



'The Pinball Incident!'



Data East Pinball, Inc.

1990 Janice Avenue
Melrose Park, IL 60160

☎ 1-708-345-7700

FAX 1-708-345-7718

Toll-Free 1-800-KICKERS

Joe Blackwell
Dir., Technical Support

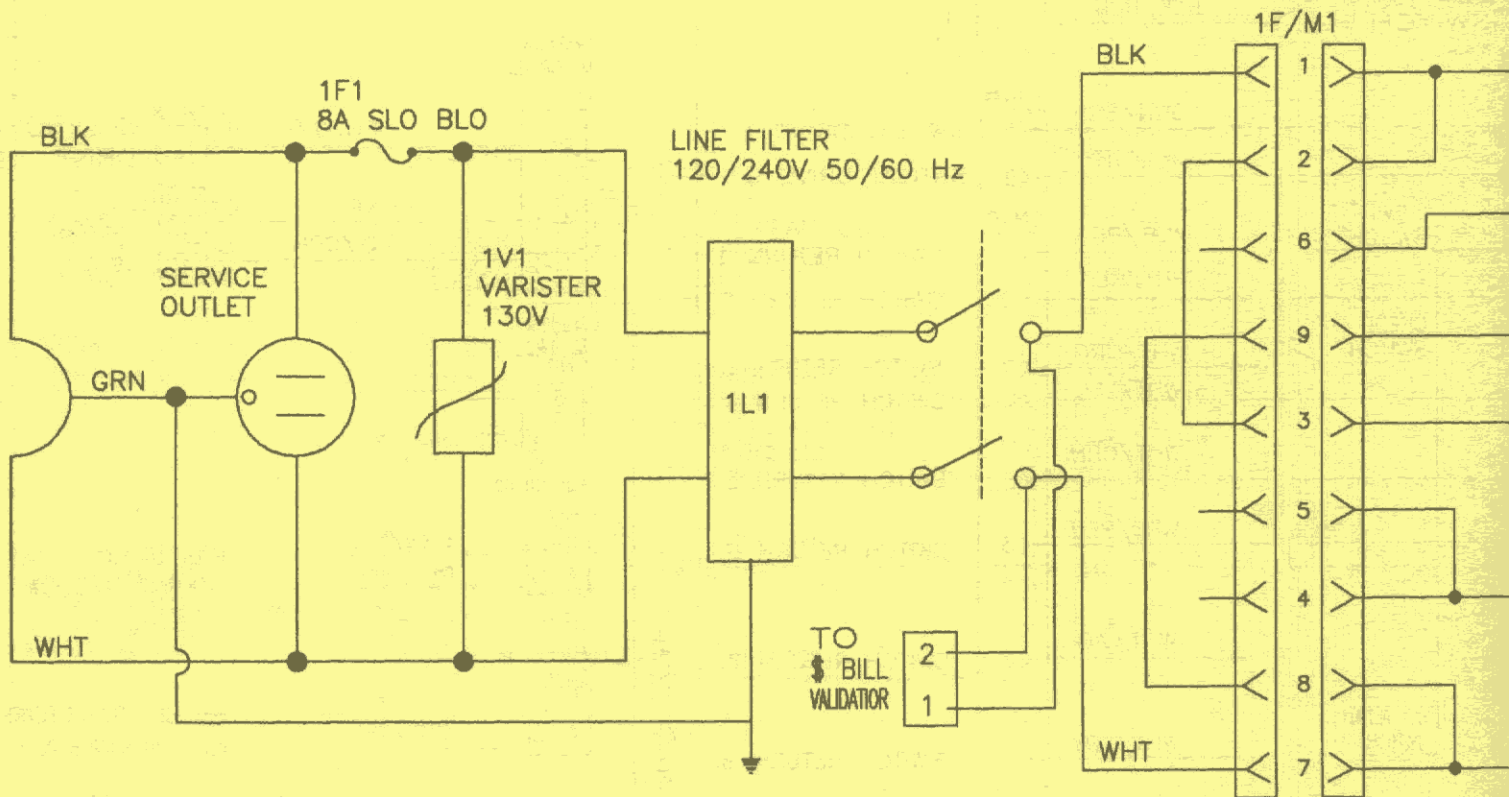
Eric Winston
Technical Support Eng.

Jay Allen
Tech. Doc. Administrator

Steve Novak
Technical Support Mgr.

THIS CONFIGURATION FOR 115

FOR LOWER LINE VOLTAGES
OR 220 VOLT OPERATION
SEE SAMPLES BELOW



JUMPER FOR VOLTAGE VARIATION

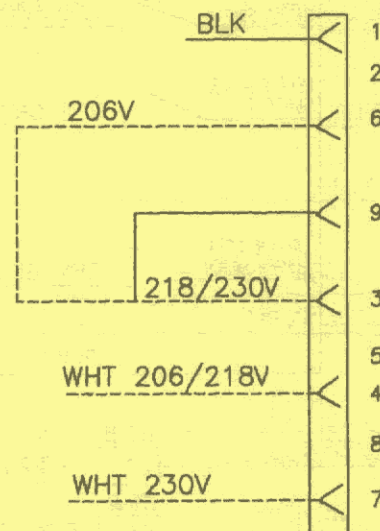
230/218/206 VOLTS

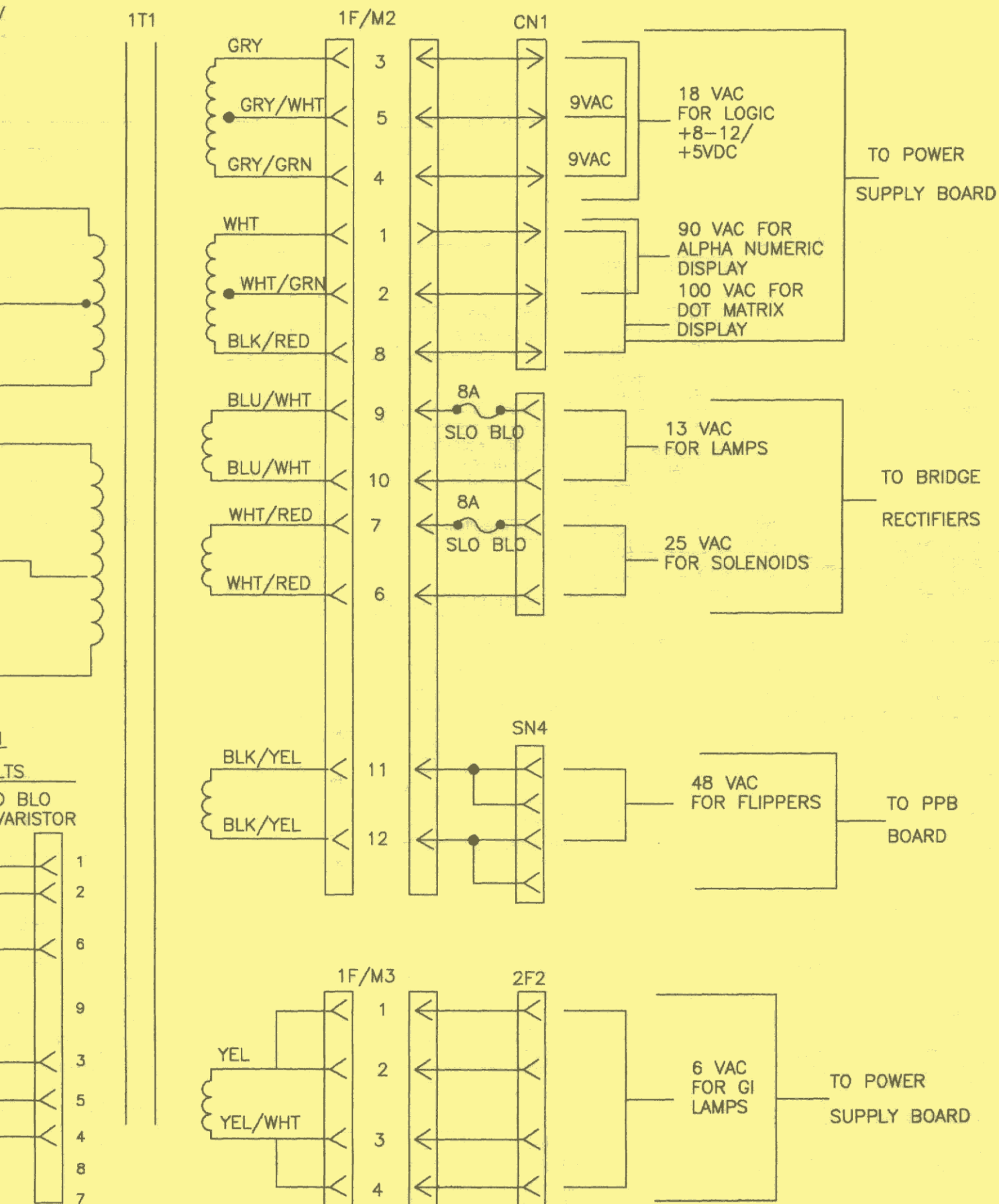
1F1= 4A SLO BLO
1V1=275V VARISTOR

100/105 VOLTS

1F1= 8A SLO BLO
1V1= 130V VARISTOR

REMOVE
PIN 9





COIN DOOR

CPU CN14/2 GRND
CPU CN2/1 ENABLE
CPU CN3/10 METER STROBE
KEY
SIGNAL TO COIN METER
CPU CN4/9 +18V

TO METER BOARD

99	WHT	<1
80	GRY/BLK	<2
82	GRY/RED	<3
KEY		<4
81	GRY/BRN	<5
69	BLU/WHT	<6

AMP CONNECTOR
TO \$ BILL VALIDATOR

(AC)	BLK	<4
W(AC)		<6
DIODE		<7
GRN/BRN		<8
WHT/GRN		<9

112-5001-00
1N4001 DIODE
SWITCH DRIVE
SWITCH RETURN

STEP
FOR/REV

(EUROPEAN USE)
4TH COIN

RIGHT COIN

(U.S. BILL ACCEPTOR)
CENTER COIN

LEFT COIN

SLAM TILT

TAG
SWITCH

TO COIN METER

PSCN6/10	89	GRY (+5VDC)	<1
COIN DOOR INTERFACE BOARD	81	GRY/BRN (COIN SIGNAL)	<2
		N.C.	<3

PRINTER BOARD
CN1

ORG/BRN	<1
ORG/RED	<2
ORG/BLK	<3
KEY	<4
ORG/YEL	<5
ORG/GRN	<6
ORG/BLU	<7
ORG/VIO	<8
ORG/GRY	<9

DATA LINES
CPU CN3/1-9

CN2

PS CN6/3 12 VDC	GRY/RED	<1
	KEY	<2
CPU CN1/6 PRINTER CONTROL	VIO/WHT	<3
CPU CN1/5 PRINTER STROBE	VIO	<4
CPU CN2/1 ENABLE	GRY/BLK	<5
	N.C.	<6
CPU CN3/11 CA2 PRINTER BUSY	ORG/WHT	<7
	N.C.	<8
PS CN6/10 +5VDC	GRY	<9
CPU CN5/7 GRND	BLK	<10

