

**DE** DATA  
EAST

# TALES FROM THE CRYPT



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**DATA EAST PINBALL®**

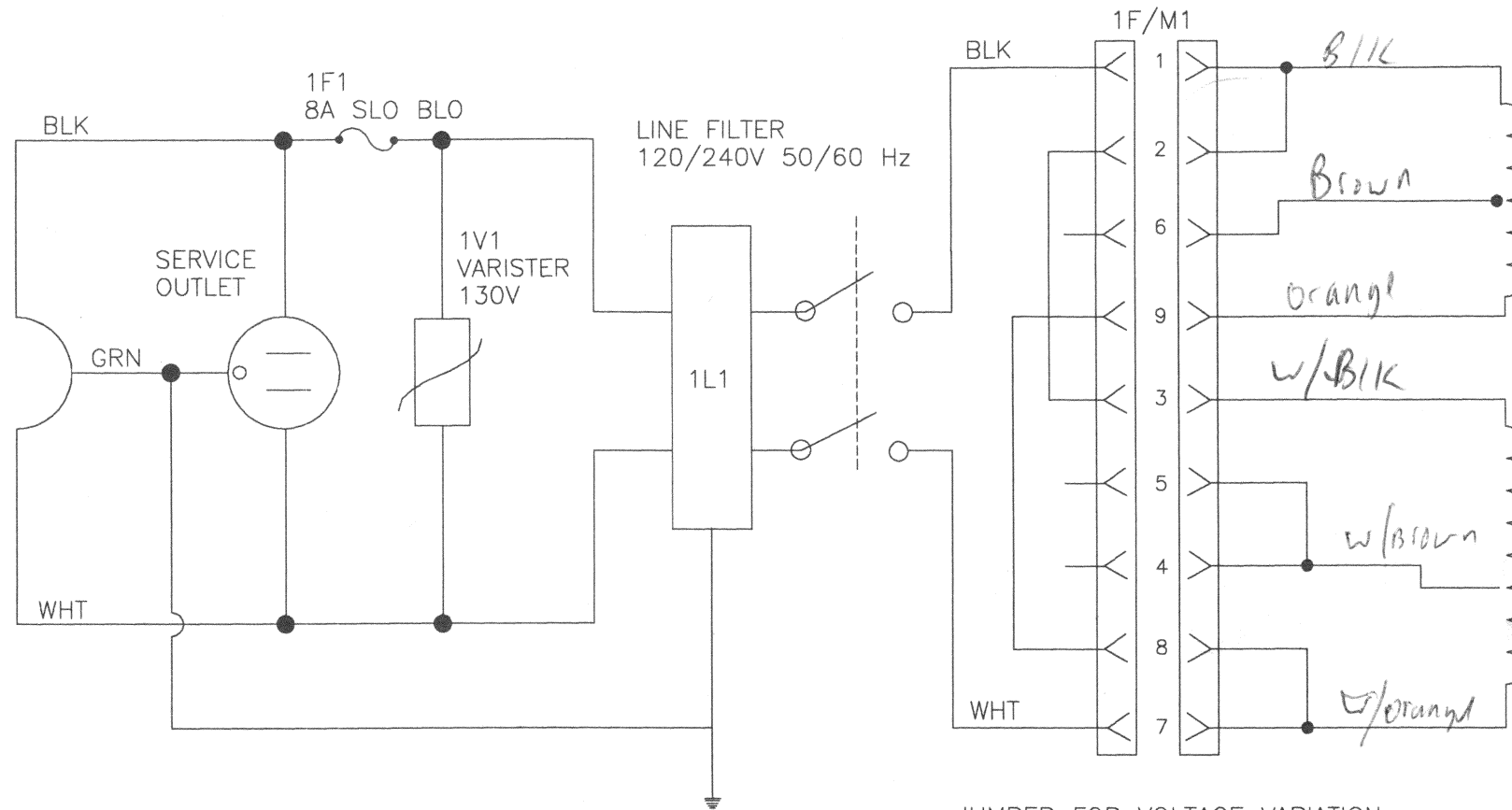
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Melrose Park, IL 60160  
708-345-7700  
FAX 708-345-7718  
**1-800-KICKERS**

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780-5018-00

THIS CONFIGURATION FOR 115V

FOR LOWER LINE VOLTAGES  
OR 220 VOLT OPERATION  
SEE SAMPLES BELOW



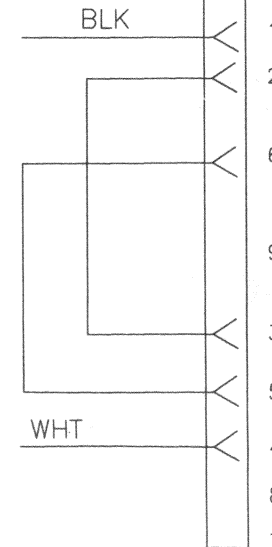
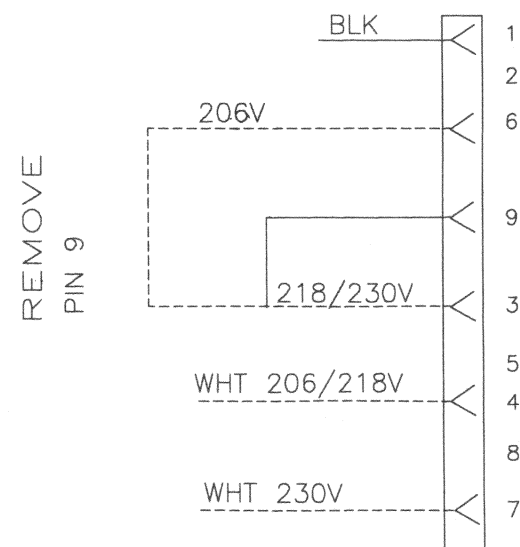
JUMPER FOR VOLTAGE VARIATION

