

# SERIES E

Manual FO-650-13

Printed Circuit Board  
Schematics/Parts Lists  
for all  
Electronic Slot Machines

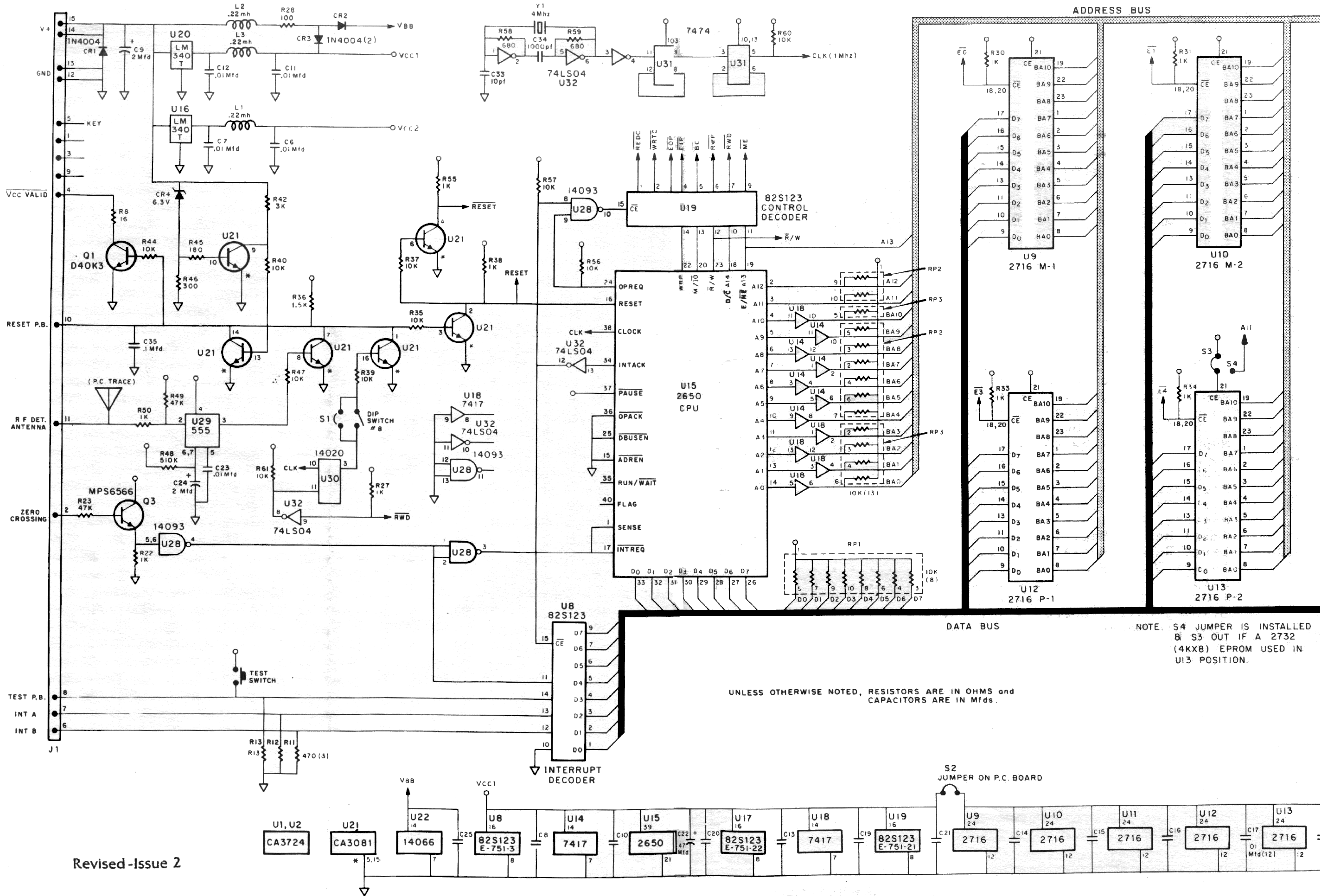
Revised-Issue 2

*Bally*<sup>®</sup>

MANUFACTURING CORPORATION  
GAMING DIVISION

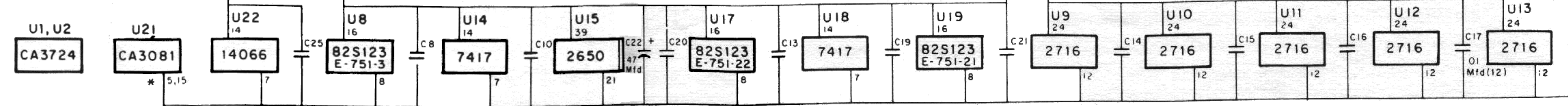
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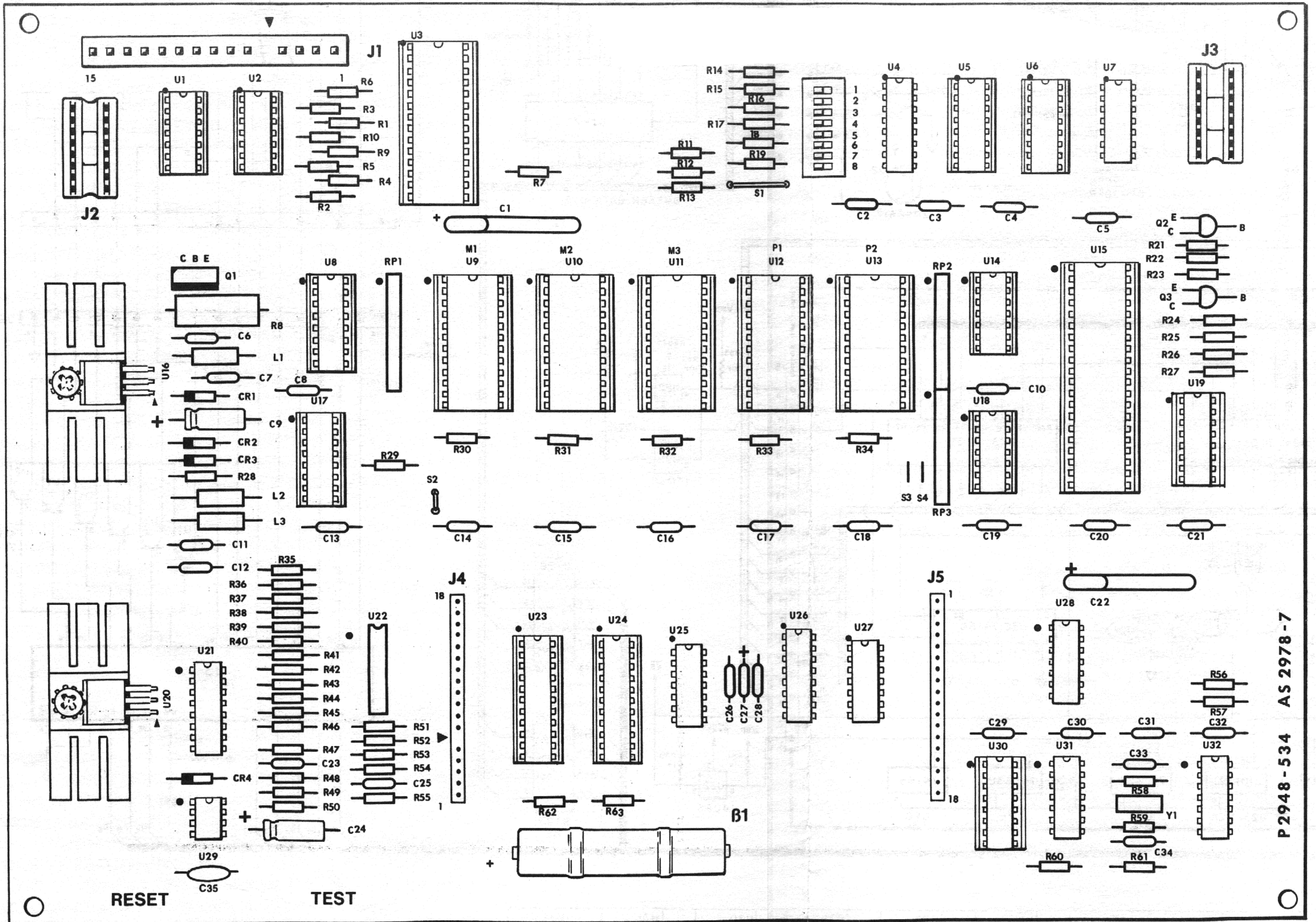


NOTE: S4 JUMPER IS INSTALLED & S3 OUT IF A 2732 (4KX8) EPROM USED IN U13 POSITION.

UNLESS OTHERWISE NOTED, RESISTORS ARE IN OHMS and CAPACITORS ARE IN Mfds.







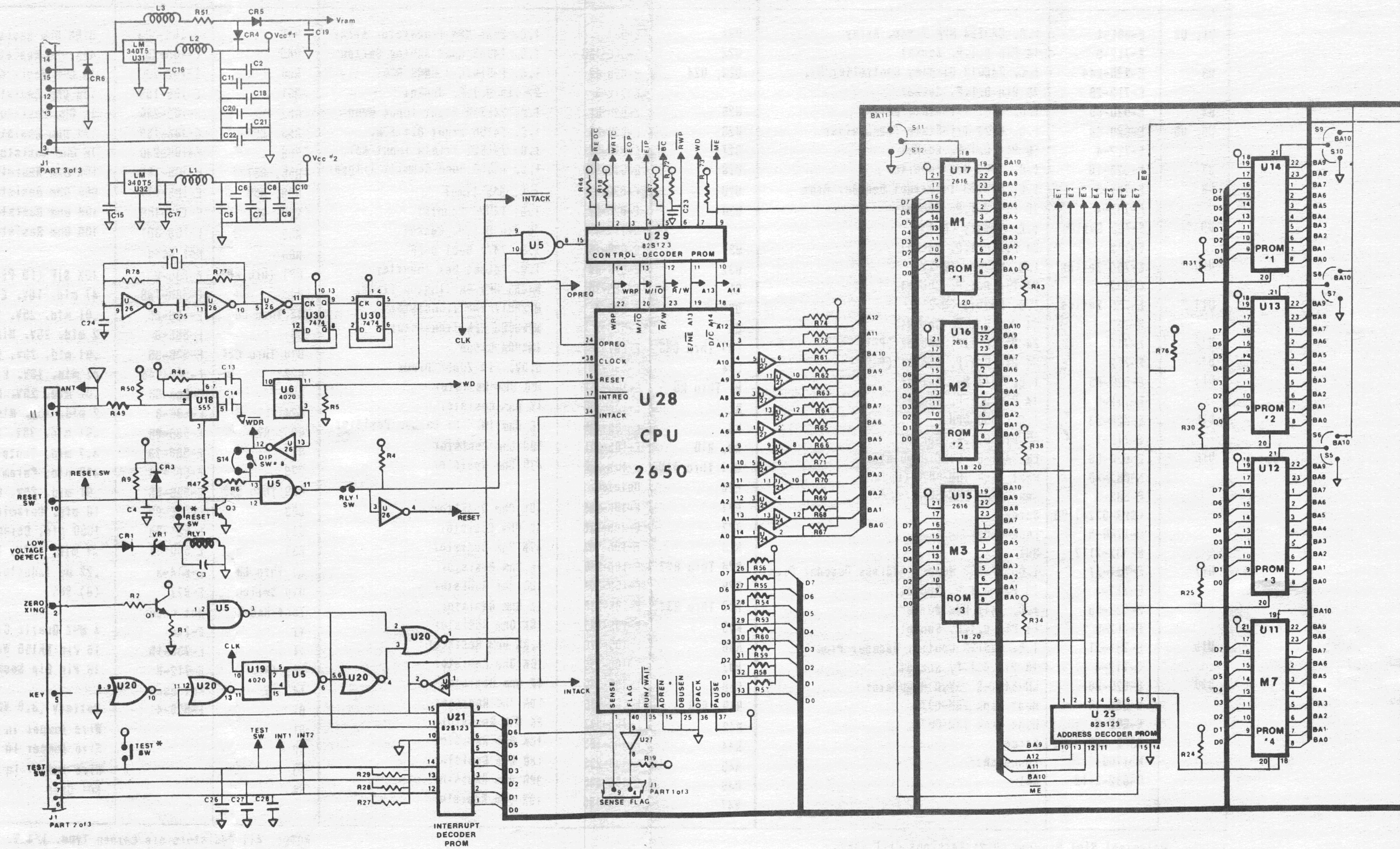
P 2948 - 534 AS 2978 - 7

E-2000 AS-2978-7 M.P.U. BOARD ASSEMBLY

SYMBOL	PART NO.	DESCRIPTION	SYMBOL	PART NO.	DESCRIPTION	SYMBOL	PART NO.	DESCRIPTION
U1, U2	E-681-1 E-712-5	I.C. CA3724 NPN Trans. Array 14 Pin D.I.P. Socket	U21	E-681	I.C. 3081 NPN Transistor Array	R48	E-105-304	510K Ohm Resistor
U3	E-620-244 E-712-28	I.C. 74C912 Display Controller/Dr. 28 Pin D.I.P. Socket	U22	E-620-196	I.C. 14066 Quad Analog Switch	R49	E-105-263	47K Ohm Resistor
U4	E-620-69	I.C. 8T97 Tri-State Buffer	U23, U24	E-620-42 E-712-3	I.C. P-5101L-3 CMOS Ram 22 Pin D.I.P. Socket	R50	E-105-230	1K Ohm Resistor
U5, U6	E-620-68 E-712-4	I.C. 8T28 Tri-State Transceiver 16 Pin D.I.P. Socket	U25	E-620-81	I.C. 74LS30 Eight Input Nand	R51	E-105-185	10K Ohm Resistor
U7	E-620-10	I.C. 7404 Hex Inverter	U26	E-620-86	I.C. 74166 Eight Bit S.R.	R52	E-105-230	1K Ohm Resistor
U8	E-751-3 E-712-4	I.C. 82S123 Interrupt Decoder Prom 16 Pin D.I.P. Socket	U27	E-620-80	I.C. 74LS27 Triple Input Nor	R53, R54	E-105-185	10K Ohm Resistor
U9 *	E-755 Series E-712	I.C. Memory (M-1) 24 Pin D.I.P. Socket	U28	E-620-170	I.C. 14093 Quad Schmitt Trigger	R55	E-105-230	1K Ohm Resistor
U10 *	E-755 Series E-712	I.C. Memory (M-2) 24 Pin D.I.P. Socket	U29	E-620-4	I.C. 555 Timer	R56, R57	E-105-185	10K Ohm Resistor
U11 *	E-755 Series E-712	I.C. Memory (M-3) 24 Pin D.I.P. Socket	U30	E-620-67 E-712-4	I.C. 14020 Counter 16 Pin D.I.P. Socket	R58, R59	E-105-277	680 Ohm Resistor
U12	E-712	24 Pin D.I.P. Socket (P-1)	U31	E-620-25	I.C. 7474 Dual D-FF	R60, R61	E-105-185	10K Ohm Resistor
U13	E-712	24 Pin D.I.P. Socket (P-2)	U32	E-620-60	I.C. 74LS04 Hex Inverter	R62	E-105-301	100 Ohm Resistor
U14	E-620-65 E-712-5	I.C. 7417 Hex Buffer 14 Pin D.I.P. Socket	Q1	E-585-75	D40K3 NPN Darlington Trans.	R63	Not used	
U15	E-620-53 E-712-1	I.C. 2650 CPU 40 Pin D.I.P. Socket	Q2	E-585-4	MPS6517 PNP Transistor	RP1 Thru RP3	E-835-9	10K SIP (10 Pin) (Pull-Up)
U16	E-620-66 E-682-10 E-682-9 LSPR-632-1106 M-1700-6 N-632-2112	LM-340T-5 5VDC Regulator Heat Sink THM-6070 (Upper) Heat Sink THM-6071 (Lower) Screw Lockwasher Nut	Q3	E-585-2	MPS6566 NPN Transistor	C1	E-586-148	47 mfd. 16V. Electrolytic
U17	E-751-27 E-712-4	I.C. 82S123 Memory Address Decoder Prom 16 Pin D.I.P. Socket	CR1 Thru CR3	E-587-6	1N4004 Diode	C2 Thru C8	E-586-85	.01 mfd. 25V. Ceramic
U18	E-620-65 E-712-5	I.C. 7417 Hex Buffer 14 Pin D.I.P. Socket	CR4	E-598-19	6.3V. 1% Zener Diode	C9	E-586-8	2 mfd. 25V. Min. Electrolytic
U19	E-751-21 E-712-4	I.C. 82S123 Control Decoder Prom 16 Pin D.I.P. Socket	R1 Thru R6	E-105-301	100 Ohm Resistor	C10 Thru C21	E-586-85	.01 mfd. 25V. Ceramic
U20	E-620-66 E-682-10 E-682-9 LSPR-632-1106 M-1700-6 N-632-2112	LM-340T-S 5VDC Regulator Heat Sink THM-6070 Heat Sink THM-6071 Screw Lockwasher Nut	R7	E-105-230	1K Ohm Resistor	C22	E-586-148	47 mfd. 16V. Electrolytic
			R8	E-105-408	16 Ohm 1W. 5% Carbon Resistor	C23	E-586-85	.01 mfd. 25V. Ceramic
			R9, R10	E-105-301	100 Ohm Resistor	C24	E-586-8	2 mfd. 25V. Min. Electrolytic
			R11 Thru R19	E-105-280	470 Ohm Resistor	C25, C26	E-586-85	.01 mfd. 25V. Ceramic
			R20	Deleted		C27	E-586-73	4.7 mfd. Tantalum
			R21	E-105-185	10K Ohm Resistor	C28	E-586-94	470 pfd. Ceramic
			R22	E-105-230	1K Ohm Resistor	C29 Thru C32	E-586-85	.01 mfd. 25V. Ceramic
			R23	E-105-263	47K Ohm Resistor	C33	E-586-93	10 pfd. Ceramic
			R24 Thru R27	E-105-230	1K Ohm Resistor	C34	E-586-95	1000 pfd. Ceramic
			R28	E-105-301	100 Ohm Resistor	C35	E-586-44	.1 mfd. 100V. Polyester
			R29 Thru R34	E-105-230	1K Ohm Resistor	L1 Thru L3	E-604-3	.22 MH Inductor
			R35	E-105-185	10K Ohm Resistor	Dip Switch	E-677	(8) SPST
			R36	E-105-229	1.5K Ohm Resistor	Test-Reset	Not used	
			R37	E-105-185	10K Ohm Resistor	Y1	E-744	4 MHZ Quartz Crystal
			R38	E-105-230	1K Ohm Resistor	J1	E-736-15	15 Pin KK156 Wafer
			R39, R40	E-105-185	10K Ohm Resistor	J2, J3	E-712-8	16 Pin Dip Socket
			R42	E-105-333	3K Ohm Resistor	J4, J5	Not used	
			R44	E-105-185	10K Ohm Resistor	B1	E-628-4	Battery (3.6 VDC. NI-CAD.)
			R45	E-105-235	180 Ohm Resistor	S1		Wire Jumper in Circuit
			R46	E-105-406	300 Ohm Resistor	S2		Wire Jumper in Circuit
			R47	E-105-185	10K Ohm Resistor	S3		Wire Jumper in Circuit
						S4		Not Used

