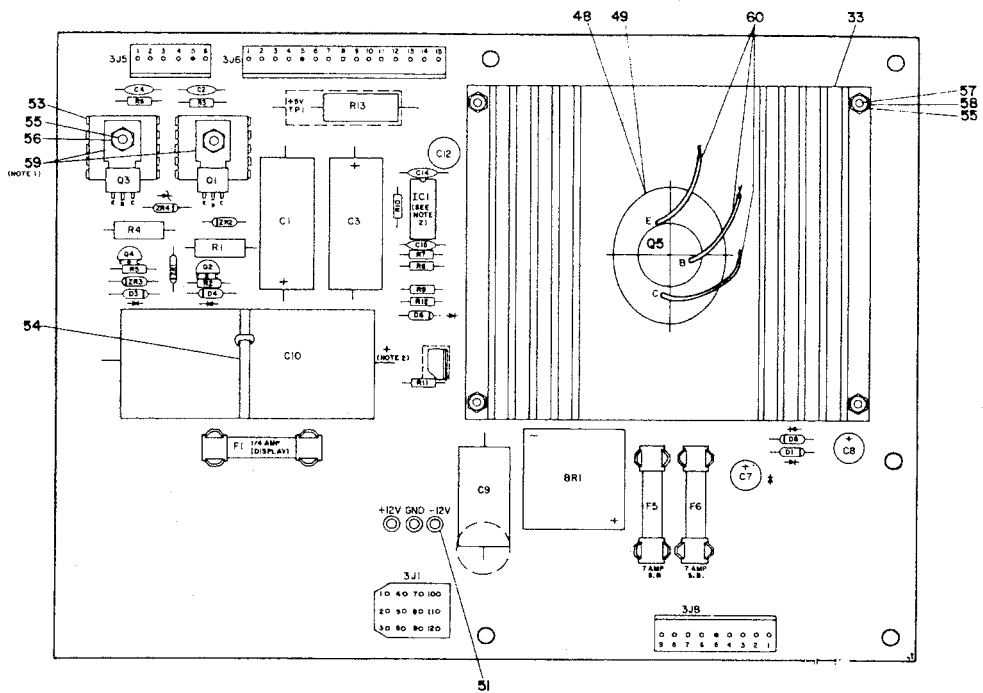


D-8345-566 Power Supply Schematic



- NOTES: 1. Heat sink compound must be applied between transistor and heat sink.
 2. Observe index mark on integrated circuit, polarity of capacitors and diodes, and position of transistors.
 3. The view of Q5 and its related heat sink and hardware is from the bottom of the heatsink, to clarify installation.

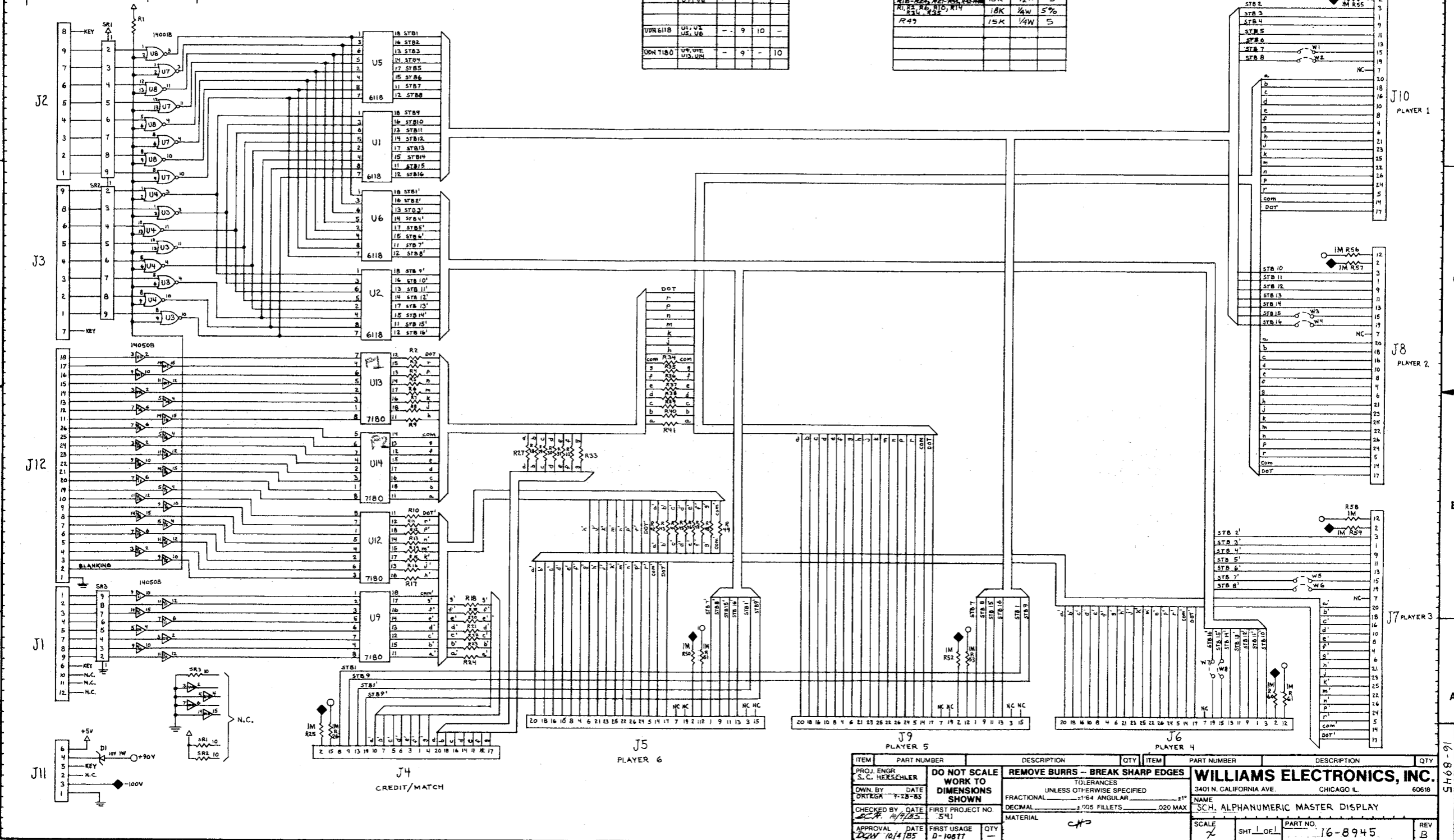
Power Supply p/n D-8345-566

Part No.	Ckt Designator	Description	Item	Part No.	Ckt Designator	Description
5765-09466-01		Bare P. C. Board	26	5164-12154-00	Q1	Transistor, MJE15030, NPN
5013-09426-00	R7	Resistor, 2.15K, 1%, 1/4w, C. F.	27	5164-09056-00	Q4	Transistor, MPSD02, NPN
5013-09427-00	R8	Resistor, 4.99K, 1%, 1/4w, C. F.	28	5194-12155-00	Q3	Transistor, MJE15031, PNP
5010-09428-00	R11	Resistor, 1.5K, 2%, 1/4w, C. F.	29	5194-09055-00	Q2	Transistor, MPSD52, PNP
5010-09085-00	R10	Resistor, 1.5K, 5%, 1/4w, C. F.	30	5791-10862-15	3J6	Connector, 15 pin (Hdr)
5010-09541-00	R9	Resistor, 2.7K, 2%, 1/4w, C. F.	31	5791-10862-06	3J5	Connector, 6 pin (Hdr)
5010-09508-00	R12	Resistor, 270Ω, 2%, 1/4w, C. F.	32	5791-09068-00	3J1	Connector, 12 pin (Hdr)
5012-09429-00	R13	Resistor, 0.12Ω, 5%, 5w	33	5321-09178-00		Fuseholder
5010-09536-00	R1, R4	Resistor, 39K, 5%, 1w	34	5731-08761-00	F1	Fuse, 1/4A, 250v, S-B
5010-09061-00	R2, R5	Resistor, 680Ω, 2w	35	B-8416	Q5 Reqr	Transistor/Heat sink subassy
5010-09069-00	R3, R6	Resistor, 330K, 5%, 1/2w, C. F.	a)	5162-09425-00	Q5	Transistor, 2N6057, NPN
5040-09419-00	C10	Capacitor, 18,000 mfd, electr, 20v, axial	b)	5700-09445-00		Socket
5040-09420-00	C9	Capacitor, 1000 mfd, electr, 25v, axial or radial	c)	5701-09652-00		Mica Insulator
5040-09423-00	C12	Capacitor, 330 mfd, electr, 10v, radial	d)	5705-09431-00		Heatsink
5043-09065-00	C15	Capacitor, 470 pfd	e)	4006-01003-12		Mach. Screw 5-32 x 3/4
5040-09053-00	C1, C3	Capacitor, 100 mfd, electr, 150v	f)	HW-30118-4		Wire, 18AWG, YEL, 4-3/8"
5043-09072-00	C2, C4	Capacitor, 0.1 mfd, 500v, disc	g)	HW-30118-5		Wire, 18AWG, GRN, 4-3/8"
5043-09446-00	C14	Capacitor, 0.1 mfd, 50v, disc	h)	HW-30118-9		Wire, 18AWG, WHT, 4-3/8"
5040-09421-00	C7	Capacitor, 100 mfd, 25v, radial	36	5824-09428-00	TP2 - TP4	Terminal, #1502-1 (Test Post)
5040-09422-00	C8	Capacitor, 47 mfd, 50v, radial	37	5100-09418-00	BR1	Bridge Rectifier, 35A, 100V
5070-06258-00	D1, D5, D6	Diode, 1N4001	38	5705-09042-00		Heat Sink
5070-09054-00	D3, D4	Diode, 1N4004	39	03-7947		Tie Wrap
5075-09059-00	ZR1, ZR3	Zener, 1N5990, 3.9v, 5%	40	4005-01016-07		Mach. Screw, 5-40 x 7/16, RH
5075-09060-00	ZR2, ZR4	Zener, 1N4764, 100v, 5%	41	4700-00004-00		Flat washer, 3/8 od x .146 id x 21 ga
5460-09424-00	IC1	IC, Volt. Reg., MC1723C	42	4701-00023-00		Lockwasher, #5, split
			43	4405-01117-00		Hex Nut, 5-40
			44	20-9229		Heatsink Thermal Compound
			45	5731-09342-00	F6, F5	Fuse, 7A, 250V, S-B

REV	DESCRIPTION OF CHANGE	ECN NO. DATE
	NPR	14768 11-25-85
A	ADDED VALUE CHART R1 VALUE WAS 33K (AT D-4)	15028 11-25-85
B	REVISED UNMARKED RESISTORS PER REV B' ON D-10877	15210 1-26-86

