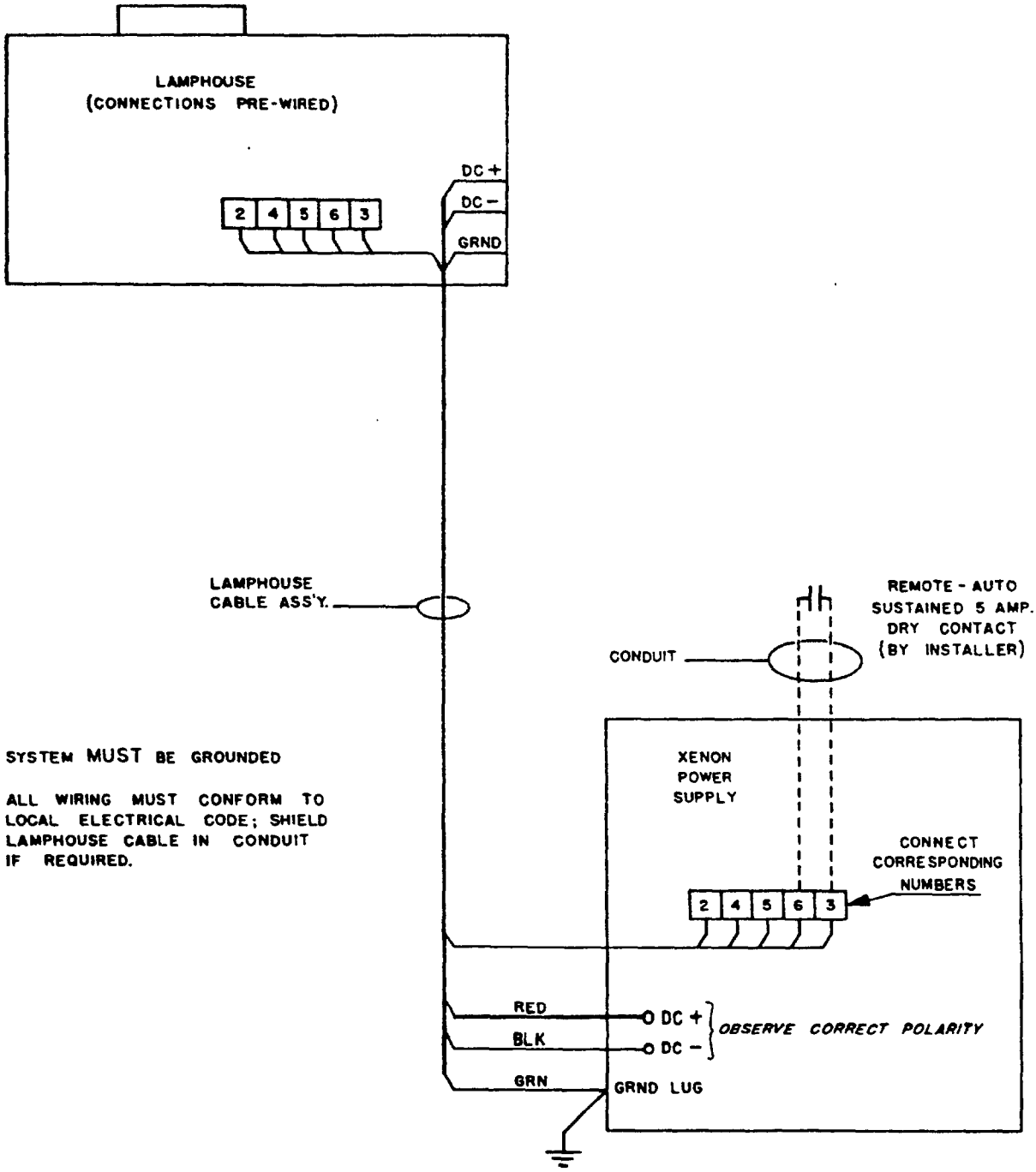
Loss of one or more phase of the incoming AC power, or a sudden decrease in incoming voltage (brown-out), will also interrupt power supply operation. These conditions are hazardous to the switching circuit, and the power supply will remain out of service until the AC supply line is corrected.