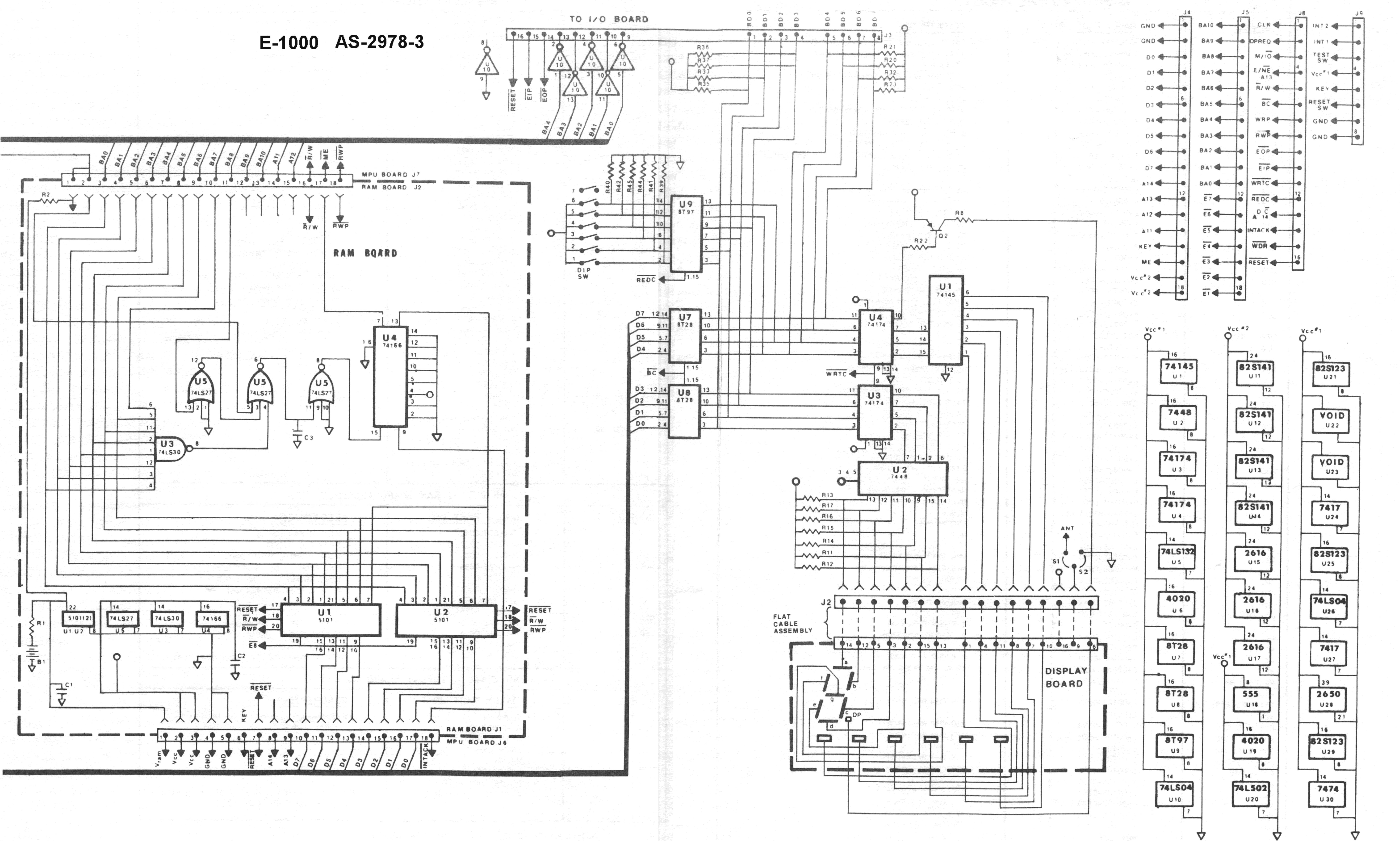
Universal Slot Program (USP) Versions will vary.

NOTE: All Resistors are Carbon Type, 1/4 W. 5% Unless Noted.  
U16 & U20; Use Thermal Compound as Needed.



\*These switches are not installed

# E-1000 AS-2978-3



SYMBOL	BALLY PART NO.	DESCRIPTION
U1	E-00620-0063	74145 I.C. BCD TO DECIMAL DECODER
U2	E-00620-0061	7448 I.C. BCD TO 7-SEG. DECODER
U3 - U4	E-00620-0064	74174 I.C. HEX D-FF
U5	E-00620-0062	74LS132 I.C. QUAD SCHMITT TRIGGER
U6	E-00620-0067 E-00712-0004	4020 I.C. COUNTER 16 PIN DIP SOCKET
U7 - U8	E-00620-0068 E-00712-0004	8T28 I.C. TRI-STATE TRANSCEIVER 16 PIN DIP SOCKET
U9	E-00620-0069	8T97 I.C. TRI-STATE TRANSCEIVER
U10	E-00620-0060	74LS04 I.C. HEX INVERTER
U11	EWRO-M2716 E-00712-0000	2716 (INTEL) I.C. EPROM (M-7) (GAME PERSONALITY) 24 PIN DIP SOCKET
U12 U13	NOT USED	
U14	E-00712-0000	24 PIN DIP SOCKET
U15	E-755-10 E-00712-0000	9316 I.C. ROM (M-3) 24 PIN DIP SOCKET
U16	E-755-9 E-00712-0000	9316 I.C. ROM (M-2) 24 PIN DIP SOCKET
U17	E-755-8 E-00712-0000	9316 I.C. ROM (M-1) 24 PIN DIP SOCKET
U18	E-00620-0004	555 I.C. TIMER
U19	E-00620-0067 E-00712-0004	4020 I.C. COUNTER 16 PIN DIP SOCKET
U20	E-00620-0011	7402 I.C. QUAD NOR GATE
U21	E-00751-0003 E-00712-0004	82S123 INTERRUPT PROM 16 PIN DIP SOCKET
U22 U23	NOT USED	
U24	E-00620-0065 E-00712-0005	7417 I.C. HEX BUFFER 14 PIN DIP SOCKET
U25	E-00751-0012 E-00712-0004	82S123 MEMORY ADDR. PROM 16 PIN DIP SOCKET
U26	E-00620-0060	74LS04 I.C. HEX INVERTER
U27	E-00620-0065 E-00712-0005	7417 I.C. HEX BUFFER 14 PIN DIP SOCKET
U28	E-00620-0053 E-00712-0001	2650A I.C. CPU 40 PIN DIP SOCKET
U29	E-00751-0001 E-00712-0004	82S123 CONTROL PROM 16 PIN DIP SOCKET
U30	E-00620-0025	7474 I.C. DUAL D-FF
U31 - U32	E-00620-0066 E-00682-0010 E-00682-0009 LSPR-00632-1106 M-01700-0006 N-00632-2112	LM-340T-5.0 5 VDC REGULATOR HEAT SINK - THM 6070 HEAT SINK - THM 6071 SCREW LOCKWASHER NUT
Q1	E-00585-0002	MPS 6566 NPN TRANSISTOR
Q2	E-00585-0004	MPS 6517 PNP TRANSISTOR
Q3	E-00585-0002	MPS 6566 NPN TRANSISTOR
CR1	E-00587-0006	1N4004 DIODE
CR2	DELETED	
CR3	E-00587-0014	1N4148 DIODE
CR4 THRU CR6	E-00587-0006	1N4004 DIODE
R1	E-00105-0230	1 K OHM RESISTOR
R2	E-00105-0263	47 K OHM RESISTOR
R3	DELETED	
R4	E-00105-0230	1 K OHM RESISTOR
R5	E-00105-0185	10 K OHM RESISTOR
R6 THRU R9	E-00105-0230	1 K OHM RESISTOR
R10	DELETED	
R11 THRU R25	E-00105-0230	1 K OHM RESISTOR
R26	DELETED	
R27 THRU R29	E-00105-0303	220 OHM RESISTOR
R30 THRU R38	E-00105-0230	1 K OHM RESISTOR
R39 THRU R42	E-00105-0303	220 OHM RESISTOR
R43	E-00105-0230	1 K OHM RESISTOR
R44 - R45	E-00105-0303	220 OHM RESISTOR
R46 - R47	E-00105-0230	1 K OHM RESISTOR
R48	E-00105-0304	510 K OHM RESISTOR
R49	E-00105-0230	1 K OHM RESISTOR
R50	E-00105-0263	47 K OHM RESISTOR
R51	E-00105-0301	100 OHM RESISTOR
R52	NOT USED	

R53 THRU R60	E-00105-0185	10 K OHM RESISTOR
R61 THRU R73	E-00105-0230	1 K OHM RESISTOR
R74 - R75	E-00105-0185	10 K OHM RESISTOR
R76	E-00105-0230	1 K OHM RESISTOR
R77 - R78	E-00105-0277	680 OHM RESISTOR
C1	DELETED	
C2	E-00586-0085	.01 MFD., 50 V. CERAMIC
C3 - C4	E-00586-0099	33 MFD., 25 V. ELECTROLYTIC
C5 THRU C11	E-00586-0085	.01 MFD., 50 V. CERAMIC
C12	DELETED	
C13	E-00586-0008	2 MFD., 50 V. ELECTROLYTIC
C14	E-00586-0085	.01 MFD., 50 V. CERAMIC
C15	E-00586-0008	2 MFD., 50 V. ELECTROLYTIC
C16 - C17	E-00586-0073	4.7 MFD., 25 V. TANTALUM
C18 THRU C20	E-00586-0085	.01 MFD., 50 V. CERAMIC
C21	E-00586-0099	33 MFD., 25 V. ELECTROLYTIC
C22	E-00586-0085	.01 MFD., 50 V. CERAMIC
C23	E-00586-0094	470 PFD., 1 K.V. CERAMIC
C24	E-00586-0093	10 PFD., 1 K V. CERAMIC
C25	E-00586-0095	1000 PFD., 1 K.V. CERAMIC
C26 THRU C28	E-00586-0073	4.7 MFD., 25 V. TANTALUM
L1 THRU L3	E-00604-0003	.22 MH INDUCTOR
RLY1	E-00146-0796	ELECTRO #RA31441051 REED RELAY
SW	E-00677-0000	8 POSITION DIP SWITCH
VR1	E-00598-0013	1N4733 ZENER DIODE
Y1	E-00744-0000	4 MHZ CRYSTAL
J1	E-00736-0015	15 CKT. KK 156 WAFER
J2 - J3	E-00712-0008	16 PIN DIP SOCKET
J4	NOT USED	
J5	NOT USED	
J6 - J7	E-00770-0018	18 CKT. KK 100 WAFER
J8	NOT USED	
J9	NOT USED	
+ (TEST POINT)	P-5399	TEST CLIP
- (TEST POINT)	P-5399	TEST CLIP
S1	WIRE JUMPER IN CIRCUIT	
S2 THRU S9	NOT USED	
S10	WIRE IN JUMPER CIRCUIT	
S11	NOT USED	
S12	WIRE IN JUMPER CIRCUIT	
S13	NOT USED	

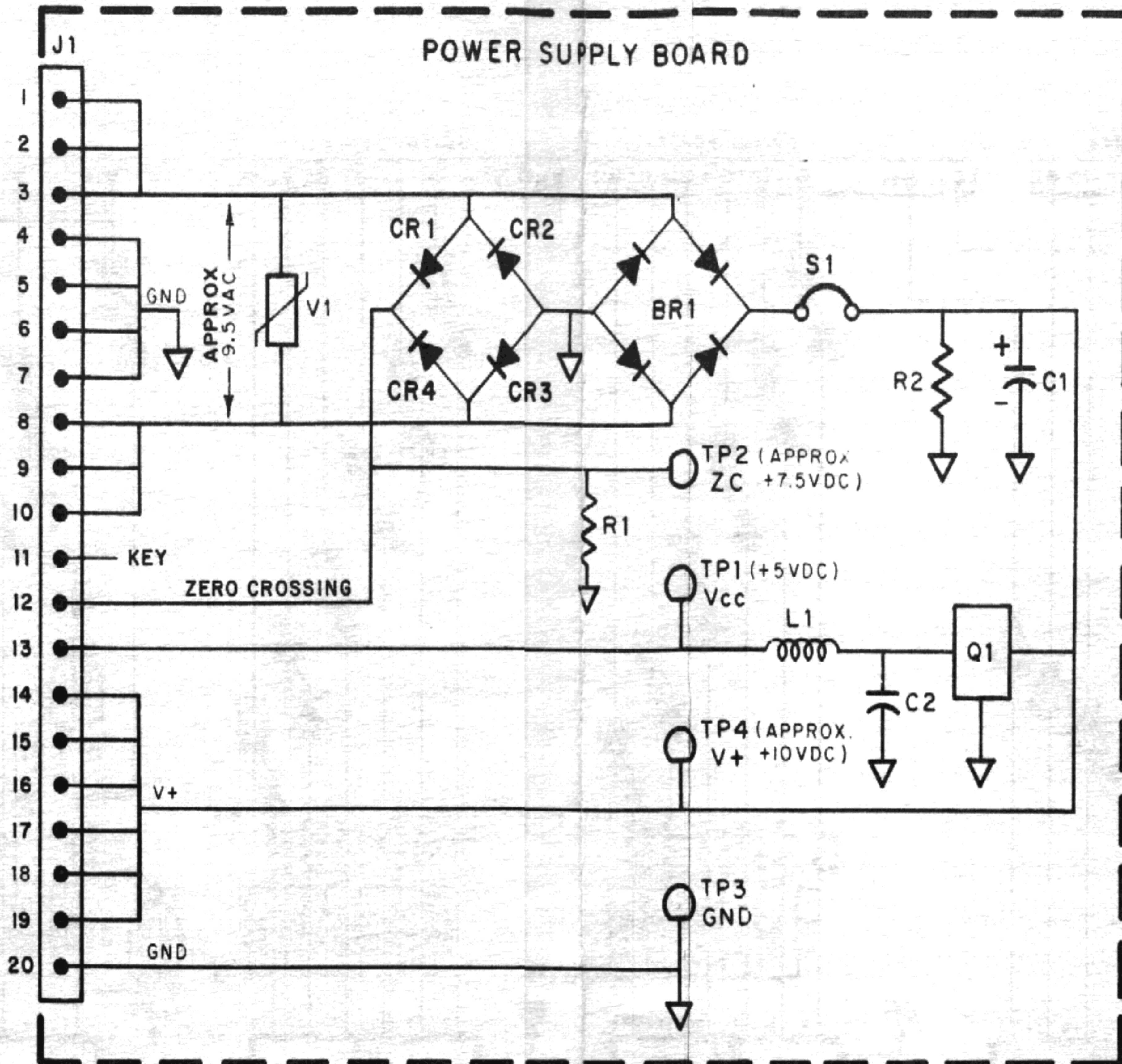
AS-2979-1 RAM BOARD ASSEMBLY

SYMBOL	BALLY PART NO.	DESCRIPTION
U1 - U2	E-00620-0042 (2) E-00712-0003	P5101L-3 RAM (OMOS) 22 PIN DIP SOCKET
U3	E-00620-0081	74LS30 EIGHT - INPUT NAND
U4	E-00620-0086	74166 EIGHT - BIT SHIFT REGISTER
U5	E-00620-0080	74LS27 TRIPLE 3 - INPUT NOR
R1	E-00105-0301	100 OHM. RESISTOR 1/4 WATT 5%
R2	NOT USED	
C1	E-00586-0085	.01 MFD., 50 V. CERAMIC
C2	E-00586-0073	4.7 MFD., 25 V. TANTALUM
C3	E-00586-0094	470 PFD., 50 V. CERAMIC
B1	E-00628-0003	BATTERY
J1 - J2	E-00771-0018	18 CKT. KK100 BOTTOM ENTRY CONNECTOR