230/218/206 VOLTS

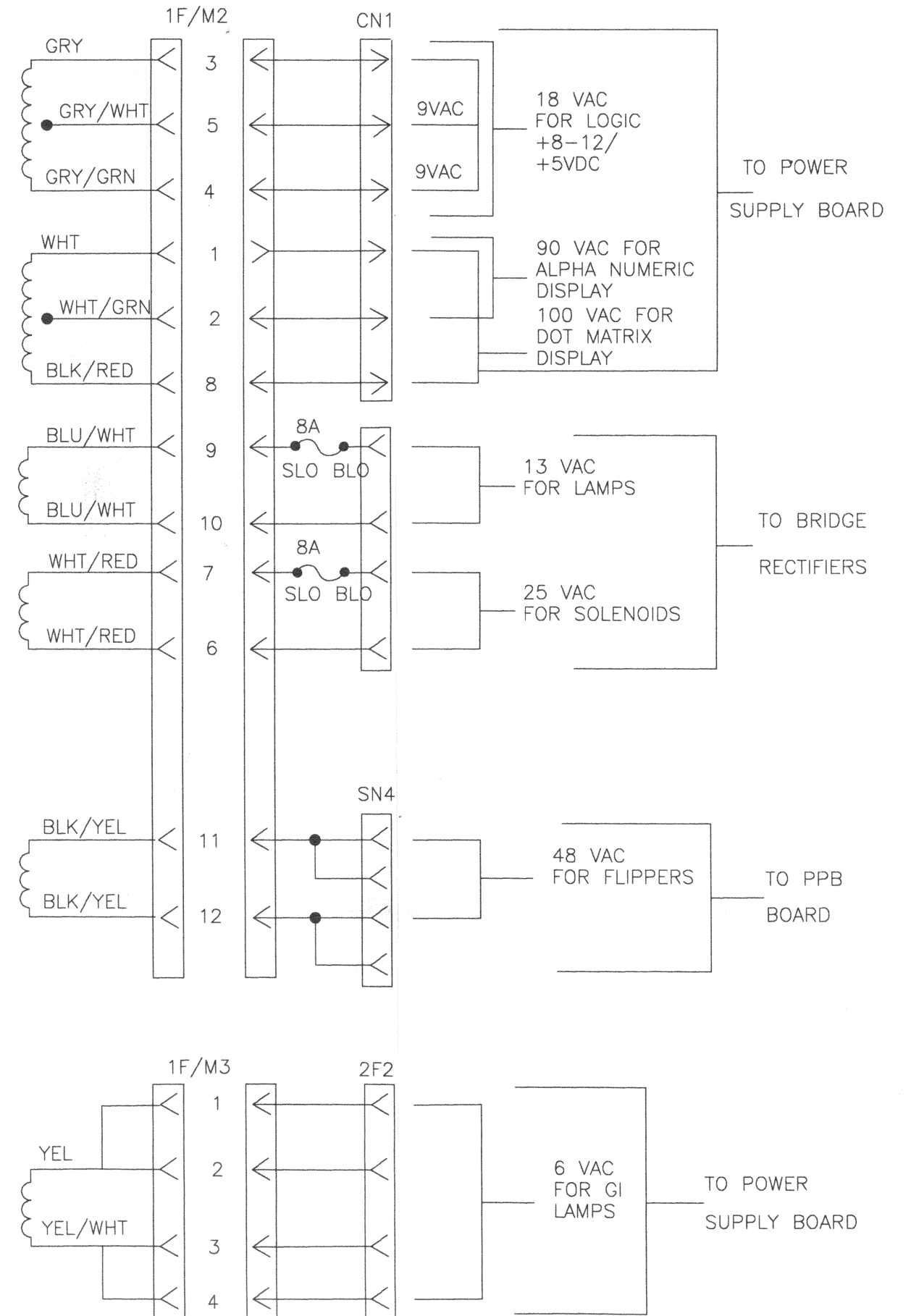
1F1= 4A SLO BLO  
1V1=275V VARISTOR

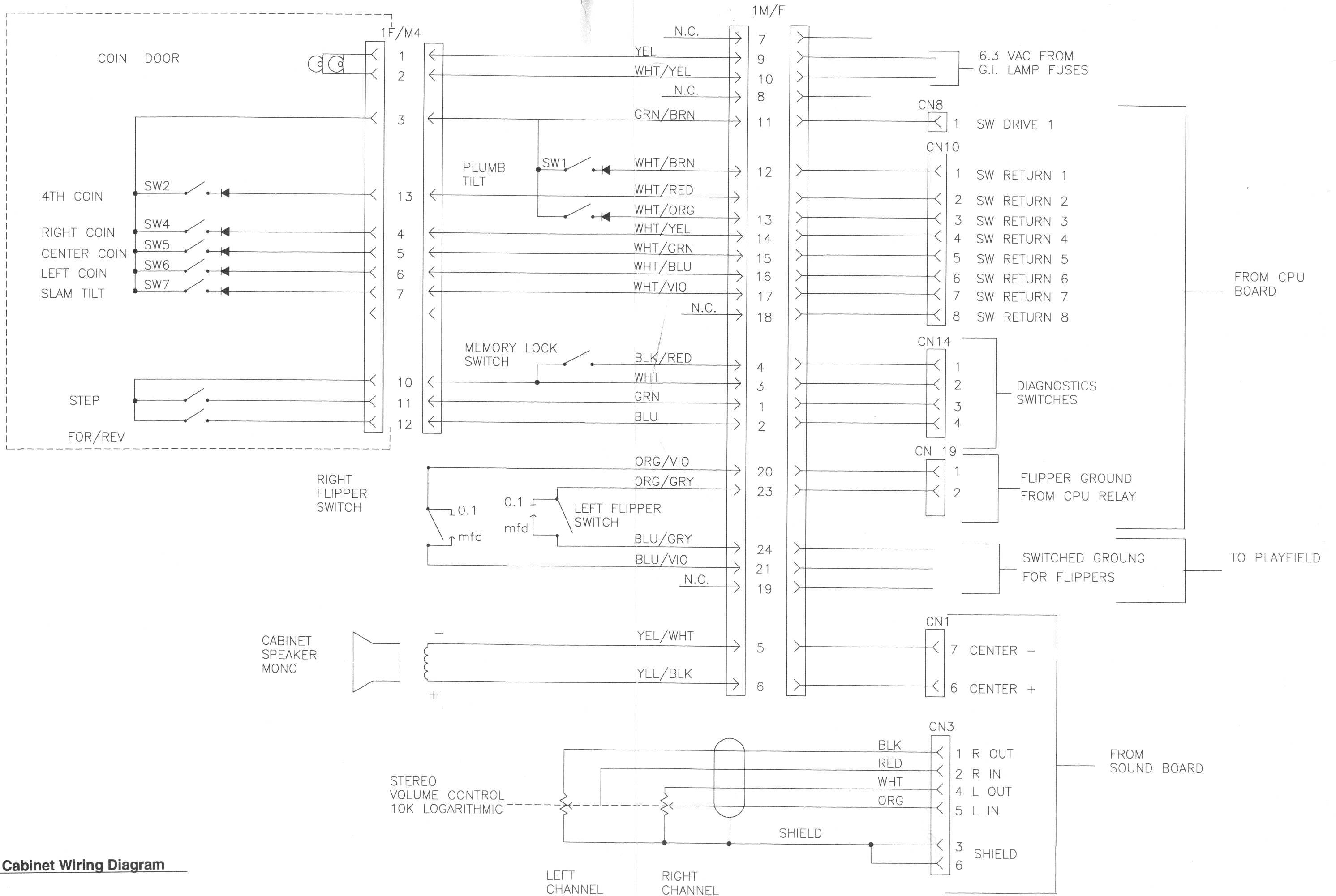
100/105 VOLTS

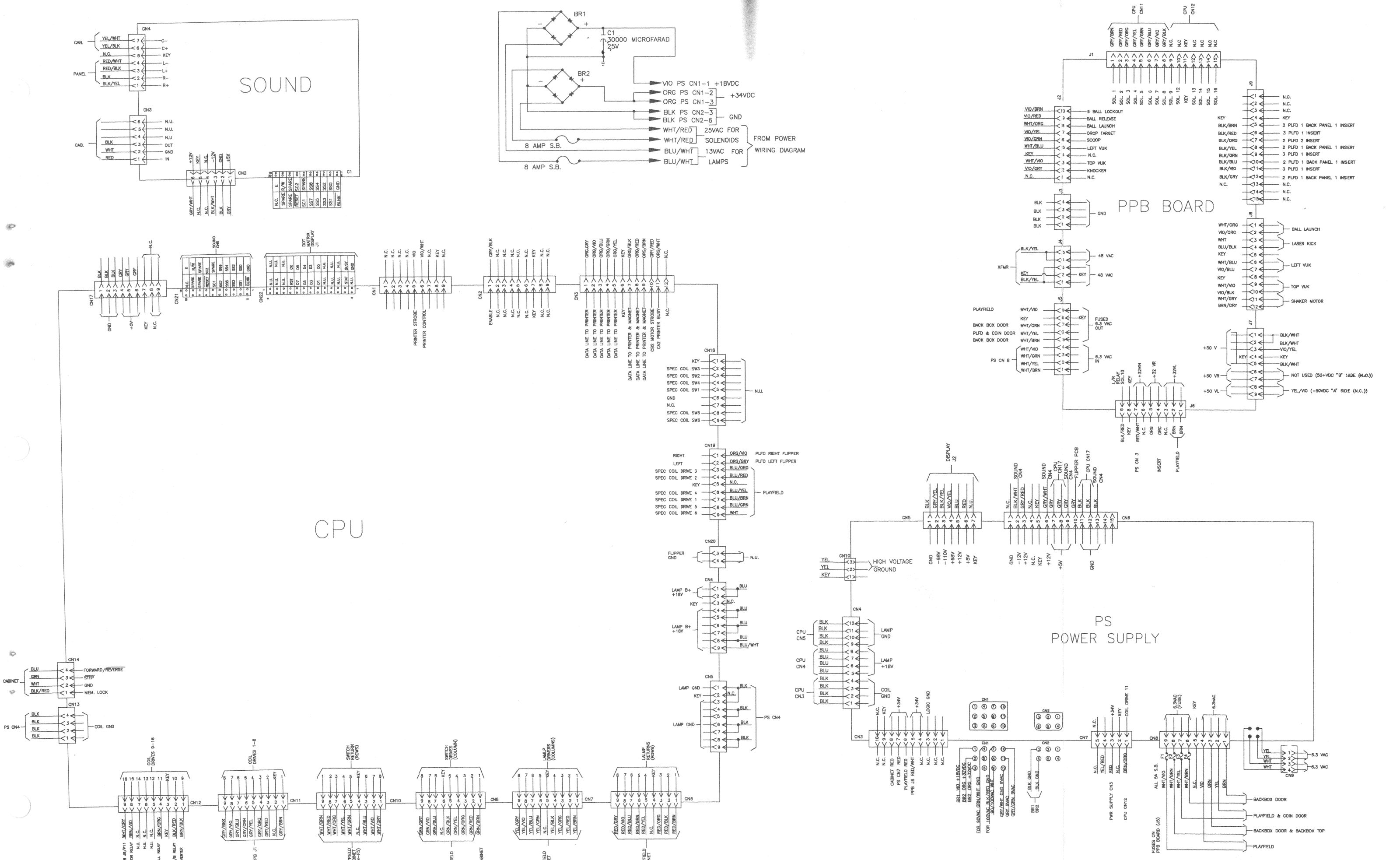
1F1= 8A SLO BLO  
1V1= 130V VARISTOR

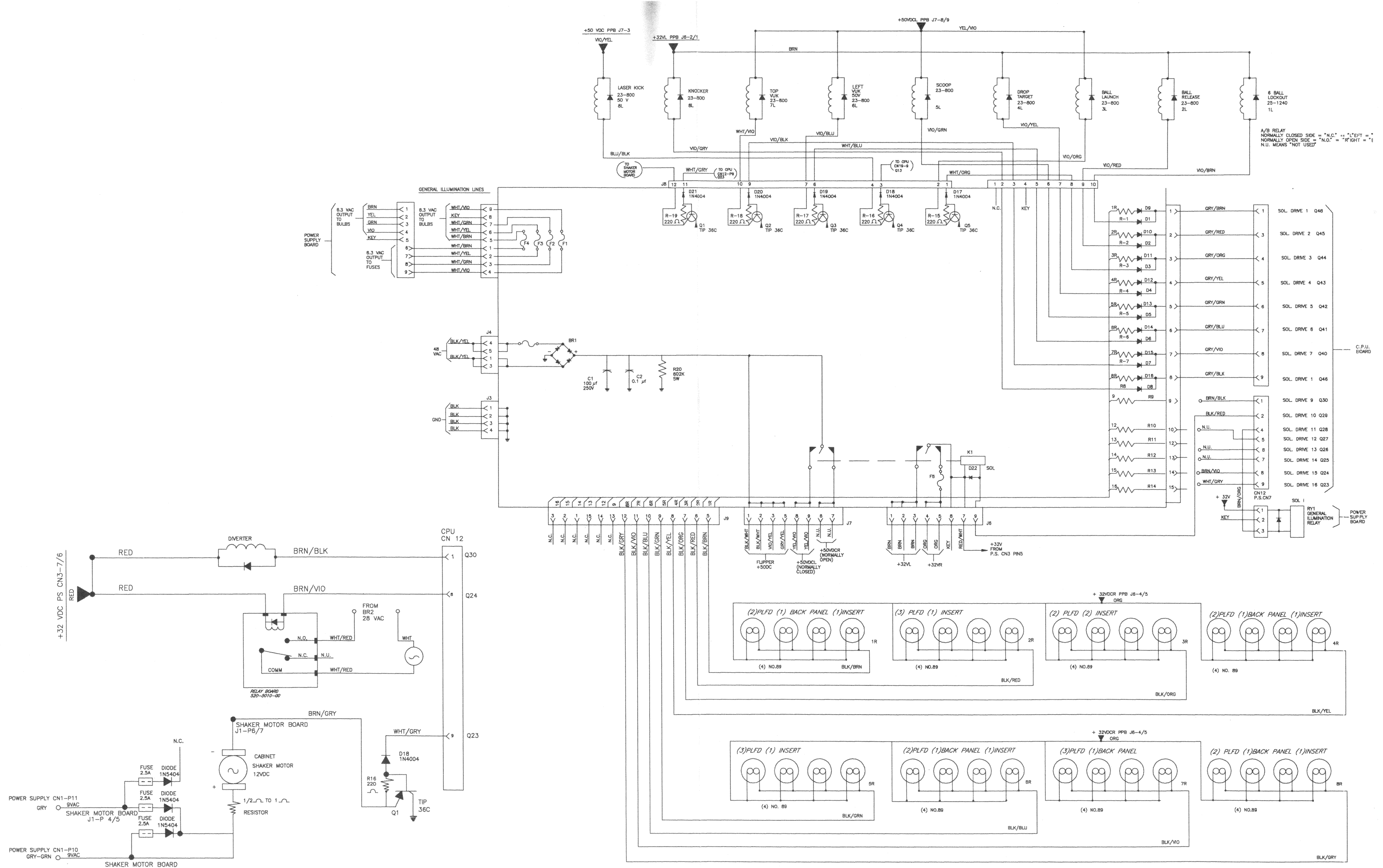


1T1



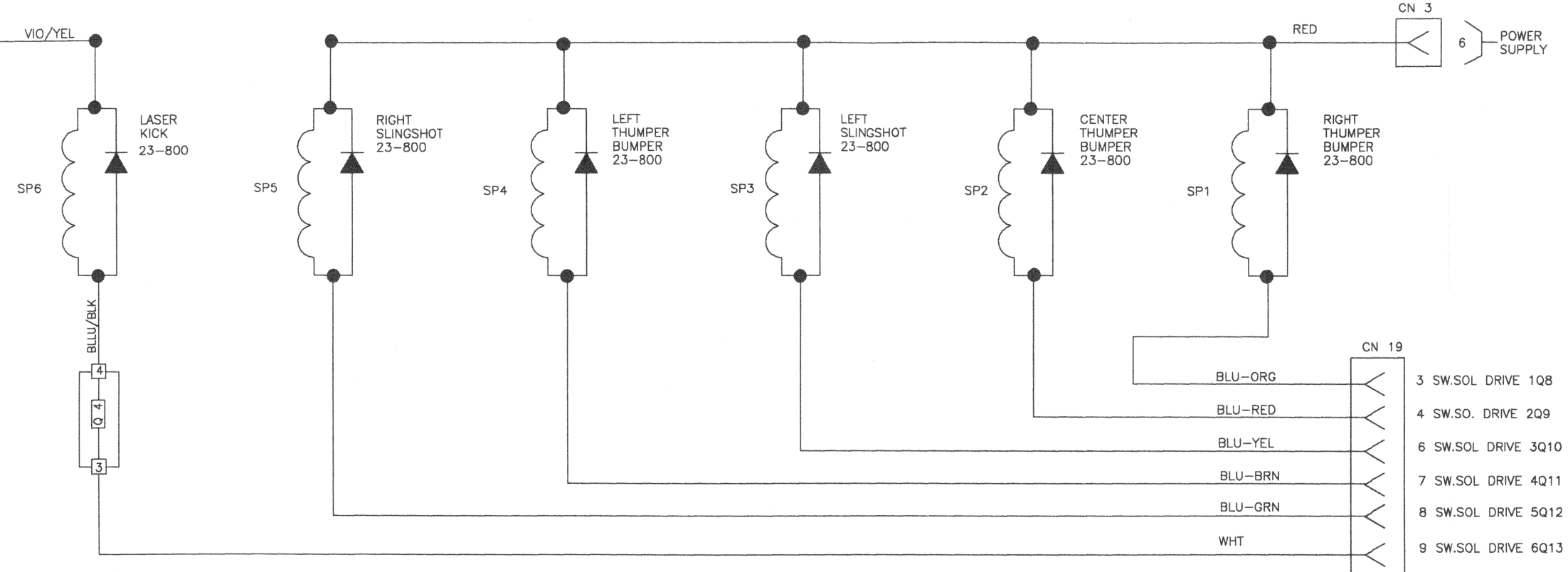




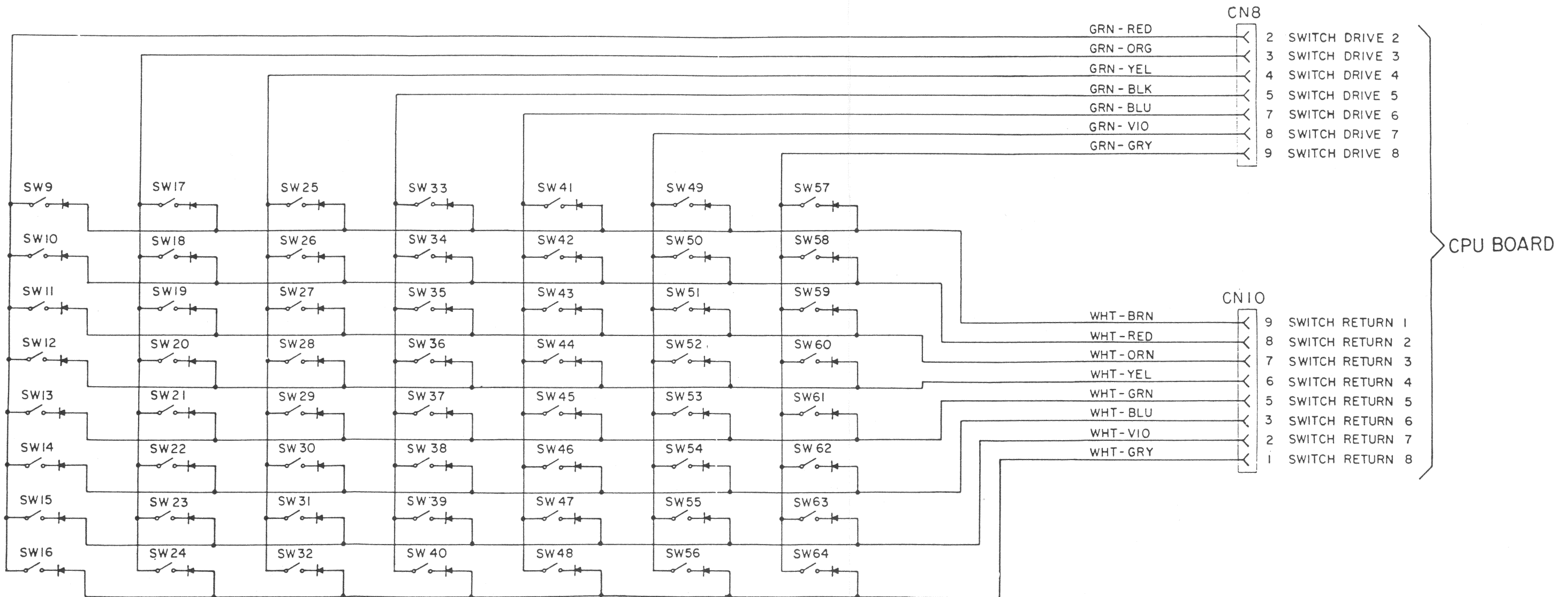


A/B RELAY  
 NORMALLY CLOSED SIDE = "N.C." "L" = "LEFT" = "L"  
 NORMALLY OPEN SIDE = "N.O." "R" = "RIGHT" = "R"  
 N.U. MEANS "NOT USED"

+50 VDC PPB J7-3



Switch Number	Description	Part No.	Switch Number	Description	Part No.	Switch Number	Description	Part No.
01*	Plumb Tilt	See Cabinet	17	Left Outlane	500-5706-00	33*	Up (Tomb)	180-5052-00
02*	4th Coin	-	18	Left Return	500-5706-00	34	Not Used	-
03*	Credit Button	500-5097-02	19	Left Slingshot	180-5023-00	35	Not Used	-
04*	Right Coin	180-5024-00	20	Left Bottom 3 Bank	180-5130-02	36*	Down (Tomb)	180-5052-00
05*	Center Coin	180-5024-00	21	Left Mid 3 Bank	180-5130-01	37*	Tombstone Score	180-5083-00
06*	Left Coin	180-5024-00	22	Left Top 3 Bank	180-5130-00	38	VUK Left	180-5064-00
07*	Slam Tilt	180-5022-00	23	Left Bottom Orbit	500-5706-00	39	Captive Ball Trgt. Switch	180-5114-08
08*	Buy-In Button	180-5073-00	24	Left Top Orbit	500-5707-00	40	Left Spinner	180-5010-04
09	Trough #1 Left	180-5119-00	25	Right Outlane	500-5707-00	41	Left Drop Target	180-5092-01
10	Trough #2	180-5119-00	26	Right Return	500-5707-00	42	Mid Drop Target	180-5092-01
11	Trough #3	180-5119-00	27	Right Slingshot	180-5023-00	43	Right Drop Target	180-5092-01
12	Trough #4	180-5119-00	28	Right Bottom 3 Bank	180-5130-02	44	Left Ramp Enter	180-5090-00
13	Trough #5	180-5119-00	29	Right Mid 3 Bank	180-5130-01	45	Left Ramp Middle	180-5090-00
14	Trough #6	180-5119-00	30	Right Top 3 Bank	180-5130-02	46	Right Ramp Enter	180-5090-00
15	Trough #7 Right	180-5118-00	31	Right Bottom Orbit	500-5706-00	47	Right Ramp Exit	180-5093-00
16	Shooter Lane	180-5100-01	32	Right Top Orbit	500-5707-00	48	Right Spinner	180-5010-04
						49	Left Turbo Bumper	180-5015-01
						50	Bottom Turbo Bumper	180-5015-01
						51	Right Turbo Bumper	180-5015-01
						52	Super VUK Right	180-5064-01
						53	Small Trough	180-5093-00
						54	Large Trough	180-5093-00
						55	Power Scoop	500-5057-00
						56	Middle Spinner	180-5010-04
						57	Left Ramp Exit	180-5090-00
						58	Not Used	-
						59	Not Used	-
						60	Not Used	-
						61	Not Used	-
						62*	Launch Button	180-5073-00
						63*	Left End of Stroke	180-5124-00
						64*	Right End of Stroke	180-5124-00

