

This document has been downloaded from:



The largest resource for amusement machines
documentation on the world wide web!



FLIPPERSPILL.COM

Williams®

16-3007-103
November, 1982

Moon Patrol

DRAWING SET

FOR SERVICE...
NOTE NEW TOLL-FREE
TELEPHONE NUMBERS:

800-621-1253
IN ILLINOIS CALL:
800-572-1324



Williams®
ELECTRONICS, INC.

3401 N. California Ave., Chicago, IL 60618

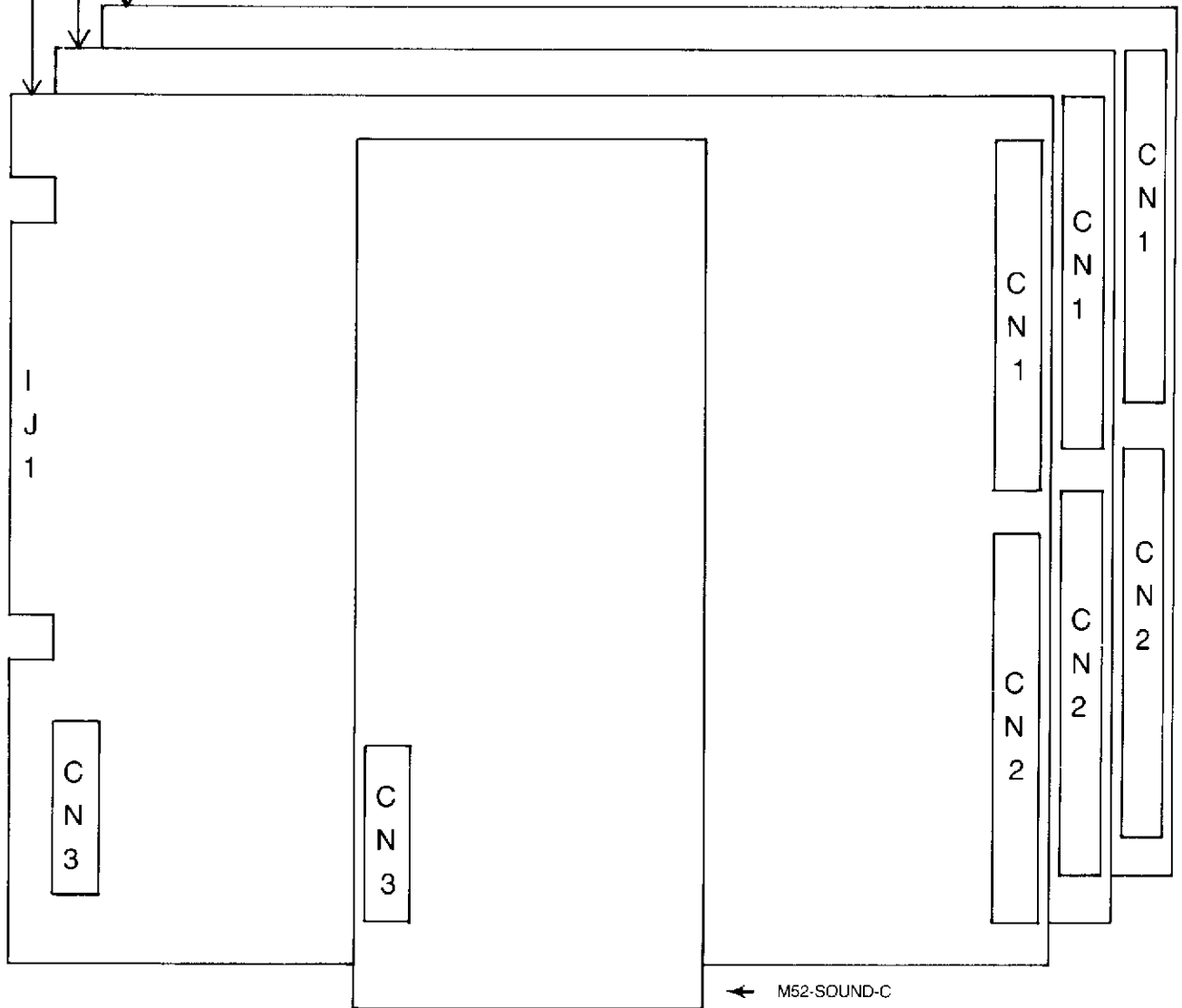
CONTENTS

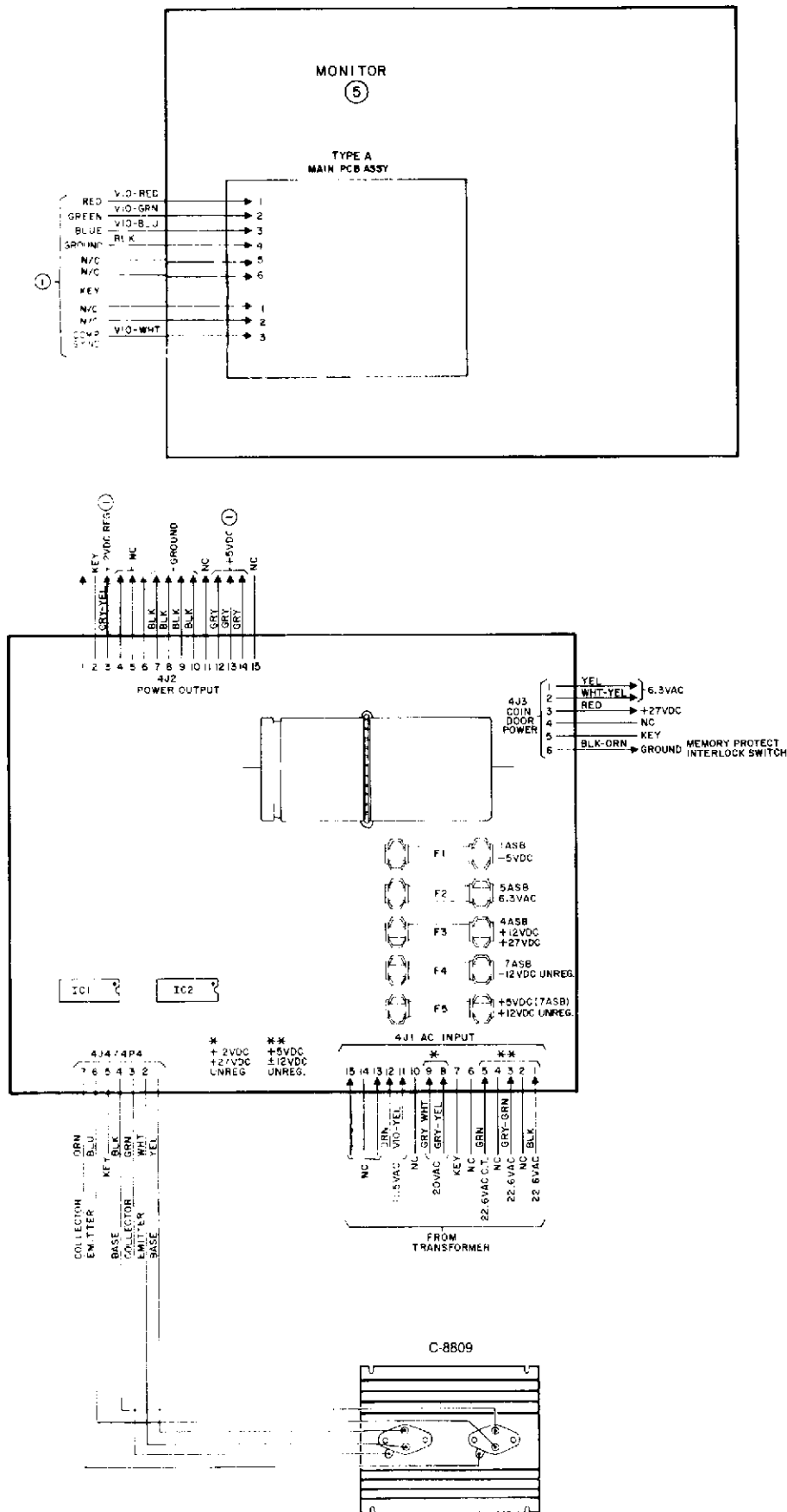
Interboard Wiring Diagram	1
Connector Identification and Block Diagram	2
D-9454 CPU Board (M-52-A-C) Sheet 1 of 2	3
D-9454 CPU Board (M-52-A-C) Sheet 2 of 2	4
D-9455 Character Board (M-52-B-C) Sheet 1 of 2	5
D-9455 Character Board (M-52-B-C) Sheet 2 of 2	6
D-9456 Scrolling Video Board (M-52-E-C) Sheet 1 of 2	7
D-9456 Scrolling Video Board (M-52-E-C) Sheet 2 of 2	8
C-9457 Sound Board (M-52-SOUND-C)	9
D-8784-3007 Power Supply Board Assembly Drawing	10
D-8784-3007 Power Supply Board Schematic Diagram	11
Power Wiring Diagram	12
Cabinet Wiring Diagram	13

M52-A-C CPU BOARD

M52-B-C CHARACTER BOARD

M52-E-C SCROLLING VIDEO BOARD





C-8809 heat sink assembly

Part No.	Description
5162-09425	2N6057, Transistor, NPN
5161-09552	2N3055, Transistor, NPN
5705-09684	Heat Sink
5700-09445	Socket, TO3
5701-09562	Thermal Pad
4006-01003-10	Machine Screw 6-32x5/8"

DIP SWITCH NO. 1

ADJUSTMENT	OPTIONS	1
*RECOMMENDED SETTINGS		ON
+COIN MODE 1	2 PLAYS/1 COIN 3 PLAYS/1 COIN 4 PLAYS/1 COIN 5 PLAYS/1 COIN 6 PLAYS/1 COIN *1 PLAY/1 COIN 1 PLAY/2 COINS 1 PLAY/3 COINS 1 PLAY/4 COINS 1 PLAY/5 COINS 1 PLAY/6 COINS FREE PLAY	
+COIN MODE 2	1 PLAY/1 COIN 1 PLAY/2 COINS 1 PLAY/3 COINS FREE PLAY 2 PLAYS/1 COIN 3 PLAYS/1 COIN 5 PLAYS/1 COIN 6 PLAYS/1 COIN	
# PATROL CARS	5 PATROL CARS *4 PATROL CARS 3 PATROL CARS 2 PATROL CARS	OFF ON OFF ON
ADDITIONAL CAR AT:	*10,000/30,000/50,000 20,000/40,000/60,000 10,000 ONLY NO EXTENDED PLAY	

DIP SWITCH NO. 2

ADJUSTMENT	OPTIONS	1
*RECOMMENDED SETTINGS		OFF
FLIP PICTURE	NO YES	OFF ON
**CABINET TYPE	TABLE UPRIGHT	
COIN MODE SETTINGS FOR DIP SWITCH 1	COIN MODE 1 COIN MODE 2	
FREEZE SCREEN	*NO YES	
SECTOR-SELECTION FEATURE	*NO YES	
DEMO MODE	*NO YES	
TEST MODE	*NO YES	
SWITCH 4 (not used)		

*recommended settings

**For upright games, select ON for switch 2. Table games require

†For games with a single coin selector or 2 selectors of the same type, turn on.