The mother board is protected by a 40 ampere cartridge fuse located adjacent to the AC input terminal block. This fuse is not commonly available, and should be serviced by a factory authorized technician. Do not change this fuse until the power supply has been OFF for at least (20) minutes to allow the capacitors to discharge completely. Consult your Strong International Dealer if this fuse fails repeatedly.

Refer all servicing of this power supply to an authorized Strong International Dealer. There are **no user serviceable** components in this unit.

Complete and return the postpaid Warranty Registration card received with the unit immediately upon installation.

LAMPHOUSE - POWER SUPPLY
INTERCONNECTION DIAGRAM



SYSTEM MUST BE GROUNDED

ALL WIRING MUST CONFORM TO LOCAL ELECTRICAL CODE; SHIELD LAMPHOUSE CABLE IN CONDUIT IF REQUIRED.

INSTALLATION - OPERATION

CAUTION: High voltages exist inside the power supply enclosure. Remove **only** the (2) small access panels in the power supply cabinet for installation procedures. The input panel is located near the circuit breakers; the output on the opposite corner.

Connect the lamphouse leads to the output side of the power supply prior to connecting to AC power. Lamphouse to power supply connections are illustrated in the lamphouse instruction manual. Make certain the lamphouse is grounded.

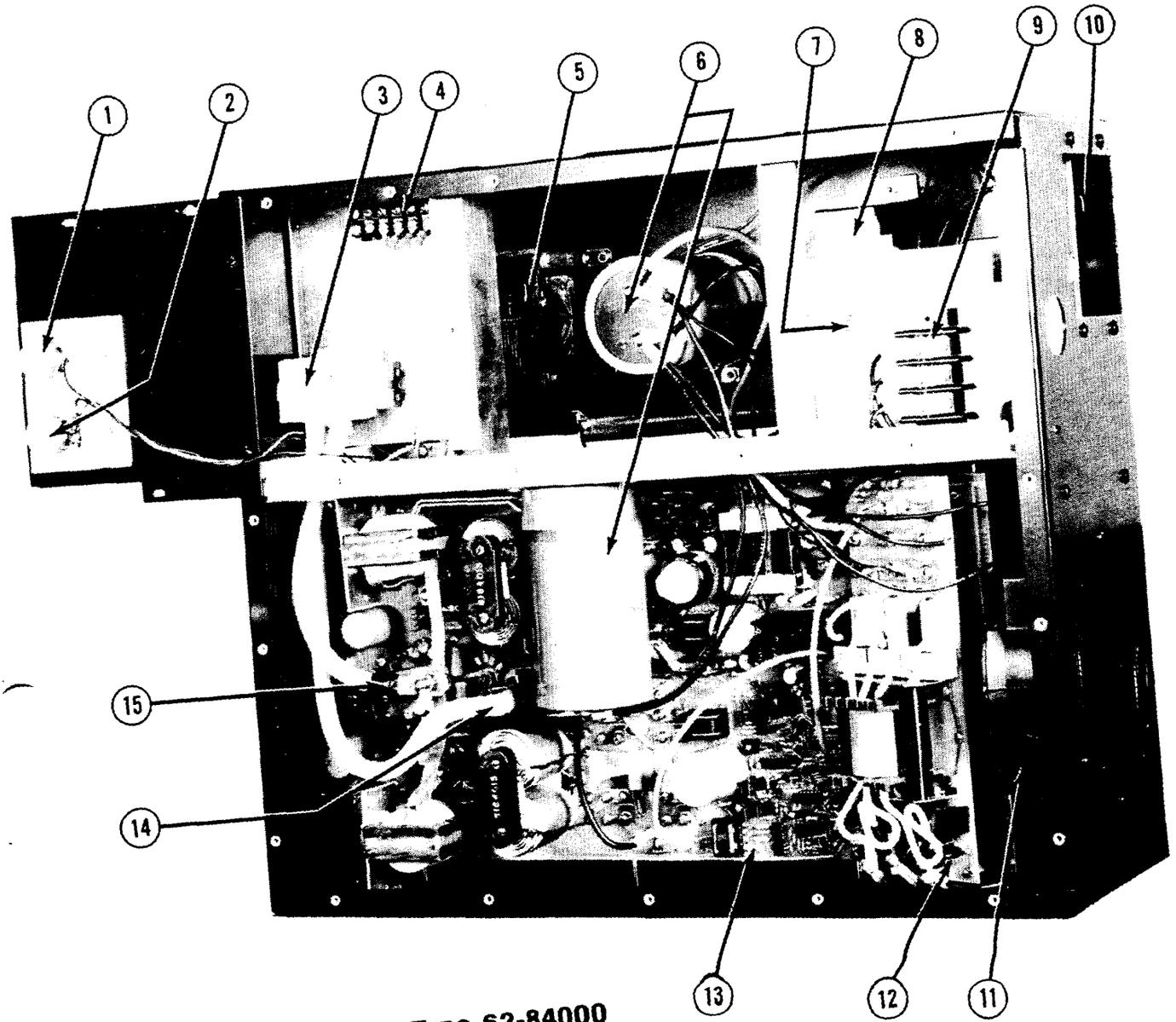
Power leads run to the unit must be of the correct size and type to conform to local codes. Shield in conduit as required. The power supply will not energize until the circuit breakers on the side of the cabinet are placed in the ON position.