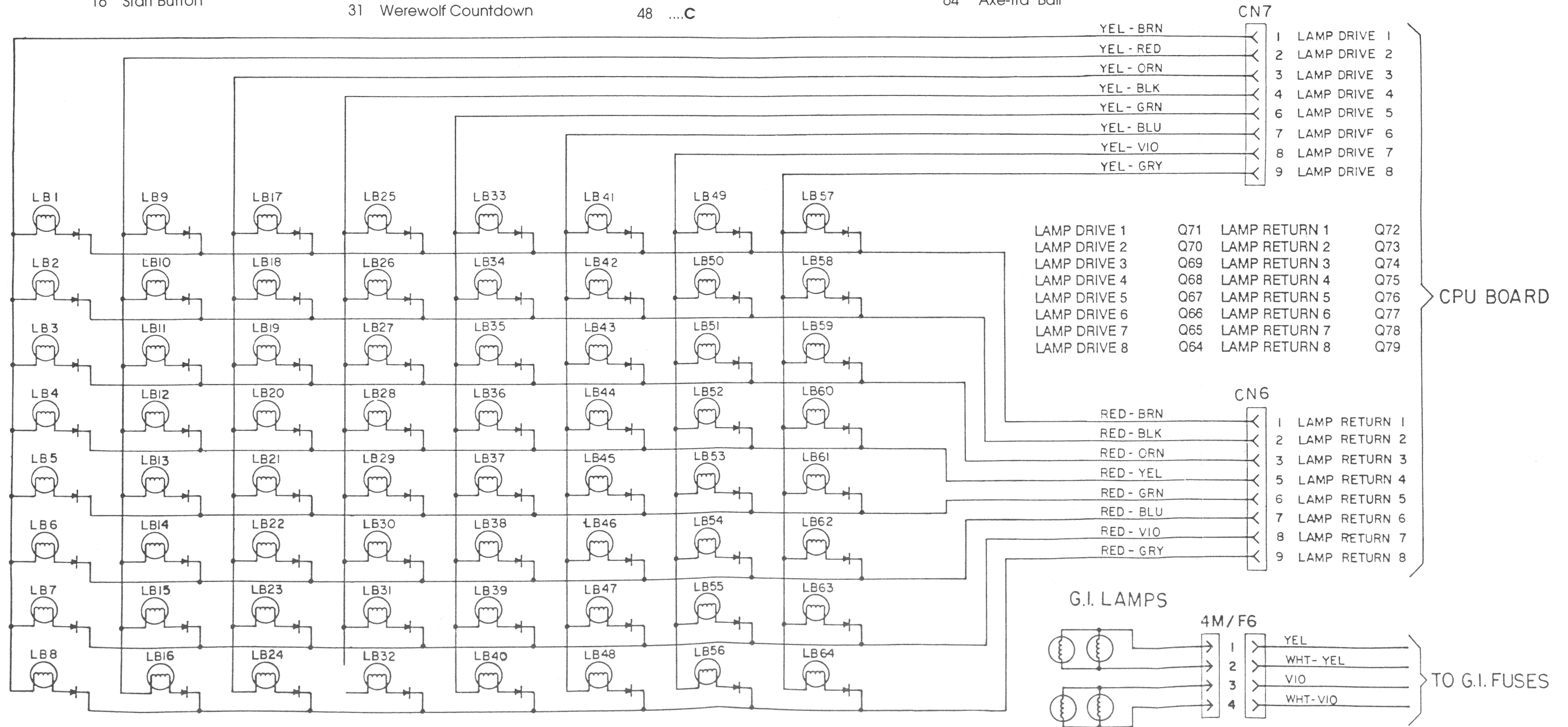


- 01 Thunderstorm
- 02 Skull Crackin'
- 03 Door PrizeSelect
- 04 Frightmare
- 05 Psycho Pops
- 06 Robbing the Crypt
- 07 Lite Extra Ball
- 08 Super GuillotineTargets
- 09 Werewolf Countdown
- 10 Video Mode
- 11 Electric Chair
- 12 Keeper Targets
- 13 Over Scoop
- 14 Buy-In Type
- 15 Launch
- 16 Start Button

- 17 A-Crypt Kick
- 17 B-Scared to Death
- 18 Extra Ball
- 19 Skull Crush
- 20 ....K
- 21 ....E
- 22 ....E
- 23 Collect Creature Feature
- 24 Monster Jackpot
- 25 Multiball
- 26 A-Lite Mystery Door (Left Return)
- 26 B-Chop Pops (Right Return)
- 27 Clone
- 28 ....R
- 29 ....E
- 30 ....P
- 31 Werewolf Countdown

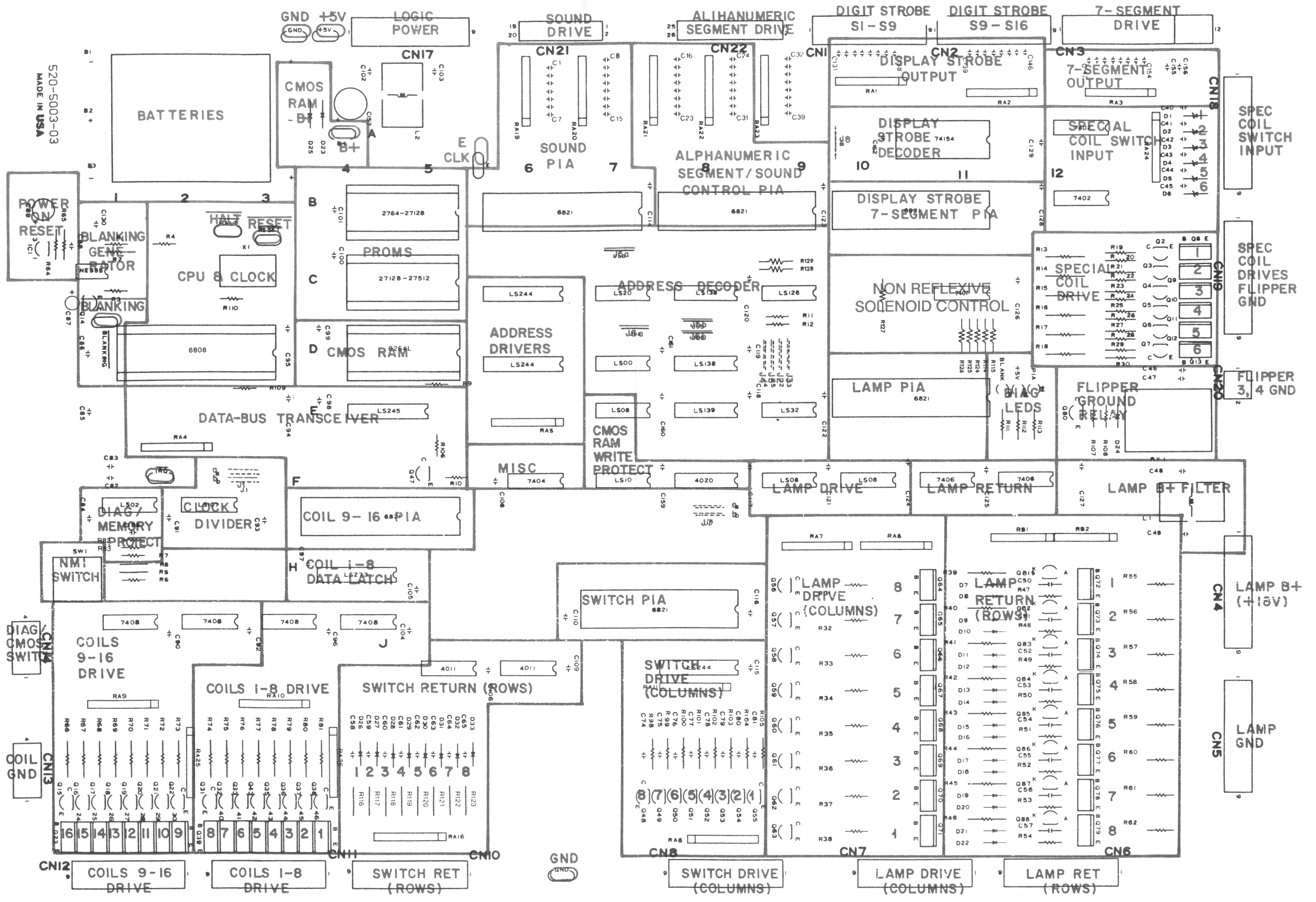
- 32 Increase Jackpot
- 33 Lite Creature Feature
- 34 Frightmare
- 35 Increase Double Jackpot
- 36 Lite Creature Feature
- 37 Rats
- 38 Goblins
- 39 Ghosts
- 40 Bats
- 41 Guillotine DropTarget Left
- 42 Guillotine DropTarget Middle
- 43 Guillotine DropTarget Right
- 44 ....T
- 45 ....P
- 46 ....Y
- 47 ....R
- 48 ....C

- 49 Mystery Door 1
- 50 Mystery Door 2
- 51 Mystery Door 3
- 52 Double Jackpot
- 53 Living Dead
- 54 Gravedigger
- 55 Chainsaw Mode
- 56 Play the Organ
- 57 Left Turbo Bumper
- 58 Bottom Turbo Bumper
- 59 Right Turbo Bumper
- 60 Jackpot
- 61 Multiball
- 62 Left Ramp Enter
- 63 Right Ramp Enter
- 64 "Axe-tra" Ball