FINISHING
MOVE

TAG

CREDIT
BUTTON

BUY A BALL

CPU
CN6

LAMP RETURN 7
LAMP RETURN 8
LAMP RETURN 9
LAMP RETURN 3

CPU
CN7

LAMP DRIVE 2
LAMP DRIVE 4

CABINET
SPEAKER
MONO

STEREO
VOLUME
CONTROL
10K

YEL/WHT
YEL/BLK

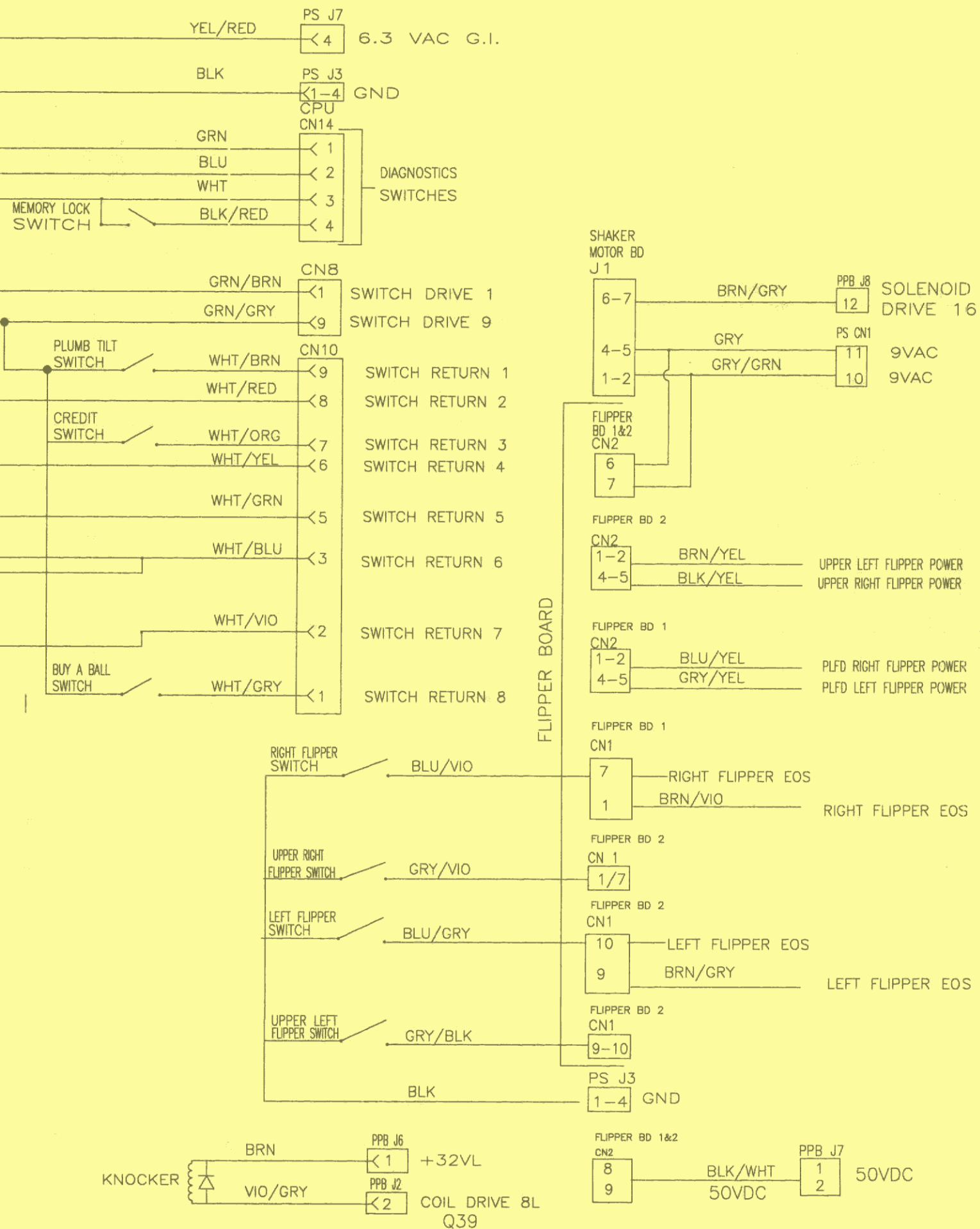
SND BD CN1

<7 CENTER -
<6 CENTER +

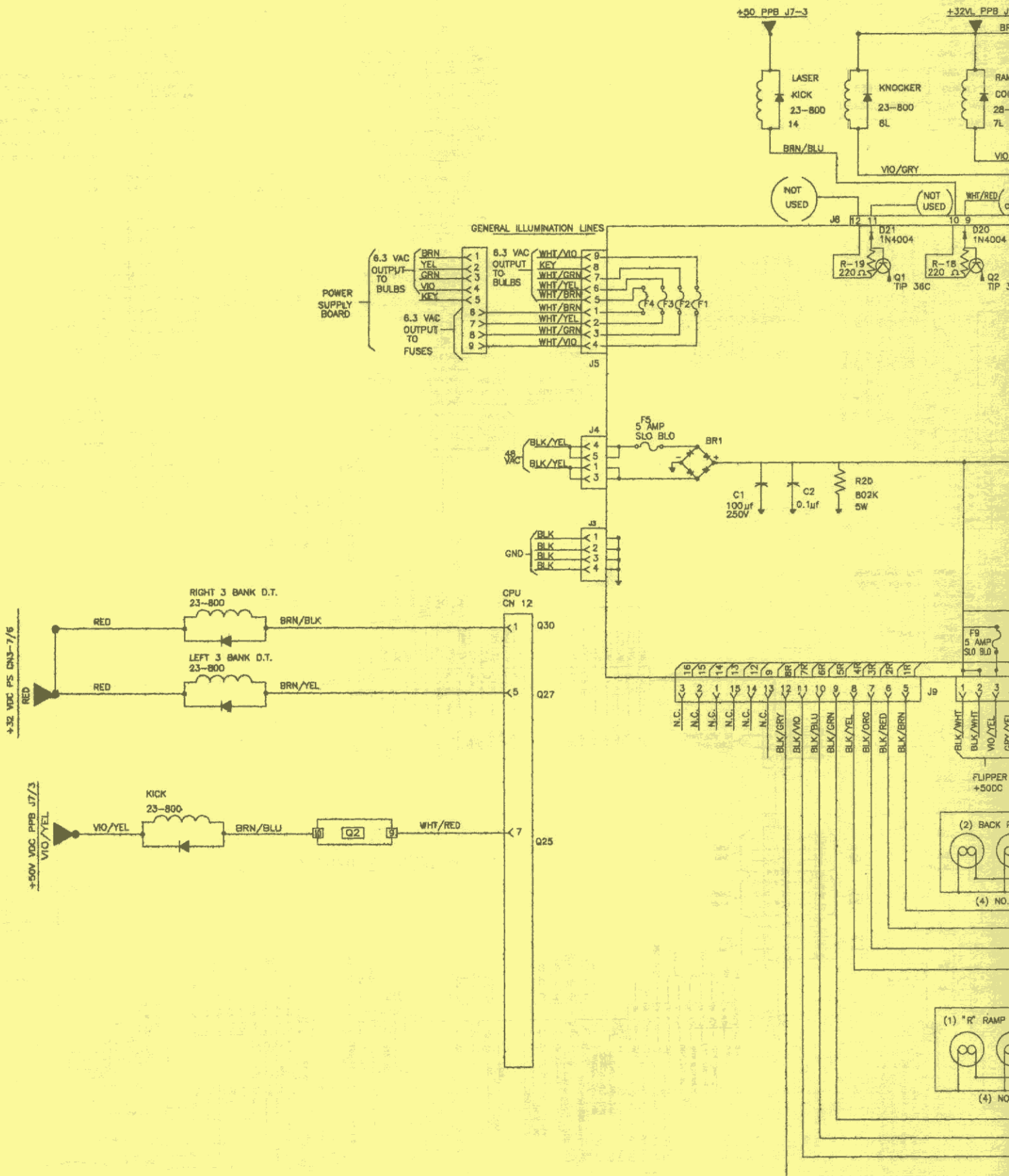
SND BD CN3

RED
WHT
BLK

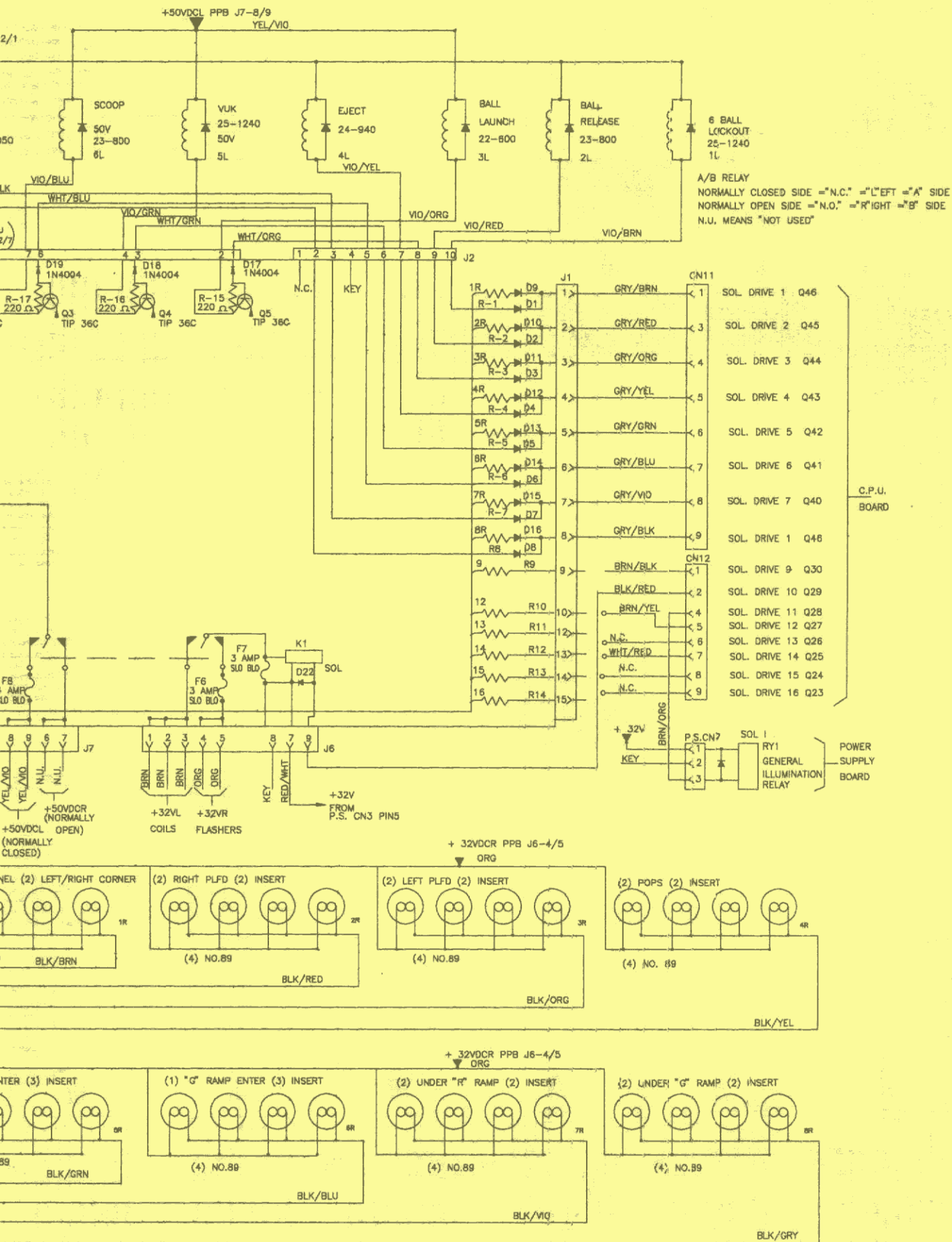
1
2
3



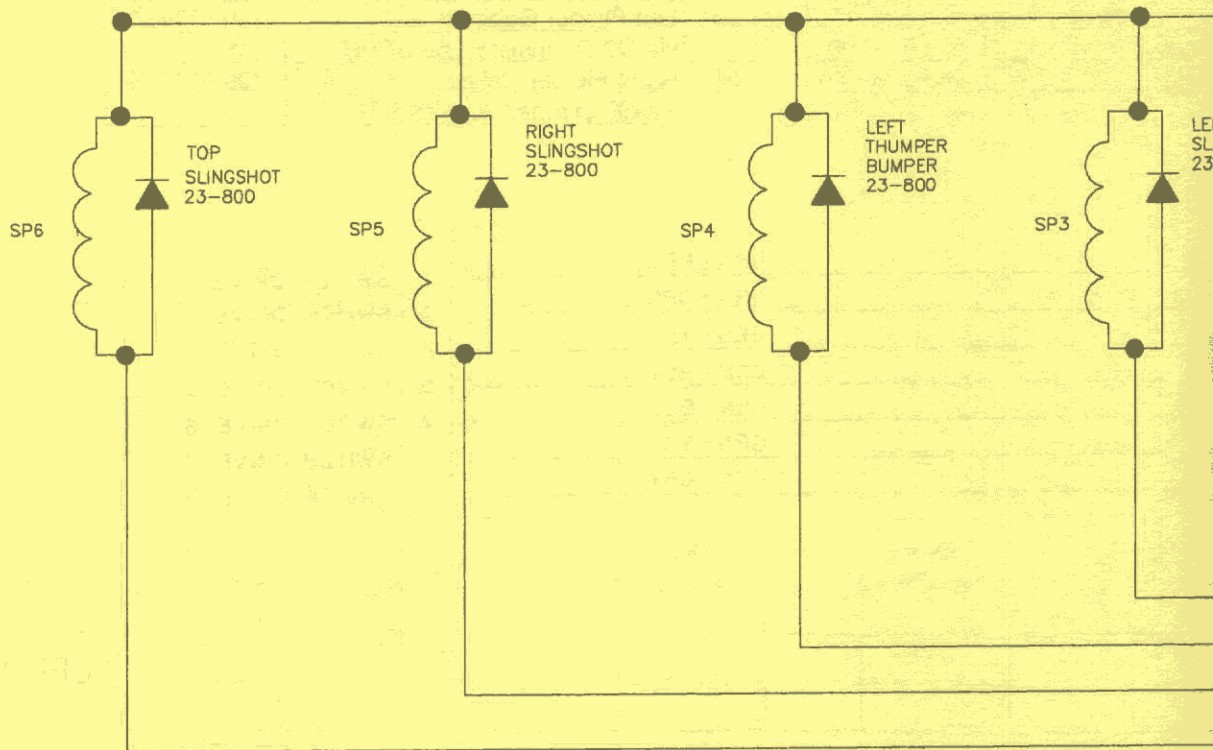


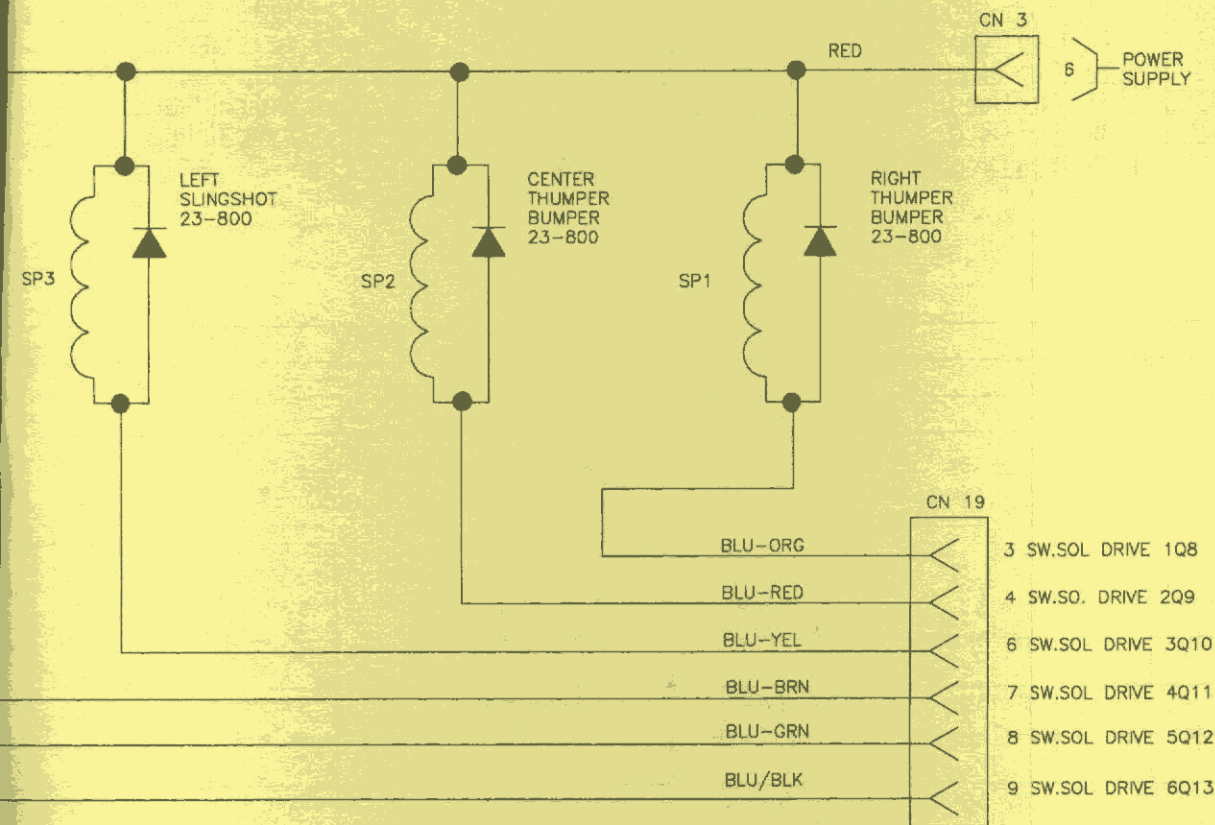


**Playfield Coil / Flashlamp
 Wiring Diagram**



Playfield Coil / Flashlamp Wiring Diagram

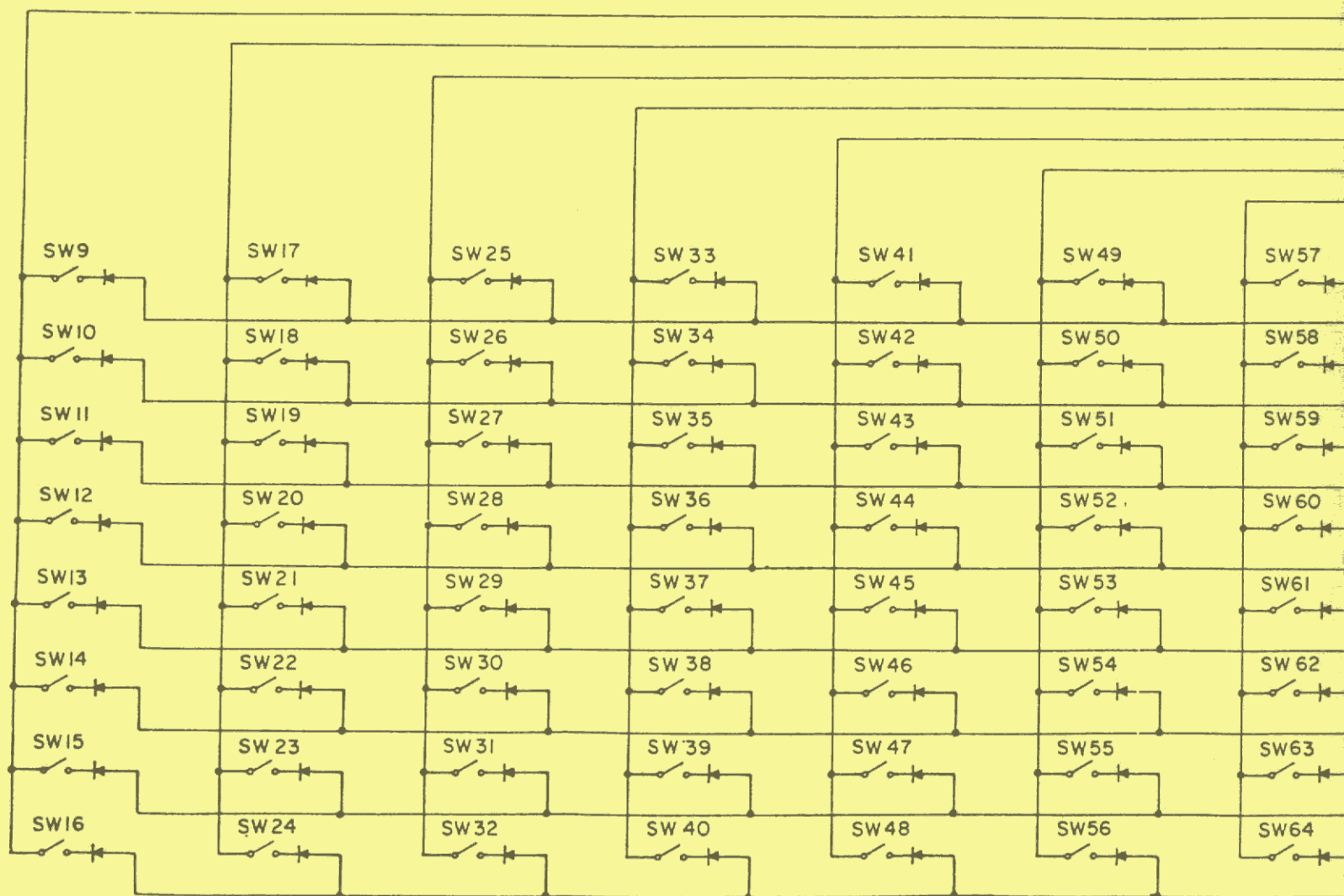




Switch Matrix No. & Description	Part No.
01* Plumb Tilt	See Cabinet
02* 4th Coin (On Coin Door)	---
03* Credit Button (Left of Coin Door)	500-5097-02
04* Right Coin (On Coin Door)	180-5024-00
05* Center Coin (On Coin Door)	180-5024-00
06* Left Coin (On Coin Door)	180-5024-00
07* Slam Tilt	180-5022-00
08* Extra Ball Button (Under 03)	180-5073-00
09 #1 (Left) Ball Trough	180-5119-00
10 #2 Ball Trough	180-5119-00
11 #3 Ball Trough	180-5119-00
12 #4 Ball Trough	180-5119-00
13 #5 Ball Trough	180-5119-00
14 #6 Ball Trough	180-5119-00
15 #7 (Right) Ball Trough	180-5118-00
16 Shooter Lane	180-5100-01

Switch Matrix No. & Description	Part No.
17 Captive Stand-Up "D" of DUFF	515-5470-08
18 Captive Stand-Up "U" of DUFF	515-5470-08
19 Captive Stand-Up "F" of DUFF	515-5470-08
20 Captive Stand-Up "F" of DUFF	515-5470-08
21 Top Lane Left "J" of JAM	500-5707-00
22 Top Lane Middle "A" of JAM	500-5707-00
23 Top Lane Right "M" of JAM	500-5707-00
24 Left Shooter Lane	180-5700-00
25 Left Turbo Bumper	180-5015-01
26 Bottom Turbo Bumper	180-5015-01
27 Right Turbo Bumper	180-5015-01
28 Right Slingshot	180-5054-00
29 Left Slingshot	180-5054-00
30 Top Slingshot	180-5054-00
31 Not Used	-----
32 Not Used	-----
33 Left Drop Target Bottom	180-5092-01

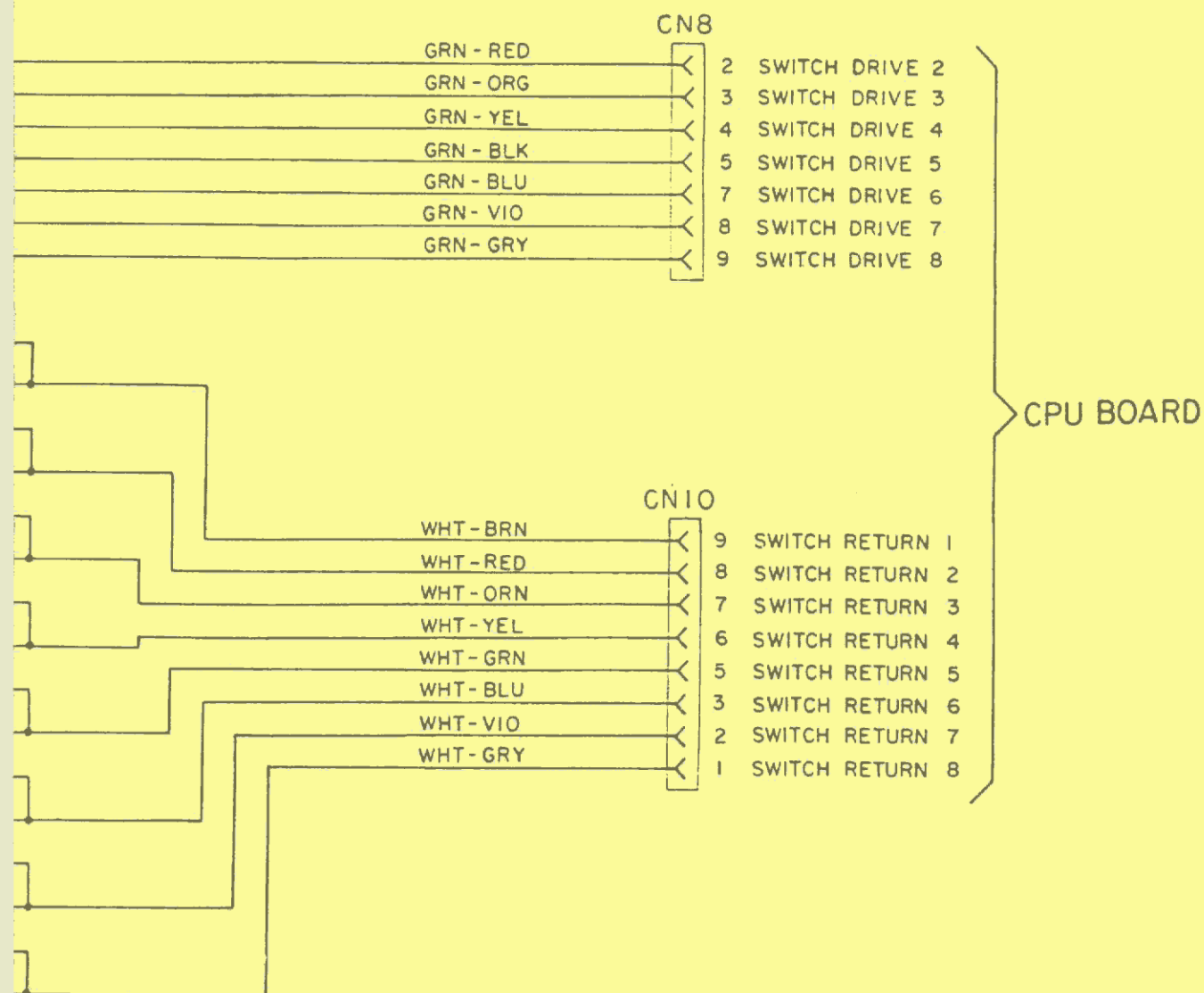
Switch Matrix No. & Description	Part No.
34 Left Drop Target	180-5092-01
35 Right Drop Target	180-5092-01
36 Right Drop Target	180-5092-01
37 Eject	180-5092-01
38 Center Scoop	180-5092-01
39 VUK	180-5092-01
40 Funnel Snak	180-5092-01
41 Not Used	-----
42 Not Used	-----
43 Not Used	-----
44 Not Used	-----
45 Not Used	-----
46 Not Used	-----
47 Not Used	-----
48 Inner Orbit B	180-5092-01
49 " R " Ramp E	180-5092-01



Io. & Description	Part No.
Target Middle	180-5092-01
Target Middle	180-5092-01
Target Bottom	180-5092-01
	180-5027-01
	180-5057-00
	180-5116-00
Ball Pit	515-6073-00

Bottom	500-5706-00
Center	180-5090-00

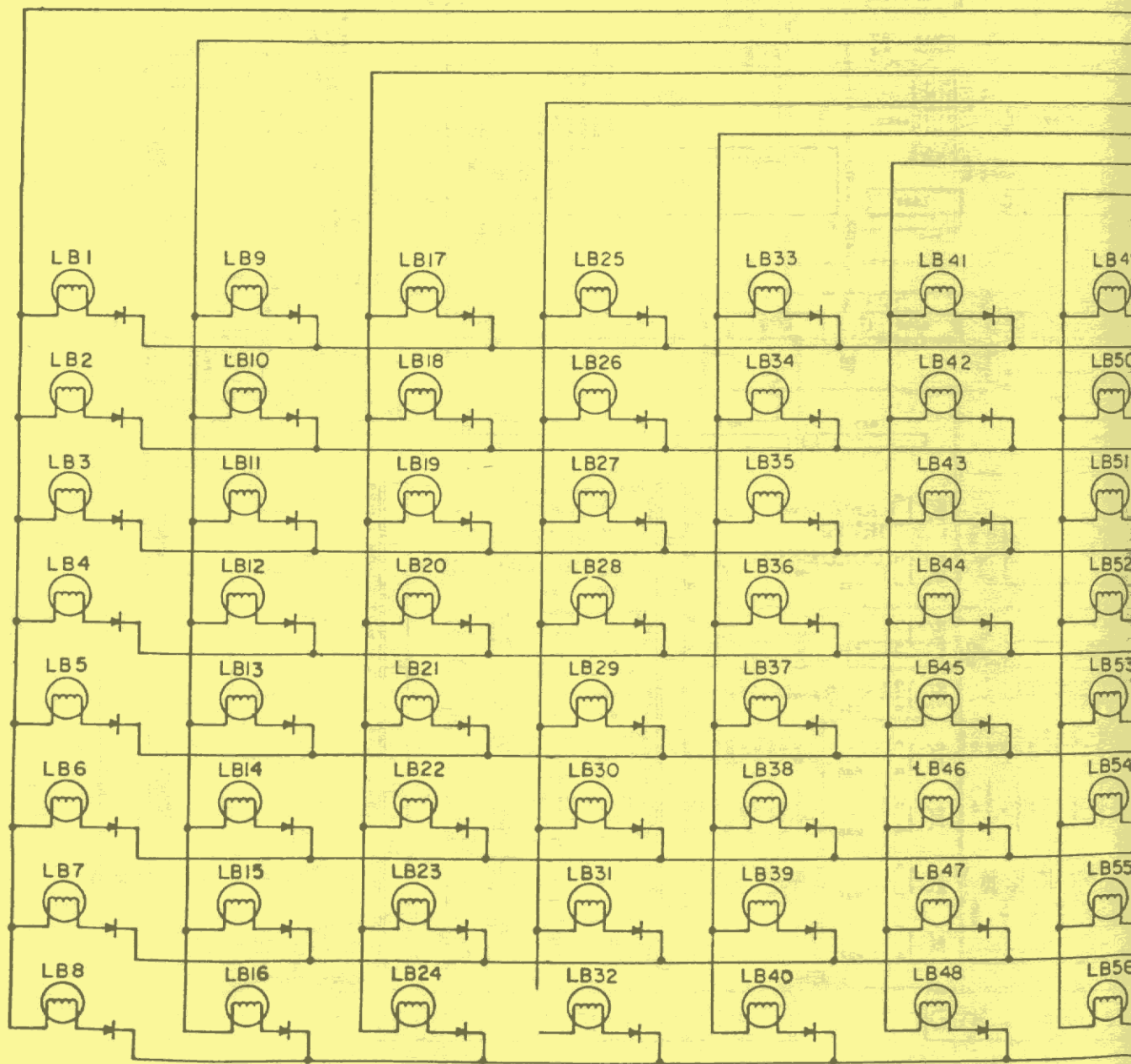
Switch Matrix No. & Description	Part No.
50 " R " Ramp Exit	180-5090-00
51 " G " Ramp Enter	180-5090-00
52 " G " Ramp Exit	180-5090-00
53 Left Return Lane	500-5707-00
54 Left Outlane	500-5707-00
55 Right Outlane	500-5707-00
56 Right Return Lane	500-5706-00
57 Right Drop Target Top	180-5092-01
58 Right Orbit Top	500-5707-00
59 Left Drop Target Top	180-5092-01
60 Left Orbit Top	500-5706-00
61 Not Used	-----
62 Gun Trigger	180-5093-00
63* Left Flipper Cabinet via Q7 (Transistor) on SSFB	180-5124-00
64* Right Flipper Cabinet via Q5 (Transistor) on SSFB	180-5124-00