DIP SWITCH SETTINGS

DIP SWITCH NO. 1

ADJUSTMENT	OPTIONS	SWITCH NUMBER							
		1	2	3	4	5	6	7	8
*RECOMMENDED SETTINGS		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
*COIN MODE 1	2 PLAYS/1 COIN					OFF	OFF	OFF	ON
	3 PLAYS/1 COIN					ON	OFF	OFF	ON
	4 PLAYS/1 COIN					OFF	ON	OFF	ON
	5 PLAYS/1 COIN					ON	ON	OFF	ON
*COIN MODE 2	6 PLAYS/1 COIN					OFF	OFF	ON	ON
	*1 PLAY/1 COIN					OFF	OFF	OFF	OFF
	1 PLAY/2 COINS					ON	OFF	OFF	OFF
	1 PLAY/3 COINS					OFF	ON	OFF	OFF
# PATROL CARS	1 PLAY/4 COINS					ON	ON	OFF	OFF
	1 PLAY/5 COINS					OFF	OFF	ON	OFF
	1 PLAY/6 COINS					ON	OFF	ON	OFF
	FREE PLAY					ON	ON	ON	ON
*COIN MODE 2	1 PLAY/1 COIN					OFF	OFF		
	1 PLAY/2 COINS					ON	OFF		
	1 PLAY/3 COINS					OFF	ON		
	FREE PLAY					ON	ON		
# PATROL CARS	2 PLAYS/1 COIN							OFF	OFF
	3 PLAYS/1 COIN							ON	OFF
	5 PLAYS/1 COIN							OFF	ON
	6 PLAYS/1 COIN							ON	ON
# PATROL CARS	5 PATROL CARS	OFF	OFF						
	*4 PATROL CARS	ON	OFF						
	3 PATROL CARS	OFF	ON						
	2 PATROL CARS	ON	ON						
ADDITIONAL CAR AT:	*10,000/30,000/50,000			OFF	OFF				
	20,000/40,000/60,000			ON	OFF				
	10,000 ONLY			OFF	ON				
	NO EXTENDED PLAY			ON	ON				

DIP SWITCH NO. 2

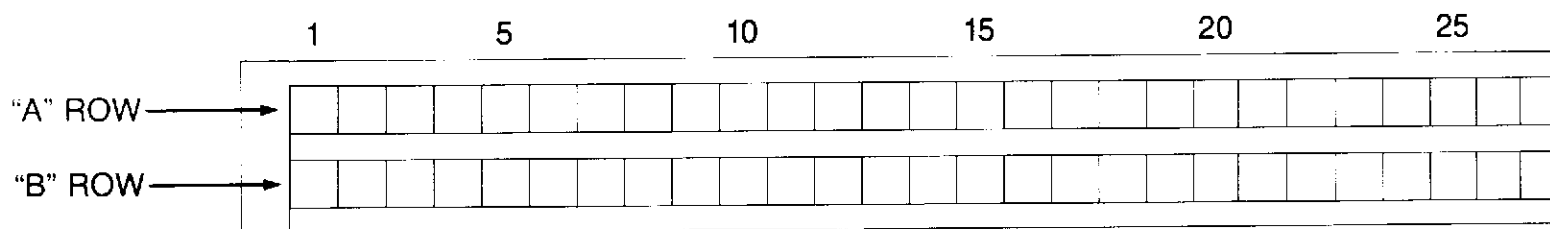
ADJUSTMENT	OPTIONS	SWITCH NUMBER							
		1	2	3	4	5	6	7	8
*RECOMMENDED SETTINGS		OFF	ON	÷	OFF	OFF	OFF	OFF	OFF
FLIP PICTURE	NO	OFF							
	YES	ON							
**CABINET TYPE	TABLE		OFF						
	UPRIGHT		ON						
COIN MODE SETTINGS FOR DIP SWITCH 1	COIN MODE 1			OFF					
	COIN MODE 2			ON					
FREEZE SCREEN	*NO					OFF			
	YES					ON			
SECTOR-SELECTION FEATURE	*NO						OFF		
	YES						ON		
DEMO MODE	*NO							OFF	
	YES							ON	
TEST MODE	*NO								OFF
	YES								ON
SWITCH 4 (not used)					OFF				

*recommended settings

**For upright games, select ON for switch 2. Table games require OFF for switch 2.

÷ For games with a single coin selector or 2 selectors of the same value, S3 must be turned off. For games with selectors for 2 different coin values, S3 must be turned on.

CONNECTORS CN1 & CN2



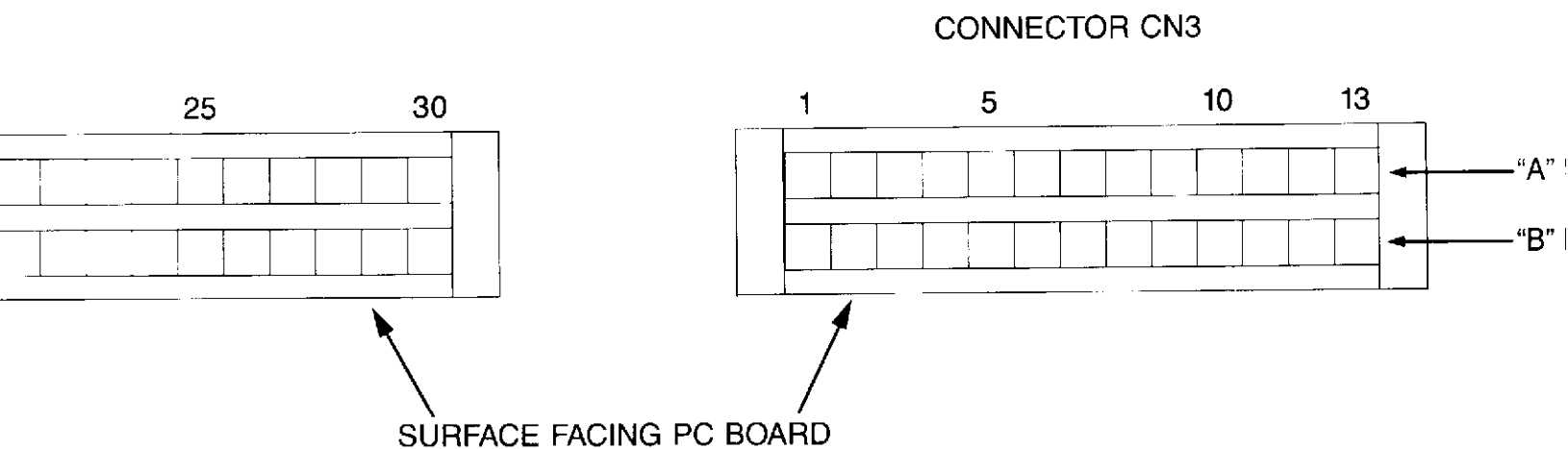
Connector CN1	
PIN NO.	DESCRIPTION
1A	6 MHz
1B	†ANPR
2A	6 MHz
2B	N.C.
3A	7 HB
3B	N.C.
4A	7 HB
4B	†CPR
5A	HBLB
5B	BLUE
6A	HBLB
6B	RED
7A	VBLB
7B	GND
8A	VBLB
8B	GND
9A	VB1
9B	GND
10A	VB128
10B	GND
11A	GREEN
11B	GND
12A	C-FLIP 1
12B	GND
13A	C-FLIP 2
13B	GND
14A	FLIP
14B	GND
15A	VE1
15B	GND

PIN NO.	DESC.
16A	VE2
16B	GND
17A	VE4
17B	GND
18A	VE8
18B	GND
19A	VE16
19B	GND
20A	VE32
20B	GND
21A	VE64
21B	GND
22A	VE128
22B	GND
23A	DB0
23B	HE1
24A	DB1
24B	HE2
25A	DB2
25B	HE4
26A	DB3
26B	HE8
27A	DB4
27B	HE16
28A	DB5
28B	HE32
29A	DB6
29B	HE64
30A	DB7
30B	HE128

Connector CN2	
PIN NO.	DESCRIPTION
1A	HB1
1B	AB14
2A	HB2
2B	AB13
3A	HB4
3B	AB11
4A	HB8
4B	AB10
5A	HB16
5B	AB12
6A	HB32
6B	AB15
7A	HB64
7B	+5V
8A	HB128
8B	+5V
9A	HB256
9B	+5V
10A	WAIT
10B	+5V
11A	AB0
11B	+5V
12A	AB1
12B	+5V
13A	AB2
13B	+5V
14A	AB3
14B	+5V
15A	AB4
15B	+5V

