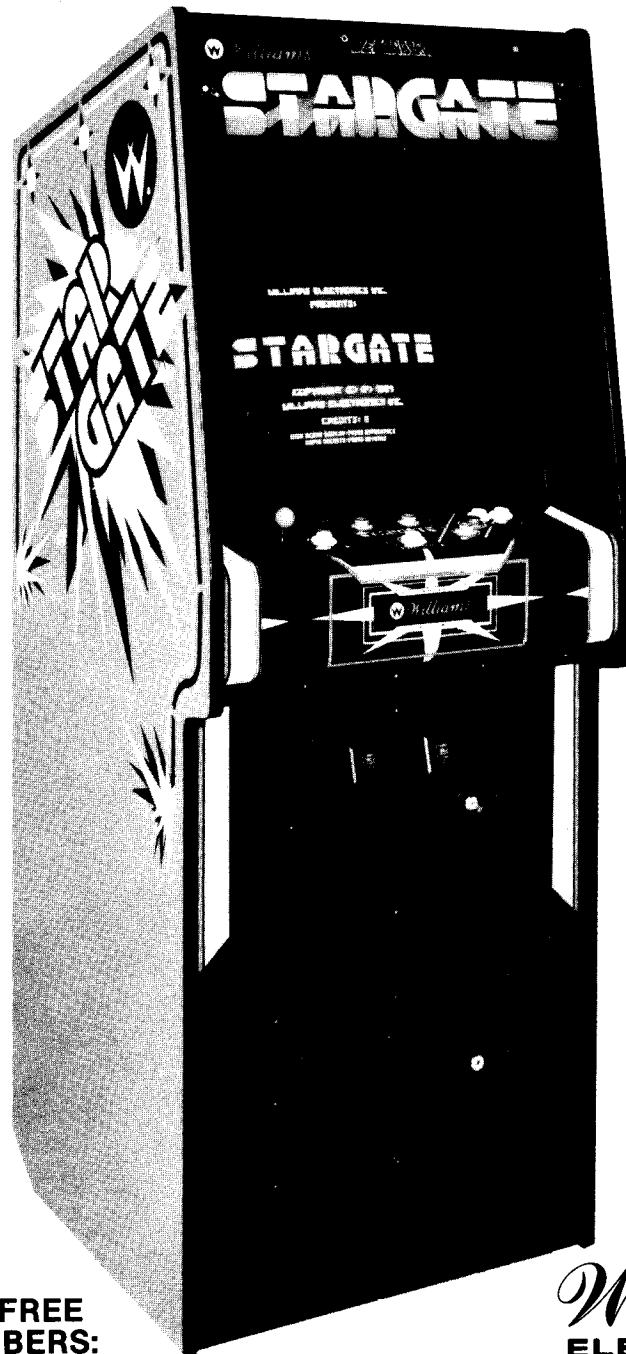


*Williams*<sup>®</sup>

16P-3002-103  
December, 1981

# STARGATE

## DRAWING SET



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TELEPHONE NUMBERS:

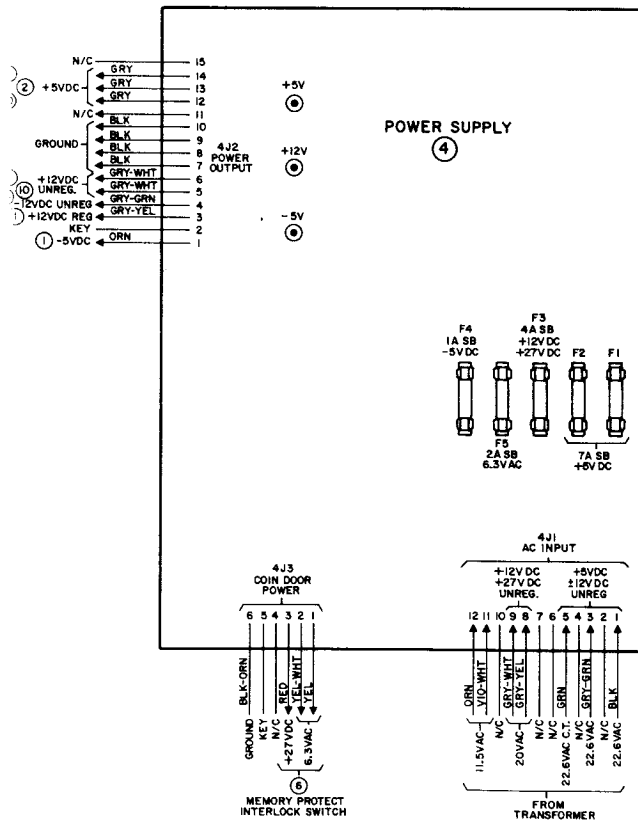
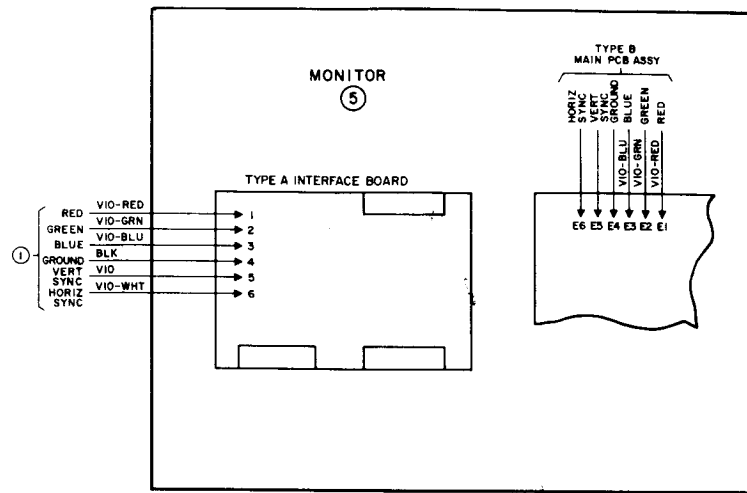
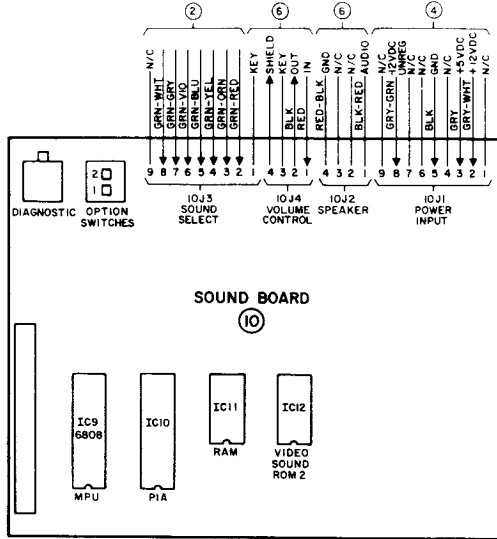
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IN ILLINOIS CALL:  
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*Williams*<sup>®</sup>   
ELECTRONICS, INC.

