

JOOJST

DRAWING SET

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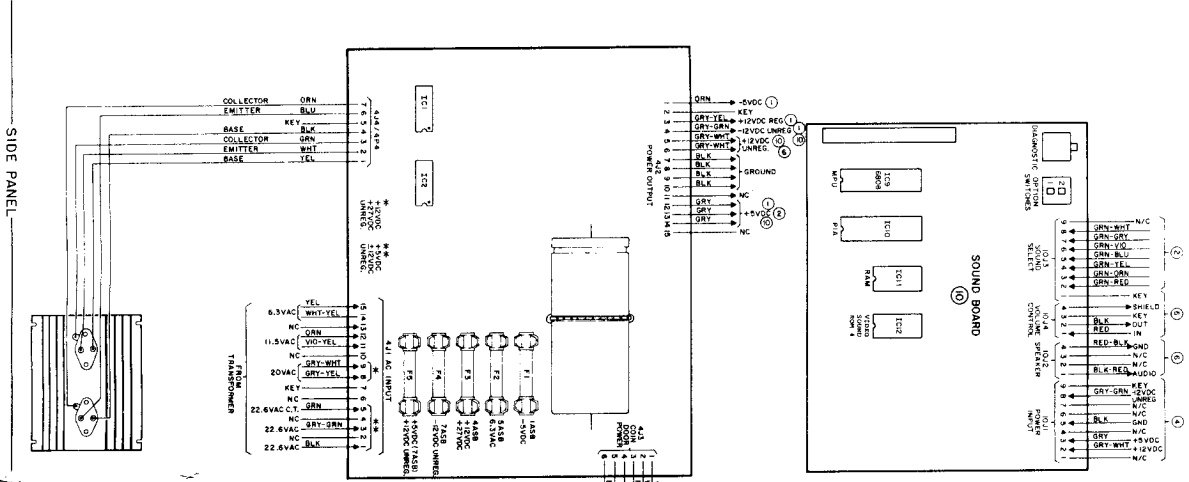
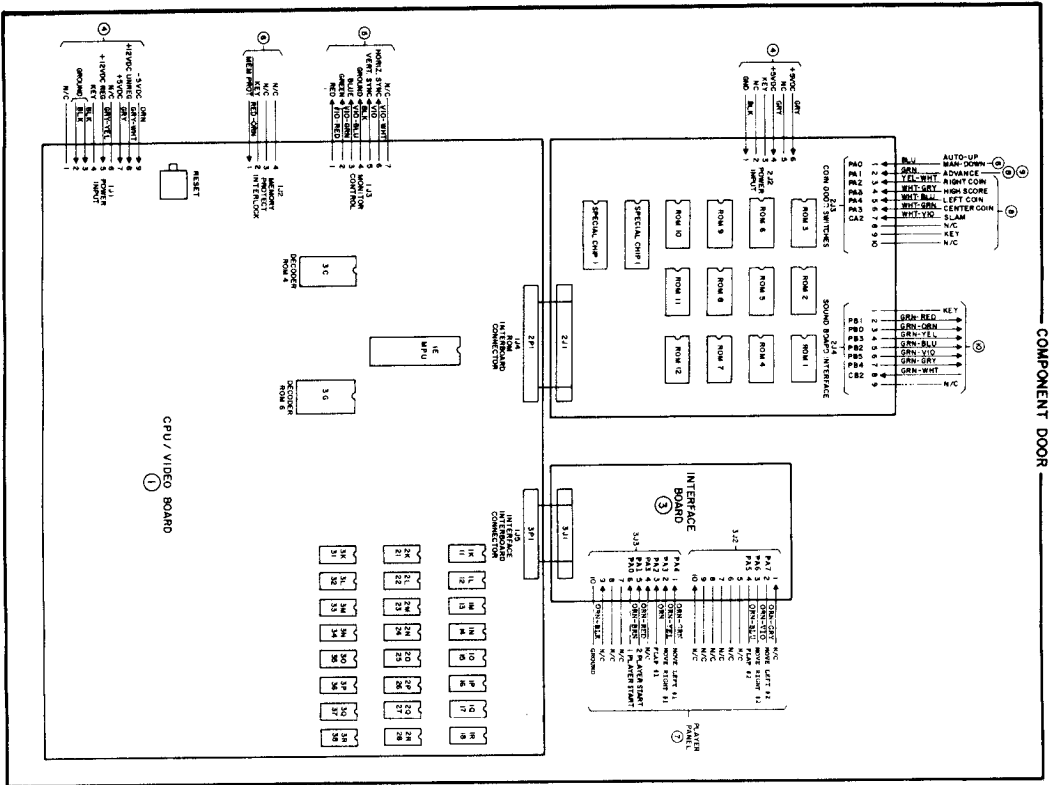
Williams® 
ELECTRONICS, INC.

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

CONTENTS

Interboard Wiring Diagram	1
CPU Board Assembly Drawing	2
CPU Board Logic Diagram (Sheet 1 of 2)	3
CPU Board Logic Diagram (Sheet 2 of 2)	4
Interface Board Assembly and Logic Diagram	5
ROM Board Assembly Drawing	6
ROM Board Logic Diagram	7
Power Supply Board Assembly Drawing	8
Power Supply Board Schematic Diagram	9
Power Wiring Diagram	10
Cabinet Wiring Diagram	11
D8224 Sound Board Assembly Drawing	12
D8224 Sound Board Schematic Drawing	13

INTERBOARD WIRING



- ① CPU/VIDEO BOARD
- ② ROW BOARD
- ③ INTERFACE BOARD
- ④ POWER SUPPLY
- ⑤ MONITOR
- ⑥ CABINET
- ⑦ PLAYER PANEL
- ⑧ COIN DOOR
- ⑨ CASH BOX
- ⑩ SOUND BOARD

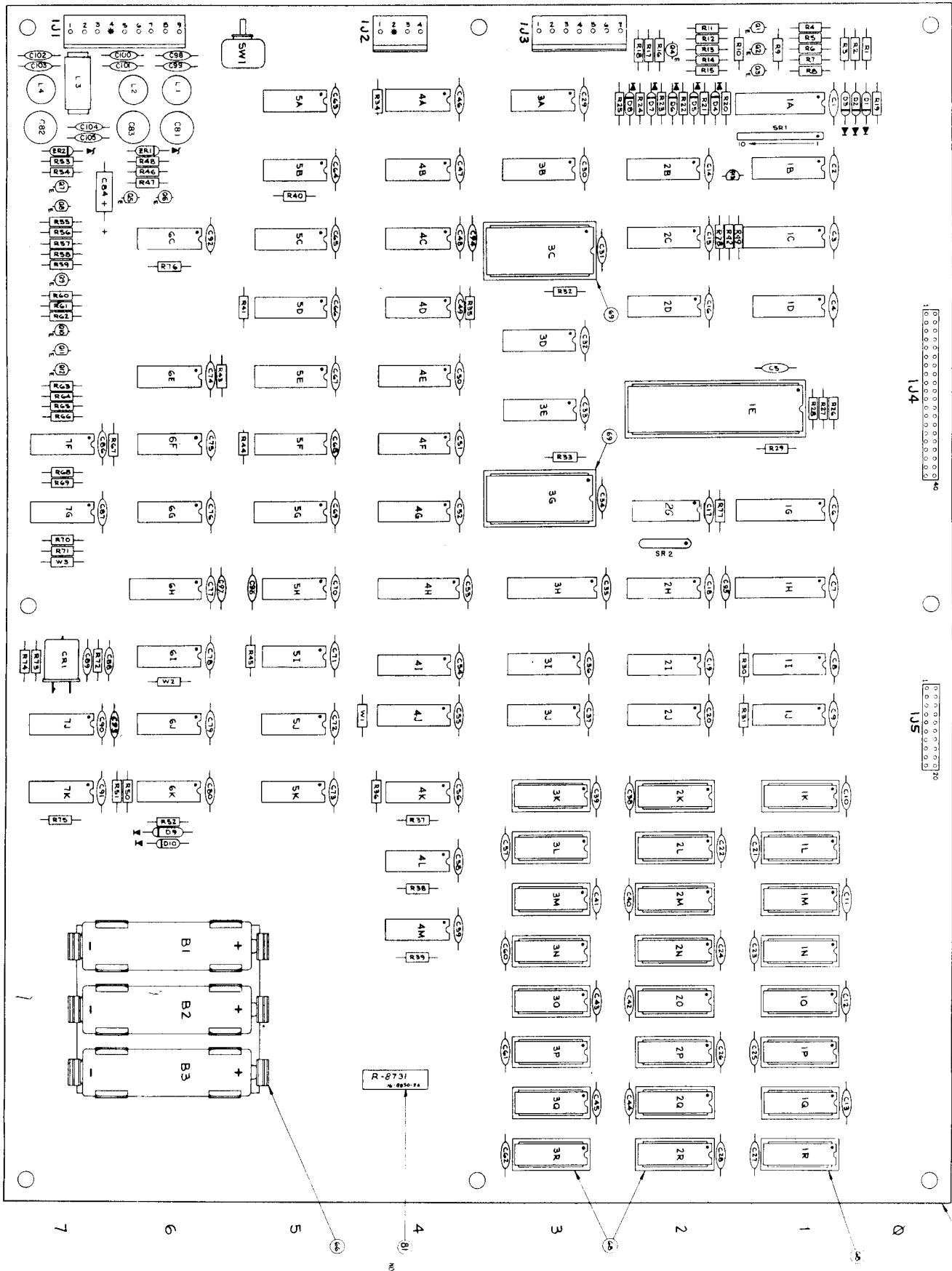
C-8808 Heat sink assembly

Part No. Description
 2N8057 Transistor, NPN
 5161-095425
 5161-095852
 5705-08884
 5705-08884
 5705-08884
 5705-08884
 4009-01003-10
 Socket, Pkg
 Thermal Paste
 Thermal Paste
 Thermal Paste
 Thermal Paste
 Thermal Paste
 Machine Screw 8-32x3/8"