†ANPR = ALPHA NUMERIC PRIORITY
†CPR = CHARACTER PRIORITY

†CPR* = CHARACTER PRIORITY*



TIM
COL

Connector CN2

NO.	DESCRIPTION	PIN NO.	DESC.
	HB1	16A	AB5
	AB14	16B	+5V
	HB2	17A	AB6
	AB13	17B	+5V
	HB4	18A	AB7
	AB11	18B	+5V
	HB8	19A	AB8
	AB10	19B	+5V
	HB16	20A	AB9
	AB12	20B	+5V
	HB32	21A	C8WT
	AB15	21B	+5V
	HB64	22A	C000RD
	+5V	22B	+5V
	HB128	23A	C000CS
	+5V	23B	V256
	HB256	24A	RESET
	+5V	24B	DOWT
	WAIT	25A	WRB
	+5V	25B	H30
	AB0	26A	1ORQB
	+5V	26B	†CPR*
	AB1	27A	RFSHB
	+5V	27B	3DIM
	AB2	28A	RDB
	+5V	28B	NOT USED
	AB3	29A	M1B
	+5V	29B	NOT USED
	AB4	30A	MREQB
	+5V	30B	NOT USED

Connector CN3

PIN NO.	DESCRIPTION
1A	SP+
1B	SP+
2A	SP-
2B	SP-
3A	+12V
3B	+12V
4A	+5V
4B	GND
5A	+5V
5B	GND
6A	+5V
6B	GND
7A	NOT USED
7B	NOT USED
8A	NOT USED
8B	NOT USED
9A	D0
9B	D1
10A	D2
10B	D3
11A	D4
11B	D5
12A	D6
12B	D7
13A	NOT USED
13B	NOT USED

