Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjustments to anything you may read about in these Adobe manual downloads.

www.film-tech.com

MODEL XD1000-3

XENON LAMP POWER SUPPLY

OPERATION MANUAL

CONTENTS

OUTLINE

Xenon lamp power supply, modle XD 1000-3 is a power supply equipment for 16mm model 163-x projector or 35mm model 104-x projector. It uses thyristor for rectification, arithmetic amplifier for steady current and indirect-control trigger circuit for igniting xenon lamp. Its automatic-manual logic circuit for projector exchange is an indirect-control circuit with steady current ability, and the projector exchange does well. This xenon lamp power supply and its control circuit power supply provide their output a short-circuit protection and use safely.

The indirect-control trigger circuit for igniting xenon lamp and the automatic-manual logic circuit for projector exchange are loaded on two print current boards separatly. There provide testing board and spare current P.C.B. and it is convenient to fix. The entire equipment is light, compact and well-designed.

* Read in detail the operation manual before use the xenon lamp power supply model XD 1000-3.

Notice:

. Put the power supply case in a dry ventilated place. Keep a distance of 0.5m or more between the back of the power supply case and the wall. Don't open the cover of the cast in order to ensnre the ventilating device run normally.

. Chose power input socket with single-phase-three-wire system and connect the 3rd lead of the socket with ground safyly. Connect zero line with the 3rd lead of the socket is absolutely forbidden. The right way is given in the figure below. The cover of the power supply connect with the sooket. If connect 3rd lead with the 2nd lead by mistake, then the cover of the power supply will be electrified. It is very dangorous to human being, to be careful.

. Put the trigger button of projector untill xenon lamp is light completely. When main voltage lower than 220V and xenon lamp voltage largen then 22V, then the xenon lamp current shoud be decreased in order to decrease power consumption.

MAIN TECHNICAL DATA

1. enviroment condition

. Temperature: -10℃～40℃

. Relative moisture: lower than 80%

. Working load class first class, continue working

. Resistance in electrified wire netting: lower than 0.2Ω after starting work, the decrease voltage of the network lower than 10V.

2. Technical data

. Power requirement: frequency 50Hz

voltage 220V ±10%

20%

current equal or lower than 10A

power about 2KVA

. Voltage output: 22V

. Unloaded voltage: about 110V

. current output: 45A, manual adjustment range from 31.5 to 49.5A

. Safety and responsibility: Both Xenon lamp power supply and control circuit power supply have a short-circuit protection.

. Projector motor: 110V, 50Hz

. Impelling lamp: 10V, 50Hz(DC)

. Volume: 400×180×460(unit: mm)

. Weight: 37Kg

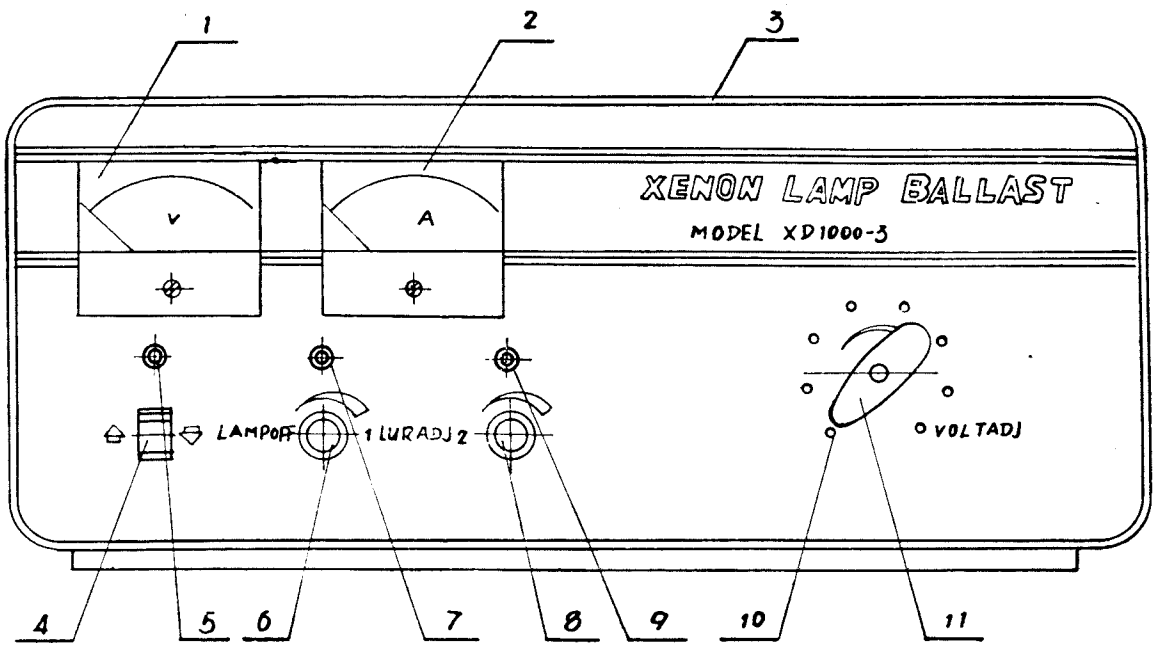
FRONT SIDE

1. Alternative current voltmeter
2. Direct current voltmeter
3. Case cover
4. Xenon lamp trigger control switch
5. Xenon lamp trigger control indication lamp
6. Xenon lamp current adjustment knob
7. Logic indication lamp 1
8. Xenon lamp current adjustment knob
9. Logic indication lamp 2
10. Voltage scale
11. Voltage adjustment knob