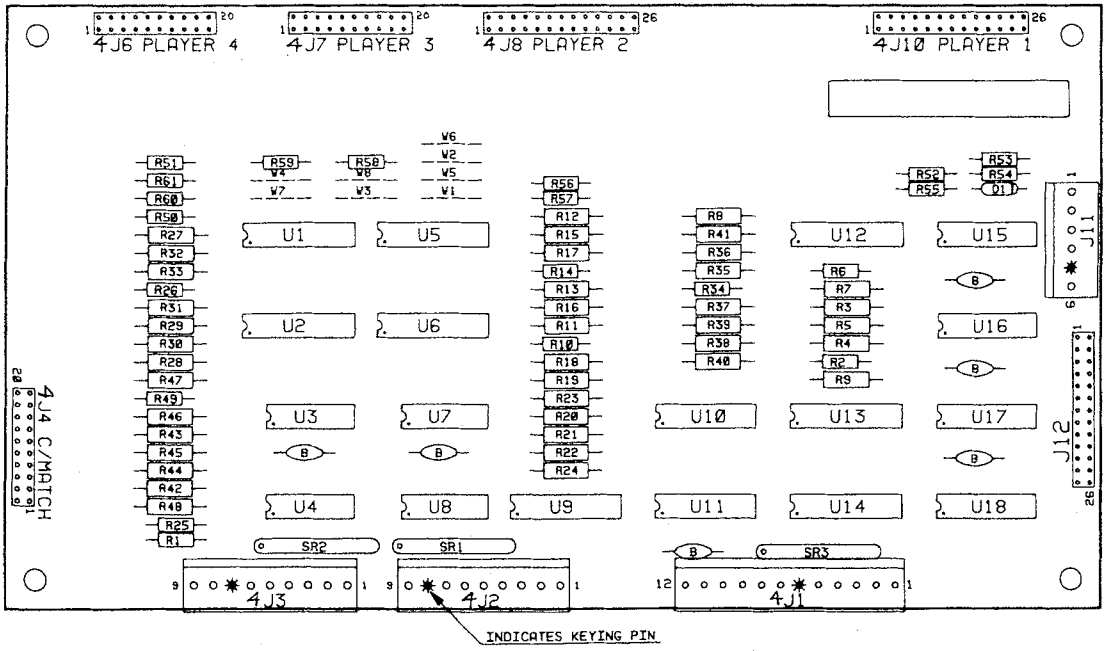
POWER TABLE						
TYPE	REF. DESIG.	+5V	GND	+90	-100	
14050	U10, U11, U12, U13, U14	1	8	-	-	
14001	U3, U4, U7, U8	14	7	-	-	
UDN611B	U1, U2, U5, U6	-	9	10	-	
UDN7180	U9, U16, U17, U18	-	9	-	10	

VALUE OF UNMARKED RESISTORS			
DESIGNATORS	OHMS	WATTS	%
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100	8.2K	1/2W	5
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100	10K	1/2W	5
R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100	18K	1/4W	5%
R49	15K	1/4W	5



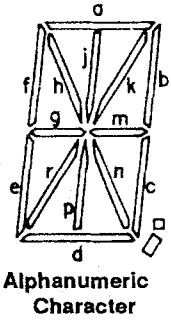
ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ ENGR	S. C. HEKSCHLER	REMOVE BURRS - BREAK SHARP EDGES		WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE. CHICAGO IL. 60618			
OWN. BY	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED					
CHECKED BY	DATE	FRACTIONAL .1:164 ANGULAR .21"		NAME			
APPROVAL	DATE	DECIMAL .005 FILLETS .020 MAX		SCH. ALPHANUMERIC MASTER DISPLAY			
		MATERIAL		SCALE	SHT. OF	PART NO.	REV
						16-8945	B

Alphanumeric Master Display Board (D-10877) Schematic

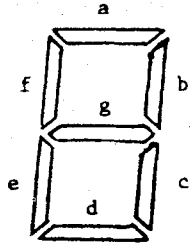


Alphanumeric Master Display Board p/n D-10877

Part No.	Ckt Designation	Description
5760-10875-00		Bare P. C. Board
5791-10850-00	J8, J10, J12	Connector, 26 pin (Hdr)
5791-09437-00	J4, J6, J7	Connector, 20 pin (Hdr)
5791-10862-12	J1	Connector, 12 pin (Hdr)
5791-10862-09	J2, J3	Connector, 9 pin (Hdr)
5791-10862-06	J11	Connector, 6 pin (Hdr)
5010-10258-00	R25, R26, R50 - R61	Resistor, 1 M, 1/4 w, 5%
5010-08773-00	R1, R2, R6, R10, R14, R34, R35	Resistor, 22 K, 1/4 w, 5%
5010-08772-00	R49	Resistor, 15 K, 1/4 w, 5%
5010-08981-00	R18 - R24, R27 - R33, R36, R37, R39, R40, R42 - R48	Resistor, 10 K, 1/4 w, 5%
5010-09534-00	W1 - W8	Resistor, 0 Ω
5010-10927-00	R3 - R5, R7 - R9, R38	Resistor, 8.2 K, 1/2 w, 5%
5019-10387-00	R11 - R13, R15 - R17	Resistor, 0 Ω
5043-08980-00	SR1 - SR3	SIP, 18 K, 9R, 10P, 5%
5075-09135-00	B	Capacitor, 0.01 μfd, 50V
5310-09153-00	D1	Zener, 1N4740A, 10V, 1 w
5310-09882-00	U10, U11, U15 - U18	IC, Hex Buffer, 4050
5680-08969-00	U3, U4, U7, U8	IC, Quad NOR, 4001B
5680-08969-00	U9, U12 - U14	IC, Cathode Seg. Driver, UDN7180A
5680-08968-00	U1, U2, U5, U6	IC, Anode/Digit Driver, UDN6118A or 6184



Alphanumeric Character



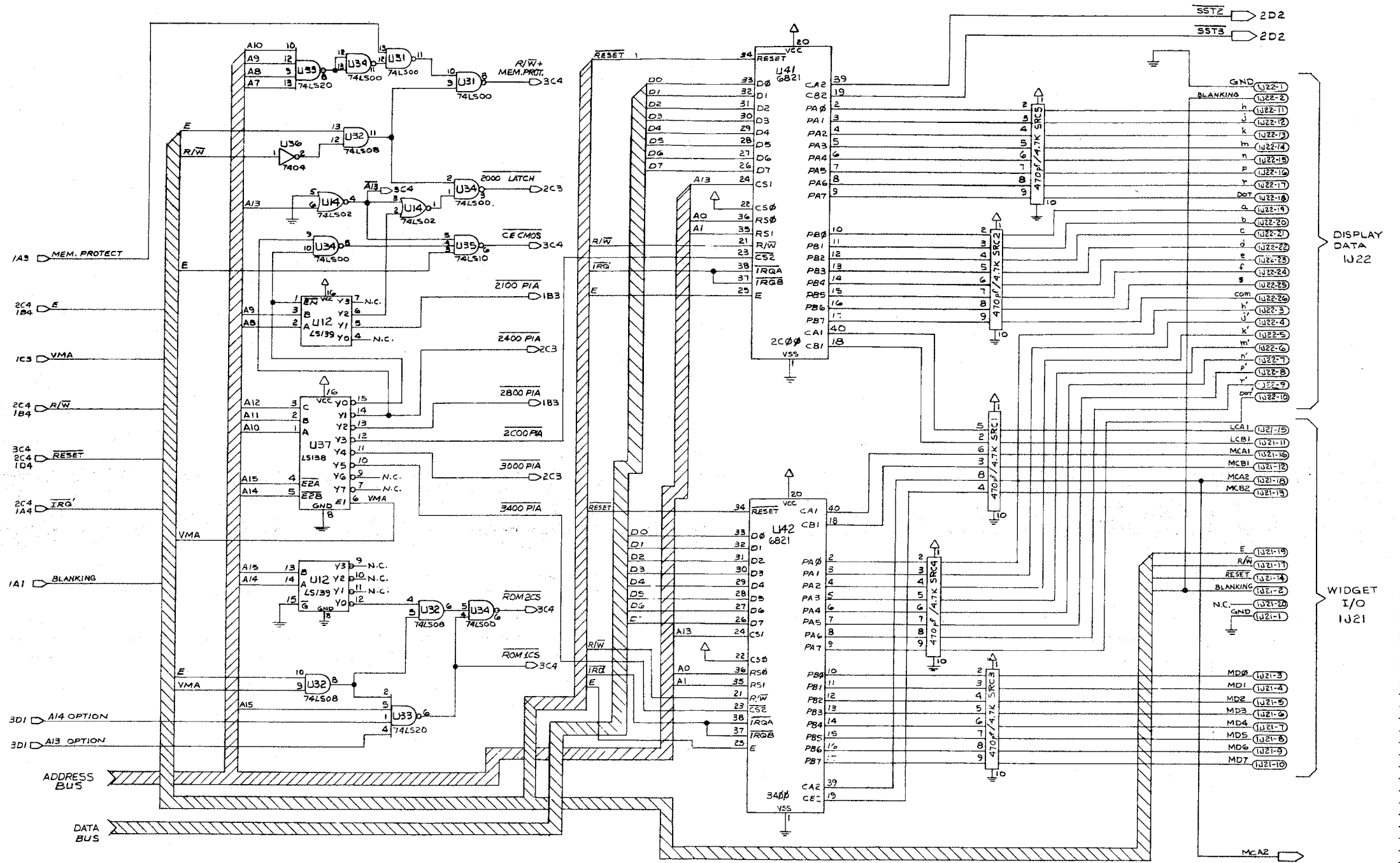
Display Characters Segment Designations

Marquee Score Display & Lamps PC Board p/n D-12146

Part No.	Description	Part No.	Description
D-10877*	Master Display PC Board	24-8767	Socket, Twist Lamp (#555)
D-12145	Mounted Displays Subassembly	24-8768	Bulb, #555 (6.3v, 0.25A)
20-9566	PC Bd Support	03-8069-2	Double Light Shield

* - See separate parts list.