Connect 208/230 V.AC three phase input to L1, L2, and L3. Single phase neutral is not required for installation of this unit. Attach the ground lug to an adequate ground.

See the warranty information packed with the xenon bulb for correct operating current. **Do not exceed, at any time, the maximum current level specified by the bulb manufacturer.**

Adjust the current output to the bulb through use of the (2) adjustment potentiometers. The FINE and COARSE adjustment potentiometers are located on the access plate used for lamphouse connection. Check the lamphouse ammeter on the first bulb ignition, and adjust the FINE potentiometer to the desired bulb current. Rotate the potentiometer clockwise to increase current, or counterclockwise to reduce current. If the bulb current is too low at the highest setting of the FINE potentiometer, rotate the COARSE potentiometer slightly clockwise. If the bulb current is too high at the lowest setting of the FINE potentiometer, rotate the COARSE potentiometer slightly counterclockwise.

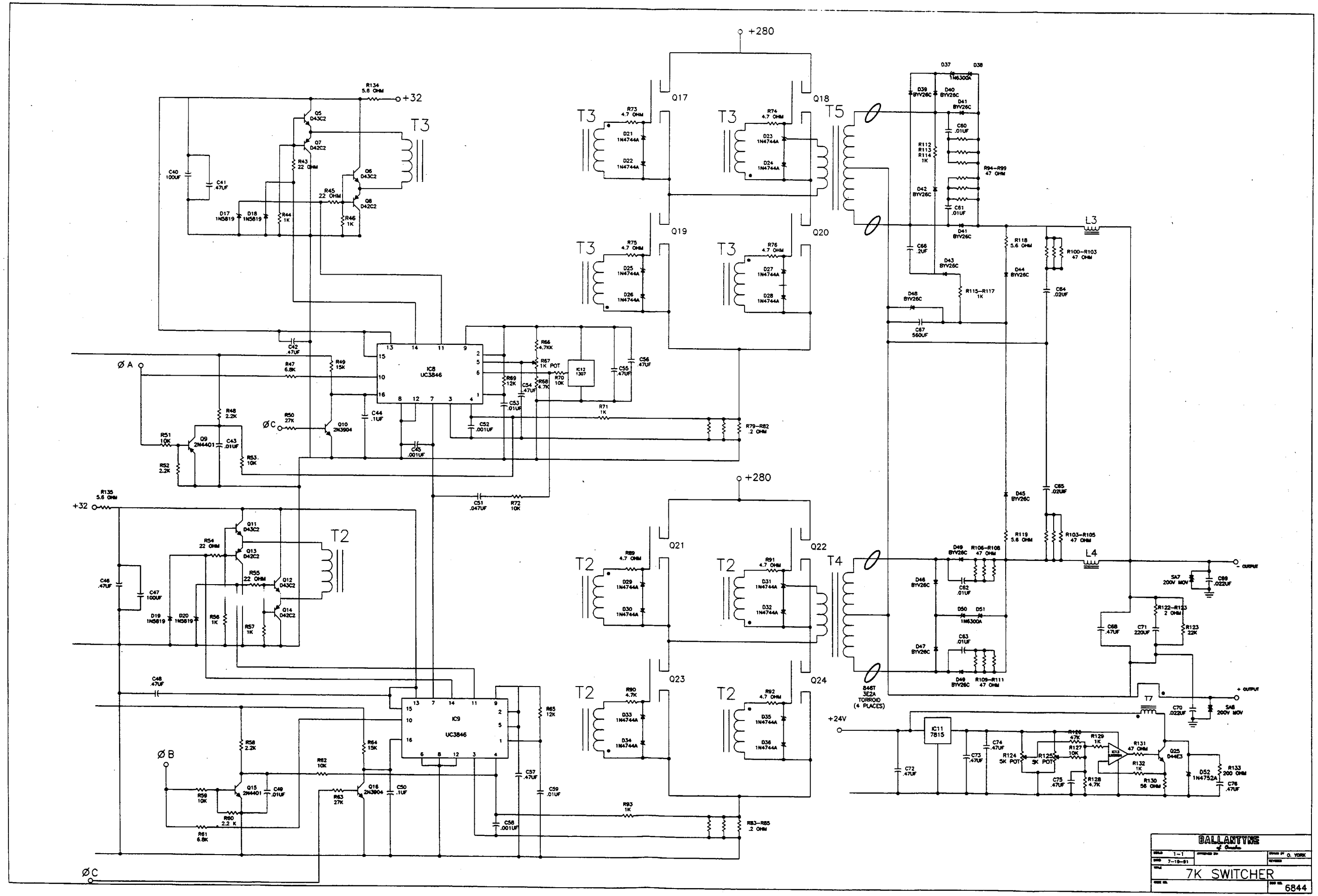