Lamp Matrix No. & Description	
01	Cross Grid Top "Dizzy"
02	" R " of — R — OCK
03	" O " of R — O — CK
04	" C " of RO — C — K
05	" K " of ROC — K —
06	COMA
07	Multi-Ball Ready
08	Add Band Members
09	Same Player Shoots Again
10	Cross Grid Left "Matt"
11	Double Mode
12	" R " of — R — OSES
13	" O " of R — O — SES
14	" S " of RO — S — ES
15	" E " of ROS — E — S
16	" S " of ROSE — S —

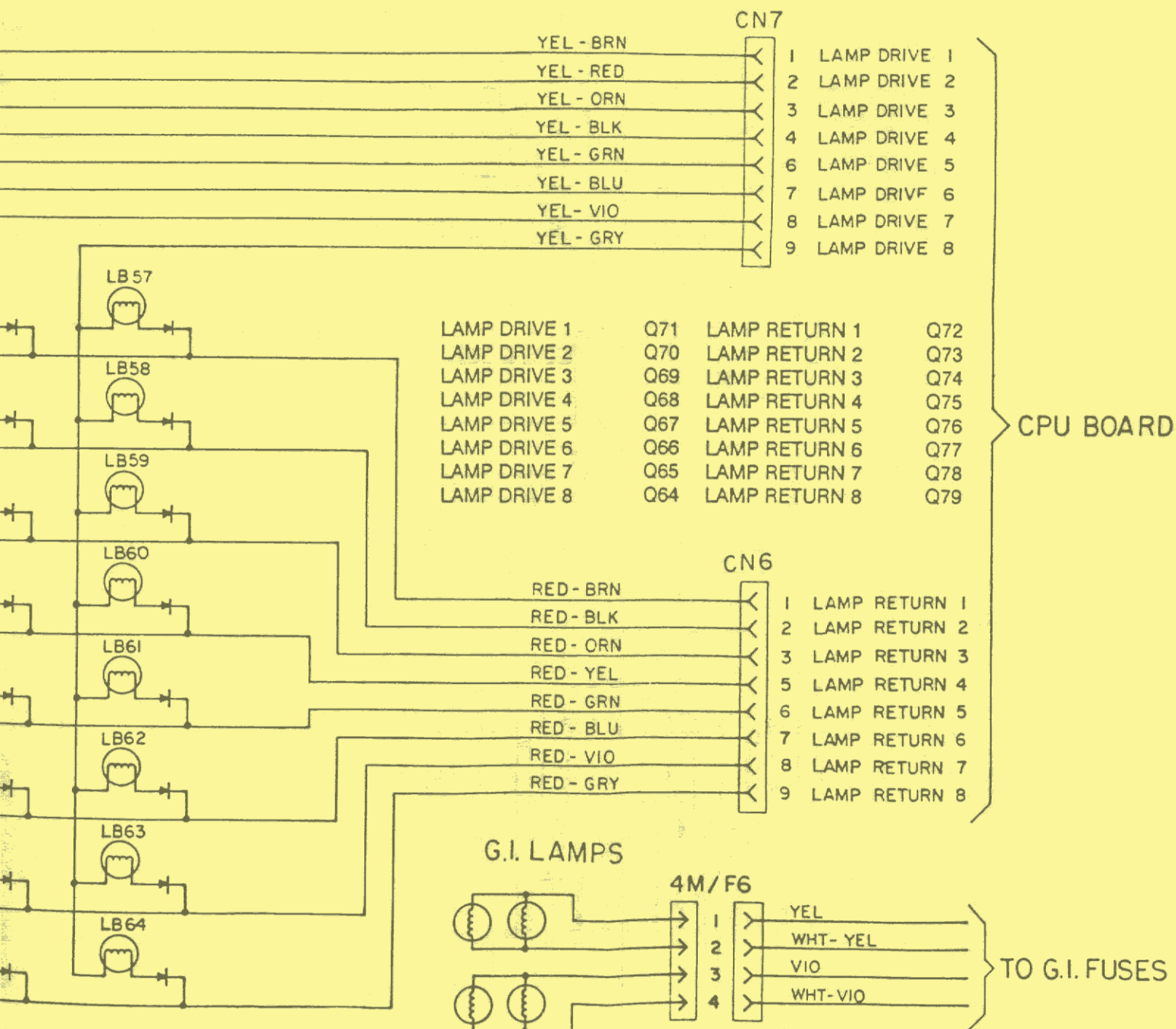
Lamp Matrix No. & Description	
17	Left Outlane Patience
18	Left Return Lite Rock
19	Cross Grid Up. Center "Axl"
20	" G " of — G — UNS
21	" U " of G — U — NS
22	" N " of GU — N — S
23	" S " of GUN — S —
24	" N " of Guns — N' — Roses
25	Right Outlane Michelle
26	Right Return Lite Guitar
27	Captive Ball
28	Cross Grid Right "Duff"
29	" D " of — D — UFF
30	" U " of D — U — FF
31	" F " of DU — F — F
32	" F " of DUF — F —

Lamp Matrix	
33	" R " Ran
34	" R " Ran
35	" R " Ran
36	Magnets
37	Cross Gr
38	" G " Ram
39	" G " Ram
40	" G " Ram
41	Riot Ball
42	Axl 3-Bal
43	Dizzy Bal
44	Duff Rock
45	Super Sn
46	Cross Gr
47	RIOT Jac
48	Super Ja

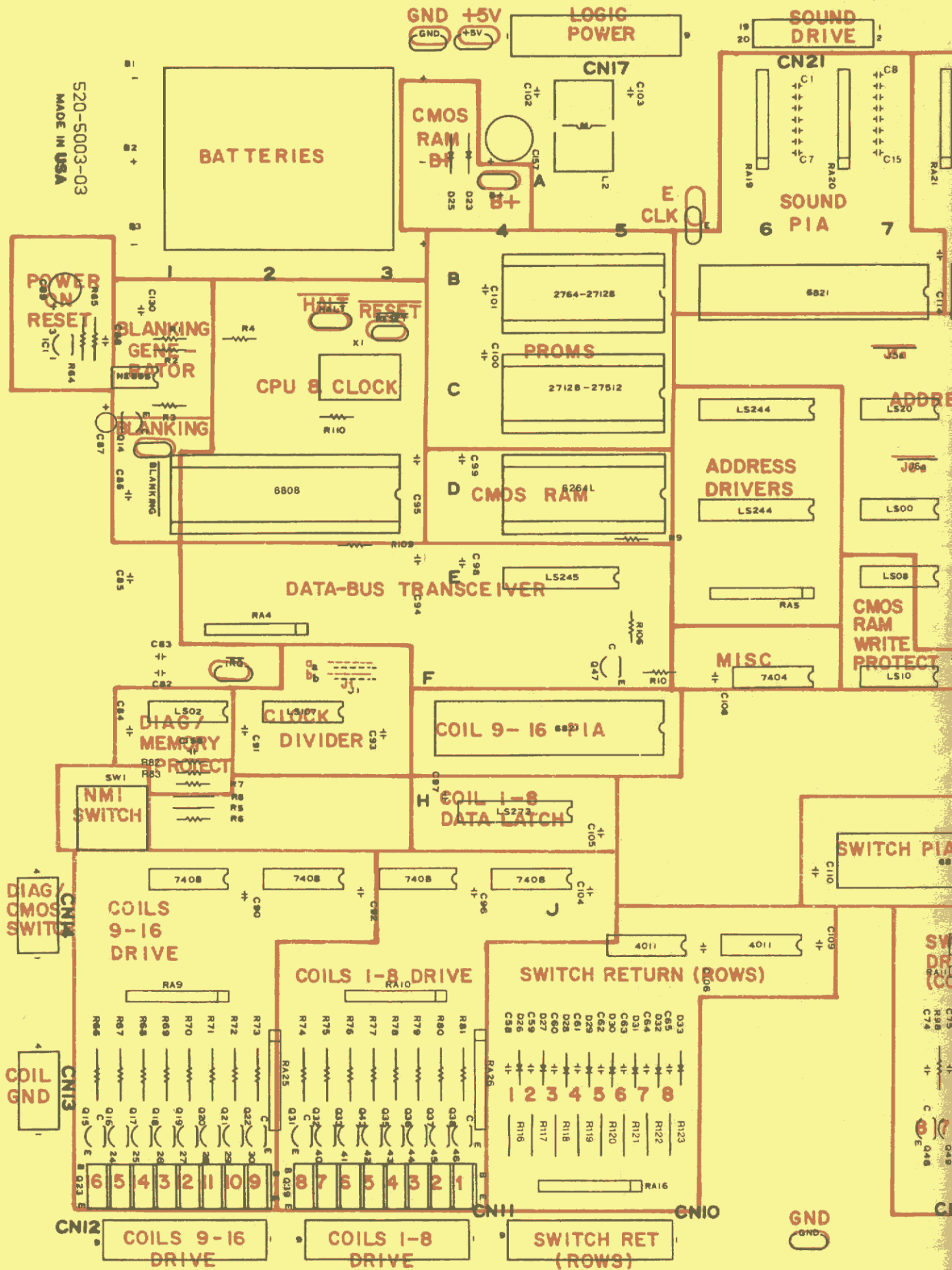


No. & Description
o Rose Millions
o Jackpot
o Enter
ON
o Lwr. Cntr. "Slash"
o Gun Millions
o Jackpots
o Enter
s
ke Pit
Bottom "Gilby"
pot
pot

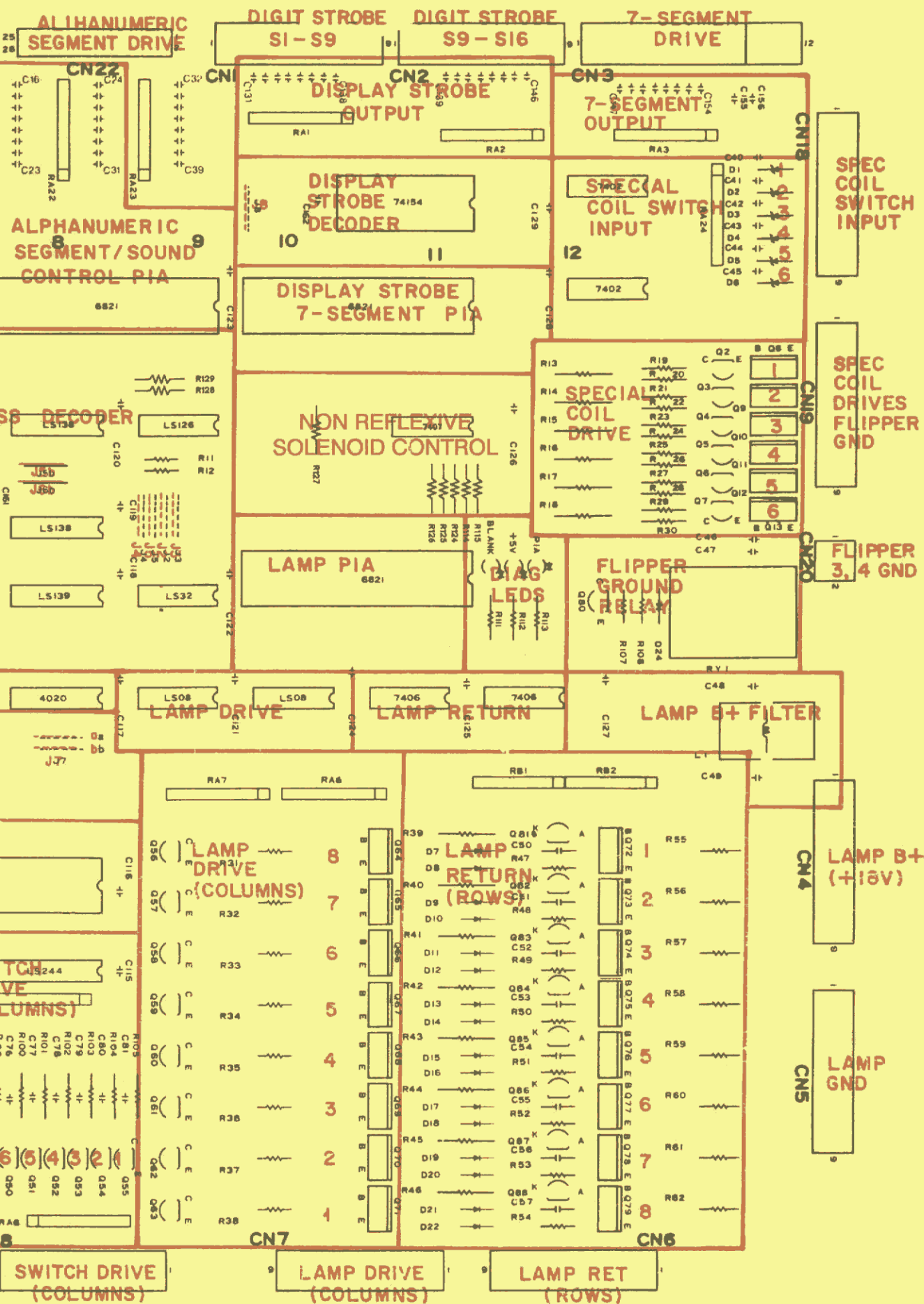
Lamp Matrix No. & Description
49 Matt Scoring
50 Slash Solo
51 Lite COMA
52 Gilby Rolls
53 Extra Ball
54 Mystery Scoop
55 Left Shooter/Left Ramp
56 Roll
57 Left Top Lane "J" of JAM
58 Middle Top Lane "A" of JAM
59 Right Top Lane "M" of JAM
60 Back Stage Pass
61 Slash
62 Right Shooter Lane
63 Extra Ball Button
64 Credit