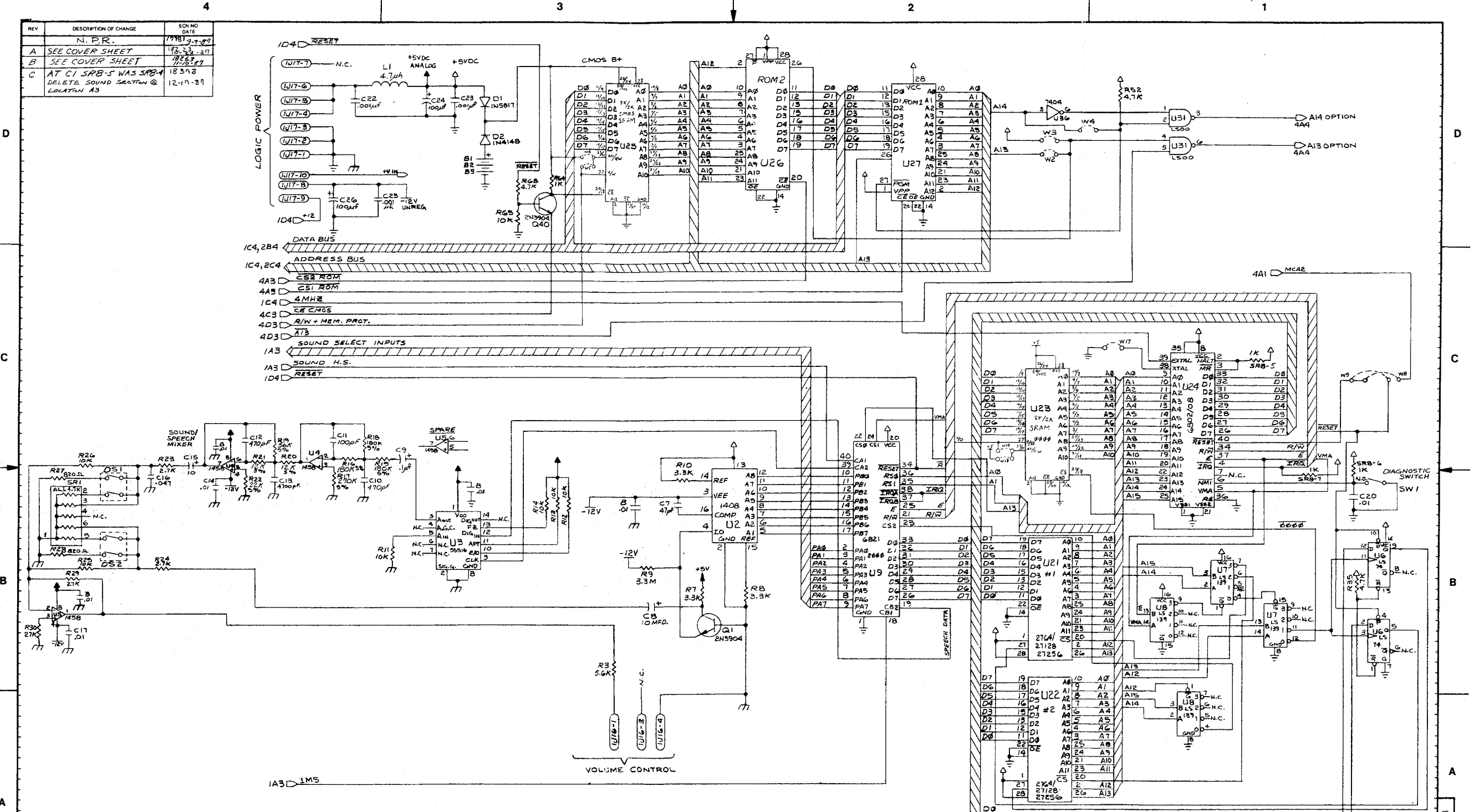
REV	DESCRIPTION OF CHANGE	ECH. NO. DATE
	N. P. R.	1778
A	SEE COVER SHEET	1822-3-87
B	SEE COVER SHEET	1822-3-87
C	SEE SHEET 1-3	1822-3-87



ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ. ENGR C. BLEICH		DO NOT SCALE WORK TO DIMENSIONS SHOWN		REMOVE BURRS - BREAK SHARP EDGES		TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONAL .1/64 ANGULAR .2°	
OWN. BY DATE ROSS 8-20-87		FIRST PROJECT NO. 557		DECIMAL .005 FILLETS .020 MAX		MATERIAL	
CHECKED BY DATE G. [Signature] 11/18		FIRST USAGE D-11882		SCALE N/S		SHT 4 of 4	
APPROVAL DATE [Signature] 7/78		QTY		PART NO 16-9019		REV C	
WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE CHICAGO IL 60618				NAME CPU SYS 11B SCHEMATIC			

System 11B CPU Schematic (16-9019, Sheet 4 of 4)

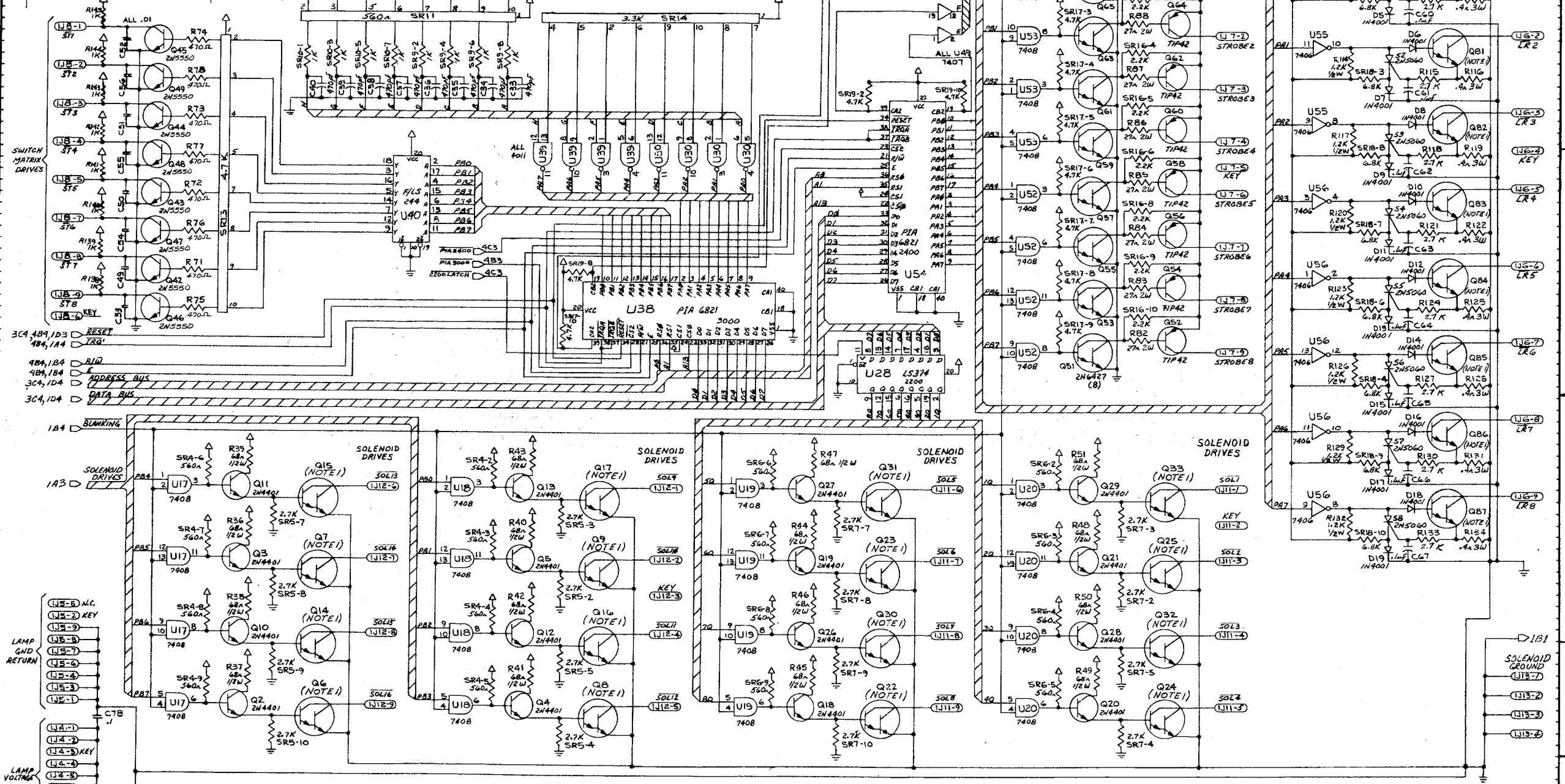
REV	DESCRIPTION OF CHANGE	ECN NO	DATE
	N. P.R.	1781	9-7-87
A	SEE COVER SHEET	1833	2-27
B	SEE COVER SHEET	1833	4-27
C	AT C1 SPB-S WAS SRB-4 DELETE SOUND SECTION @ LOCATION A3	1837	12-17-87



ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ. ENGR C. BLEICH		DO NOT SCALE WORK TO DIMENSIONS SHOWN		REMOVE BURRS - BREAK SHARP EDGES		WILLIAMS ELECTRONICS, INC.	
DWN BY ROSS		DATE 8-20-87		TOLERANCES UNLESS OTHERWISE SPECIFIED		3401 N. CALIFORNIA AVE. CHICAGO IL. 60618	
CHECKED BY C. BLEICH		DATE 9/1/87		FRACTIONAL 1/64 ANGULAR 1°		NAME CPU SYS 11B SCHEMATIC	
APPROVAL C. BLEICH		DATE 9/1/87		DECIMAL 0.005 FILLETS 0.020 MAX		SCALE 1:1	
FIRST PROJECT NO 557		FIRST USAGE D-11882		MATERIAL		SHT 3 OF 4	
QTY						PART NO 16-9019	
						REV C	

System 11B CPU Schematic (16-9019, Sheet 3 of 4)