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(312) 267-2240

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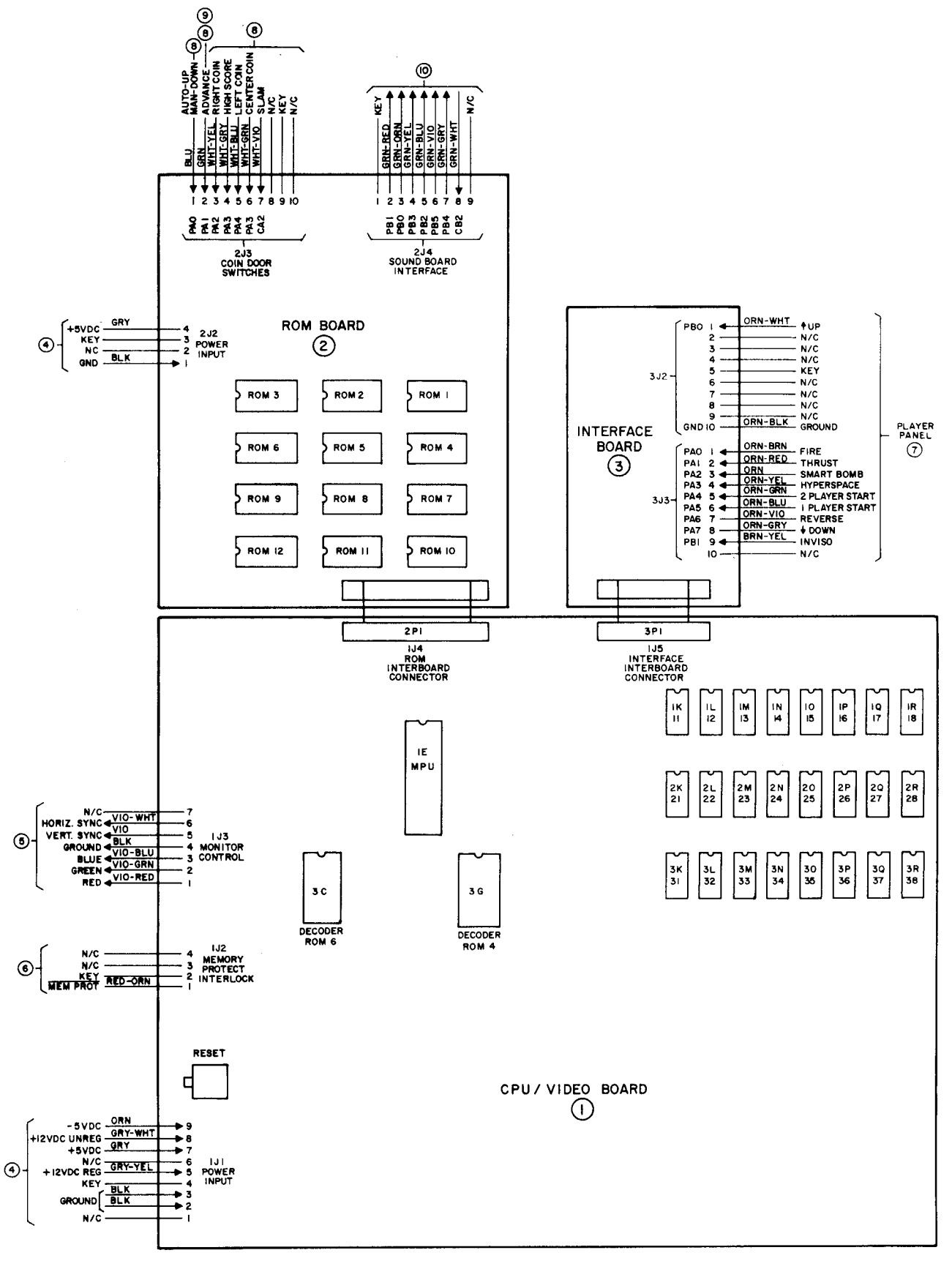
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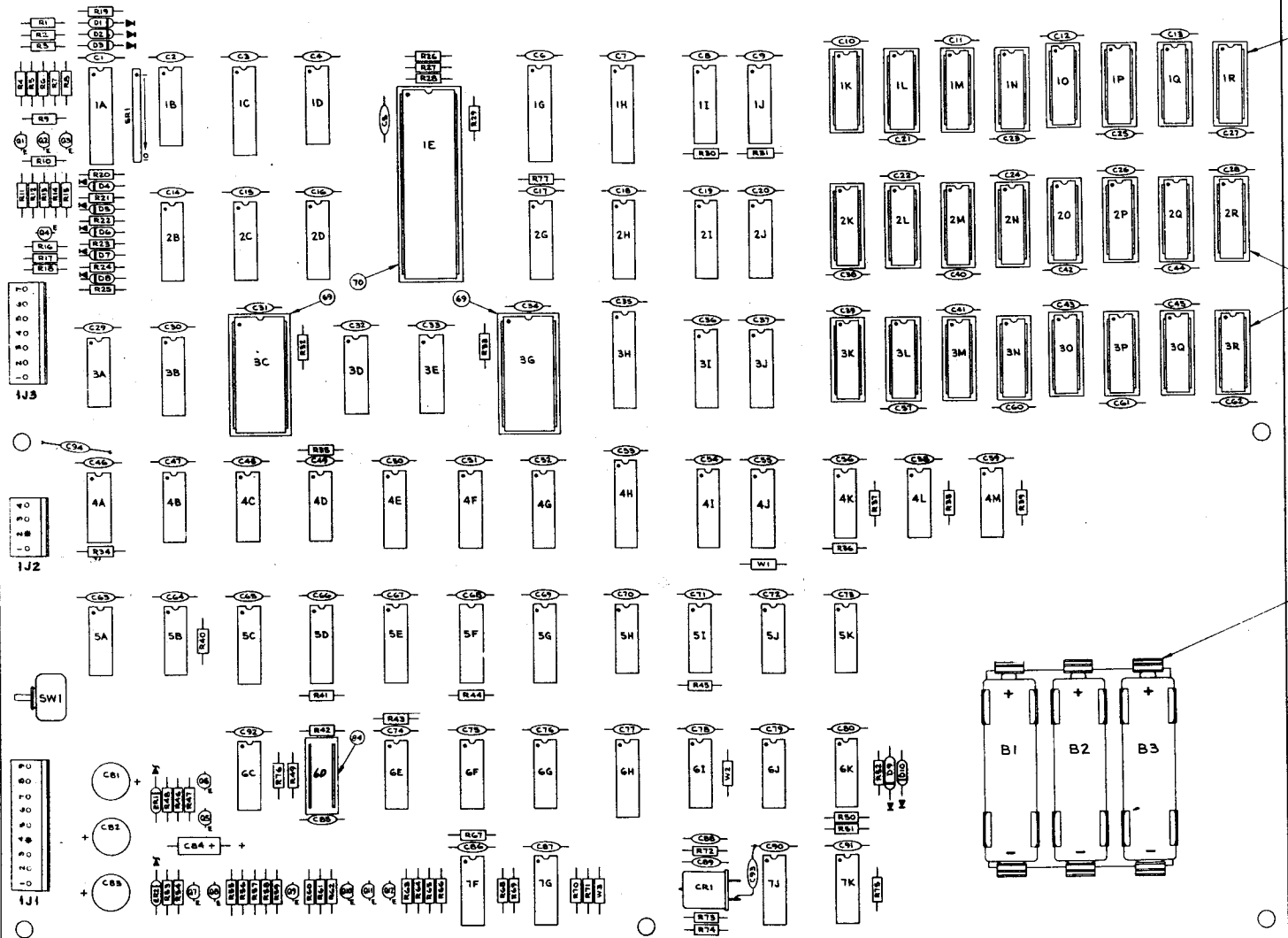
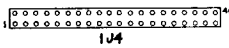
- ① CPU / VIDEO BOARD
- ② ROM BOARD
- ③ INTERFACE BOARD
- ④ POWER SUPPLY
- ⑤ MONITOR
- ⑥ CABINET
- ⑦ PLAYER PANEL
- ⑧ COIN DOOR
- ⑨ CASH BOX
- ⑩ SOUND BOARD

SIDE PANEL

# COMPONENT DOOR

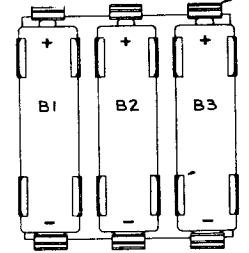
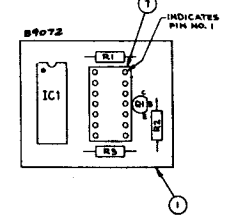


A B C D E F G H I J K L M N O P Q R



**B9072 BILL OF MATERIAL**

ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
1	5170-09810-00		BARE P.C. BOARD	1
2	5280-09011-00	IC1	7410 TRIPLE 3-INPUT NAND	1
3	5160-09358-00	Q1	2N4401, TO-92 TRANSISTOR, NPN	1
4	5010-09358-00	R1	RESISTOR, C.F. 1K ± 5% 1/4 WATT	1
5	5010-02991-00	R2	RESISTOR, C.F. 47.5K ± 5% 1/4 WATT	1
6	5010-09034-00	R3	RESISTOR, C.F. 10K ± 5% 1/4 WATT	1
7	5101-09812-00		14 PIN I.C. HEADER	1



BILL OF MATERIAL					ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
					49	5010-09001-00	R2, R21, R24	RESISTOR, C.F. 330 OHM 5% 1/4 W.	3
1	5170-09656-00		BARE P.C. BOARD 8x4	1	50	5010-09039-00	R56	RESISTOR, C.F. 10 OHM 5% 1/4 W.	1
2	5280-09073-00	4B	7400 QUAD 2-INPUT NAND	1	51	5043-09491-00	C89, C93	CAPACITOR, AXIAL 22 PFD. 1K V. ±10%	2
3	5280-08948-00	5H	7402 QUAD 2-INPUT NOR	1	52	5043-09492-00	C88	CAPACITOR, AXIAL 100 PFD. 50 V. ±10%	1
4	5281-09218-00	7J	74LS04 HEX. INVERTER	1	53	5040-09545-00	C84	CAPACITOR, AXIAL 22 MFD. 10 V. ±20%	1
5	5280-09019-00	5A, 5K	7404 HEX. INVERTER	2	54	5043-09065-00	C94	CAPACITOR, AXIAL 470 PFD. 50 V. XTR ±20%	1
6	5280-08973-00	6F	7408 QUAD AND	1	55	5043-08996-00	SEE NOTE #3	CAPACITOR, AXIAL 1 MFD. 50 V. ±20%	86
7	5280-09011-00	4L, 4M, 4I	7410 TRIPLE 3-INPUT NAND	3	56	5040-09421-00	C81, C82, C83	CAPACITOR, RADIAL 100 MFD. 25 V. +50 -10%	3
8	5280-09475-00	3A, 6J	7411 TRIPLE 3-INPUT AND	2	57	5075-09059-00	ZR2	1N5990A 3.9 V. ZENER DIODE	1
9	5280-09530-00	5B	7420 DUAL 4-INPUT NAND	1	58	5075-09018-00	ZR1	1N5990A 6.8 V. ZENER DIODE	1
10	5280-09476-00	4C	7421 DUAL 4-INPUT AND	1	59	5070-08919-00	D1, D2, D3, D4, D5, D6, D7, D8	1N4148 DIODE, SILICON	8
11	5280-09477-00	6E, 6G	7432 QUAD 2-INPUT OR	2	60	5070-09266-00	D9	1N5817 DIODE, SILICON	1
12	5280-09478-00	4D, 4K, 4G, 6C, 7F, 7G	7474 DUAL-D TYPE FLIP-FLOP	6	61	5160-08938-00	Q5, Q6, Q7, Q8, Q9, Q10, Q11	2N4401, TO-92 TRANSISTOR, NPN	7
13	5280-09479-00	4A, 5J	7486 QUAD 2-INPUT EX-OR	2	62	5190-09016-00	Q1, Q2, Q3, Q4, Q12	2N4403, TO-92 TRANSISTOR, PNP	5
14	5281-09480-00	7K	74LS107 DUAL J-K FLIP-FLOP	1	63	5520-09495-00	CRI	12 MHZ CRYSTAL	1
15	5281-09532-00	5G	74LS133 13-INPUT NAND	1	64				
16	5281-09246-00	4G, 6H	74LS139 DUAL 2 to 4 LINE DECODER	2	65	5880-09022-00	B1, B2, B3	BATTERY ALKALINE 1.5 V. (AA)	3
17	5280-09481-00	3D, 3E, 4E, 4F	74153 DUAL 4 to 1 DATA INVERT	4	66	5881-09021-00		BATTERY HOLDER #171	1
18	5280-09468-00	1I, 1J, 2I, 2J, 3I, 3J, 4I, 4J	74166 8-BIT SHIFT REGISTER	8	67	5700-09628-00		14-PIN IC SOCKET	0
19					68	5700-09006-00		16-PIN IC SOCKET	24
20	5281-09308-00	1G	74LS245 OCTAL BUSTRANSCEIVER	1	69	5700-09004-00		24-PIN IC SOCKET	2
21	5281-09485-00	2C, 2H	74LS257 QUAD DATA MULPX.	2	70	5700-08985-00		40-PIN IC SOCKET	1
22	5370-08989-00	1D, 2D, 2G, 3B	8T97 HEX. TS BUFFER	0	71	5791-09437-00	1J5	20 PIN RIBBON CABLE HEADER	1
	5281-09385-00		74LS367 HEX BUS DRIVER	4	72	5791-09349-00	1J4	40 PIN RIBBON CABLE HEADER	1
23	5281-09486-00	1A, 1H, 3H, 4H	74LS374 OCTAL D-TYPE FLIP-FLOP	4	73	5791-09028-00	1J2	4 PIN HEADER 09-65-1041	1
24	A-5342-09695	3C	UNIVERSAL VERT. DECODER ROM5	1	74	5791-09497-00	1J3	7 PIN HEADER 09-65-1071	1
25	A-5342-09694	3G	UNIVERSAL HORIZ. DECODER ROM4	1	75	5791-09027-00	1J1	9 PIN HEADER 09-65-1091	1
26	B-9072	6D	CMOS MOD. ASSY BOARD	1	76	5019-09669-00	SR1	RESISTOR, 1K OHM 10 PIN SIP	1
27	5281-09533-00	5I	74LS393 DUAL 4-BIT BIN. COUNTER	1	77	5010-09534-00	W1, W2, W3	RESISTOR, C.F. 0 OHM 1/4 WATT	3
28	5340-09488-00	SEE NOTE #1	4116 (450 ns ACCESS) 16 K x 1 DYNAMIC RAM	24	78	5340-09689-00	1C	5114 1K X 4 CMOS STATIC RAM	1
29	5070-06258-00	D10	1N4001 DIODE	1		5340-09667-00		6514 1K X 4 CMOS STATIC RAM	0
30	5280-09489-00	5C, 5D, 5E, 5F	9316 4-BIT BIN. COUNTER	4	79	5281-09488-00	1B, 2B	74LS189 16 X 4 RAM	0
31	5400-09490-00	1E	6809E MICROPROCESSOR	1		5180-09628-00		7489 16 X 4 RAM	0
32	5010-09548-00	R10, R12, R14	RESISTOR, C.F. 68 OHM 2% 1/4 W.	3		5281-09716-00		74S189 16 X 4 RAM	0
33	5010-09036-00	R65	RESISTOR, C.F. 100 OHM 5% 1/4 W.	1		5281-09715-00		74LS289 16 X 4 RAM	2
34	5010-09187-00	R4, R6, R7, R16, R19, R25	RESISTOR, C.F. 150 OHM 5% 1/4 W.	6		5282-09717-00		74S289 16 X 4 RAM	0
35	5010-09508-00	R11, R13, R15	RESISTOR, C.F. 270 OHM 2% 1/4 W.	3	80	5641-09371-00	SW1	PUSH BUTTON SW. SPST	0
36	5010-09416-00	R18	RESISTOR, C.F. 470 OHM 5% 1/4 W.	1		5641-09312-00		PUSH BUTTON SW. DPDT MOM.	1
37	5010-08992-00	R1, R20, R23	RESISTOR, C.F. 560 OHM 5% 1/4 W.	3	81				
38	5010-09558-00	R5, R8, R9, R17, R48, R54, R74	RESISTOR, C.F. 1K OHM 5% 1/4 W.	7	82				
39	5010-09314-00	R3, R22	RESISTOR, C.F. 1.2 K OHM 5% 1/4 W.	2	83				
40	5010-08998-00	R59, R72, R73	RESISTOR, C.F. 2.2 K OHM 5% 1/4 W.	3	84	5700-09813-00		14 PIN IC SOCKET	1
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.	27					
44	5010-09034-00	R46, R53	RESISTOR, C.F. 10 K OHM 5% 1/4 W.	2					
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. 33K OHM 5% 1/4 W.	1					
47	5010-09359-00	R64	RESISTOR, C.F. 47 K OHM 5% 1/4 W.	1					
48	5010-09442-00	R42, R49	RESISTOR, C.F. 330 K OHM 5% 1/4 W.	2					

