

*Williams*<sup>®</sup>

16P-3003-101  
Game No. 3003  
November, 1981



**DRAWING SET  
(Upright)**



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

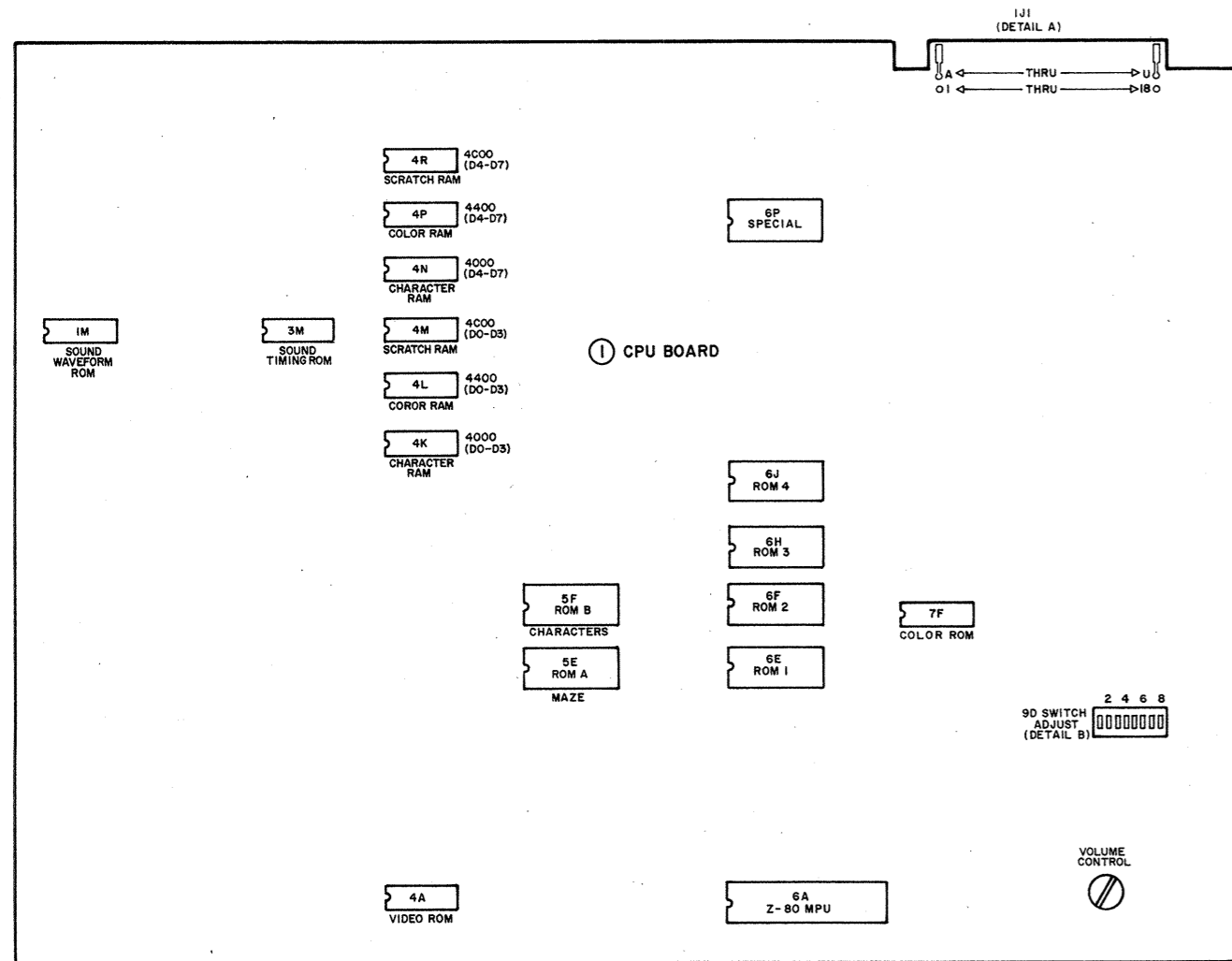
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**ELECTRONICS, INC.**

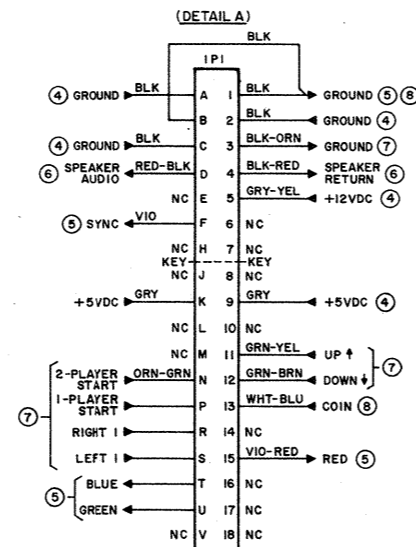
3401 N. California Ave., Chicago, IL 60618  
Cable Address: WILCOIN, CHICAGO  
(312) 267-2240

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- ① CPU BOARD
- ② NOT ASSIGNED
- ③ NOT ASSIGNED
- ④ NOT ASSIGNED
- ⑤ MONITOR
- ⑥ CABINET
- ⑦ PLAYER PANEL
- ⑧ COIN DOOR

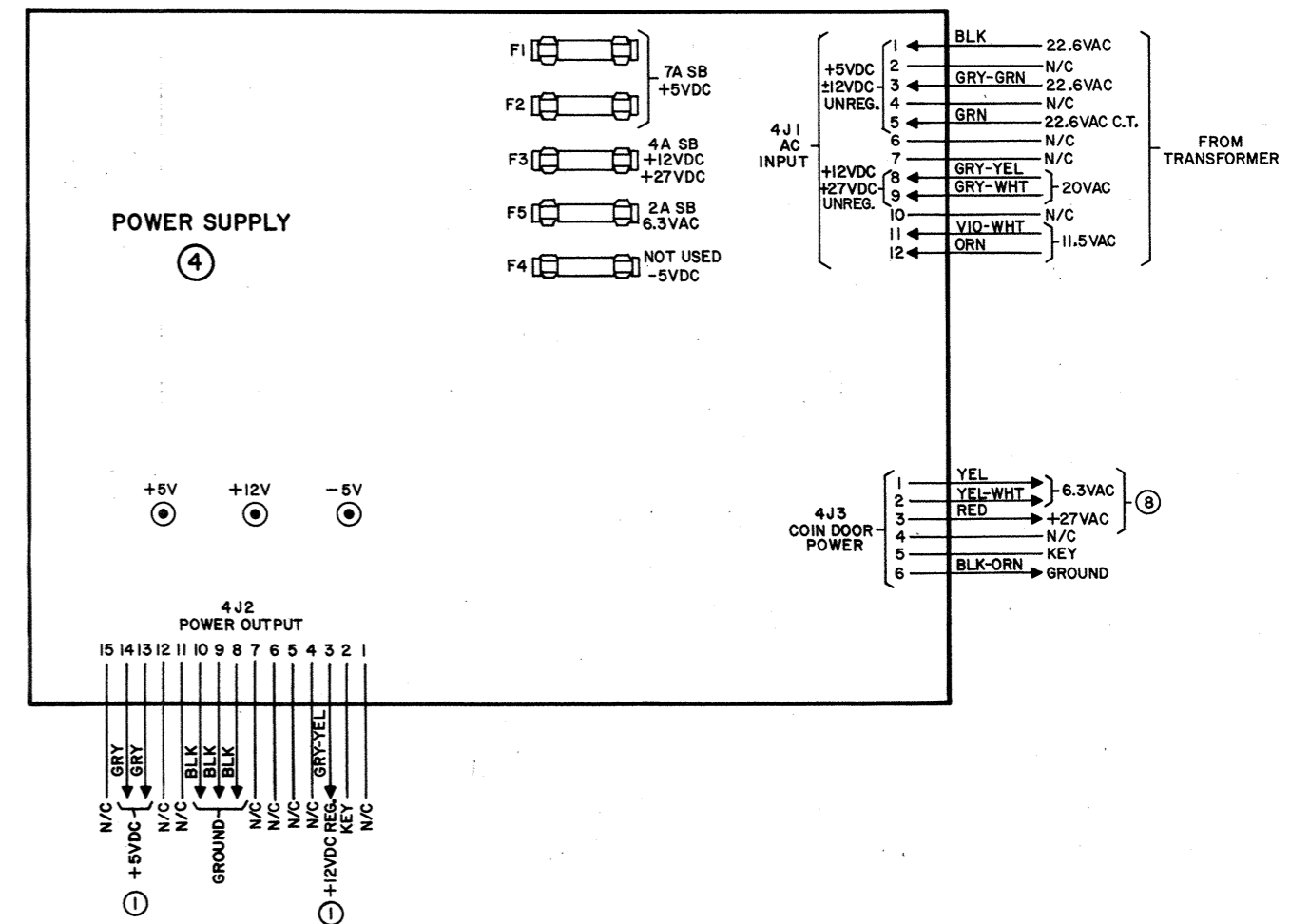
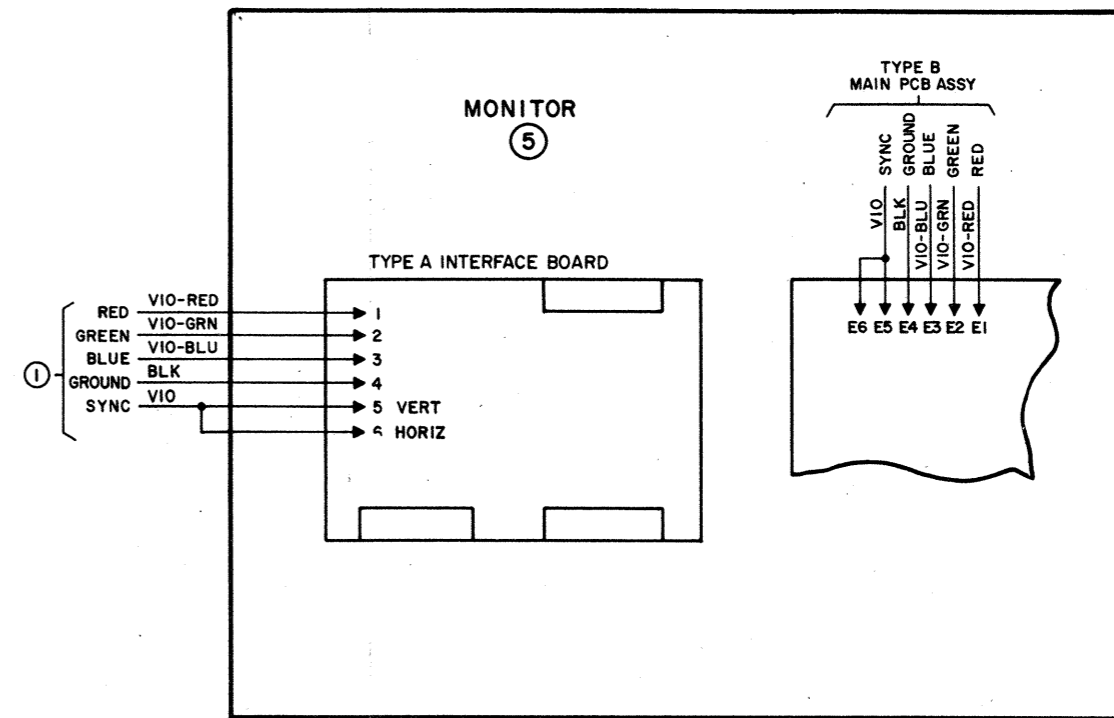