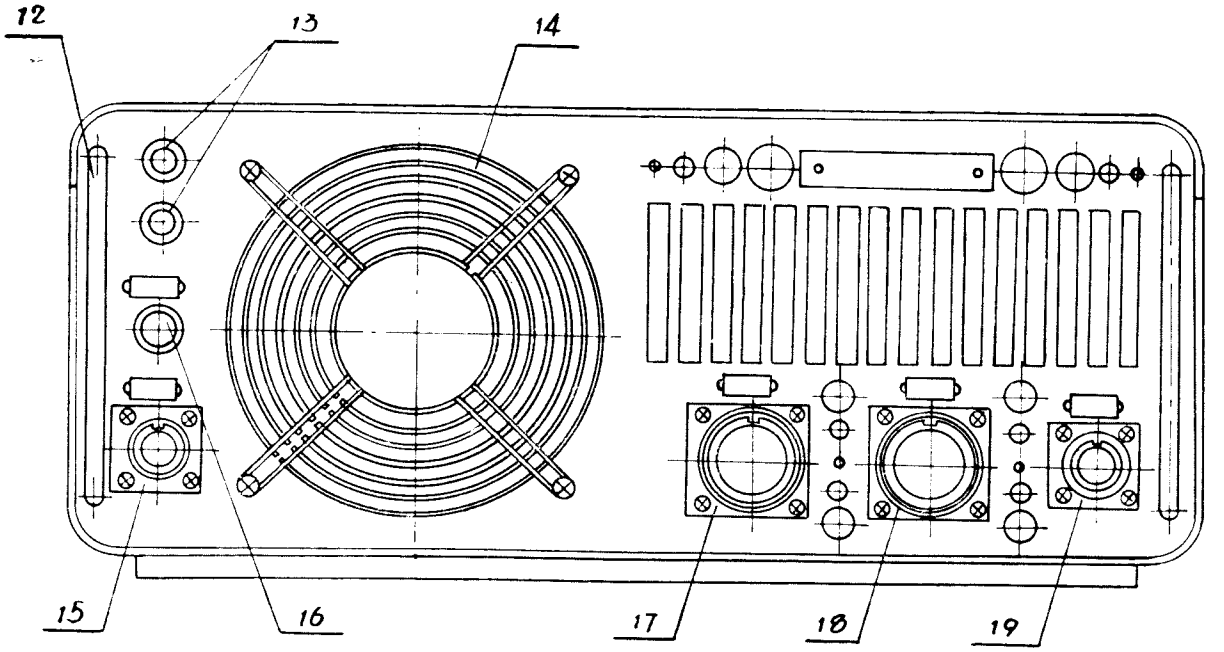
Back side

12. Handle
13. Auxiliary power fuse
14. Discharge fan
15. 220V AC linein socket
16. Main power fuse
17. Profector1 socket
18. Projector 2 socket
19. 220V AC auxiliary socket

Front side



Back side



OPERATION

1. Cable connect

By using 12-lead cable, connect projector 1 to power supply through socket 17 and connect projector 2 to power supply through socket 18. By using three-lead cable, connect the power supply to 220V, 50Hz electrified wire netting through socket 15.

2. Adjustment switch knob 11:

Turn voltage adjustment knob clockwise and make the voltmeter to 220V. When turn away the voltage adjustment knob 11 from Point 10-the first point on the bottom of left side, the discharge fans for projector 1 and projector 2 will run too.

3. Xenon lamp trigger control switch 4:

After being prepared for working, turn Xenon lamp trigger control switch up and make control indication lamp 5 light and all parts of the projectors get ready for working. Xenon lamp trigger control switch 4 is an emergency switch. During running process, if something appear unusually inside the power supply case, then turn switch 4 down instantly to cut off control circuit and to stop suppling power and make sure power supply be in safety state.

4. Xenon lamp current adjustment

Suppose projector 1 is working. Turn on motor switch of projector 1 and film transfer parts begin to work. Put down tripper button, the Xenon lamp and the impelling lamp of projector 1 light in step, and the indication lamp 7 light on the control panel of power supply case. Adjust Xenon lamp current adjustment knob 6 and make current meter for Xenon lamp current to 45A. knob 8 is the same with knob 7. When turn the knob clockwise, then the current increase gradually, and decrease if turn the knob reverse.

Formula for Xenon lamp adjustment

$$I = \frac{P}{V}$$

I-value of Xenon lamp current(indicated by current meter 2)

P-power consumption (suppose it is 1000W)

V-value of Xenon lamp(the standard value of a new lamp is $22V \pm 2V$. But the old one can not be certain)

See the equality above, I varise directly as V. Remember when $V=22V$, then $I=45A$, and when V increase, then I decrease correspondingly to keep $P=IV$. Generally, in order to enlarge the life-span of Xenon lamp, make power consumption lower than 1000W.