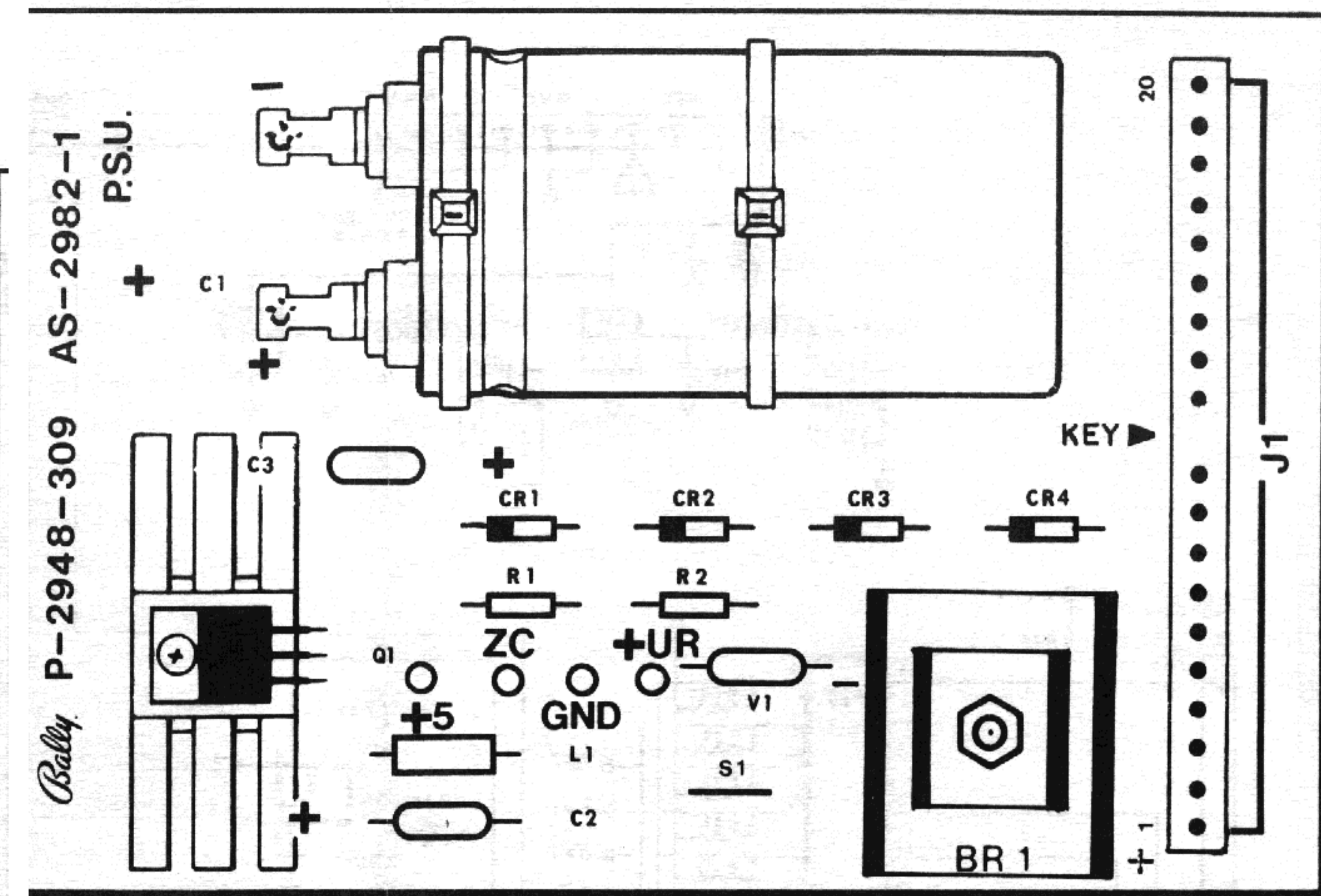
AS-2985-1 DISPLAY BOARD ASSEMBLY

SYMBOL	BALLY PART NO.	DESCRIPTION
(2)	E-00680-0002	HP-5082-7433 3 DIGIT, 7 SEGMENT DISPLAY
	AS-02988-XXYZ	16 CONDUCTOR FLAT CABLE ASSEMBLY
	LENGTH IN	
	INCHES	
	NO. OF	
	PULL TABS	
	NO. OF STRAIN RELIEFS	
	EXAMPLE: AS-02988-3611	
		FLAT CABLE ASSEMBLY 3 FT. LONG WITH STRAIN RELIEF & PULL TAB ON ONE END.

# POWER SUPPLY BOARD

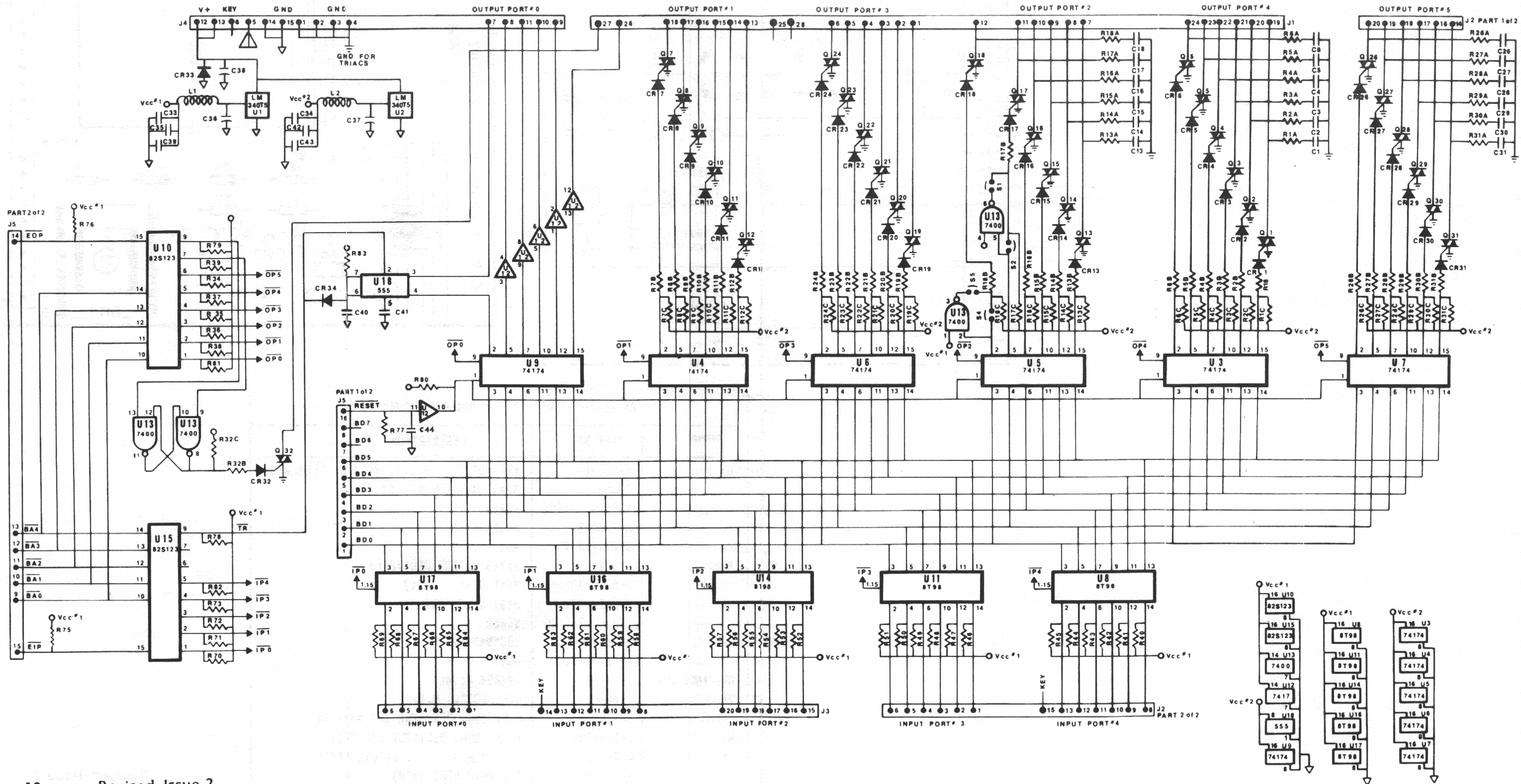


W-1217-5 (A-1046)



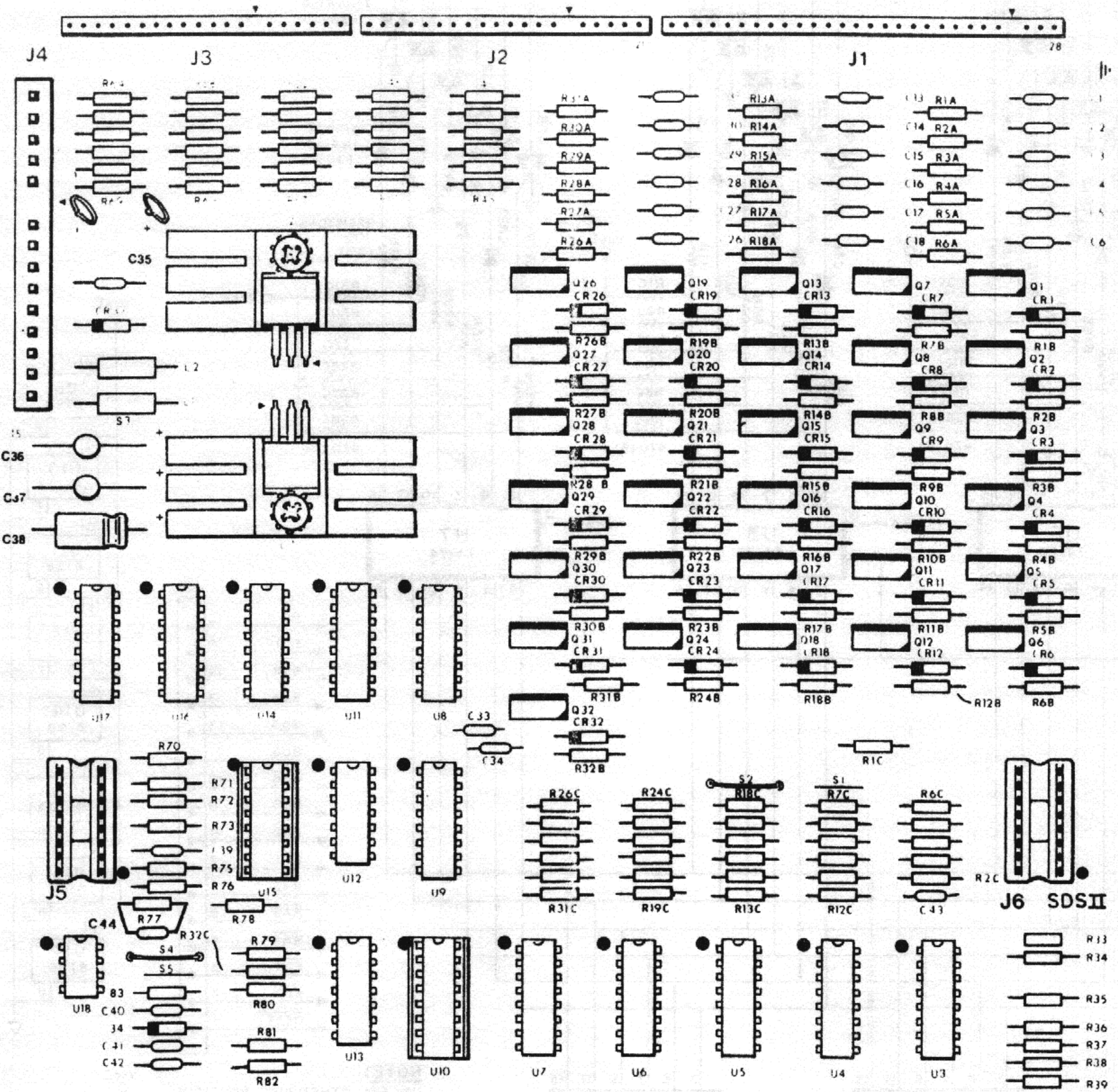
AS-2982-1 POWER SUPPLY BOARD ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
Q1	E-620-66 E-682-10 LSPR-632-1106 M-1700-6	LM-340T-5 5 V.D.C. VOLTAGE REGULATOR HEAT SINK THERMALLOY 6070 SCREW LOCKWASHER
BR1	N-632-2112 E-602-3 P-6629-158 P-6629-191 LSPR-632-1110 M-1700-6 N-632-2112	NUT VJ248 BRIDGE RECTIFIER HEAT SINK (LARGE) HEAT SINK (SMALL) SCREW LOCKWASHER NUT
CR1 THRU CR4	E-587-6	1N4004 DIODE
V1	E-713-2	G.E. V22ZA1 M.O.V.
R1	E-105-230	1 K. OHM. RESISTOR 1/4 WATT 5%
R2	E-105-185	10 K. OHM. RESISTOR 1/4 WATT 5%
C1	E-586-62 E-847-5	11,700 MFD. 20 V. ELECTROLYTIC TIE WRAP (TWO USED)
C2	E-586-8	2 MFD. 50 V. ELECTROLYTIC
C3	NOT USED	
L1	E-604-3	.22 M.H. INDUCTOR
TP1 THRU TP4	P-5399	TEST CLIP (TEST POINT)
J1	E-736-10	10 CKT. KK156 WAFER (2)
S1		WIRE JUMPER IN CIRCUIT