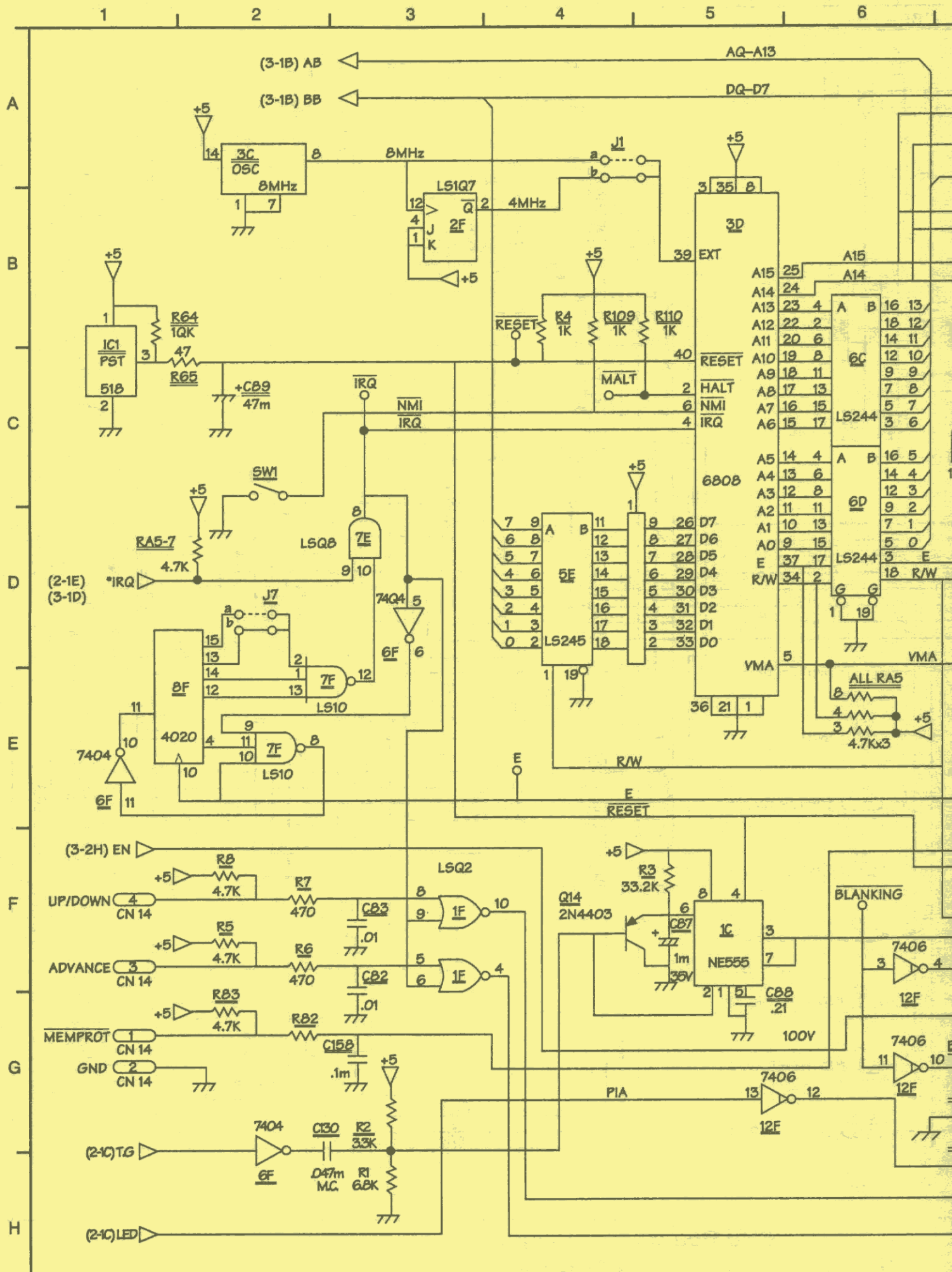


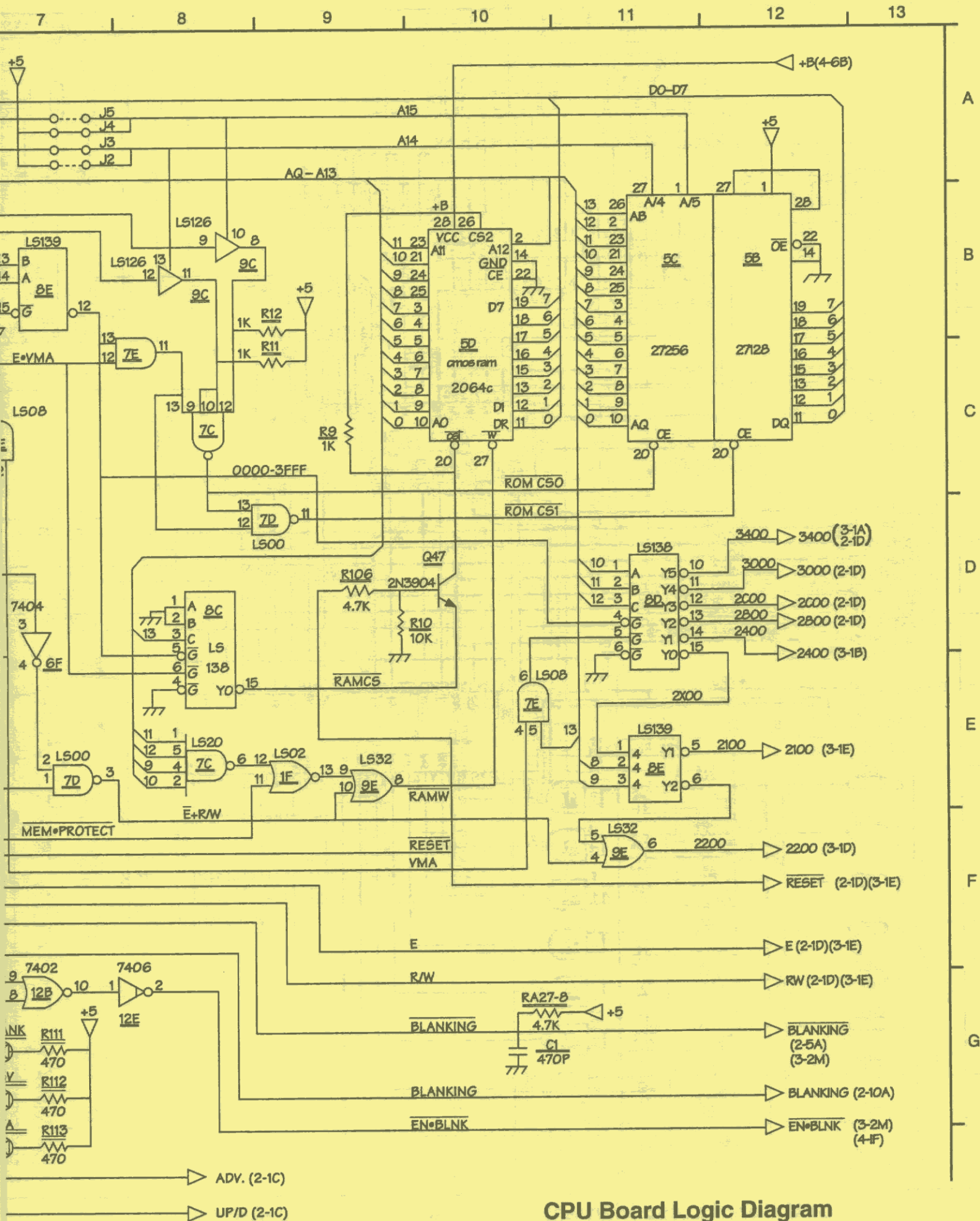
520-5003-03
MADE IN USA



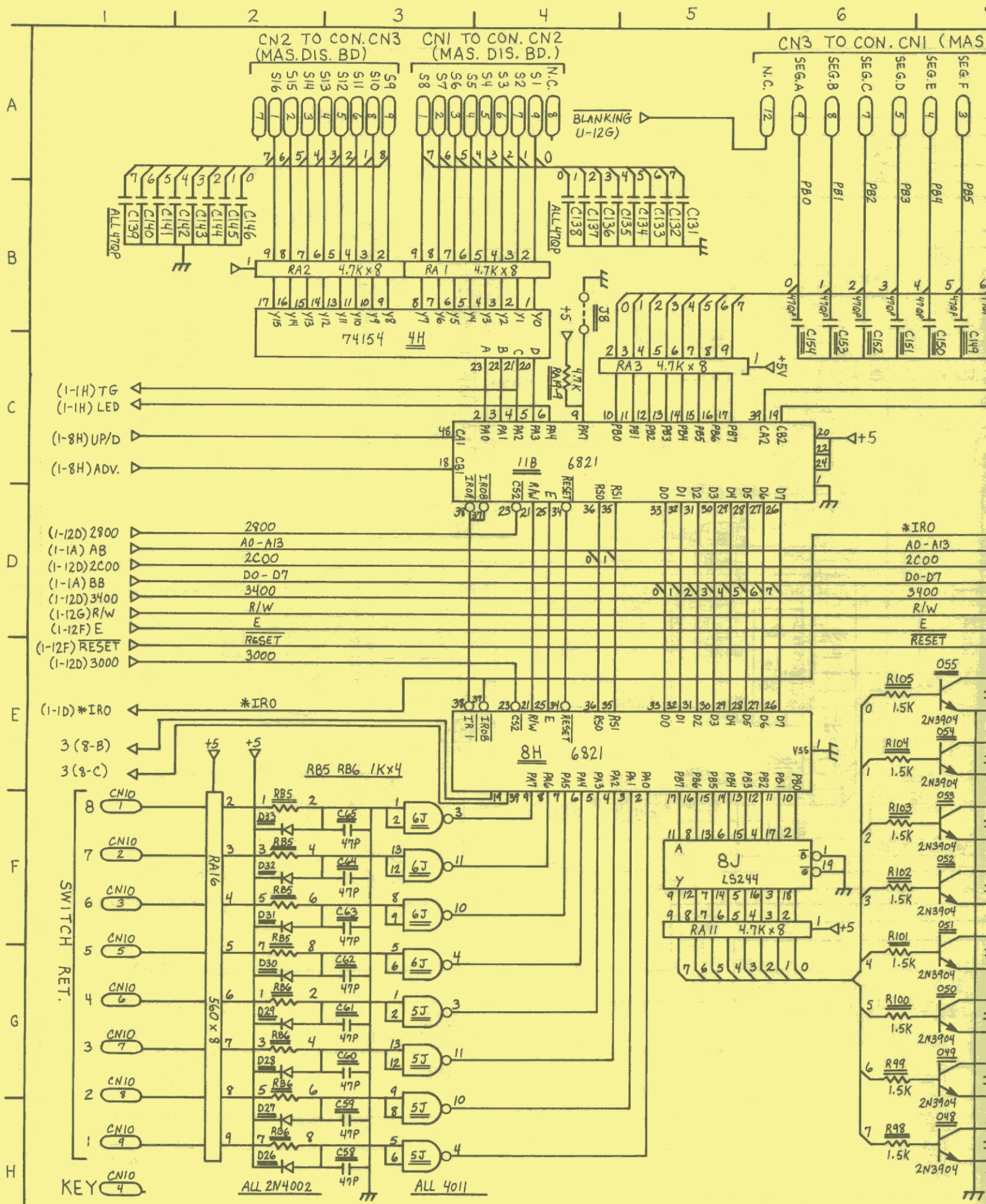
520-5003-03
REV.-A
02-0282-3A





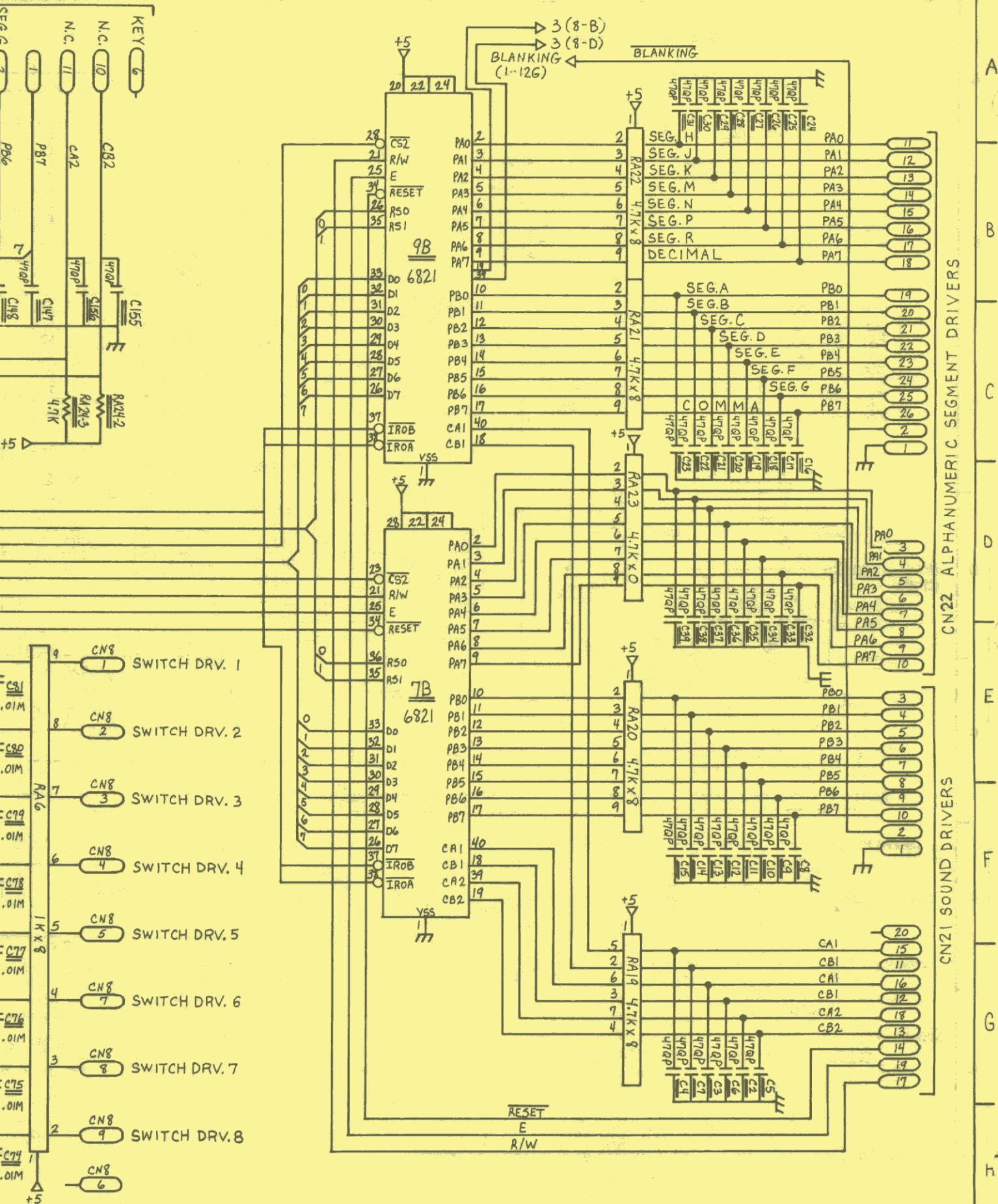


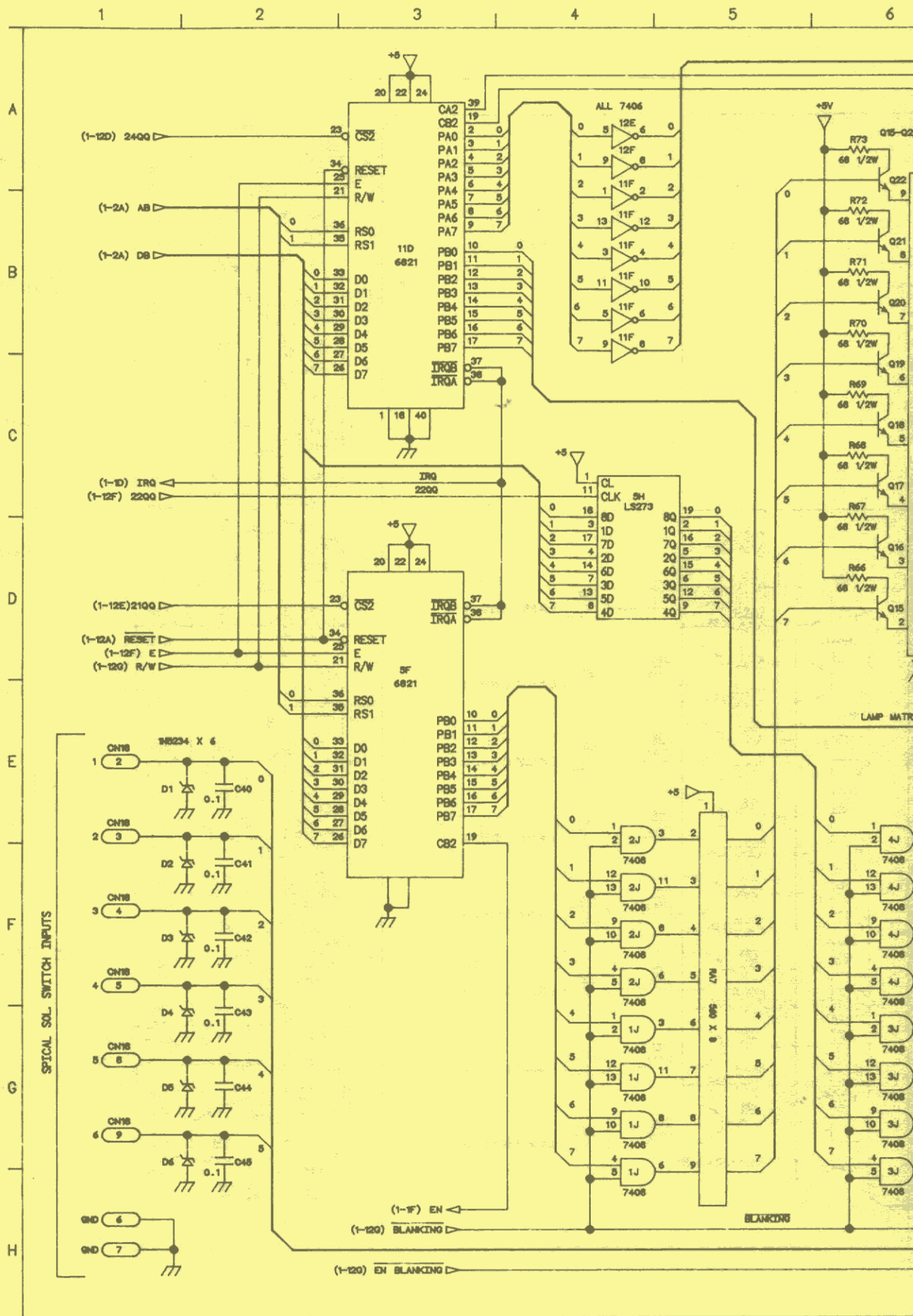
CPU Board Logic Diagram
(Sheet 1 of 4)



CPU Board Logic Diagram
(Sheet 2 of 4)

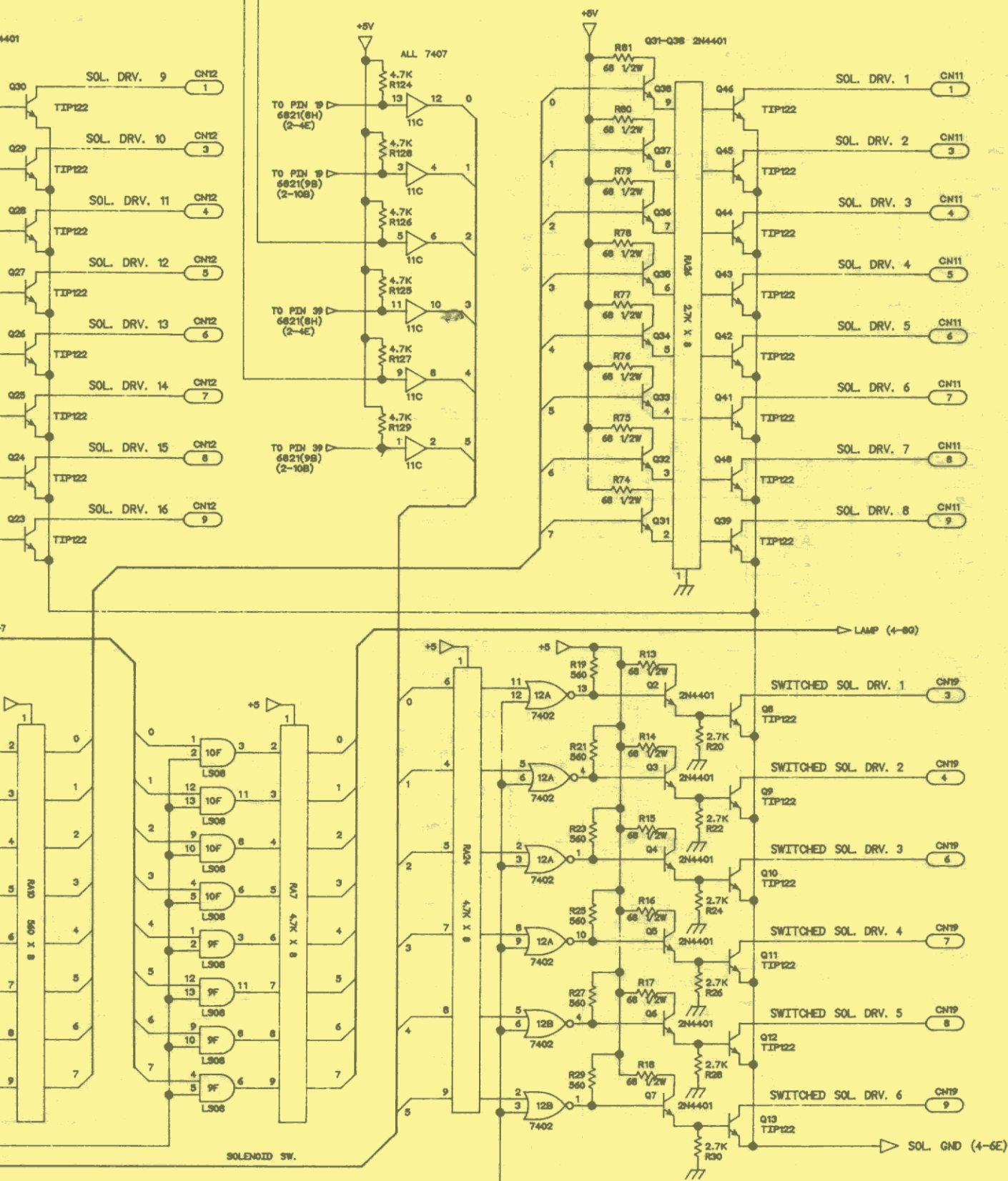
+5 D





LAMP MATRIX CONT. 0-7

→ LAMP CNT (4-BA)