A B C D E F G H I J K L M N O P Q R

104

105



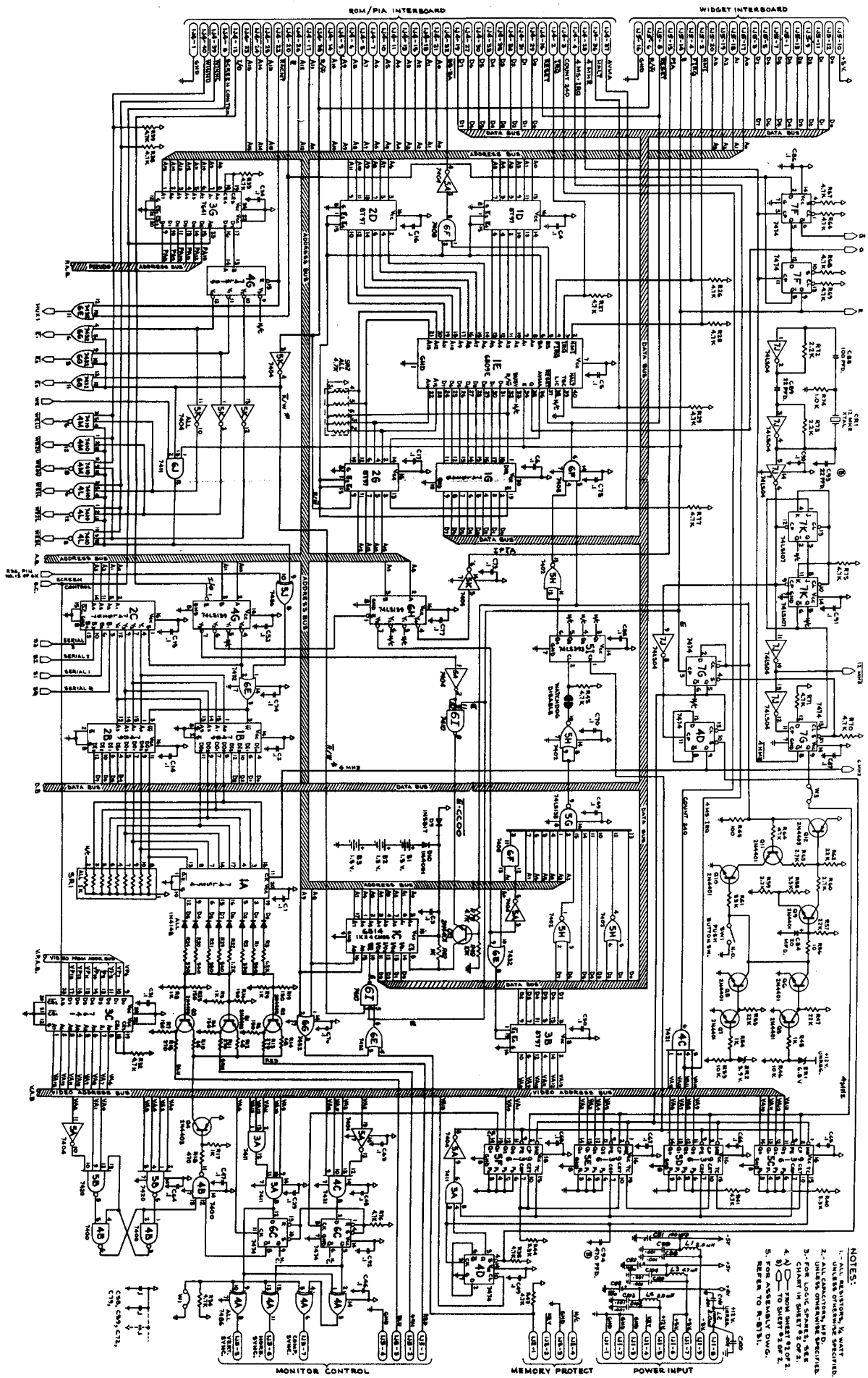
NOTE LABEL LOCATION IS PERMANENT

ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
74	5791-09497-00	1J3	7 PIN HEADER 09-65-1071	1
75	5791-09027-00	1J1	9 PIN HEADER 09-65-1091	1
76	5019-09669-00	SR1	RESISTOR, 1K OHM 10 PIN SIP	1
77	5010-09534-00	W1, W2, W3	RESISTOR, C.F. 0 OHM 1/4 WATT	3
78	5340-09689-00	1C	5114 1K X 4 CMOS STATIC RAM	1
	5340-09667-00		6514 1K X 4 CMOS STATIC RAM	0
79	5281-09483-00	1B, 2B	74LS189 16 X 4 RAM	0
	5280-09625-00		7489 16 X 4 RAM	0
	5282-09716-00		74S189 16 X 4 RAM	0
	5281-09715-00		74LS289 16 X 4 RAM	2
	5282-09717-00		74S289 16 X 4 RAM	0
80	5641-09371-00	SW1	PUSH BUTTON SW. SPST	0
	5641-09312-00		PUSH BUTTON SW. DPDT MOM.	1
81	16-8850-26	---	LABEL PCB ASSY I.D.	1
82				
83	5019-09786-00	SR2	SIP 4.7KΩ 5R 6 PIN 5% 125 W/R @ 70°C	1
84	5281-09856-00	1H, 3H, 4H	OCTAL LATCH 74LS373	3
85				
47	5010-09035-00	R64	RESISTOR, C.F. 47K OHM 5% 1/4 W.	1
48	5551-09822-00	L3	COIL, 4.74H, 3A	1
49	5010-09001-00	R2, R21, R24	RESISTOR, C.F. 330 OHM 5% 1/4 W.	3
50	5010-09039-00	R56	RESISTOR, C.F. 10 OHM 5% 1/4 W.	1
51	5043-09491-00	C89, C93	CAPACITOR, AXIAL 22 PFD. 1K V. ±10%	2
52	5043-09492-00	C88	CAPACITOR, AXIAL 100 PFD. 50 V. ±10%	1
53	5040-09545-00	C84	CAPACITOR, AXIAL 22 MFD. 10 V. ±20%	1
54	5043-09065-00	C94 THRU C97	CAPACITOR, AXIAL 470 PFD. 50 V. XTR ±20%	4
55	5043-08996-00	SEE NOTE #3	CAPACITOR, AXIAL .1 MFD. 50 V. ±20%	85
56	5040-09421-00	C81, C82, C83	CAPACITOR, RADIAL 100 MFD. 25V. ±30-10%	3
57	5075-09059-00	ZR2	1N5990A 3.9V. ZENER DIODE	1
58	5075-09018-00	ZR1	1N5996A 6.8V. ZENER DIODE	1
59	5070-08919-00	D1, D2, D3, D4, D5, D6, D7, D8	1N4148 DIODE, SILICON	8
60	5070-09266-00	D9	1N5817 DIODE, SILICON	1
61	5160-08938-00	Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q13	2N4401, TO-92 TRANSISTOR, NPN	8
62	5190-09016-00	Q1, Q2, Q3, Q4, Q12	2N4403, TO-92 TRANSISTOR, PNP	5
63	5520-09495-00	CR1	12 MHZ CRYSTAL	1
64	5043-09845-00	C98-C105	CAPACITOR, AXIAL 1000 PFD 50V ±20%	8
65	5880-09022-00	B1, B2, B3	BATTERY ALKALINE 1.5V. (AA)	3
66	5881-09021-00	---	BATTERY HOLDER *171	1
67	5700-09628-00	---	14-PIN IC SOCKET	0
68	5700-09006-00	---	16-PIN IC SOCKET	24
69	5700-09004-00	---	24-PIN IC SOCKET	2
70	5700-08985-00	---	40-PIN IC SOCKET	1
71	5791-09437-00	1J5	20 PIN RIBBON CABLE HEADER	1
72	5791-09349-00	1J4	40 PIN RIBBON CABLE HEADER	1
73	5791-09028-00	1J2	4 PIN HEADER 09-65-1041	1

NOTES:

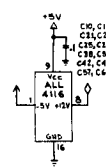
- 411G: 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 1R, 2K, 2L, 2M, 2N, 2O, 2P, 2Q, 2R, 3K, 3L, 3M, 3N, 3O, 3P, 3Q, 3R
- 4.7K Ω RESISTOR:
R26, R27, R28, R29, R32, R33, R35, R36, R37, R38, R39, R41, R43, R45, R50, R51, R52, R66, R67, R68, R69, R70, R71, R75, R34, R76, R77, R78
- .1 MFD. CAPACITORS:
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C86, C87, C90, C91, C92
- FOR SCHEMATIC REFER TO 16-8809