M52-A _ _

M52-B _ _

M52-E _ _

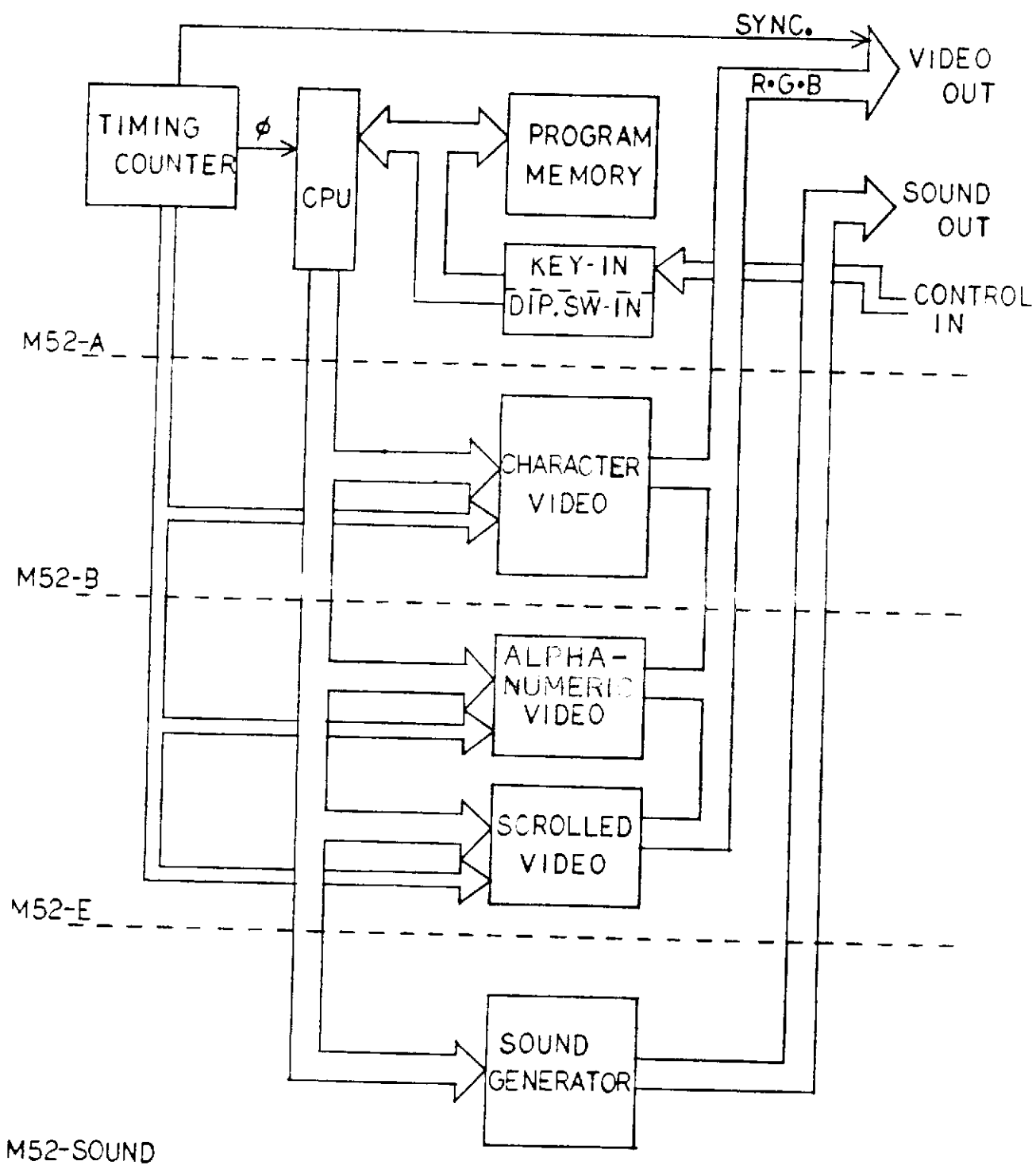
ACTER PRIORITY*

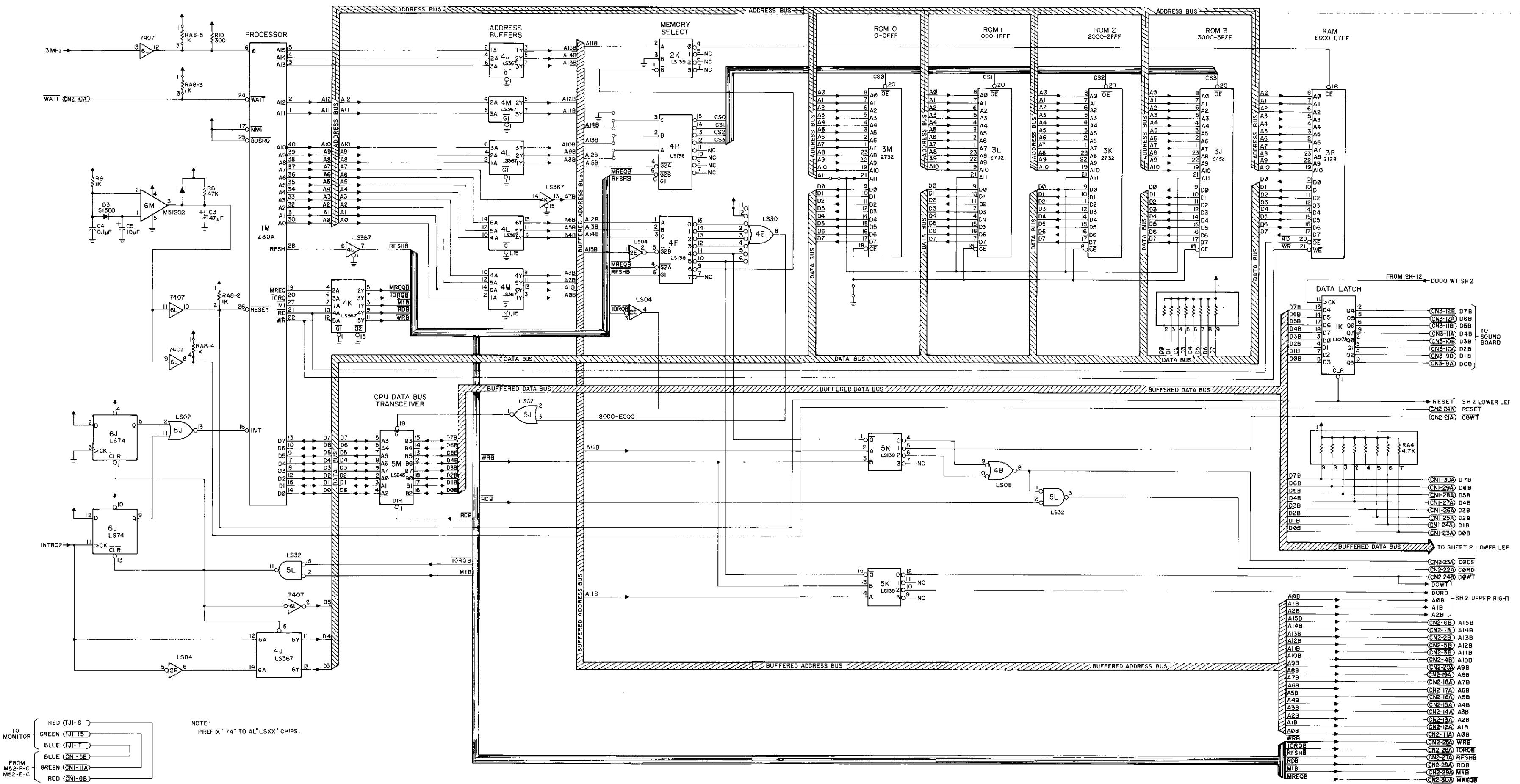
M52-SOU

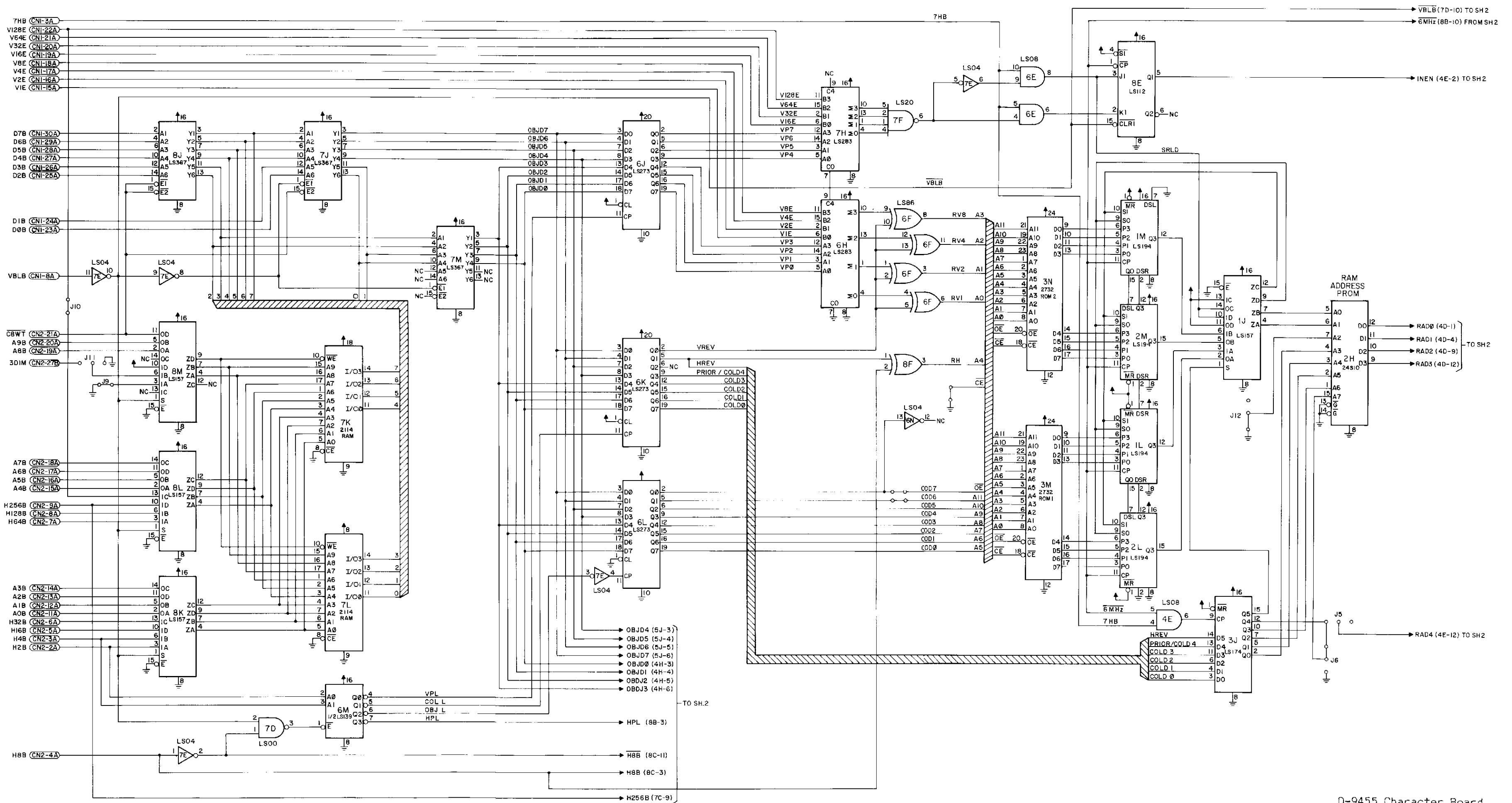
13

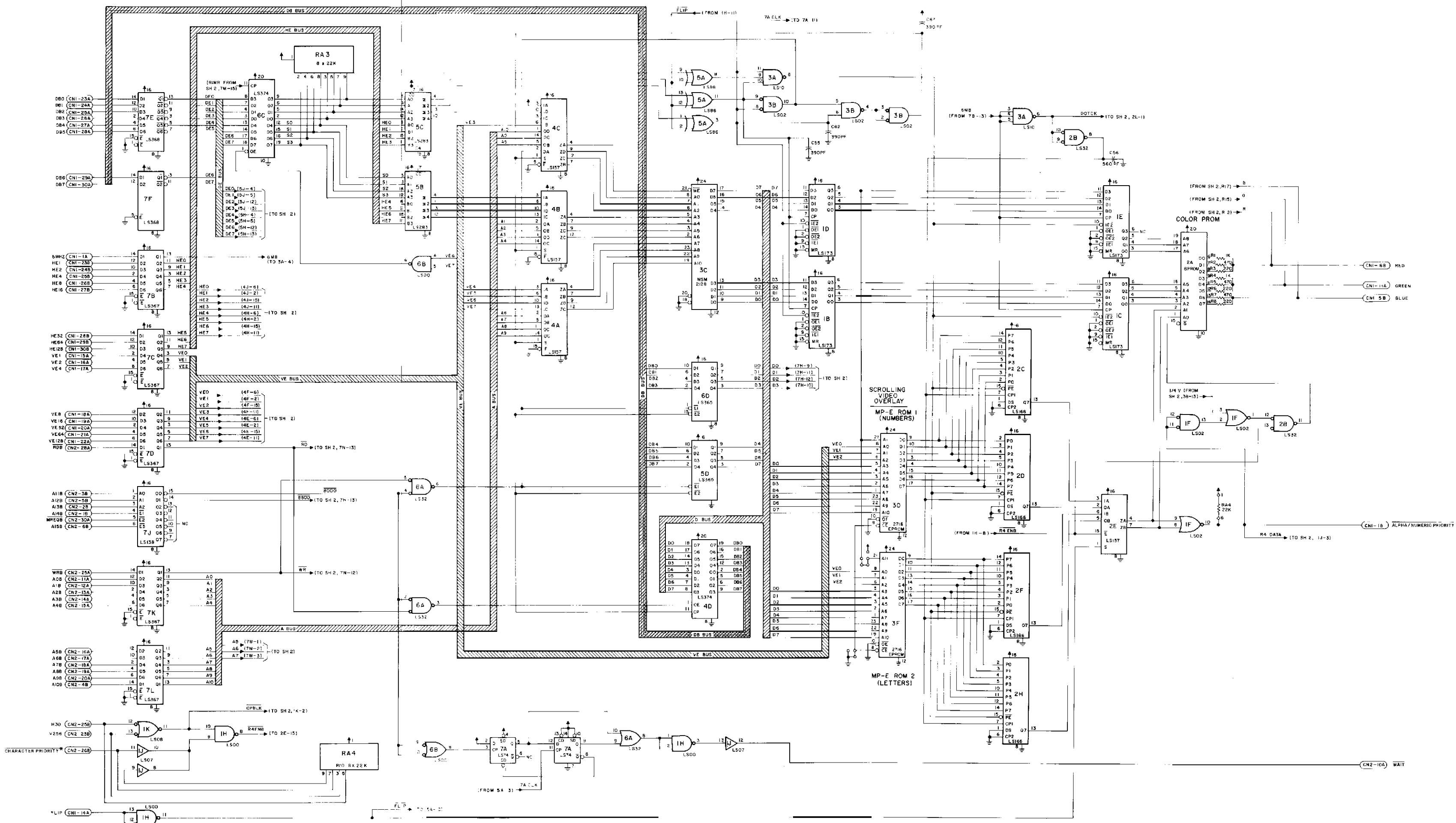
"A" ROW

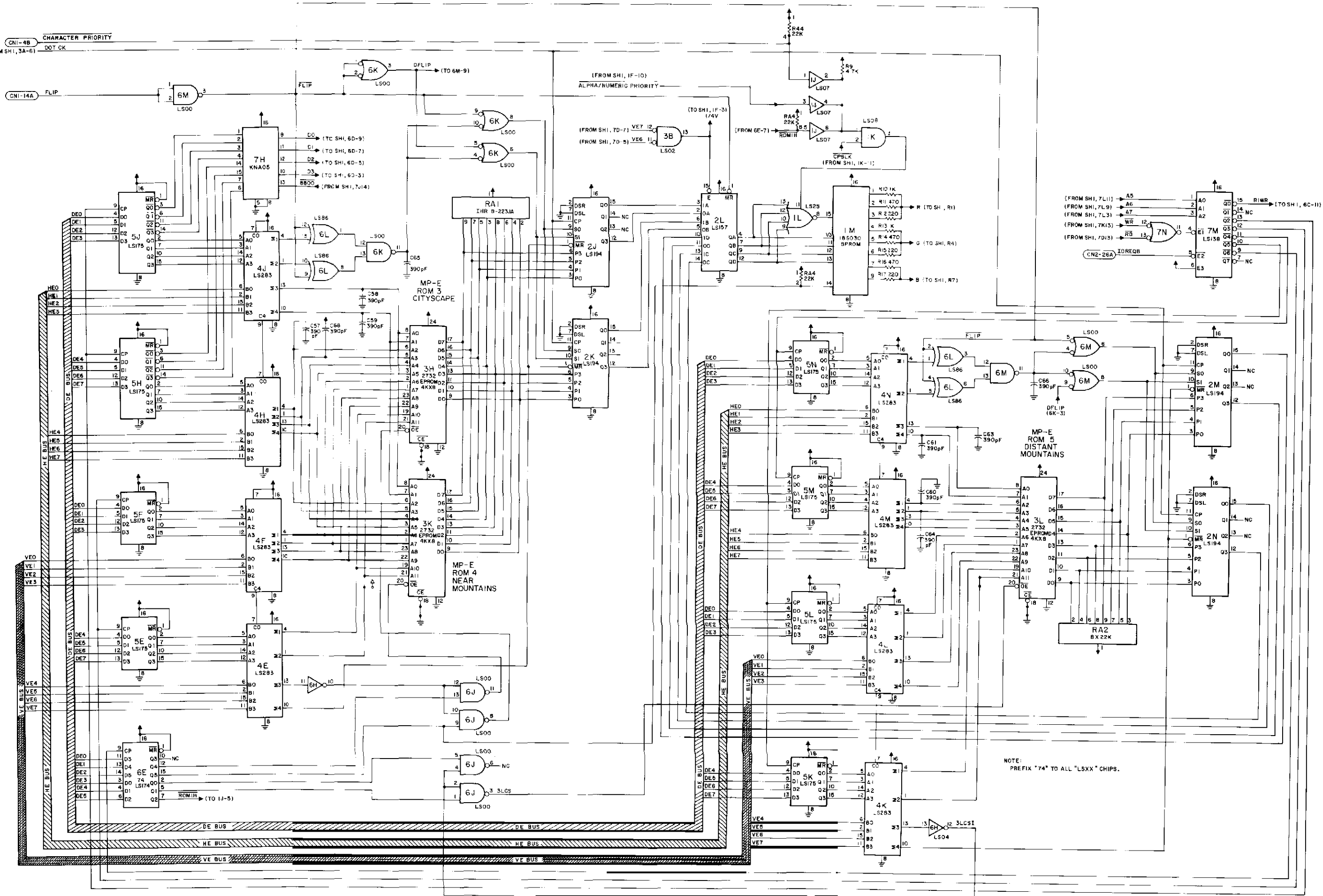
"B" ROW