A

B

C

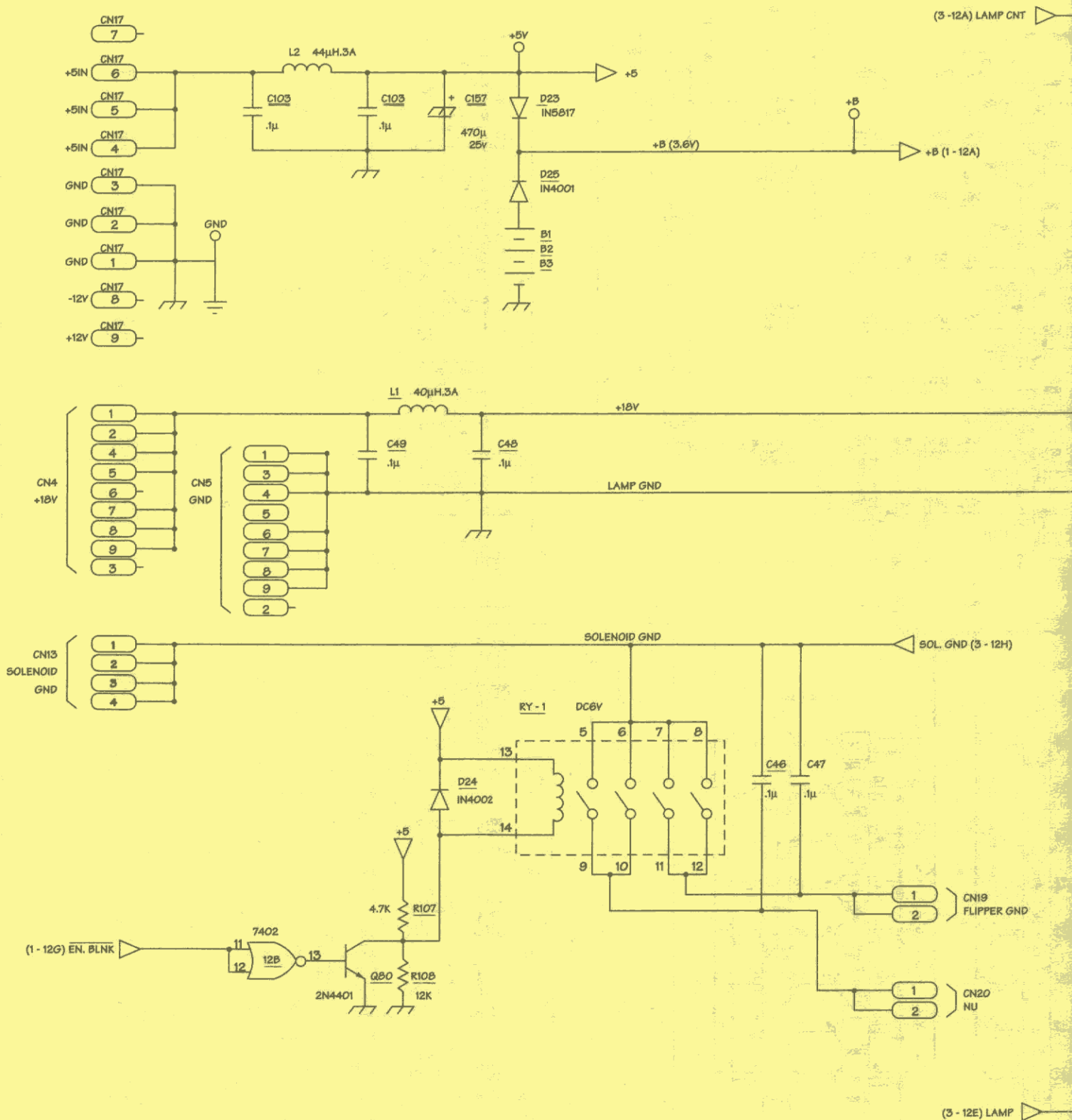
D

E

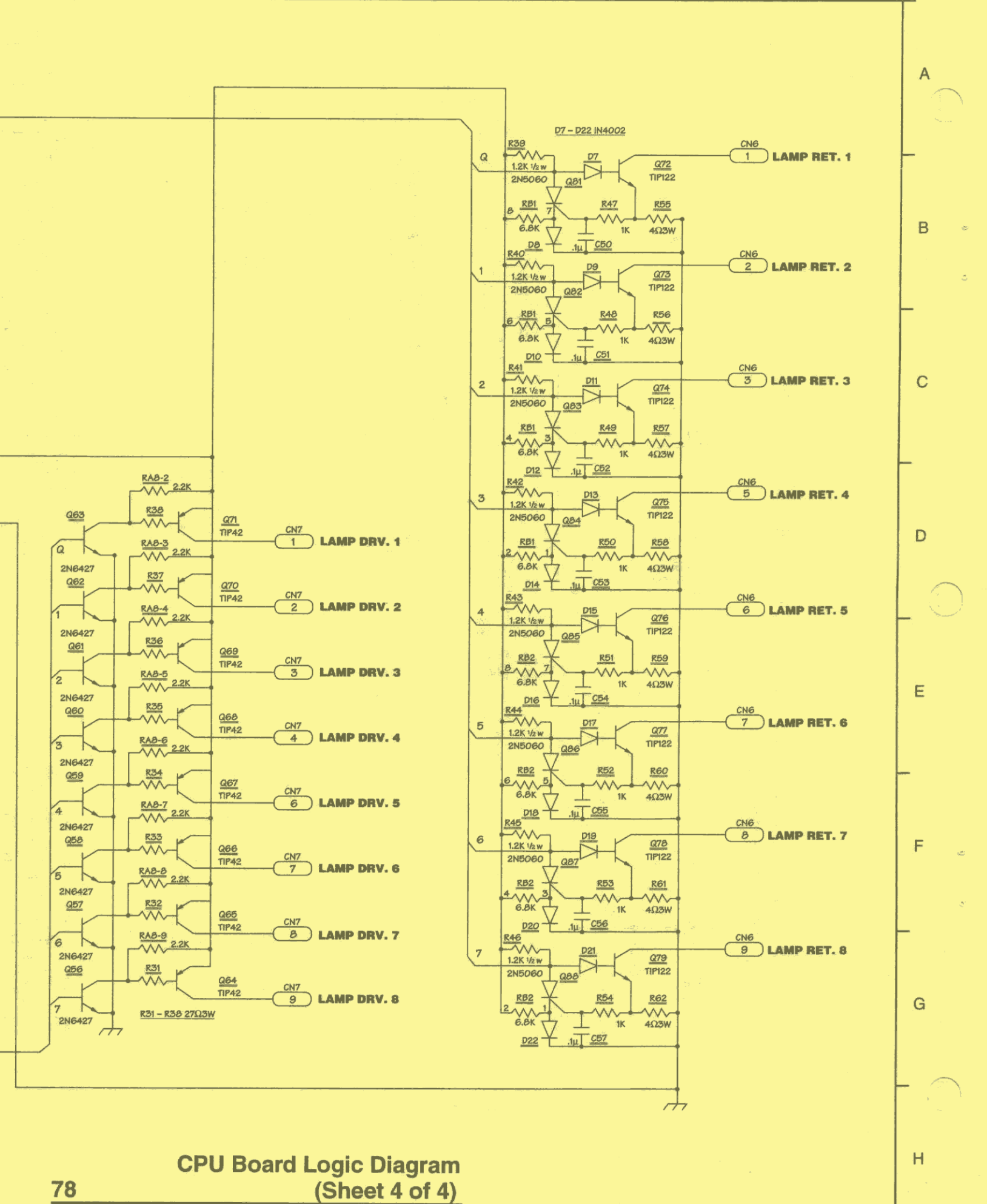
F

G

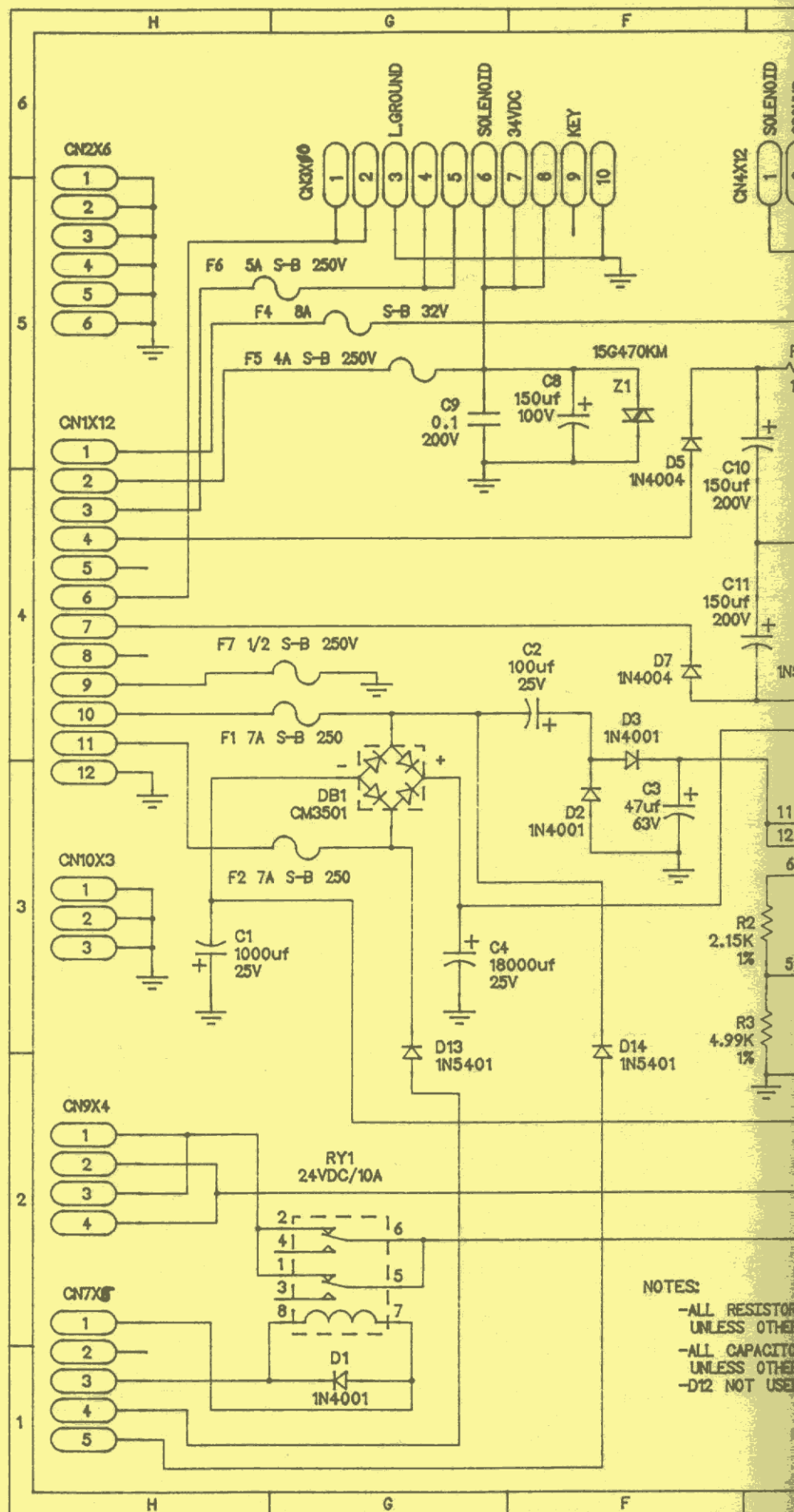
H

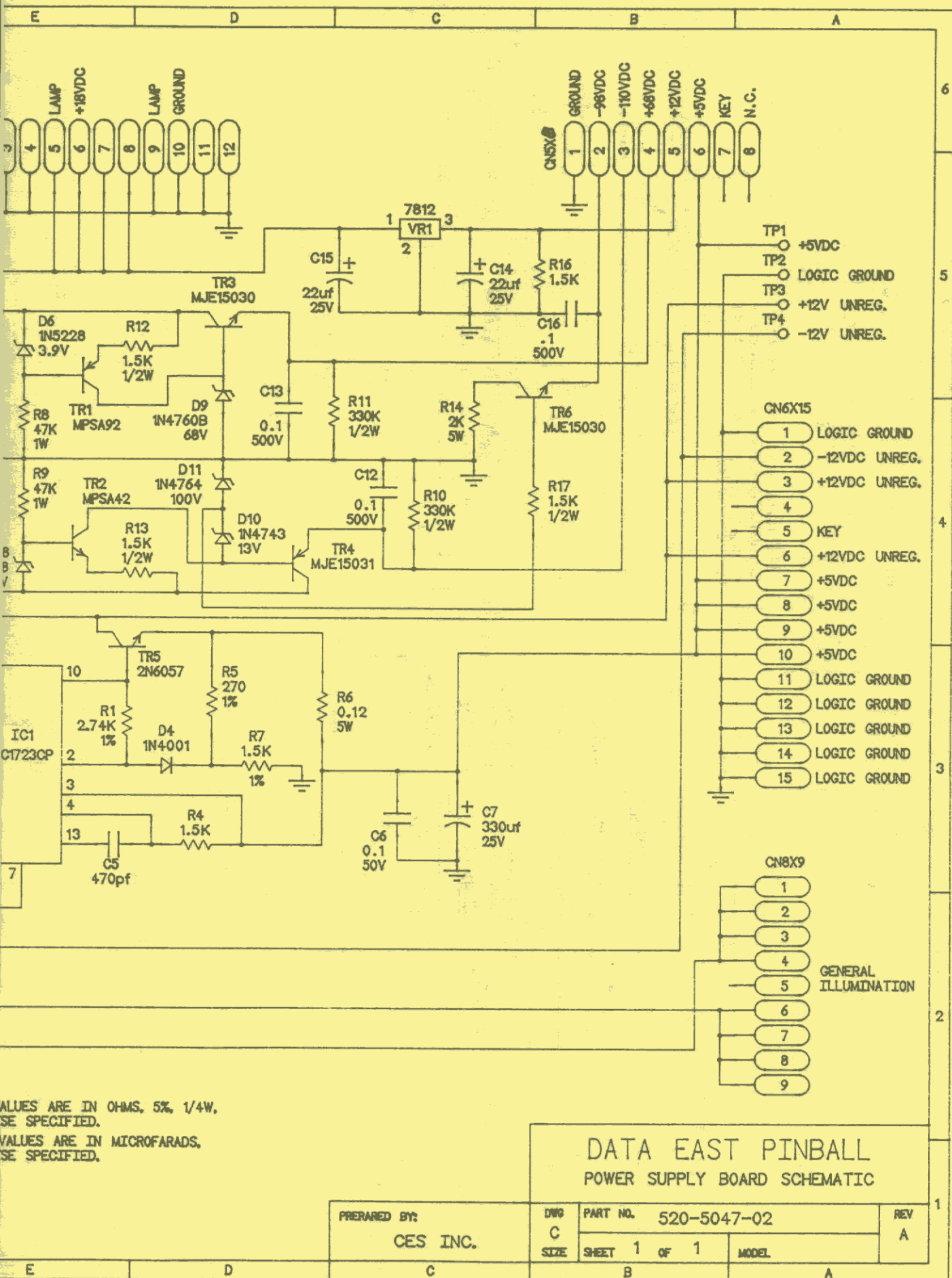


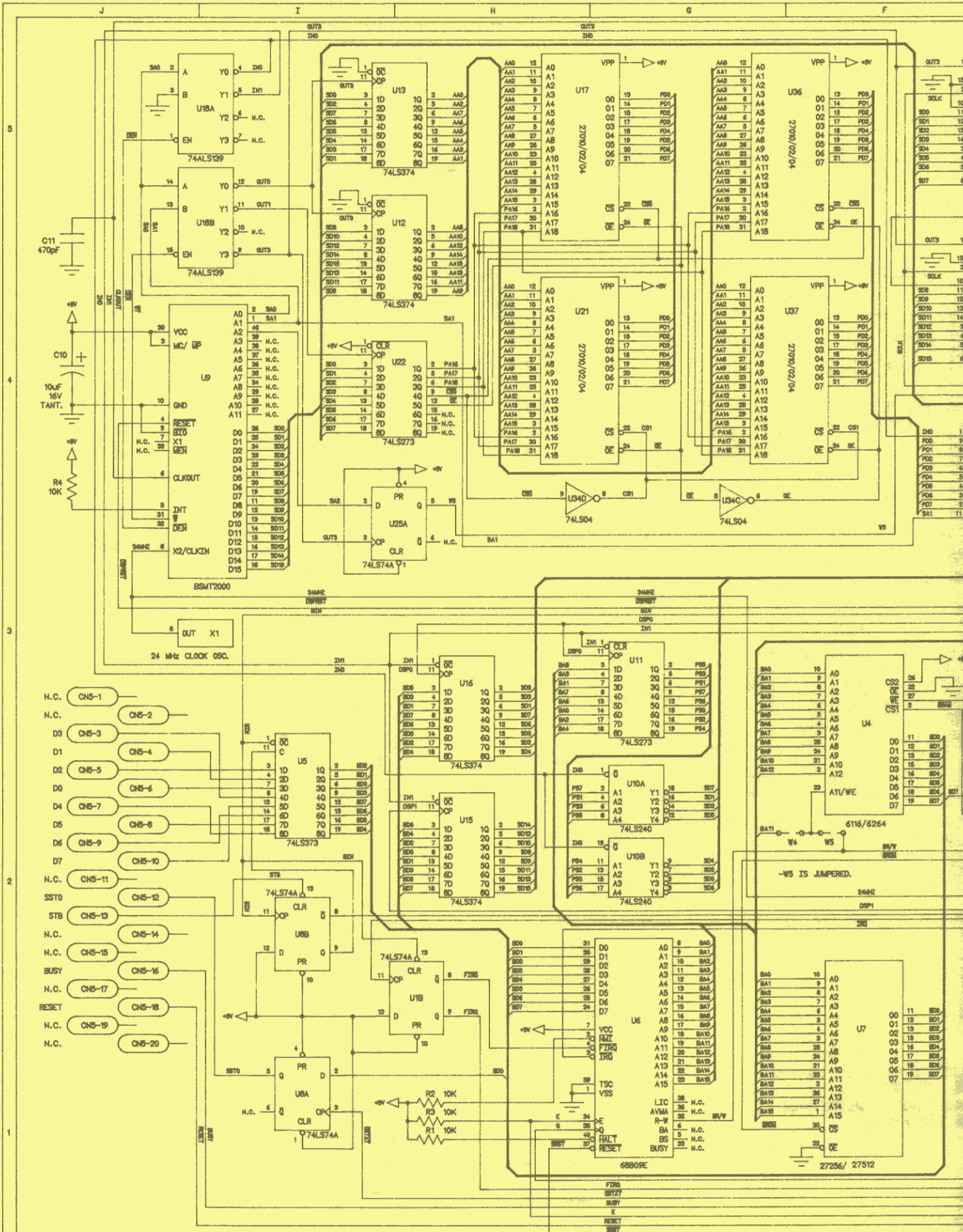
CPU Board Logic Diagram
(Sheet 4 of 4)



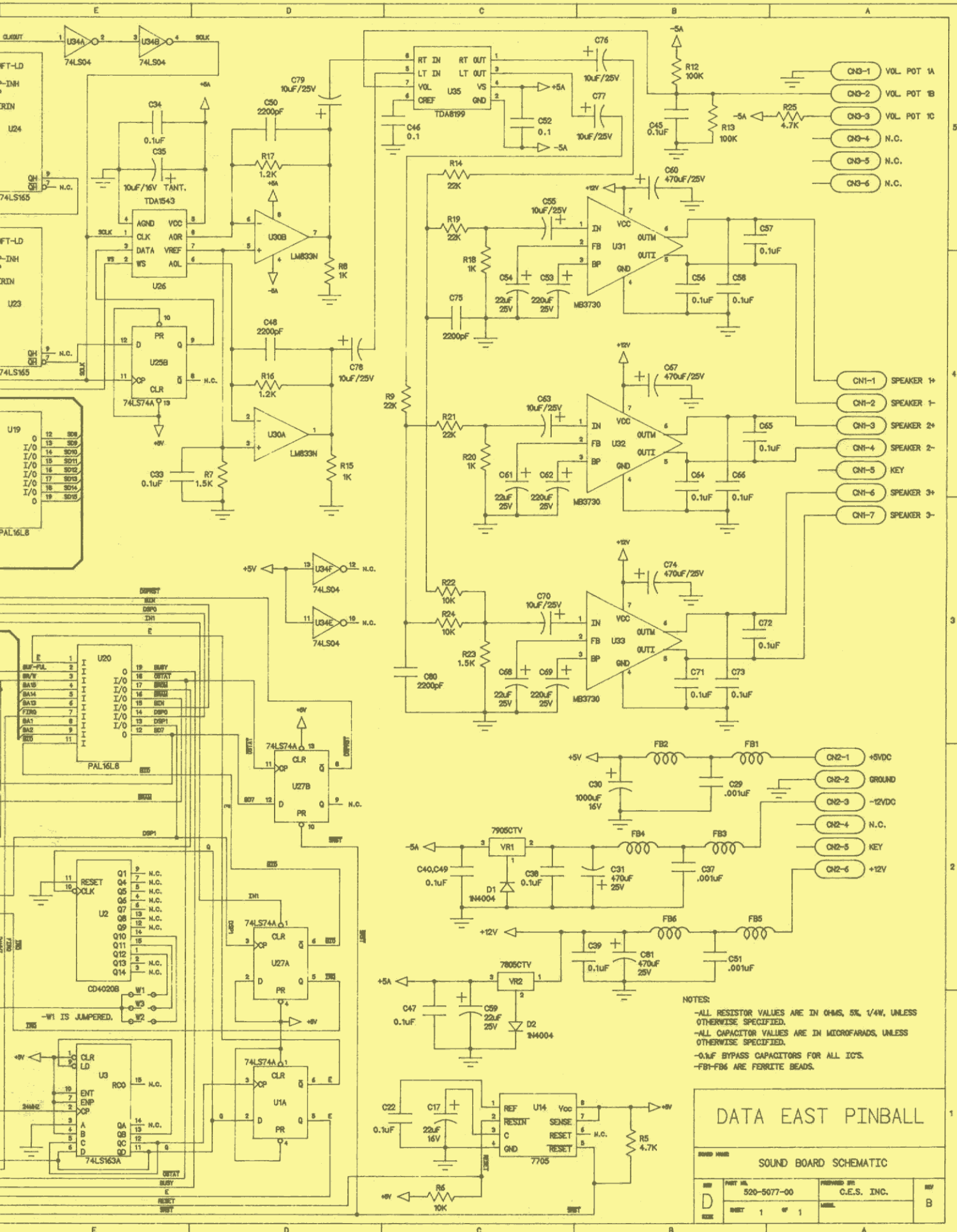
CPU Board Logic Diagram
(Sheet 4 of 4)



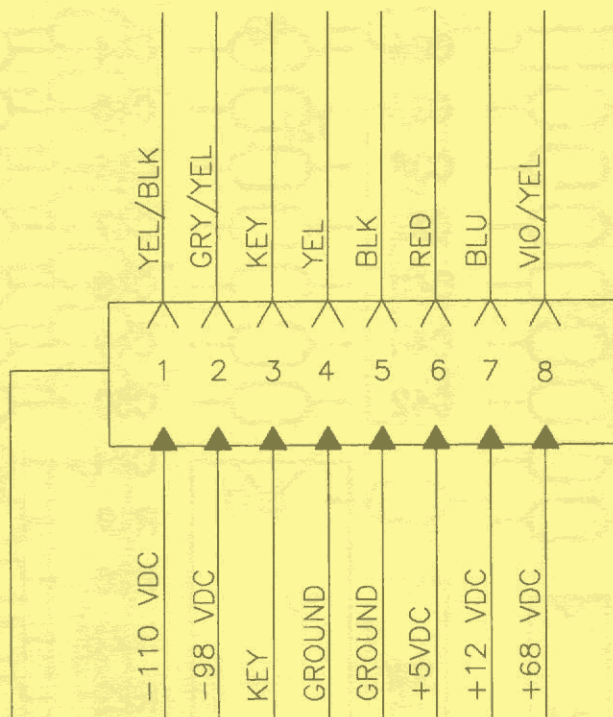




Sound Board (520-5077-00)
Schematic



Sound Board (520-5077-00)
Schematic



PI

DOT MATRIX BOARD 520-5052-00

2	0	0	0	0	0	0	0	14
1	0	0	0	0	0	0	0	13
	DISPLAY ENABLE	ROW DATA	ROW CLOCK	COL. LATCH	PIX CLOCK	SER. DATA	NOT USED	
	GROUND	GROUND	GROUND	GROUND	GROUND	GROUND	NOT USED	