BILL OF MATERIAL				
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D NO.
1	5770-09656-00		BARE P.C. BOARD REV. 0	1
2	5280-09073-00	4B	7400 QUAD 2-INPUT NAND	1
3	5280-08948-00	5H	7402 QUAD 2-INPUT NOR	1
4	5281-09215-00	7J	74LS04 HEX. INVERTER	1
5	5280-09013-00	5A, 5K	7404 HEX. INVERTER	2
6	5280-08973-00	6F	7408 QUAD AND	1
7	5280-09011-00	4L, 4M, 6I	7410 TRIPLE 3-INPUT NAND	3
8	5280-09475-00	3A, 6J	7411 TRIPLE 3-INPUT AND	2
9	5280-09530-00	5B	7420 DUAL 4-INPUT NAND	1
10	5280-09476-00	4C	7421 DUAL 4-INPUT AND	1
11	5280-09477-00	6E, 6G	7432 QUAD 2-INPUT OR	2
12	5280-09478-00	4D, 4K, 4K, 6C, 7F, 7G	7474 DUAL-D TYPE FLIP-FLOP	6
13	5280-09479-00	4A, 5J	7486 QUAD 2-INPUT EX-OR	2
14	5281-09480-00	7K	74LS107 DUAL J-K FLIP-FLOP	1
15	5281-09532-00	5G	74LS133 13-INPUT NAND	1
16	5281-09246-00	4G, 6H	74LS139 DUAL 2 to 4 LINE DECODER	2
17	5280-09481-00	3D, 3E, 4E, 4F	74LS53 DUAL 4 to 1 DATA INVERT	4
18	5280-09668-00	1I, 1J, 2I, 2J, 3I, 3J, 4I, 4J	74166 8-BIT SHIFT REGISTER	8
19				
20	5281-09308-00	1G	74LS245 OCTAL BUSTRANSCEIVER	1
21	5281-09485-00	2C, 2H	74LS257 QUAD DATA MUX	2
22	5370-08989-00	1D, 2D, 2G, 3B	8T97 HEX. TS BUFFER	0
	5281-09385-00		74LS367 HEX BUS DRIVER	4
23	5281-09486-00	1A,	74LS374 OCTAL D-TYPE FLIP-FLOP	1
24	A-5342-09821	3C	UNIVERSAL VERT. DECODER ROM 4	1
25	A-5342-0969A	3G	UNIVERSAL HORIZ. DECODER ROM 4	1
26	5551-09848-00	L1, L2, L4	COIL, 204H, 1.5A	3
27	5281-09533-00	5I	74LS393 DUAL 4-BIT BIN. COUNTER	1
28	5340-09488-00	SEE NOTE #1	411G (450 ns ACCESS) 16K X 1 DYNAMIC RAM	24
29	5070-06258-00	D10	1N4001 DIODE	1
30	5280-09489-00	5C, 5D, 5E, 5F	9316 4-BIT BIN. COUNTER	4
31	5400-09490-00	1E	6809E MICROPROCESSOR	1
32	5010-09548-00	R10, R12, R14	RESISTOR, C.F. 68 OHM 2% 1/4 W.	3
33	5010-09036-00	R65	RESISTOR, C.F. 100 OHM 5% 1/4 W.	1
34	5010-09187-00	R4, R6, R7, R16, R19, R25	RESISTOR, C.F. 150 OHM 5% 1/4 W.	6
35	5010-09508-00	R11, R13, R15	RESISTOR, C.F. 270 OHM 2% 1/4 W.	3
36	5010-09416-00	R18	RESISTOR, C.F. 470 OHM 5% 1/4 W.	1
37	5010-08992-00	R1, R20, R23	RESISTOR, C.F. 560 OHM 5% 1/4 W.	3
38	5010-09358-00	R42, R50, R77, R48, R54, R74	RESISTOR, C.F. 1K OHM 5% 1/4 W.	8
39	5010-09314-00	R3, R22	RESISTOR, C.F. 1.2 K OHM 5% 1/4 W.	2
40	5010-08998-00	R59, R72, R73	RESISTOR, C.F. 2.2 K OHM 5% 1/4 W.	3
41	5010-08997-00	R60, R63	RESISTOR, C.F. 2.7 K OHM 5% 1/4 W.	2
42	5010-08983-00	R30, R31, R40, R44, R58	RESISTOR, C.F. 3.3 K OHM 5% 1/4 W.	5
43	5010-08991-00	SEE NOTE #2	RESISTOR, C.F. 4.7 K OHM 5% 1/4 W.	1
44	5010-09034-00	R49, R46, R53	RESISTOR, C.F. 10 K OHM 5% 1/4 W.	3
45	5010-08774-00	R47, R55, R57, R62	RESISTOR, C.F. 22 K OHM 5% 1/4 W.	4
46	5010-09113-00	R61	RESISTOR, C.F. 33 K OHM 5% 1/4 W.	1

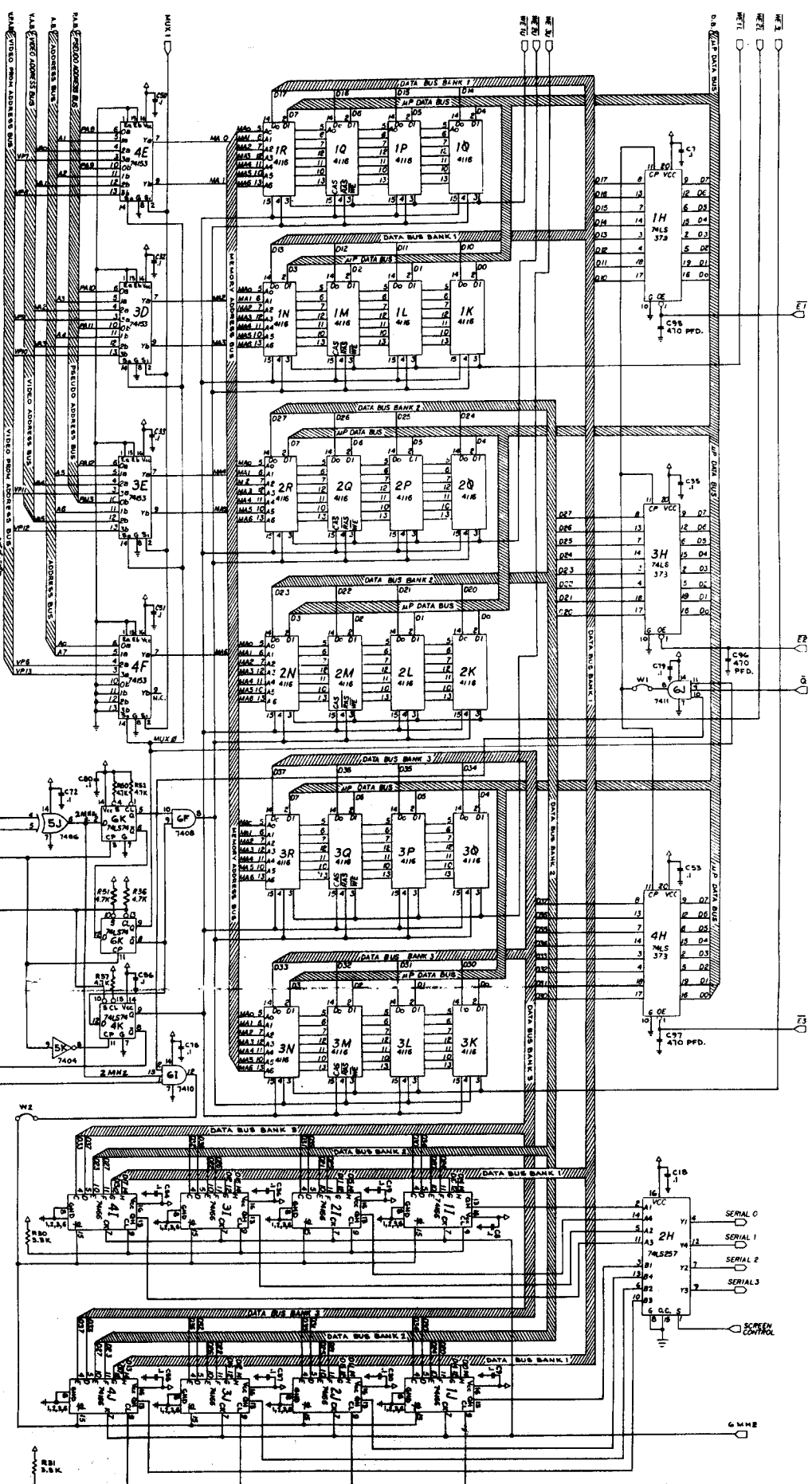


R-8751 CPU Board Logic Diagram
(Sheet 1 of 2)