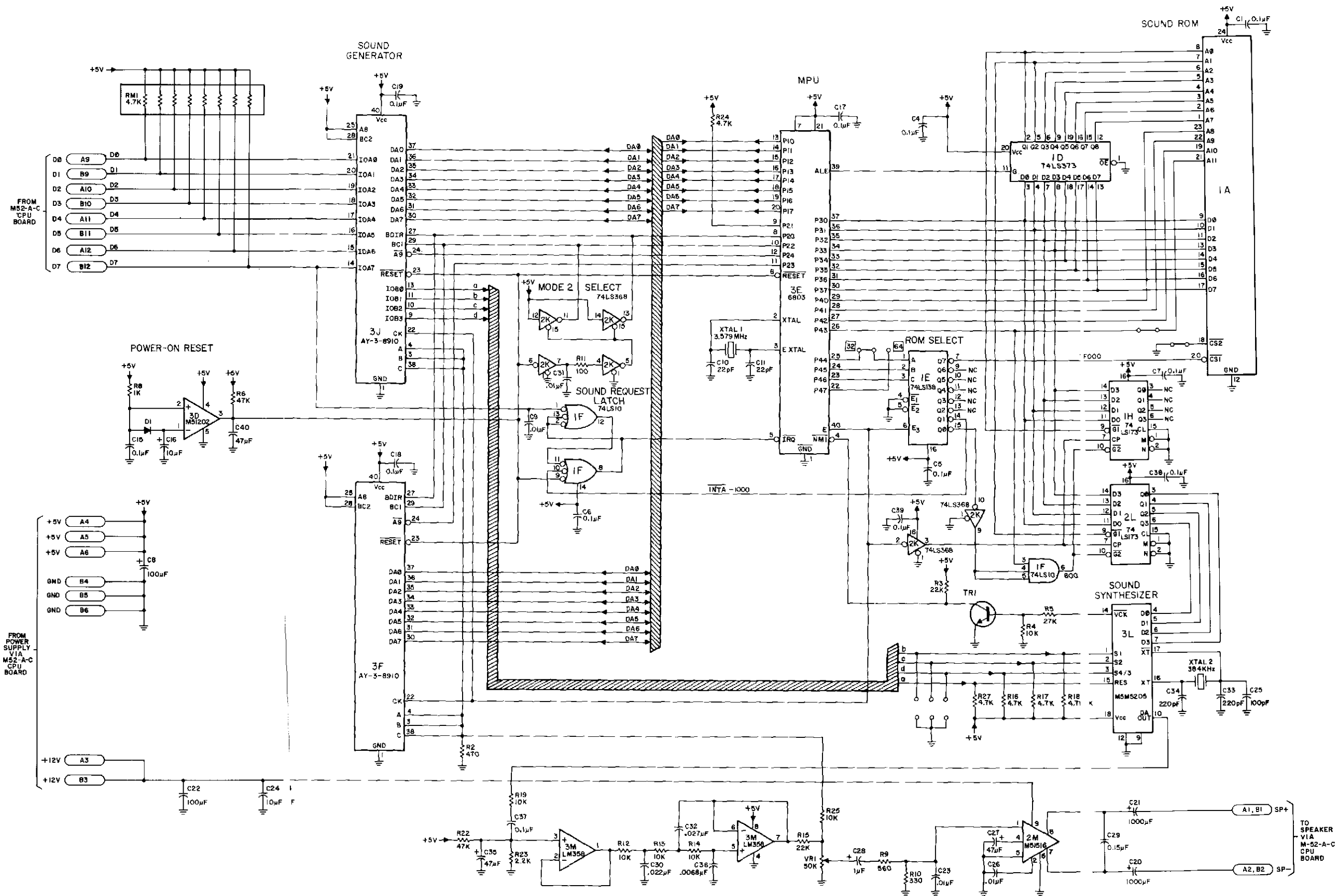




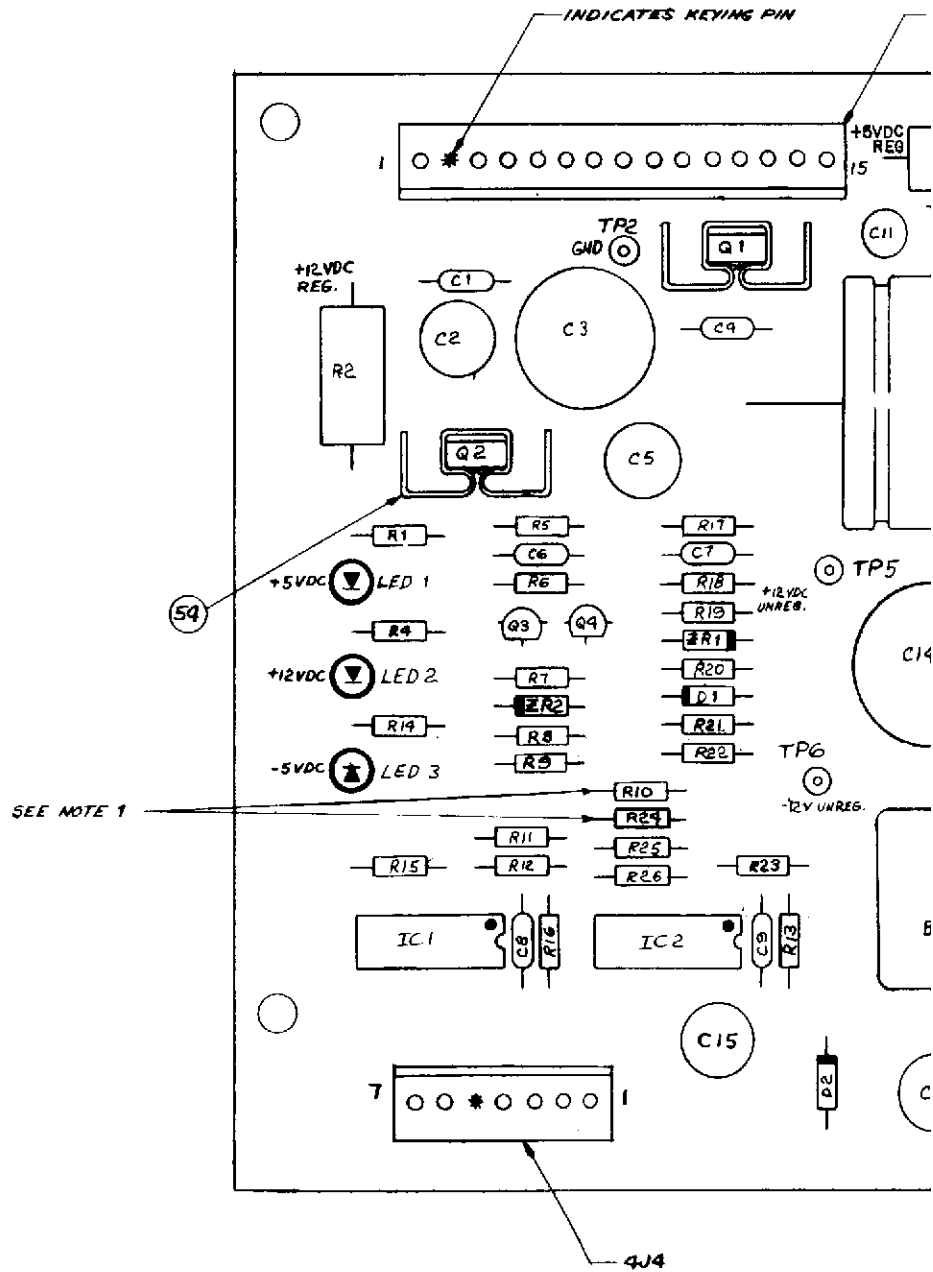








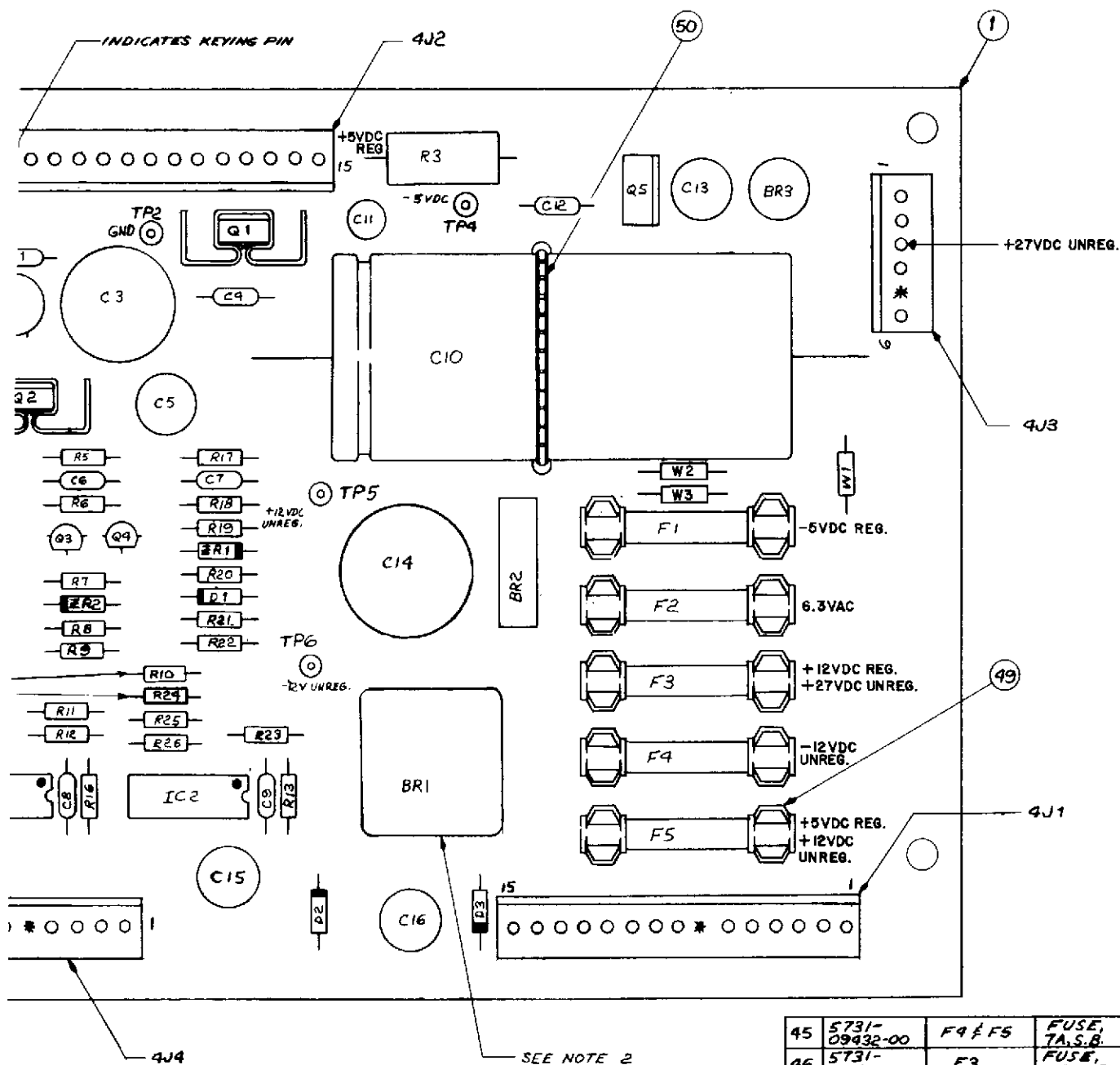
C-9457 Sound Board
(M-52-SOUND-C)



NOTES:

1. REMOVE R24 IF +5VDC IS GREATER THEN 5.25 VDC, REMOVE R10 IF +5VDC IS LESS THAN 4.75 VDC.
2. BR1 MUST BE MOUNTED 1/8" ABOVE SURFACE OF BOARD.