**NOTES:**

1. 4116: 1K, 1L, 1M, 1N, 1O, 1P, 1Q, 1R, 2K, 2L, 2M, 2N, 2O, 2P, 2Q, 2R, 3K, 3L, 3M, 3N, 3O, 3P, 3Q, 3R

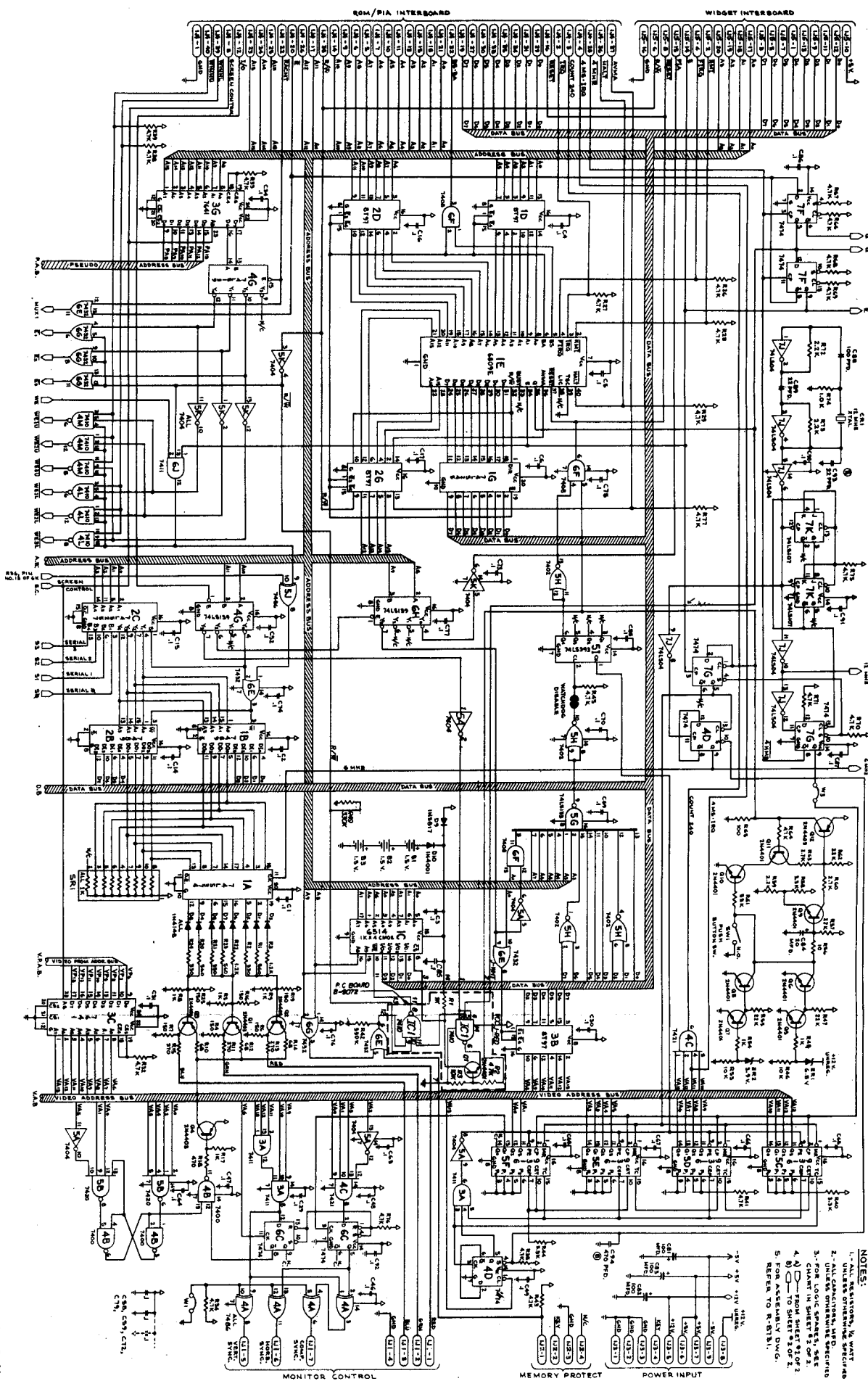
**2. 47K 4 RESISTOR:**

R26, R27, R28, R29, R32, R33, R35, R36, R37, R38, R39, R41, R43, R45, R50, R51, R52, R66, R67, R68, R69, R70, R71, R75, R84, R76, R77

**3. J 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, C85, C86, C87, C90, C91, C92

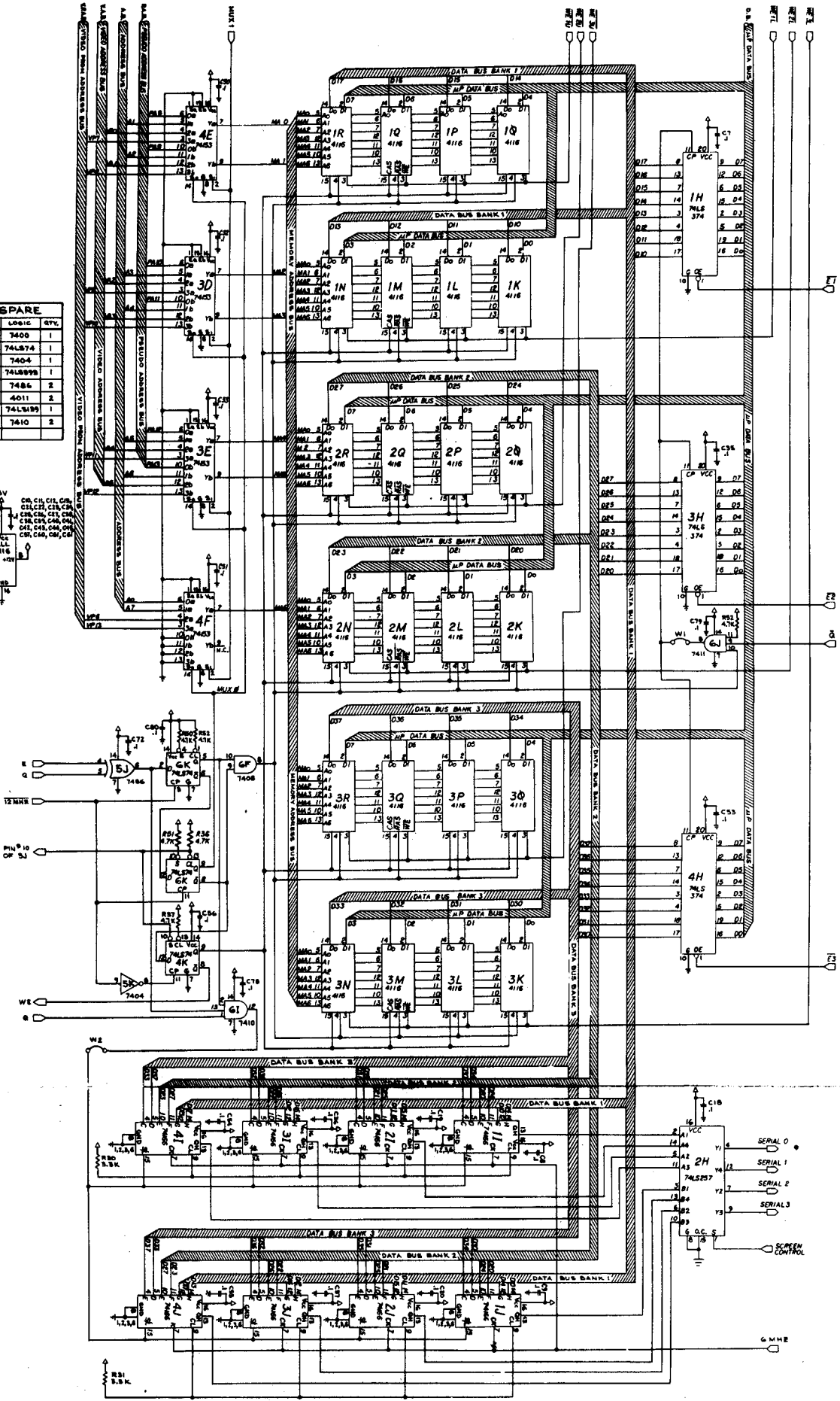
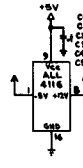
4. FOR SCHEMATIC REFER TO 16-8809