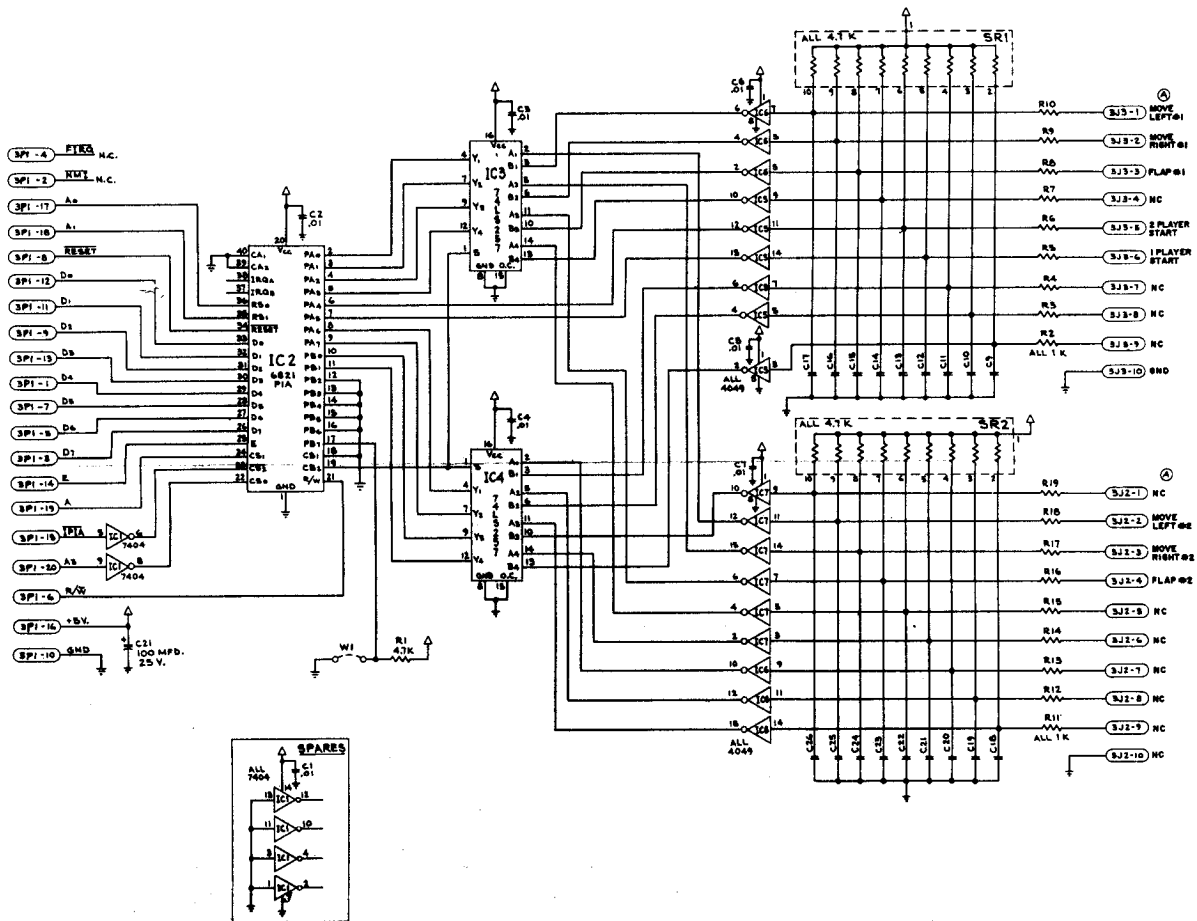
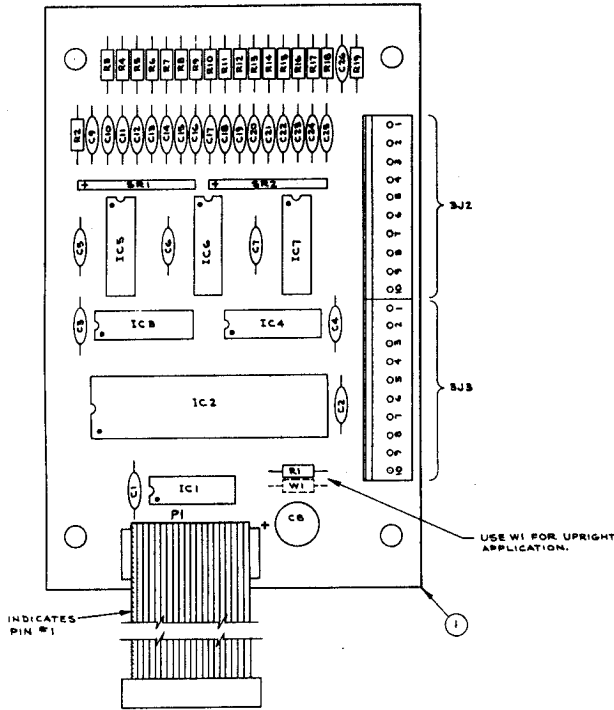
SPARE		
LOC.	LOGIC	QTY.
4B	7400	1
4K	74LS74	1
5I	74LS99B	1
5J	7486	2
6D	4011	2
6H	74LS199	1
6I	7410	2



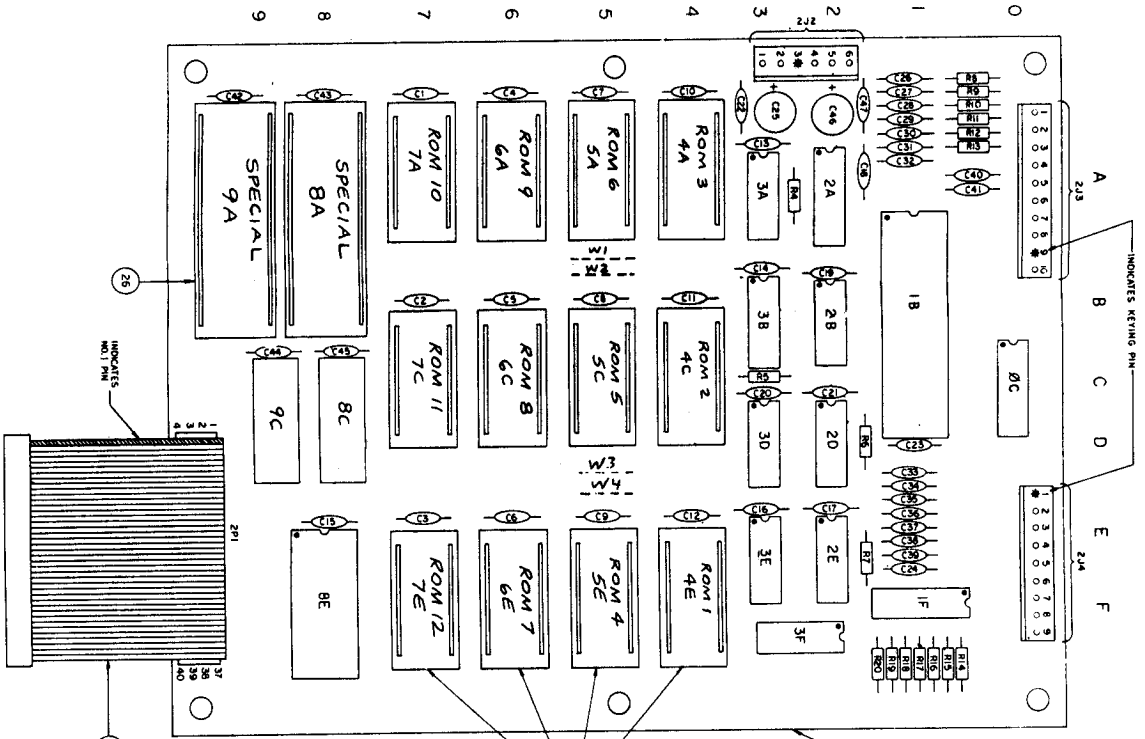
R-8731 CPU Board Logic Diagram (Sheet 2 of 2)



BILL OF MATERIAL				
ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	NO. REQ'D.
1	5772-09480-00		BARE P.C. BOARD	1
2	5430-08972-00	IC2	6871 PIA	1
3	5310-08918-00	IC8, IC6, IC7	4049 CMOS HEX INVERTOR	3
4	5280-09018-00	IC1	7404 HEX INVERTER	1
5	4281-09486-00	IC3, IC4	74LS257 QUAD DATA MULTIPLEXER	2
6	5019-09163-00	SR1, SR2	4.7K OHM 5 RES. 10 PIN SIP	2
7	5010-09386-00	R2 THRU R19	RESISTOR, C.F. 1K OHM 5% 1/4 WATT	18
8	5010-08991-00	R1	RESISTOR, C.F. 4.7K OHM 5% 1/4 WATT	1
9	5010-09384-00	W1	RESISTOR, C.F. 0 OHM 1/4 WATT	1
10	5043-09068-00	C9 THRU C26	CAPACITOR, CERAMIC DISC 470 PFD. 50 V. XTR 220%	18
11	5040-09421-00	CB	CAPACITOR, ELECT. RADIAL, 100 MFD. 25 VOLT. +50-10%	1
12	3048-08980-00	C1 THRU C7	CAPACITOR, CERAMIC DISC, 0.1 MFD. 50 V. +50-20%	7
13	3795-09540-00	P1	20 PIN RIBBON CABLE ASSY	1
14	5781-09444-00	SJ2, SJ3	10 PIN HEADER 09-65-1101	2