3. FOR SCHEMATIC REFER TO 16-8811.

55	5010-02682-00
56	5010-09324-00
ITEM NO.	PART NO.



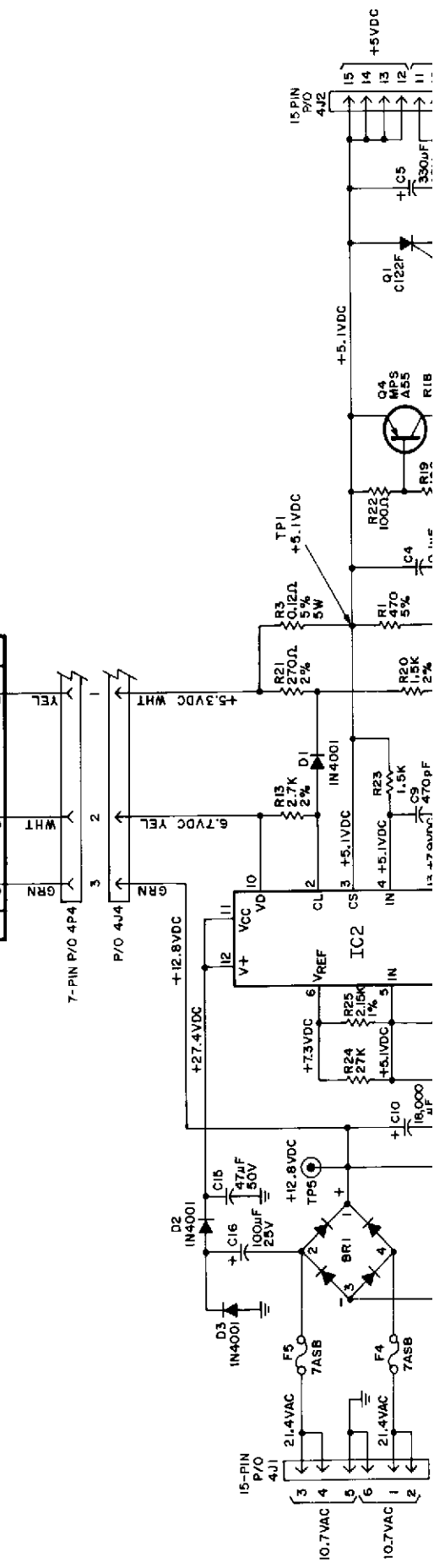
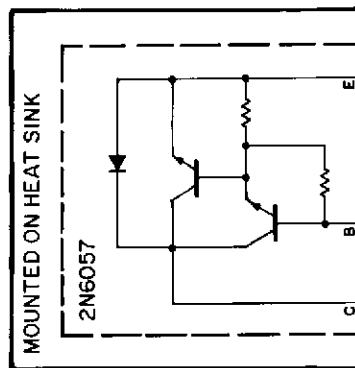
F +5VDC IS GREATER THEN 5.25 VDC,
F +5VDC IS LESS THAN 4.75 VDC.
MOUNTED 1/8" ABOVE SURFACE OF
REFER TO 16-8811.