RIBBON CABLE
P2

2	0	0	0	0	0	0	0	14
1	0	0	0	0	0	0	0	13
	DISPLAY ENABLE	ROW DATA	ROW CLOCK	COL. LATCH	PIX CLOCK	SER. DATA	NOT USED	
	GROUND	GROUND	GROUND	GROUND	GROUND	GROUND	NOT USED	

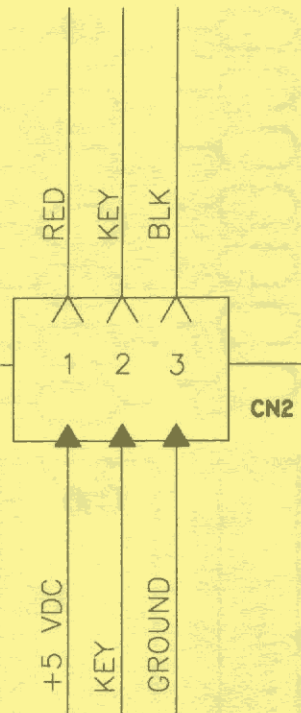
RIBBON CABLE
P2

0	0	PIX	CLOCK	GROUND
0	0	SER.	DATA	GROUND
0	0	NOT	USED	NOT USED

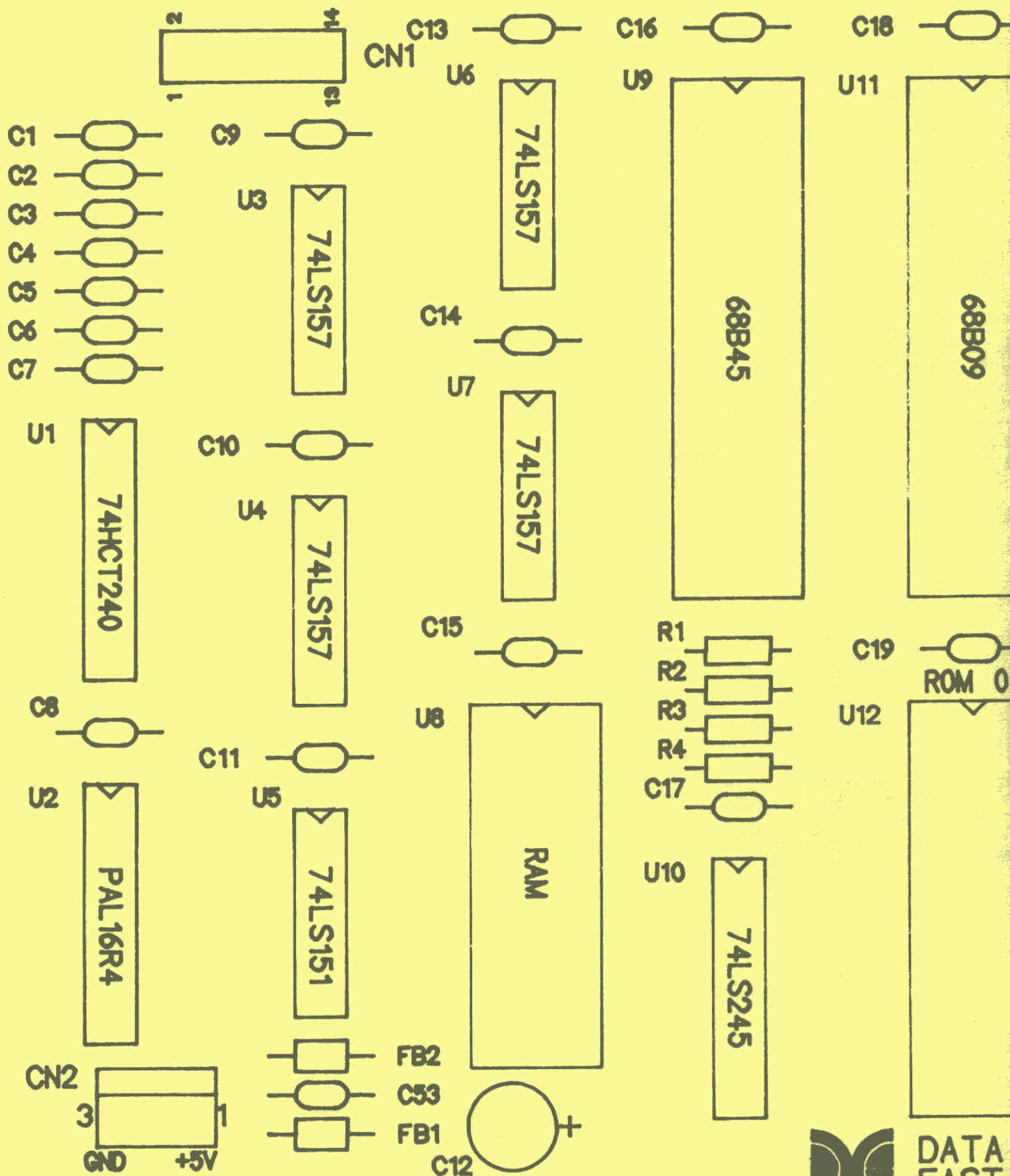
14 2
13 1

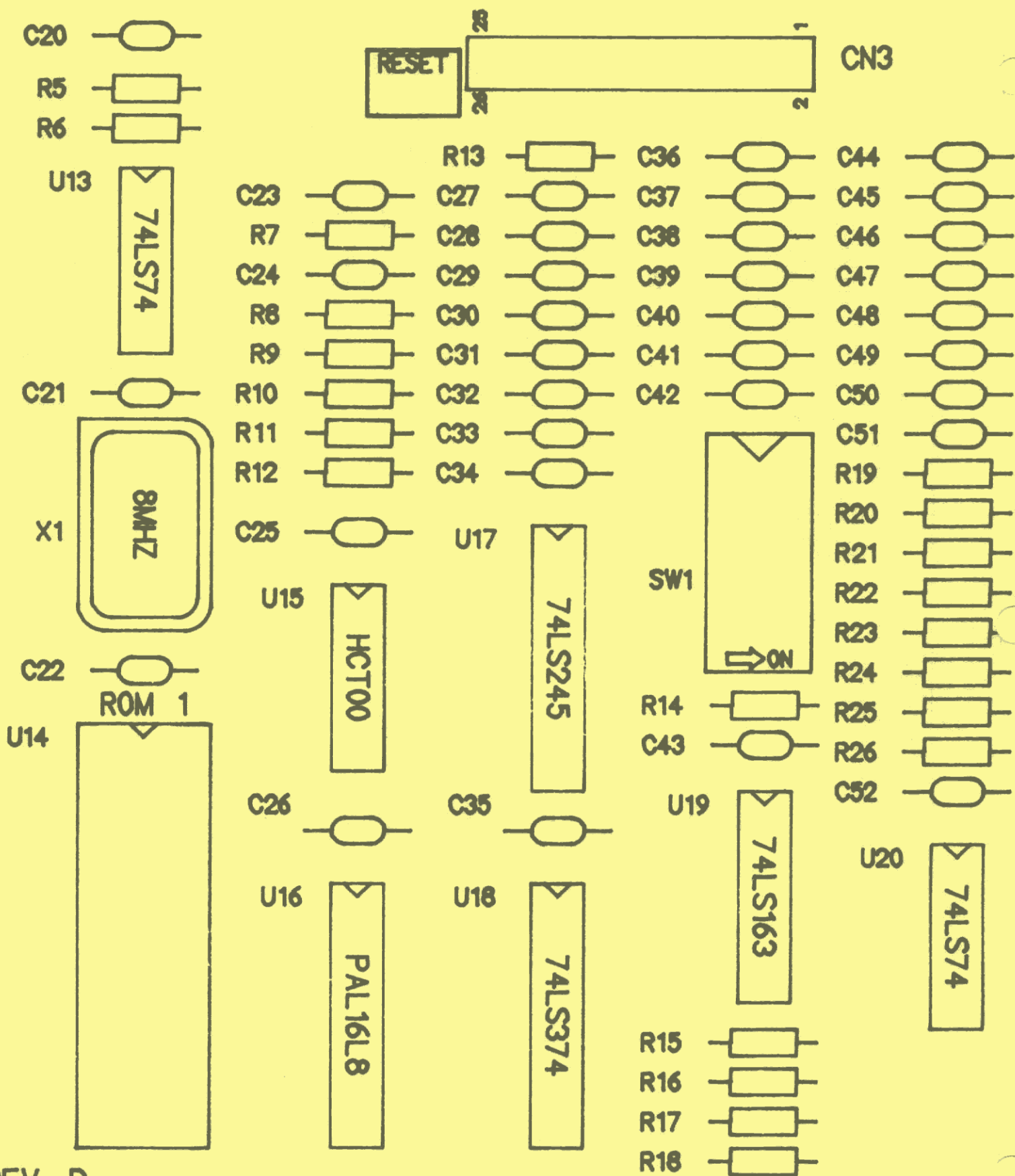
0	0	NOT	USED	NOT	USED
0	0	SWITCH	1	SWITCH	2
0	0	SWITCH	3	SWITCH	4
0	0	SWITCH	5	SWITCH	6
0	0	SWITCH	7	SWITCH	8
0	0	DATA	0	DATA	1
0	0	DATA	2	DATA	3
0	0	DATA	4	DATA	5
0	0	DATA	6	DATA	7
0	0	STROBE	RESET	STAT	0
0	0	STAT	1	STAT	2
0	0	STAT	3	BUSY	

RIBBON CABLE
CN3



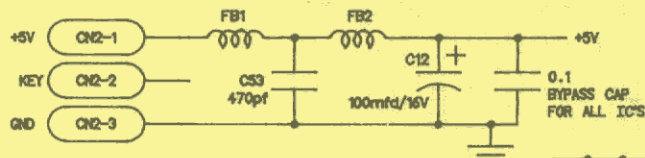
CONTROLLER BOARD
520-5055-00





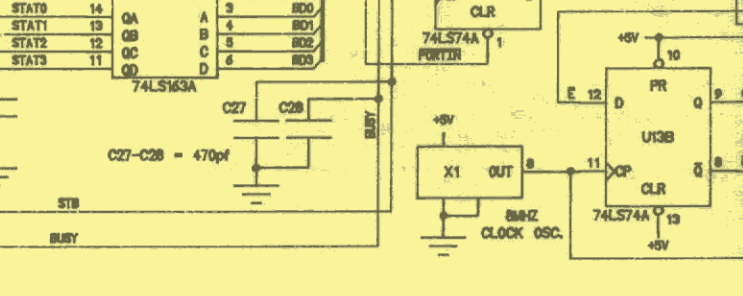
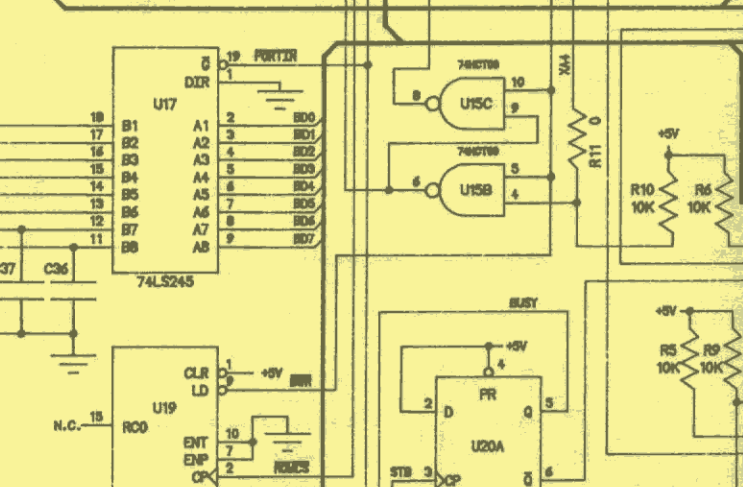
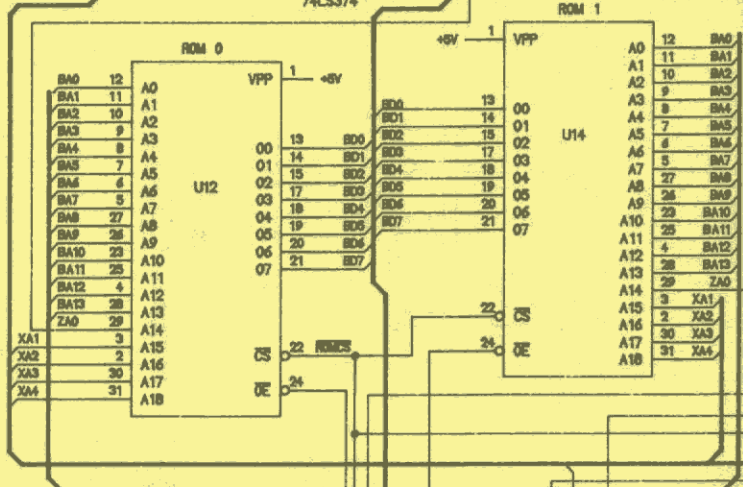
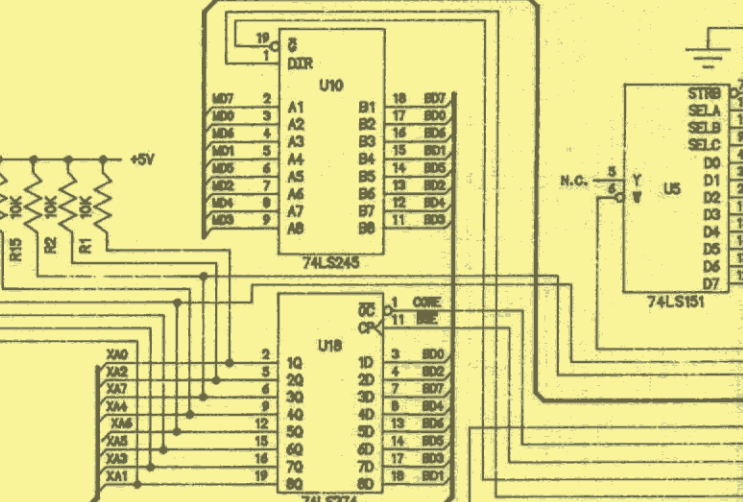
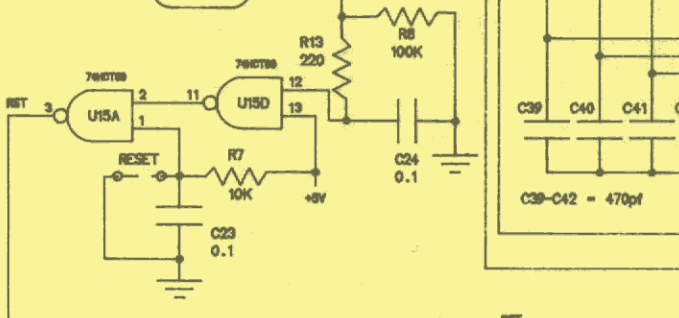
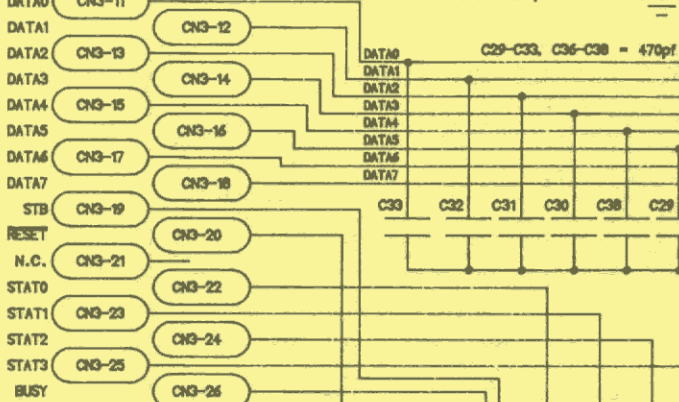
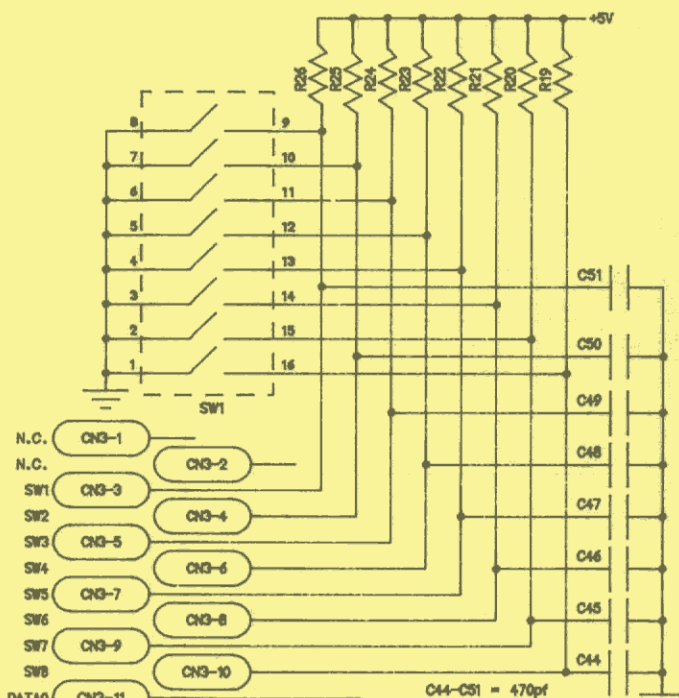
REV.-D
520-5055-00

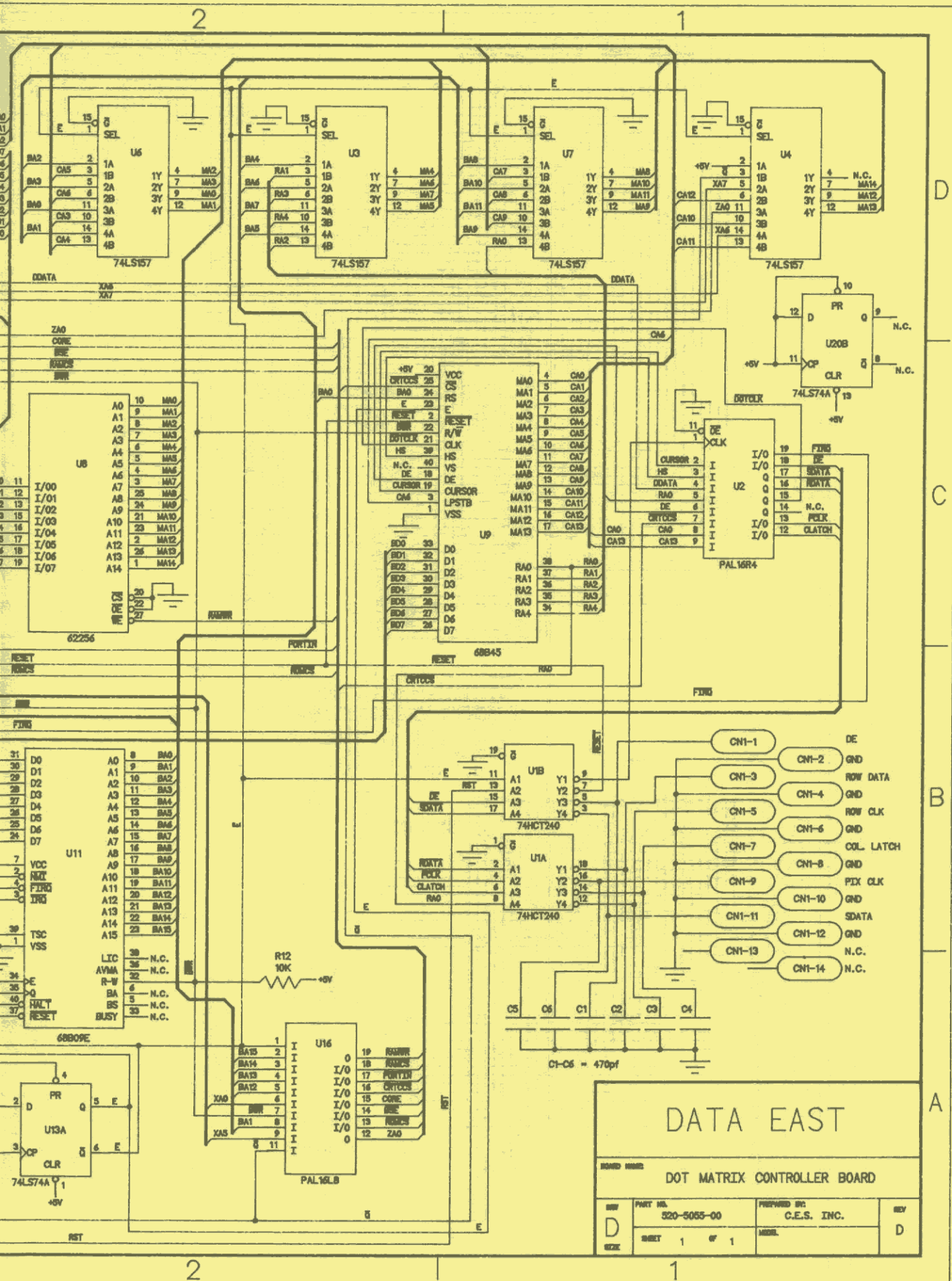
Display Controller Board
Component Layout