C-8783 Interface Board Assembly and Logic Diagram

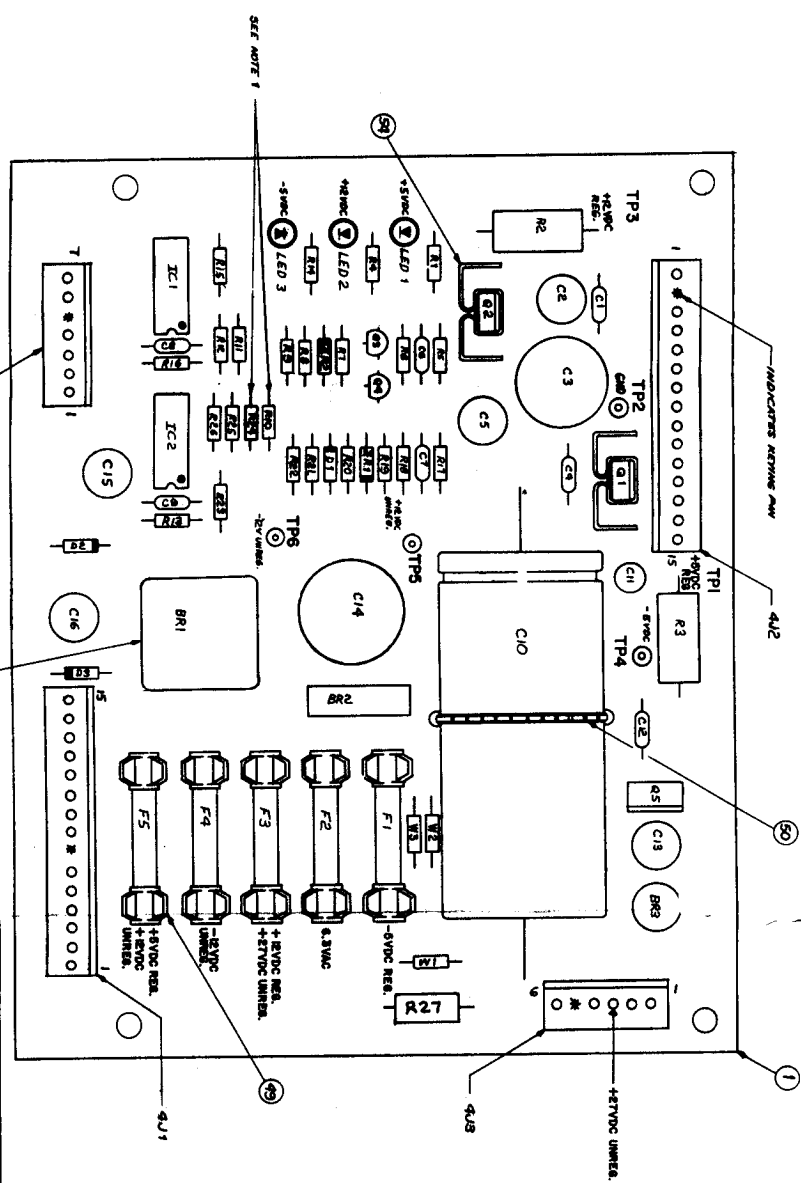


TOUJST

CHIP CODE	ROM #	PART #
4E	ROM 1	A-53443-09961A
4C	ROM 2	A-53443-09962A
4A	ROM 3	A-53443-09963A
5E	ROM 4	A-53443-09965A
5C	ROM 5	A-53443-09966A
5A	ROM 6	A-53443-09967A
6E	ROM 7	A-53443-09968A
6A	ROM 8	A-53443-09969A
7A	ROM 9	A-53443-09970A
7C	ROM 10	A-53443-09971A
7E	ROM 11	A-53443-09972A
7B	ROM 12	A-53443-09973A
		W2, W4

BILL OF MATERIALS

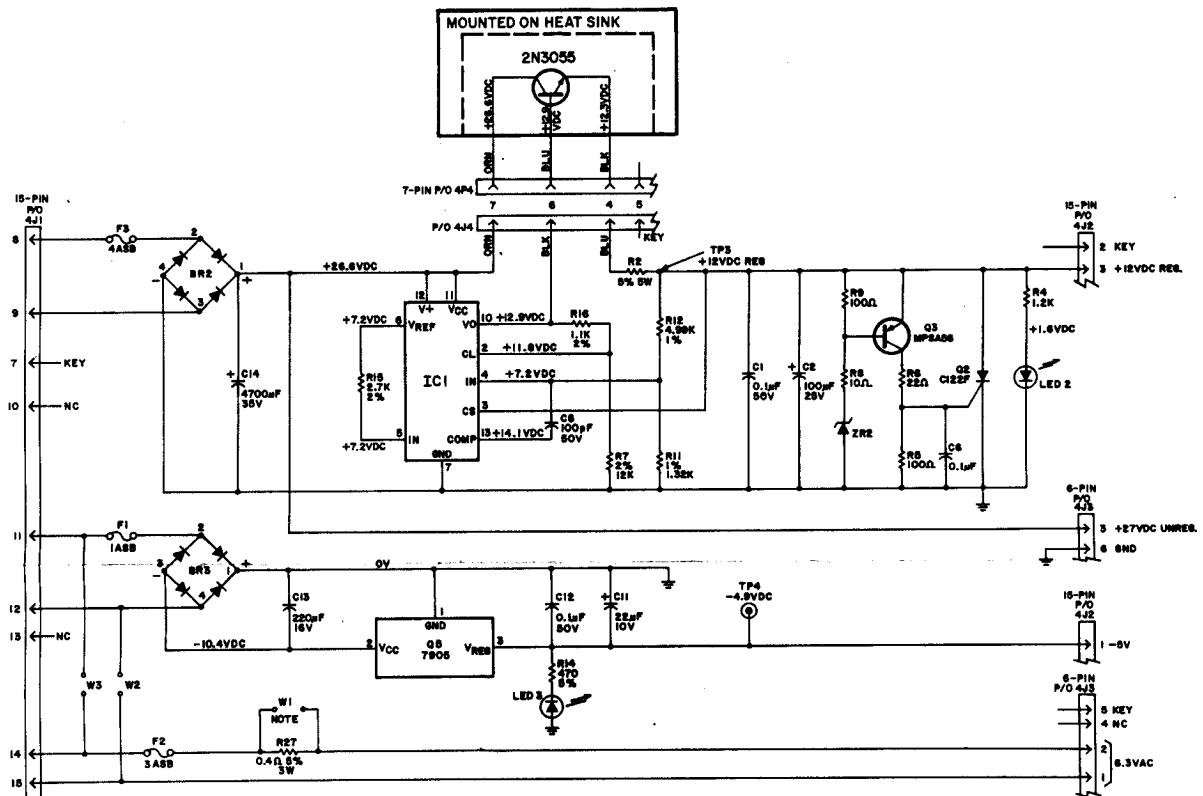
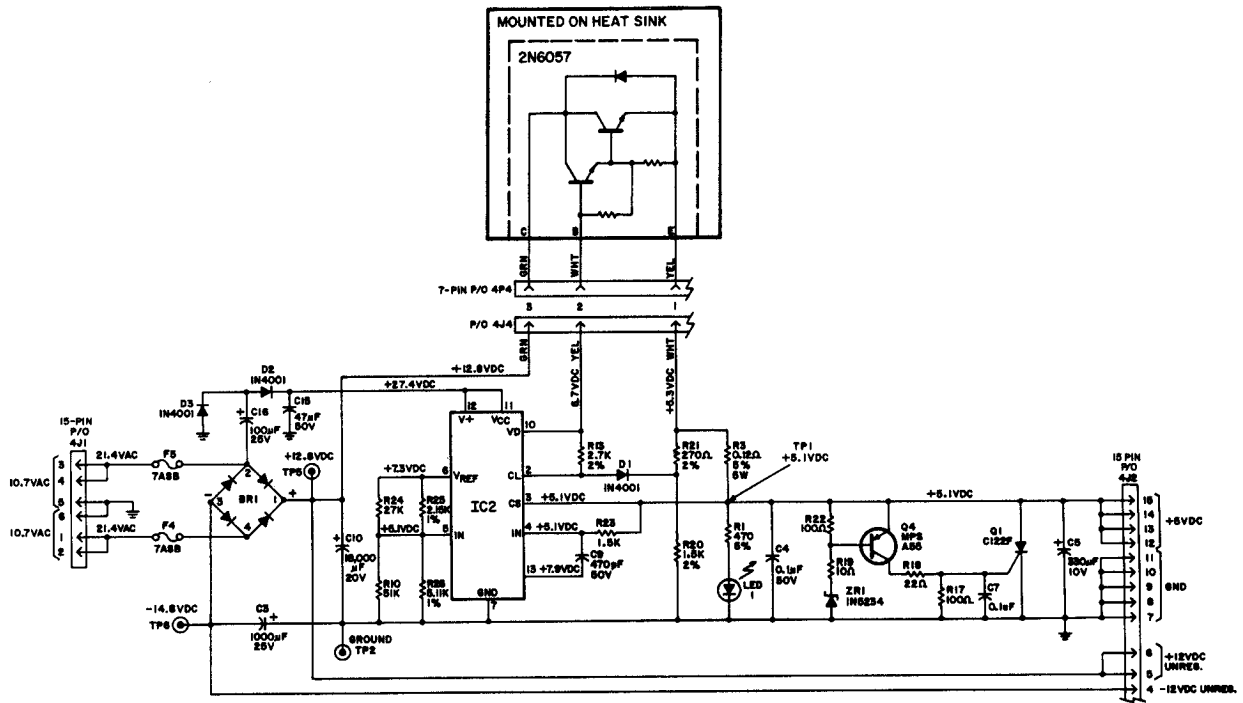
ITEM NO.	PART NO.	PART DESCRIPTION	QTY
1	5230-00	BASE PCB BOARD	1
2	5230-00	44TRC0 TO 7SEG LED DISPLAY	1
3	09407-00	IF	1
4	09476-00	20, 3A	1
5	09476-00	W7A	1
6	09476-00	W8A	1
7	09476-00	W9A	1
8	09476-00	W10A	1
9	09476-00	W11A	1
10	09476-00	W12A	1
11	09476-00	W13A	1
12	09476-00	W14A	1
13	09476-00	W15A	1
14	09476-00	W16A	1
15	09476-00	W17A	1
16	09476-00	W18A	1
17	09476-00	W19A	1
18	09476-00	W20A	1
19	09476-00	W21A	1
20	09476-00	W22A	1
21	09476-00	W23A	1
22	09476-00	W24A	1
23	09476-00	W25A	1
24	09476-00	W26A	1
25	09476-00	W27A	1
26	09476-00	W28A	1
27	09476-00	W29A	1
28	09476-00	W30A	1
29	09476-00	W31A	1
30	09476-00	W32A	1
31	09476-00	W33A	1
32	09476-00	W34A	1