Under the condition of AC voltmeter indicating 220V, Xenon lamp voltage being 22V, the Xenon lamp current indicating meter 2 can be adjusted under 45A. After adjusting voltage adjustment switch 11, the working voltage cannot get to 220V, then decrease Xenon lamp working current to protect over consume power and to ensure the responsibility of triggering Xenon lamp. The lower the voltage, the more the current decrease. But the lowest current value must not lower than 35A.

5. Twin-projector exchange

Twin-projector exchange is controled directly by motor switch and Xenon lamp trigger button load on the projectors. If projector 1 is working, and the film in projector 1 has nearly finished, then projector 2 should get ready for working turn on motor switch of projector 2 to run it, and put down the button of projector 2. By starting logic control circuit, Xenon lamp and impelling lamp of projector 1 turn off automatically. In the same time, Xenon lamp and impelling lamp of projector 2 turn on, and now, automatic-manual twin projector exchange has been completed.

Turn Xenon lamp off

When the film has finished or there is a stopping need halfway then turn off Xenon lamp as follow:

. turn off the switch for projector motor, then the xenon lamp die out at once.

. turn xenon lamp trigger control switch down on power supply case, then the xenon lamp die out at once.

. if the projector is model 163-x, then switch the projector off, the xenon lamp die out at once.

. turn voltage adjus tment knob from scale 11 to scale 10 on the left corner to switch power supplyoff, then the xenon lamp die out at once.

Notice:

Use the first three methods will be good for xenon lamp and power supply, for they can keep the discharge fans of the projector lamp and the power supply running.

SECURITY ITEMS

1. Power supply requirement: $220V \pm \begin{matrix}10\% \\ 20\%\end{matrix}$, 50Hz Electrified wire netting resistance: lower than 0.2Ω

2. Make sure ground well to avoid the shell being electrifide.

3. Check all kinds of power cables, connectors of cables and make sure there are no loose contact.

4. When igniting, put the xenon lamp trigger button down completely and make sure the lamp is light before letting go.

5. When the power supply lower than 220V or some other reasons, like ageing of xenon lamp or the increase of tube voltage, then decrease the consumption of xenon lamp to run the projectors.

6. The discharge fans in projector lamp case and power case are use to cool the air. When they stop by false, the temperature inside the cases will be go up sharp and such as to destroy electric parts and shorten the life period of xenon lamp and reflector mirror.

7. This power supply provide two spare print circuit boards for emergency, and don't make wrong one when need.

8. Get ground well when use electric soldering iron to check and repair the projector. When check and do some repairments, depart power cable from electrified wire netting or the ground line of soldering iron and the phase line may get short circuit and destory the key parts. Please take care of it.

DISORDER INSPECTION

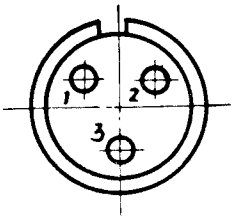
1. No indicating on AC voltmeter
. check fuse for distribution device or check circuit breaker
. check power supply connector
. check main fuse of power supply
2. Stoppage of discharge fan
. check the fan wire
. check the discharge fan
3. No indication on xenon trigger control indication lamp
. check trigger switch
. check every group voltage of control power
. check the indication lamp
4. No indication on logic indication lamp
. check projector switch
. check the door of lamp case
. check 12-lead connector
. check the indication lamp
. check logic circuit
5. No igniting
. check addition power fuse 13
. check xenon cartridge
6. No lighting, only strike sparks between the two plate of the xenon lamp
. check xenon lamp
7. Steading current quality of xenon lamp descent
. check xenon lamp are starting
. check the xenon lamp ageing extent
. check the consumption power of xenon lamp
. check current output
. check line in voltage
8. Difficulty of twin-projector exchange
. check xenon lamp consumption power
. check inlet line voltage

ADDITIONAL REMARK

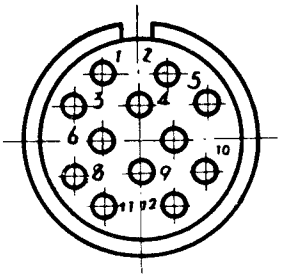
1. Electric circuit diagram: main circuit drawing 030000 and circuit drawing 060000

2. Arrangement of socket-lead

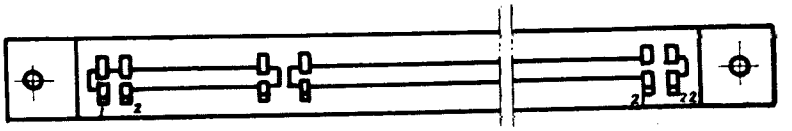
Y_1 Y_2



Y_A, Y_B,



socket of printed circuit

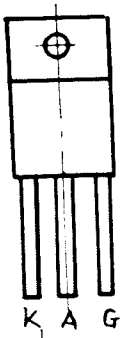


3. Transistor outlet leads

. double-action

electric symbol

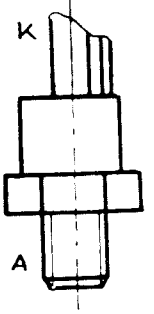
figue



. thyristor: 3CT

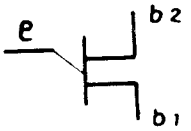
electric symbol

figue

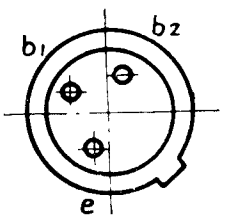


. double-base transistor, BT(Q1)