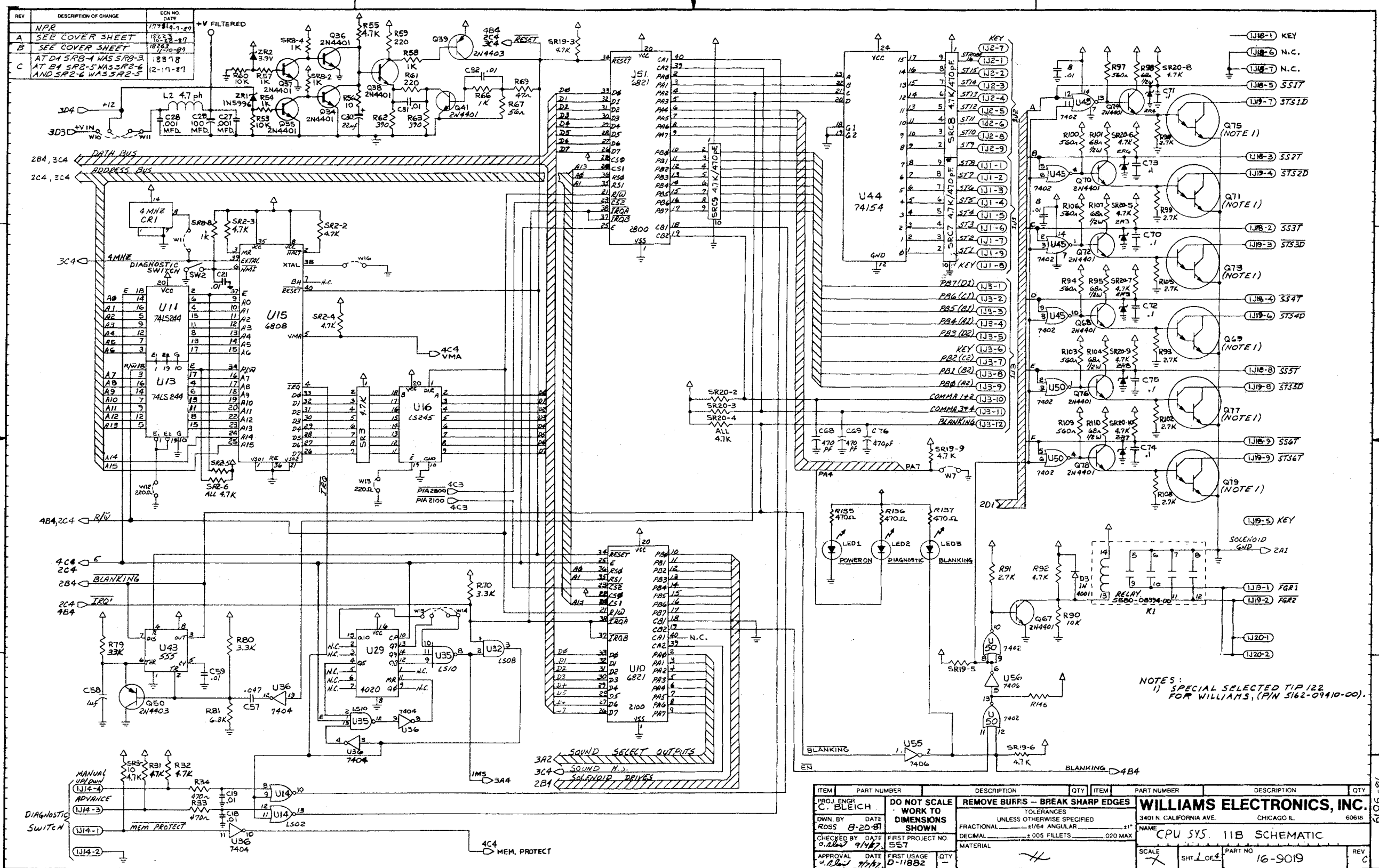
REV	DESCRIPTION OF CHANGE	EDN NO	DATE
A	SEE COVER SHEET	1798	9-7-87
B	SEE COVER SHEET	1823	10-28-87
C	AT A4 C77 WAS C78 AND C78 WAS C77	18399	12-17-87
D	R71 THRU R78 WAS 1.5K Q42 THRU Q49 WAS 2N3904	19042	5-12-88



NOTES:
 1) SPECIAL SELECTED TIP 122 FOR WILLIAMS, (P/N 5162-09410-00).

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
DO NOT SCALE WORK TO DIMENSIONS SHOWN							
REMOVE BURRS - BREAK SHARP EDGES							
TOLERANCES UNLESS OTHERWISE SPECIFIED							
FRACTIONAL ±1/64 ANGULAR ±1°							
DECIMAL ±.005 FILLETS .020 MAX							
MATERIAL							
WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE. CHICAGO IL 60618				NAME CPU SYS 11B SCHEMATIC			
SCALE X				SHT 2 OF 4 PART NO. 16-9019 REV 3			

System 11B CPU Schematic (16-9019, Sheet 2 of 4)



ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ ENGR C. BLEICH DOWN BY DATE ROSS 8-20-81 CHECKED BY DATE G. B. 9/14/82 APPROVAL DATE 9/14/82							
DO NOT SCALE WORK TO DIMENSIONS SHOWN				REMOVE BURRS - BREAK SHARP EDGES TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONAL ±1/64 ANGULAR ±1° DECIMAL ±.005 FILLETS ±.020 MAX MATERIAL			
WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE. CHICAGO IL. 60618							
NAME CPU SYS. 11B SCHEMATIC							
SCALE		SHT. L OF 4		PART NO.		REV.	
X		1		16-9019		C	

System 11B CPU Schematic (16-9019, Sheet 1 of 4)