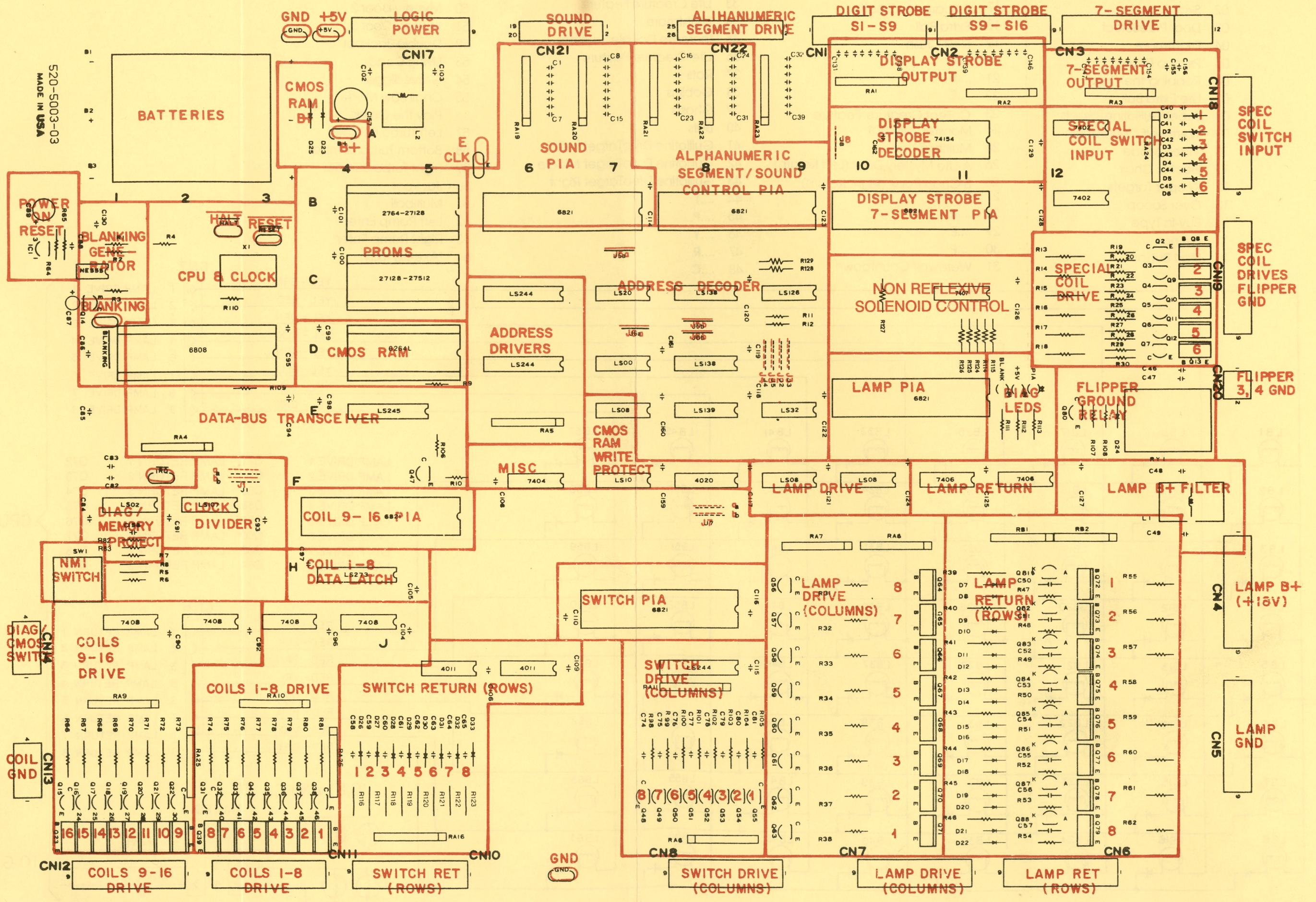


520-5003-03  
MADE IN USA

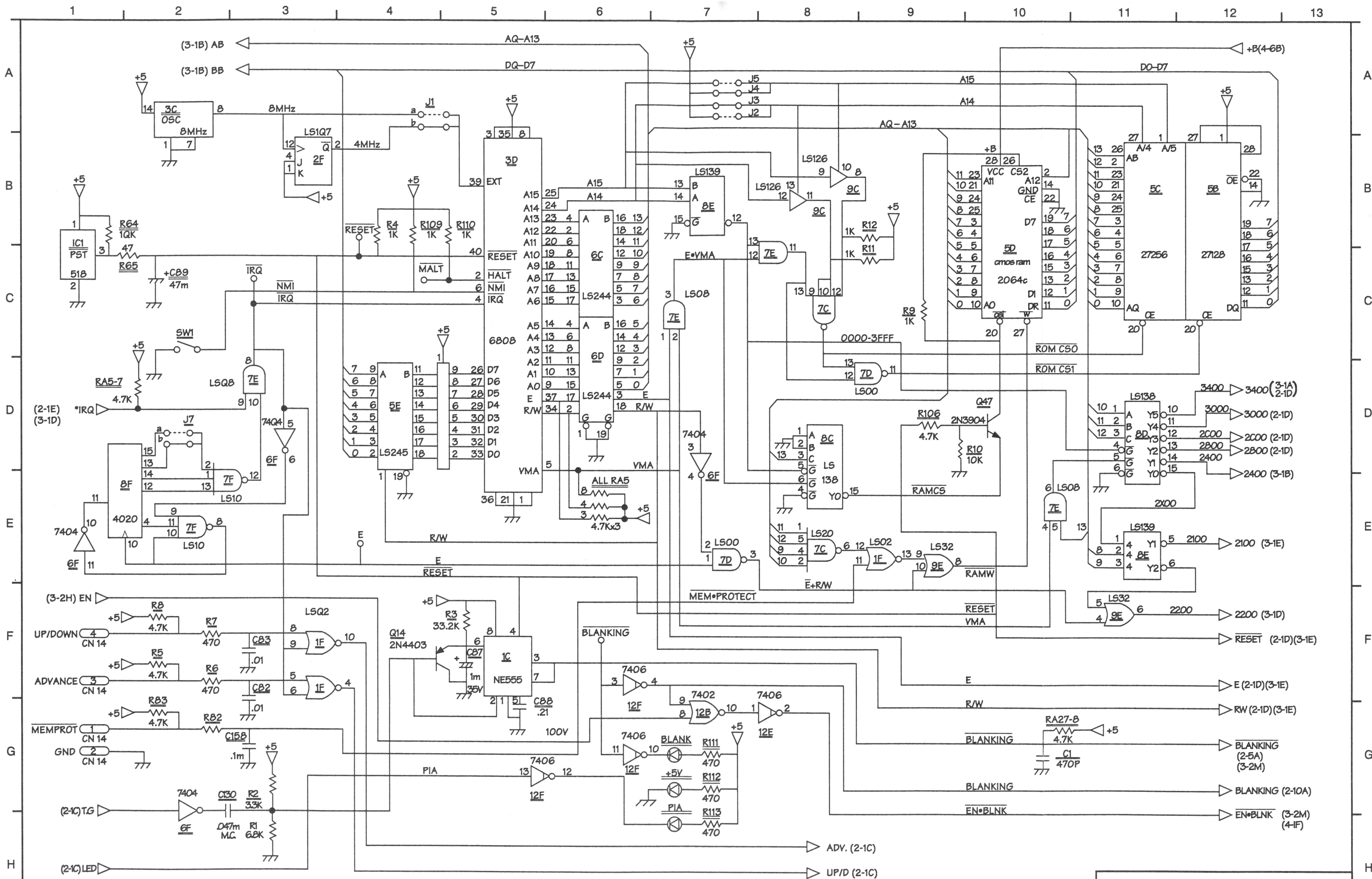


520-5003-03 REV-A  
00-0262-3A

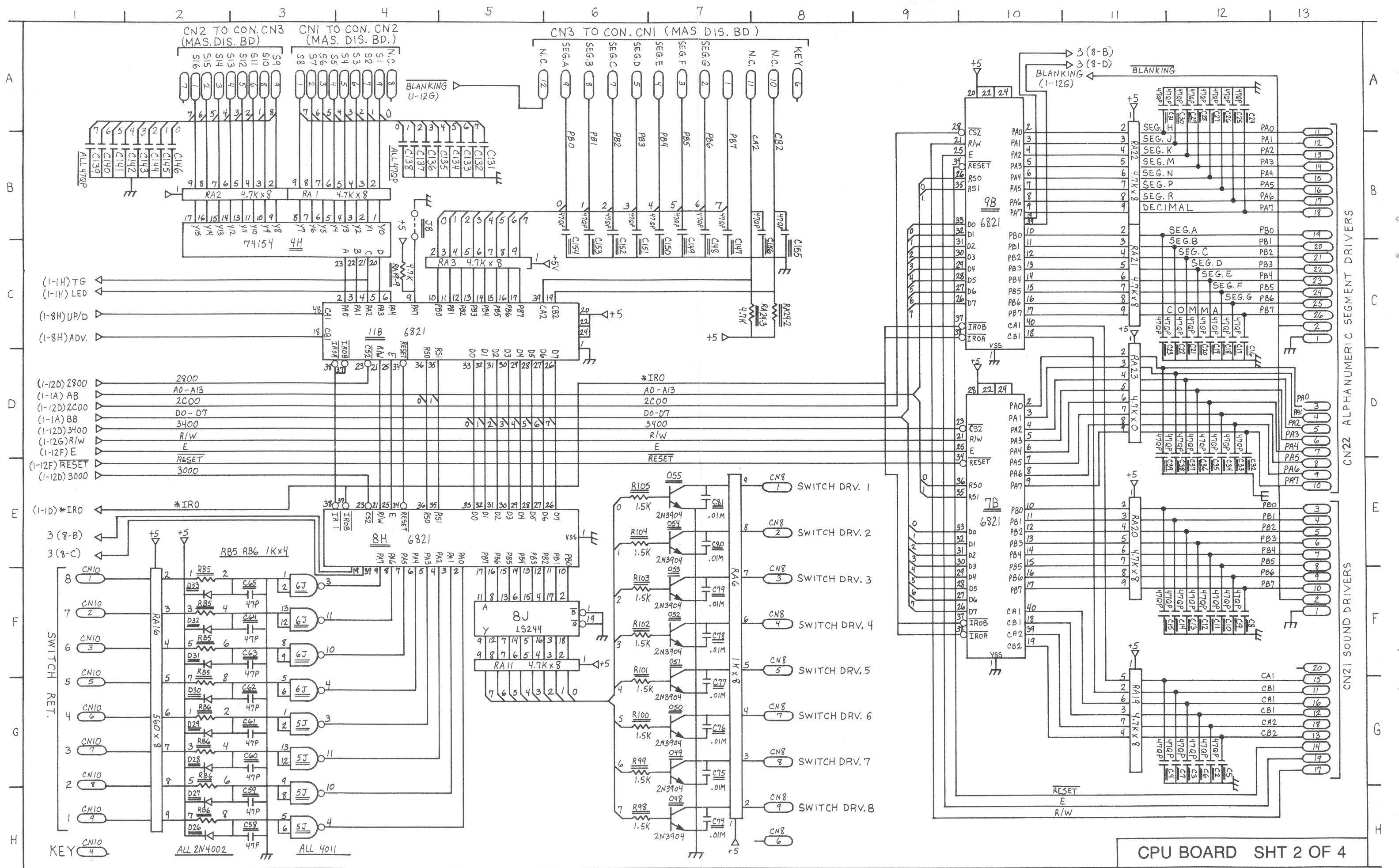
520-5003-03  
MADE IN USA

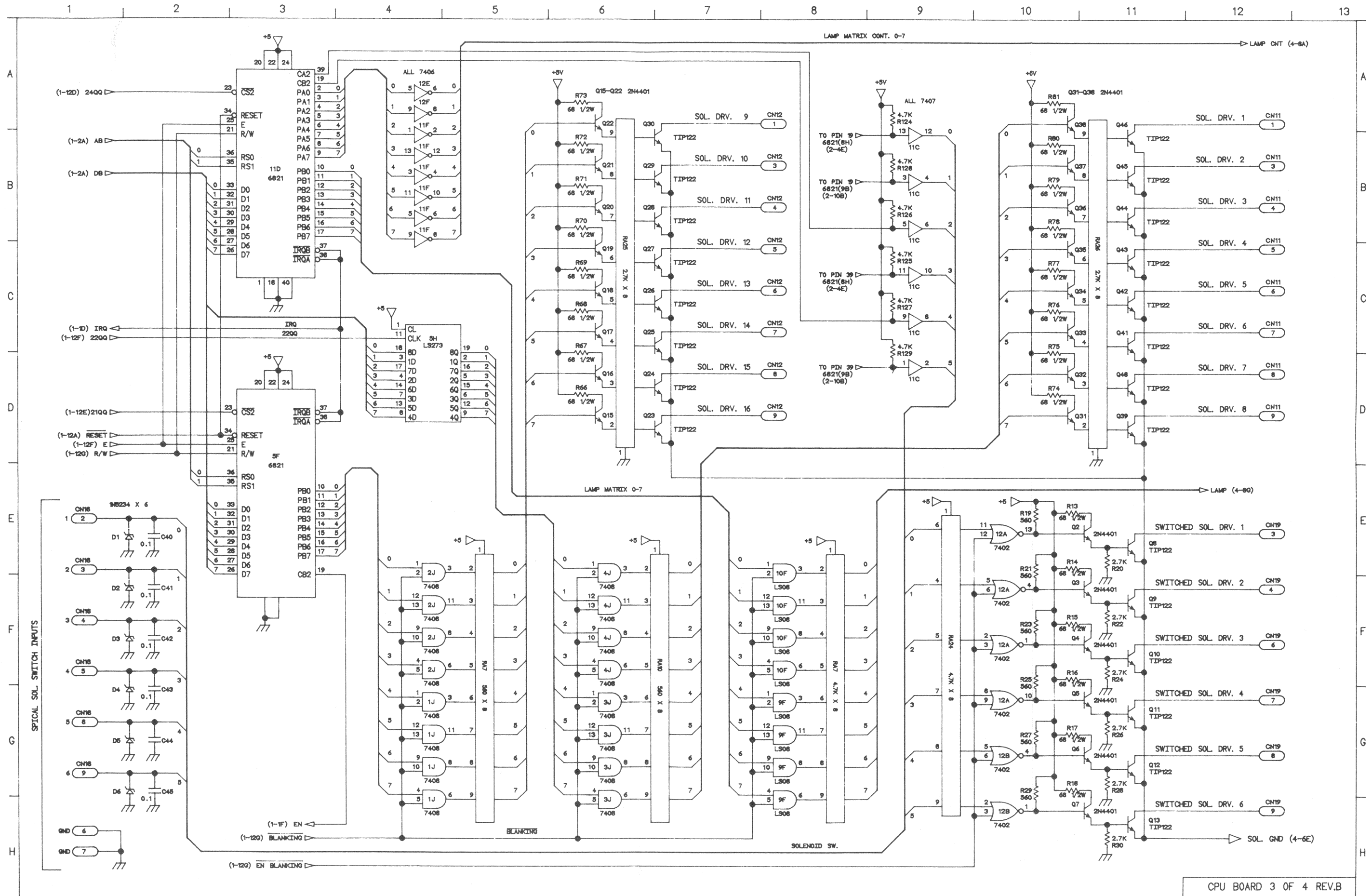


520-5003-03 REV-A  
DE-0282-3A

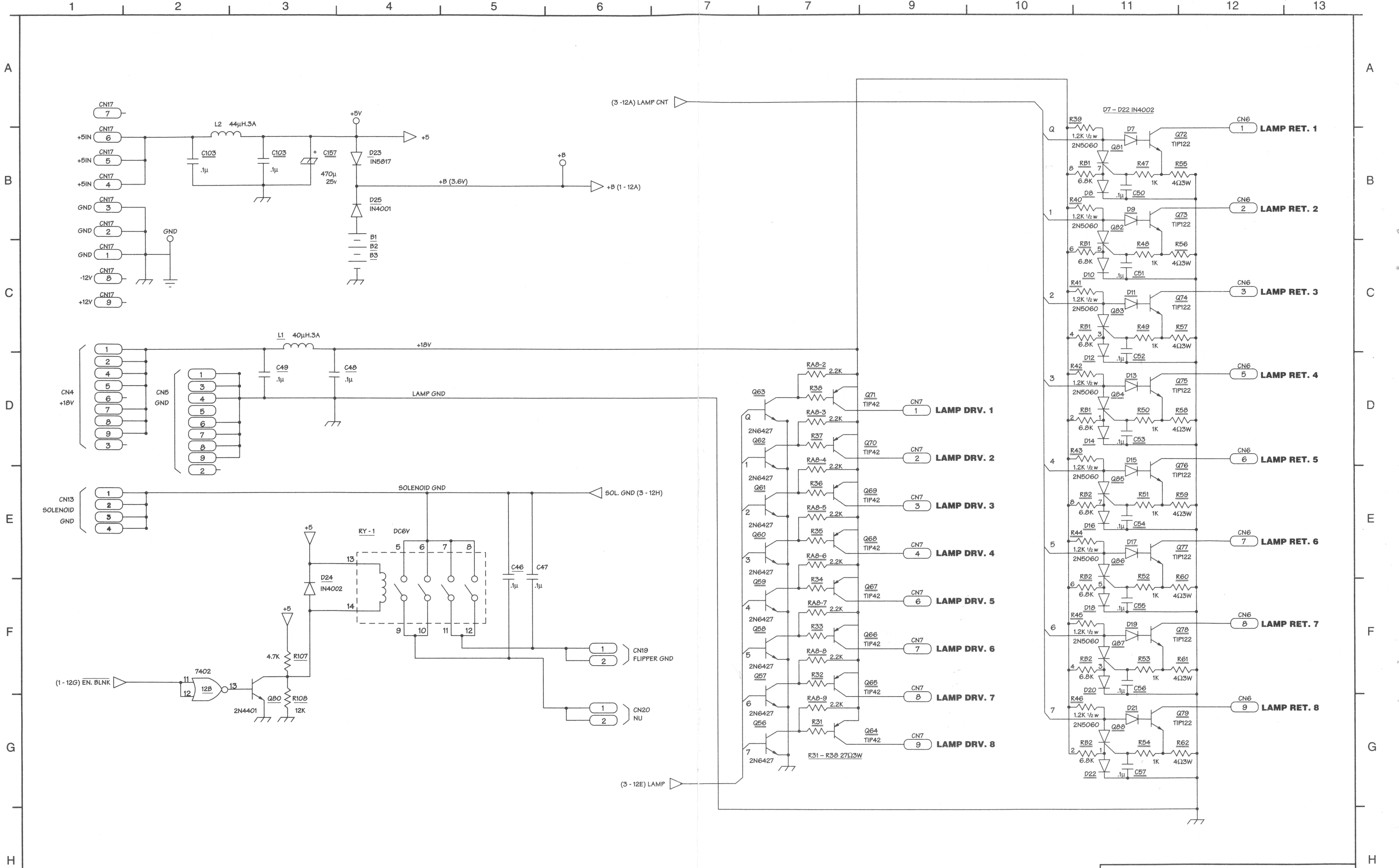


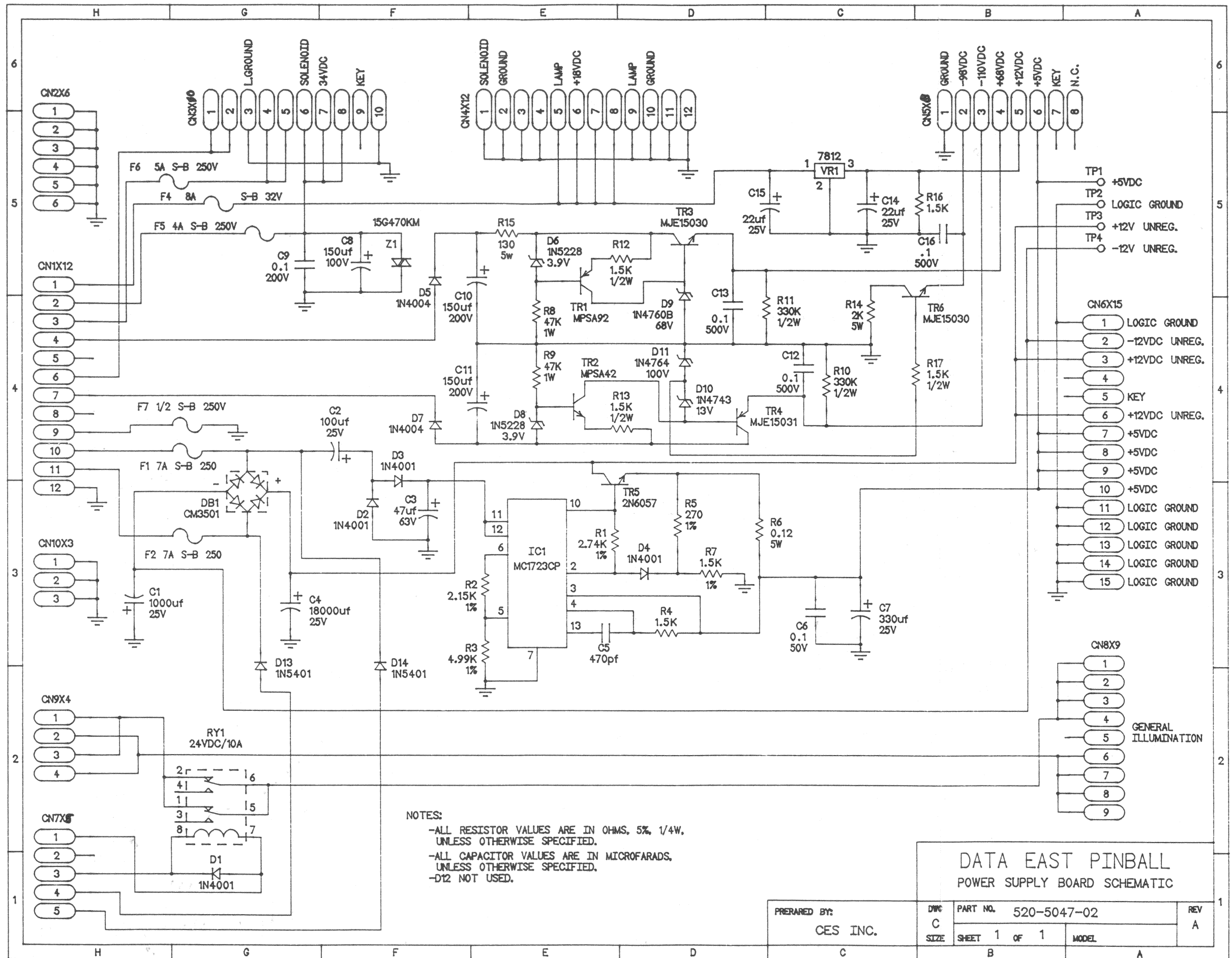