electric symbol

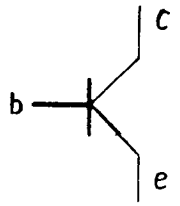


figue

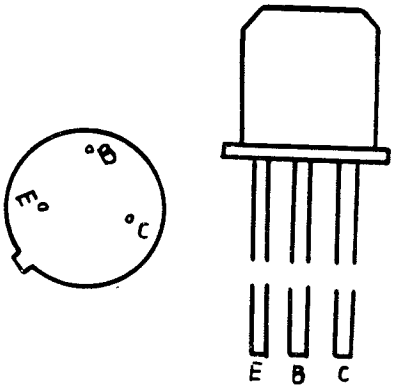


4. transistor(NPN)Q

electric symbol

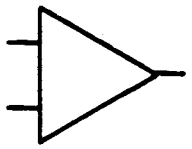


figue

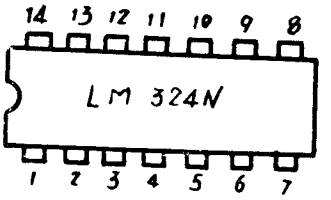


5. arthimetic amplifier; IC

electric symbol

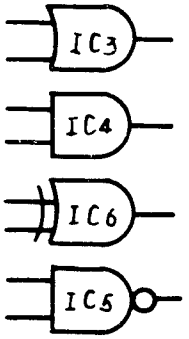


figue



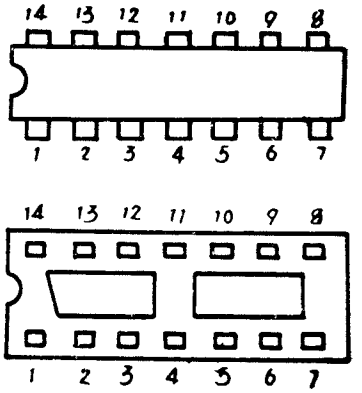
6. logic circuit

electric symbol



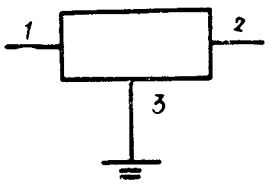
figue

socket

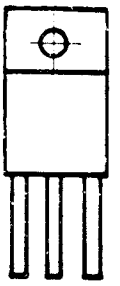


7. three-lead stabilizer; SW

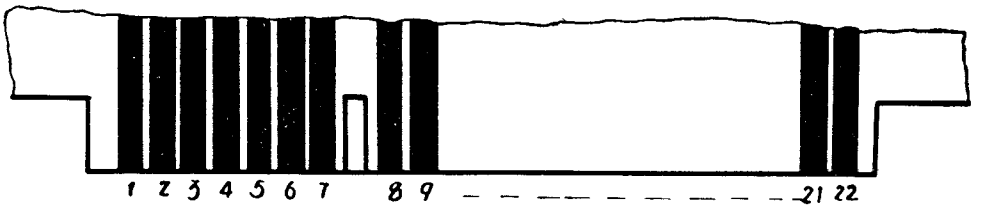