R8948 CPU Board Logic Diagram (Sheet 1 of 2)

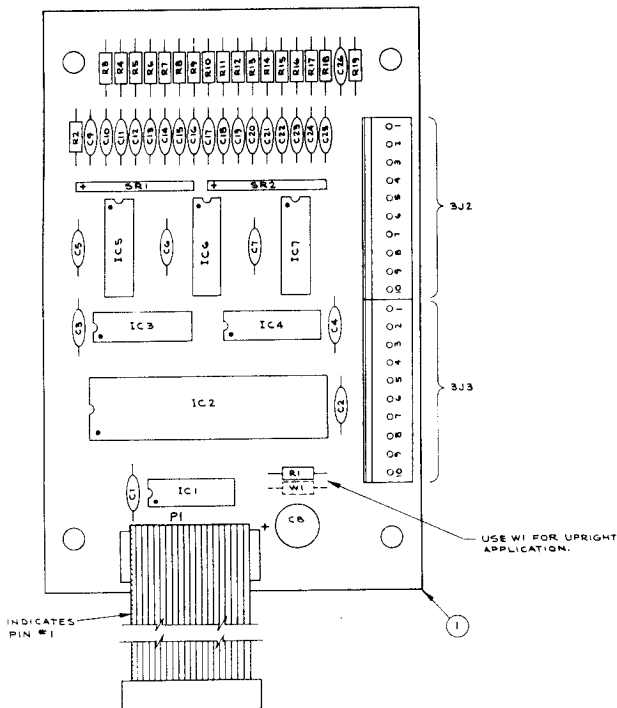
- NOTES:
1. ALL RESISTORS, IN WATT
  2. ALL CAPACITORS, IN PICO-FARADS UNLESS OTHERWISE SPECIFIED
  3. FOR LOGIC SYMBOLS, SEE CHART IN SHEET 2 OF 2
  4. A) FROM SHEET 2 OF 2
  5. RETURN TO SHEET 2 OF 2
  6. FROM ASSEMBLY DWG.
  7. RETURN TO SHEET 2 OF 2

SPARE		
LOC.	LOGIC	QTY.
4B	7400	1
4K	74LS74	1
5A	7404	1
5I	74LS99B	1
5J	7486	2
6D	4011	2
6H	74LS99	1
6I	7410	2





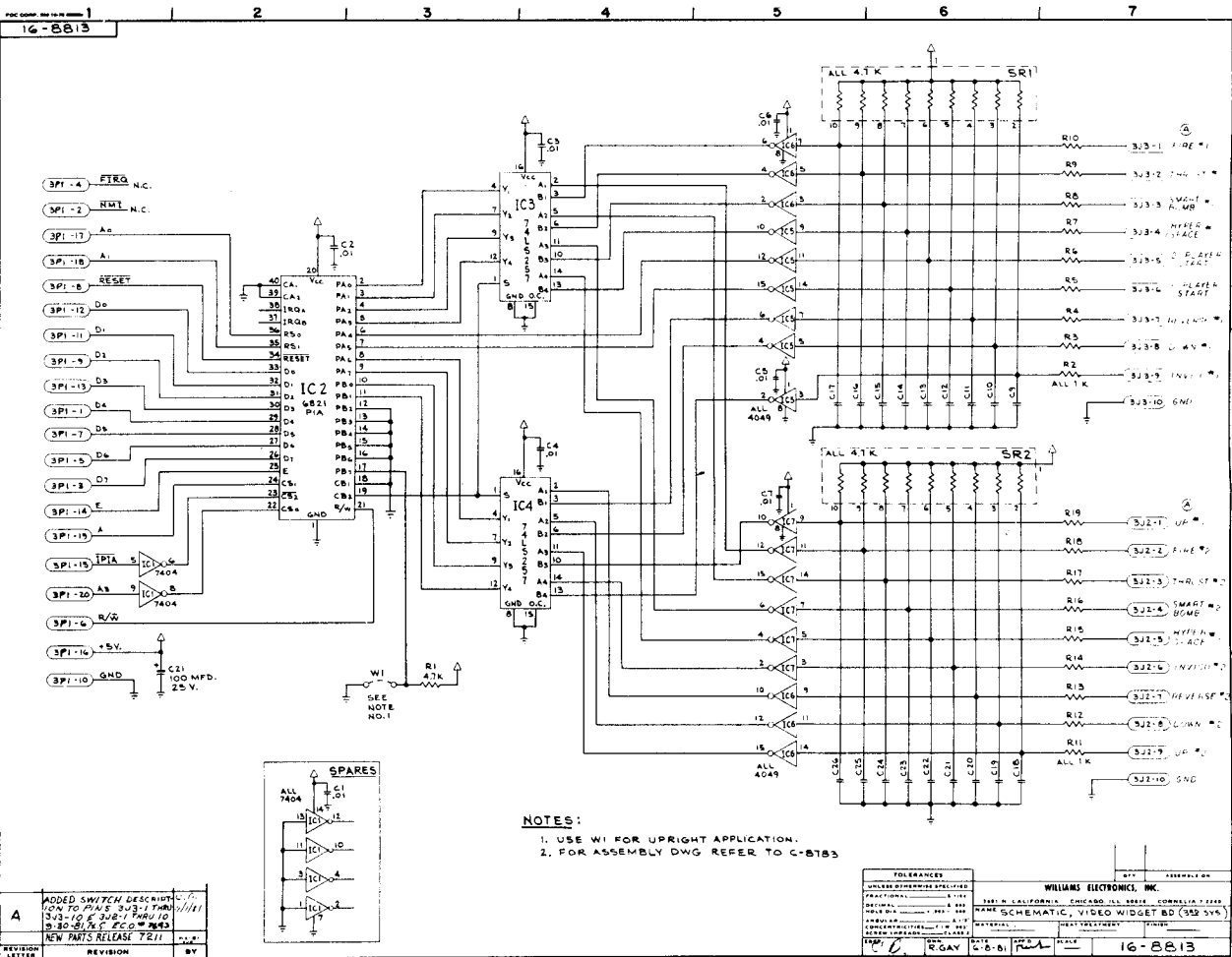
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1	5172-09600-00		BARE P.C. BOARD	1
2	5450-08972-00	IC2	6821 PIA	1
3	5310-08975-00	IC5, IC6, IC7	4049 CMOS HEX INVERTOR	3
4	5280-09013-00	IC1	7404 HEX INVERTER	1
5	5281-09485-00	IC3, IC4	74LS257 QUAD DATA MULTIPLEXER	2
6	5019-09362-00	SR1, SR2	4.7K OHM 8 RES. 10 PIN SIP	2
7	5010-09388-00	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	5010-09594-00	W1	RESISTOR, C.F. 0 OHM 1/4 WATT	1
10	5045-09065-00	C8 THRU C26	CAPACITOR, CERAMIC DISC 470 PFD. 50 V. XTR 120%	18
11	5040-09421-00	C6	CAPACITOR, ELECT. RADIAL 100 MFD. 25 VOLT. +50-10%	1
12	5045-08980-00	C1 THRU C7	CAPACITOR, CERAMIC DISC. 0.1 MFD. 50 V. +50-20%	7
13	5175-09540-00	PI	20 PIN RIBBON CABLE ASSY.	1
14	5191-09444-00	BJ2, BJ3	10 PIN HEADER 09-65-1101	2



NEW PARTS RELEASE 7212  
REVISION BY

TOLERANCES	UNLESS OTHERWISE SPECIFIED
FRACTIONAL	± 1%
DECIMAL	± .01
ANGULAR	± .1°
WELD DIMENSIONS	± .005
WIRE DIMENSIONS	± .002
WIRE TOLERANCE	± .001

WILLIAMS ELECTRONICS, INC.  
3801 N. CALIFORNIA, CHICAGO, ILL. 60618, CORNELIA 7238  
NAME VIDEO WIDGET ASSEM (380 SYSTEM)  
MATERIAL: NONE  
FINISH: NONE  
DATE: 2-4-81  
BY: R.GAY  
C-8783