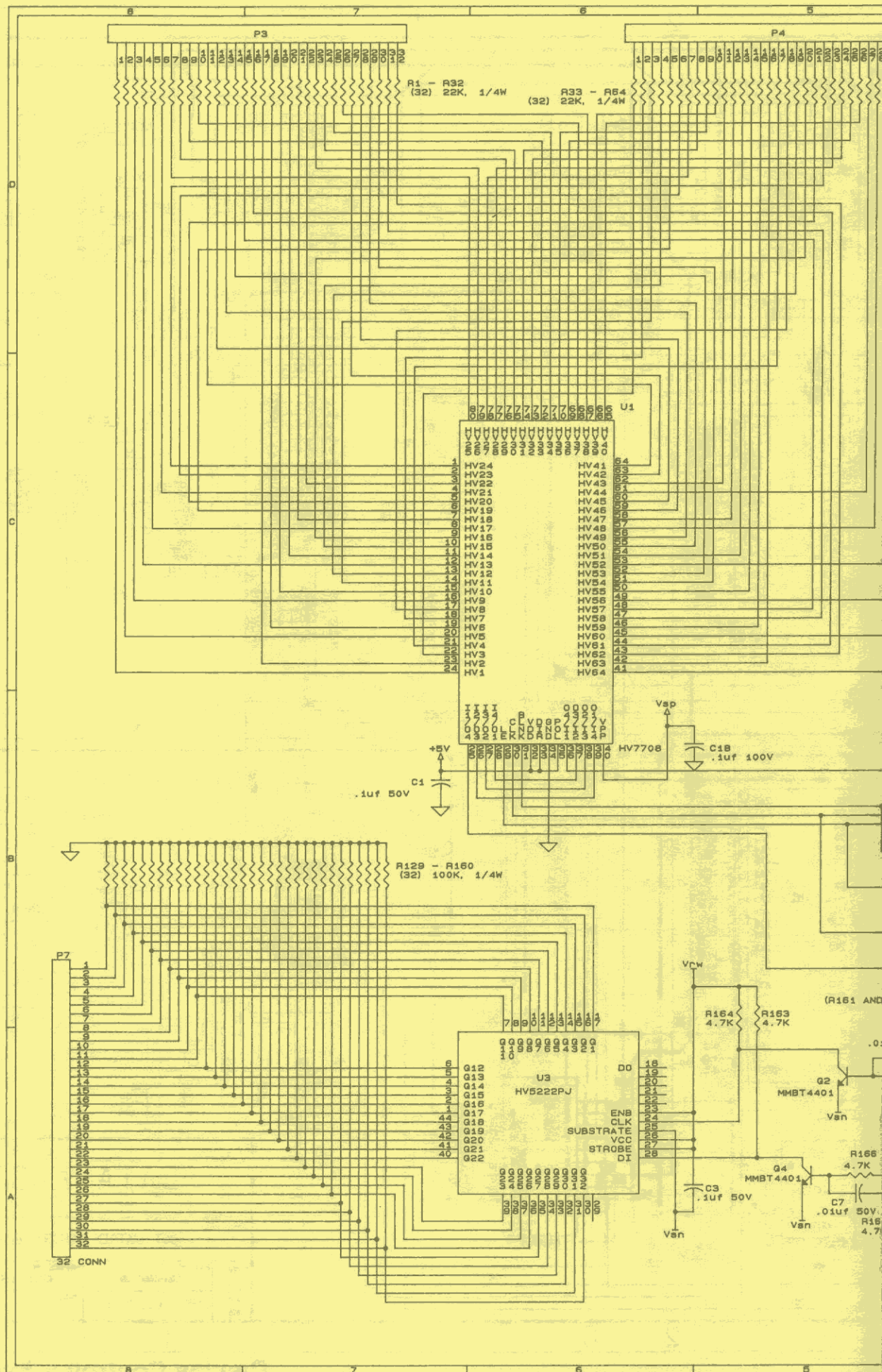
NOTES:
 -ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE SPECIFIED.
 -ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
 -FB1 AND FB2 ARE FERRITE BEADS.

R19-R26 = 4.7K



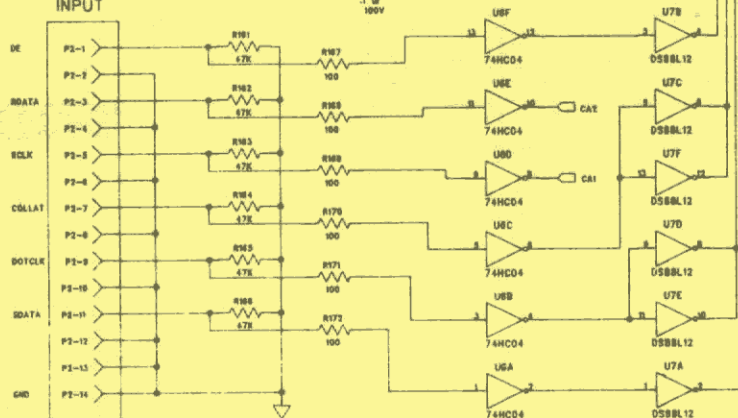


Display Controller Board Schematic



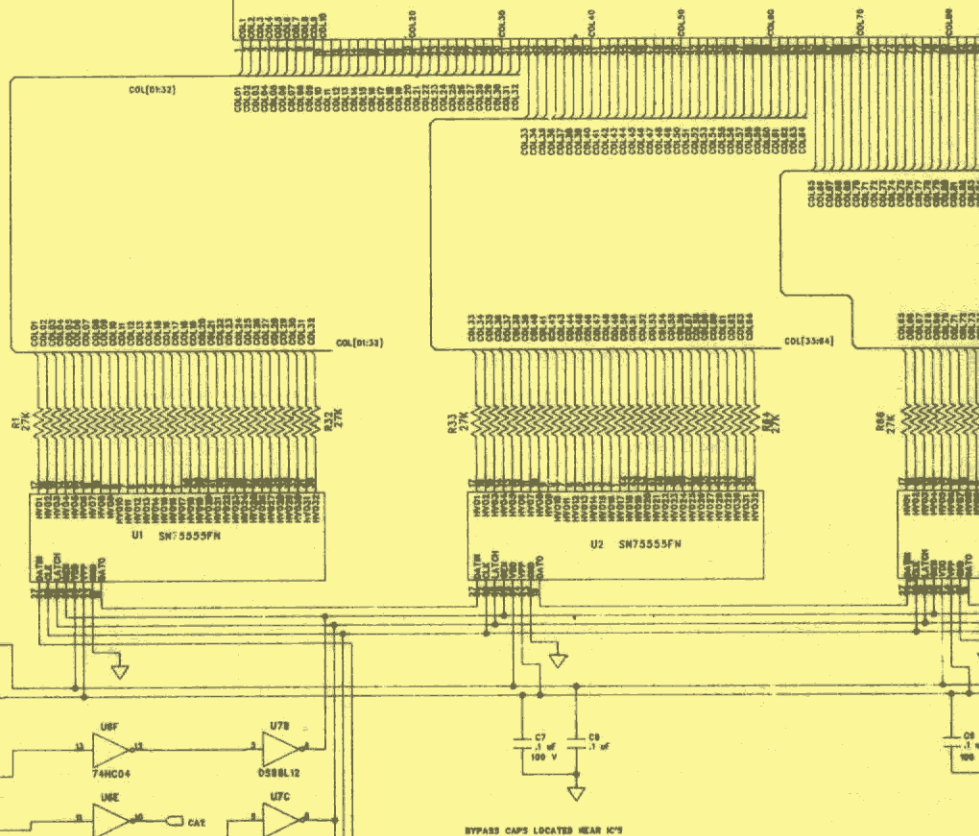


P2 INPUT

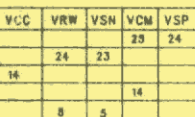


2. RESISTOR VALUES ARE IN OHMS, 1/8 WATT, 5%.
 1. CAPACITOR VOLTAGES ARE 50V, 20%.
- NOTES: UNLESS OTHERWISE SPECIFIED.

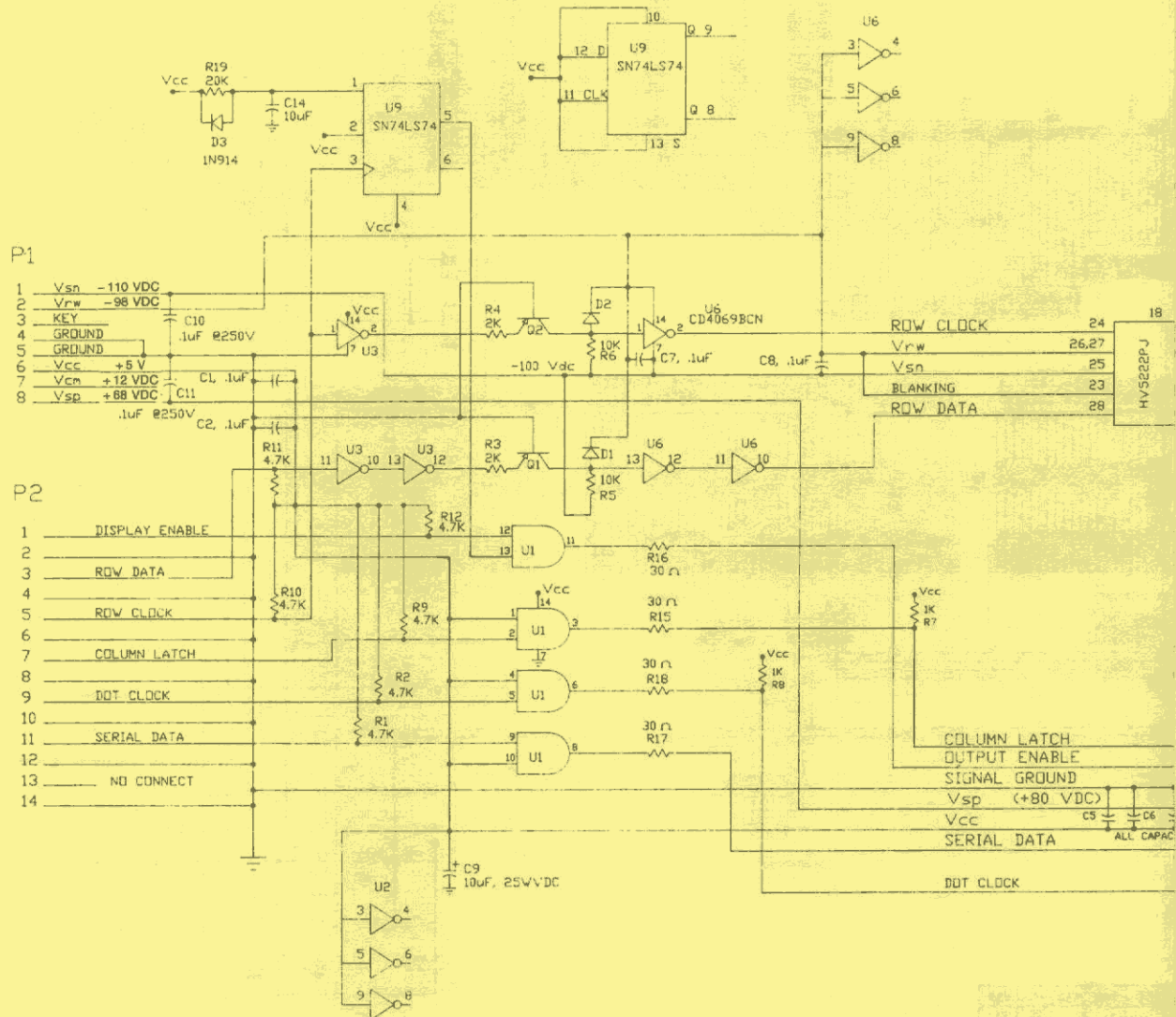
DISPLAY GP-O



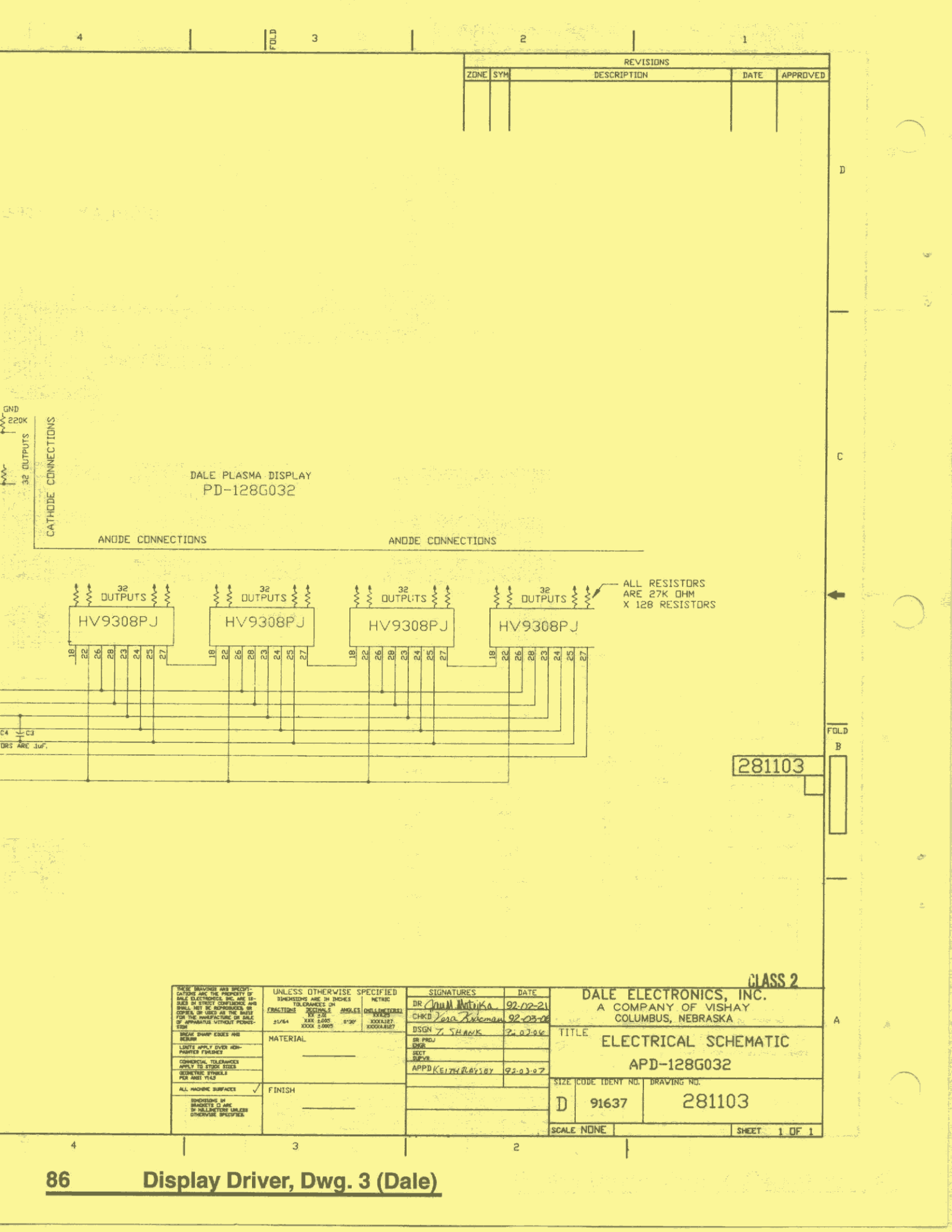
REF	DES	QNT
U1 - U4	23	
U5		
U6	7	
U7	7	
U8		

**Display Driver, Dwg. 2 (Babcock) 85**

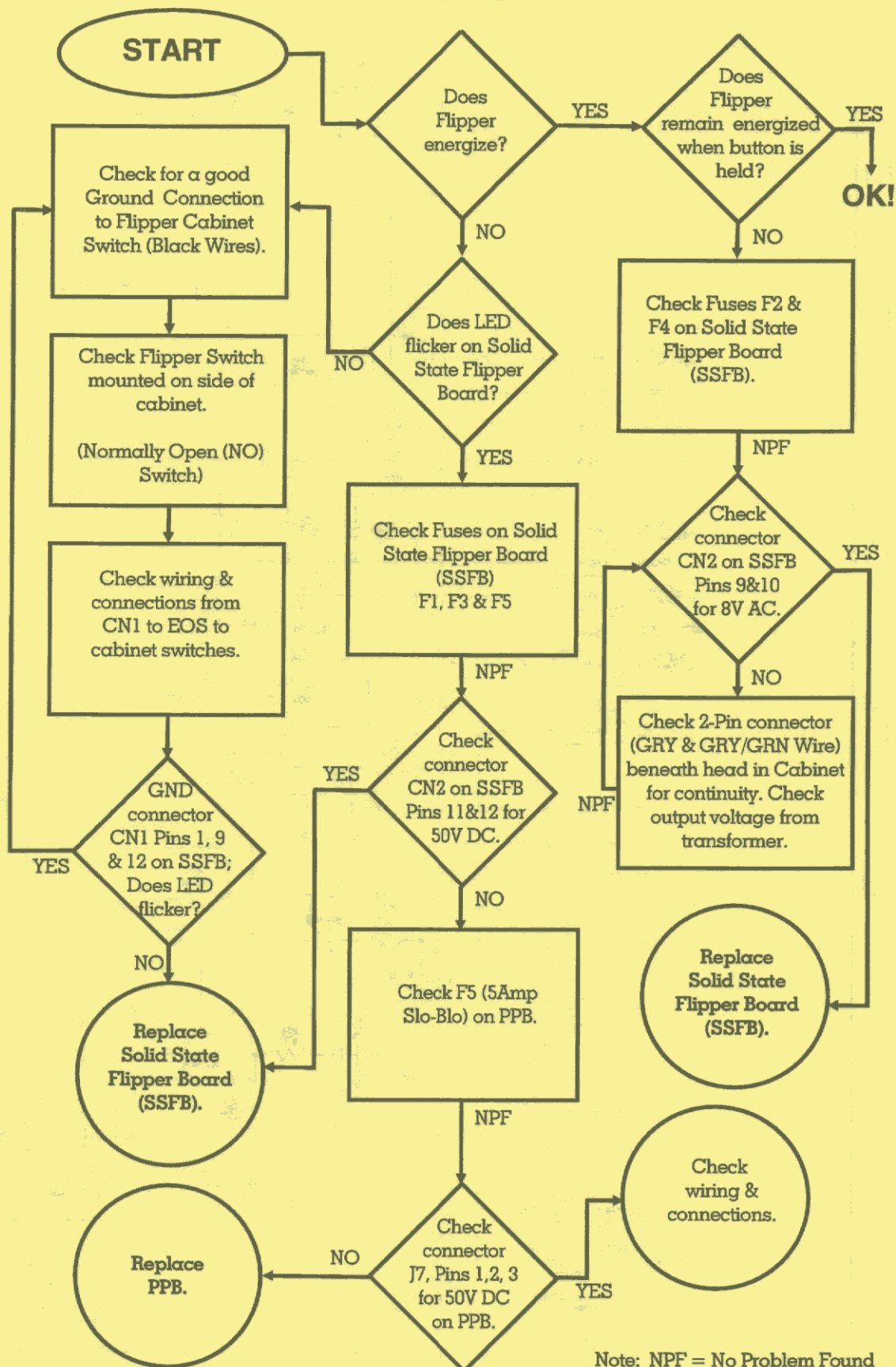
PART NO.	INTL CODE
281103-01	S



NOTES



Solid State Flipper Circuit Troubleshooting Flowchart



Note: NPF = No Problem Found

New Solid State Flipper Board

We have redesigned our Solid State Flipper Board (S.S.F.B.) so that a misadjustment or failure of the End-of-Stroke (E.O.S.) Switch will not affect the operation of the flippers. The flippers will still work! The E.O.S. switch is strictly an added feature, not a functional part of the circuit (see E.O.S. Theory of Operation).