electric symbol



figue



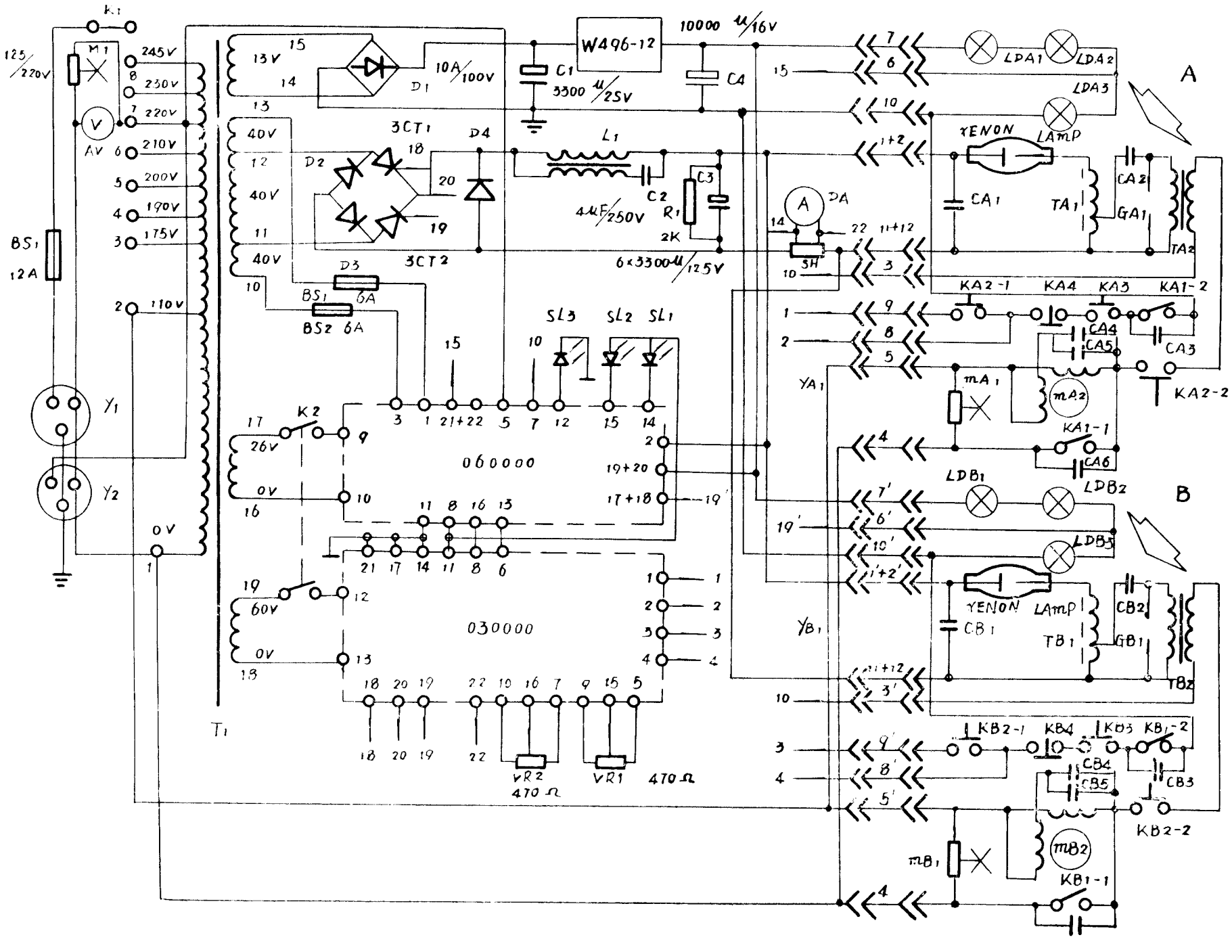
8. arrangement for P.C.B. outlet leads

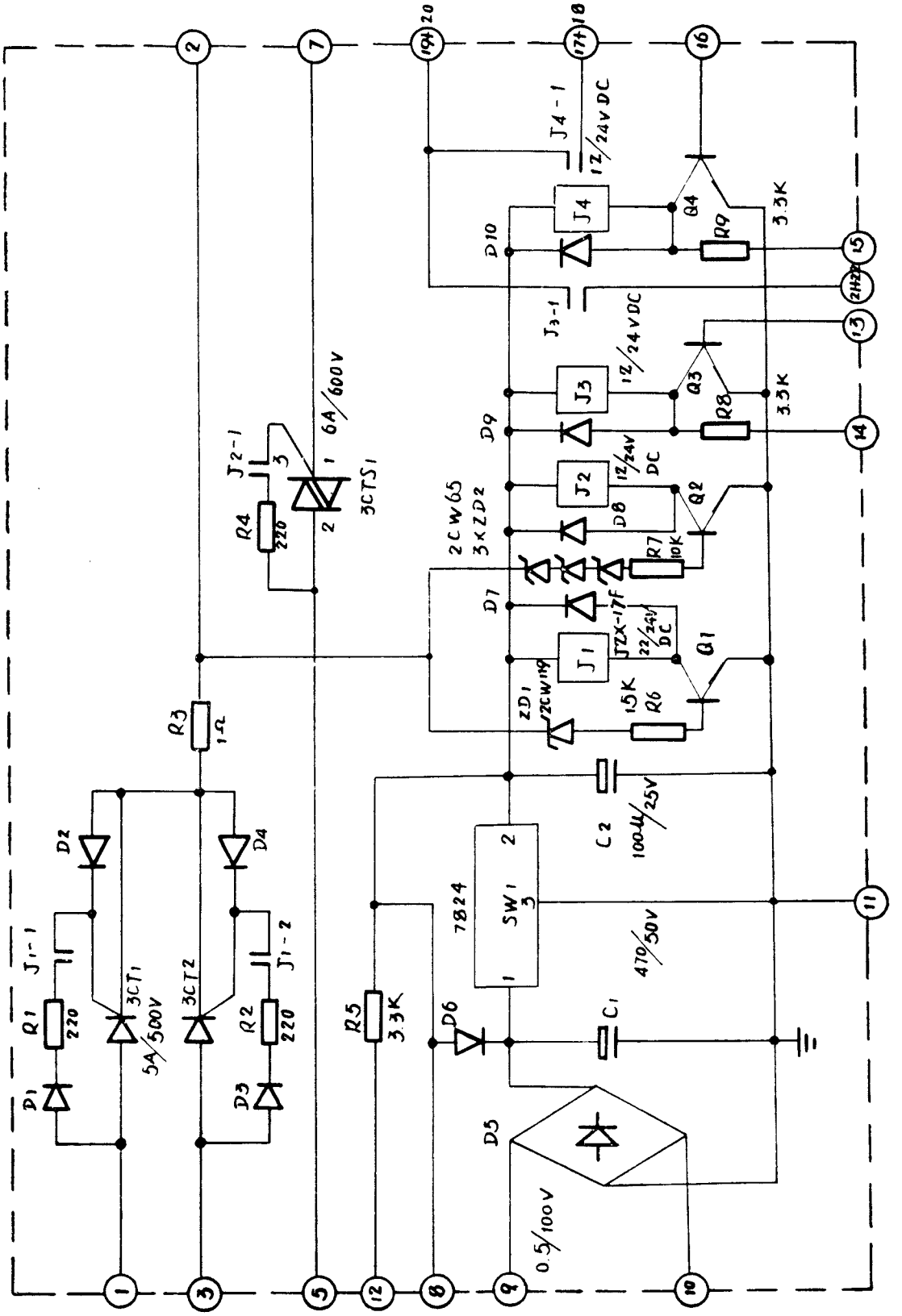


9. relay

(a) J_1 J_{1-1} J_{1-2}

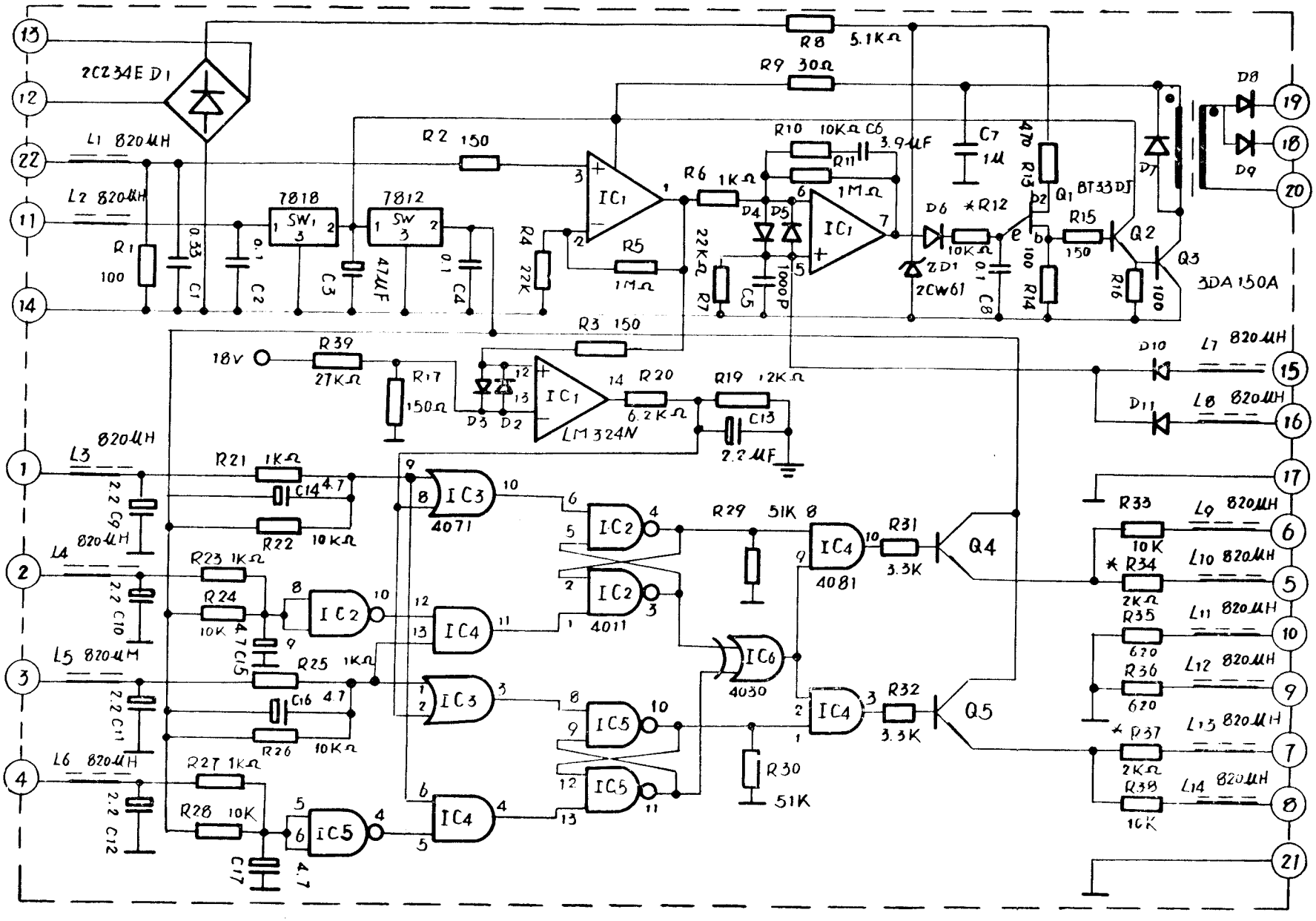
(b) J_2 (J_3, J_4) J_{2-1} (J_{3-1}, J_{4-1})