CPU BOARD 1 OF 4





CPU BOARD 3 OF 4 REV.B

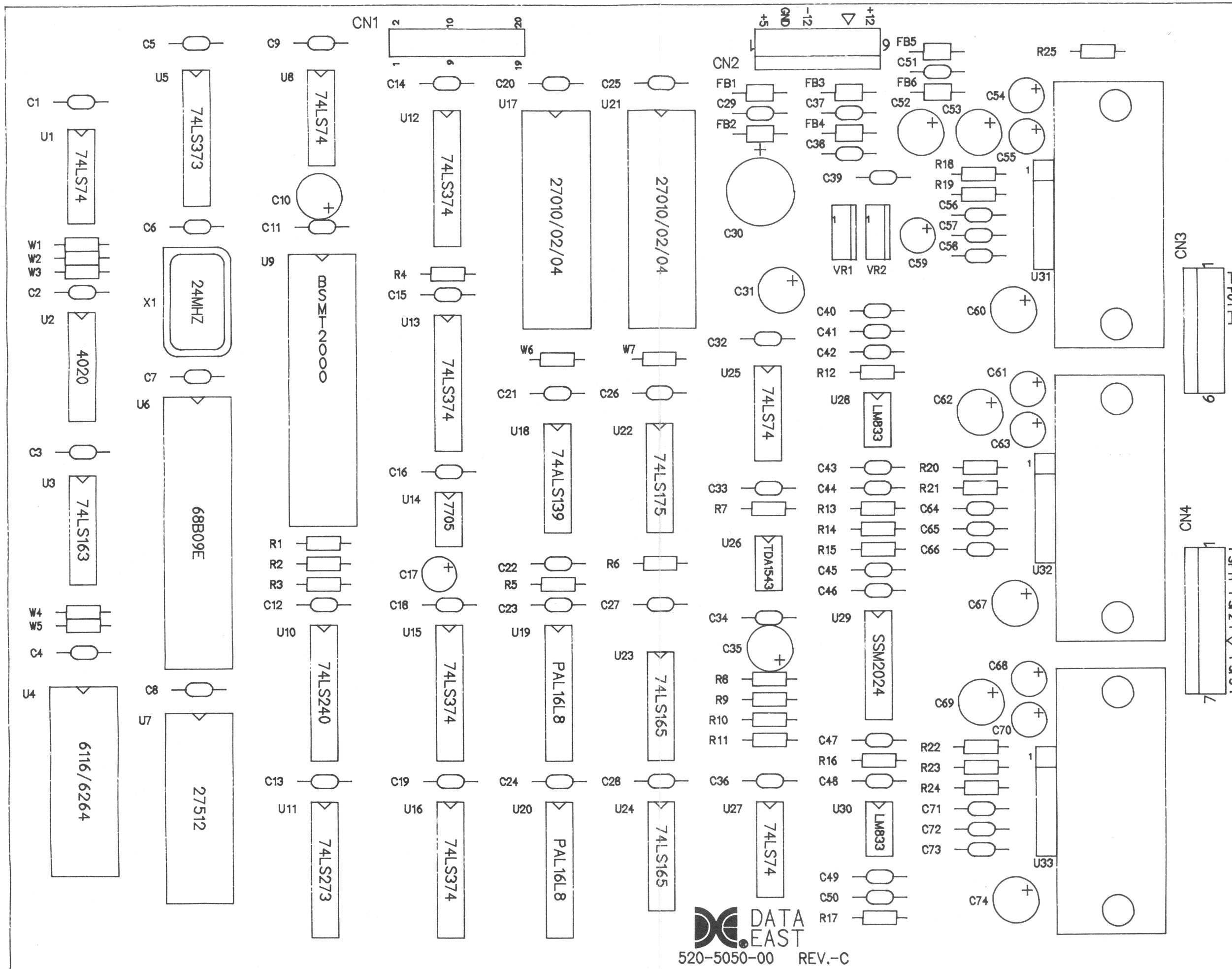




NOTES:  
 -ALL RESISTOR VALUES ARE IN OHMS, 5%, 1/4W, UNLESS OTHERWISE SPECIFIED.  
 -ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.  
 -D12 NOT USED.

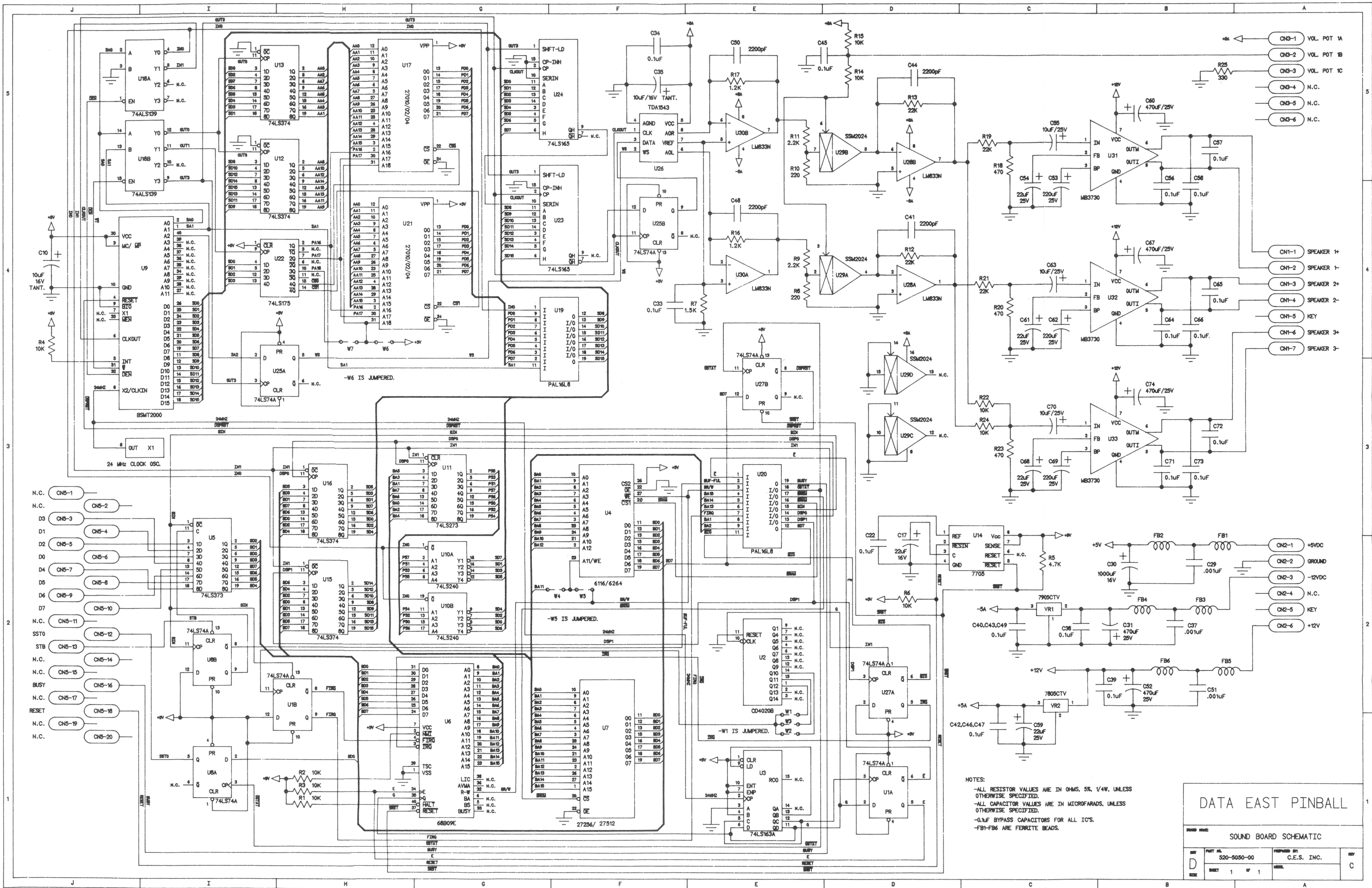
DATA EAST PINBALL  
 POWER SUPPLY BOARD SCHEMATIC