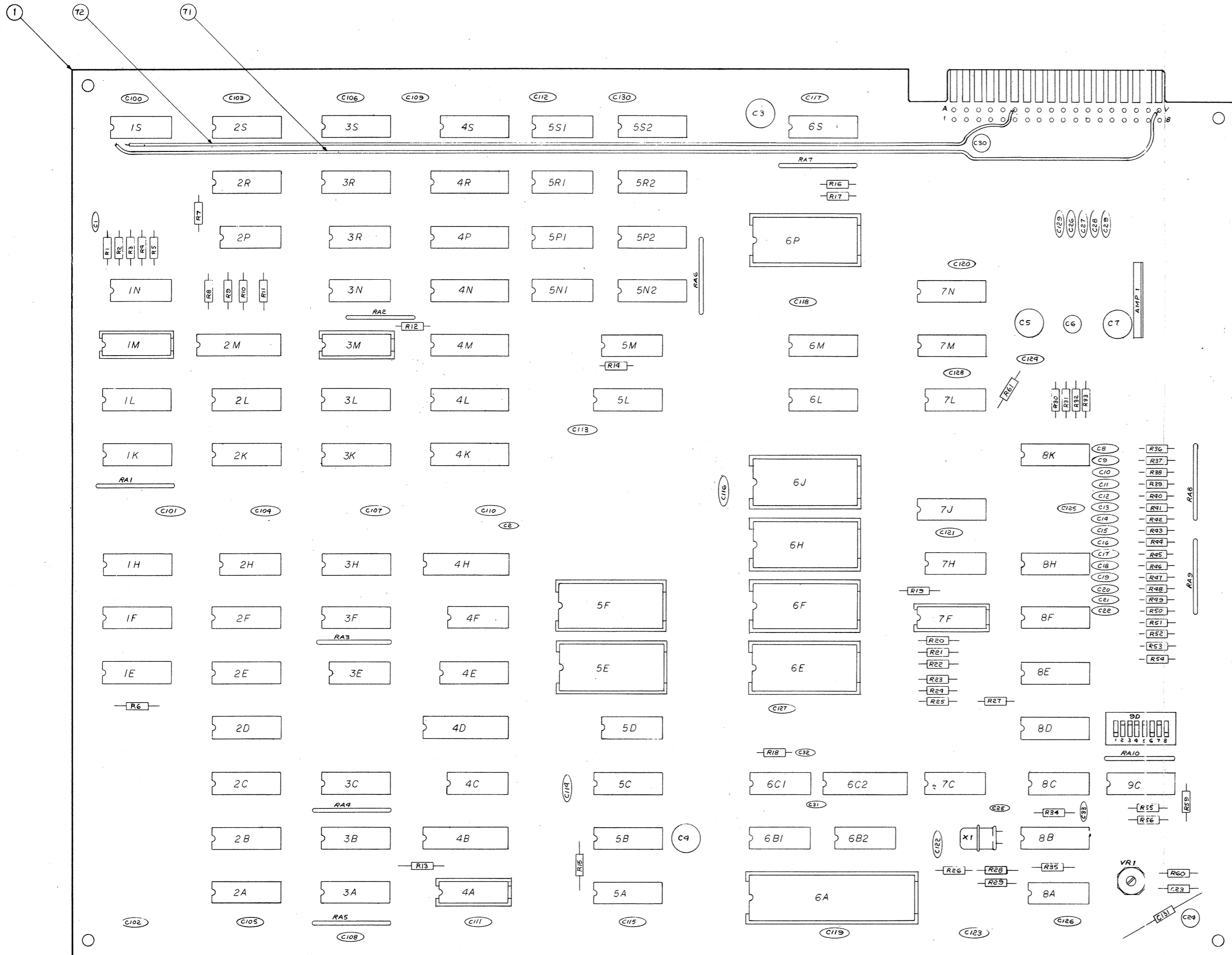
(DETAIL B)

SWITCH NUMBER

ADJUSTMENT	1	2	3	4	5	6	7	**8
*RECOMMENDED	OFF	ON	ON	ON	ON	OFF	ON	OFF
1 PLAY/2 COINS	OFF	OFF						
2 PLAYS/1 COIN	ON	OFF						
*1 PLAY/1 COIN	OFF	ON						
FREE PLAY	ON	ON						
6 BRUSHES			OFF	OFF				
5 BRUSHES			ON	OFF				
4 BRUSHES			OFF	ON				
*3 BRUSHES			ON	ON				
FIRST PATTERN EASY					OFF			
*FIRST PATTERN DIFFICULT					ON			
*WARP HOLE DISABLED						OFF		
WARP HOLE ENABLED						ON		
TABLE GAME							OFF	
UPRIGHT							ON	

\*\* SET SWITCH 8 TO ON TO FREEZE PATTERN FOR MONITOR ADJUSTMENTS.