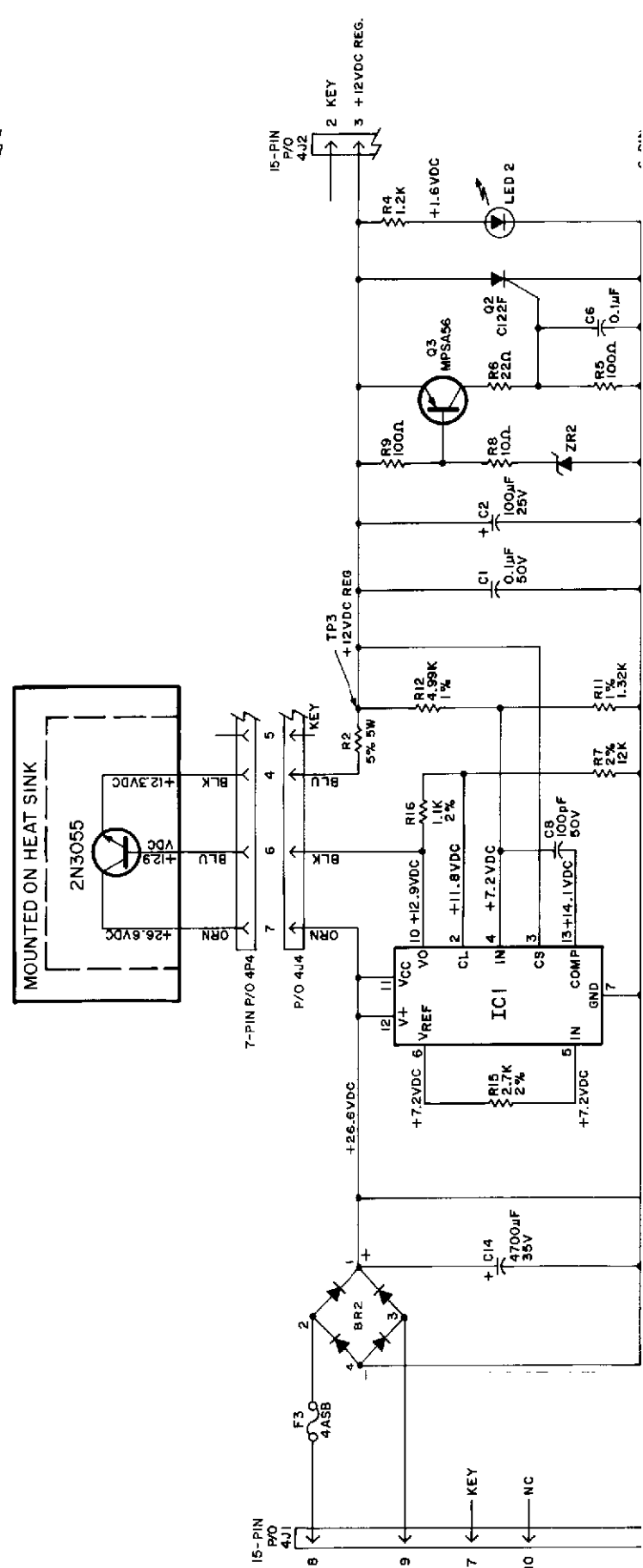
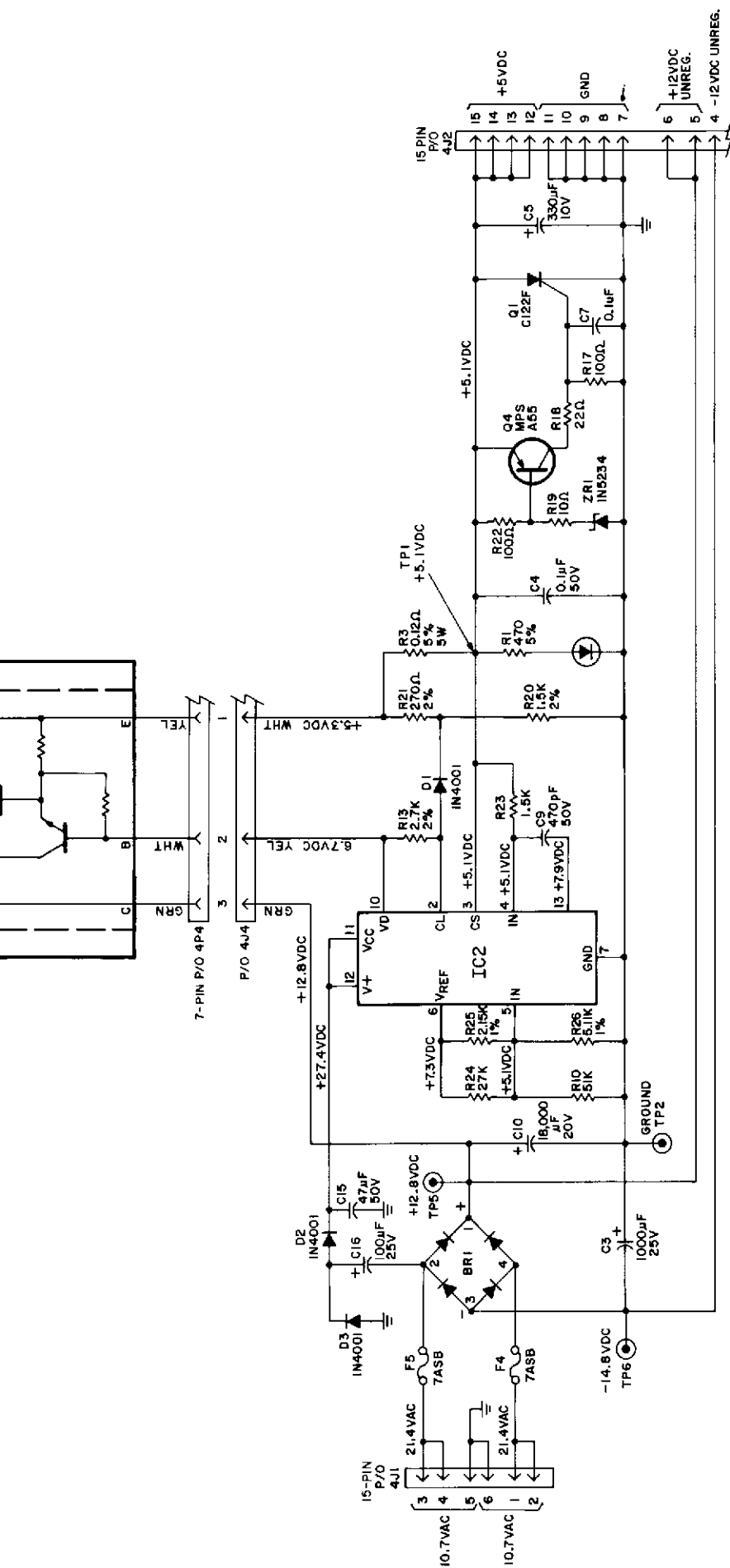
55	5010-09682-00	R10	RESISTOR C.F. 51K ±5% 1/4W	1	45	5731-09432-00	F4 & F5	FUSE, 7A, S.B.
56	5010-09324-00	R24	RESISTOR C.F. 27K ±5% 1/4W	1	46	5731-06314-00	F3	FUSE, 4A, S.B., 250V
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO	47	5731-06569-00	F1	FUSE, 1A, S.B., 250V
					48	5731-09651-00	F2	FUSE, 5A, S.B., 250V
					49	5732-09178-00		FUSEHOLDER
					50	03-7520		TIE WRAP
					51	5731-09074-00	4J1 & 4J2	HEADER, 15 PIN 09-65-1051
					52	5731-09038-00	4J3	HEADER, 6 PIN 09-65-1061
					53	5731-09497-00	4J4	HEADER, 7 PIN 09-65-1071
					54	5705-09663-00		HEAT SINK
						5706-09688-00		HEAT SINK