PREPARED BY: CES INC.	DWG C	PART NO. 520-5047-02	REV A
	SIZE	SHEET 1 OF 1	MODEL




**DATA EAST**  
 520-5050-00 REV.-C



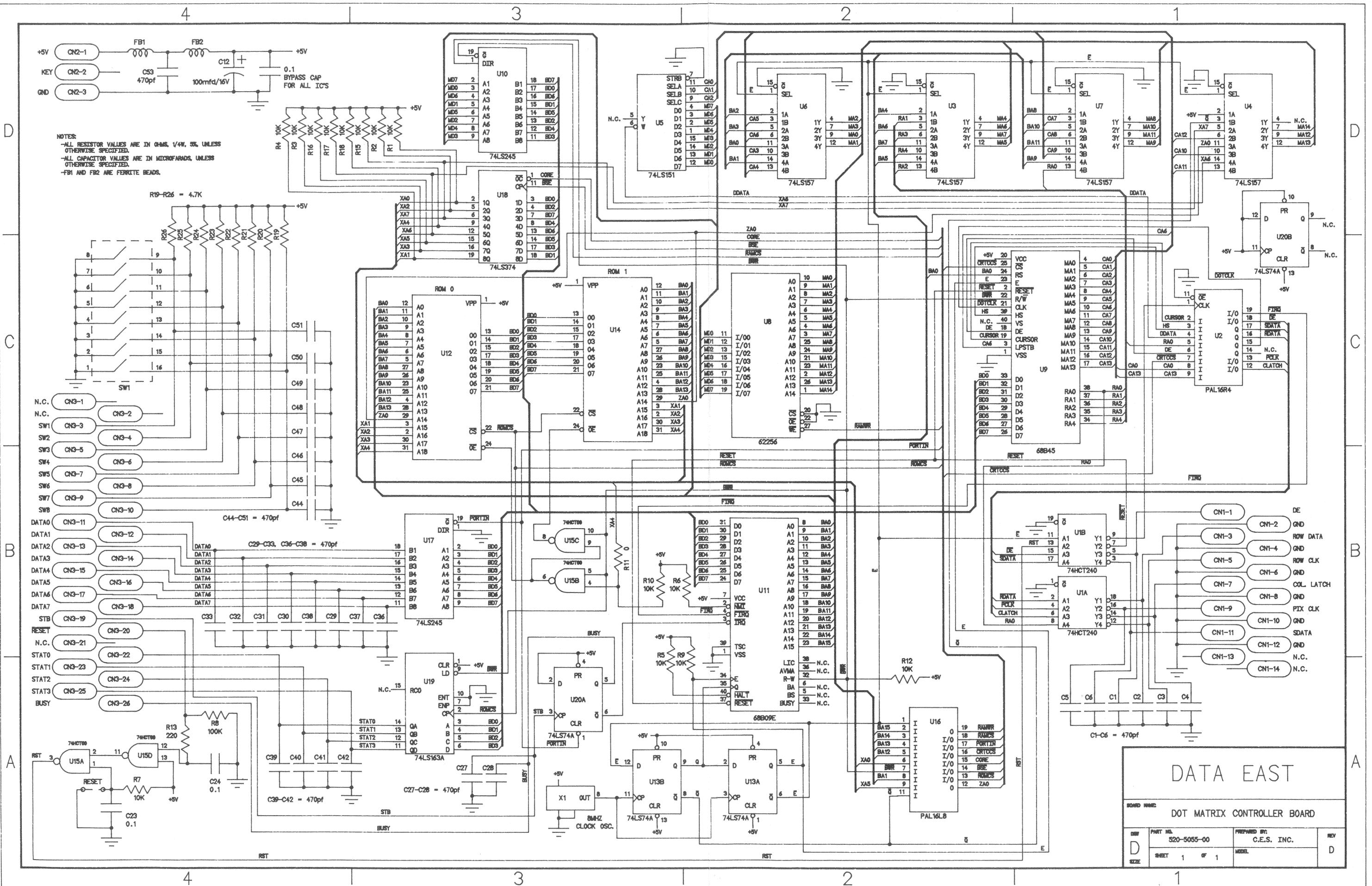


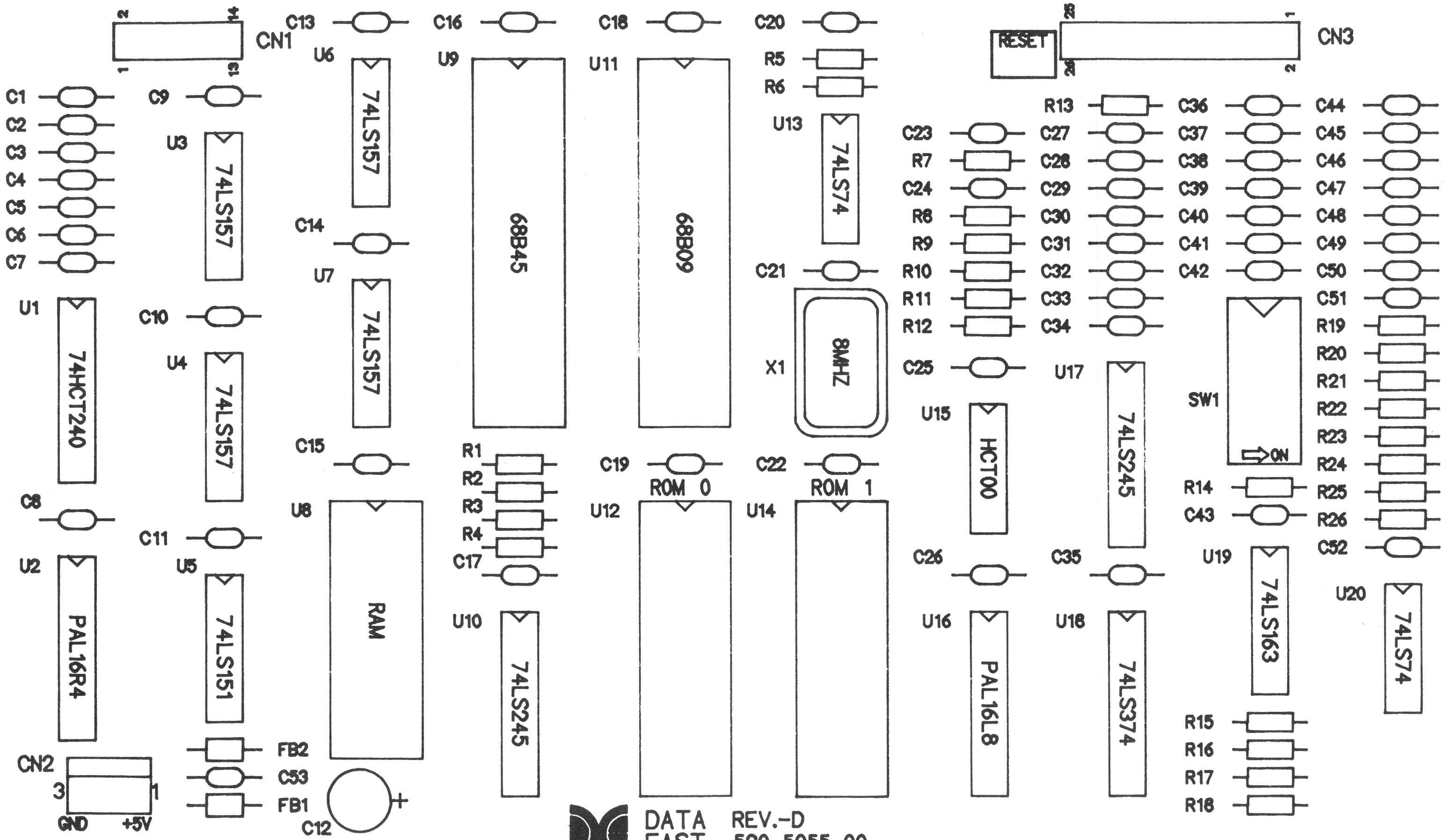
NOTES:  
 -ALL RESISTOR VALUES ARE IN OHMS, 5%, 1/4W, UNLESS OTHERWISE SPECIFIED.  
 -ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.  
 -0.1uF BYPASS CAPACITORS FOR ALL IC'S.  
 -FB1-FB6 ARE FERRITE BEADS.

DATA EAST PINBALL

SOUND BOARD SCHEMATIC

REV	PART NO.	PREPARED BY	REV
D	520-5050-00	C.E.S. INC.	C
SIZE	SHEET 1 OF 1	DATE	

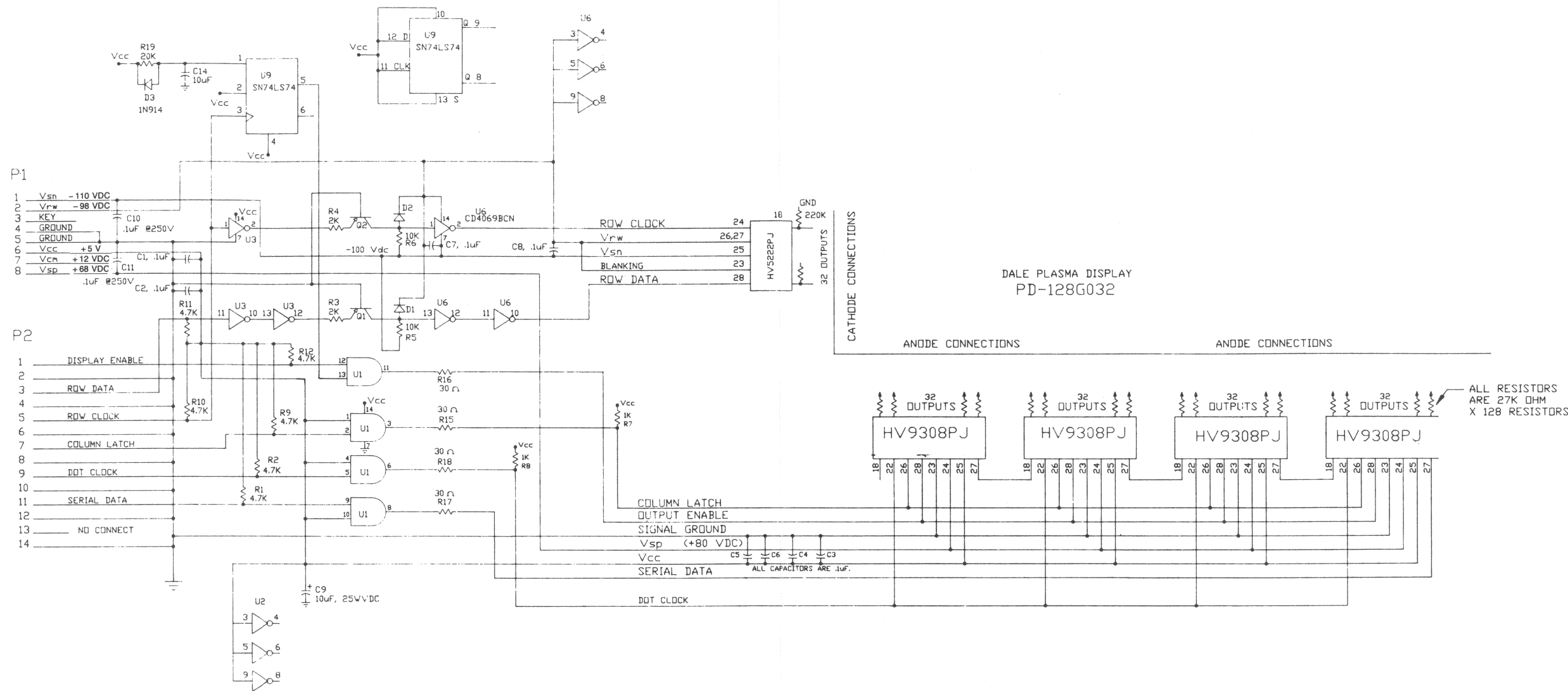





**DATA EAST** REV.-D  
 520-5055-00

PART NO.	INTL CODE
281103-01	S

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED



P1

P2

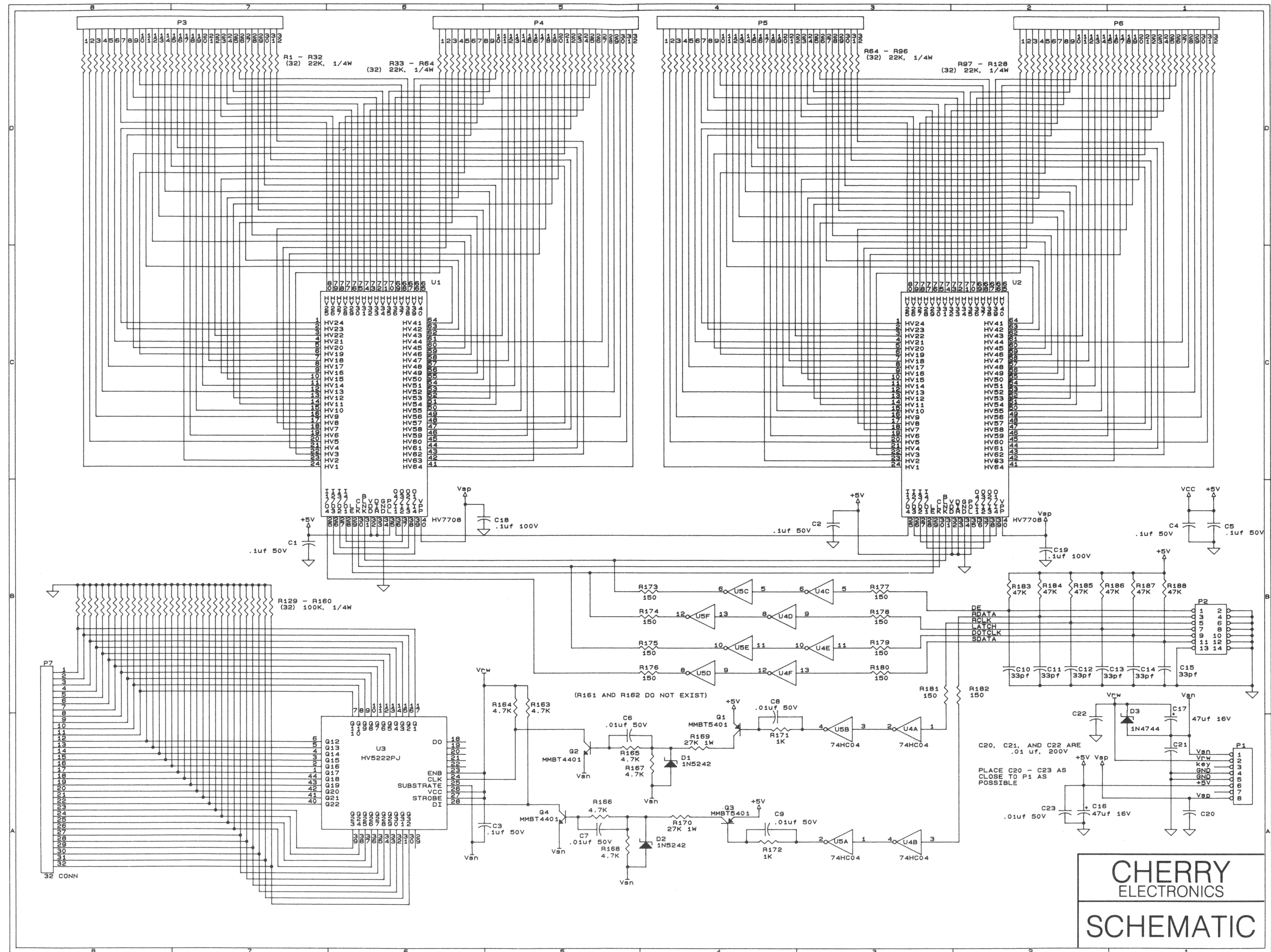
- 1 Vsn -110 VDC
- 2 Vrw -98 VDC
- 3 KEY
- 4 GROUND
- 5 GROUND
- 6 Vcc +5 V
- 7 Vcm +12 VDC
- 8 Vsp +68 VDC