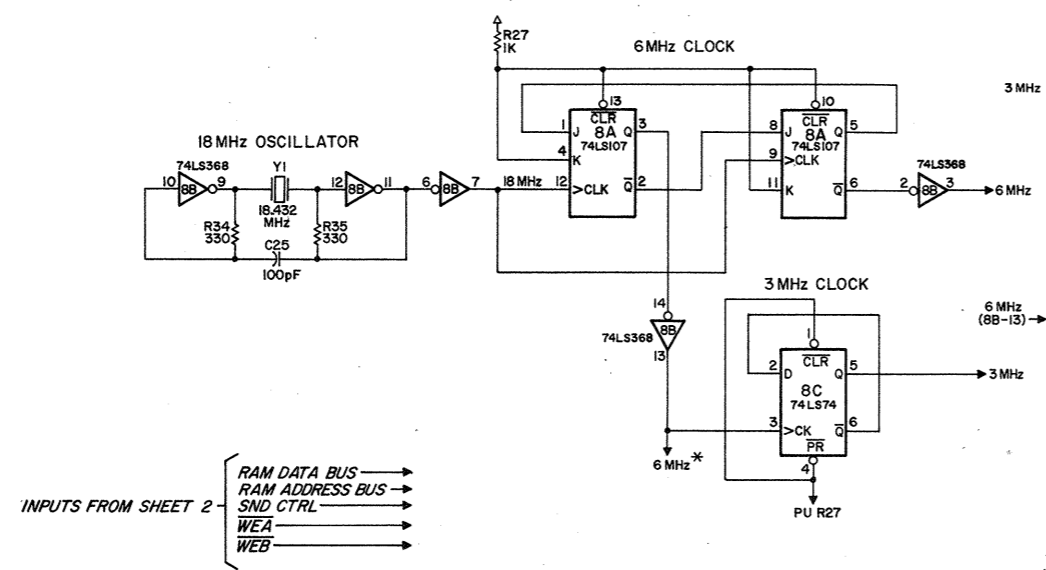




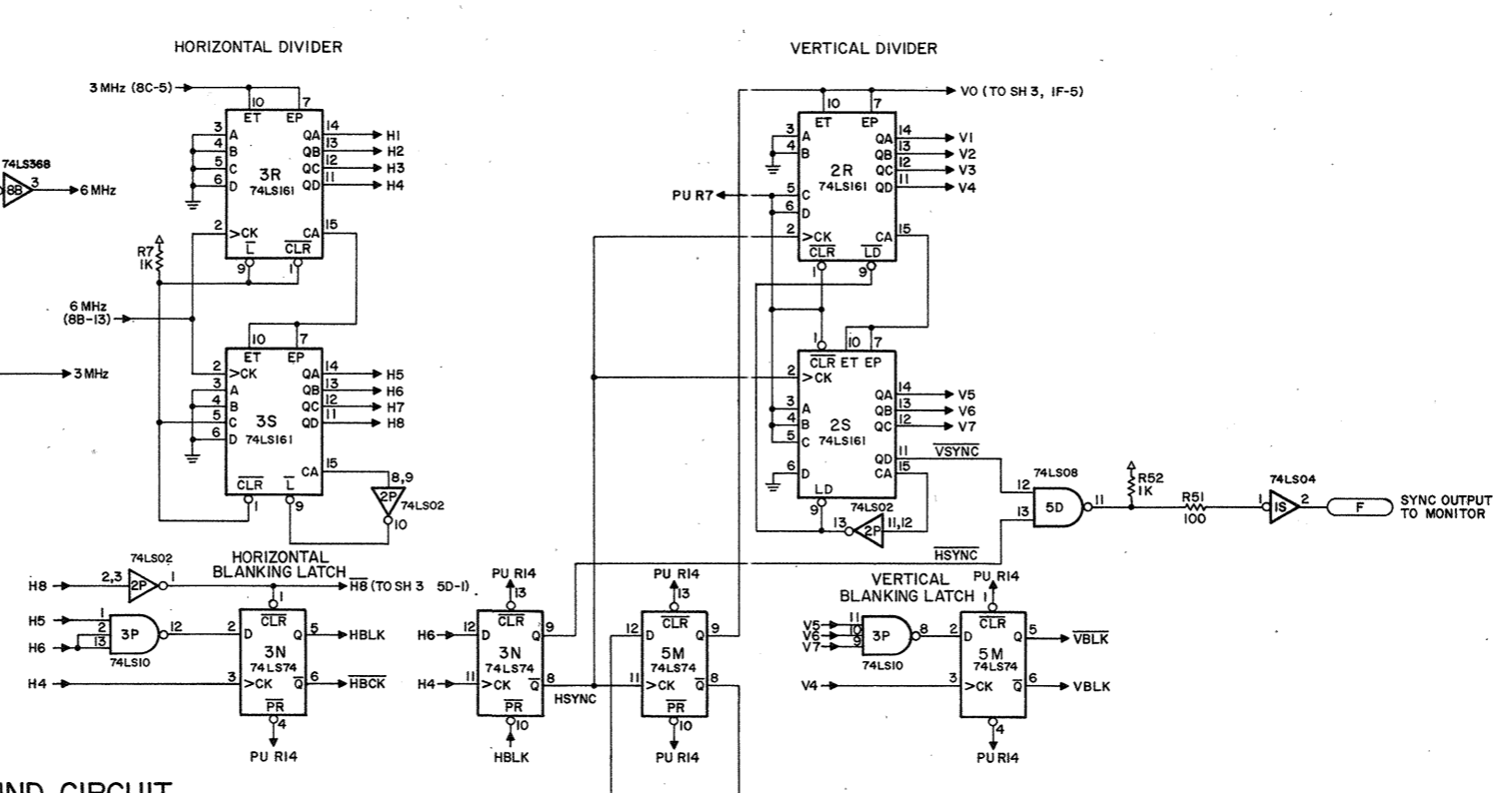
BILL OF MATERIAL					ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5770-08754-00		BARE P.C. BOARD	1	50	5282-09759-00	7F ICM/TRX COLOR PROM	1	
2	5010-0874-00	R1, R2, 60	RESISTOR 22K 1/4W 5%	3	51	5282-09759-00	1M ICM/TRX WAVE FORM GENERATOR	1	
3	5010-08998-00	R9	RESISTOR 22K 1/4W 5%	1	52	5282-09760-00	3M ICM/TRX SOUND CONTROL ASM	1	
4	5010-09001-00	R39, R35	RESISTOR 330 1/4W 5%	2	53	5282-09761-00	4A ICM/TRX VIDEO GENERATOR ASM	1	
5	5010-09039-00	R3	RESISTOR 10K 1/4W 5%	1	54	5310-09712-00	1N ICCD4066, 4 A/SW	1	
6	5010-09035-00	R9, R8	RESISTOR 47K 1/4W 5%	2	55	5340-09751-00	2A, 2B, 2C, 2D ICRAM/S 2125AL 1K x 1	4	
7	5010-09036-00	RS1	RESISTOR 100 1/4W 5%	1	56	5390-09752-00	4R, 4R, 4K, 4L, 4M, 4N ICRAM/S 2114-3 1K x 4	6	
8	5010-09160-00	R22, 25, 28, 36-50, 54	RESISTOR 220 1/4W 5%	10	57	A-5343-09762-	5E ICM/TRX ROM A ASM	1	
9	5010-09162-00	R5	RESISTOR 100K 1/4W 5%	1	58	A-5343-09763-	5F ICM/TRX ROM B ASM	1	
10	5010-09358-00	R6, 7, 10, 12-20, 24, 26, 27, 29, 30, 33, 35, 37, 38	RESISTOR 1K 1/4W 5%	24	59	A-5343-09764-	6E ICM/TRX ROM 1 ASM	1	
11	5010-09416-00	R11, R21, R53	RESISTOR 470 1/4W 5%	3	60	A-5343-09765-	6F ICM/TRX ROM 2 ASM	1	
12	5010-09768-00	R23	RESISTOR 180 1/4W 5%	1	61	A-5343-09766-	6H ICM/TRX ROM 3 ASM	1	
13	5014-09755-00	VR1	VARIABLE RESISTOR 1K 1/4W	1	62	A-5343-09767-	6J ICM/TRX ROM 4 ASM	1	
14	5019-09748-00	RA1, RA3, RA4, RA6-RA10	1K 1/4W 5%	8	63	5370-09750-00	AMP 1 IC3712 AUDIO AMP	1	
15	5040-09776-00	C3, C4, C5, C7	CAPACITOR, +50-10 10 MFD 16V RADIAL	4	64	5400-09753-00	GA I.C. MPU Z80A	1	
16	5043-09777-00	C30	CAPACITOR, +50-10 10 MFD 16V RADIAL	1	65	5410-09771-00	6P I.C. MPU Z80A	1	
17	5043-09980-00	C1	CAPACITOR .01 MFD 50V +30-20	1	66	5520-09749-00	X1 18.432 MHE CRYSTAL	1	
18	5043-09773-00	C2, C22, C26, C29, C100-C130	CAPACITOR .1 MFD 18V +30-20	50	67	5645-09025-00	SD 8 STATION DIP SWITCH	1	
19	5048-09442-00	C31, C32, C33, C25	CAPACITOR .10 MFD 50V +10	4	68	5700-08985-00	6A 40 PIN IC SOCKET	1	
20	5048-09775-00	C2	CAPACITOR 330 PFD 18V +20-20	1	69	5700-09004-00	5F, 5E, 6E, 6F 24 PIN IC SOCKET	7	
21	5280-09530-00	3E	IC7420, DUAL 4 IN NAND	1	70	5700-09006-00	1M, 3M, 4A, 7F 16 PIN IC SOCKET	4	
22	5280-09597-00	7C	IC7427 3 IN NOR	1	71	HW-00030-9	JUMP WIRE WHITE 14"	14"	
23	5280-09625-00	2K, 2L, 2F, 3H	IC7480 16 x 4 RAM	4	72	HW-00030-9	JUMP WIRE WHITE 12"	12"	
24	5281-09215-00	G81, 15	IC74LS04 HEX INV	2	73	5040-09422-00	C6, C24 CAPACITOR 47MFD 50V +50-10	2	
25	5281-09235-00	3P	IC74LS10 2 IN NAND	1	74	5043-08996-00	C131, C23 0.1 MFD AXIAL 50V 7-20	2	
26	5281-09247-00	4S, 5L, 7M	IC74LS02 2 IN NOR	3	75	5019-08991-00	R61 4.7K J, 5%, 1/4W	1	
27	5281-09247-00	2F, 5N1, 7L	IC74LS245 OCTAL TRANSCEIVER	2	76	5019-09780-00	RA2, RA5 5.1.P 1K 4R, 5, 5%	2	
28	5281-09308-00	4H, 6C2	IC74LS245 OCTAL TRANSCEIVER	2					
29	5281-09385-00	6S, 8D, 8E, 8F, 8M, 5M, 6L, 6M	IC74LS367 HEX BUFFER	8					
30	5281-09480-00	8A	IC74LS107 DUAL	1					
31	5281-09484-00	7N	IC74LS42 BCD-DECODER	1					
32	5281-09485-00	5S1, 5P2, 5S2	IC74LS257 QUAD 2-1 MULTX	3					
33	5281-09487-00	3N, 5M, 6C1, 6C	IC74LS74 DUAL	4					
34	5281-09499-00	4C, 6B2	IC74LS00 QUAD 2 IN NAND	2					
35	5281-09753-00	1L, 1H	IC74LS174 HEX F/F	2					
36	5281-09734-00	1K, 1F, 2F	IC74LS283 ADDR 4B	3					
37	5281-09735-00	1E, 2S, 2R, 2E, 3R, 3S, 3C	IC74LS161 BIN CTR	7					
38	5281-09736-00	2M, 4D	IC74LS273 OCTAL F/F	2					
39	5281-09737-	2H, 4F	IC74LS86 QUAD OR	2					
40	5281-09738-00	3B, 3L, 4E, 5A	IC74LS157 MLTPX	4					
41	5281-09739-00	3A, 3K	IC74LS158 MLTPX I	2					
42	5281-09740-00	3C	IC74LS375 LATCH	1					
43	5281-09741-00	4B	IC74LS377 QUAD F/F	1					
44	5281-09742-00	5B, 5C	IC74LS194 SHFT/R	2					
45	5281-09743-00	5D, 7H	IC74LS08 QUAD 2 IN AND	2					
46	5281-09744-00	5R1, 5N2, 5R2	IC74LS258 MLTPX	3					
47	5281-09745-00	7J	IC74LS138 DMLTPX	1					
48	5281-09746-00	8B	IC74LS369 HEX INV	1					
49	5281-09747-00	8K	IC74LS259 LATCH	1					