NOTES:
 1. REMOVE R24 IF +5VDC IS GREATER THAN 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 16-8011.

ITEM NO.	QTY	PART NO.	DESCRIPTION	UNIT
55	1	5000-	RESISTOR C.T.	1
56	1	5012A-00	RESISTOR C.T.	1
57	1	5012B-00	RESISTOR C.T.	1
58	1	5012C-00	RESISTOR C.T.	1
59	1	5012D-00	RESISTOR C.T.	1
60	1	5012E-00	RESISTOR C.T.	1
61	1	5012F-00	RESISTOR C.T.	1
62	1	5012G-00	RESISTOR C.T.	1
63	1	5012H-00	RESISTOR C.T.	1
64	1	5012I-00	RESISTOR C.T.	1
65	1	5012J-00	RESISTOR C.T.	1
66	1	5012K-00	RESISTOR C.T.	1
67	1	5012L-00	RESISTOR C.T.	1
68	1	5012M-00	RESISTOR C.T.	1
69	1	5012N-00	RESISTOR C.T.	1
70	1	5012O-00	RESISTOR C.T.	1
71	1	5012P-00	RESISTOR C.T.	1
72	1	5012Q-00	RESISTOR C.T.	1
73	1	5012R-00	RESISTOR C.T.	1
74	1	5012S-00	RESISTOR C.T.	1
75	1	5012T-00	RESISTOR C.T.	1
76	1	5012U-00	RESISTOR C.T.	1
77	1	5012V-00	RESISTOR C.T.	1
78	1	5012W-00	RESISTOR C.T.	1
79	1	5012X-00	RESISTOR C.T.	1
80	1	5012Y-00	RESISTOR C.T.	1
81	1	5012Z-00	RESISTOR C.T.	1

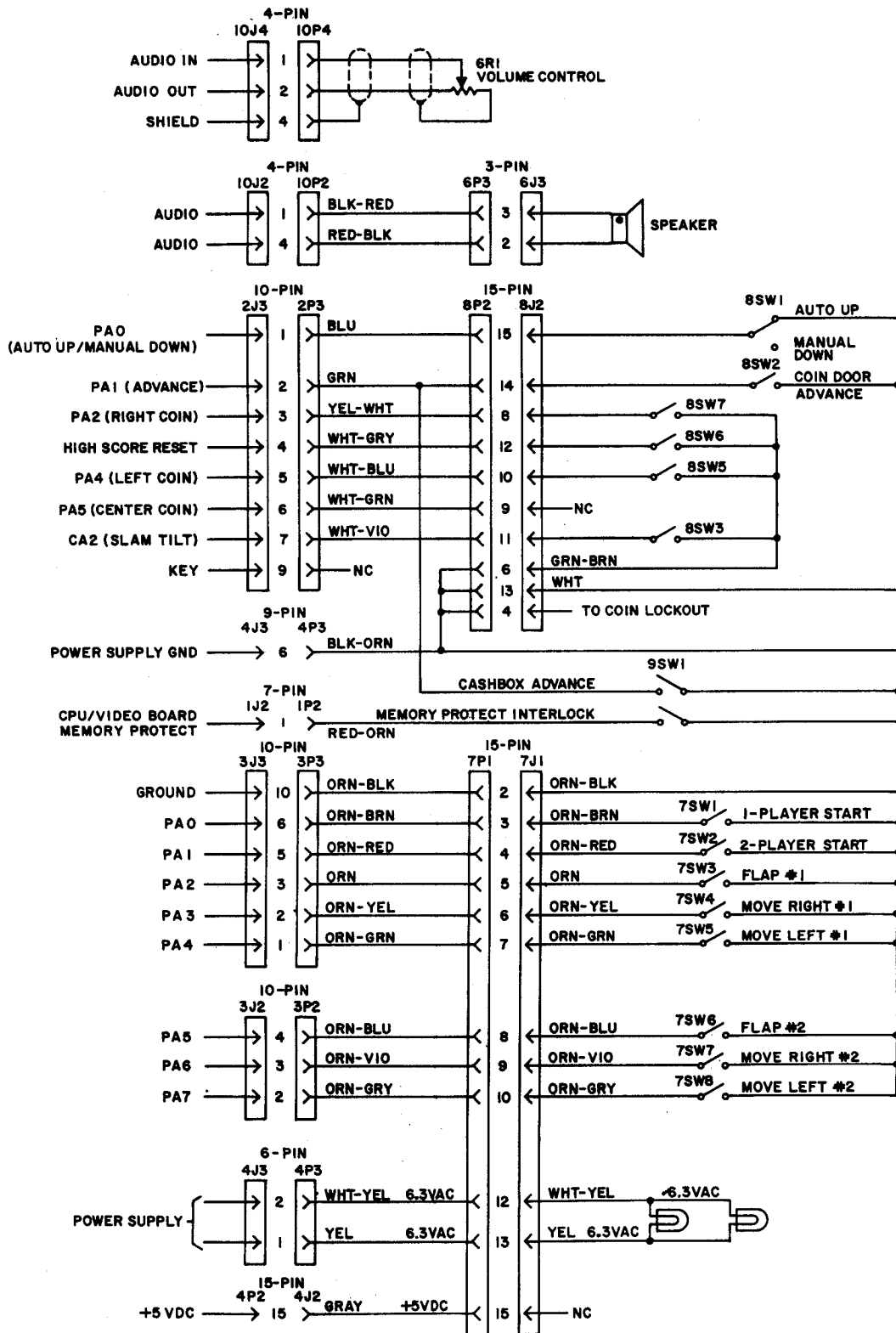
ITEM NO.	QTY	PART NO.	DESCRIPTION	UNIT
1	1	5000-	RESISTOR C.T.	1
2	1	5012A-00	RESISTOR C.T.	1
3	1	5012B-00	RESISTOR C.T.	1
4	1	5012C-00	RESISTOR C.T.	1
5	1	5012D-00	RESISTOR C.T.	1
6	1	5012E-00	RESISTOR C.T.	1
7	1	5012F-00	RESISTOR C.T.	1
8	1	5012G-00	RESISTOR C.T.	1
9	1	5012H-00	RESISTOR C.T.	1
10	1	5012I-00	RESISTOR C.T.	1
11	1	5012J-00	RESISTOR C.T.	1
12	1	5012K-00	RESISTOR C.T.	1
13	1	5012L-00	RESISTOR C.T.	1
14	1	5012M-00	RESISTOR C.T.	1
15	1	5012N-00	RESISTOR C.T.	1
16	1	5012O-00	RESISTOR C.T.	1
17	1	5012P-00	RESISTOR C.T.	1
18	1	5012Q-00	RESISTOR C.T.	1
19	1	5012R-00	RESISTOR C.T.	1
20	1	5012S-00	RESISTOR C.T.	1
21	1	5012T-00	RESISTOR C.T.	1
22	1	5012U-00	RESISTOR C.T.	1
23	1	5012V-00	RESISTOR C.T.	1
24	1	5012W-00	RESISTOR C.T.	1
25	1	5012X-00	RESISTOR C.T.	1
26	1	5012Y-00	RESISTOR C.T.	1
27	1	5012Z-00	RESISTOR C.T.	1
28	1	5013A-00	RESISTOR C.T.	1
29	1	5013B-00	RESISTOR C.T.	1
30	1	5013C-00	RESISTOR C.T.	1
31	1	5013D-00	RESISTOR C.T.	1
32	1	5013E-00	RESISTOR C.T.	1
33	1	5013F-00	RESISTOR C.T.	1
34	1	5013G-00	RESISTOR C.T.	1
35	1	5013H-00	RESISTOR C.T.	1
36	1	5013I-00	RESISTOR C.T.	1
37	1	5013J-00	RESISTOR C.T.	1
38	1	5013K-00	RESISTOR C.T.	1
39	1	5013L-00	RESISTOR C.T.	1
40	1	5013M-00	RESISTOR C.T.	1
41	1	5013N-00	RESISTOR C.T.	1
42	1	5013O-00	RESISTOR C.T.	1
43	1	5013P-00	RESISTOR C.T.	1
44	1	5013Q-00	RESISTOR C.T.	1
45	1	5013R-00	RESISTOR C.T.	1
46	1	5013S-00	RESISTOR C.T.	1
47	1	5013T-00	RESISTOR C.T.	1
48	1	5013U-00	RESISTOR C.T.	1
49	1	5013V-00	RESISTOR C.T.	1
50	1	5013W-00	RESISTOR C.T.	1
51	1	5013X-00	RESISTOR C.T.	1
52	1	5013Y-00	RESISTOR C.T.	1
53	1	5013Z-00	RESISTOR C.T.	1
54	1	5014A-00	RESISTOR C.T.	1
55	1	5014B-00	RESISTOR C.T.	1
56	1	5014C-00	RESISTOR C.T.	1
57	1	5014D-00	RESISTOR C.T.	1
58	1	5014E-00	RESISTOR C.T.	1
59	1	5014F-00	RESISTOR C.T.	1
60	1	5014G-00	RESISTOR C.T.	1
61	1	5014H-00	RESISTOR C.T.	1
62	1	5014I-00	RESISTOR C.T.	1
63	1	5014J-00	RESISTOR C.T.	1
64	1	5014K-00	RESISTOR C.T.	1
65	1	5014L-00	RESISTOR C.T.	1
66	1	5014M-00	RESISTOR C.T.	1
67	1	5014N-00	RESISTOR C.T.	1
68	1	5014O-00	RESISTOR C.T.	1
69	1	5014P-00	RESISTOR C.T.	1
70	1	5014Q-00	RESISTOR C.T.	1
71	1	5014R-00	RESISTOR C.T.	1
72	1	5014S-00	RESISTOR C.T.	1
73	1	5014T-00	RESISTOR C.T.	1
74	1	5014U-00	RESISTOR C.T.	1
75	1	5014V-00	RESISTOR C.T.	1
76	1	5014W-00	RESISTOR C.T.	1
77	1	5014X-00	RESISTOR C.T.	1
78	1	5014Y-00	RESISTOR C.T.	1
79	1	5014Z-00	RESISTOR C.T.	1
80	1	5015A-00	RESISTOR C.T.	1
81	1	5015B-00	RESISTOR C.T.	1
82	1	5015C-00	RESISTOR C.T.	1
83	1	5015D-00	RESISTOR C.T.	1
84	1	5015E-00	RESISTOR C.T.	1
85	1	5015F-00	RESISTOR C.T.	1
86	1	5015G-00	RESISTOR C.T.	1
87	1	5015H-00	RESISTOR C.T.	1
88	1	5015I-00	RESISTOR C.T.	1
89	1	5015J-00	RESISTOR C.T.	1
90	1	5015K-00	RESISTOR C.T.	1
91	1	5015L-00	RESISTOR C.T.	1
92	1	5015M-00	RESISTOR C.T.	1
93	1	5015N-00	RESISTOR C.T.	1
94	1	5015O-00	RESISTOR C.T.	1
95	1	5015P-00	RESISTOR C.T.	1
96	1	5015Q-00	RESISTOR C.T.	1
97	1	5015R-00	RESISTOR C.T.	1
98	1	5015S-00	RESISTOR C.T.	1
99	1	5015T-00	RESISTOR C.T.	1
100	1	5015U-00	RESISTOR C.T.	1