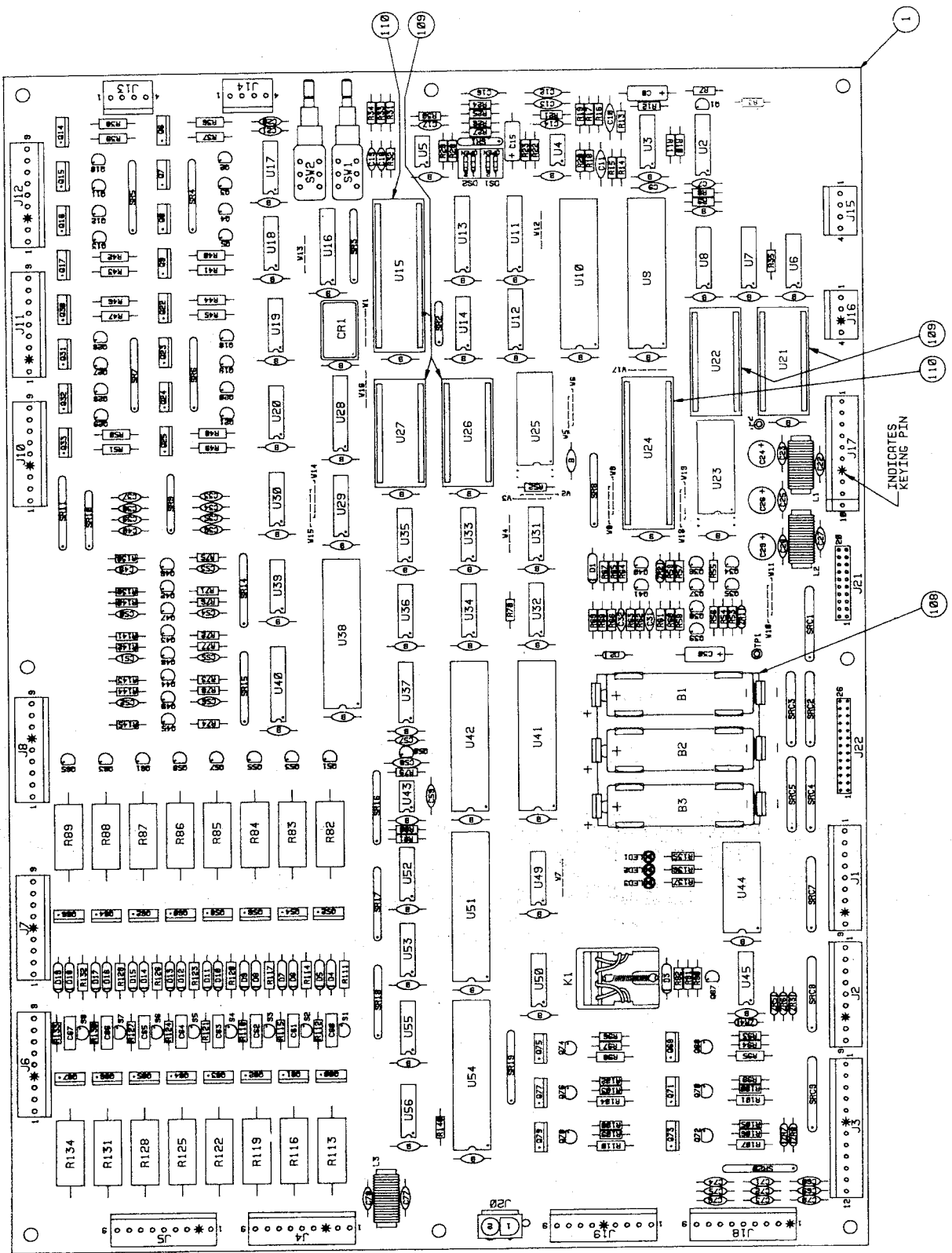
System 11B CPU Board

p/n D-11883-566

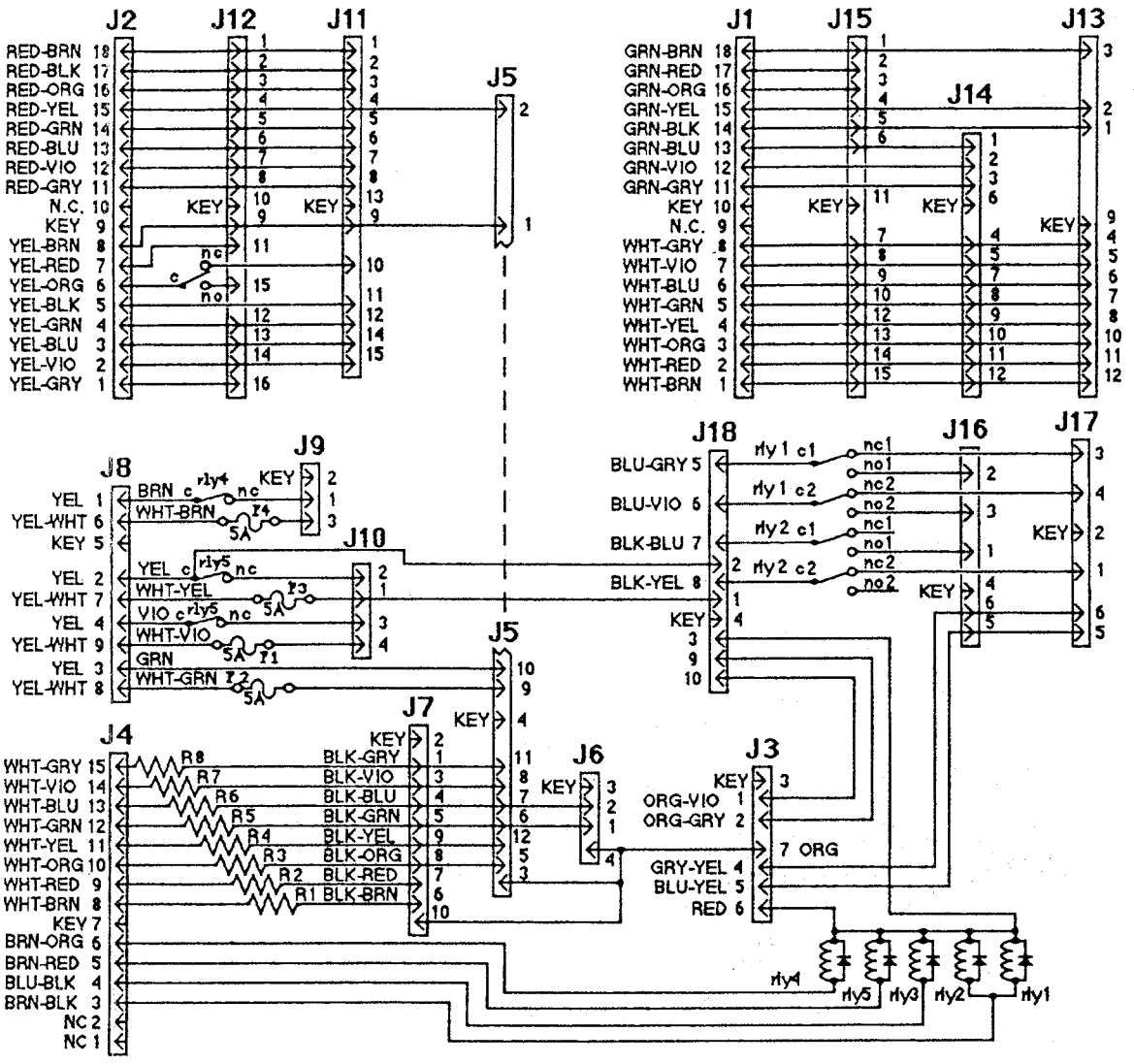
Item	Part No.	Ckt Designator	Description	Item	Part No.	Ckt Designator	Description
1	5764-12206-00		Bare P. C. Board	64	5010-10170-00	R69	Resistor, 47Ω, 5%, 1/4w, C. F.
2	5370-09691-00	U3	IC, CVSD Mod., 55536	65	5010-09160-00	R59, R61, W12, W13	Resistor, 220Ω, 5%, 1/4w, C. F.
3	5370-09321-00	U4, U5	IC, Dual Op Amp, 1458	66	5010-09416-00	R33, R34, R71-R78, R135-R137	Resistor, 470Ω, 5%, 1/4w, C. F.
4	5281-09308-00	U16	IC, Octal Bus Xcvr, 74LS245	67	5010-09179-00	R9	Resistor, 3.3MΩ, 5%, 1/4w, C. F.
5	5430-08972-00	U9, U10, U38, U41, U42, U51, U54	IC, PIA, MC6820/6821	68	Not Used		
6	5340-10139-00	U25	IC, 2K x 8 CMOS Static RAM	69	5010-10361-00	R111, R114, R117, R120, R123, R126, R129, R132	Resistor, 1.2KΩ, 5%, 1/2w, C. F.
7	5280-09010-00	U44	IC, 4-16 Decoder, 74154	70	Not Used		
8	5281-09246-00	U7, U8, U12	IC, 2-4 Decoder, 74LS139	71	Not Used		
9	5075-09406-00	ZR3 - ZR8	Diode, Zener, 6.2v, 0.5w	72	5010-09120-00	R17	Resistor, 270KΩ, 5%, 1/4w, C. F.
10	5164-10998-00	Q42 - Q49	Transistor, NPN, 2N5550, TO-92	73	5010-09333-00	R15, R16, R18	Resistor, 180KΩ, 5%, 1/4w, C. F.
11	5281-09487-00	U6	IC, Dual D Flip-flop, 74LS74	74	5010-09324-00	R29, R30	Resistor, 27KΩ, 5%, 1/4w, C. F.
12	5431-09449-00	U43	IC, Timer, MC1455	75	5010-09269-00	R20, R21	Resistor, 12KΩ, 5%, 1/4w, C. F.
13	5310-09236-00	U29	IC, 14-b Counter, 4020	76	5010-09356-00	R27, R28	Resistor, 820Ω, 5%, 1/4w, C. F.
14	5281-09743-00	U32	IC, Quad 2-Input AND, 74LS08	77	5019-09783-00	SR18	SIP, 9R, 10-pin, 6.8KΩ, .125w/R, 5%
15	5281-09247-00	U14	IC, Quad 2-Input NOR, 74LS02	78	5019-09362-00	SR3, SR15, SR17, SR19, SR20	SIP, 9R, 10-pin, 4.7KΩ, .125w/R, 5%
16	5281-09235-00	U35	IC, Triple 3-Input NAND, 74LS10	79	5019-09808-00	SR4, SR6, SR11	SIP, 9R, 10-pin, 560Ω, .125w/R, 5%
17	5280-09013-00	U36	IC, Hex Inverter, 7404	80	5019-09785-00	SR16	SIP, 9R, 10-pin, 2.2KΩ, .125w/R, 5%
18	5281-09499-00	U31, U34	IC, Quad 2-Input NAND, 74LS00	81	5019-10472-00	SR14	SIP, 9R, 10-pin, 3.3KΩ, .125w/R, 5%
19	5281-10014-00	U33	IC, Dual 4-Input NAND, 74LS20	82	5019-09669-00	SR8	SIP, 9R, 10-pin, 1.0KΩ, .125w/R, 5%
20	5281-09486-00	U28	IC, Octal D Flip-flop, 74LS374	83	5019-09780-00	SR9, SR10	SIP, 4R, 8-pin, 1KΩ, 5%
21	5371-09152-00	U2	IC, D/A Converter, MC1408	84	5019-09788-00	SR1, SR2	SIP, 5R, 8-pin, 4.7KΩ, .125w/R, 5%
22	5281-09745-00	U37	IC, 3-8 Decoder, 74LS138	85	5019-09792-00	SR5, SR7	SIP, 9R, 10-pin, 2.7KΩ, .125w/R, 5%
23	5340-09878-00	U23	IC, 2K x 8 Static RAM, 2016	86	5060-10396-00	SRC1 - SRC5, SRC7 - SRC9	SIP, 8R, 8C, 10-pin, 4.7KΩ & 470pfd
24	5164-10998-00	Q42 - Q49	Transistor, NPN, 2N5550, TO-92	87	5010-08774-00	R22	Resistor, 22KΩ, 5%, 1/4w, C. F.
25	5281-09867-00	U11, U13, U40	IC, Octal Buffer, 74LS244	88	5043-08980-00	C14, C17-C21, C31, C32, C49-C56, C59, + 54 Bypass, marked B	Capacitor, 0.01 μfd, 50v(+80,-20%), Axial
26	5280-08973-00	U17-U20, U52, U53	IC, Quad 2-Input AND, 7408	89	5043-09845-00	C22, C23, C25, C27, C28	Capacitor, 1K pfd, 50v(±20%), Axial
27	5280-08974-00	U55, U56	IC, Hex Inverter, 7406	90	5043-08996-00	C9, C70-75, C77, C78	Capacitor, 0.1 μfd, 50v(±20%), Axial
28	5310-09155-00	U30, U39	IC, Quad 2-Input NAND, MC14011	91	5040-09343-00	C8, C15	Capacitor, 10 μfd, Electr., 20v(±20%), Axial
29	5280-08948-00	U45, U50	IC, Quad 2-Input NOR, 7402	92	5043-09844-00	C7	Capacitor, 47 pfd, 50v(±20%), Axial
30	5280-09309-00	U49	IC, Hex Buffer, 7407	93	5040-10974-00	C24, C26, C29	Capacitor, 100 μfd, Electr., 25v(+50,-10%), Axial
31	5671-09019-00	LED1-LED3	LED, Red, Display	94	Not Used		
32	5521-10506-00	CR1	Oscillator, 4 MHz	95	5045-09796-00	C60-C67	Capacitor, 0.1 μfd, Polycarbonate Rad., 100v(±10%)
33	5162-08976-00	Q51, Q53, Q55, Q57, Q59, Q61, Q63, Q65, Q60, Q62, Q64, Q66	Transistor, NPN Darl. 2N6427, TO-92	96	5043-09065-00	C33-C40, C68, C69, C76, C10, C12	Capacitor, 470 pfd, 50v(±20%), Axial
34	5191-08978-00	Q52, Q54, Q56, Q58, Q60, Q62, Q64, Q66	Transistor, PNP, TIP42, TO-220	97	5040-09545-00	C30	Capacitor, 22 μfd, Electr., 10v(+50,-10%), Axial
35	5162-09410-00	Q6-Q9, Q14-Q17, Q22-Q25, Q30-Q33, Q69, Q71, Q73, Q75, Q77, Q79, Q80-Q87	Transistor, NPN, TIP122, TO-220	98	5041-09031-00	C58	Capacitor, 1 μfd, Tant., 25v(±20%), Axial
36	5160-08938-00	Q2-Q5, Q10-Q13, Q18-Q21, Q26-Q29, Q34-Q38, Q41, Q67, Q68, Q70, Q72, Q74, Q76, Q78	Transistor, NPN, 2N4401, TO-92	99	5043-09030-00	C16, C57	Capacitor, 0.047 μfd, 50v(±20%), Axial
37	5160-10269-00	Q1, Q40	Transistor, NPN, 2N3904, TO-92	100	Not Used		
38	5190-09016-00	Q39, Q50	Transistor, PNP, 2N4403, TO-92	101	5043-09492-00	C11	Capacitor, 100 pfd, ceramic, 100v(±20%)
39	5130-09014-00	S1-S8	SCR, 30v, 0.8A, 2N5060	102	Not Used		
40	5070-06258-00	D3-D19	Diode, 1N4001	103	5048-10992-00	C13	Capacitor, 4700 pfd, ceramic, 50v(±10%)
41	5070-08919-00	D2	Diode, 1N4148, 150mA	104	5551-09822-00	L1-L3	Inductor, 4.7 μH, 3A
42	5070-09266-00	D1	Diode, 1N5817, 1.0A	105	5641-09312-00	SW1, SW2	Switch, Pushbutton, DPDT, 100v, 5A
43	5075-09018-00	ZR1	Diode, Zener, 1N5996A, 6.8v, 0.5w	106	5880-09022-00	B1-B3	Battery, Alkaline, 1.5v, AA
44	5075-09059-00	ZR2	Diode, Zener, 1N5990, 3.9v, 0.5w	107	20-9491	W18, W19	Bus Wire, Jumper
45	5010-08992-00	R94, R97, R100, R103, R106, R109	Resistor, 560Ω, 5%, 1/4w, C. F.	108	5881-09021-00		Battery Holder, #171
46	5010-09039-00	R56	Resistor, 10Ω, 5%, 1/4w, C. F.	109	5700-10176-00		IC Socket, 28 pin
47	5010-09534-00	W1, W2, W4, W5, W7, W8, W11, W14, W16, W17, W19	Resistor, 0Ω, 5%, 1/4w, C. F.	a)	A-5343-566-1	U26	IC, Game ROM 2, 27128
48	5010-08991-00	R31, R32, R35, R52, R55, R68, R92, R146	Resistor, 4.7KΩ, 5%, 1/4w, C. F.	b)	A-5343-566-2	U27	IC, Game ROM 1, 27256
49	5010-09358-00	R54, R57, R58, R64, R66, R138-R145	Resistor, 1.0KΩ, 5%, 1/4w, C. F.	c)	A-5343-566-4	U21	IC, Sound ROM 1, 27256
50	5010-09113-00	R79	Resistor, 33KΩ, 5%, 1/4w, C. F.	d)	A-5343-566-3	U22	IC, Sound ROM 2, 27256
51	5010-08983-00	R7, R8, R10, R70, R80	Resistor, 3.3KΩ, 5%, 1/4w, C. F.	110	5700-08985-00		IC Socket, 40 pin
52	5010-09034-00	R11-R14, R25, R26, R53, R60, R65, R90	Resistor, 10KΩ, 5%, 1/4w, C. F.	a)	5400-09150-00	U15	IC, μProcessor, 6802
53	5010-09086-00	R81	Resistor, 6.8KΩ, 5%, 1/4w, C. F.	b)	5400-09150-00	U24	IC, μProcessor, 6802
54	5010-09363-00	R3	Resistor, 5.6KΩ, 5%, 1/4w, C. F.	111	5824-09248-00	TP1, TP2	Test Point
55	5010-08997-00	R23, R24, R91, R93, R96, R99, R102, R105, R108, R112, R115, R118, R121, R124, R127, R130, R133, R113, R116, R119, R122, R125, R128, R131, R134	Resistor, 2.7KΩ, 5%, 1/4w, C. F.	112 - 115	Not Used		
56 ²	5012-09037-00	R113, R116, R119, R122, R125, R128, R131, R134	Resistor, 0.4Ω, 5%, 3w, Wire-Wnd.	116	Not Used		
57	5010-08993-00	R36-R51, R95, R98, R101, R104, R107, R110	Resistor, 68Ω, 5%, 1/2w, C. F.	117	5580-08994-01	K1	Relay, 4-pole, 40Ω, 6v
58 ²	5012-10880-00	R82-R89	Resistor, 27Ω, 5%, 2w, C. F.	118	5791-10862-09	J1, J2, J4-J18, J10-1J12, J17-J19	Connector, 9 pin (Hdr)
59	Not Used			119	5791-10862-04	J13, J14, J16	Connector, 4 pin (Hdr)
60	Not Used			120	5791-10862-12	J3	Connector, 12 pin (Hdr)
61	5010-10987-00	R19	Resistor, 56KΩ, 5%, 1/4w, C. F.	121	Not Used		
62	5010-10003-00	R62, R63	Resistor, 390Ω, 5%, 1/4w, C. F.	122	5791-10850-00	J22	Connector, 26 pin Ribbon (Hdr)
63	5010-10171-00	R67	Resistor, 56Ω, 5%, 1/4w, C. F.	123	5791-09437-00	J21	Connector, 20 pin Ribbon (Hdr)