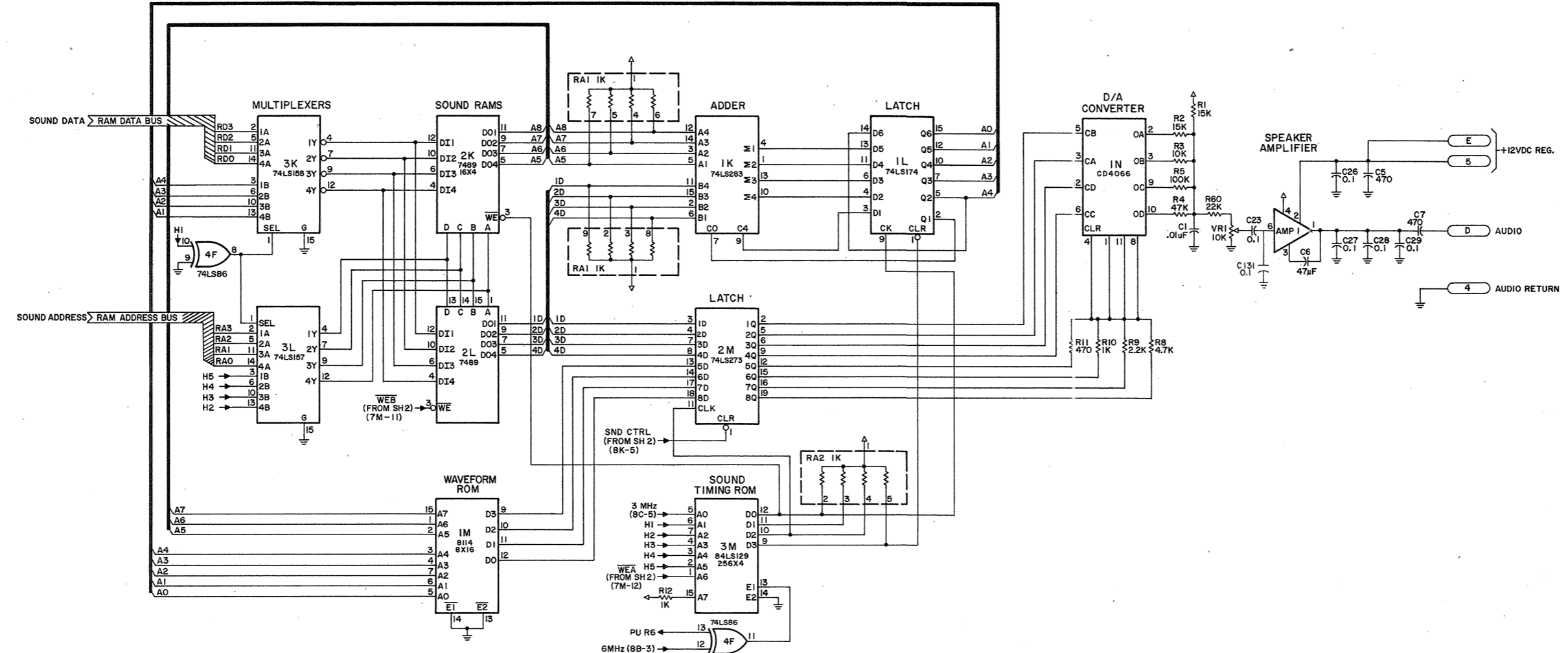
CLOCK CIRCUIT



DIVIDERS



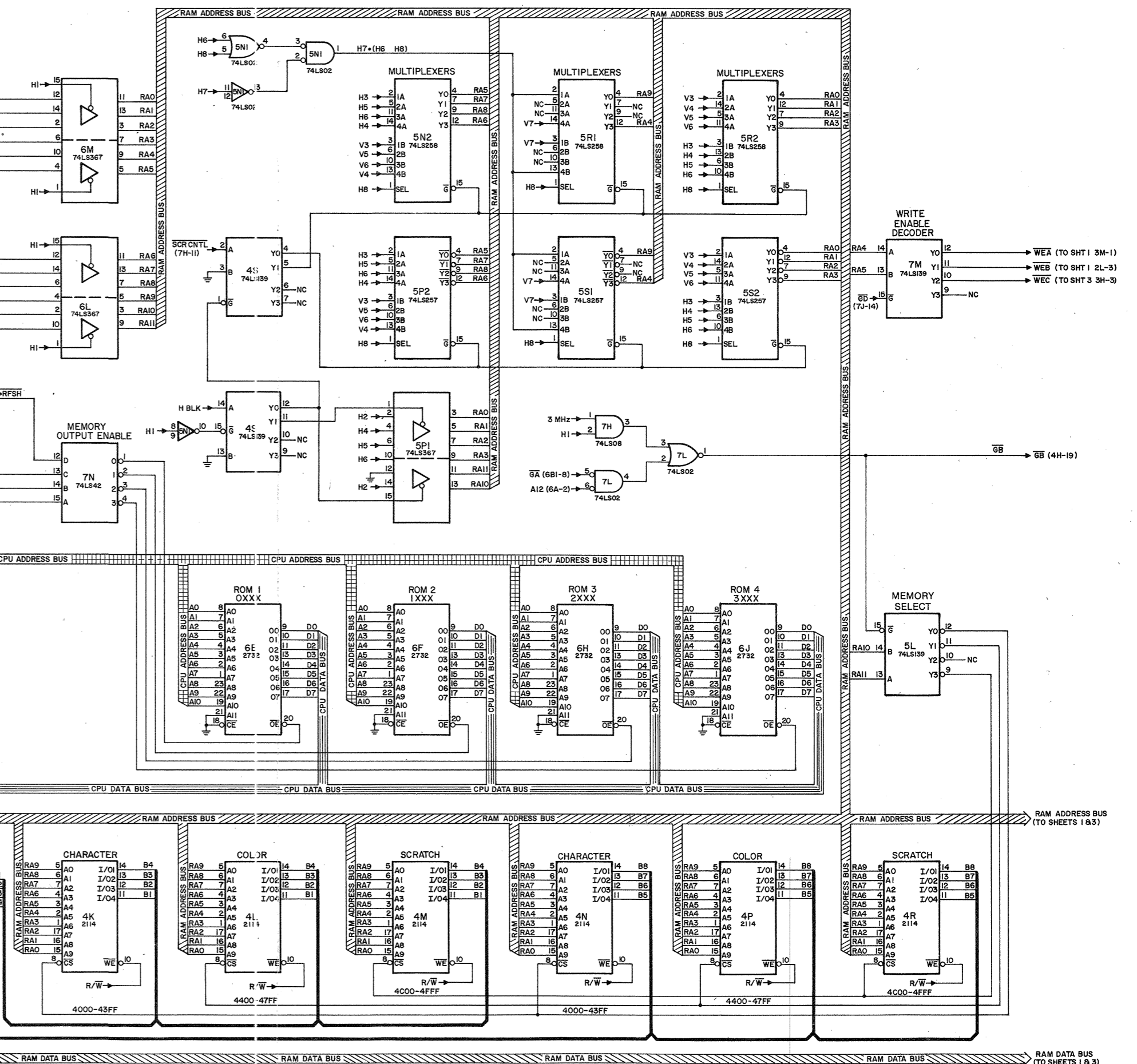
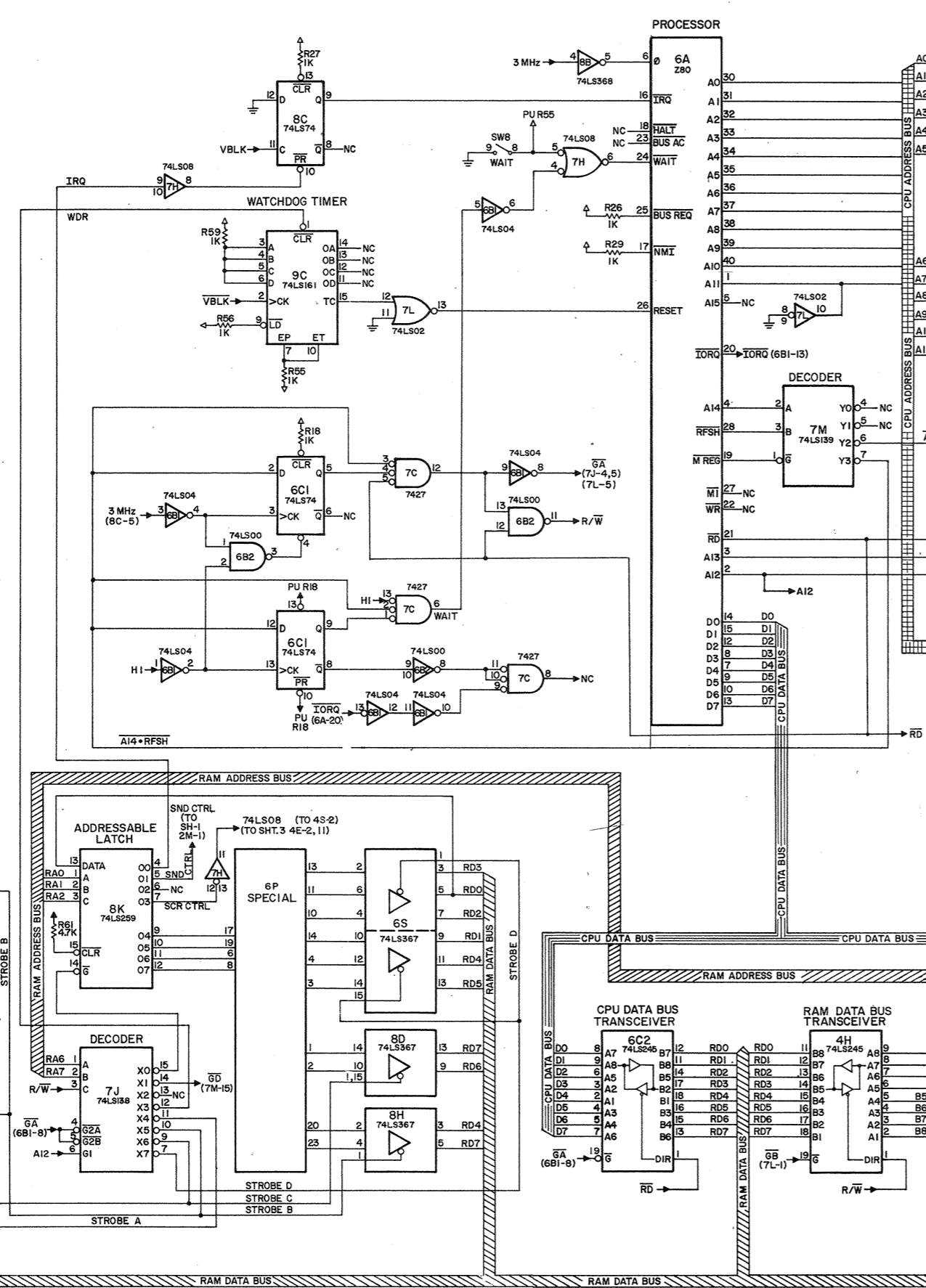
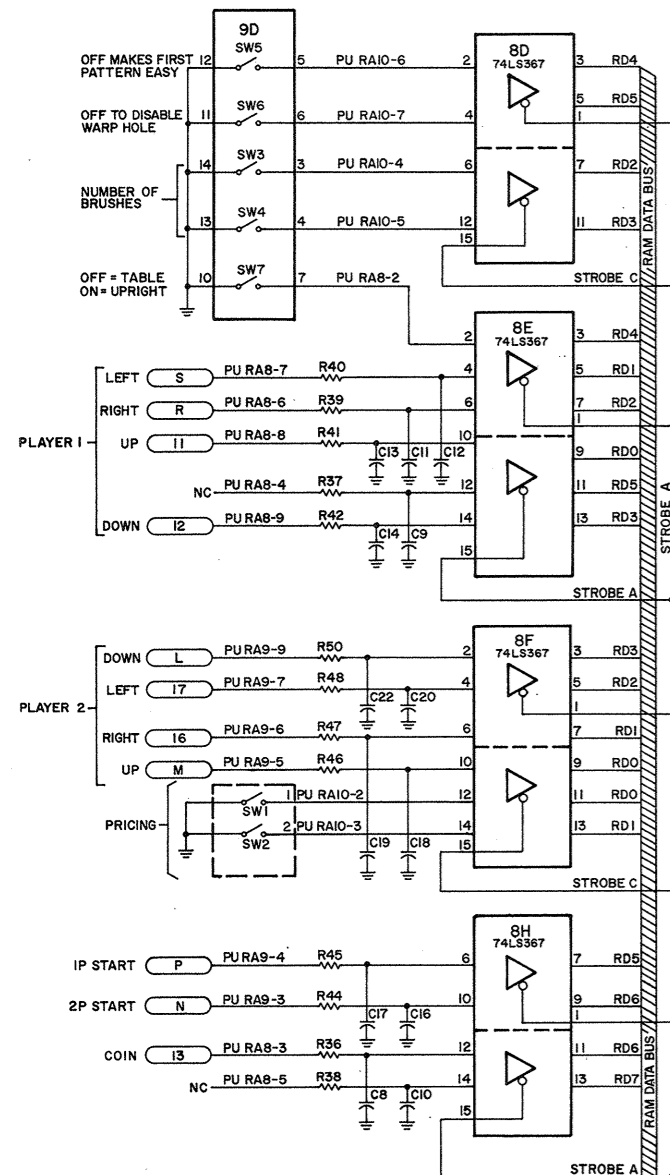
SOUND CIRCUIT