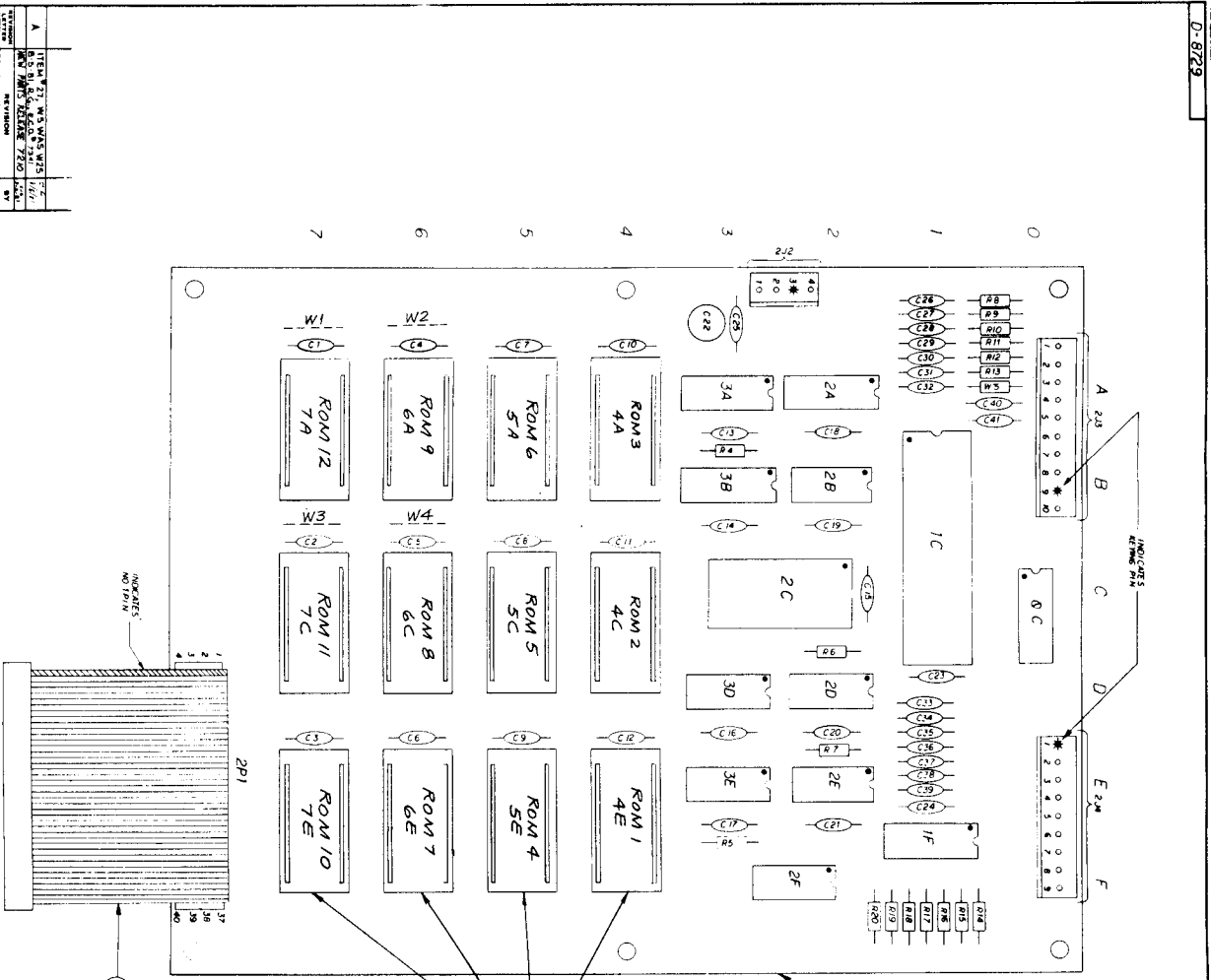


ADDED SWITCH DESCRIPTION TO PIAE 3UB-1 THRU 3UB-10 & 3UB-11 FROM 10-10-80 BY R.G. 7211  
NEW PARTS RELEASE 7211

TOLERANCES	UNLESS OTHERWISE SPECIFIED
FRACTIONAL	± 1%
DECIMAL	± .01
ANGULAR	± .1°
WELD DIMENSIONS	± .005
WIRE DIMENSIONS	± .002
WIRE TOLERANCE	± .001

WILLIAMS ELECTRONICS, INC.  
3801 N. CALIFORNIA, CHICAGO, ILL. 60618, CORNELIA 7238  
NAME SCHEMATIC, VIDEO WIDGET BS (380 SYS)  
MATERIAL: NONE  
FINISH: NONE  
DATE: 2-4-81  
BY: R.GAY  
16-8813

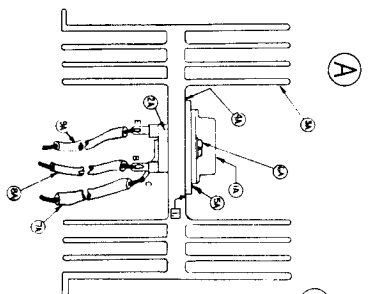
C8783 Interface Board Assembly and Logic Diagram



GRUPE	STARBUATE
4A	A-5843-07102
4B	A-5843-07101
4C	A-5843-07103
4D	A-5843-07104
4E	A-5843-07105
4F	A-5843-07106
4G	A-5843-07107
4H	A-5843-07108
4I	A-5843-07109
4J	A-5843-07110
4K	A-5843-07111
4L	A-5843-07112
4M	A-5843-07113
4N	A-5843-07114
4O	A-5843-07115
4P	A-5843-07116
4Q	A-5843-07117
4R	A-5843-07118
4S	A-5843-07119
4T	A-5843-07120
4U	A-5843-07121
4V	A-5843-07122
4W	A-5843-07123
4X	A-5843-07124
4Y	A-5843-07125
4Z	A-5843-07126
5A	A-5843-07127
5B	A-5843-07128
5C	A-5843-07129
5D	A-5843-07130
5E	A-5843-07131
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5K	A-5843-07137
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5P	A-5843-07142
5Q	A-5843-07143
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5S	A-5843-07145
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5Y	A-5843-07151
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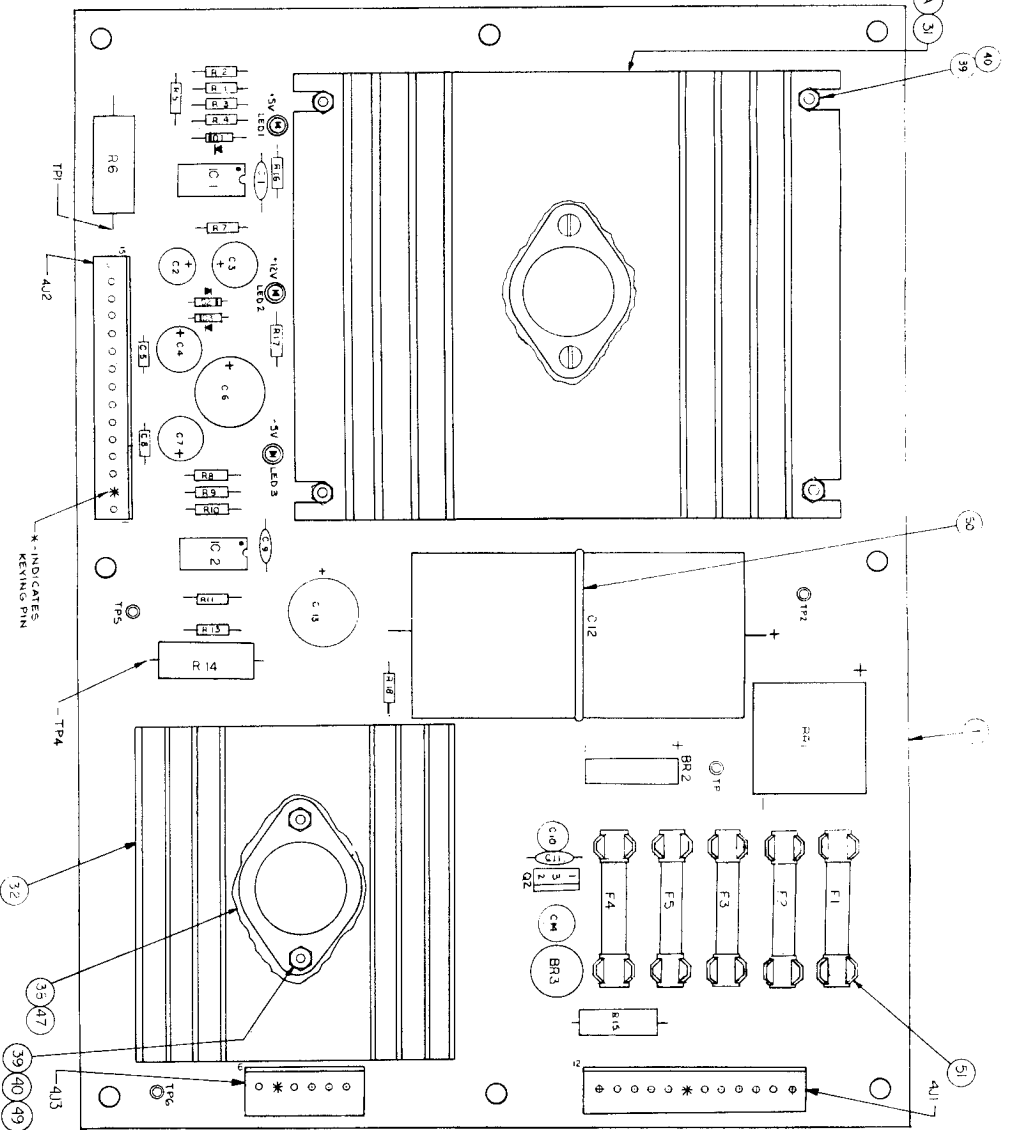
ITEM NO.	PART NO.	PART DESCRIPTION	DESCRIPTION	QTY REQD
1	5271-00	BASE PC BOARD		1
2	5880-00	IF		1
3	5880-00	3A, 2E		2
4	5880-00	5B		1
5	5880-00	2B		1
6	5880-00	2D		1
7	5880-00	3D		1
8	5880-00	3E		1
9	5880-00	2C		1
10	5880-00	1C		1
11	5880-00	8C		1
12	5880-00	6C		7
13	5880-00	4C		4
14	5880-00	2C		1
15	5880-00	2F		1
16	5880-00	2A		23
17	5880-00	2E		1
18	5880-00	2D		1
19	5880-00	2B		6
20	5880-00	2A		12
21	5880-00	2E		1
22	5880-00	2C		1
23	5880-00	2D		1
24	5880-00	2A		1
25	5880-00	2E		1
26	5880-00	2C		6
27	5880-00	2D		1
28	5880-00	2A		1
29	5880-00	2E		1



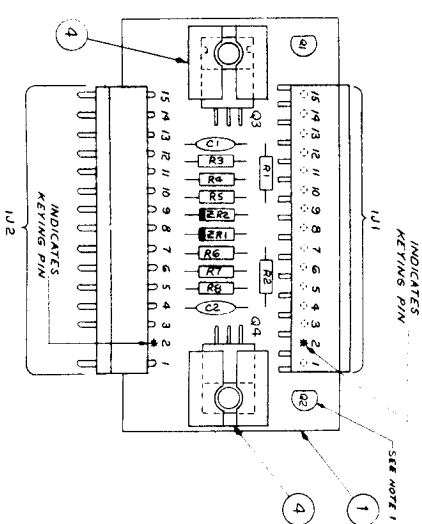
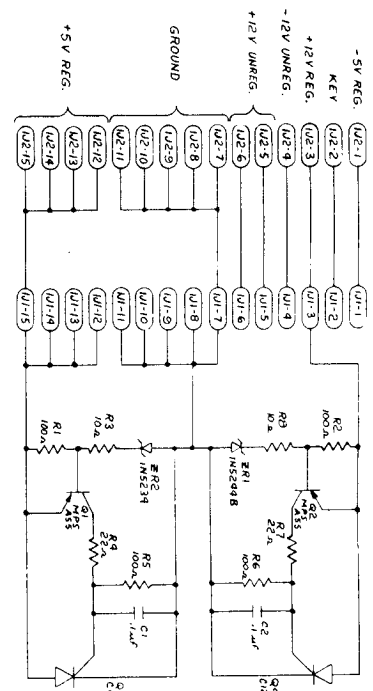


ITEM NO	PART NO	DESCRIPTION	REQD NO
1A	5462-0942-00	TRANSISTOR NPN	1
2A	5300-0941-00	TRANSISTOR PNP	1
3A	5300-0941-00	TRANSISTOR PNP	1
4A	20-0734-00	HEAT SINK	1
5A	370-0918-00	TOP SHIELD	1
6A	4008-0008-00	HEAT CONDUCTIVE COMPOUND	1
7A	5853-0951-00	HEADERS, 10 PIN, 0.65-1181	2
8A	5853-0951-00	HEADERS, 12 PIN, 0.65-1181	1
9A	5853-0951-00	HEADERS, 12 PIN, 0.65-1181	1
10A	5853-0951-00	HEADERS, 12 PIN, 0.65-1181	1

NOTES:  
 1. SEE DIMENSIONS AND TOLERANCES ON DRAWING.  
 2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.  
 3. FINISHES ARE AS SHOWN ON DRAWING.  
 4. MATERIALS ARE TO BE AS SPECIFIED IN THE BILL OF MATERIALS.  
 5. ALL PARTS ARE TO BE NEW UNLESS OTHERWISE SPECIFIED.