# I/O BOARD



# I/O BOARD

## AS-2980-5600 I/O BOARD ASSEMBLY

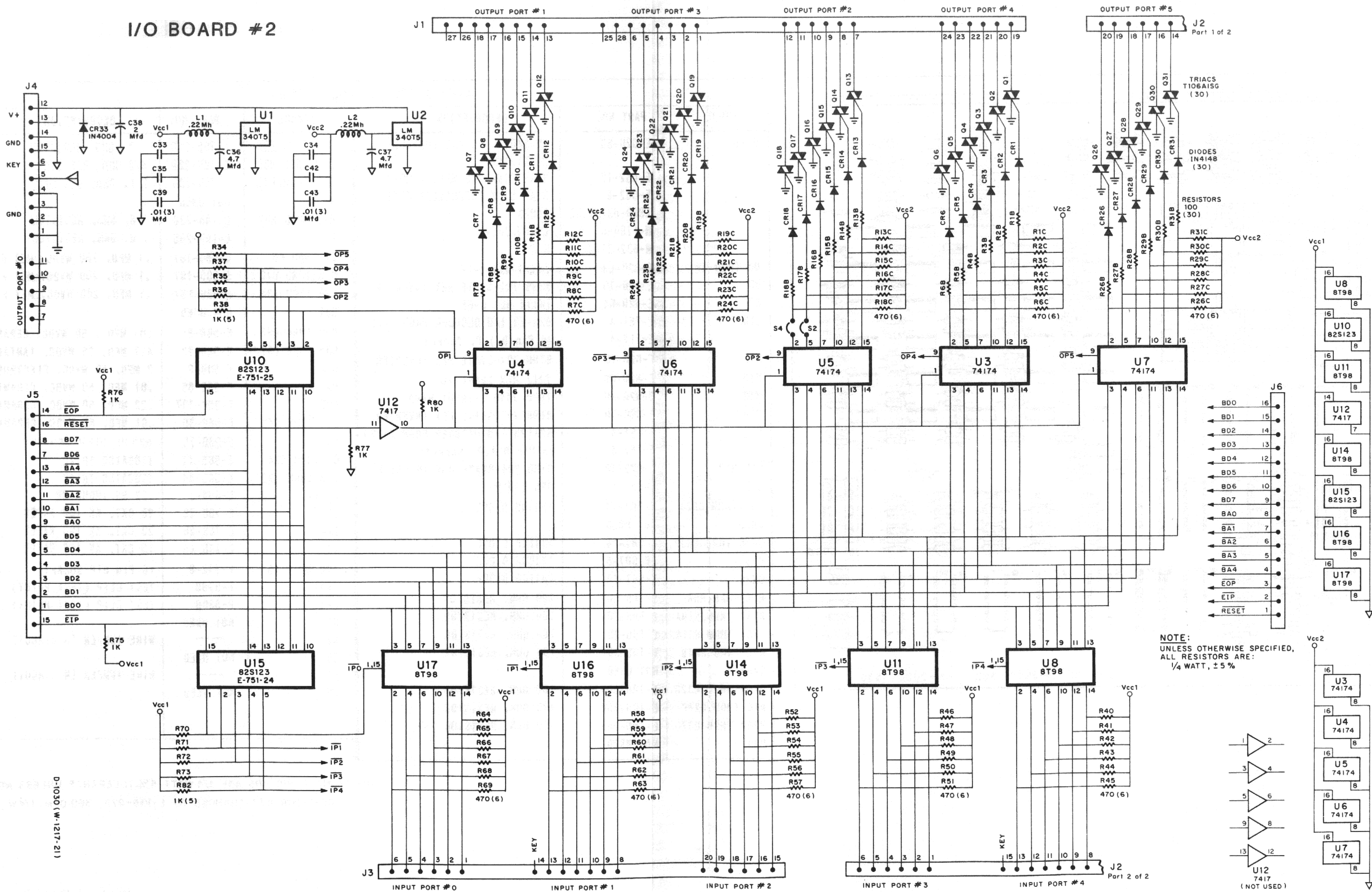


Bally I/O P-2948-303 AS-2980-5600

SYMBOL	PART NO.	DESCRIPTION	SYMBOL	PART NO.	DESCRIPTION
U1-U2	E-620-66	LM-340T-5 5 VDC VOLTAGE REGULATOR	R34 THRU R39	E-105-230	1 K. OHM. RESISTOR
	E-682-10	HEAT SINK THERMALLOY 6070	R40 THRU R69	E-105-280	470 OHM. RESISTOR
	E-682-9	HEAT SINK THERMALLOY 6071	R70 THRU R73	E-105-230	1 K. OHM. RESISTOR
	LSPR-632-1106	SCREW	R74	NOT USED	
	M-1700-6	LOCKWASHER	R75 THRU R82	E-105-230	1 K. OHM. RESISTOR
	N-632-2112	NUT	R83	E-105-285	1 M. OHM. RESISTOR
U3 THRU U7	E-620-64	74174 HEX D-FF	C1 THRU C6	E-586-197	.1 MFD. 200 WVDC. MET FILM
U8	E-620-70	8T98 TRI-STATE HEX INVERTER	C13 THRU C18	E-586-197	.1 MFD. 200 WVDC. MET FILM
U9	E-620-64	74174 HEX D-FF	C26 THRU C31	E-586-197	.1 MFD. 200 WVDC. MET FILM
U10	E-751-4	82S123 I/O DECODER PROM #1129	C32	NOT USED	
	E-712-4	16 Pin D.I.P. Socket	C33 THRU C35	E-586-85	.01 MFD . 50 WVDC. CERAMIC
U11	E-620-70	8T98 TRI-STATE HEX INVERTER	C36 THRU C37	E-586-73	4.7 MFD. 25 WVDC. TANTALUM
U12	E-620-65	7417 HEX BUFFER/O.C.	C38	E-586-8	2 MFD. 50 WVDC. ELECTROLYTIC
U13	E-620-19	7400 QUAD 2-INPUT NAND	C39	E-586-85	.01 MFD. 50 WVDC. CERAMIC
U14	E-620-70	8T98 TRI-STATE HEX INVERTER	C40	E-586-107	.22 MFD. 50 WVDC. CERAMIC
U15	E-751-4	82S123 I/O DECODER PROM #1129	C41 THRU C43	E-586-85	.01 MFD. 50 WVDC. CERAMIC
	E-712-4	16 Pin D.I.P. Socket	C44	E-586-75	820 Pf. 01KV. CERAMIC
U16-U17	E-620-70	8T98 TRI-STATE HBX INVERTER	Q1 THRU Q24	E-585-44	T106A1SG TRIAC
U18	E-620-4	555 TIMER	Q26 THRU Q32	E-585-44	T106A1SG TRIAC
CR1 THRU CR24	E-587-14	1N4148 DIODE	L1-L2	E-604-3	.22 MH INDUCTOR
CR25	NOT USED		J1	E-766-28	28 CKT. KK 100 WAFER
CR26 THRU CR32	E-587-14	1N4148 DIODE	J2-J3	E-766-20	20 CKT. KK 100 WAFER
CR33	EP-587-6	1N4004 DIODE	J4	E-736-15	15 CKT. KK 156 WAFER
CR34	E-587-14	1N4148 DIODE	SDS II - J5	E-712-8	16 PIN DIP SOCKET
R1A THRU R6A	E-105-301	100 OHM. RESISTOR	(+)	P-5399	TEST CLIP (TEST POINT)
R13A THRU R18A	E-105-301	100 OHM. RESISTOR	(-)	P-5399	TEST CLIP (TEST POINT)
R26A THRU R31A	E-105-301	100 OHM. RESISTOR	S1	NOT USED	
R1B THRU R24B	E-105-301	100 OHM. RESISTOR	S2	---	WIRE JUMPER IN CIRCUIT
R25B	NOT USED		S3	NOT USED	
R26B THRU R32B	E-105-301	100 OHM. RESISTOR	S4	---	WIRE JUMPER IN CIRCUIT
R1C THRU R24C	E-105-280	470 OHM. RESISTOR	S5	NOT USED	
R26C THRU R32C	E-105-280	470 OHM. RESISTOR			
R33	NOT USED				

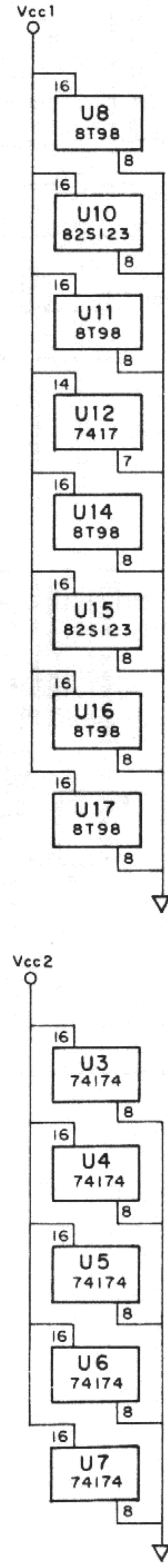
NOTE: ALL RESISTORS ARE 1/4 WATT 5% TOLERANCE UNLESS NOTED, RESISTOR R77 CHANGED TO E-105-279, 360 Ohm, 1/4 W., 5%.

# I/O BOARD #2



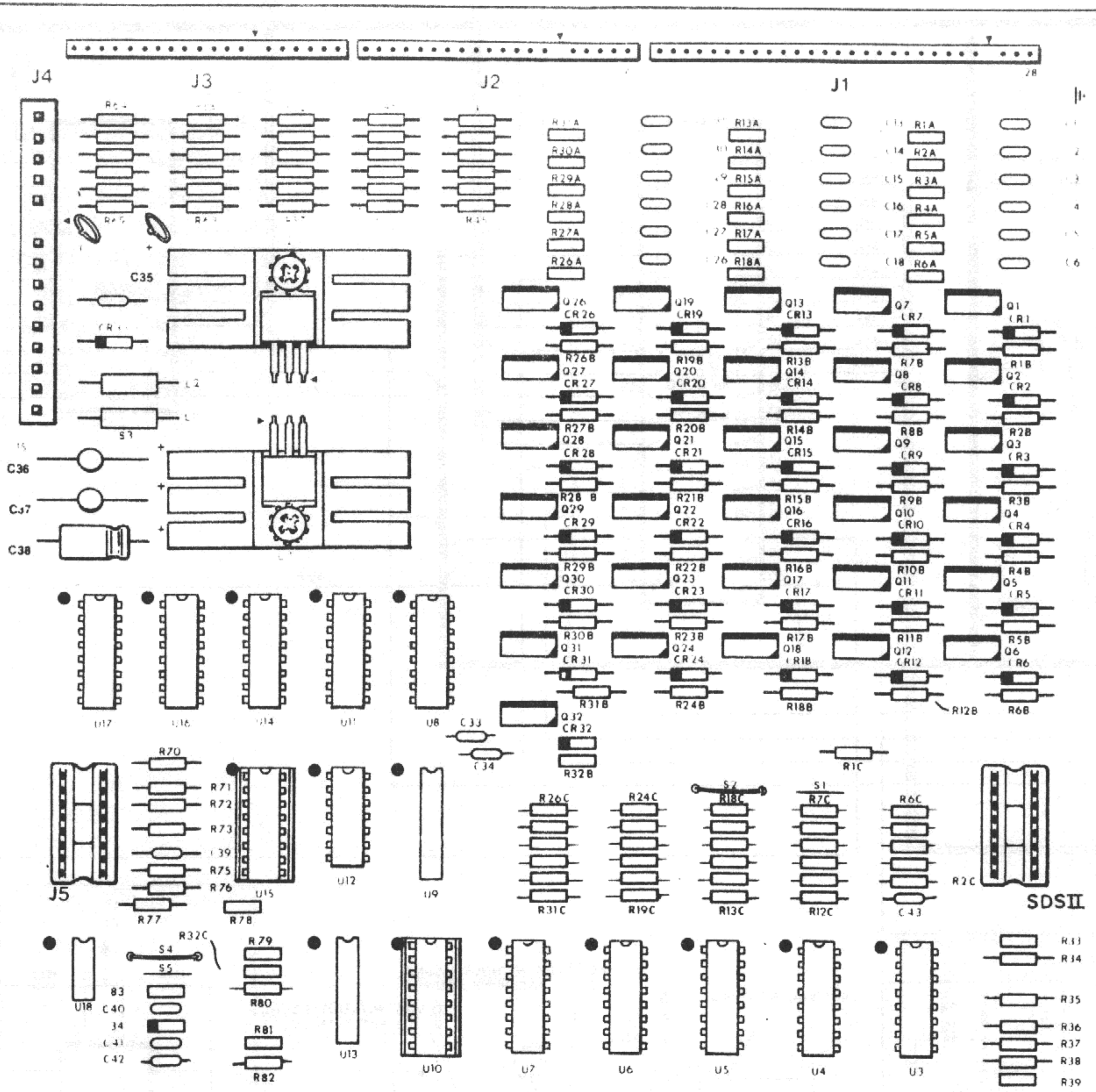
NOTE:  
UNLESS OTHERWISE SPECIFIED,  
ALL RESISTORS ARE:  
1/4 WATT, ± 5%

D-1030 (W-1217-21)



# I/O BOARD #2

# AS-2980-5500 #2 I/O BOARD ASSEMBLY

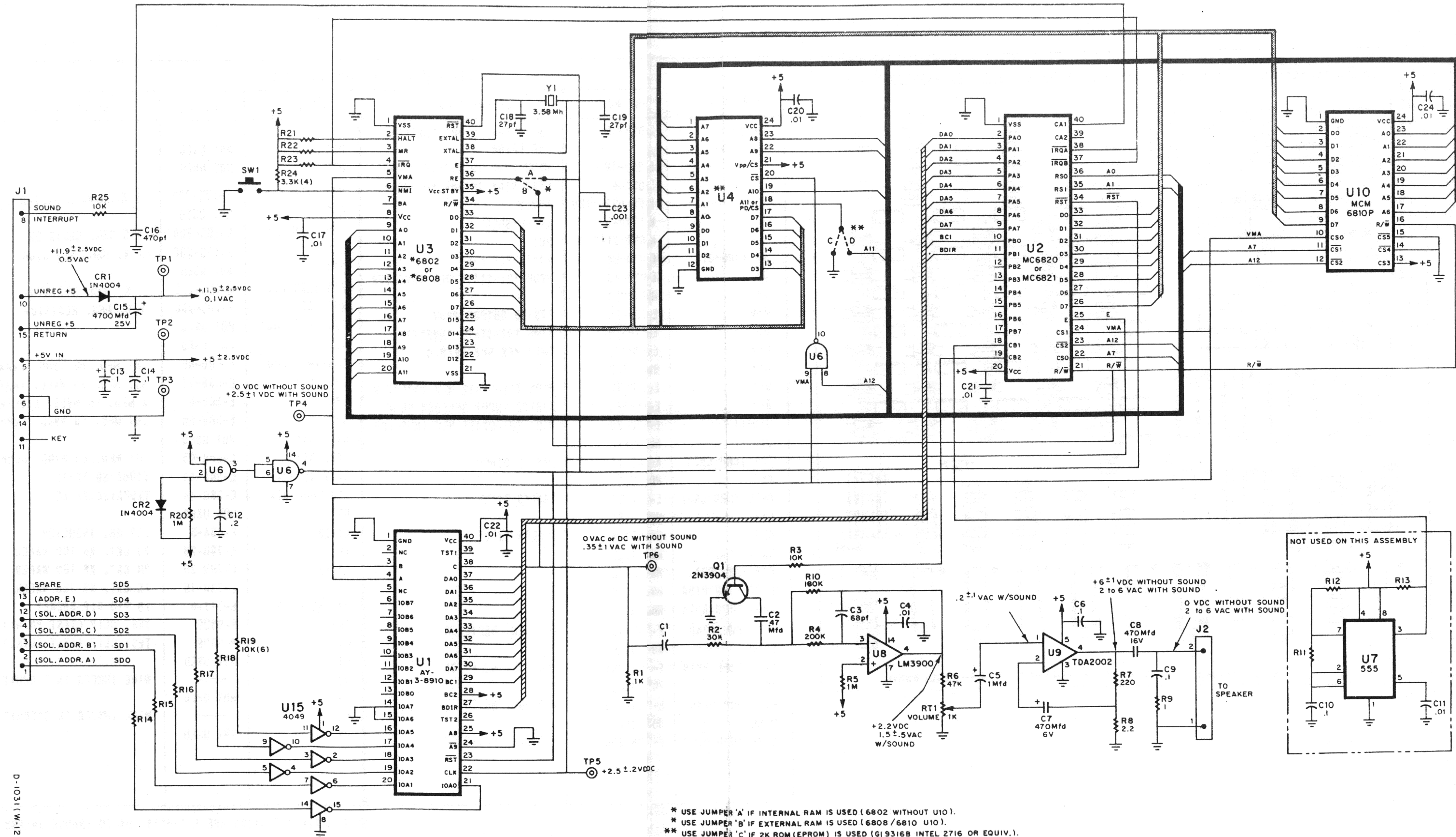


M-645-663 (Bully I/O) P-2948-512 AS-2980-5500

SYMBOL	PART NO.	DESCRIPTION	SYMBOL	PART NO.	DESCRIPTION
U1-U2	E-620-66	LM-340T-5 5 VDC VOLTAGE REGULATOR	R32C	NOT USED	
	E-682-10	HEAT SINK THERMALLOY 6070	R33	NOT USED	
	E-682-9	HEAT SINK THERMALLOY 6071	R34 THRU R38	E-105-230	1 K. OHM. RESISTOR
	LSPR-632-1106	SCREW	R39	NOT USED	
	M-1700-6	LOCKWASHER	R40 THRU R69	E-105-280	470 OHM. RESISTOR
	N-632-2112	NUT	R70 THRU R73	E-105-230	1 K. OHM. RESISTOR
U3 THRU U7	E-620-64	74174 HEX D-FF	R74	NOT USED	
U8	E-620-70	8T98 TRI-STATE HEX INVERTER	R75 THRU R77	E-105-230	1 K. OHM. RESISTOR
U9	NOT USED		R80, R82	E-105-230	1 K. OHM. RESISTOR
U10	E-751-25	82S123 OUTPUT PROM	R78, R79, R81	NOT USED	
U11	E-620-70	8T98 TRI-STATE INVERTER	C32	NOT USED	
U12	E-620-65	7417 HEX BUFFER/O.C.	C33 THRU C35	E-586-85	.01 MFD. 50 WVDC. CERAMIC
U13	NOT USED		C36, C37	E-586-73	4.7 MFD. 25 WVDC. TANTALUM
U14	E-620-70	8T98 TRI-STATE HEX INVERTER	C38	E-586-8	2 MFD. 50 WVDC. ELECTROLYTIC
U15	E-751-24	82S123 INPUT DECODER PROM	C39	E-586-85	.01 MFD. 50 WVDC. CERAMIC
U16-U17	E-620-70	1501 TRI-STATE HEX INVERTER	C40, C41	NOT USED	
U18	NOT USED		C42, C43	E-586-85	.01 MFD. 50 WVDC. CERAMIC
CR1 THRU CR24	E-587-14	1N4148 DIODE	Q1 THRU Q24	E-585-44	T106A1SG TRIAC
CR25	NOT USED		Q26 THRU Q31	E-585-44	T106A1SG TRIAC
CR26 THRU CR31	E-587-14	1N4148 DIODE	Q32	NOT USED	
CR32	NOT USED		L1-L2	E-604-3	.22 MH. INDUCTOR
CR33	EP-587-6	1N4004 DIODE	J1	E-766-28	28 CKT. KK 100 WAFER
CR34	NOT USED		J2-J3	E-766-20	20 CKT. KK 100 WAFER
R1A THRU R6A	NOT USED		J4	E-736-15	15 CKT. KK 156 WAFER
R13A THRU R18A	NOT USED		SDS II - J5	E-712-8	16 PIN DIP SOCKET
R26A THRU R31A	NOT USED		(+)	P-5399	TEST CLIP (TEST POINT)
R1B THRU R24B	E-105-301	100 OHM. RESISTOR	(-)	P-5399	TEST CLIP (TEST POINT)
R25B	NOT USED		S1	NOT USED	
R26B THRU R31B	E-105-301	100 OHM. RESISTOR	S2	---	WIRE JUMPER IN CIRCUIT
R32B	NOT USED		S3	NOT USED	
R1C THRU R24C	E-105-280	470 OHM. RESISTOR	S4	---	WIRE JUMPER IN CIRCUIT
R25C	NOT USED		S5	NOT USED	
R26C THRU R31C	E-105-280	470 OHM. RESISTOR			