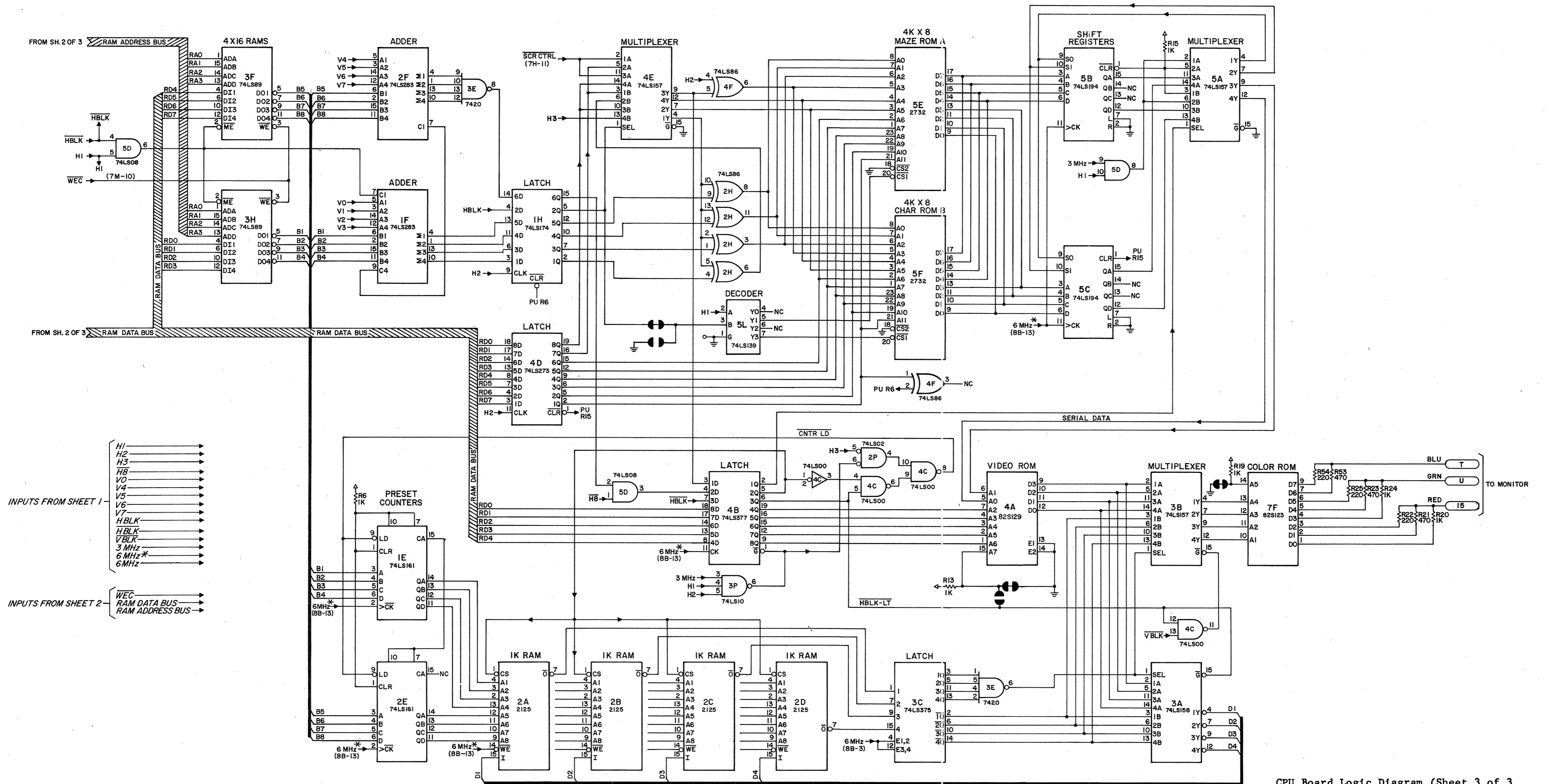


SCREEN DECODING

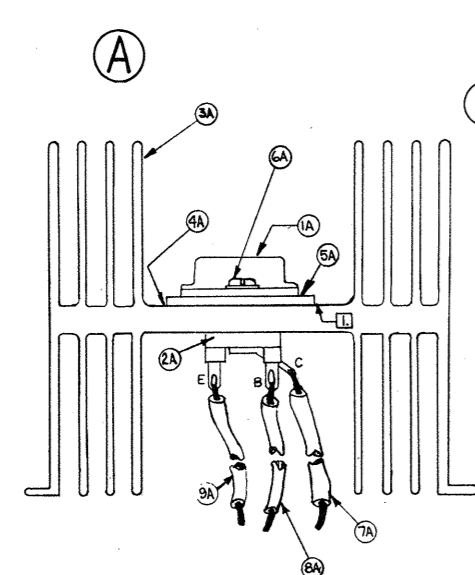
- INPUTS FROM SHEET 1
- H1 →
  - H2 →
  - H3 →
  - H4 →
  - H5 →
  - H6 →
  - H7 →
  - H8 →
  - V3 →
  - V4 →
  - V5 →
  - V6 →
  - V7 →
  - V8 →
  - VBLK →
  - VBLK →
  - VBLK →
  - 3MHz →

INPUT BUFFERS



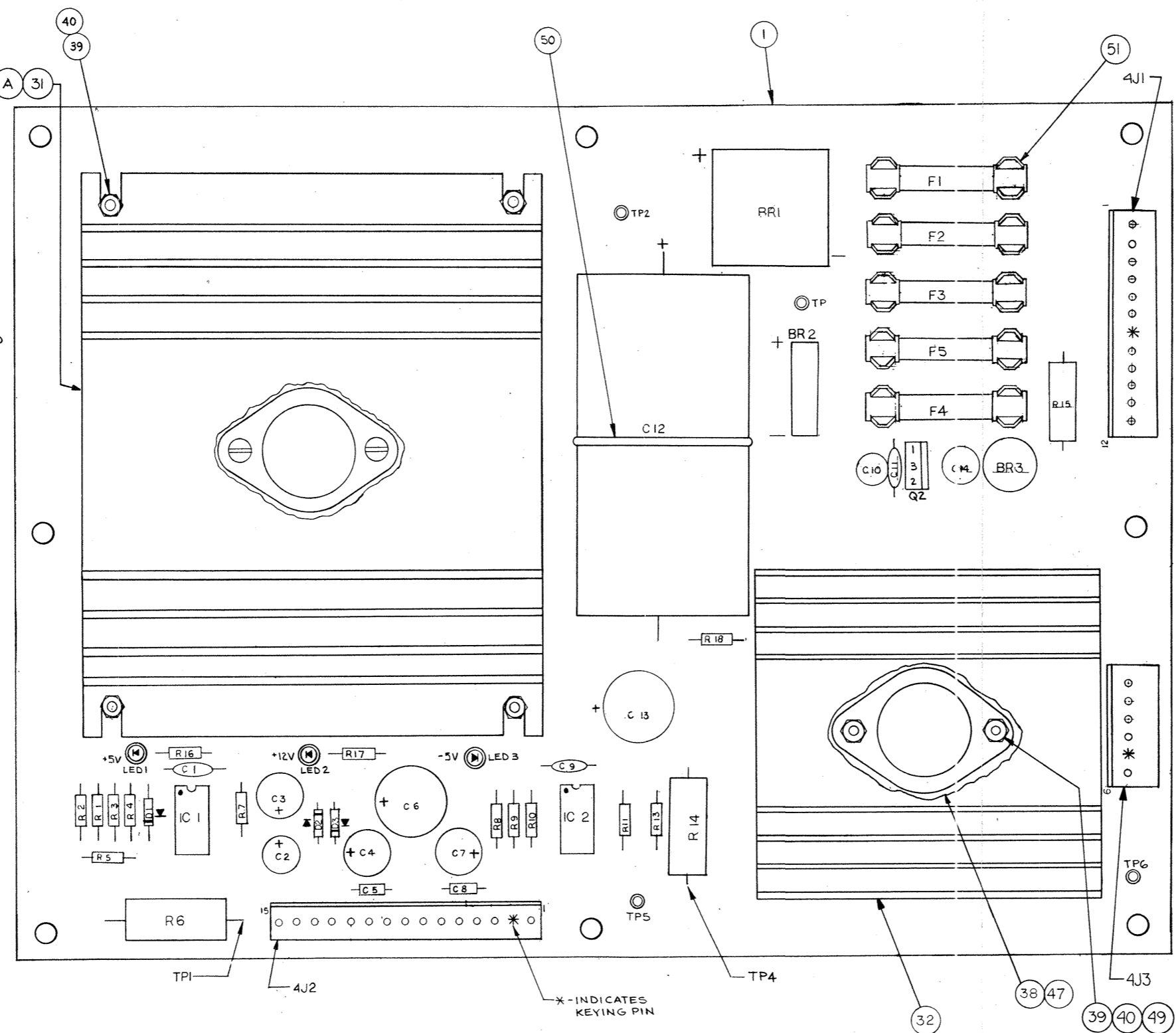


CPU Board Logic Diagram (Sheet 3 of 3)