NOTES:

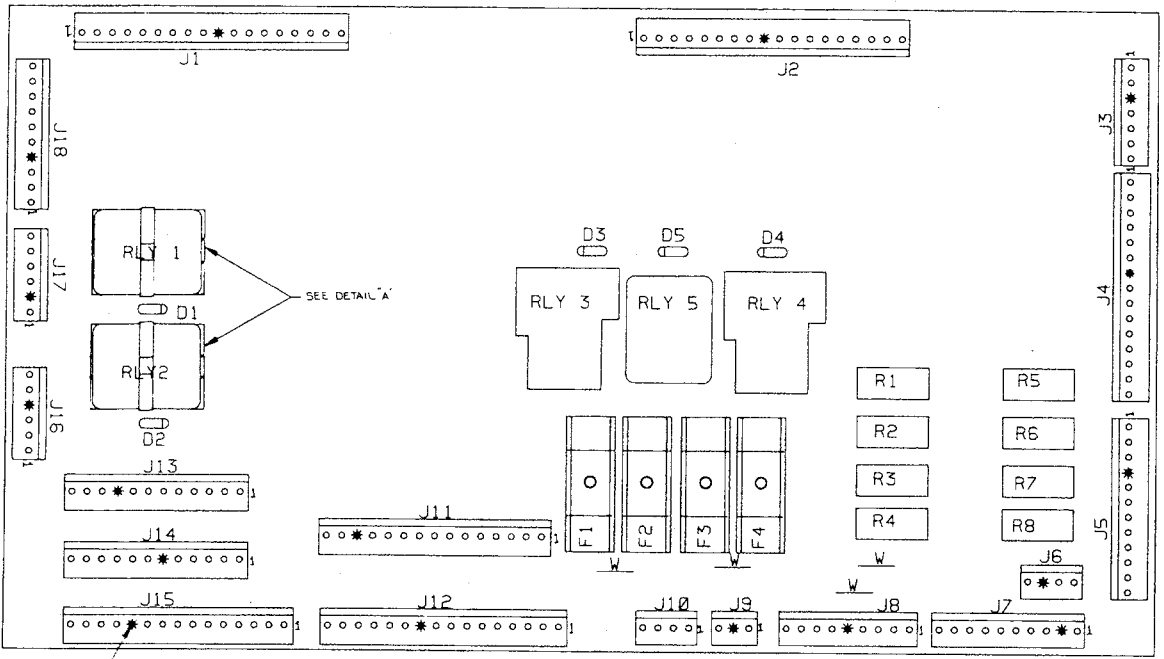
- For Schematic, refer to drawing #16-9019.
- Items 56 and 58 (resistors) must be mounted 1/8" above PCB surface.
- Standard Jumper: W1, W2, W4, W5, W7, W8, W11, W14, W16, W17, W19.



System 11B CPU Board (D-11883) Parts Information

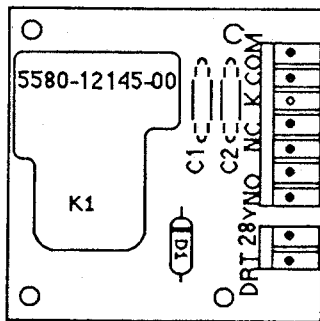


Backbox Interconnect Board (D-12112) Schematic



BANZAI RUN Interconnect PC Board Assembly p/n D-12112

Part No.	Description	Part No.	Description
5768-12292-00	PC Board	5733-12060-01	Fuseholder (for F1 - F4)
5791-12273-03	Header, 3-pin (J9)	5731-09651-00	Fuse, 5A, S-B, 250v (F1 - F4)
5791-10862-04	Header, 4-pin (J6, J10)	5580-09555-01	Relay, DPDT 13A (RLY 5)
5791-10862-06	Header, 6-pin (J16, J17)	5580-12145-00	Relay, 24V dc (RLY3, RLY4)
5791-10862-07	Header, 7-pin (J3)	5070-09054-00	Diode, 1N4004, 1A (D1 - D5)
5791-10862-09	Header, 8-pin (J8)	5012-12163-00	Resistor, 11Ω, 10% (R1, R2)
5791-10862-10	Header, 10-pin (J7, J18)	5012-10023-00	Resistor, 8Ω, 10% (R3 - R8)
5791-10862-12	Header, 12-pin (J5, J13, J14)	5580-12299-00	Relay Assy, (RLY1, RLY2) including:
5791-10862-15	Header, 15-pin (J4, J11, J15)	5580-12299-0A	Relay, 24V dc (RLY1, RLY2)
5791-10862-16	Header, 16-pin (J12)	5580-12299-0B	Socket, Relay Mounting
5791-10862-18	Header, 18-pin (J1, J2)	5580-12299-0C	Clip, Relay Holddown



Ball Lifter Motor Relay Board Assembly p/n C-11902-1

Part No.	Description
5768-12221-00	PC Board
5070-09054-00	Diode, 1N4004, 1.0A
5580-12145-00	Relay, 24vdc, 30A
5791-12273-02	Header, 2-pin sq post (J1)
5791-12273-07	Header, 7-pin sq post (J2)

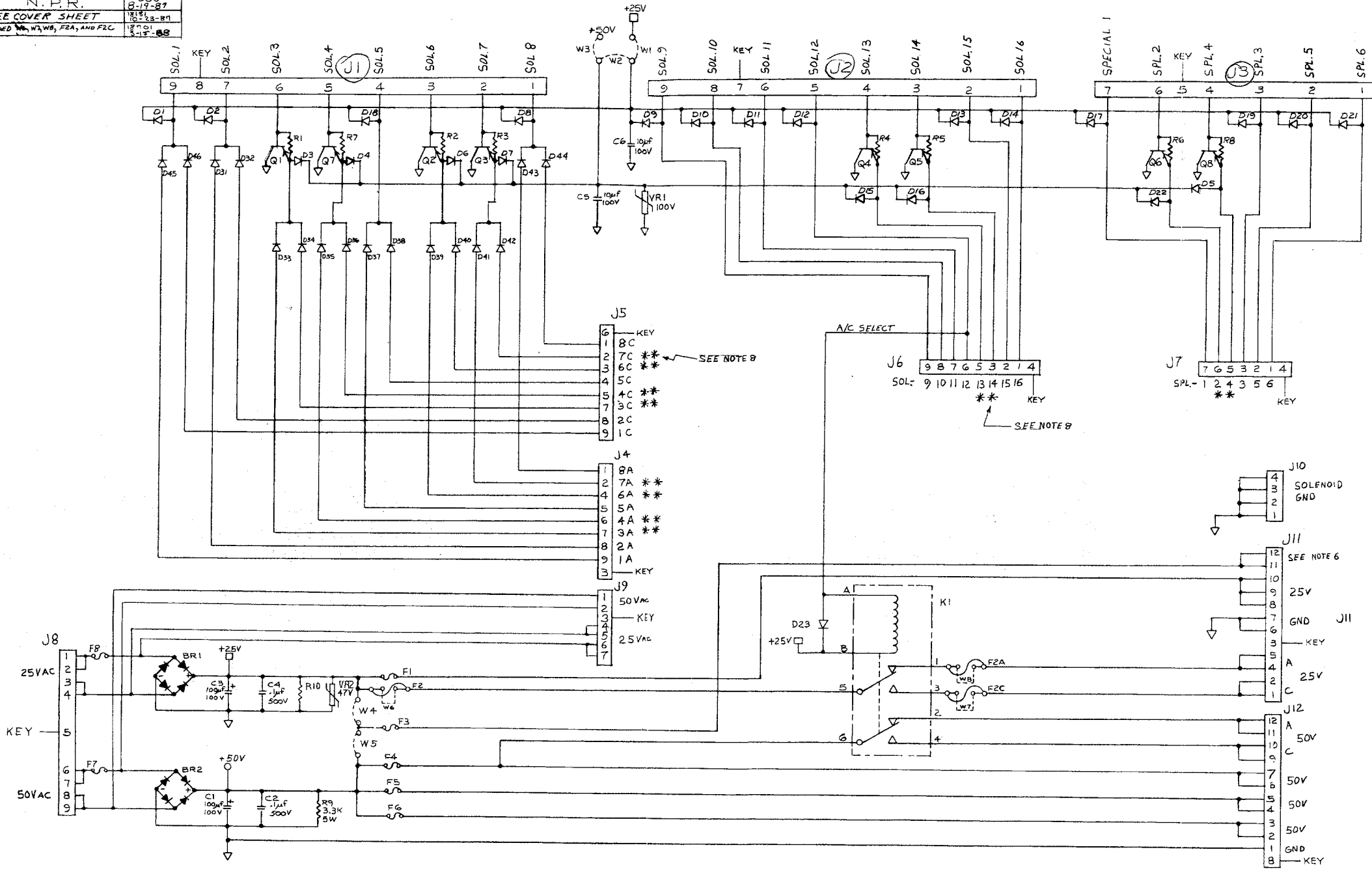
Marquee Flashers PC Board Assembly p/n D-12144