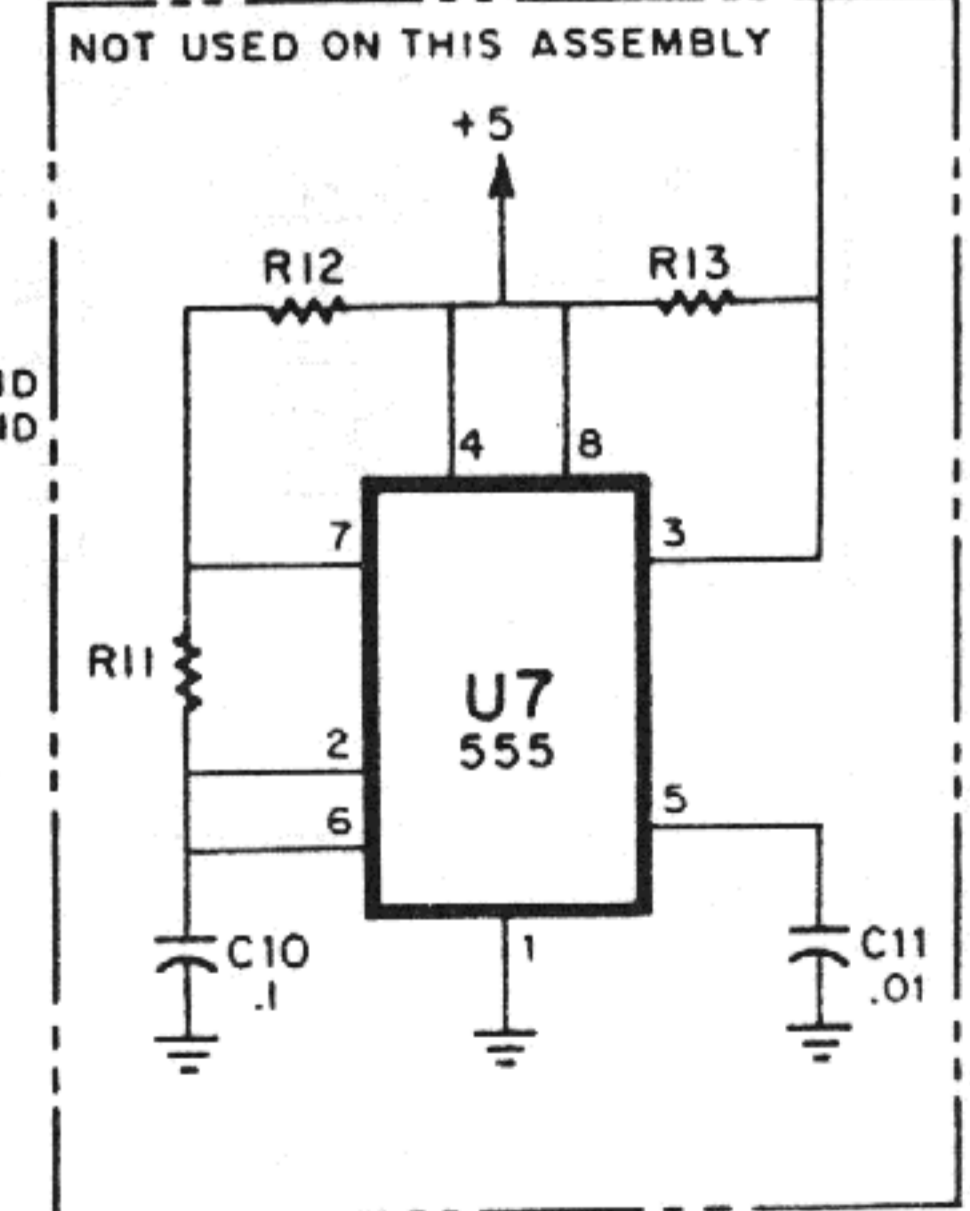
NOTE: ALL RESISTORS ARE 1/4 WATT 5% TOLERANCE UNLESS NOTED.

# SOUND MODULE BOARD



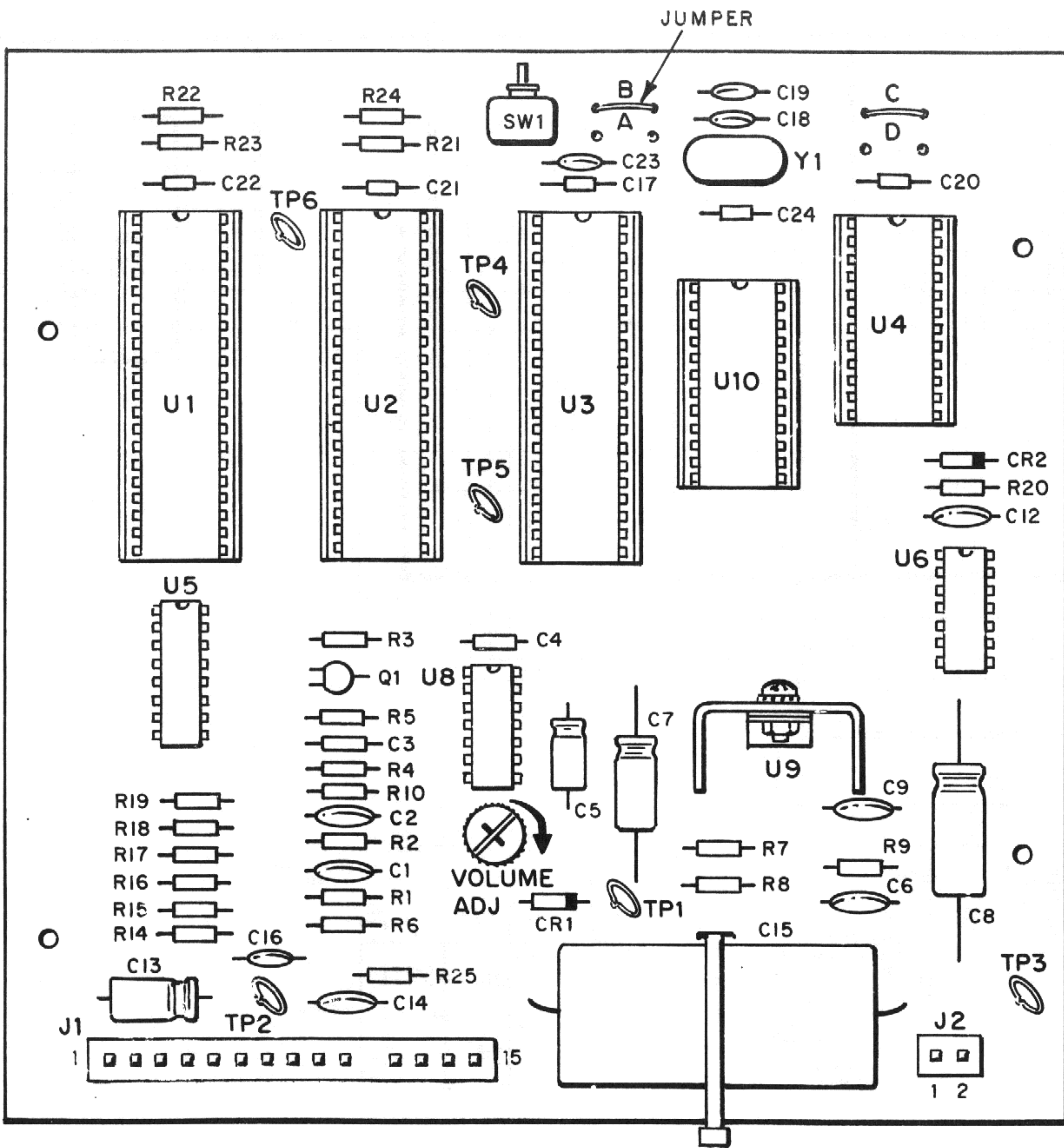
\* USE JUMPER 'A' IF INTERNAL RAM IS USED (6802 WITHOUT U10).  
 \* USE JUMPER 'B' IF EXTERNAL RAM IS USED (6808/6810 U10).  
 \*\* USE JUMPER 'C' IF 2K ROM (EPROM) IS USED (G19316B INTEL 2716 OR EQUIV.).  
 \*\* USE JUMPER 'D' IF 4K ROM (EPROM) IS USED (T1TMS 2532, TMS4732 OR EQUIV.).

UNLESS OTHERWISE NOTED, ALL RESISTORS ARE IN OHMS AND ALL CAPACITORS ARE IN MfdS.



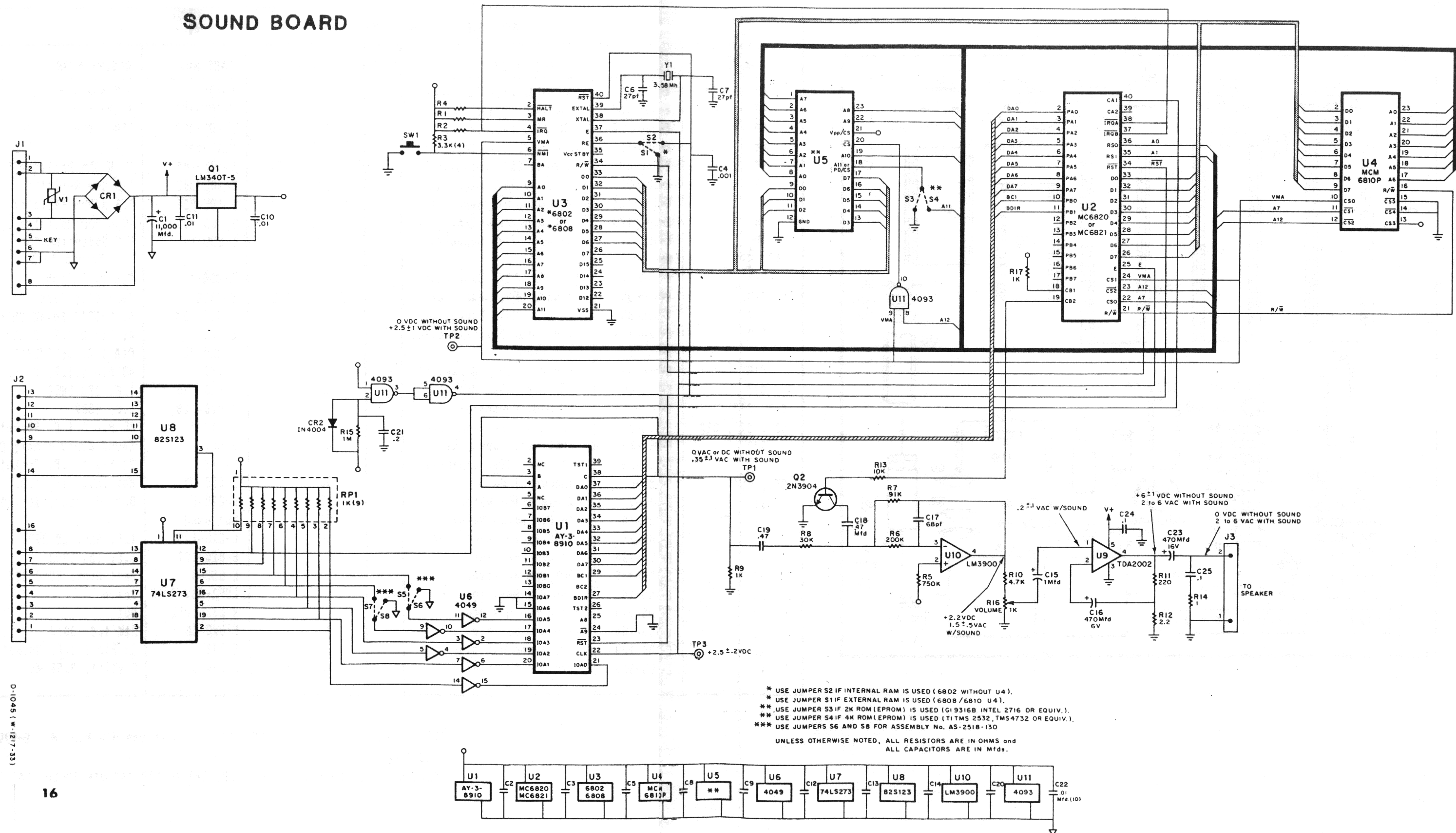
ASE-2518-51 SOUND MODULE BOARD ASSEMBLY

SYMBOL	PART NO.	DESCRIPTION	SYMBOL	PART NO.	DESCRIPTION
C1	E-586-89	.1 mfd. 25V. Capacitor	R8	E-105-211	2.2 Ohm Resistor
C2	E-586-130	.47 mfd. Capacitor	R9	E-105-196	1 Ohm Resistor
C3	E-586-120	68 pfd. Capacitor	R10	E-105-252	180 K Ohm Resistor
C4	E-586-85	.01 mfd. 25V. Capacitor	R11, R12, R13	Not used	
C5	E-586-90	1 mfd. 25V. Capacitor	R14 Thru R19	E-105-185	10 K Ohm Resistor
C6	E-586-89	.1 mfd. 25V. Capacitor	R20	E-105-285	1 M Ohm Resistor
C7	E-586-124	470 mfd. 6V. Capacitor	R21 Thru R24	E-105-238	3.3 K Ohm Resistor
C8	E-586-129	470 mfd. 16V. Capacitor	R25	E-105-185	10 K Ohm Resistor
C9	E-586-89	.1 mfd. 25V. Capacitor	RT1	E-599-16	1 K Potentiometer (Volume Adj)
C10, C11	Not used		SW1	E-658-1	P.C.B. Switch
C12	E-586-118	.2 mfd. 16V. Capacitor	TP1 Thru TP6	P-5399	Test Clip (Test Points)
C13	E-586-90	1 mfd. 50V. Capacitor	U1	E-620-124	AY-3-8910 Sound Chip
C14	E-586-89	.1 mfd. 25V. Capacitor	U2	E-712-1	40 Pin D.I.P. Socket
C15	E-586-123	4700 mfd. 25V. Capacitor	U3	E-620-29	PIA I.C. 6820/6821
C16	E-647-5	Tie Wrap	U4	E-712-1	40 Pin D.I.P. Socket
C17	E-586-83	470 pfd. 50V. Capacitor	* U3	E-620-125	I.C. CPU 6808
C18, C19	E-586-121	27 pfd. Capacitor		E-620-128	I.C. 6802
C20, C21, C22	E-586-85	.01 mfd. 25V. Capacitor	U4	E-712-1	40 Pin D.I.P. Socket
C23	E-586-122	.001 mfd. Capacitor	U5	E-861	Sound Board Memory Chip
C24	E-586-85	.01 mfd. 25V. Capacitor	U6	E-712	24 Pin D.I.P. Socket
CR1, CR2	E-587-6	1N4004 Diode	U7	E-620-33	Hex Inverter (I.C.) 4049
J1	E-736-2	2 Pin KK156 Wafer	U8	E-620-5	Quad 2 Input, MC 14011
J2	E-736-15	15 Pin KK156 Wafer	U9	E-620-126	I.C. Amp, LM 3900
Q1	E-585-31	2N3904 NPN Transistor		E-620-127	I.C. TDA 2002
R1	E-105-230	1K Ohm Resistor		E-682-8	Heat Sink, 6030 BTT
R2	E-105-245	30K Ohm Resistor		LSPR-632-1106	Screw
R3	E-105-185	10K Ohm Resistor		N-632-2112	Nut
R4	E-105-225	200K Ohm Resistor	* U10	E-620-30	RAM I.C. 6810
R5	E-105-285	1 M Ohm Resistor		E-712	24 Pin D.I.P. Socket
R6	E-105-239	4.7 K Ohm Resistor	Y1	E-744-5	Crystal, 3.58 Mhz
R7	E-105-303	220 Ohm Resistor			



\* When using U3 Part No. E-620-125, You Must use U10 Part No. E-620-30 and Jumper 'B'. When using U3 Part No. E-620-128, Delete U10 and use Jumper 'A'. 15

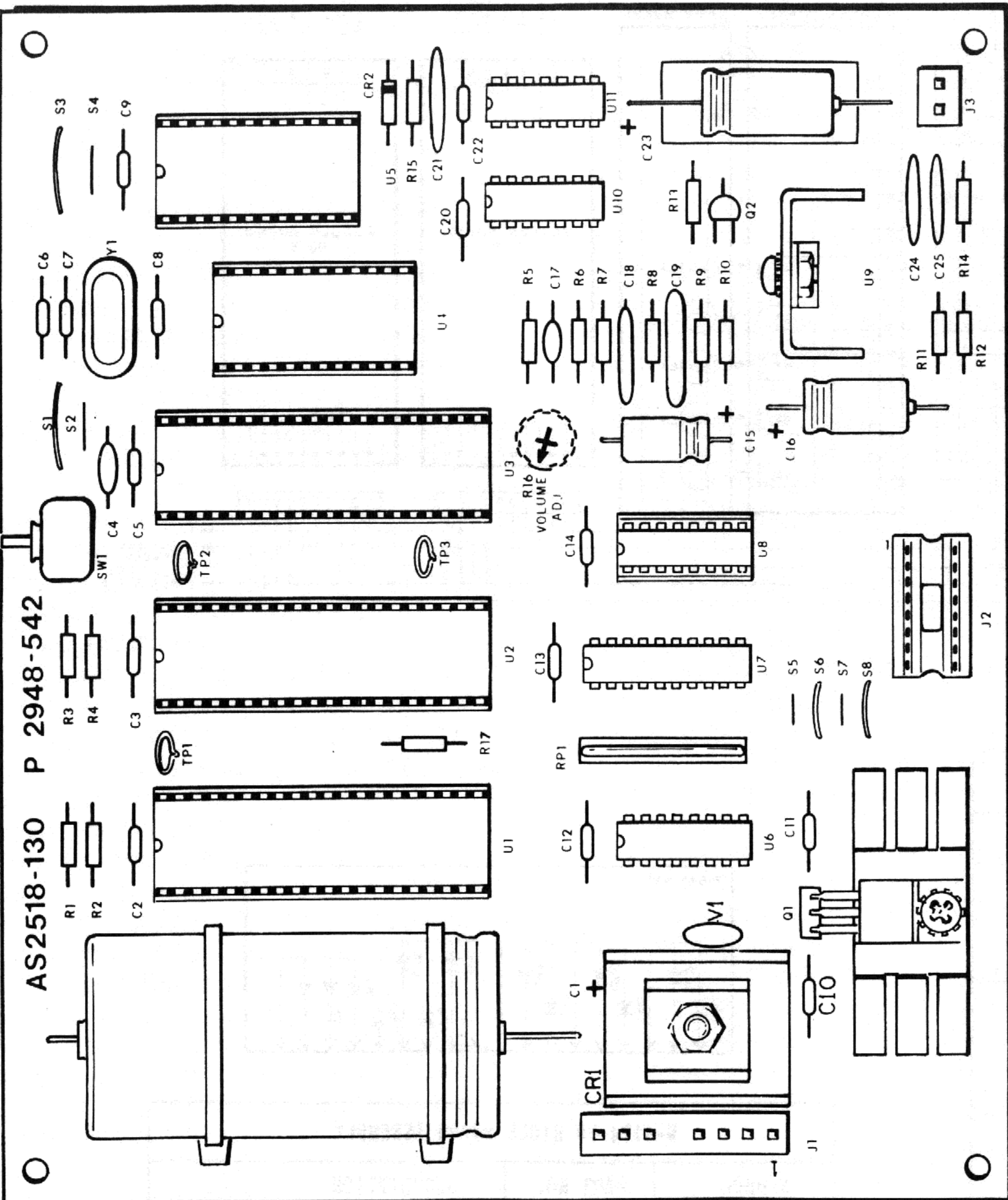
# SOUND BOARD



- \* USE JUMPER S2 IF INTERNAL RAM IS USED (6802 WITHOUT U4).
- \*\* USE JUMPER S1 IF EXTERNAL RAM IS USED (6808 / 6810 U4).
- \*\*\* USE JUMPER S3 IF 2K ROM (EPROM) IS USED (G19316B INTEL 2716 OR EQUIV.).
- \*\*\* USE JUMPER S4 IF 4K ROM (EPROM) IS USED (TI TMS 2532, TMS4732 OR EQUIV.).
- \*\*\* USE JUMPERS S6 AND S8 FOR ASSEMBLY No. A5-2518-130