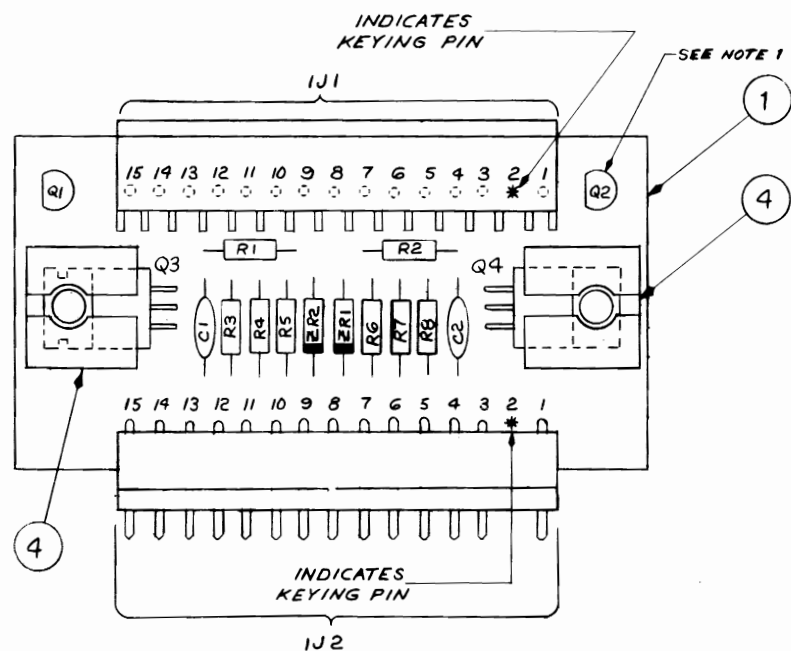
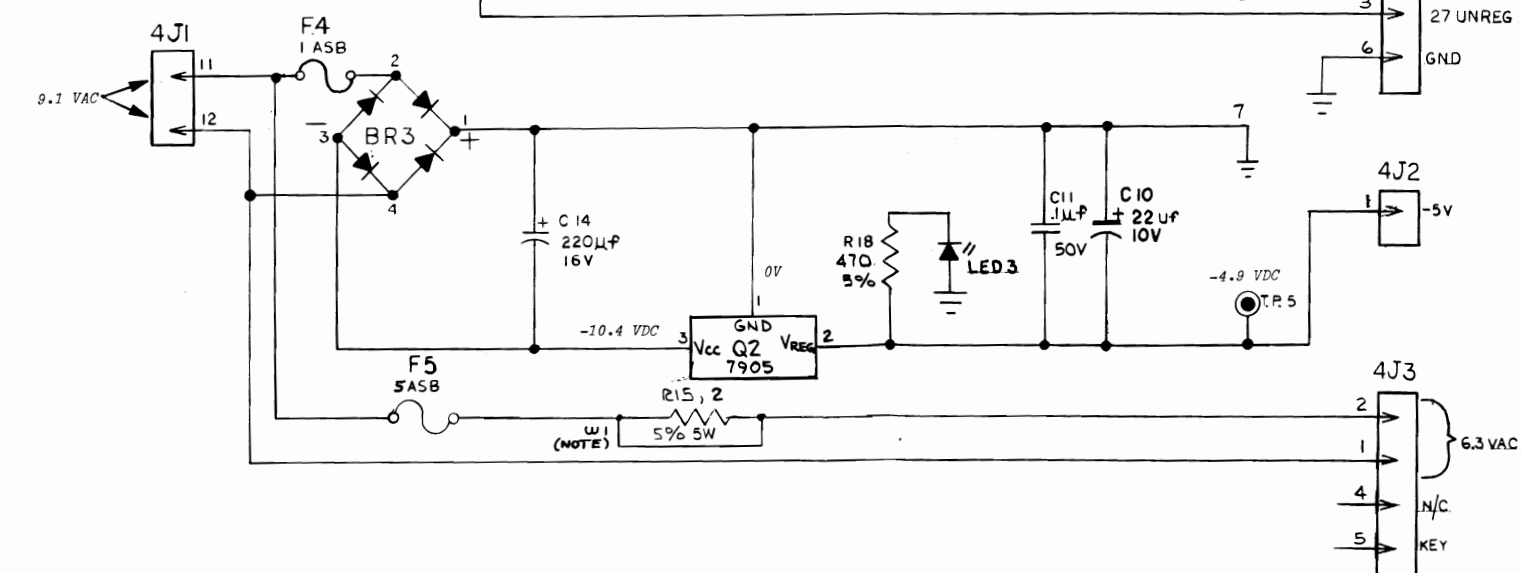
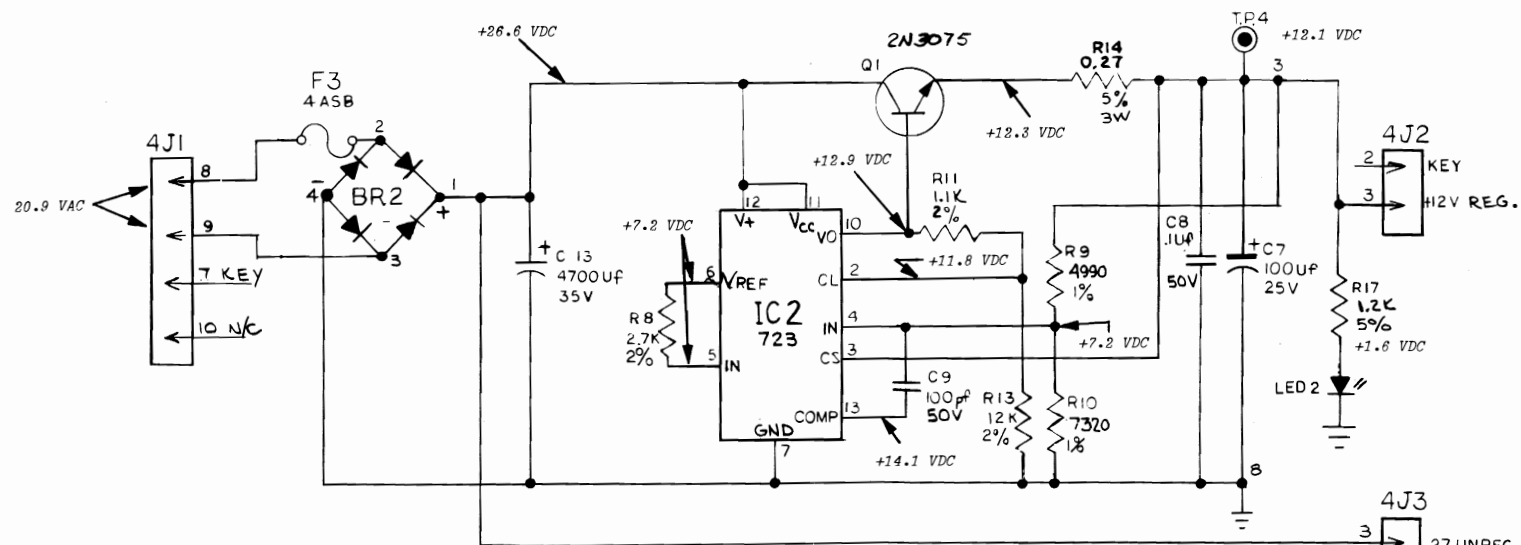
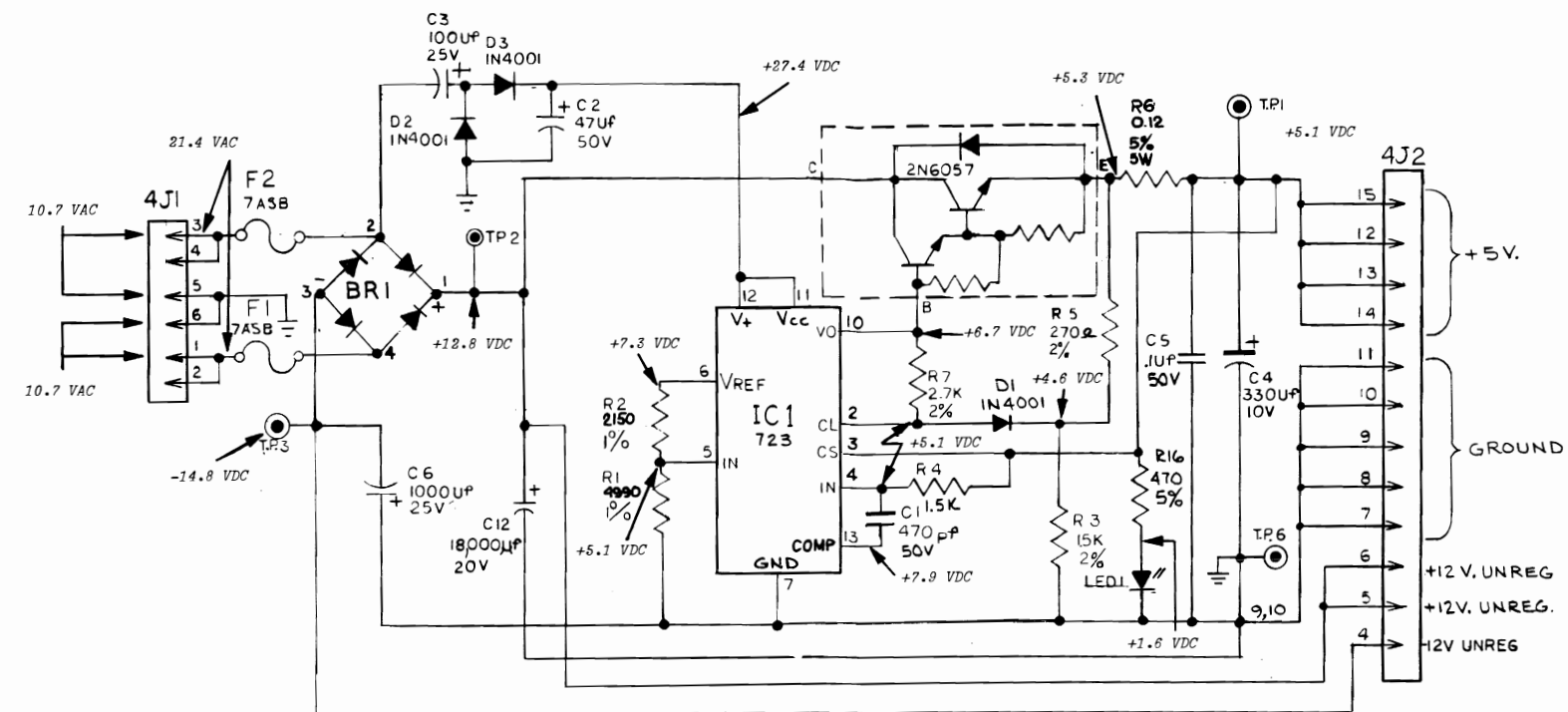
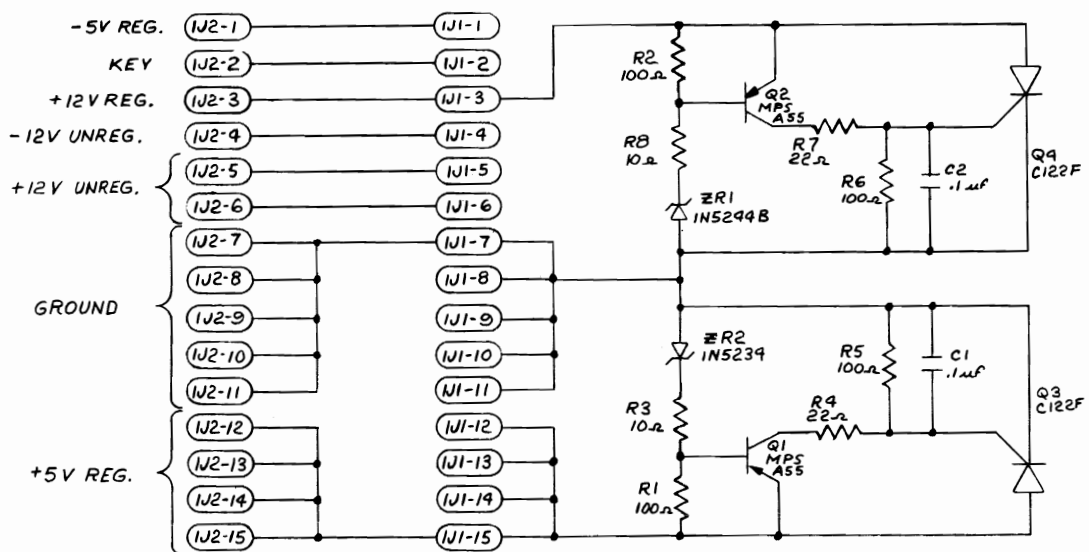
BILL OF MATERIAL			
ITEM NO.	PART NO.	DESCRIPTION	REQ'D NO.
1A	5162-09423-00	TRANSISTOR NPN 2N6057	1
2A	5700-09445-00	TRANSISTOR-SOCKET T 03	1
3A	5705-09431-00	HEAT SINK	1
4A	20-9229-00	THERMAL COMPOUND 1.5 OUNCE	1
5A	5701-09338-00	T 03 3 MIL MICA INSULATOR	1
6A	4006-01003-B	MS-6-22x1/2-P-PH-5	2
7A	5853-09591-00	LEAD WIRE #18 AWG 4/3/8 STRIPPED (GRN)	1
8A	5853-09592-00	LEAD WIRE #18 AWG 4/3/8 STRIPPED (WHT)	1
9A	5853-09593-00	LEAD WIRE #18 AWG 4/3/8 STRIPPED (YEL)	1