Part No.	Description
5768-12296-00	PC Board
24-8803	Twist Lamp (#906) Socket
24-8802	Flashlamp, #906 (13v, 0.69A)
5791-10871-09	Header, 9-pin sq post (J1)

Top 6 Lamps ('6-L') PC Board Assembly p/n C-12043

Part No.	Description
5768-12269-00	PC Board
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-09	Header, 10-pin sq post (J1)

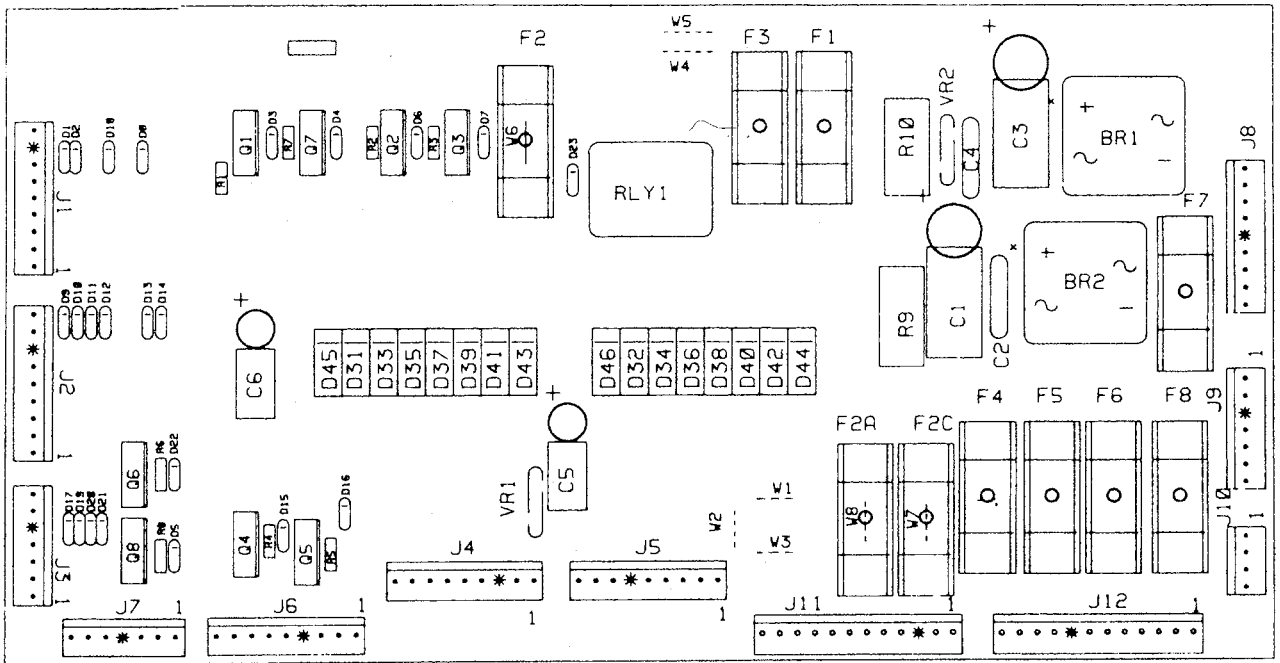
REV	DESCRIPTION OF CHANGE	ECN NO	DATE
	N.P.R.	19886	8-19-87
A	SEE COVER SHEET	181	12-13-87
B	ADDED W1, W2, W3, W4, W5, W6, F2A, AND F2C	181	12-13-87
		181	12-13-87



- NOTES:
1. R1-R8, 220Ω 1/4 W
 2. Q1-Q8, TIP-36C
 3. D1-D23, 1N4003
 4. D31-D46, MR501
 5. BR1, BR2, 35A 250V
 6. W1, W3, W4 JUMPERS SELECT COMBINATION OF 25V AND 50V COILS; W2, W3, W5 JUMPERS SELECT 50V COILS.
 7. F1-F8, SEE APPROPRIATE ASSEMBLY FOR FUSE VALUES (D-11813-1).
 8. *, 50V COILS ONLY; **, 50V COIL OR FLASH LAMP ONLY.
 9. VOLTAGES SPECIFIED UNDER FULL LOAD CONDITIONS.

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ ENGR	K. DEGER	DO NOT SCALE WORK TO DIMENSIONS SHOWN		WILLIAMS ELECTRONICS, INC. 3401 N. CALIFORNIA AVE. CHICAGO IL 60618 NAME: SCHEMATIC - AUX. PWR. DR. P. SCALE: N/S SHT. 1 OF 1 PART NO. 16-9015 REV 8			
DOWN BY	DATE	REMOVE BURRS - BREAK SHARP CORNERS & EDGES					
CHECKED BY	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED		DECIMAL	XXX	ANGULAR	±1/2°
APPROVAL	DATE	FIRST PROJECT NO	557	XXX	XXX	FRACTIONAL	±1/64
		FIRST USAGE	557-BB				

Aux Power Driver Board Schematic



Aux Power Driver Unit Board

p/n D-12247-566

Part No.	Ckt Designator	Description	Part No.	Ckt Designator	Description
5760-12184-00		Bare P. C. Board	5191-12179-00	Q1 - Q8	Transistor, TIP36C
5040-09537-00	C1, C3	Capacitor, 100 μ fd., 100v, Radial	5580-09555-01	K1	Relay, DPDT, 13A
5040-12181-00	C5, C6	Capacitor, 10 μ fd., 100v, Radial	5733-12060-01		Fuseholder
5043-08996-00	C2, C4	Capacitor, 0.1 μ fd., 500v	5731-08665-00	F5, F6	Fuse, 2, S-B, 250v
5010-09160-00	R1 - R8	Resistor, 220 Ω , 1/4w C.F., 5%	5731-09128-00	F1, F2A, F3, F4	Fuse, 2-1/2A, S-B, 250v
5012-12238-00	R9	Resistor, 8.2K, 5w, 5%	5731-09651-00	F2C	Fuse, 5A, S-B, 250v
5010-09534-00	W1, W3, W4, W6	Resistor, 0 Ω , 1/4w	5731-06314-00	F7	Fuse, 4A, S-B, 250v
5017-12180-00	VR1	Varistor, 100v	5731-09432-00	F8	Fuse, 7A, S-B, 250v
5017-09064-00	VR2	Varistor, 47v	5791-10862-09	J1, J2, J4 - J6, J8	Connector, 9-pin Hdr, Sq Pin
5100-09690-00	BR1, BR2	Bridge Rectifier, 35A, 200v	5791-10862-07	J3, J7, J9	Connector, 7-pin Hdr, Sq Pin
5070-08785-00	D1 - D23	Diode, 1N4003	5791-10862-12	J11, J12	Connector, 12-pin Hdr, Sq Pin
5070-09045-00	D31 - D46	Diode, MR501	5791-10862-04	J10	Connector, 4-pin Hdr, Sq Pin

Center Eject Lamp ('4-L') PC Board Assembly

p/n C-12139

Part No.	Description
5768-12295-00	PC Board
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-06	Header, 6-pin sq post (J1)

Bonus Lamps ('11-L') PC Board Assembly

p/n D-12042

Part No.	Description
5768-12268-00	PC Board
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-12	Header, 12-pin sq post (J1)
5010-09534-00	Resistor, 0 Ω (W1)

6-Bank ('13-L') Lamp PC Board Assembly

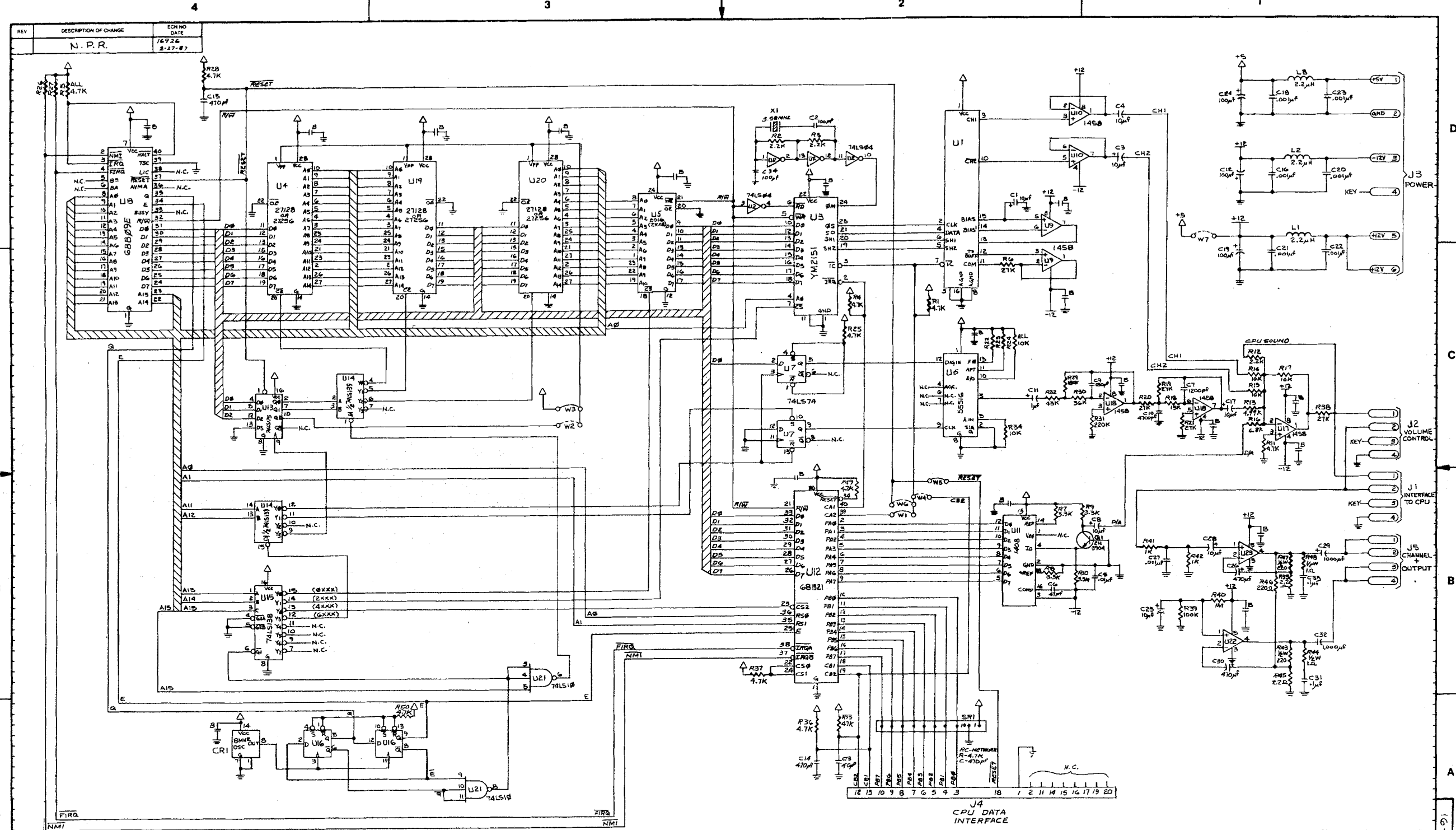
p/n D-12041

Part No.	Description
5768-12267-00	PC Board
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-10	Header, 10-pin sq post (J1)