- 1 DISPLAY ENABLE
- 2 ROW DATA
- 3 ROW CLOCK
- 4 COLUMN LATCH
- 5 DDT CLOCK
- 6 SERIAL DATA
- 7 NO CONNECT

281103

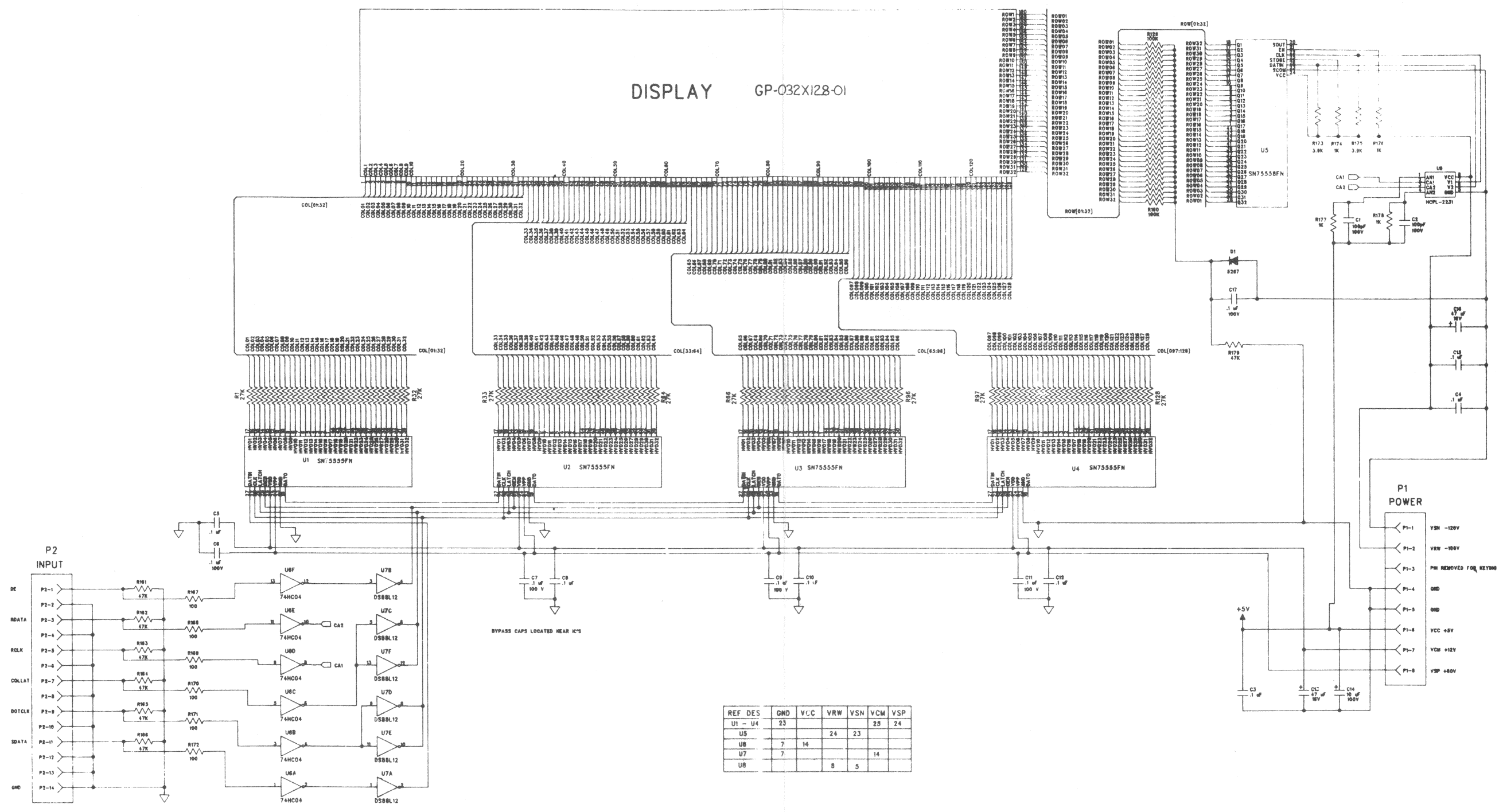
CLASS 2

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	DALE ELECTRONICS, INC. A COMPANY OF VISHAY COLUMBUS, NEBRASKA	TITLE ELECTRICAL SCHEMATIC APD-128G032		
SIZE CODE IDENT NO. DRAWING NO. D 91637 281103	SCALE NONE SHEET 1 OF 1			



**CHERRY**  
 ELECTRONICS  
**SCHEMATIC**

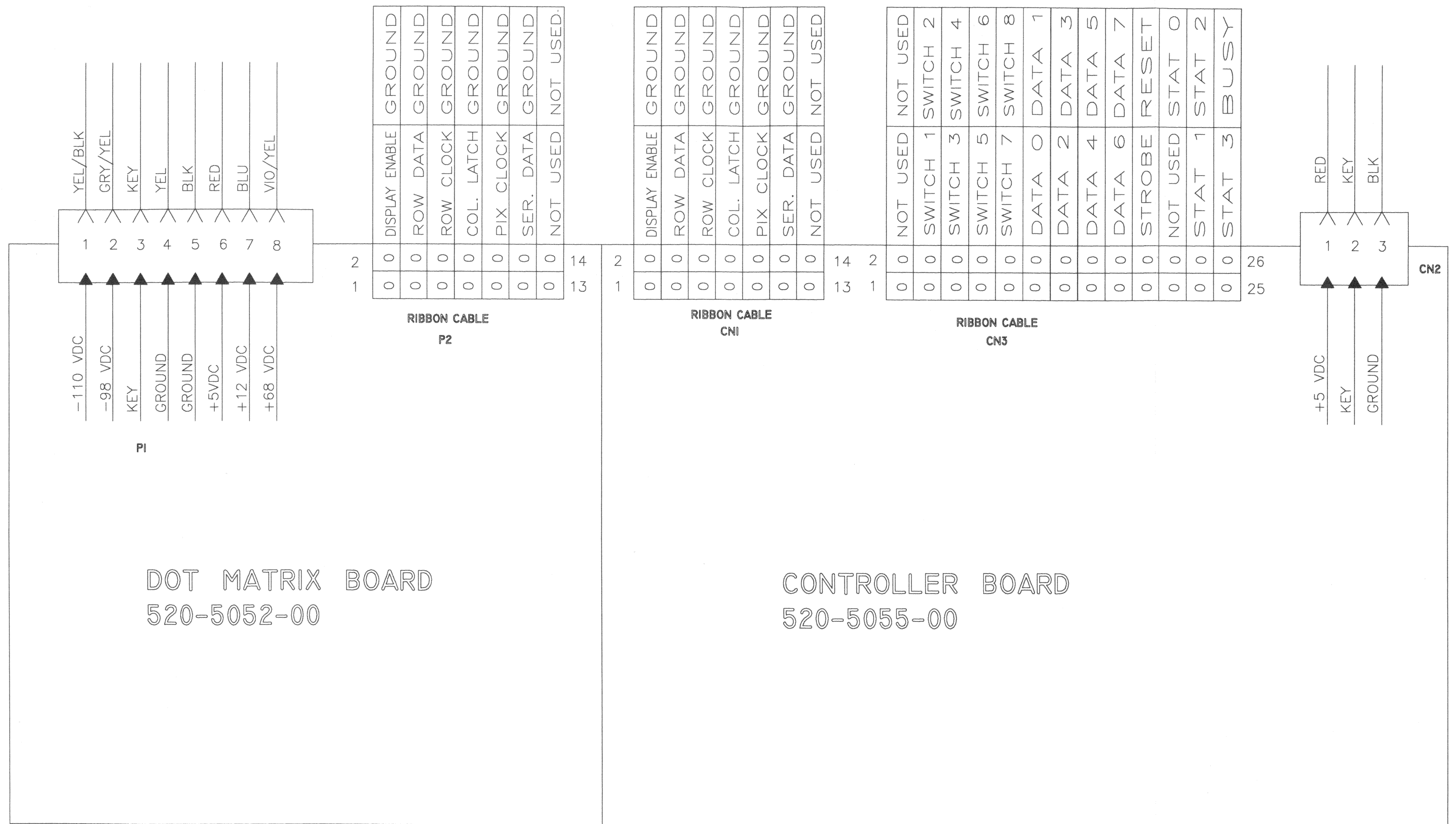
DISPLAY GP-032X128-01



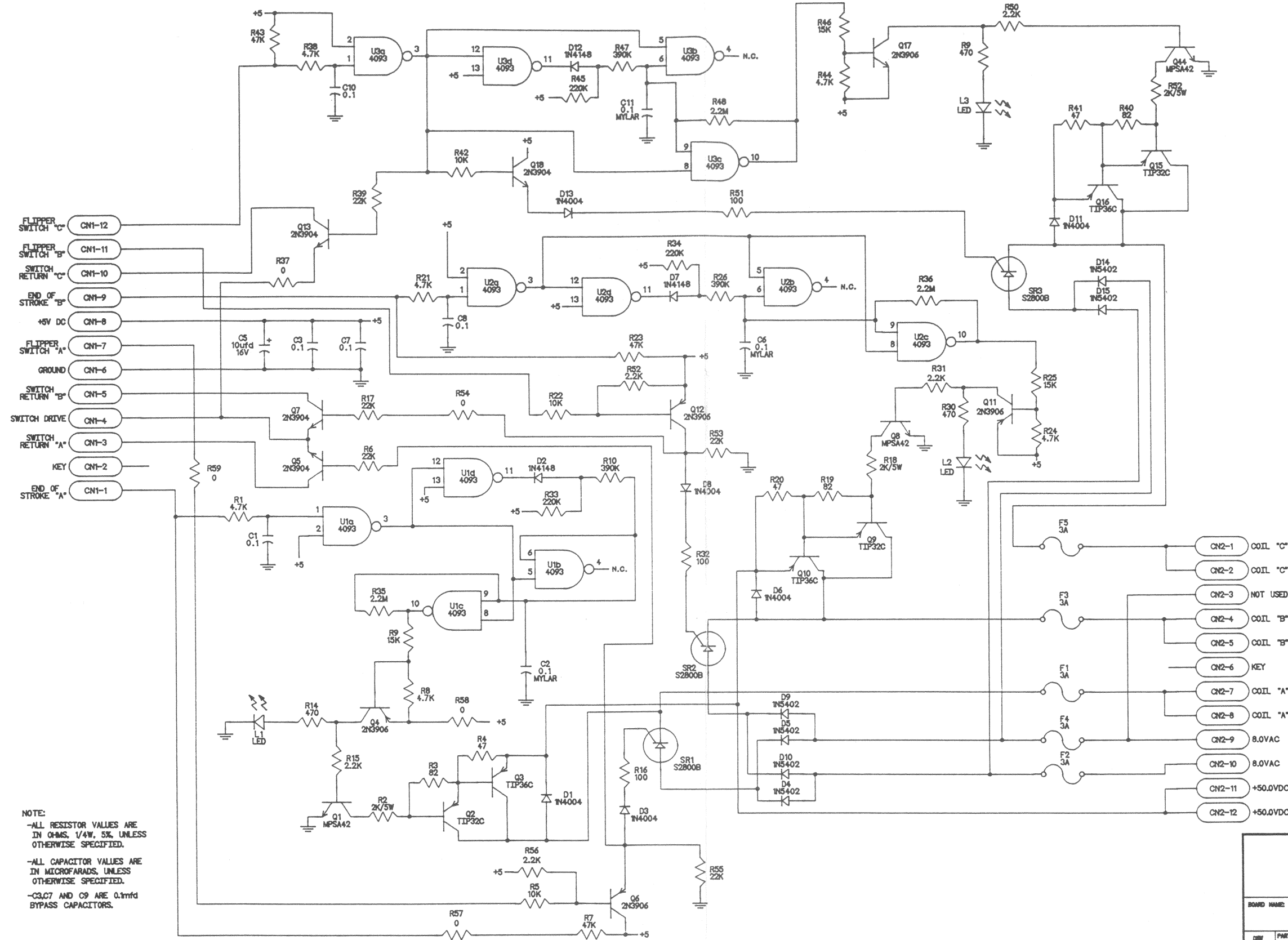
REF DES	QND	VCC	VRW	VSN	VCM	VSP
U1 - U4	23			24	23	24
U5			24	23		
U6	7	14				
U7	7			14		
UB			8	5		

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

PADS LOGIC VER. 2.03 FILE: DM32128.SCH		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: .X.X 1.005 X.X 1.020 ANGLES 2		CONTR NO.	
DRAWN BY RAY DEESE		DATE 10-16-91		BABBOK DISPLAY PRODUCTS, INC. 1051 S. EAST STREET ANAHEIM, CALIFORNIA 92805	
CHECK BY		DATE		SCHEMATIC	
APPR BY		DATE		DO NOT SCALE PRINT	
CODE IDENT: 60-032X128-01		THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF BABBOK AND IS FORWARDED SUBJECT TO THE CONDITIONS THAT THE INFORMATION (A) BE RETAINED IN CONFIDENCE, (B) NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART AND (C) NOT BE USED OR INCORPORATED IN ANY PRODUCT, EXCEPT UNDER AN EXPRESS WRITTEN AGREEMENT WITH BABBOK.		SCALE: 1510-0106	
NEXT ASSY USED ON APPLICATION		SCALE: 1510-0106		SHEET 1 OF 1	



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
B	TRACE CHANGE ON ARTWORK.	3-1-93	
C	ADD END OF STROKE CONDUITS	4-29-93	



NOTE:  
 -ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5% UNLESS OTHERWISE SPECIFIED.  
 -ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.  
 -C3, C7 AND C9 ARE 0.1mfd BYPASS CAPACITORS.