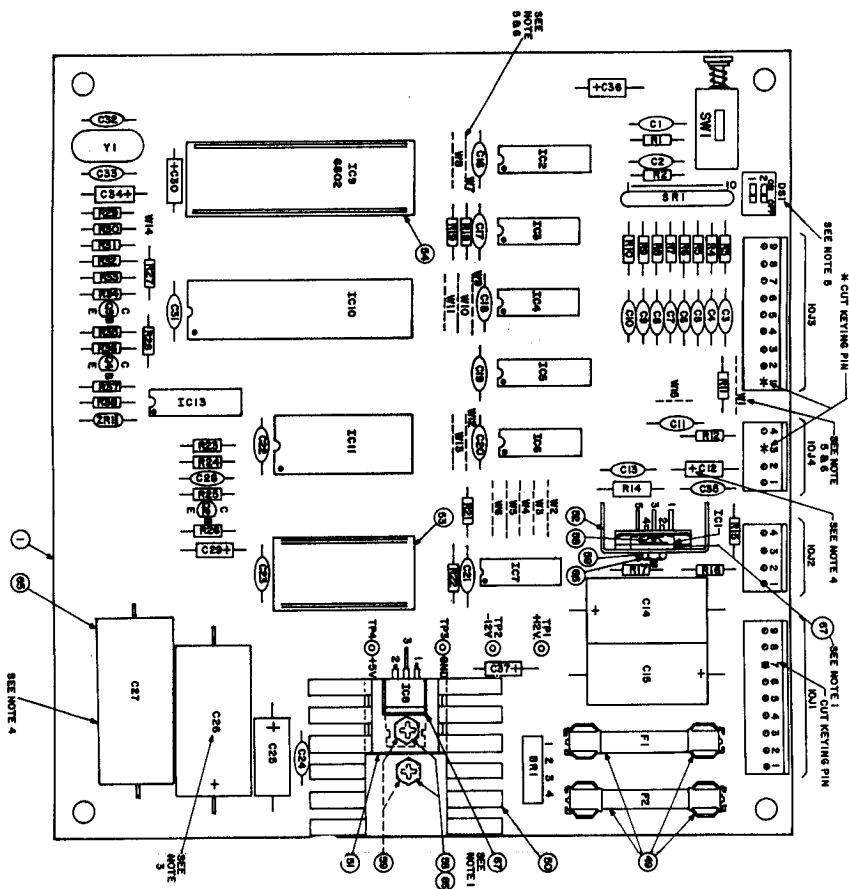


NOTE: JUMPERS W1, W2 & W3 ARE ALL N.C. IN JOUST-UPRIGHT GAMES.
 THESE GAMES USE POWER TRANSFORMER 60S-C-0955 WITH
 A 12.5VCT SECONDARY, ALLOWING 6.5V FOR GENERAL ILLUMINATION.

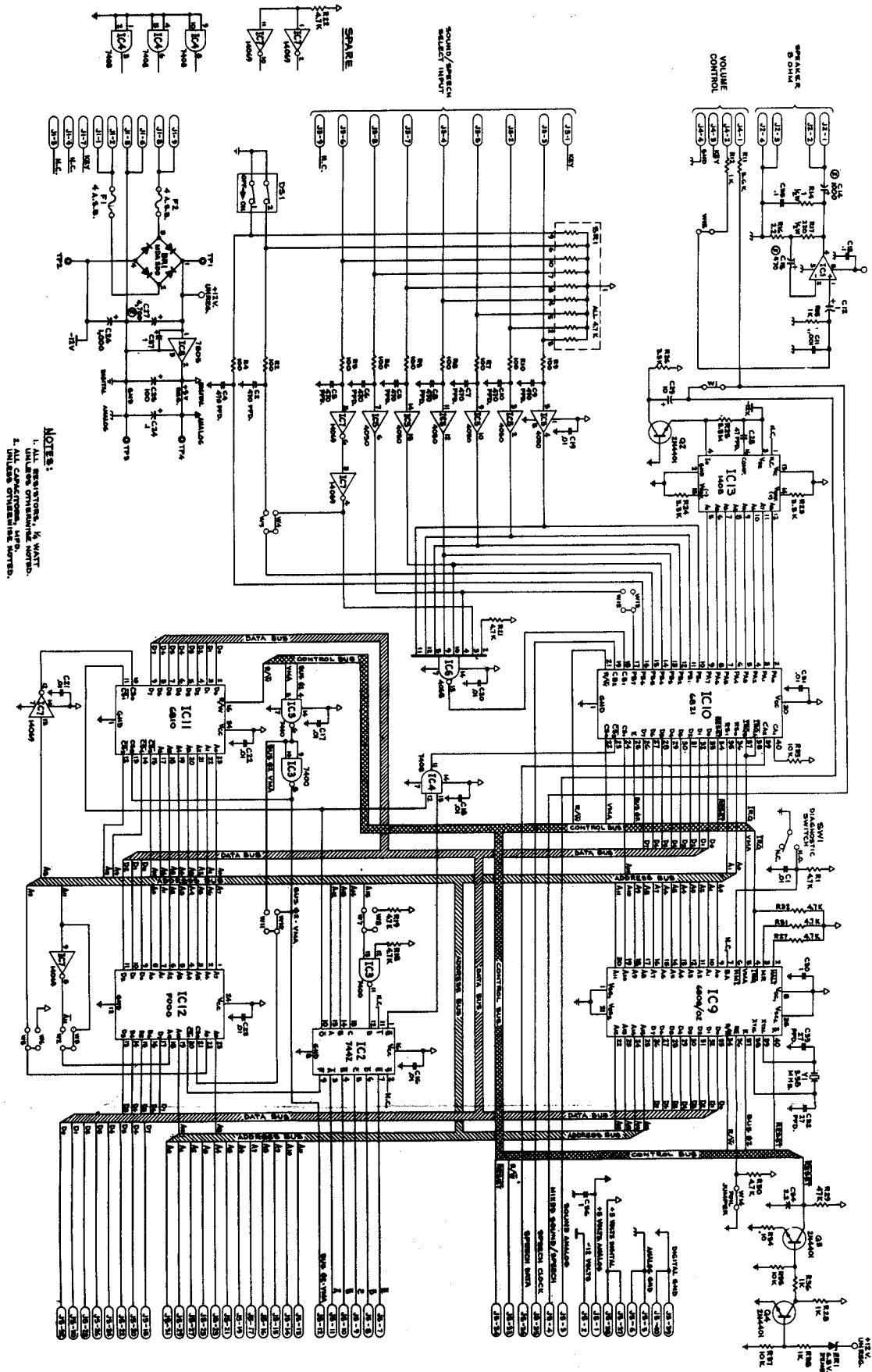
D-8784 Power Supply Board Schematic Diagram