Bottom 8 Lamp ('8-L') PC Board Assembly

p/n C-12040

Part No.	Description
5768-12266-00	PC Board
24-8767	Socket, Twist Lamp (#555)
24-8768	Bulb, #555 (6.3v, 0.25A)
5070-09054-00	Diode, 1N4004
5791-10871-12	Header, 12-pin sq post (J1)
5010-09534-00	Resistor, 0 Ω (W1)



REV: N.P.R. ECN NO: 16926 DATE: 2-17-87

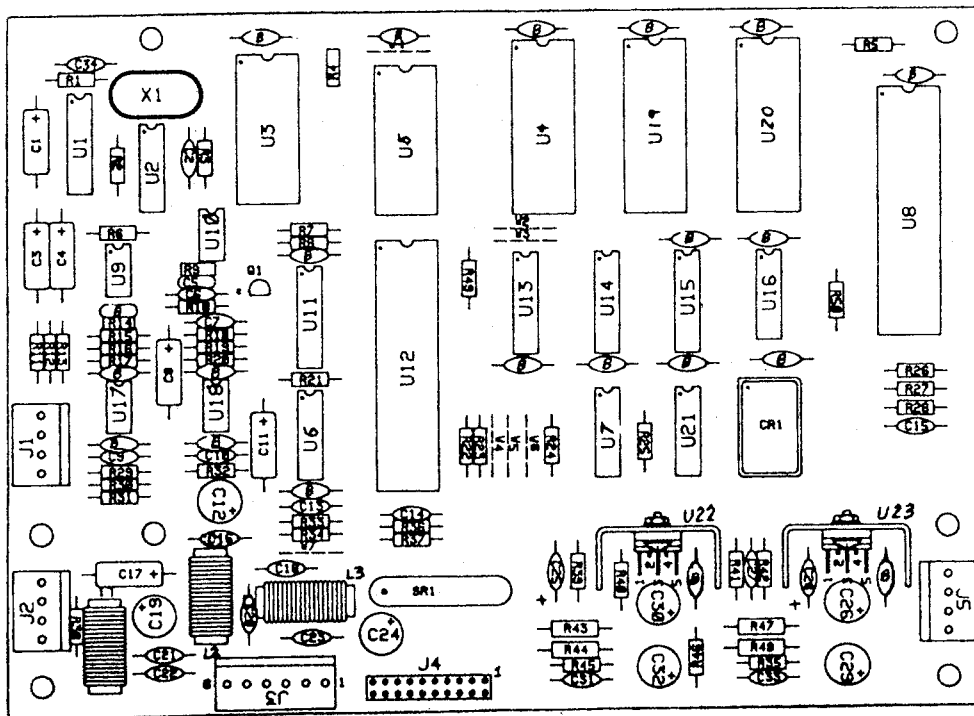
NOTES:
 - ALL CAPACITORS WITH "B" ARE BYPASS AND HAVE A VALUE OF .01μF.
 - LAST USED C34, R48, U23, W7, J5, L3.

SPARE GATES:
 74LS10, 74LS14, 74LS15, 74LS16, 74LS17, 74LS18, 74LS19, 74LS20, 74LS21, 74LS22, 74LS23, 74LS24, 74LS25, 74LS26, 74LS27, 74LS28, 74LS29, 74LS30, 74LS31, 74LS32, 74LS33, 74LS34, 74LS35, 74LS36, 74LS37, 74LS38, 74LS39, 74LS40, 74LS41, 74LS42, 74LS43, 74LS44, 74LS45, 74LS46, 74LS47, 74LS48, 74LS49, 74LS50, 74LS51, 74LS52, 74LS53, 74LS54, 74LS55, 74LS56, 74LS57, 74LS58, 74LS59, 74LS60, 74LS61, 74LS62, 74LS63, 74LS64, 74LS65, 74LS66, 74LS67, 74LS68, 74LS69, 74LS70, 74LS71, 74LS72, 74LS73, 74LS74, 74LS75, 74LS76, 74LS77, 74LS78, 74LS79, 74LS80, 74LS81, 74LS82, 74LS83, 74LS84, 74LS85, 74LS86, 74LS87, 74LS88, 74LS89, 74LS90, 74LS91, 74LS92, 74LS93, 74LS94, 74LS95, 74LS96, 74LS97, 74LS98, 74LS99, 74LS100.

ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
PROJ ENGR	C. BLEICH	DO NOT SCALE WORK TO DIMENSIONS SHOWN		REMOVE BURNS-BREAK SHARP CORNERS & EDGES			
DWN BY	DATE	TOLERANCES UNLESS OTHERWISE SPECIFIED		DECIMAL	±0.30	ANGULAR	±1/2°
CHECKED BY	DATE	FIRST PROJECT NO.	554	XXX	±0.05	FRACTIONAL	±1/64
APPROVAL	DATE	FIRST USAGE	D-11579	MATERIAL			

WILLIAMS ELECTRONICS, INC.
 3401 N. CALIFORNIA AVE. CHICAGO IL. 60618
 NAME: AUDIO SYSTEM SCHEMATIC
 SCALE: N/S SHT: L OF L PART NO: 16-8999 REV: -

Audio Board (D-11581) Schematic



Audio Board Assembly

p/n D-11581-566

Part No.	Ckt Designator	Description	Part No.	Ckt Designator	Description
5766-12130-00		Bare P. C. Board	5010-08991-00	R1, R4, R5, R11, R25 - R28, R33, R36, R37, R49, R50	Resistor, 4.7K, 1/4w, 5%
5731-11087-00	U1	IC, D/A Conv, YM3012	5010-09034-00	R14 - R17	Resistor, 10K, 1/4w, 5%
a) 5700-09006-00		Socket, IC, 16-pin (U1)	5010-09324-00	R6, R38	Resistor, 27K, 1/4w, 5%
5730-11086-00	U3	IC, Sound Processor, YM2151	5010-09162-00	R39	Resistor, 100K, 1/4w, 5%
a) 5700-09004-00		Socket, IC, 24-pin (U3)	5010-10258-00	R40	Resistor, 1M, 1/4w, 5%
5400-10320-00	U8	IC, μ Processor, MC68B09E	5010-09179-00	R10	Resistor, 3.3M, 1/4w, 5%
a) 5700-08985-00		Socket, IC, 40-pin (U8)	5010-09534-00	W9	Resistor, 0 Ω , 1/4w, 5%
A-5343-566-5	U4	IC, Audio ROM 1	5040-09343-00	C1, C3, C4, C8	Capacitor, 10 μ fd, 20v, \pm 20%
A-5343-566-6	U19	IC, Audio ROM 2	5040-10974-00	C12, C19, C24	Capacitor, 100 μ fd, 35v
A-5343-566-7	U20	IC, Audio ROM 3	5040-09776-00	C26, C30	Capacitor, 470 μ fd, 16v, +50, -10%
a) 5700-10176-00		Socket, IC, 28-pin (U4, U19, U20)	5040-12006-00	C29, C32	Capacitor, 1000 μ fd, 16v, 20%
5371-09152-00	U11	IC, D/A Convtr, MC1408	5041-09243-00	C25, C28	Capacitor, 10 μ fd, 10v, \pm 10%
5430-10322-00	U12	IC, PIA, MC68B21	5043-08980-00	C5, B (17)*	Capacitor, 0.01 μ fd, 50v, +80, -20%
5340-09878-00	U5	IC, RAM, 2016	5043-08996-00	C31, C33	Capacitor, 0.1 μ fd, 50v, \pm 20%
5281-09487-00	U16	IC, Dual D Flipflop, 74LS74	5043-09065-00	C13 - C15	Capacitor, 470 pfd, 50v, \pm 20%
5281-10043-00	U13	IC, 74LS175	5043-09492-00	C2, C34	Capacitor, 100 pfd, 50v, \pm 10%
5281-09235-00	U21	IC, Triple NAND, 74LS10	5043-09844-00	C6	Capacitor, 47 pfd, 50v, \pm 20%
5370-09321-00	U9, U10, U17	IC, Op Amp, MC1458	5043-09845-00	C16, C18, C20 - C23, C27	Capacitor, 1000 pfd, 50v, \pm 20%
5281-09215-00	U2	IC, Hex Inv, 74LS04	5520-09020-00	X1	Crystal, 3.58 MHz
5281-09246-00	U14	IC, 2-4 Dec, 74LS139	5521-10931-00	CR1	Oscillator, 8 MHz
5281-09745-00	U15	IC, Dual Mux, 74LS138	5551-09822-00	L1 - L3	Inductor, 4.7 μ H, 3A
5370-09156-00	U22, U23	IC, Audio Amp, TDA2002	5791-09437-00	J4	Connector, 20 pin, (Hdr), Rib. Cbl
a) 5705-09199-00		Heatsink, #6030B	5791-10862-04	J1, J2, J5	Connector, 4 pin (Hdr)
b) 20-9229		Thermal Compound	5791-10862-06	J3	Connector, 6 pin (Hdr)
c) 4006-01003-06		6-32 x 3/8 P-PH-S			
d) 4406-01117-00		6-32 Hexnut			
e) 4703-00007-00		#6 Ext. Lockwasher			
5370-09691-00	U6	IC, CVSD, 55536			
5160-10269-00	Q1	Transistor, 2N3904, NPN			
5060-10396-00	SR1	SIP 4.7K & 470pfd, 8R8C			
5010-09181-00	R44, R48	Resistor, 1.0 Ω , 1/2w, 5%			
5010-09161-00	R35, R45	Resistor, 2.2 Ω , 1/4w, 5%			
5010-09361-00	R43, R46, R47	Resistor, 220 Ω , 1/2w, 5%			
5010-09358-00	R41, R42	Resistor, 1K, 1/4w, 5%			
5010-08998-00	R2, R3, R12	Resistor, 2.2K, 1/4w, 5%			
5010-08983-00	R7 - R9	Resistor, 3.3K, 1/4w, 5%			

Notes: * 17 capacitors (shown on diagram with "B" symbol) provide +5VDC filtering for ICs.

All capacitors are ceramic, 50v, axial, unless otherwise noted.
All resistors are 5%, 1/4w, Carbon Film, unless otherwise noted.