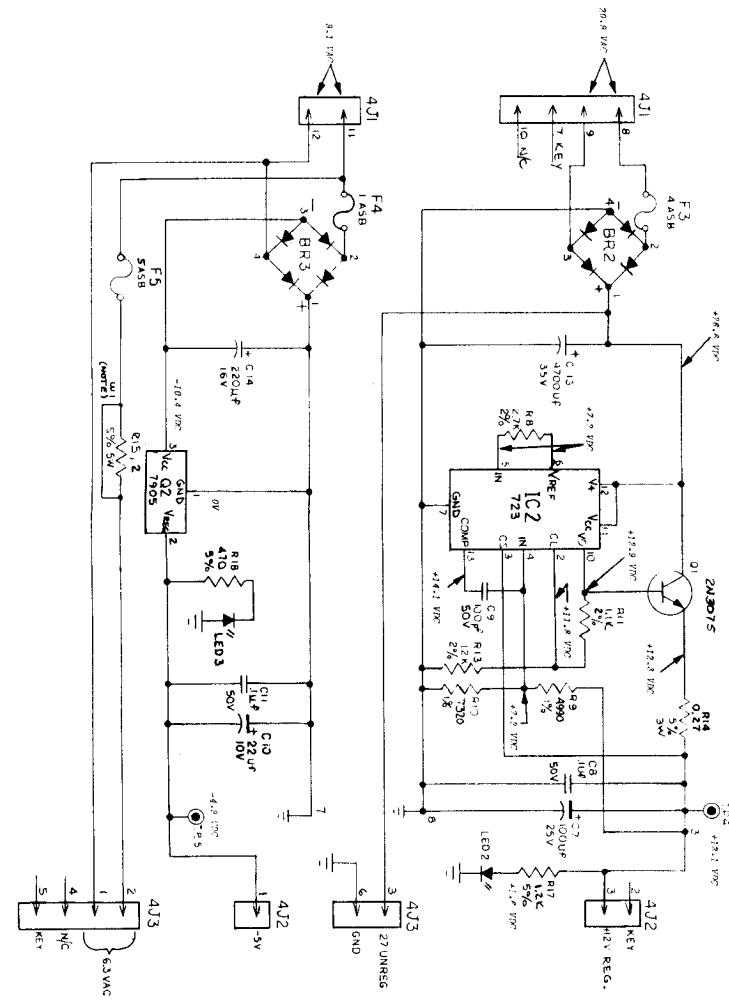
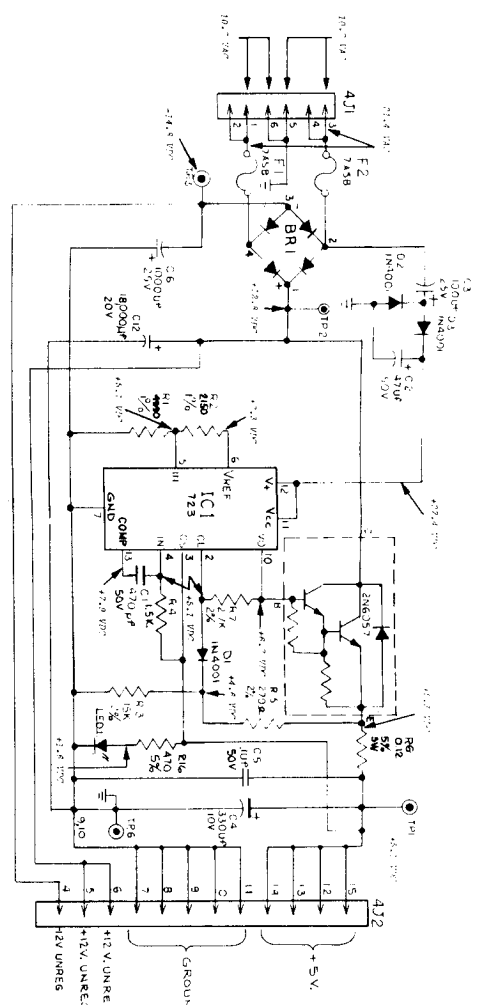
ITEM NO	PART NO	DESCRIPTION	REQD NO
1	5113-0914-00	BASE P.C. BOARD	1
2	5800-0905-00	RESISTOR, 1/4 W, 5%, 1/4 W	1
3	5001-0941-00	RESISTOR, 27K, 3/4 W, 1/4 W	2
4	5000-0940-00	RESISTOR, 210, 2 1/2 W, 1/4 W	1
5	5000-0942-00	RESISTOR, 1.5K, 2 1/2 W, 1/4 W	1
6	5000-0943-00	RESISTOR, 1.5K, 2 1/2 W, 1/4 W	1
7	5000-0944-00	RESISTOR, 1.5K, 2 1/2 W, 1/4 W	1
8	5000-0945-00	RESISTOR, 1.5K, 2 1/2 W, 1/4 W	1
9	5000-0946-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
10	5000-0947-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
11	5000-0948-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
12	5000-0949-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
13	5000-0950-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
14	5000-0951-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
15	5000-0952-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
16	5000-0953-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
17	5000-0954-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
18	5000-0955-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
19	5000-0956-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
20	5000-0957-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
21	5000-0958-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
22	5000-0959-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
23	5000-0960-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
24	5000-0961-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
25	5000-0962-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
26	5000-0963-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
27	5000-0964-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
28	5000-0965-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
29	5000-0966-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
30	5000-0967-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
31	5000-0968-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
32	5000-0969-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
33	5000-0970-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
34	5000-0971-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
35	5000-0972-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
36	5000-0973-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
37	5000-0974-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
38	5000-0975-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
39	5000-0976-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
40	5000-0977-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
41	5000-0978-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
42	5000-0979-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
43	5000-0980-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
44	5000-0981-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
45	5000-0982-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
46	5000-0983-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
47	5000-0984-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
48	5000-0985-00	RESISTOR, 2.1K, 2 1/2 W, 1/4 W	1
49	03-7558	INSULATOR, NYLON	2
50	03-7520	TIE WRAP	1
51	80320718-00	FUSEHOLDER	10