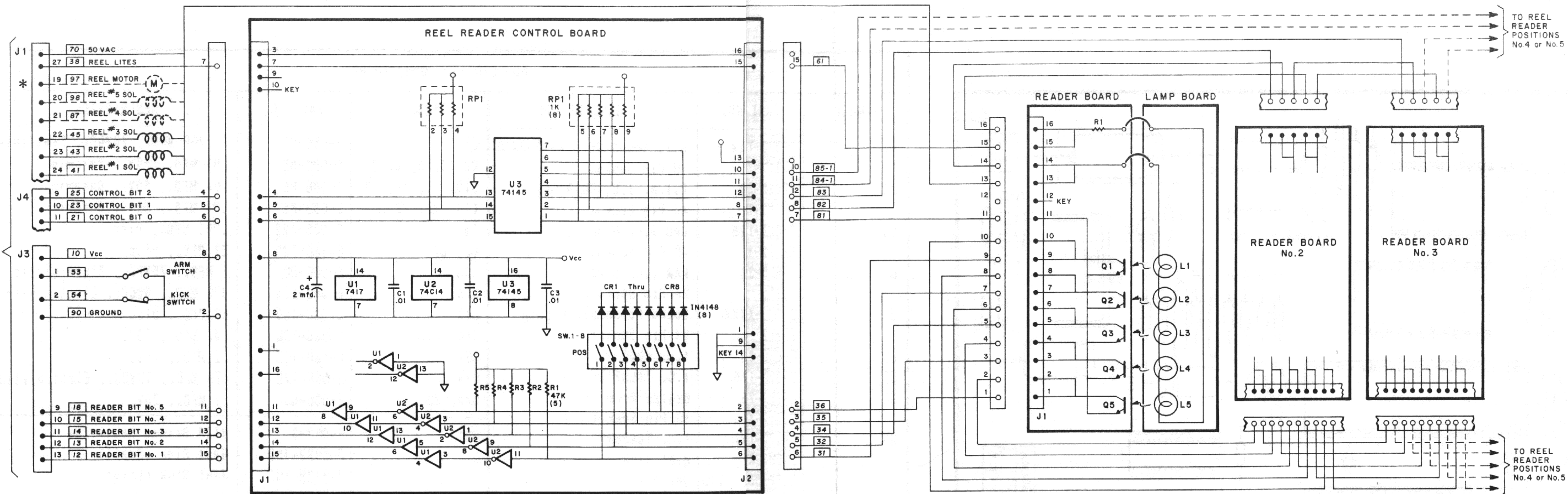
AS-2518-130 SOUND BOARD

SYMBOL	PART NO.	DESCRIPTION	SYMBOL	PART NO.	DESCRIPTION
U1	E-620-124 E-712-1	G.I. Sound Chip AY-3-8910 40 Pin Socket	C1	E-586-62	11,700 MFD., 20VDC., Electrolytic
U2	E-620-29 E-712-1	P.I.A. I.C. 6820/6821 40 Pin Socket	C2, 3, 5, 8, 9	E-586-85	.01 MFD., 50V., Ceramic
U3	E-620-125 E-712-1	CPU I.C. 6808 40 Pin Socket	C10, 11, 12, 13	E-586-85	.01 MFD., 50V., Ceramic
U4	E-620-30 E-712	RAM I.C. 6810 24 Pin Socket	C14, 20, 22	E-586-85	.01 MFD., 50V., Ceramic
U5	E-861-XXXX E-712	Sound Personality Chip 24 Pin Socket	C4	E-586-122	.001 MFD., Disc
U6	E-620-33	I.C. 4049	C6, C7	E-586-121	27 PFD., Disc
U7	E-620-180	I.C. 74LS273	C15	E-586-90	1 MFD., 25VDC., Electrolytic
U8	E-751-23 E-712-4	82S123 Prom 16 Pin Socket	C16	E-586-124	470 MFD., 6VDC., Electrolytic
U9	E-620-127 E-682-8 LSPR-632-1110 M-1700-6 N-632-2112	I.C. TDA2002 Heat Sink Screw Lockwasher Nut	C17	E-586-120	68 PFD., Disc
U10	E-620-126	I.C. LM3900	C18, C19	E-586-130	.47 MFD., 16V.
U11	E-620-170	I.C. 4093	C21	E-586-118	.2 MFD., 16V.
R1, 2, 3, 4	E-105-238	3.3K. Ohm Resistor	C23	E-586-129	470 MFD., 16VDC., Electrolytic
R5	E-105-344	750K. Ohm Resistor	C24, 25	E-586-89	.1 MFD., 25V.
R6	E-105-225	200K. Ohm Resistor	CR1	E-602-3 P-6629-158 P-6629-191 LSPR-632-1106 M-1700-6 N-632-2112	VJ24 Bridge Rectifier Heat Sink (Small) Heat Sink (Large) Screw Lockwasher Nut
R7	E-105-313	91K. Ohm Resistor	CR2	E-587-6	1N4004 Diode
R8	E-105-245	30K. Ohm Resistor	Q1	E-620-66 E-682-9 E-682-10 LSPR-632-1106 M-1700-6 N-632-2112	LM-340T-5 5VDC. REGULATOR Heat Sink THM-6071 (Upper) Heat Sink THM-6070 (Lower) Screw Lockwasher Nut
R9, R17	E-105-230	1K. Ohm Resistor	Q2	E-585-31	2N3904 Transistor
R10	E-105-239	4.7K. Resistor	J1	E-736-8	8 Ckt. KK156 Wafer
R11	E-105-303	220 Ohm Resistor	J2	E-712-8	16 Pin Dip Socket
R12	E-105-211	2.2 Ohm Resistor	J3	E-736-2	2 Ckt. KK156 Wafer
R13	E-105-185	10K. Ohm Resistor	S1, 3, 6, 8	—	Wire Jumper In Circuit
R14	E-105-196	1 Ohm Resistor	S2, 4, 5, 7	—	Not Applicable
R15	E-105-285	1M. Ohm Resistor	V1	E-713-2	G.E. #V22ZA1 MOV
R16	E-599-16	Trimmer (1K. POT)	Y1	E-744-5	3.58 MHZ Quartz XTAL
RP1	E-835-8	1K. Ohm SIP			
SW1	E-658-1	Push Button PCB Switch			
TP1, 2, 3	P-5399	Test Clip			

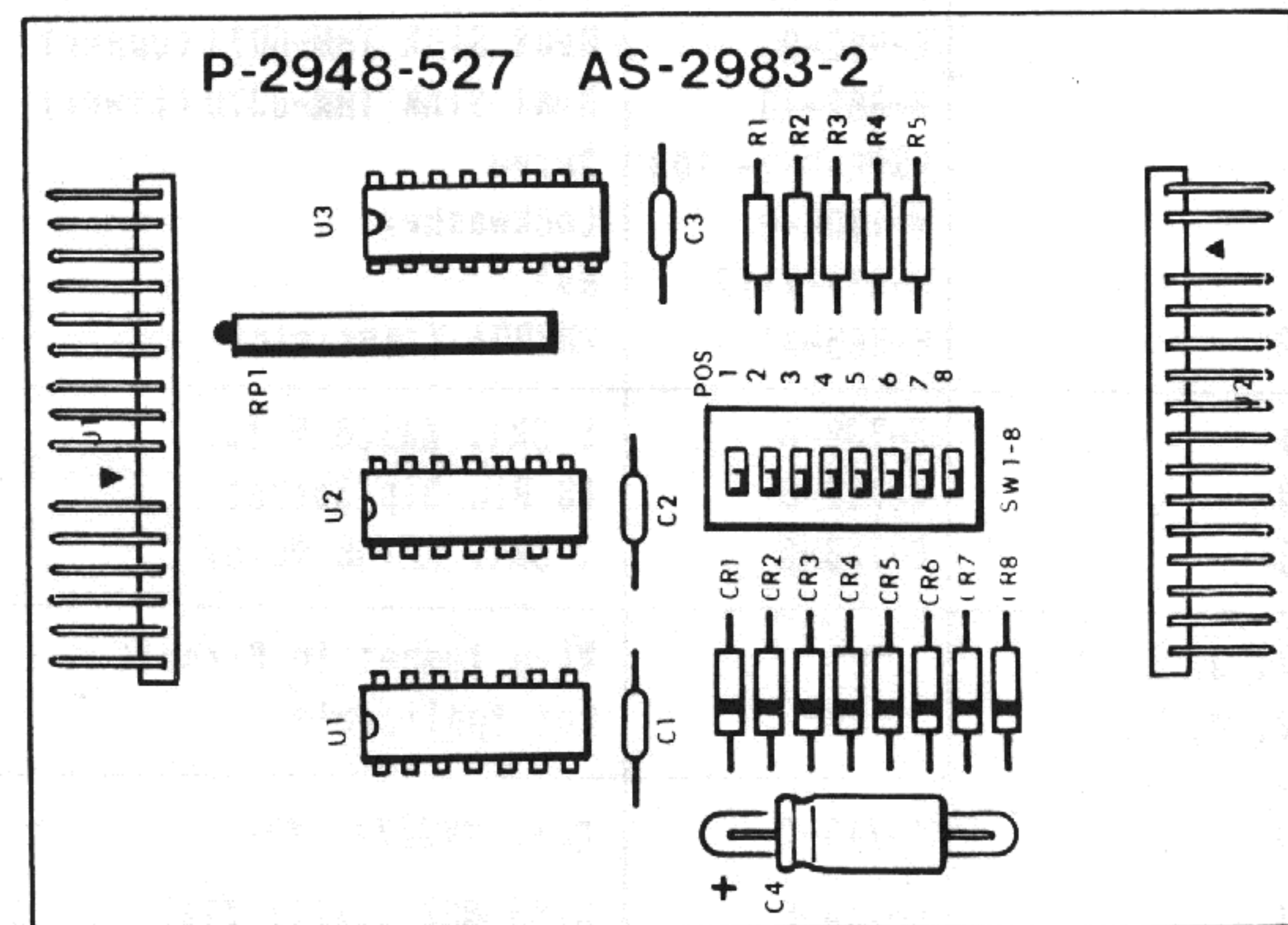


AS2518-130 P 2948-542

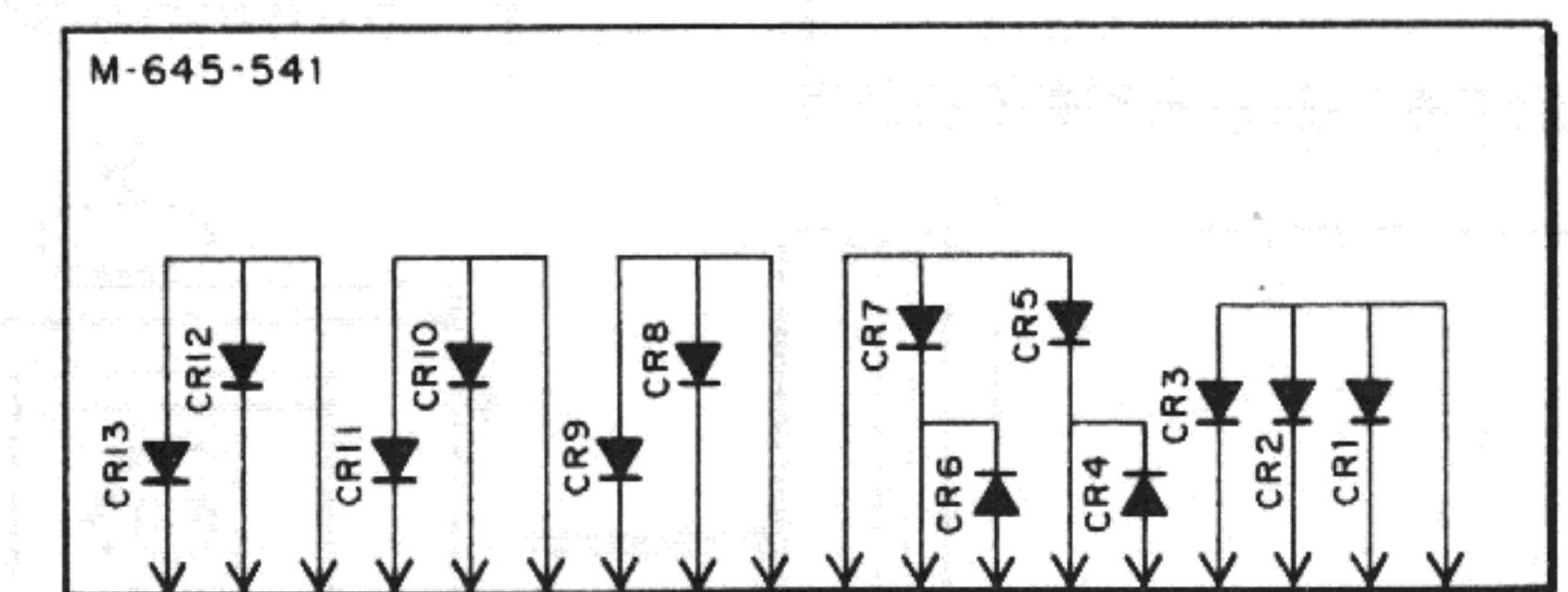
# REEL MECHANISM RELATED BOARDS



\*Cabinet Cable I/O Board Connector J1-Pins 19 & 20 are used for 3, 4 Reel Mech. and J2-Pins 14 & 16 are used for 5 Reel Mech.