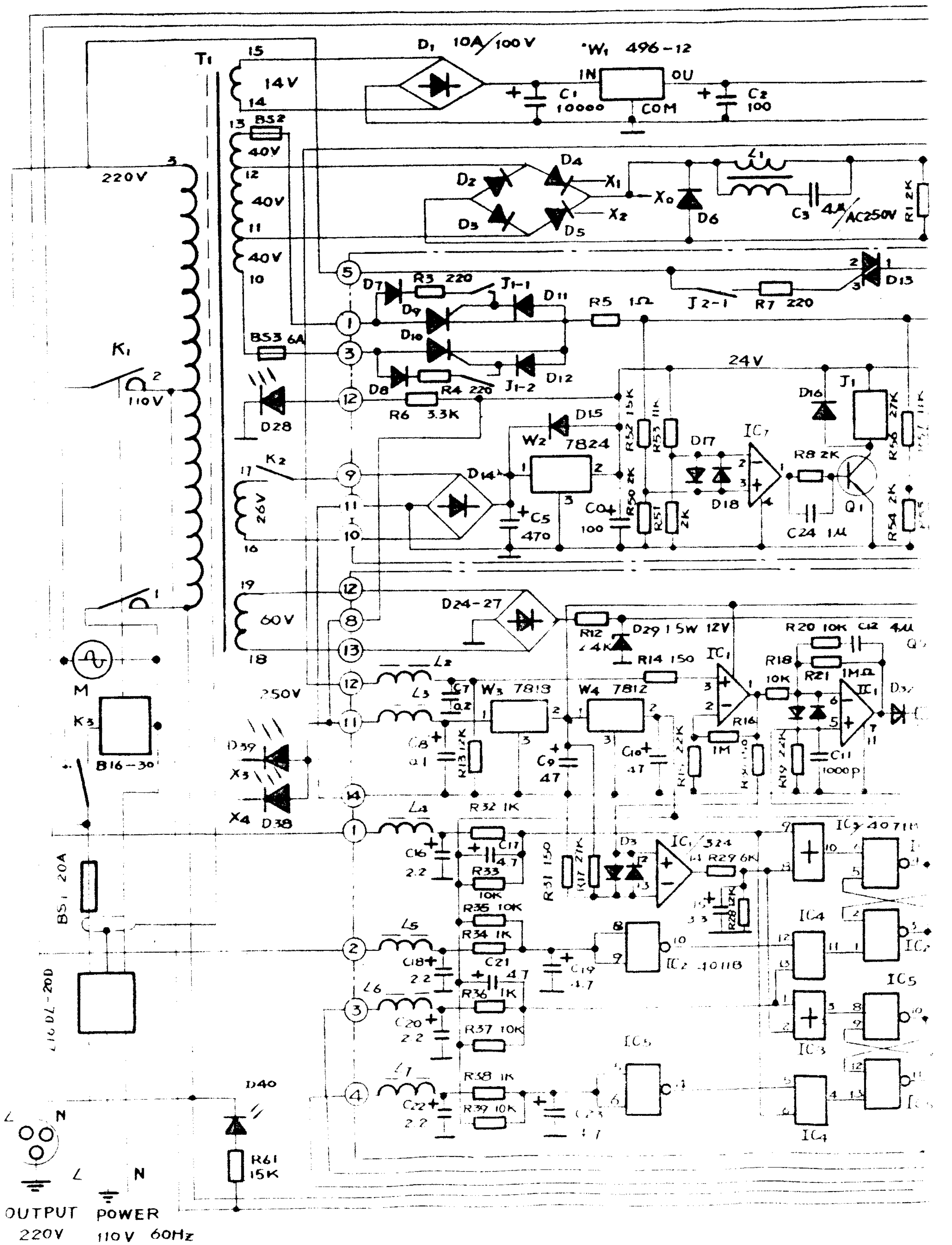

XENON LAMP POWER CIRCUIT
K1
M1
125/220V
245V
230V
220V
210V
200V
190V
175V
110V
0V
AV
BS1 12A
Y1
Y2
T1
13V
10A/100V
D1
W496-12
10000 u/16V
C1 3300 u/25V
CA
L1
C2 4uF/250V
C3
R1 2K
6×3300u/125V
3CT1
3CT2
D2
D4
40V
12
11
D3
BS1 6A
BS2 6A
SL3 SL2 SL1
K2
26V
060000
030000
VR2 470Ω
VR1 470Ω
A
DA
SH
LDA1
LDA2
LDA3
XENON LAMP
CA1
TA1
CA2
GA1
TA2
KA2-1
KA4
KA3
KA1-2
CA4
CA5
CA3
KA2-2
YA1
mA1
mA2
KA1-1
CA6
B
LDB1
LDB2
LDB3
YB1
CB1
TB1
CB2
GB1
TB2
KB2-1
KB4
KB3
KB1-2
CB4
CB5
CB3
KB2-2
mB1
mB2
KB1-1