Theory of Operation for the Solid State Flippers

The Solid State Flipper Board is a Multiple Flipper Solenoid Driver Circuit. Each solenoid driver circuit contains a One Shot Timer, a 50V Driver, and an 8V Driver.

Looking at one circuit, Schmidt NAND gates U1A, U1b, and U1D make up the One Shot Timer. The timer length is controlled by R10, R33 and C2. The output of the timer is gated at U1C with the buffered switch input from Q6. The output of U1C controls the 50V driver circuit consisting of Q4, Q1, Q2, Q3, and D1. As long as the flipper button is activated, Q6 will keep the 8V driver circuit, SR1, on.

The 50 volts provides the actuation power to the flipper solenoid while the 8 volts provides the holding power.

E.O.S. Switch Theory of Operation

The End of Stroke (E.O.S.) Switch used in our flipper circuit is a Gold Peened Contact, Blade Switch Assembly, mounted on the flipper assembly.

Electrically, it is connected in series with the Cabinet Flipper Switch and the Flipper E.O.S. input on the Solid State Flipper Board (S.S.F.B.) connector CN1 which enables the 50 Volt DC Drive Circuit.

Referring to the Flipper Wiring Diagram, one side of the Flipper Cabinet Switch is connected to ground (BLK-Wire), the other side (BLU-VIO Wire) is connected to the flipper switch input on the S.S.F.B. connector CN1 which enables your 9 Volt DC holding voltage and is connected in series to the E.O.S. switch which is a normally closed switch.

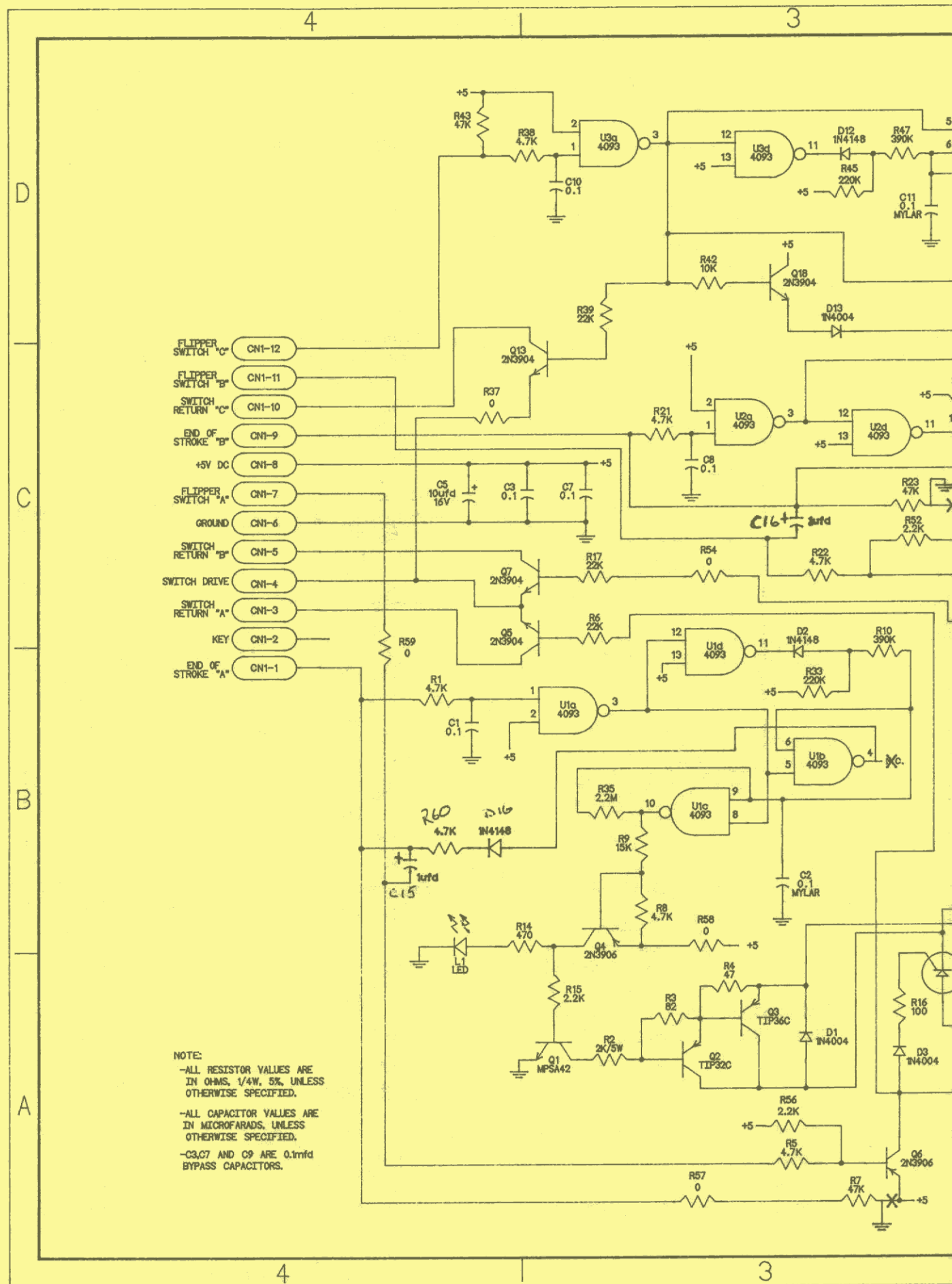
The function of the E.O.S. switch is to prevent the flipper bat from being knocked back by a high velocity shot on the playfield. If while holding the flipper in the up position, the bat is moved back 1/16" or more, the E.O.S. switch will close giving the coil another 50 Volt pulse.

E.O.S. Switch Adjustment

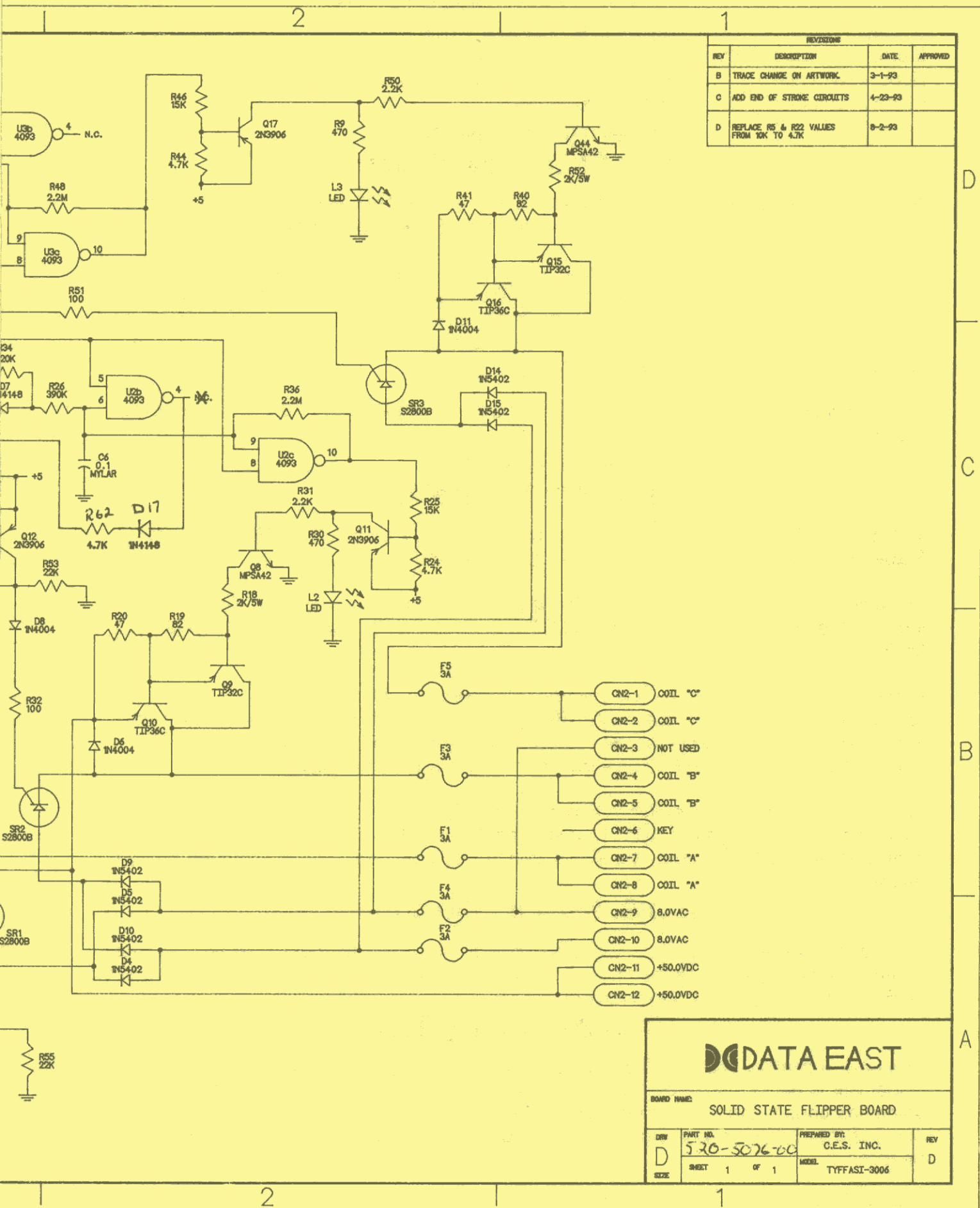
The switch contacts should be adjusted so that when the solenoid is energized, the contacts stay closed for almost the full travel of the plunger. The contacts should open 1/16" before the plunger bottoms out or reaches maximum travel.

Troubleshooting Tips

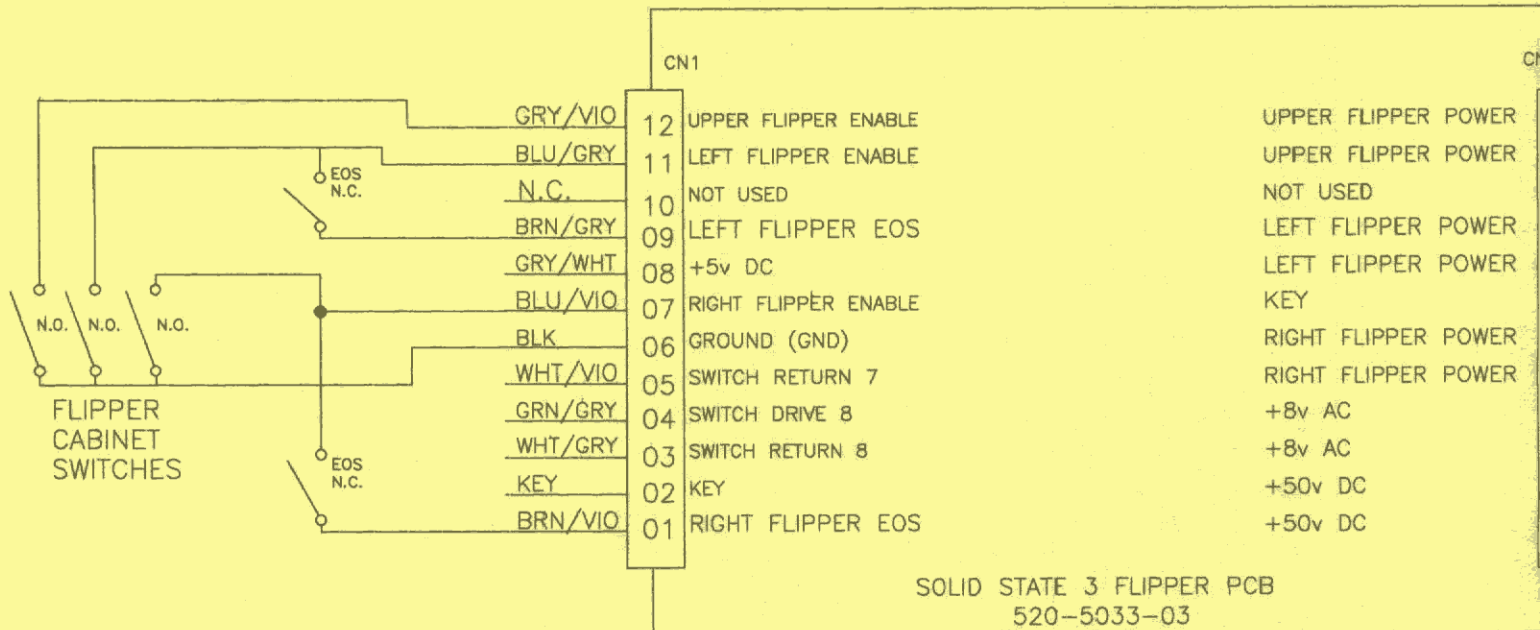
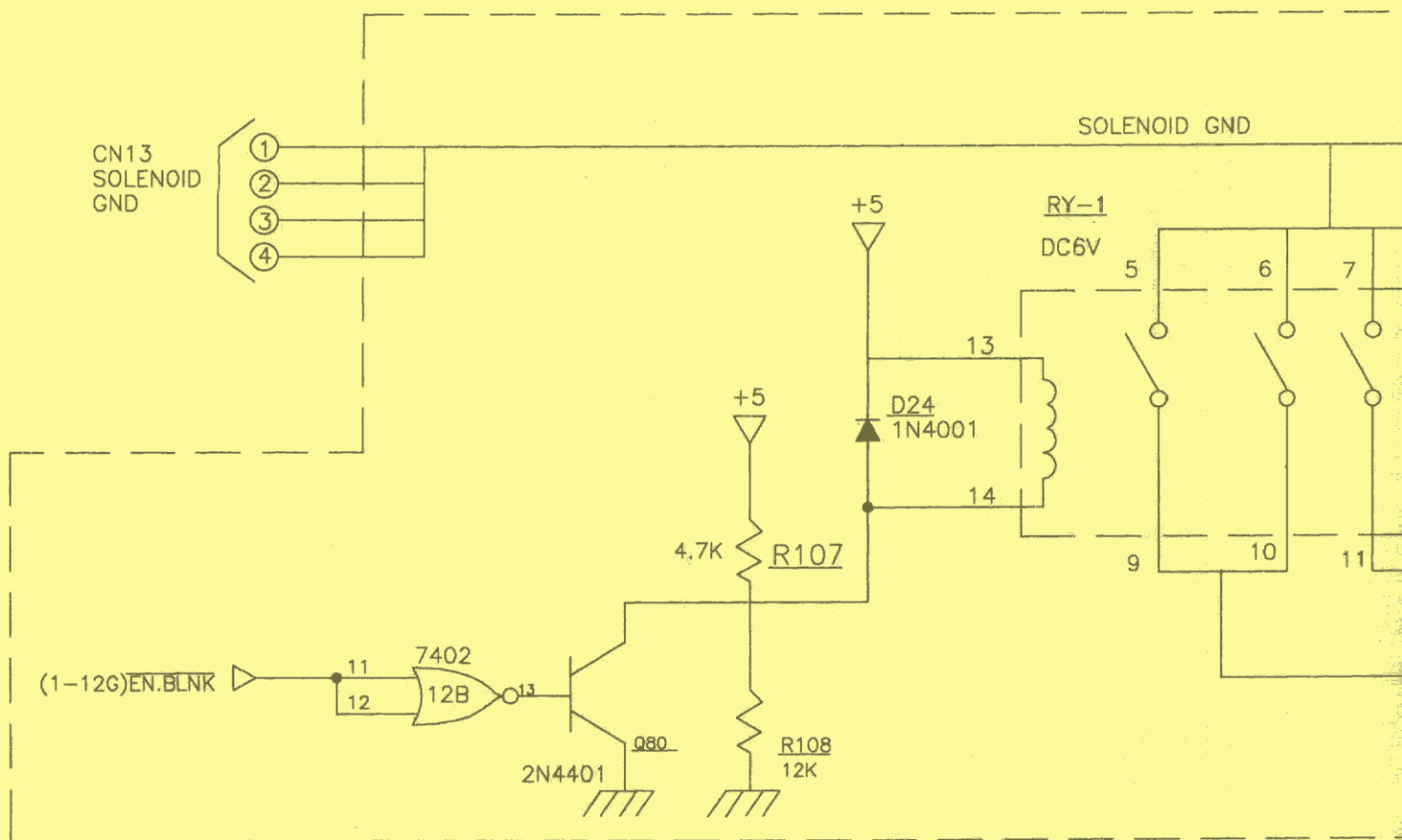
The only indication of a problem you will have is the player complaining that when the flipper bat is being held in the up position, a high velocity shot from one of the playfield solenoids causes the ball to hit the flipper bat and physically knock it back. This will not occur if the E.O.S. is working. Check switch for alignment and continuity, replace if necessary.

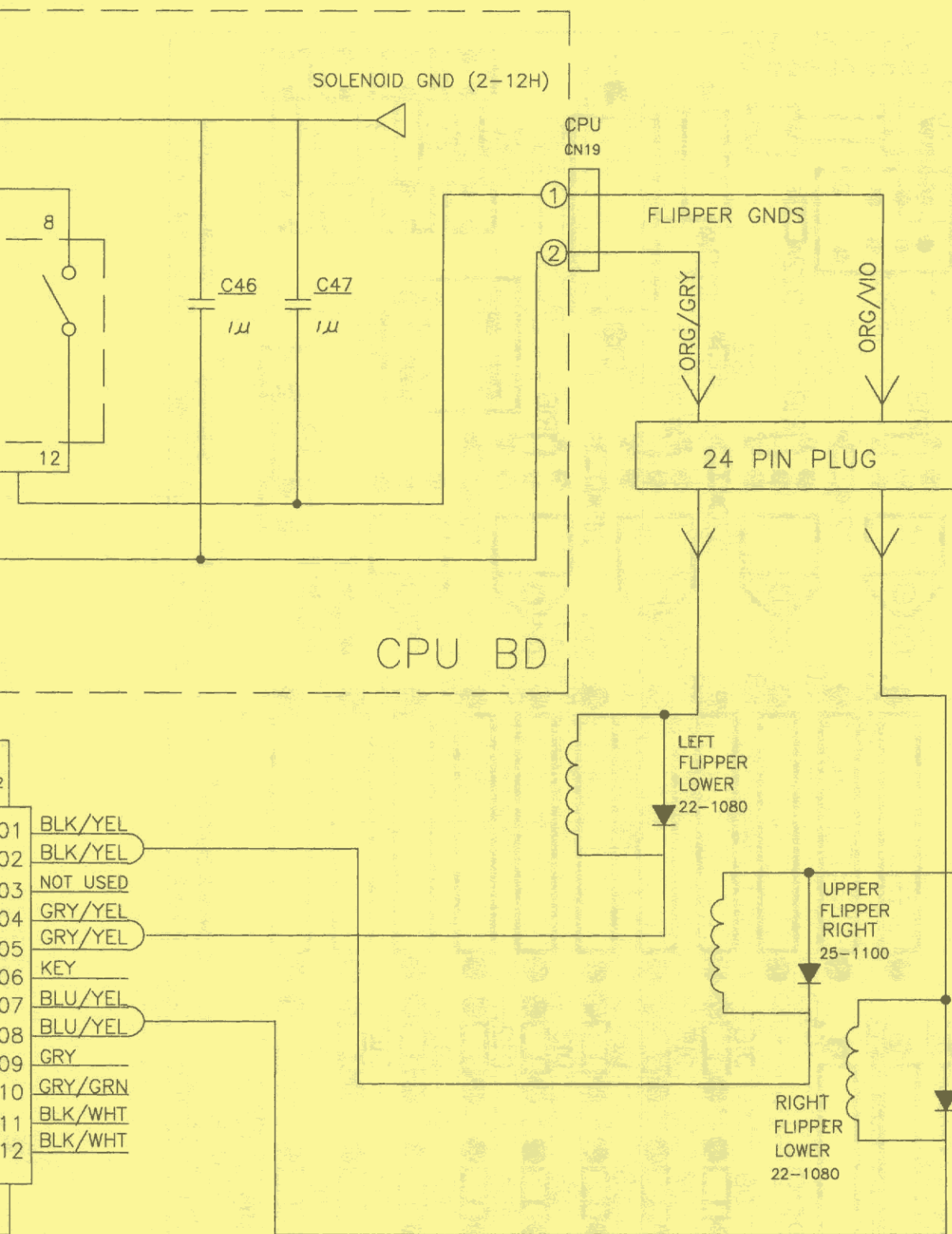


**Solid State 3-Flipper Board
Diagram**



**Solid State 3-Flipper Board
Diagram**





GUNS'N'ROSES

DWN.

Phillis

DATE

06-20-94

DATA EAST PINBALL, INC.

1990 JANICE AVE., MELROSE PARK, IL. 60160

TITLE:

3 FLIPPER WIRING DIAGRAM