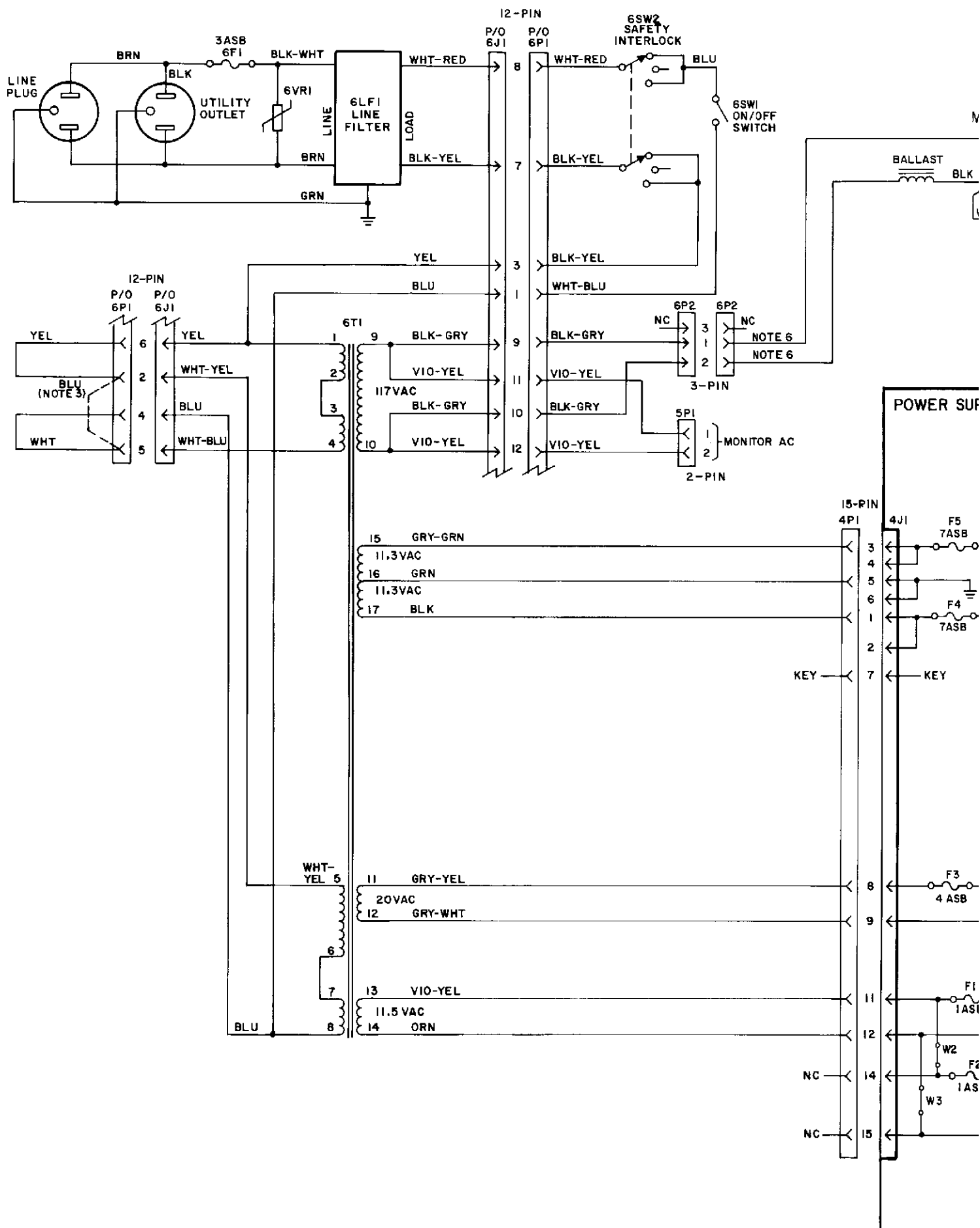
BILL OF MATERIAL

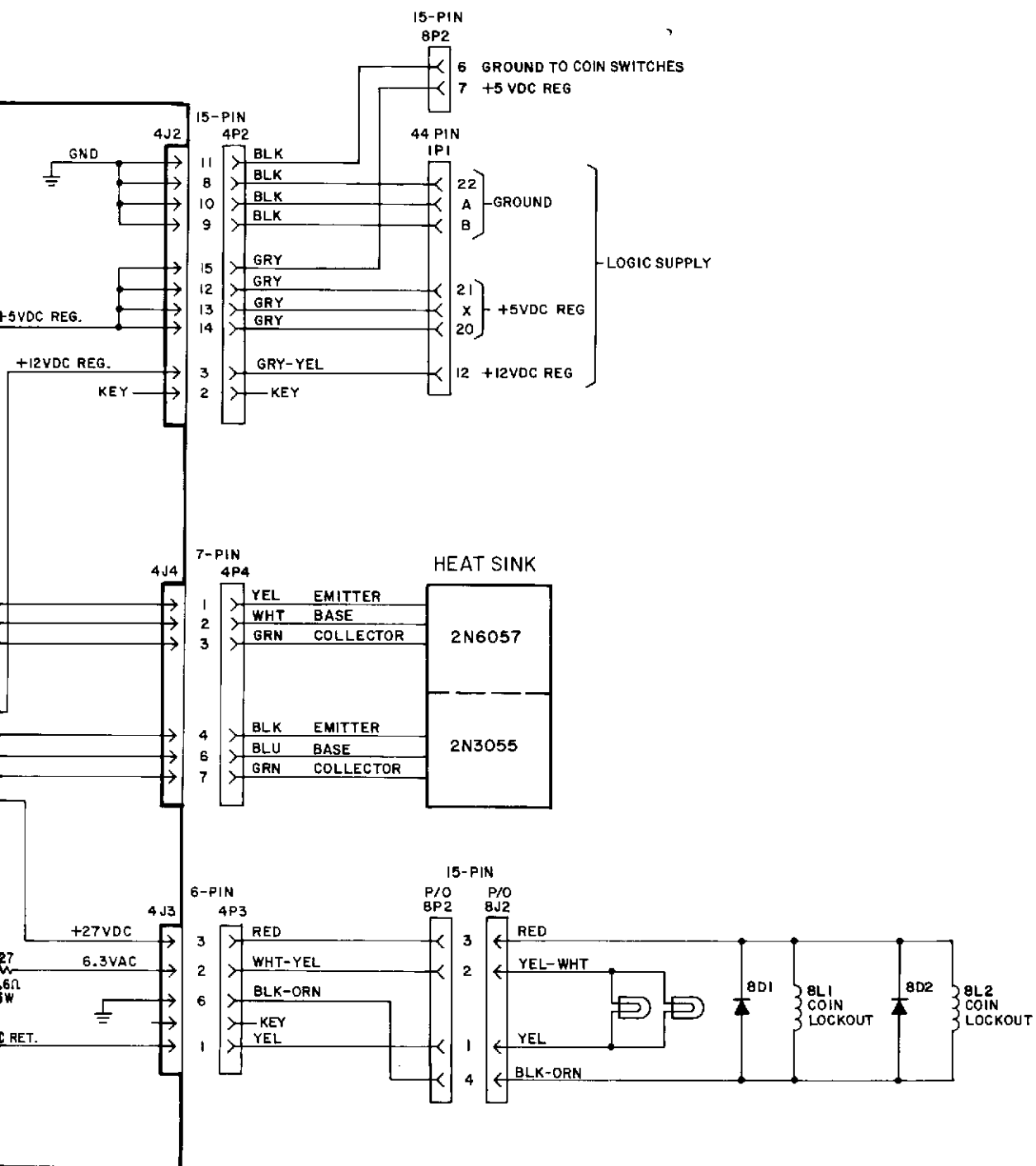
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5773-09679-00		BARE P.C. BOARD	1
2	5010-09085-00	R23	RESISTOR, 1.5K 5%, 1/4 W	1
3	5010-09541-00	R13, R15	RESISTOR, 2.7K 2%, 1/4 W	2
4	5010-09508-00	R21	RESISTOR, 870Ω 2%, 1/4 W	1
5	5010-09428-00	R20	RESISTOR, 1.5K 2%, 1/4 W	1
6	5010-09509-00	R16	RESISTOR, 1.1K 2%, 1/4 W	1
7	5010-09510-00	R7	RESISTOR, 12K 2%, 1/4 W	1
8	5010-09314-00	R4	RESISTOR, 1.2K 5%, 1/4 W	1
9	5010-09416-00	R1, R14	RESISTOR, 470Ω 5%, 1/4 W	2
10	5013-09542-00	R11	RESISTOR, 7.32K 1%, 1/4 W	1
11	5013-09427-00	R12	RESISTOR, 9.99K 1%, 1/4 W	1
12	5013-09426-00	R25	RESISTOR, 2.15K 1%, 1/4 W	1
13	5012-09429-00	R3	RESISTOR, .12Ω 5%, 5 W	1
14	5012-09512-00	R2	RESISTOR, .27Ω 5%, 5 W	1
15				
16	5013-09665-00	R26	RESISTOR, 5.11K 1%, 1/4 W	1
17	5010-09434-00	R6, R18	RESISTOR, C.R. 22Ω ± 5%, 1/4 W	2
18	5010-09036-00	R5, R9, R17 & R22	RESISTOR, C.F. 100Ω ± 5%, 1/4 W	4
19	5010-09039-00	R8, R19	RESISTOR, C.F. 10Ω ± 5%, 1/4 W	2
20	5010-09534-00	W1	RESISTOR, 0Ω	1
21	5043-08986-00	C6, C7	CAPACITOR, 0.1μF CERAMIC +80% -20% 50V	2
22	5040-09421-00	C2, C16	CAPACITOR, 100MFD, 25V RADIAL +50% -10%	2
23	5040-09422-00	C15	CAPACITOR, 47MFD, 50V RADIAL +50% -10%	1
24	5040-09420-00	C3	CAPACITOR, 1000MFD, 25V RADIAL +75% -10%	1
25	5040-09419-00	C10	CAPACITOR, 18,000MFD 20V AXIAL +75% -10%	1
26	5040-09423-00	C5	CAPACITOR, 330MFD 10V RADIAL +50% -10%	1
27	5040-09504-00	C14	CAPACITOR, 4700MFD 35V RADIAL +50% -10%	1
28	5043-09446-00	C1, C4 & C12	CAPACITOR, .1MFD, 50V AXIAL 25V -20 +80%	3
29	5043-08065-00	C9	CAPACITOR, 470PFD 50V AXIAL XTR ± 10%	1
30	5043-09492-00	C8	CAPACITOR, 100PFD 50V AXIAL 52L ± 5%	1
31	5040-09506-00	C13	CAPACITOR, 220MFD 16V RADIAL +50% -10%	1
32	5040-09493-00	C11	CAPACITOR, 22MFD 10V RADIAL +50% -10%	1
33	5070-06258-00	D1, D2 & D3	DIODE, 1N4001	3
34	5075-09406-00	ZR1	ZENER, 1N5234 ± 5% (6.2V)	1
35	5075-09662-00	ZR2	ZENER, 1N5244 ± 5% (14V)	1
36	5190-09430-00	Q3, Q4	TRANSISTOR, MPS A55	2
37	5130-09661-00	Q1, Q2	SCR, 8 AMP, 100V	2
38	5250-09515-00	Q5	VOLTAGE REGULATOR, 7905	1
39	5440-09424-00	IC1, IC2	VOLTAGE REGULATOR, 723	2
40	5100-09490-00	BR1	BRIDGE RECTIFIER, 35 AMP, 200V	1
41	5100-09513-00	BR2	BRIDGE RECTIFIER, 4.0A, 50V	1
42	5100-09514-00	BR3	BRIDGE RECTIFIER, 1.0A, 50V	1
43	5671-09018-00	LED1, LED2, LED3	LED, RED	3
44	5824-09298-00	TP1 - TP6	TERMINAL #1502-1 (TEST POINT)	4

(A)

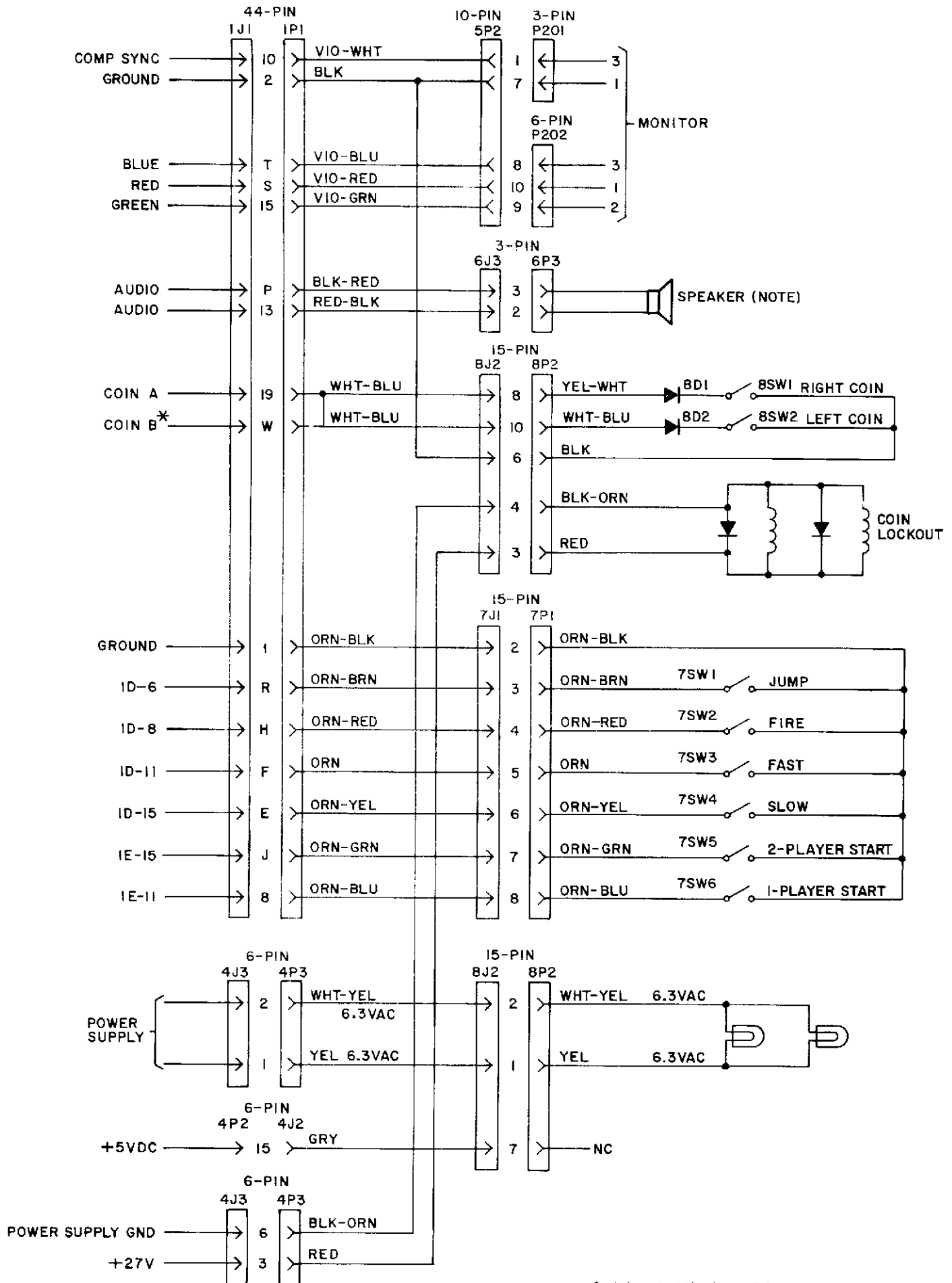








Power Wiring Diagram



Cabinet Wiring Diagram