NOTES:  
 1. HEAT SINK COMPOUND MUST BE APPLIED BETWEEN MICA INSULATOR AND HEAT SINK AND BETWEEN MICA INSULATOR AND TRANSISTOR.



BILL OF MATERIAL				
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5173-09474-00		B.S. BARE P.C. BOARD	1
2	5010-09085-00	R 4	RESISTOR, 1.5K 5%, 1/4W	1
3	5010-09541-00	RB, R 7	RESISTOR, 2.7K 2%, 1/4W	2
4	5010-09508-00	R 5	RESISTOR, 270 2%, 1/4W	1
5	5010-09428-00	R 3	RESISTOR, 1.5K 2%, 1/4W	1
6	5010-09509-00	R 11	RESISTOR, 1.1K 2%, 1/4W	1
7	5010-09510-00	R 13	RESISTOR, 12K 2%, 1/4W	1
8	5013-09542-00	R 10	RESISTOR, 732 K 1%, 1/4W	1
9	5013-09427-00	R 1 & R 9	RESISTOR 499K P/O 1/4W	2
10	5013-09426-00	R 2	RESISTOR 2.15K P/O 1/4W	1
11	5012-09429-00	R 6	RESISTOR J2, 5%, 5W	1
12	5012-09512-00	R 14	RESISTOR .27 5%, 5W	1
13	5040-09421-00	C 3 & C 7	CAPACITOR, 100 MFD, 25V, RADIAL +50% -10%	2
14	5040-09422-00	C 2	CAPACITOR, 47 MFD, 50V, RADIAL +50% -10%	1
15	5040-09420-00	C 6	CAPACITOR, 1000 MFD, 25V, RADIAL +50% -10%	1
16	5040-09419-00	C 12	CAPACITOR, 18,000 MFD, 20V, RADIAL +50% -10%	1
17	5040-09423-00	C 4	CAPACITOR, 330 MFD, 10V, RADIAL +50% -10%	1
18	5040-09504-00	C 13	CAPACITOR, 4700 MFD, 35V, RADIAL +50% -10%	1
19	5043-08996-00	C 9, C 8, C 11	CAPACITOR, 1 MFD, 50V, AXIAL 25U ±20%	3
20	5043-09065-00	C 1	CAPACITOR, 470 PFD, 50V, AXIAL X7R ±10%	1
21	5043-09492-00	C 9	CAPACITOR, 100 PFD, 50V, AXIAL S2L ±5%	1
22	5040-09506-00	C 14	CAPACITOR, 220 MFD, 16V, RADIAL +50% -10%	1
23	5040-09493-00	C 10	CAPACITOR, 22 MFD, 10V, RADIAL +50% -10%	1
24	5070-06258-00	D 1, D 2, D 3	DIODE, IN4001	3
25	5100-09418-00	BR 1	BRIDGE RECTIFIER, 35AMP 100V	1
26	5100-09513-00	BR 2	DIODE BRIDGE, 4.0A, 50V	1
27	5100-09514-00	BR 3	DIODE BRIDGE 1.0A, 50V	1
28	5731-09432-00	F 1, F 2	FUSE, 7A SB	2
29	5731-06314-00	F 3	FUSE, 4A, SB, 250 V.	1
30	5731-06569-00	F 4	FUSE, 1A, SB	1
31	B-8416-00		HEAT SINK ASSEMBLY (SEE A)	1
32	5705-09543-00		HEAT SINK	1
33	5791-09074-00	4J 2	HEADER, 15 PIN, 09-65-1151	1
34	5791-09043-00	4J 1	HEADER, 12 PIN, 09-65-1121	1
35	5250-09515-00	Q 2	VOLTAGE REGULATOR 7905	1
36	5460-09424-00	IC 1, IC 2	VOLTAGE REGULATOR 723	2
37	5824-09248-00	TP 2, TP 3, TP 5, TP 6	TERMINAL #1502-1 (TEST POST)	4
38	20-9229-00		THERMAL COMPOUND .02 OUNCE	AR
39	4005-01051-07		5-40x2/16 RH. MECH. SCREW	6
40	4405-01113-00		5-40 HEX NUT	6
41	5161-09552-00	Q 1	2N3055 TRANSISTOR NPN	1
42	5731-09651-00	F 5	FUSE, 5A, SB	1
43	5791-09038-00	4J 3	HEADER, 6 PIN, 09-65-1061	1
44	5012-09544-00	R 15	RESISTOR, 2.0Ω, 5%, 5W	1
45	5010-09416-00	R 16, R 18	RESISTOR, 470Ω, 5%, 1/4W	2
46	5010-09314-00	R 17	RESISTOR, 1.2K, 5%, 1/4W	1
47	5701-09538-00		INSULATOR, MICA, 3mil	1
48	5671-09019-00	LED 1, LED 2, LED 3	LED, RED	3
49	03-7598		INSULATOR, NYLON	2
50	03-7520		TIE WRAP	1
51	5732-09178-00		FUSE HOLDER	10