INDICATES KEYING PIN  
SEE NOTE 1  
INDICATES KEYING PIN

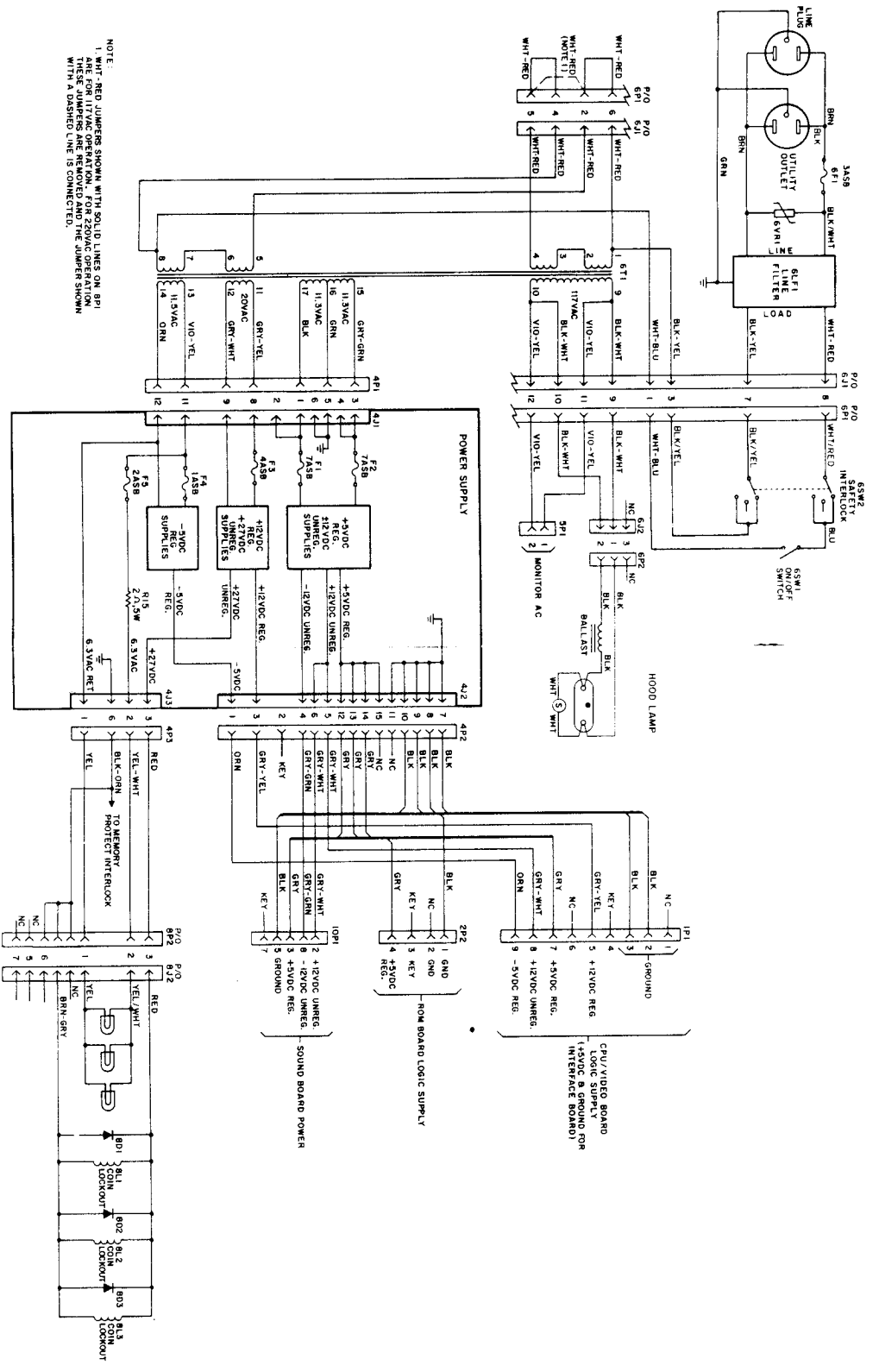
**BILL OF MATERIALS**

ITEM NO	PART NO.	PART DESCRIPTION	DESCRIPTION	REQD NO.
1	5773-00	09664-00	BARE P.C. BOARD	1
2	5792-00	IU1	RIGHT ANGLE CONNECTOR, 1/8 IN.	1
3	5791-00	IU2	HEADER CONNECTOR, 1/8 IN.	1
4	5705-00	09663-00	HEAT SINK, ALUM. ST-41	2
	5705-00	09688-00	HEAT SINK, THERMALLOK E093	0
7	5130-00	03,04	SCR (22F (100V))	2
8	5130-00	01,02	TRANSISTOR MFG. 85	2
9	5075-00	ZAI	ZENER 5.6V ± 5% (1W)	1
10	5075-00	ZR2	ZENER 1N5294 ± 5% (6.2V)	1
11	5006-00	R1, R2, R5, R6	RESISTOR 100 Ω ± 5% 1/4 W	4
12	5009-00	R3, R8	RESISTOR 1K ± 5% 1/4 W	2
13	5010-00	R4, R7	RESISTOR 22 Ω ± 5% 1/4 W	2
14	09996-00	C1, C2	CAPACITOR CERAMIC +80% -20% 50V	2

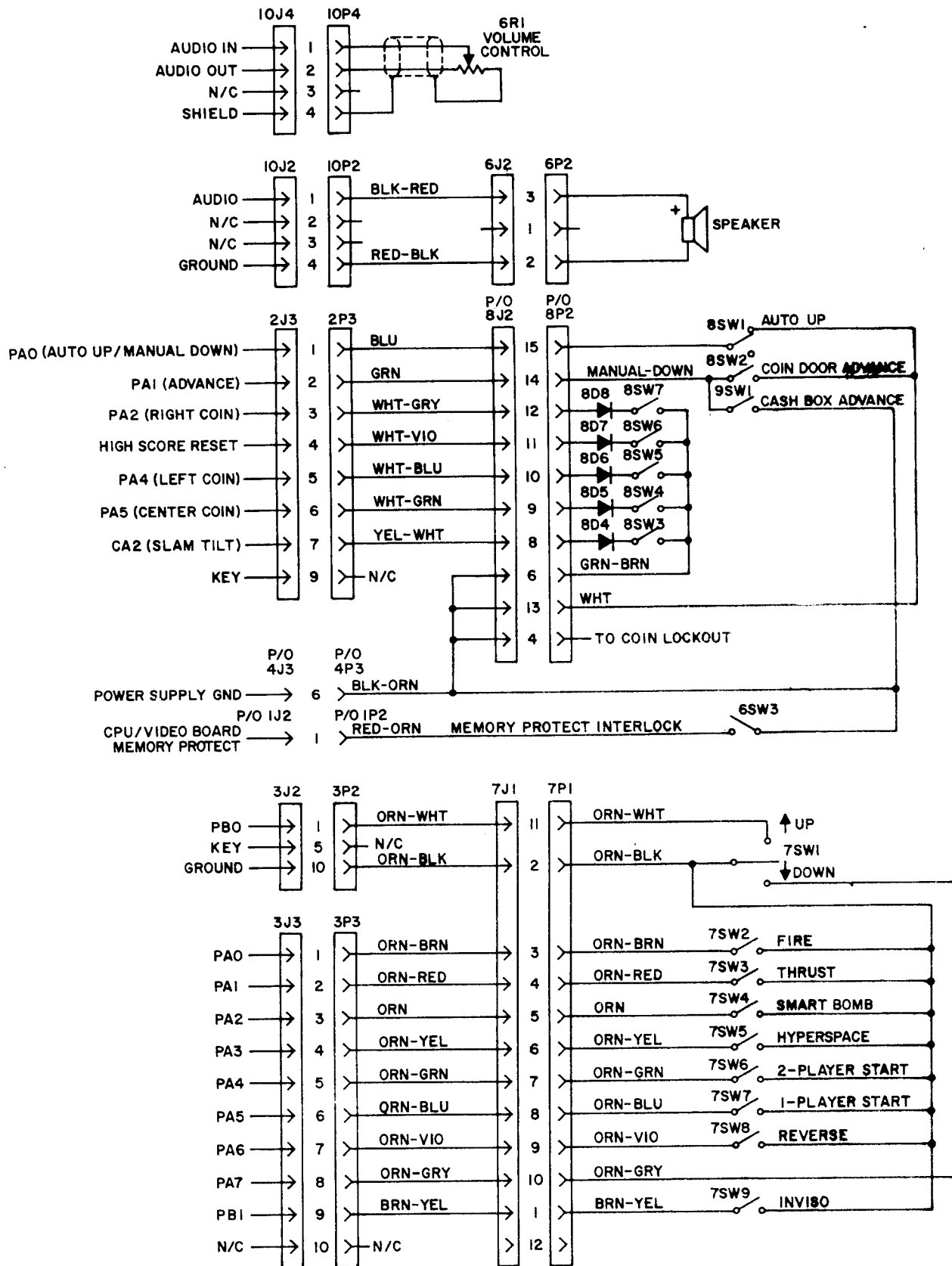


Power Supply Board Schematic Diagram and Overvoltage Protection Board

NOTE:  
NOT POWERED ONLY FOR OVERVOLTAGE APPLICATIONS.



NOTE:  
 1. WHT-RED JUMPERS SHOWN WITH SOLID LINES ON P/P1  
 THE 50M AMPERS ARE RELAYED ON 250VAC OPERATION  
 THE 50M AMPERS ARE RELAYED ON 125VAC OPERATION  
 WITH A DASHED LINE IS CONNECTED.



Cabinet Wiring Diagram

BILL OF MATERIAL

ITEM NO.	PART NO.	PART DESIGNATION	DESCRIPTION	REQ'D. NO.
1	01-2 01-146-6		BARE P.C. BOARD REV F	1
2	5370-09156-00	IC1	TDA 2002 V AUDIO AMPLIFIER	1
3	5280-09012-00	IC2	7442 BCD-DEC DECODER	1
4	5280-09073-00	IC3	7400 QUAD 2 INPUT NAND	1
5	5280-08973	IC4	7408 QUAD 2 INP. AND GATE	1
6	5310-09153-00	IC5	4050 BUFFER	1
7	5310-09154-00	IC6	4068 8 INPUT NAND GATE	1
8	5310-08971-00	IC7	4069 HEX INVERTER	1
9	5250-09157-00	IC8	7805 5 VOLT REG. W/TO 220 CASE	1
10	5430-08972-00	IC10	6821 P.I.A.	1
11	5340-09003-00	IC11	6810 RAM	1
12	5371-09152-00	IC13	1408 D/A CONVERTER	1
13	5160-08938-00	Q2, Q3, Q4	2N4401 NPN TRANSISTOR	3
14				
15	5075-09018-00	ZR1	1N5996A 6.8V ZENER DIODE	1
16				
17	5100-09357-00)	BR1	MDA 200/3N253	1
	5100-09158-00)		BRIDGE RECTIFIER	0
18	5520-09020-00	Y1	3.58 MHZ CRYSTAL	1
19	5010-08991-00	R1,R18,R19,R21,R22, R27,R30,R31, R32	RESISTOR, FC, 4.7K OHM, 5% 1/4 WATT	9
20	5010-09036-00	R2 thru R10	RESISTOR, FC, 100 OHM, 5% 1/4W	9
21	5010-09358-00	R12,R15,R28,R36,R38	RESISTOR, FC, 1K OHM, 5% 1/4W	5
22	5010-09181-00	R14	RESISTOR, FC, 1 OHM, 10% 1/2 WATT	1
23	5010-09161-00	R16	RESISTOR, FC, 2.2 OHM, 5% 1/4 WATT	1
24	5010-09361-00	R17	RESISTOR, FC, 220 OHM, 5% 1/2 WATT	1
25				
26	5010-08983-00	R23, R24, R26	RESISTOR, FC, 3.3K OHM, 5% 1/4 WATT	3
27	5010-09179-00	R25	RESISTOR, FC, 3.3M OHM, 5% 1/4 WATT	1
28	5010-09035-00	R29	RESISTOR, FC, 47K OHM, 5% 1/4 WATT	1
29	5010-09034-00	R33, R35, R37	RESISTOR, FC, 10K OHM, 5% 1/4 WATT	3
30	5010-09039-00	R34	RESISTOR, FC, 10 OHM, 5% 1/4 WATT	1
31	5043-08980-00	C1, C16 thru C23, C31	CAPACITOR, CER. .01 MFD. 50V. +80%, -20%	10
32	5043-09065-00	C2 thru C10	CAPACITOR, CER. 470 PFD. 50V. +20%	9
33	5043-09345-00	C11	CAPACITOR, CER. .001 MFD. +20% 100V.	1
34	5040-09365-00	C12, C30, C36	CAPACITOR, ELECT. 1 MFD. 63V. -10 +50%	3
35	5043-08996-00	C13, C24, C35	CAPACITOR, CER. .1 MFD. 50V. +20%	3
36	5040-09165-00	C14	CAPACITOR, ELECT. 1,000 MFD. 16V. +-20%	1
37	5040-09164-00	C15	CAPACITOR, ELECT. 470 MFD. 10V. +-20%	1
38	5040-08986-00	C25	CAPACITOR, ELECT. 100 MFD. 10V. +-20%	1
39	5040-08893-00	C26	CAPACITOR, ELECT. 1,000 MFD. 25V. +-20%	1
40	5040-09376-00	C27	CAPACITOR, ELECT. 4700 MFD. 16V. +-20%	1
41	5043-09180-00	C28	CAPACITOR, CER. 47 PFD. 1K V. +-20%	1
42	5040-09343-00)	C29	CAPACITOR, ELECT. 10 MFD. 20V	1
43	5043-09169-00	C32, C33	CAPACITOR, CER. DISC, 27 PFD. 1KV. +-10%	2
44	5041-09163-00	C34	CAPACITOR, TANTALUM 2.2 MFD. 15V. +-20%	1
45	5041-09031-00	C37	CAPACITOR, TANTALUM 1 MFD. 25V. +-20%	1
46	5641-09658-00)	SW1	MOMENTARY SWITCH SPDT	1
47	5645-09330-00	DS1	2 STD, DIP SWITCH	1
48	5731-06314-00	F1, F2	4 AMP SLOW BLOW FUSE	2
49	5732-09178-00		FUSEHOLDER	4
50	5705-09172-00		HEAT SINK THERMALLOY #6072B	1
51	5705-09173-00		HEAT SINK THERMALLOY #6071B	1
52	5705-09199-00		HEAT SINK THERMALLOY #6030	1
53	5700-09004-00		24 PIN SOCKET	1
54	5700-08985-00		40 PIN SOCKET	1
55	5791-09027-00	10J1, 10J3	9 PIN MALE CONNECTOR 09-65-1091	2
56	5791-09028-00	10J2, 10J4	4 PIN MALE CONNECTOR 09-65-1041	2
57				
58	4006-01003-06		6-32x3/8" P-PH-S	3
59	4406-01117-00		6-32 HEX NUT	3
60	5010-09534-00		0 OHM RESISTOR	A/R
61	5824-09248-00	TP1 THR TP4	TERMINAL #1502-1	4
62	5010-09363-00	R11	RESISTOR, FC, 5.6K OHM 5% 1/4 WATT	1
63				
64	5019-09362-00	SR1	RESISTOR, 4.7K OHM 10 PIN SIP	1
65	03-7520-1		TIE WRAP	1
66	4703-00007-00		#6 EXT. LOCKWASHER	3
67	20-9229		THERMAL COMPOUND	.01