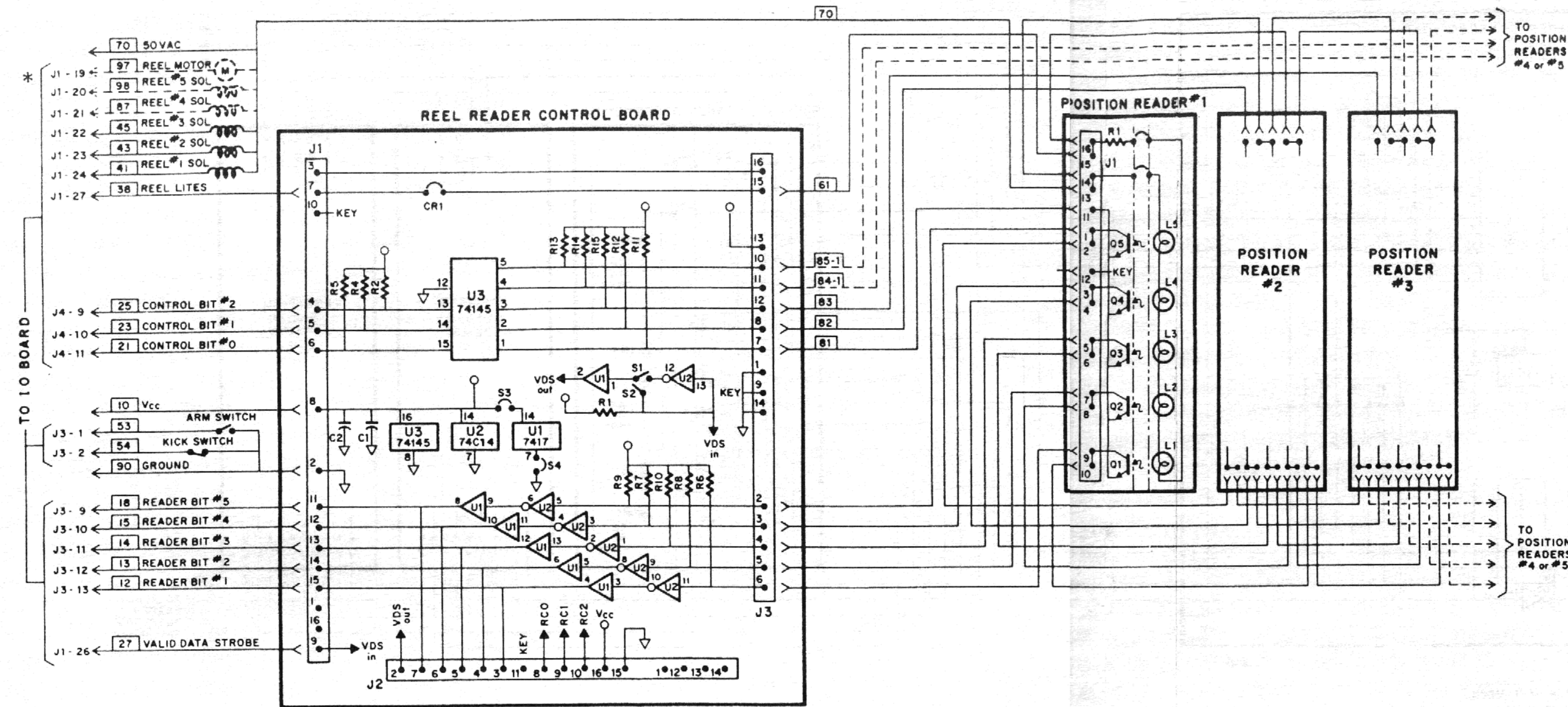


AS-2983-2 REEL READER CONTROL BOARD		
SYMBOL	PART NO.	DESCRIPTION
U1	E-620-65	I.C. 7417
U2	E-620-78	I.C. 74C14
U3	E-620-63	I.C. 74145
C1, 2, 3	E-586-85	.01 MFD., 50V., Ceramic
C4	E-586-8	2 MFD., 50V., Electrolytic
CR1 thru CR8	E-587-14	1N4148 Diode
R1 thru R5	E-105-263	47 K Ohm Resistor
RP1	E-835-8	1 K SIP (10 Pin) (Pull Up)
	E-677	8 Position SPST Dip Switch
	E-768-16	16 Ckt. KK100 Right Angle Wafer



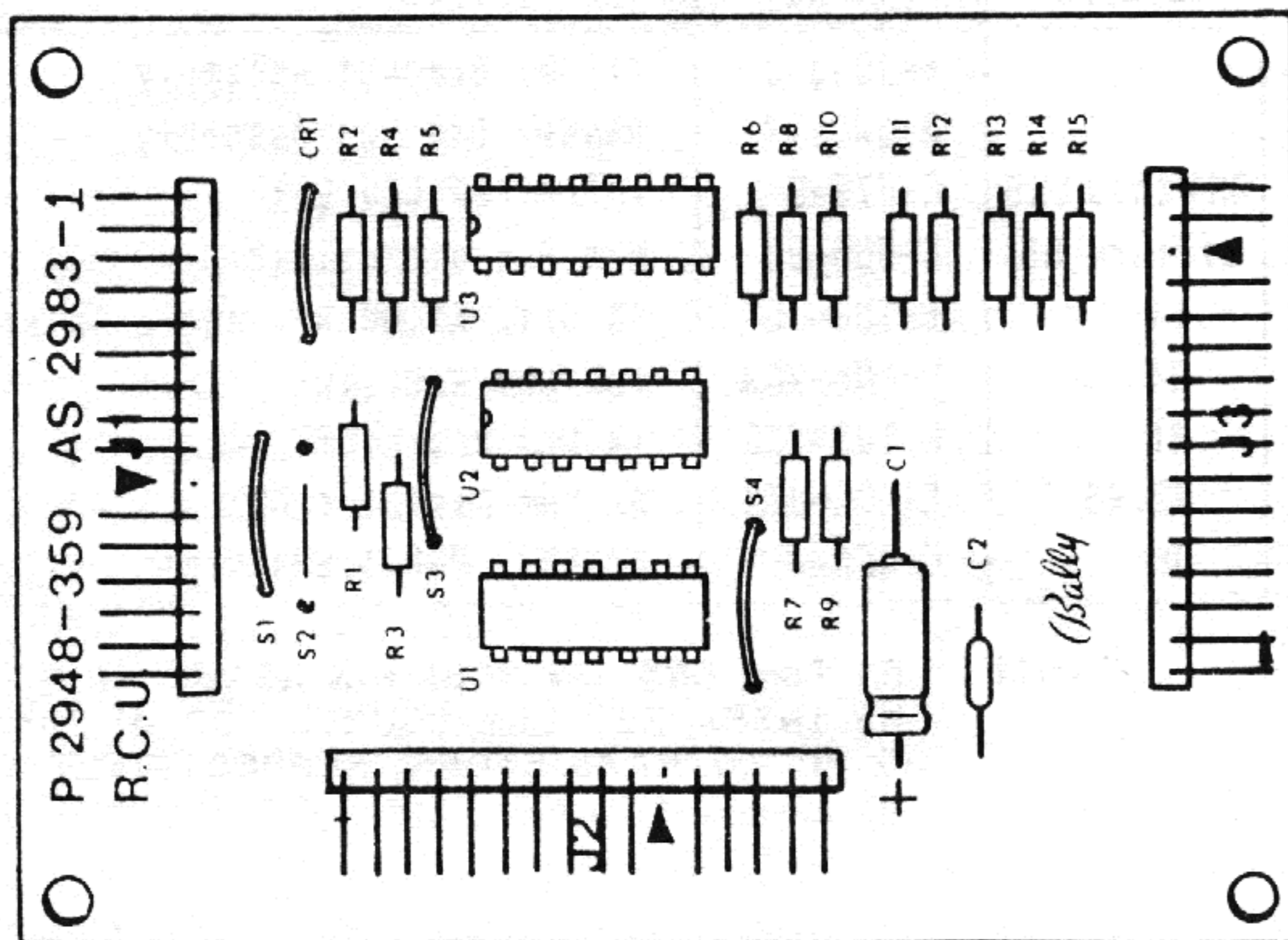
W-1174-20 DIODE BOARD ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
CR1 THRU CR13	E-587-16 P-2948-433	Diode P.C. Board

# REEL MECHANISM RELATED BOARDS

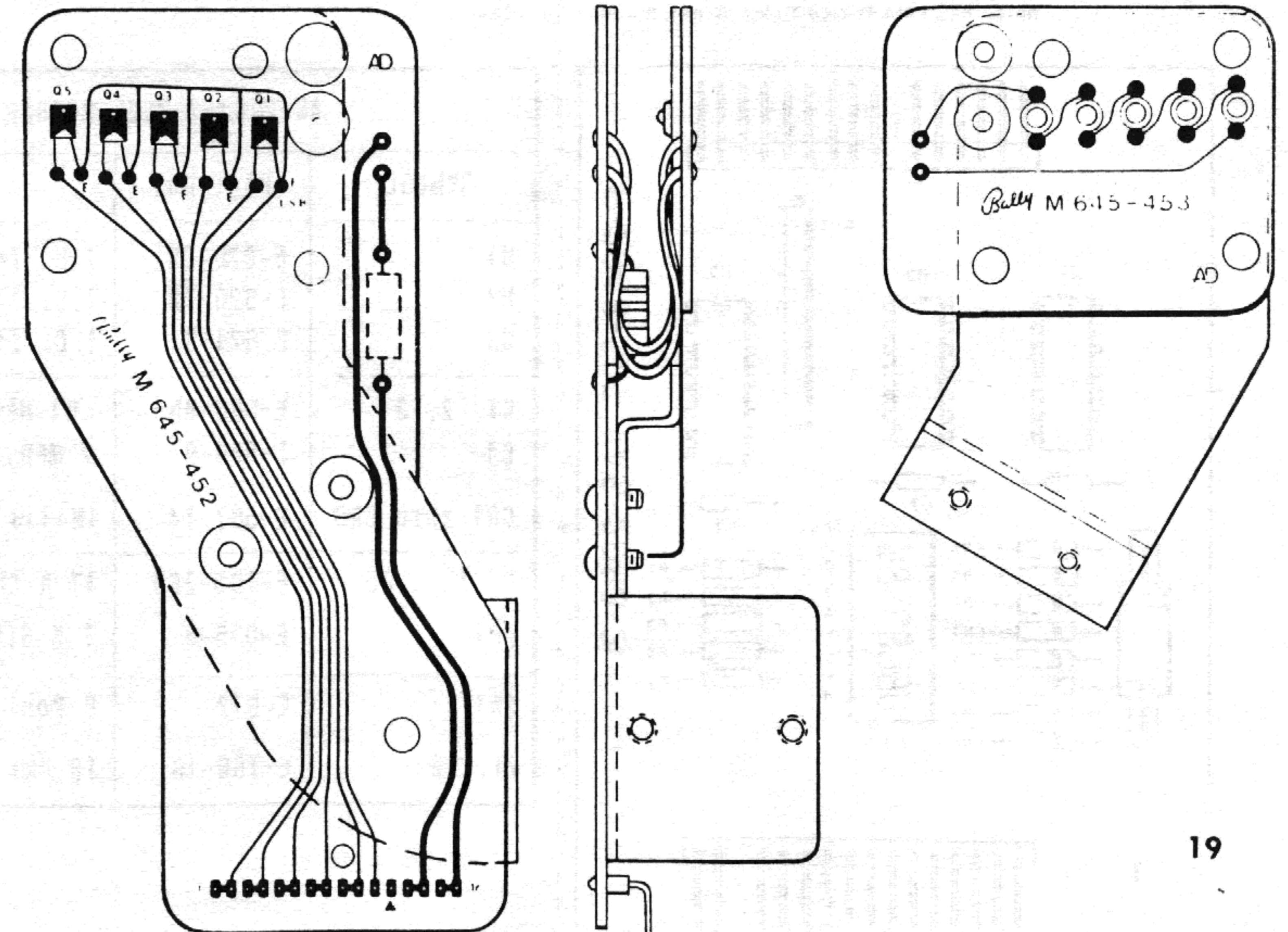


AS-2977-1 POSITION READER ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
	A-3933-2	LAMP BRACKET ASSEMBLY
	A-3933-3	READER BRACKET ASSEMBLY
L1 - L5	E-125-68	5 VOLT LAMP
Q1 - Q5	E-585-55	NPN PHOTOTRANSISTOR
R1	E-104-101	470 OHM 2 WATT RESISTOR
J1	E-768-16	16 CKT. KK100 RIGHT ANGLE WAFER

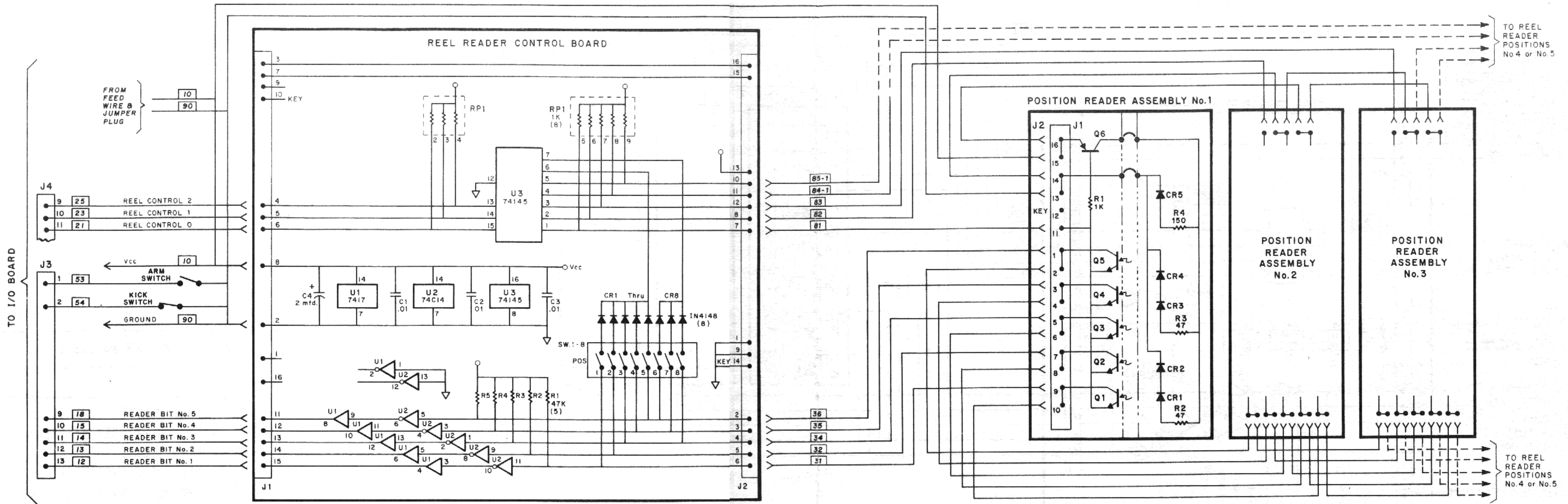
\* Cabinet Cable I/O Board Connector J1-Pins 19 & 20 are used for 3, 4 Reel Mech. and J2-Pins 14 & 16 are used for 5 Reel Mech.



AS-2983-1 REEL READER CONTROL BOARD ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
U1	E-620-65	7417 HEX BUFFER/O.C.
U2	E-620-78	74C14 HEX SCHMITT IND
U3	E-620-63	74145 BCD/DEC. DECODER
CR1	—	WIRE JUMPER
R1 - R2	E-105-230	1 K OHM RESISTOR 1/4 WATT 5%
R3	E-105-280	470 OHM RESISTOR 1/4 WATT 5%
R4 - R5	E-105-230	1 K OHM RESISTOR 1/4 WATT 5%
R6 THRU R10	E-105-263	47 K OHM RESISTOR 1/4 WATT 5%
R11 THRU R15	E-105-230	1 K OHM RESISTOR 1/4 WATT 5%
C1	E-586-8	2 MFD 50 V. ELECTROLYTIC
C2	E-586-85	.01 MFD 50 V. CERAMIC
J1, J3	E-768-16	16 CKT. KK100 RIGHT ANGLE WAFER
J2	NOT USED	
S1	—	WIRE JUMPER IN CIRCUIT
S2	NOT USED	
S3, S4	—	WIRE JUMPER IN CIRCUIT