The step-down transformer for the lamphouse control circuit is factory prewired. Terminals 2 & 4 supply 120 V.AC to the lamphouse blower(s). After completing the lamphouse interlock circuit, the 120 V.AC return to the power supply on wires 5 & 6 to close the contactor on closure of the LAMP ON switch. The same (5 & 6) circuit energizes the lamphouse igniter. Terminals 3 & 6 are dry contact switching terminals for remote or automated control. See lamphouse manual Installation Diagram. **Do not** apply voltage to terminals 3 & 6.



XENON POWER SUPPLY Type 62-84000

SWITCHING TYPE XENON POWER SUPPLY
Model 62-84000
4 - 7 kW

Item	Description
1	Fine Adjustment Potentiometer
2	Coarse Adjustment Potentiometer
3	Lamphouse DC Output Terminal Block
4	Lamphouse Control Circuit Terminal Block
5	Control Circuit Stepdown Transformer
6	Filter Capacitors
7	Input Ground Connector
8	Line Filter
9	Three Phase AC Input Terminal Block
10	Circuit Breaker & Fuse Access Panel
11	Cooling Fan
12	Filter Board
13	Mother Board
14	Positive (+) DC Output Cable
15	Negative (-) DC Output Cable


+280
+32
T3
T2
T4
T5
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
L3
L4
IC8
UC3846
IC9
UC3846
IC11
7815
T7
ØA
ØB
ØC
+24V
- OUTPUT
+ OUTPUT
848T
3E2A
TORROID
(4 PLACES)
BALLANTYNE
7K SWITCHER
6844