NOTES:

1. USE THERMAL COMPOUND BETWEEN IC1 AND IC8, AND HEAT SINKS.

2. CAUTION: AVOID STATIC DISCHARGE DAMAGE TO MOS LOGIC.

3. SYMBOLS SHOWN ON COMPONENTS ARE FOR REFERENCE ONLY.

DO NOT SCREEN OR STAMP.

4. OBSERVE INDEX MARK OF ALL INTEGRATED CIRCUITS;

DIODES D1, D2, AND ZR1;

CAPACITORS C12, C14, C15, C25, C26, C27;

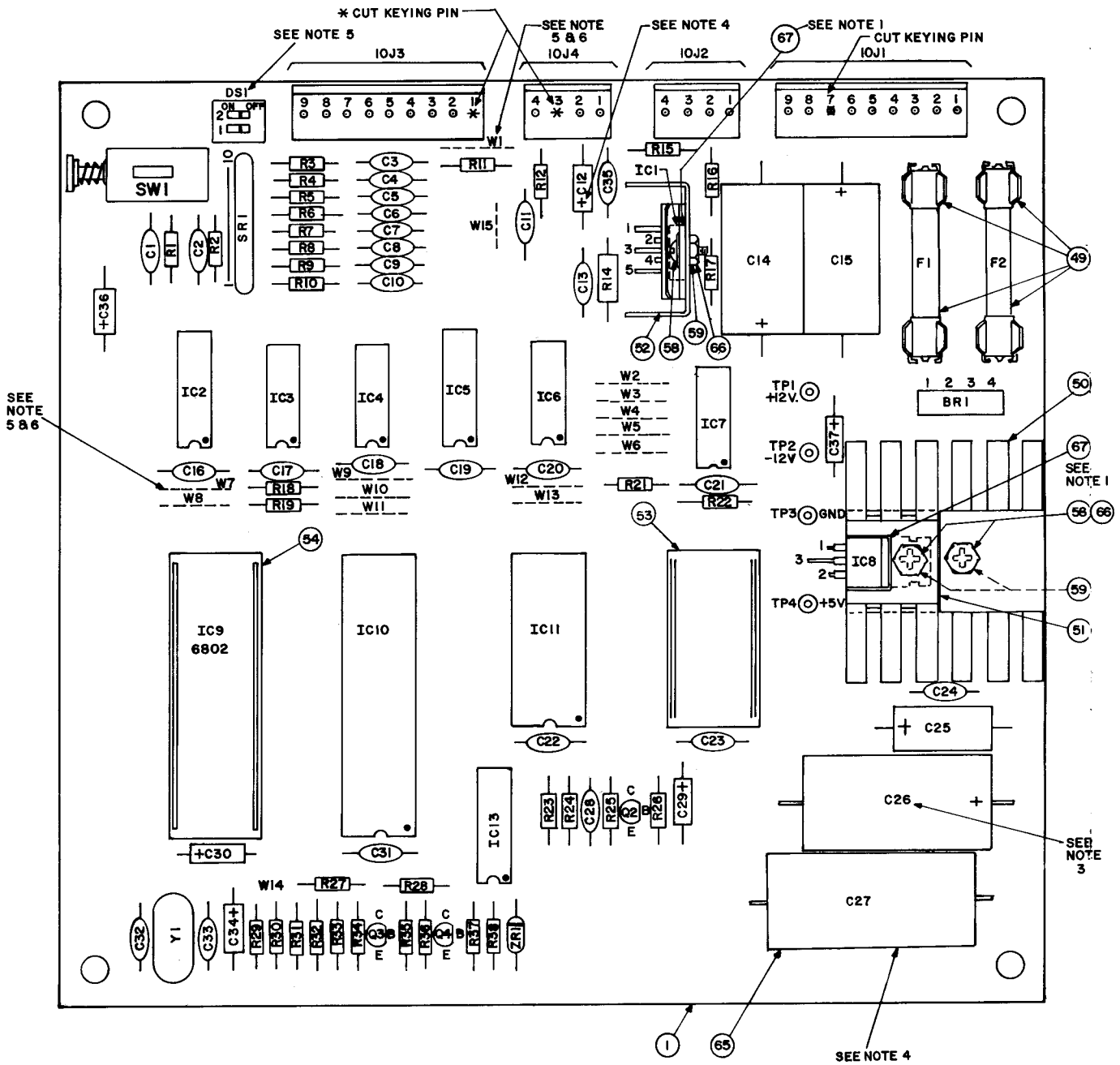
CONNECTORS 10J1, 10J2, 10J4, 10J3, 10J5;

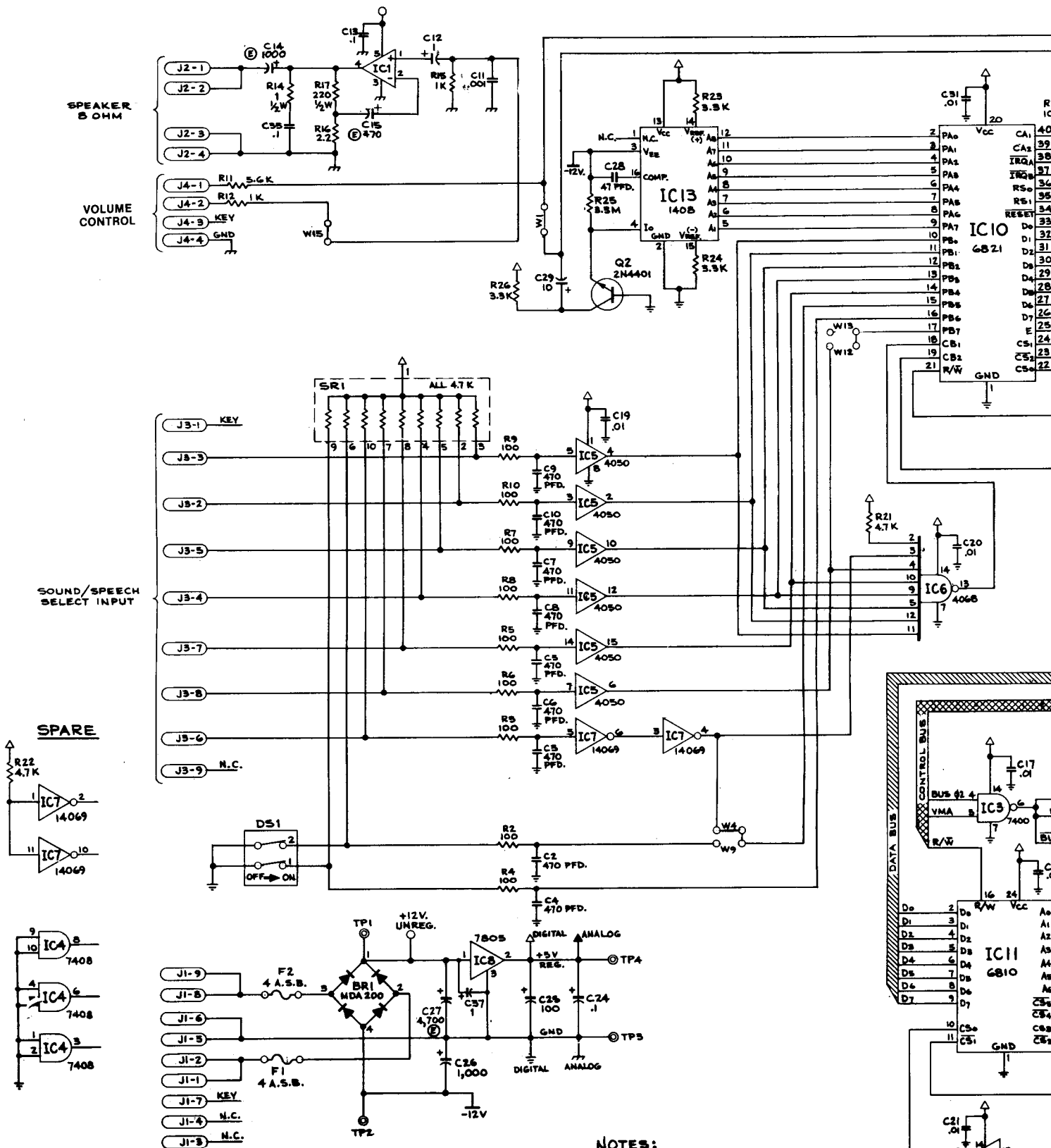
POSITION OF TRANSISTORS Q1, Q2, Q3, Q4.

5. JUMPERS

W3) W2)  
W4) W6)  
W5) IN W9) OUT  
W10) W11)  
W12)  
W13)







- NOTES:**
1. ALL RESISTORS, 1/4 WATT UNLESS OTHERWISE NOTED.
  2. ALL CAPACITORS, MFD. UNLESS OTHERWISE NOTED.