CABINET WIRING





ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
1	012-01146-4	IC1	RAE P.C. BOARD KEY F	1
2	5370-09156-00	IC2	TDK 2002 V AUDIO AMP/FILTER	1
3	5280-09012-00	IC3	7442 DEC-DEC RECORDER	1
4	5280-08013-00	IC4	7400 QUAD 2 INPUT NAND	1
5	5310-08113-00	IC5	7408 BUFFER 1 IN-2 AND GATE	1
6	5310-09154-00	IC6	4068 8 INPUT NAND GATE	1
7	5310-08971-00	IC7	4069 HEX INVERTER	1
8	5250-09157-00	IC8	7405 5 VOLT REG. W/10 220 OHM	1
9	5340-09003-00	IC9	6810 P.A.M. 1	1
10	5340-09003-00	IC10	6810 P.A.M. 2	1
11	5371-09122-00	IC11	1408 D/A CONVERTER	1
12	5371-09122-00	IC12	2M4001 NPN TRANSISTOR	1
13	5100-09018-00	IC13	1N9564 6.8V ZENER DIODE	1
14	5100-09332-00	BR1	MOA 500/2003	1
15	5320-09020-00	Y1	3.50 MHZ CRYSTAL	1
16	5010-08991-00	R1, R16, R19, R21, R22, R27, R30, R31, R32	RESISTOR, FC, 4.7K OHM, 5% 1/4 WATT	9
17	5010-09136-00	R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R17, R18	RESISTOR, FC, 100 OHM, 5% 1/4 WATT	1
18	5010-09181-00	R16	RESISTOR, FC, 1 OHM, 10% 1/2 WATT	1
19	5010-09181-00	R15	RESISTOR, FC, 1 OHM, 10% 1/2 WATT	1
20	5010-09361-00	R17	RESISTOR, FC, 220 OHM, 5% 1/2 WATT	1
21	5010-08983-00	R23, R24, R25	RESISTOR, FC, 5.1K OHM, 5% 1/4 WATT	3
22	5010-09179-00	R26	RESISTOR, FC, 5.1K OHM, 5% 1/4 WATT	1
23	5010-09033-00	R27	RESISTOR, FC, 47K OHM, 5% 1/4 WATT	1
24	5010-09033-00	R28	RESISTOR, FC, 47K OHM, 5% 1/4 WATT	1
25	5010-09033-00	R29	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
26	5010-09033-00	R30	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
27	5010-09179-00	R31	RESISTOR, FC, 5.1K OHM, 5% 1/4 WATT	1
28	5010-09033-00	R32	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
29	5010-09033-00	R33	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
30	5010-09033-00	R34	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
31	5010-09033-00	R35	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
32	5010-09033-00	R36	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
33	5010-09033-00	R37	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
34	5010-09033-00	R38	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
35	5010-09033-00	R39	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
36	5010-09033-00	R40	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
37	5010-09033-00	R41	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
38	5010-09033-00	R42	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
39	5010-09033-00	R43	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
40	5010-09033-00	R44	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
41	5010-09033-00	R45	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
42	5010-09033-00	R46	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
43	5010-09033-00	R47	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
44	5010-09033-00	R48	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
45	5010-09033-00	R49	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
46	5010-09033-00	R50	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
47	5010-09033-00	R51	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
48	5010-09033-00	R52	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
49	5010-09033-00	R53	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
50	5010-09033-00	R54	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
51	5010-09033-00	R55	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
52	5010-09033-00	R56	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
53	5010-09033-00	R57	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
54	5010-09033-00	R58	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
55	5010-09033-00	R59	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
56	5010-09033-00	R60	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
57	5010-09033-00	R61	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
58	5010-09033-00	R62	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
59	5010-09033-00	R63	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
60	5010-09033-00	R64	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
61	5010-09033-00	R65	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
62	5010-09033-00	R66	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
63	5010-09033-00	R67	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
64	5010-09033-00	R68	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
65	5010-09033-00	R69	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
66	5010-09033-00	R70	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
67	5010-09033-00	R71	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
68	5010-09033-00	R72	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
69	5010-09033-00	R73	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
70	5010-09033-00	R74	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
71	5010-09033-00	R75	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
72	5010-09033-00	R76	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
73	5010-09033-00	R77	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
74	5010-09033-00	R78	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
75	5010-09033-00	R79	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
76	5010-09033-00	R80	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
77	5010-09033-00	R81	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
78	5010-09033-00	R82	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
79	5010-09033-00	R83	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
80	5010-09033-00	R84	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
81	5010-09033-00	R85	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
82	5010-09033-00	R86	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
83	5010-09033-00	R87	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
84	5010-09033-00	R88	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
85	5010-09033-00	R89	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
86	5010-09033-00	R90	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
87	5010-09033-00	R91	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
88	5010-09033-00	R92	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
89	5010-09033-00	R93	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
90	5010-09033-00	R94	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
91	5010-09033-00	R95	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
92	5010-09033-00	R96	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
93	5010-09033-00	R97	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
94	5010-09033-00	R98	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
95	5010-09033-00	R99	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
96	5010-09033-00	R100	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
97	5010-09033-00	R101	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
98	5010-09033-00	R102	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
99	5010-09033-00	R103	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
100	5010-09033-00	R104	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
101	5010-09033-00	R105	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
102	5010-09033-00	R106	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
103	5010-09033-00	R107	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
104	5010-09033-00	R108	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
105	5010-09033-00	R109	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
106	5010-09033-00	R110	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
107	5010-09033-00	R111	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
108	5010-09033-00	R112	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
109	5010-09033-00	R113	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
110	5010-09033-00	R114	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
111	5010-09033-00	R115	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
112	5010-09033-00	R116	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
113	5010-09033-00	R117	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
114	5010-09033-00	R118	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
115	5010-09033-00	R119	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
116	5010-09033-00	R120	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
117	5010-09033-00	R121	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
118	5010-09033-00	R122	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
119	5010-09033-00	R123	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
120	5010-09033-00	R124	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
121	5010-09033-00	R125	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
122	5010-09033-00	R126	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
123	5010-09033-00	R127	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
124	5010-09033-00	R128	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
125	5010-09033-00	R129	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
126	5010-09033-00	R130	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
127	5010-09033-00	R131	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
128	5010-09033-00	R132	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
129	5010-09033-00	R133	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
130	5010-09033-00	R134	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
131	5010-09033-00	R135	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
132	5010-09033-00	R136	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
133	5010-09033-00	R137	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
134	5010-09033-00	R138	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
135	5010-09033-00	R139	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
136	5010-09033-00	R140	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
137	5010-09033-00	R141	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
138	5010-09033-00	R142	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
139	5010-09033-00	R143	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
140	5010-09033-00	R144	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
141	5010-09033-00	R145	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
142	5010-09033-00	R146	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
143	5010-09033-00	R147	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
144	5010-09033-00	R148	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
145	5010-09033-00	R149	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
146	5010-09033-00	R150	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
147	5010-09033-00	R151	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
148	5010-09033-00	R152	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
149	5010-09033-00	R153	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
150	5010-09033-00	R154	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
151	5010-09033-00	R155	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
152	5010-09033-00	R156	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
153	5010-09033-00	R157	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
154	5010-09033-00	R158	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
155	5010-09033-00	R159	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
156	5010-09033-00	R160	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
157	5010-09033-00	R161	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
158	5010-09033-00	R162	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
159				



NOTES:
 1. ALL RESISTORS, $\frac{1}{2}$ WATT.
 2. UNLESS OTHERWISE NOTED.
 3. UNLESS OTHERWISE NOTED.