3 PHASE
AC LINE
INPUT

CB 1

CB 2
3A

PL 1

220V

115V

2 4

OUT TO
LAMPHOUSE

R138 100K

R156 100K

R157 100K

C77 1UF

C78 1UF

C79 1UF

SA1 SA2 SA3 SA4 SA5 SA6

C80 .01UF C81 .01UF C82 .01UF

L 1

C83 .01UF C84 .01UF C85 .01UF

R139 22 OHM

R140 22 OHM

R141 22 OHM

GATE DRIVER

R142 47 OHM C91 .47UF

R143 47 OHM C92 .47UF

R144 47 OHM C93 .47UF

C94 .47UF

C95 .47UF

C96 .47UF

R145 18 OHM

R146 18 OHM

R147 18 OHM

C86 .47UF

C88 .47UF

C87 .47UF

DS1 1N5627

DS2 1N5627

DS3 1N5627

DS6 1N5627

PHASE LOSS SENSE

DSCR 1 DSCR 2 DSCR 3

C89 .01UF

C90 .01UF

L 2

F1
40A
500V

+280VDC

R148 5 OHM

R148 5K

C97 3700UF

C98 3700UF

C99 .47UF

C100 .47UF

C101 330UF

C102 330UF

NOTE:
SA1–SA8 ARE ALL
400V MOV'S

3T

D3 BYW29-150

D2 BYV26C

+24

R16 22 OHM

C11 .01UF

C12–C16 1000UF

C17 .47UF

+280

R1 5.6 OHM

R2 100K

R3 470 OHM

C1 .47UF

C2 100UF

C3 .47UF

C4 47UF

C5 .47UF

C6 .0047UF

D1 1N4004

5T

T1

D4 D5 BYV26C

R15 47 OHM

C9 .022UF

C18 .47UF

C10 1000UF

R5 150K

R6 150K

5K POT R7

IC 1 UC3842N

R8 47 OHM

Q2 IRFPG50

R11 10K

R13 2.7K

R14 2.7K

D7 BYV26E

R4 150K

Q1 2N3904

R9 10K

D6 1N4744A

R10 1K

R12 .39 OHM

C8 .001UF

C7 .001UF

R17 3.9K

NOTE:
A=4093B IC2
B=4093B IC3
C=4013B IC4
D=4049B IC5

D15 BYV26C

D16 BYV26C

C38 .47UF

R42 100 OHM

T6

+32

R40 22 OHM

R41 22 OHM

Q26

Q27

R39 100 OHM

D13 1N4744A

D14 1N4744A

R38 100 OHM

C39 .47UF

5 LAMPHOUSE RETURN

6 LAMPHOUSE RETURN

R18 6.8K

C19 .01UF

C20 .01UF

D8 DF-01 VM18A

C21 .47UF

R19

IC7

R20 MEG

R21 10K

R22 10K

C22 .47UF

PHASE LOSS SENSE

R23 100K

TS

Q3 2N3906

D10 1N4148

D9 1N4752A

R24 8.2K

C23 .047UF

R25 2.2K

R26 100K

C24 330PF

D11 1N4148

R28 470 OHM

R27 47K

C25 22UF

+15

A Ø

B Ø

C Ø

+32

IC10 7815CT

D12 1N4750A

C26 .47UF

R29 2.2K

C27 .47UF

R30 10K

R31 33K

Q2 IRFPG50

R32 1K

C28 330PF

R33 6.8K

C29–C33 .47UF

R34 6.8K

R35 1.5K

IC6 ICM 7555

C34 .001UF

C35 330PF

R36 4.7K

R37 4.7K

C36 47PF

C37 47PF

BALLANTYNE
of Omaha

DRAWN BY O. YORK

4.2-7K SWITCHER

62-84000 WD

6845

TROUBLESHOOTING

See Lamphouse Manual Before Troubleshooting Power Supply

No Lamphouse Blowers; Power Light ON, Supply ON, Breaker ON

1. Three ampere circuit breaker is tripped. Press to reset.
2. Improper AC connection. Check AC voltage at contactor terminals; should read 190 - 240 V.AC across L1, L2 & L3.
3. Miswired output on terminals 2 & 4. Should read 100 - 120 V.AC; check wire numbers.
4. Defective circuit breaker. Check resistance across circuit breaker CB1 with supply OFF; should measure (0) Ohms. Replace if defective.
5. Defective filter board. Check across each leg of the filter board input and output; should measure 190 - 240 V.AC. Replace as required.
6. Defective step-down transformer (T6). Check input at L1 & L3 on contactor; should measure 190 - 240 V.AC. Check output at terminals 2 & 4; should measure 100 - 120 V.AC. Replace if defective.