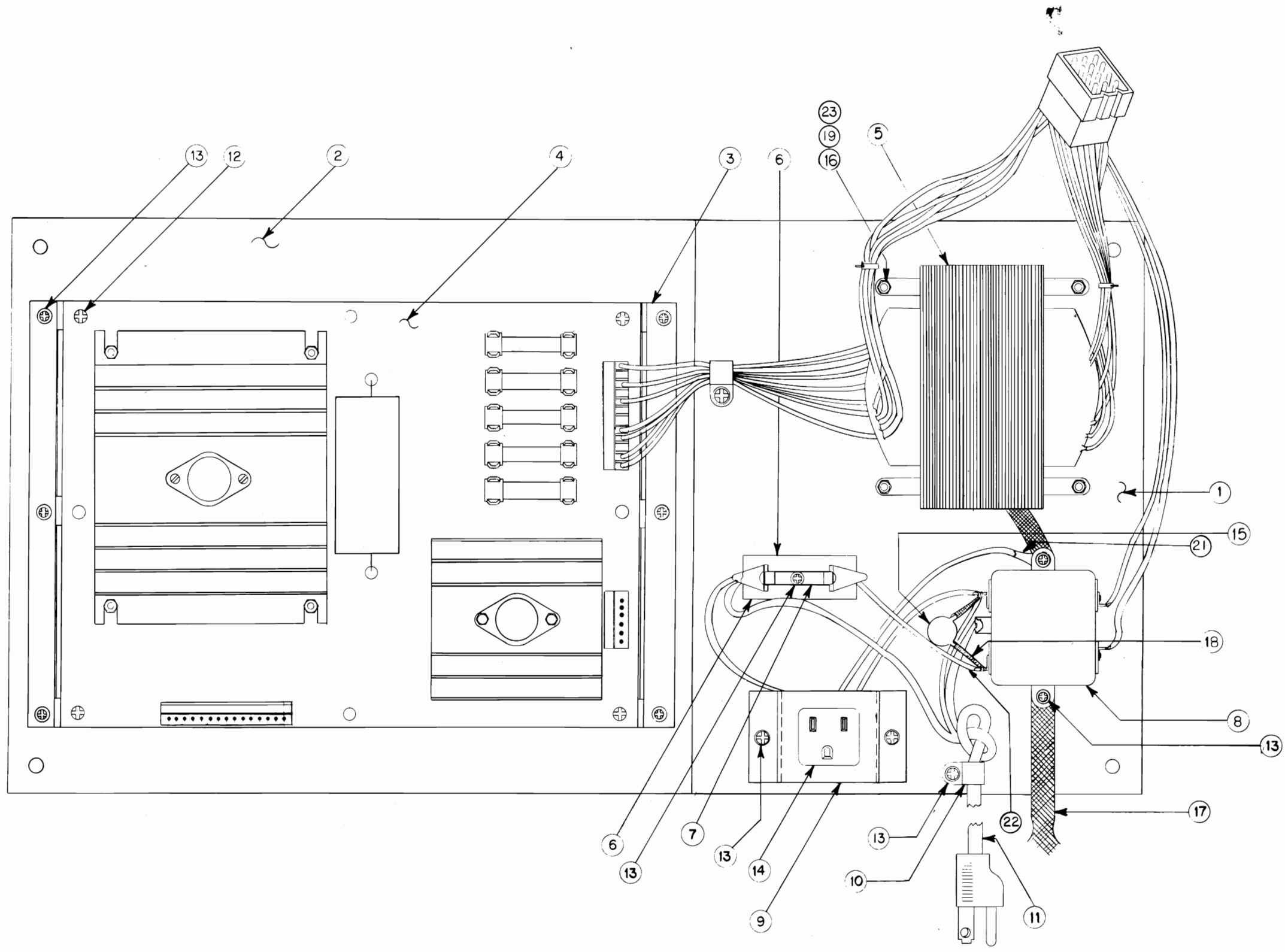




BILL OF MATERIALS				
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5773-09664-00		BARE P.C. BOARD	1
2	5792-09676-00	IJ1	RIGHT ANGLE CONNECTOR, 15 PIN	1
3	5791-09670-00	IJ2	HEADER CONNECTOR, 15 PIN	1
4	5705-09663-00		HEAT SINK, AAVID 5741	2
	5705-09688-00		HEAT SINK, THERMALLOY 6093	0
7	5130-09661-00	Q3, Q4	SCR 122F (100V)	2
8	5190-09430-00	Q1, Q2	TRANSISTOR MPS A55	2
9	5075-09662-00	ZR1	ZENER IN5244 ± 5% (14V)	1
10	5075-09406-00	ZR2	ZENER IN5234 ± 5% (6.2V)	1
11	5010-09036-00	R1, R2, R5, R6	RESISTOR C.F. 100 Ω ± 5% 1/4W	4
12	5010-09039-00	R3, R8	RESISTOR C.F. 10 Ω ± 5% 1/4W	2
13	5010-09434-00	R4, R7	RESISTOR C.F. 22 Ω ± 5% 1/4W	2
14	5043-08996-00	C1, C2	CAPACITOR 0.1 μF CERAMIC +80% -20% 50V	2

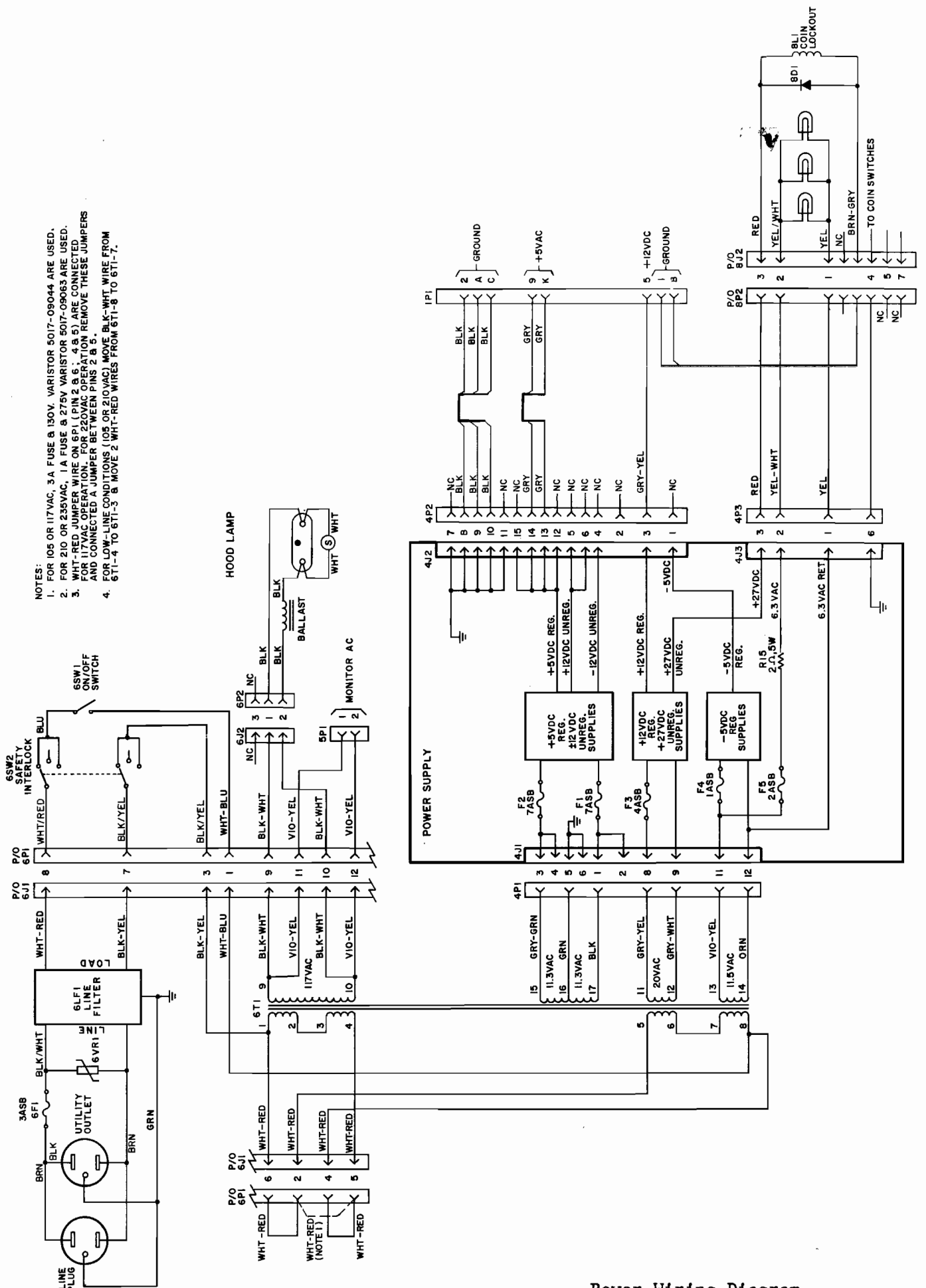
NOTES:  
 1. OBSERVE POLARITY OF CAPACITORS, DIODES AND POSITION OF TRANSISTORS.  
 2. REFERENCE DWG: SCHEMATIC 16-8810

NOTE:  
 W1 CONNECTED ONLY FOR COCKTAIL APPLICATIONS.



BILL OF MATERIALS			
ITEM	PART N <sup>o</sup>	DESCRIPTION	QTY.
1	11-580	POWER SUPPLY MTG. BD.	1
2	01-7001	POWER SUPPLY GND PLATE	1
3	01-7002	POWER SUPPLY SUPPORT BRKT.	2
4	D-8359	POWER SUPPLY BOARD	1
5	C 8529	VIDEO TRANSFORMER ASSY	1
6	B-6448-1	FUSE MOUNT ASS'Y.	1
7	5731-08633-00	LINE FUSE 3AMP 115V	1
8	5102-08895-00	LINE FILTER 5A	1
9	01-6948-	OUTLET MTG BRACKET	1
10	03-6048-6	CABLE CLAMP- 3/8	2
11	SEE NOTE #2	LINE CORD	1
12	4008-01018-04	MS. #6-32 x 1/4 P-RH	4
13	4108-01022-08	SMS # 8-32 x 1/2 P-RWH-A	13
14	5851-09184-00	3 WIRE SNAP-IN OUTLET	1
15	SEE NOTE #1	VARISTOR	1
16	4408-01117-00	NUT 8-32 HEX	4
17	20-9223-3	6 INCH BRAIDED GROUND WIRE	1
18	20-9256	1 INCH SLEEVING INSULATION	2
19	4703-00008-00	NO # 8 EXTERNAL LOCK WASHER	4
20	5825-06523-00	TERMINAL LUG	1
21	5852-09575-00	BLACK 18 AWG JUMPER WIRE-25'L	1
22	4008-01005-22	MS. 8-32 x 1 3/8 P-PH	4
23			

NOTES:  
 1. FOR 115V.A.C., 130V. VARISTOR # 5017-09044 IS USED.  
 FOR 230V.A.C., A 275V VARISTOR # 5017-09063 IS USED.  
 2. LINE CORD PART NUMBERS:  
 5850-06206-00 12 FT. EUROPE  
 5850-08728-00 U.S. DOM.  
 5850-08737-00 AUS.  
 5850-08743-00 U.S.L.A.  
 5850-09128-00 12 FT. FRANCE  
 5850-09131-00 AWG 18-12 JAPAN



- NOTES:
1. FOR 105 OR 117VAC, 3A FUSE & 130V. VARIATOR 5017-09044 ARE USED.
  2. FOR 210 OR 235VAC, 1A FUSE & 275V VARIATOR 5017-09063 ARE USED.
  3. WHT-RED JUMPER WIRE ON 6P1 (PIN 2 & 6; 4 & 5) ARE CONNECTED FOR 117VAC OPERATION. FOR 220VAC OPERATION REMOVE THESE JUMPERS AND CONNECT A JUMPER BETWEEN PINS 2 & 5.
  4. FOR LOW-LINE CONDITIONS (105 OR 210VAC) MOVE BLK-WHT WIRE FROM 6T1-4 TO 6T1-3 & MOVE 2 WHT-RED WIRES FROM 6T1-8 TO 6T1-7.

Power Wiring Diagram