**DATA EAST**

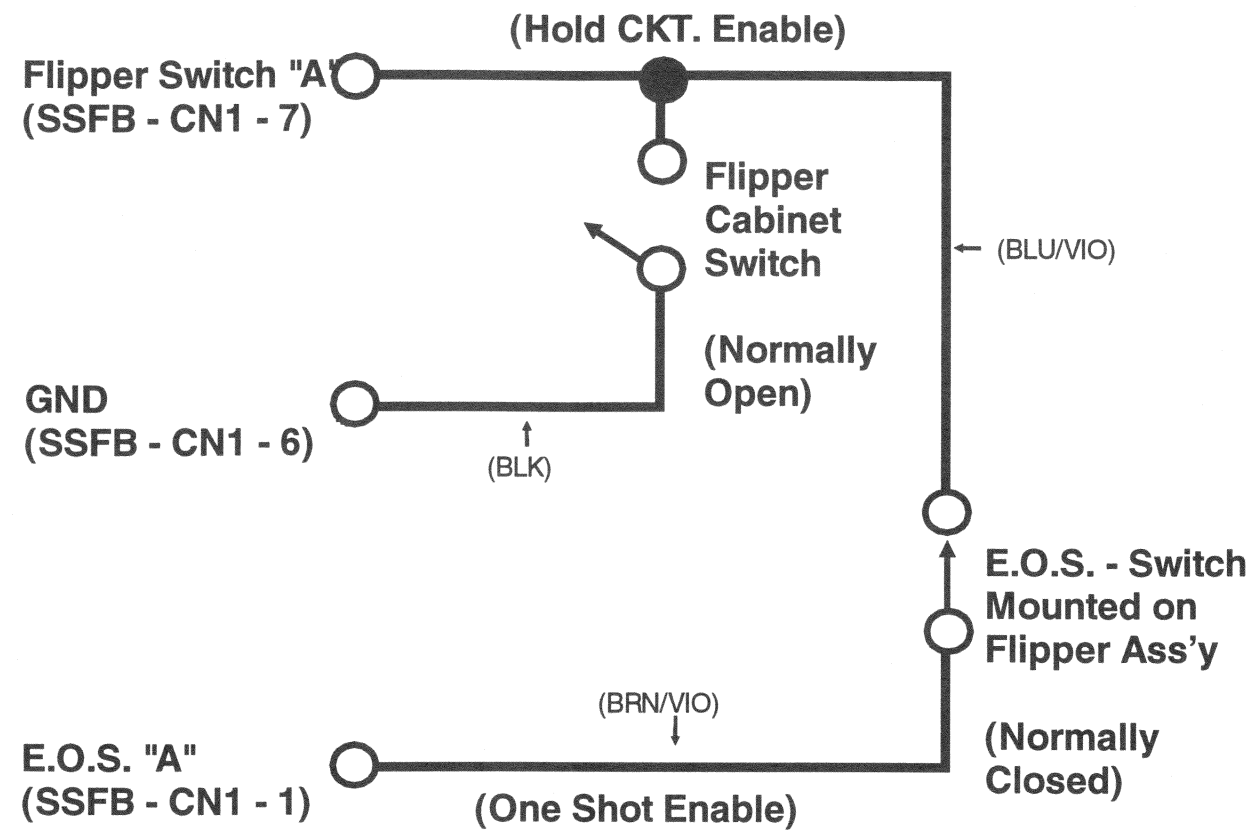
BOARD NAME: SOLID STATE FLIPPER BOARD

REV	PART NO.	PREPARED BY:	REV
D	520-5033-03	G.E.S. INC.	C
SIZE	SHEET 1 OF 1		MODEL TYFFAST-3006



(Fig 1)

## Solid State Flipper Switch Wiring Diagram



### 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 Fig. 1, 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.

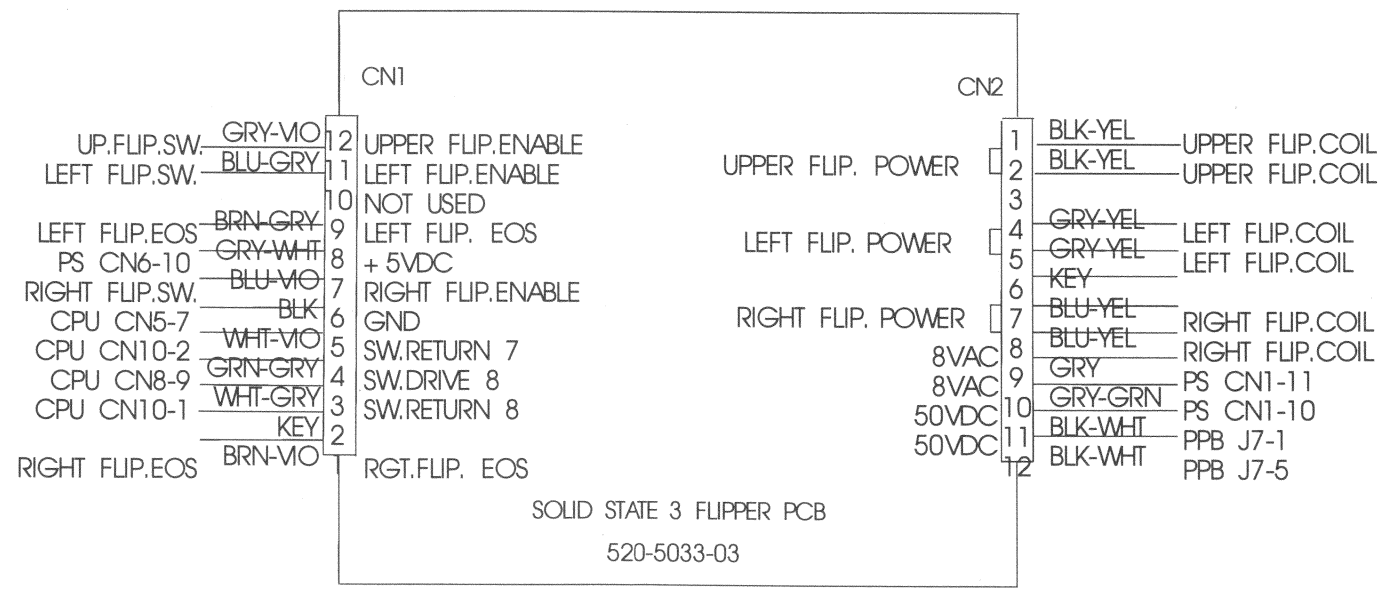
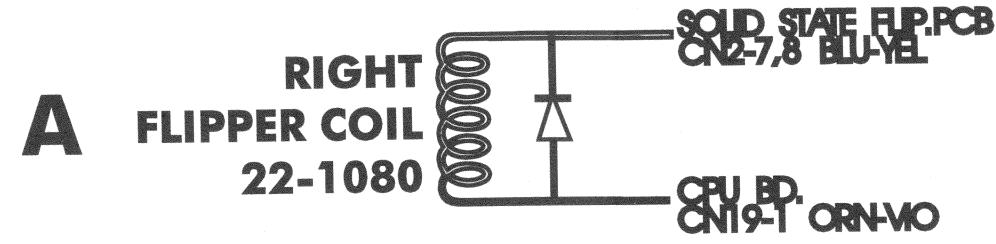
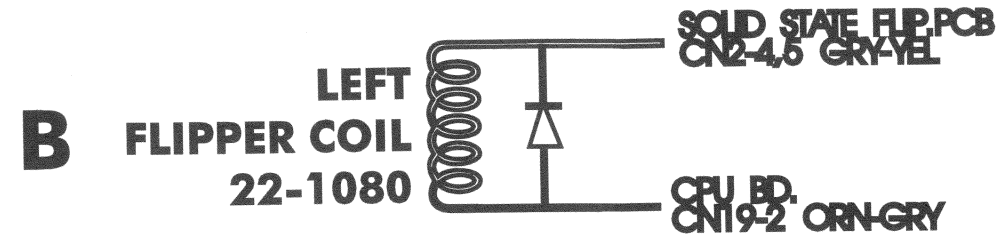
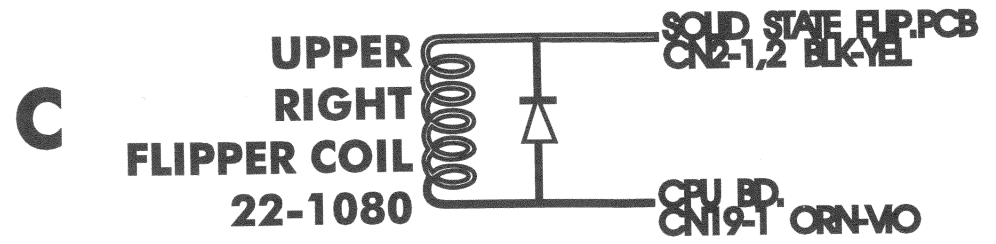
### E.O.S. Switch Adjustment

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

If the switch contacts are not making, then the series circuit to the 50 Volt Drive Circuit Enable will be broken causing the flipper not to work at all. This is also indicated by the L.E.D. on the S.S.F.B. not flashing when the cabinet flipper switch is closed. This can be easily determined by taking a jumper wire and shorting the switch. If proper adjustment of the switch does not resolve the problem, then replacement will be necessary.

Note: You may solder the two wires together going to the switch and bypass it completely, until a replacement is installed.



**Solid State Flippers PCB Wiring Diagram**

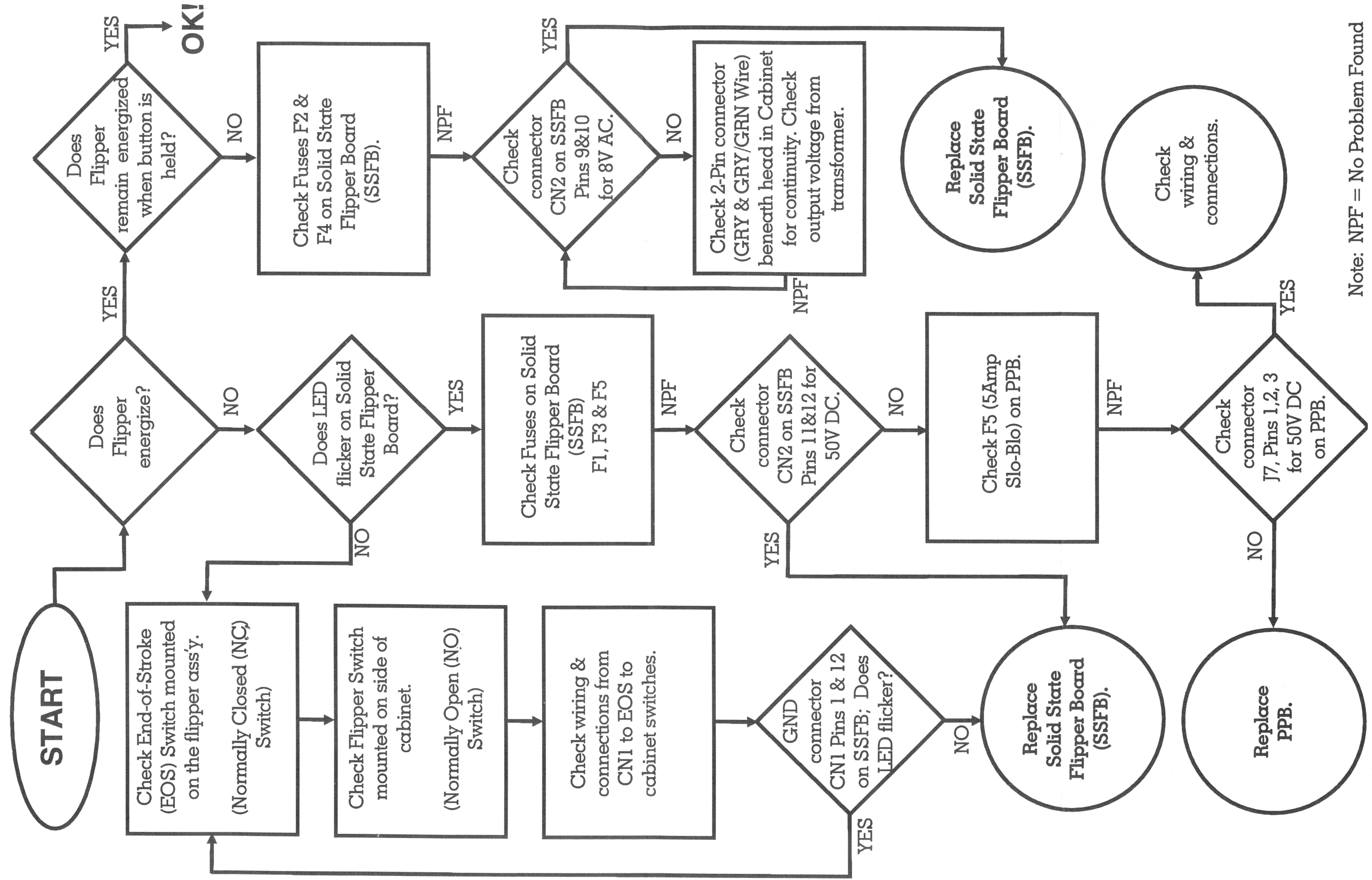
**Connector CN 1**

Pin#	Goes to	Wire Color	It Is
1	Rgt. Flipper EOS	BRN-GRY	Rgt. Flip. End of Stroke
2			Key
3	CPU CN 10-1	WHT-GRY	Sw. Ret. 8
4	CPU CN 8-9	GRN-GRY	Sw. Drive 8
5	CPU CN 10-2	WHT-VIO	Sw. Ret. 7
6	Rgt. Flip. Sw.	BLU-VIO	Rgt. Flip. Enable
7	CPU CN 5-9	BLK	GND
8	PS CN 6-10	GRY-WHT	+5V DC
9	Lft. Flip. EOS	BRN-GRY	Left Flip. End of Stroke
10			
11	Lft. Flip. Sw.	BLU-GRY	Lft. Flip. Enable
12	Upper Rgt. Flip. Sw.	GRY-VIO	Upper Rgt. Flip. Enable

**Connector CN 2**

Pin #	Goes To	Wire Color	It Is
1	Upper Rgt. Flip. Coil	BLK-YEL	Upper Rgt. Flip. Power
2	Upper Rgt. Flip. Coil	BLK-YEL	Upper Rgt. Flip. Power
3			Not Used
4	Lft. Flip. Coil	GRY-YEL	Lft. Flip. Power
5	Lft. Flip. Coil	GRY-YEL	Lft. Flip. Power
6			Key
7	Rgt. Flip. Coil	BLU-YEL	Rgt. Flip. Power
8	Rgt. Flip. Coil	BLU-YEL	Rgt. Flip. Power
9	PS CN 1-11	GRY	9V AC
10	PS CN 1-10	GRY-GRN	9V AC
11	PPB J7-1	BLK-WHT	50V DC
12	PPB J7-5	BLK-WHT	50V DC

# Solid State Flipper Circuit Troubleshooting Flowchart



Note: NPF = No Problem Found

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### **PRINTED CIRCUIT BOARDS (GAME LOGIC) 60 DAYS**

No other parts of Seller's product are warranted.

Warranty periods are effective from the initial date of shipment from Seller to its authorized distributors.

Seller's sole liability shall be, at its option, to repair or replace products which are returned to Seller during the warranty periods specified, provided:

1. Seller is notified promptly upon discovery by purchaser that stated products are defective.
2. Such products are properly packaged and then returned freight prepaid, to Seller's plant.

This warranty does not apply to any parts damaged during shipment and/or due to improper handling, or due to improper installation or usage, or alteration. In no event shall the Seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages or any other losses incurred by the customer in connection with the purchase of a Data East USA., product.

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**WARNING**--This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.



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