Lamphouse Blowers Operate, but Power Supply Contactor Does Not Close

1. LAMP "ON" or MODE switch not set correctly. See Lamphouse Manual.
2. No voltage on terminals 5 & 6. Possible open interlock switch(s); see Lamphouse Manual.
3. Power supply overheated (open thermal switches). Check for correct blower operation and unobstructed air flow. Thermal switches will open if temperatures inside the power supply cabinet exceed 190° F. (88° C.).

Bulb Fails to Ignite; Blowers Operating, Contactor Closed

1. Check DC No Load output; should measure 120 - 140 V.DC. If lower, **consult factory.**
2. Faulty DC output connection. Check and tighten as required.
3. Blown fuse. **Allow power supply (5) minutes to discharge (power OFF) before removing the fuse.** Fuse should measure (0) Ohms. Replace as required.
4. Fuse blowing repeatedly. Loose DC connection; check and retighten. Burned cables on mother board; inspect and replace as required.

No Current Adjustment

1. Wires to adjustment potentiometer(s) broken. Resolder as required.
2. Defective mother board. **Consult factory.**

MAINTENANCE

The power supply requires very little service to insure correct operation. Periodically check all electrical connections for tightness and condition; discolored terminals may indicate oxidation which will increase resistance.

Clean the ventilation inlet and outlet grilles on a regular basis to insure good air flow. Thermal switches mounted to the power supply will interrupt operation of the power supply in the event of overheating.

The blower motors are permanently lubricated and require no oil.

220 VOLT CONTROL CIRCUITS

EARLY MODEL STRONG XENON LAMPHOUSES, including the X-16, X-25, and X-60, utilized a 220 V.AC control circuit to power the lamphouse blowers (if used) and the xenon bulb igniter. The currently manufactured Strong Switching Type Xenon Power Supply can be used with these systems when the installation wiring procedure outlined below is followed, and the 81819 Transformer is used.

1. Connect the heavy DC leads from the lamphouse to the DC output terminals in the xenon power supply. **Observe Correct Polarity**; RED to POSITIVE (+) and BLACK to NEGATIVE (-). Connect the system to an adequate earth ground.

2. Lamphouse control leads (2, 3, 4, 5, and 6) are supplied by the installer. Use 16 gauge (minimum) stranded copper wire with insulation suitable for 90° Celsius or higher, or a wire **conforming to local electrical codes.** Number the conductors, or if using colored wire, conform to Strong's color code:

   2 - Brown
   3 - Red
   4 - Orange
   5 - Blue
   6 - Yellow

3. Shield all leads in conduit or greenfield if desired, or if required by local electrical codes.

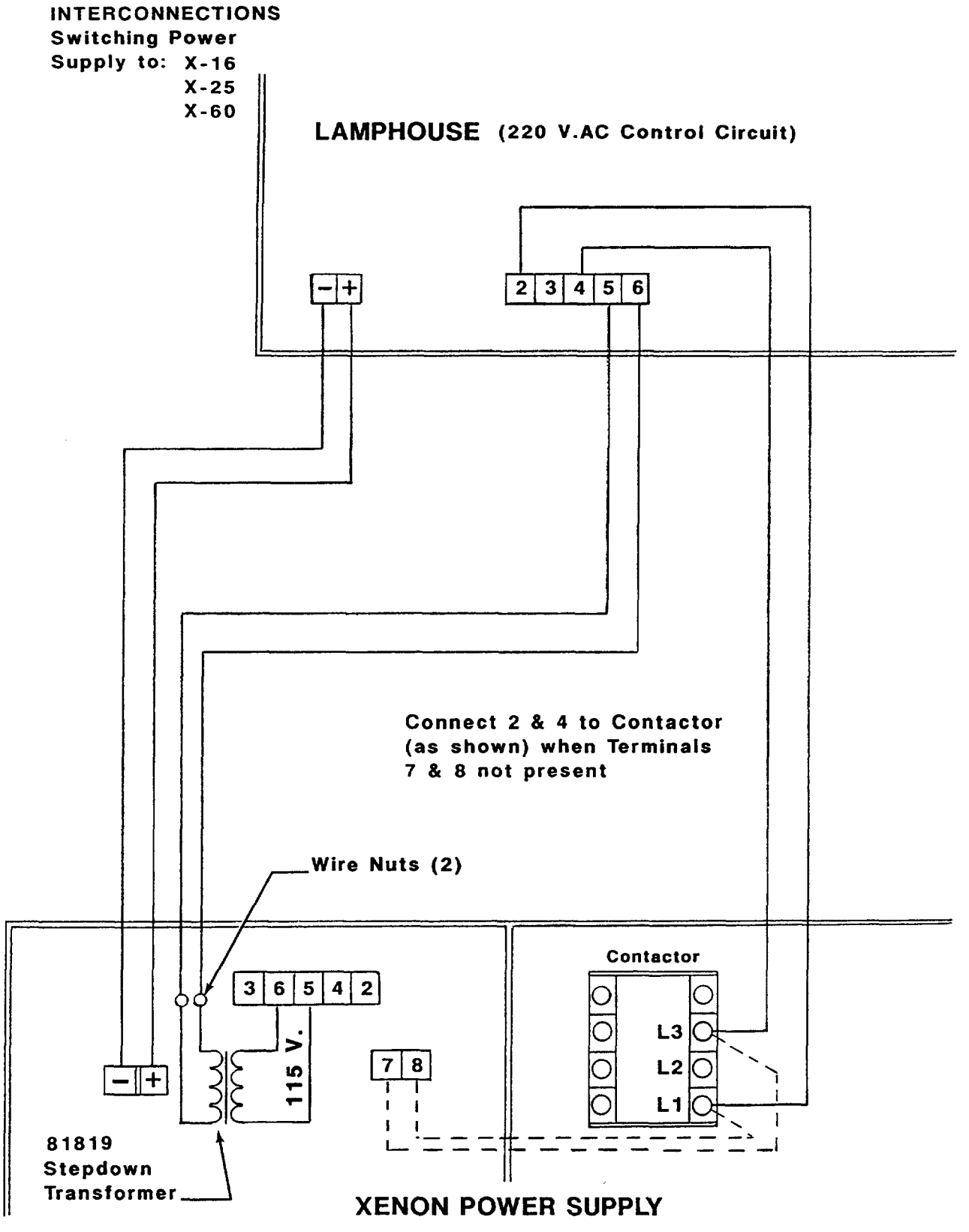
4. Wires 2 & 4 supply 220 V.AC to the lamphouse. Some models of switching power supplies (i.e. Type 62-84000) provide Terminals 7 & 8 adjacent to the DC output terminals to supply 220 V.AC. Use these terminals when present; otherwise connect lamphouse wires 2 & 4 to 220 V.AC derived from Terminals L1 and L3 on the power supply contactor (see INTERCONNECTIONS diagram).

5. Wires 5 & 6 return the control voltage from the lamphouse after all lamp interlock switches are closed. Route these wires to the lamphouse hook-up compartment in the power supply cabinet. Set the 81819 Stepdown Transformer supplied by Strong into the compartment. It need not be mounted if the power supply remains stationary.

6. Using the wire nuts provided, attach lamphouse wires 5 & 6 (220 V.) to the BLACK and GREEN primary leads of the 81819 stepdown transformer. Connect the two RED transformer secondary (115 V.) leads to Terminals 5 & 6 on the barrier strip adjacent to the DC output terminals in the power supply.
   NOTE: Failure to use the stepdown transformer will damage the power supply.

7. Wires 3 & 6, where used, are supplied for automation switching. Do not apply voltage to these terminals; use a 5 ampere sustained dry contact. See the instructions furnished with the automation controller regarding LAMP control.

8. Apply AC power to the xenon power supply and set the DC output current as instructed in the INSTALLATION section of the Power Supply Instruction Manual.


INTERCONNECTIONS
Switching Power
Supply to: X-16
X-25
X-60
LAMPHOUSE (220 V.AC Control Circuit)
− +
2 3 4 5 6
Connect 2 & 4 to Contactor
(as shown) when Terminals
7 & 8 not present
Wire Nuts (2)
3 6 5 4 2
115 V.
7 8
Contactor
L3
L2
L1
− +
81819
Stepdown
Transformer
XENON POWER SUPPLY