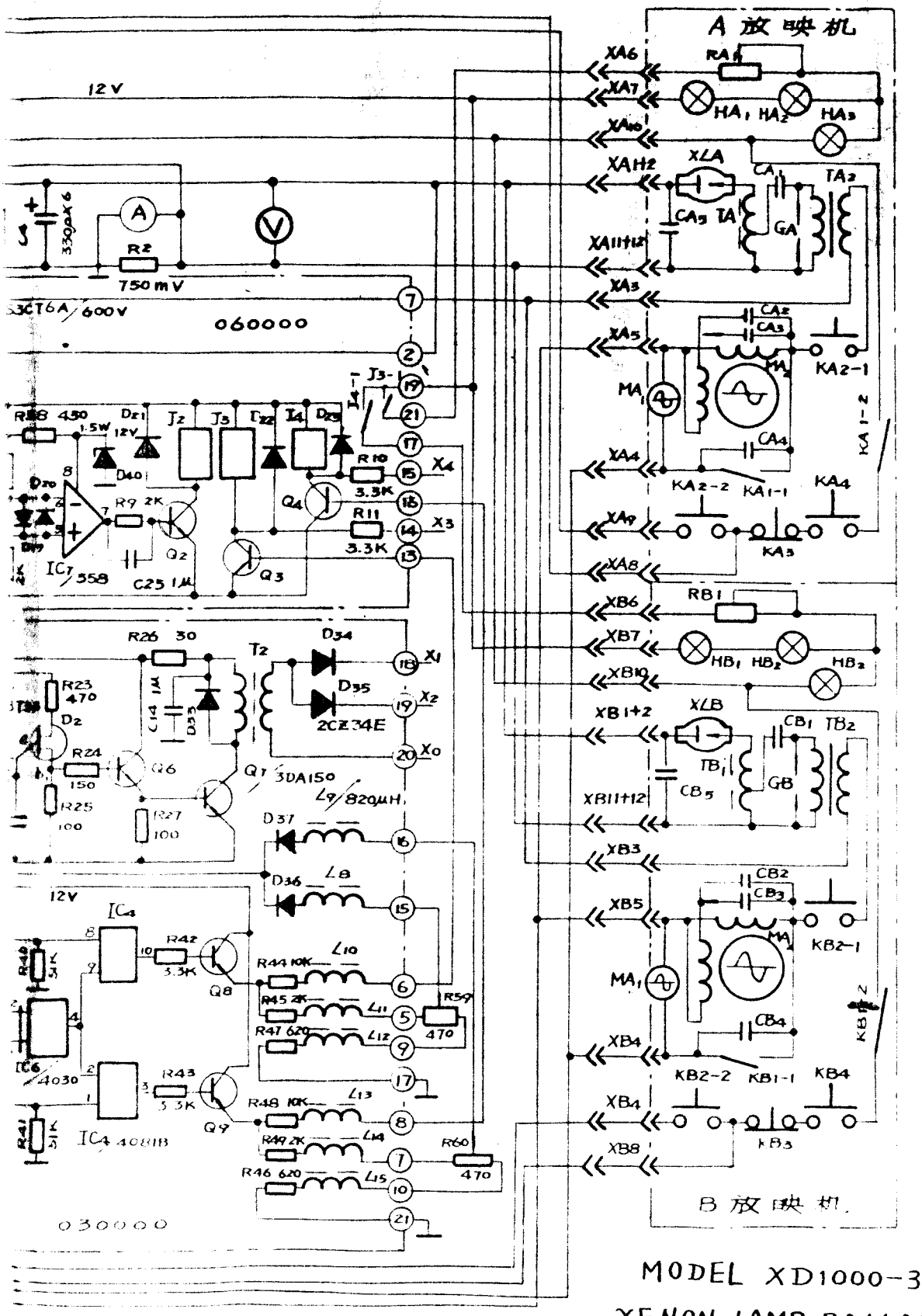
INITIATION CONTROL CIRCUIT

EXCHANG CONTROL CIRCUIT





T1
14V
40V
40V
40V
220V
110V
K1
K2
K3
B16-30
M
26V
60V
250V
D1 10A/100V
W1 496-12
IN
OU
COM
C1 10000
C2 100
BS2
BS3 6A
D2
D3
D4
D5
D6
X1
X2
X0
L1
C3 4μ/AC250V
R1 2K
D7
R3 220
J1-1
D11
D9
D10
D12
D8
R4 220
J1-2
R5 1Ω
J2-1
R7 220
D13
24V
D28
R6 3.3K
D15
W2 7824
R52 1.5K
R53 1K
D17
IC7
R8 2K
D16
J1
27K
Q1
D14
C5 470
C0 100
R50 2K
R51 2K
D18
C24 1μ
R54 2K
D24-27
R12 2.4K
D29 1.5W 12V
R14 150
R20 10K
C12 4μ
R18
R21
1MΩ
IC1
10K
L2
L3
C7 0.2
W3 7818
W4 7812
C8 0.1
R13 12K
C9 47
C10 47
R16
1M
R19 22K
C11 1000p
D39
X3
X4
D38
L4
R32 1K
C16 2.2
C17 4.7
R33 10K
R31 150
R17 27K
IC1 324
R29 6K
R28 12K
IC3 4071B
R35 10K
R34 1K
L5
C18 2.2
C21 4.7
C19 4.7
IC2 4011B
IC4
IC5
L6
R36 1K
C20 2.2
R37 10K
IC3
IC6
L7
R38 1K
C22 2.2
R39 10K
C23 4.7
D40
R61 15K
BS1 20A
110 DZ-20D
L
N
OUTPUT 220V
POWER 110V 60Hz



MODEL XD1000-3

XENON LAMP BALLAST