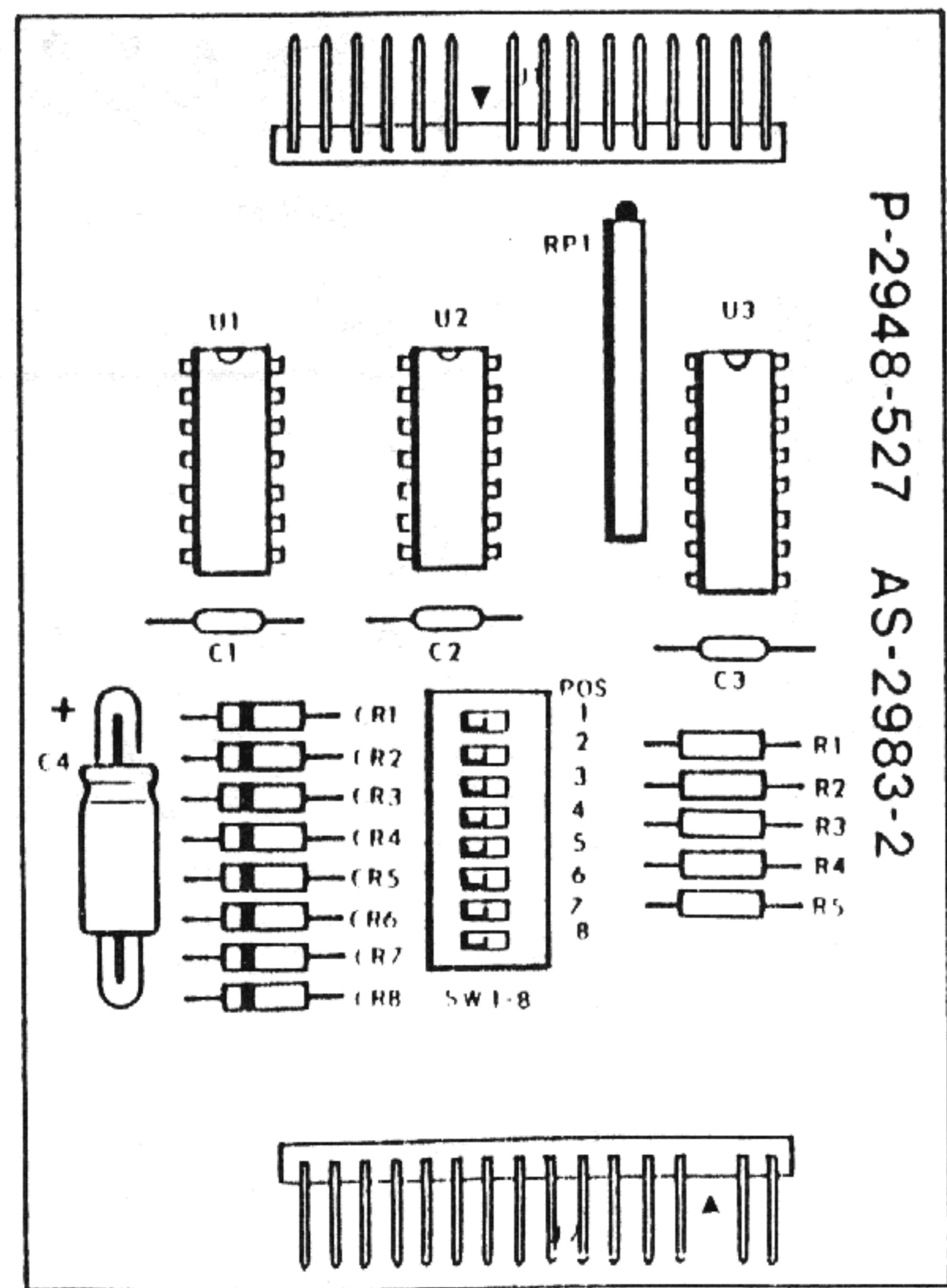
# REEL MECHANISM RELATED BOARDS



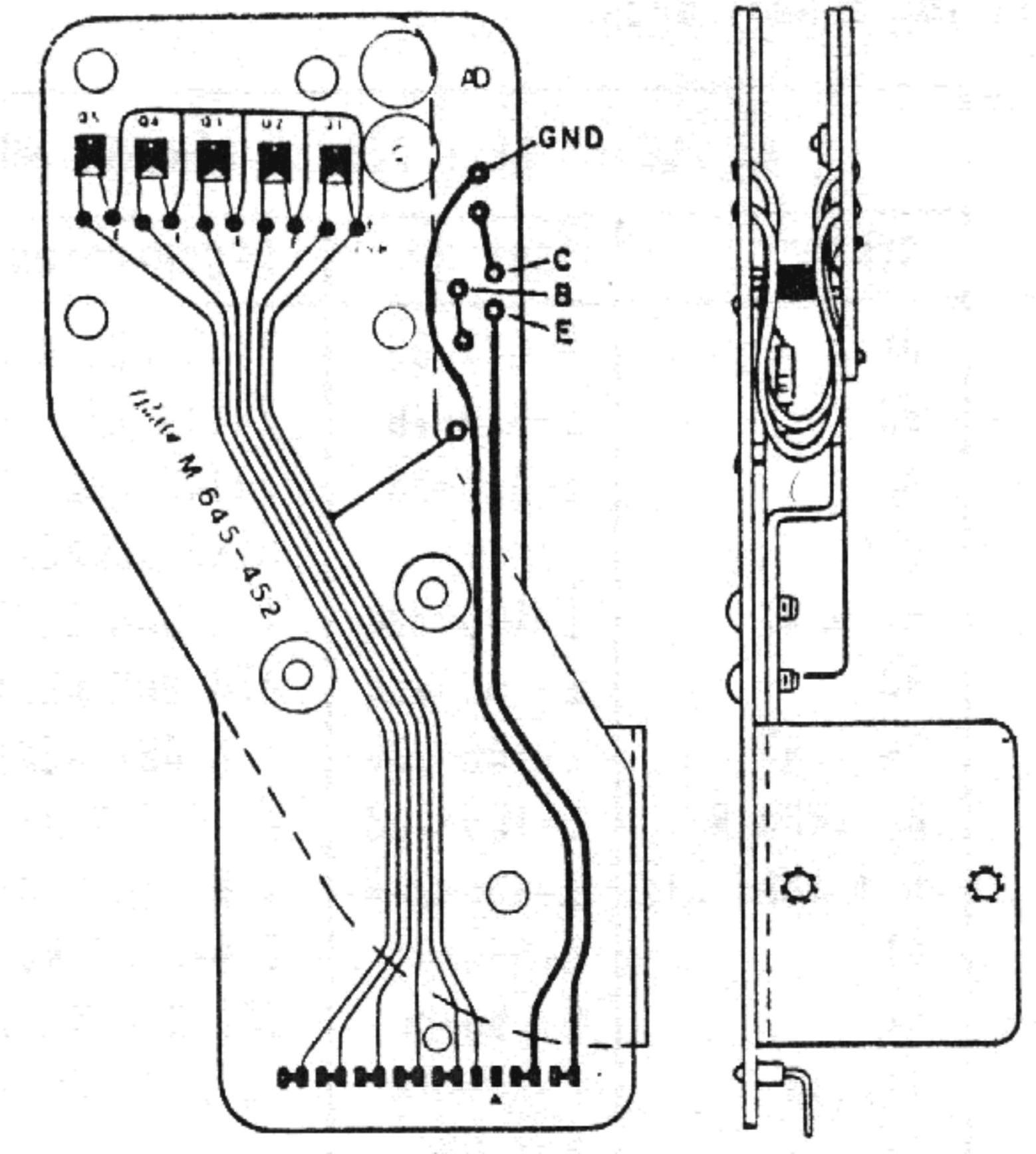
CABINET CABLE I/O BOARD CONNECTOR J1-PINS 19 & 20 ARE USED FOR 3, 4 REEL MECH.  
AND J2-PINS 14 & 16 ARE USED FOR 5 REEL MECH.

NOTE: RP1, PIN 1 IS TIED TO Vcc & RP1, PIN 10 IS NOT USED.

0-1091



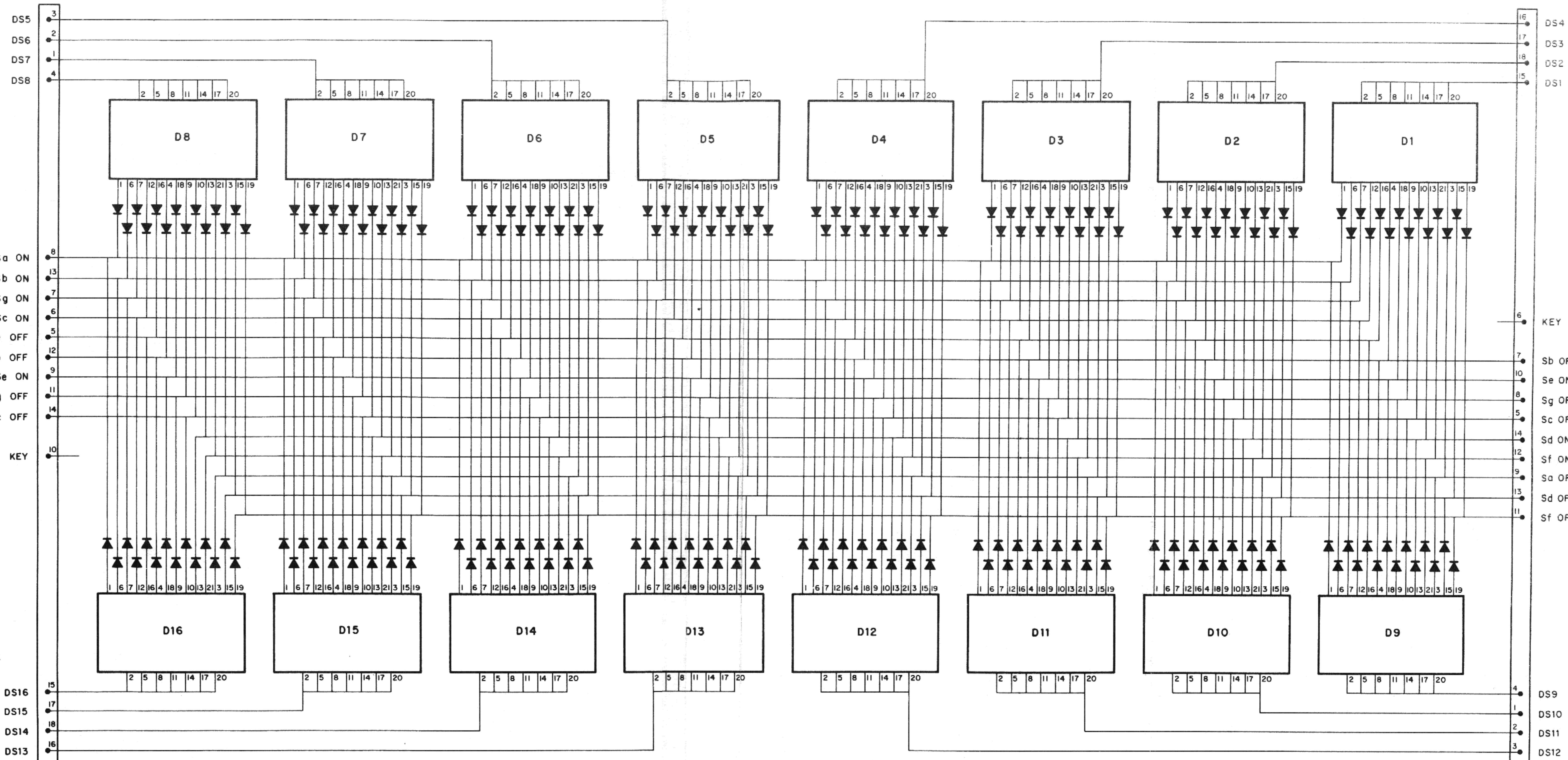
AS-2983-2 REEL READER CONTROL BOARD		
SYMBOL	PART NO.	DESCRIPTION
U1	E-620-65	I.C. 7417
U2	E-620-78	I.C. 74C14
U3	E-620-63	I.C. 74145
C1, 2, 3	E-586-85	.01 MFD., 50V., Ceramic
C4	E-586-8	2 MFD., 50V., Electrolytic
CR1 thru CR8	E-587-14	1N4148 Diode
R1 thru R5	E-105-263	47 K Ohm Resistor
RP1	E-835-8	1 K SIP (10 Pin) (Pull Up)
SW1	E-677	8 Position SPST Dip Switch
J1, J2	E-768-16	16 Ckt. KK100 Right Angle Wafer



AS-2977-6 POSITION READER ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
	A-3933-8	Illum. Bracket Assembly
	A-3933-7	Reader Bracket Assembly
CR1 thru CR5	E-679-9	Infra-red LED (5)
Q1 thru Q5	E-585-86	NPN Phototransistor
J1	E-768-16	16 Ckt. KK100 Rt. Angle Wafer
R4	E-105-233	150 Ohm Resistor
R1	E-105-230	1K Ohm Resistor
R2, R3	E-105-322	47 Ohm Resistor (2)
Q6	E-585-4	MPS6517 PNP Transistor

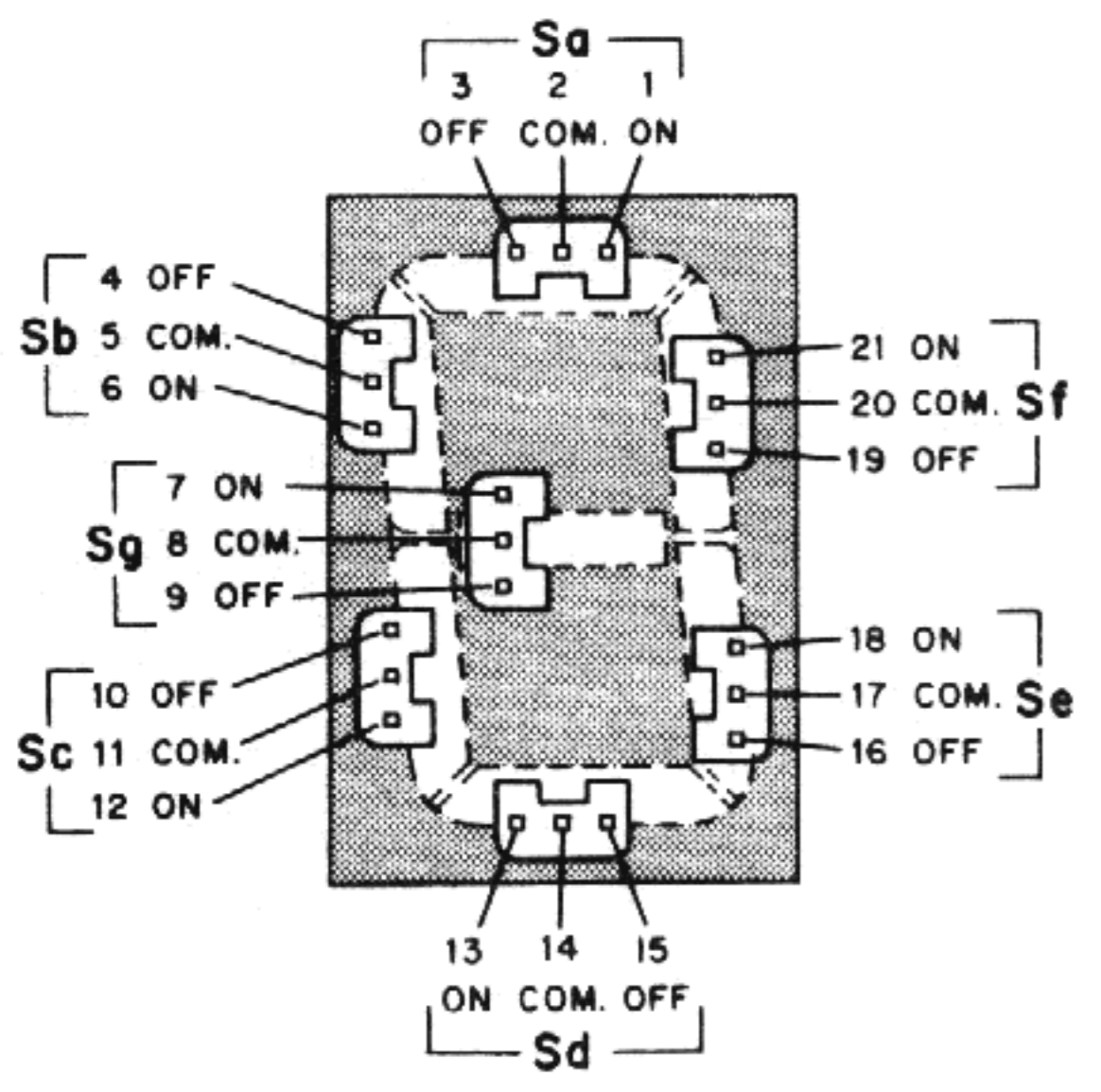
NOTE: CR1 Thru CR5 ON POSITION READER ARE THE INFRA-RED LED SOURCE FOR Q1 Thru Q5 PHOTOTRANSISTORS, RESPECTIVELY.

# PROGRESSIVE DISPLAY BOARD



## DIODE DESIGNATIONS

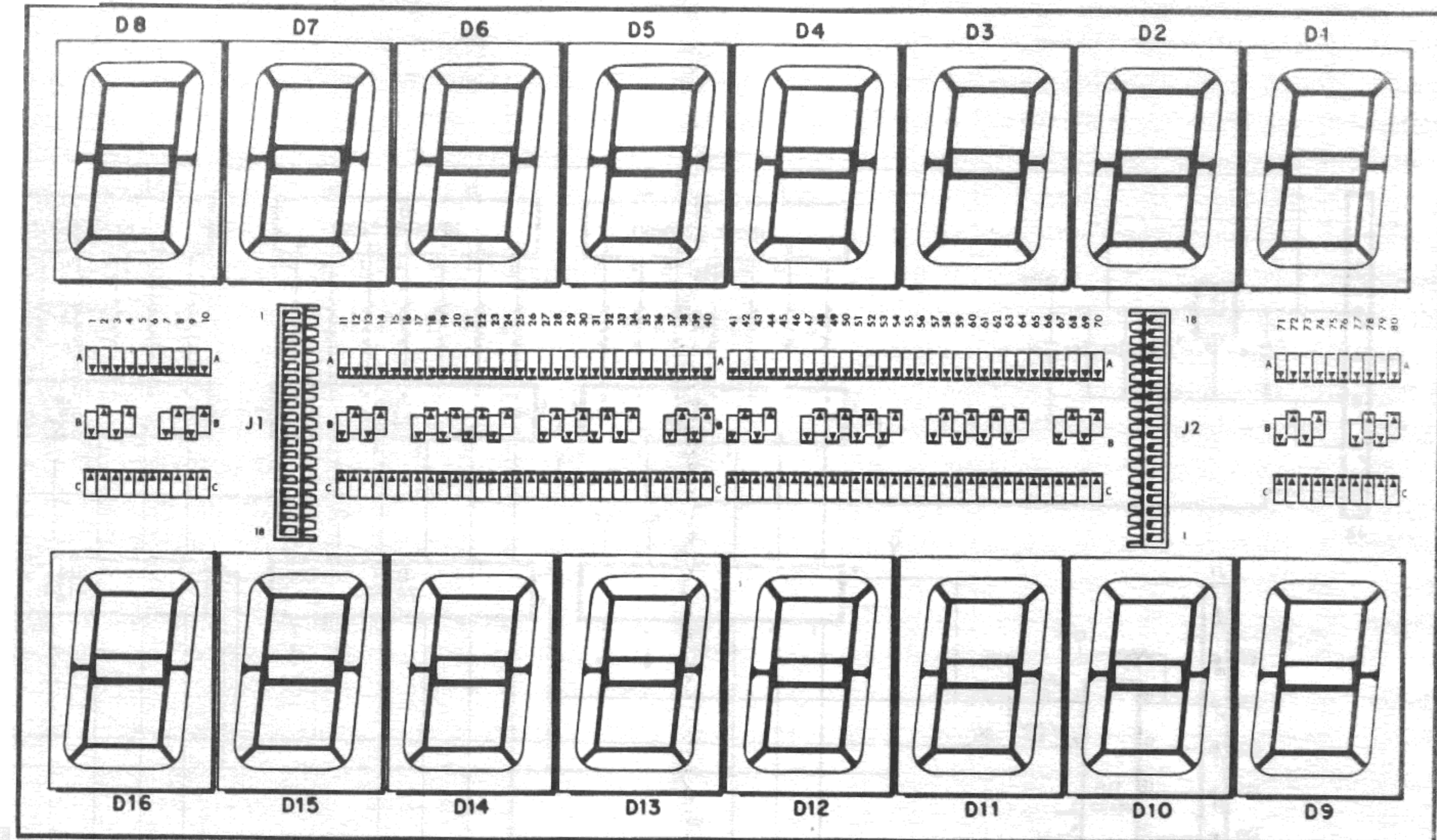
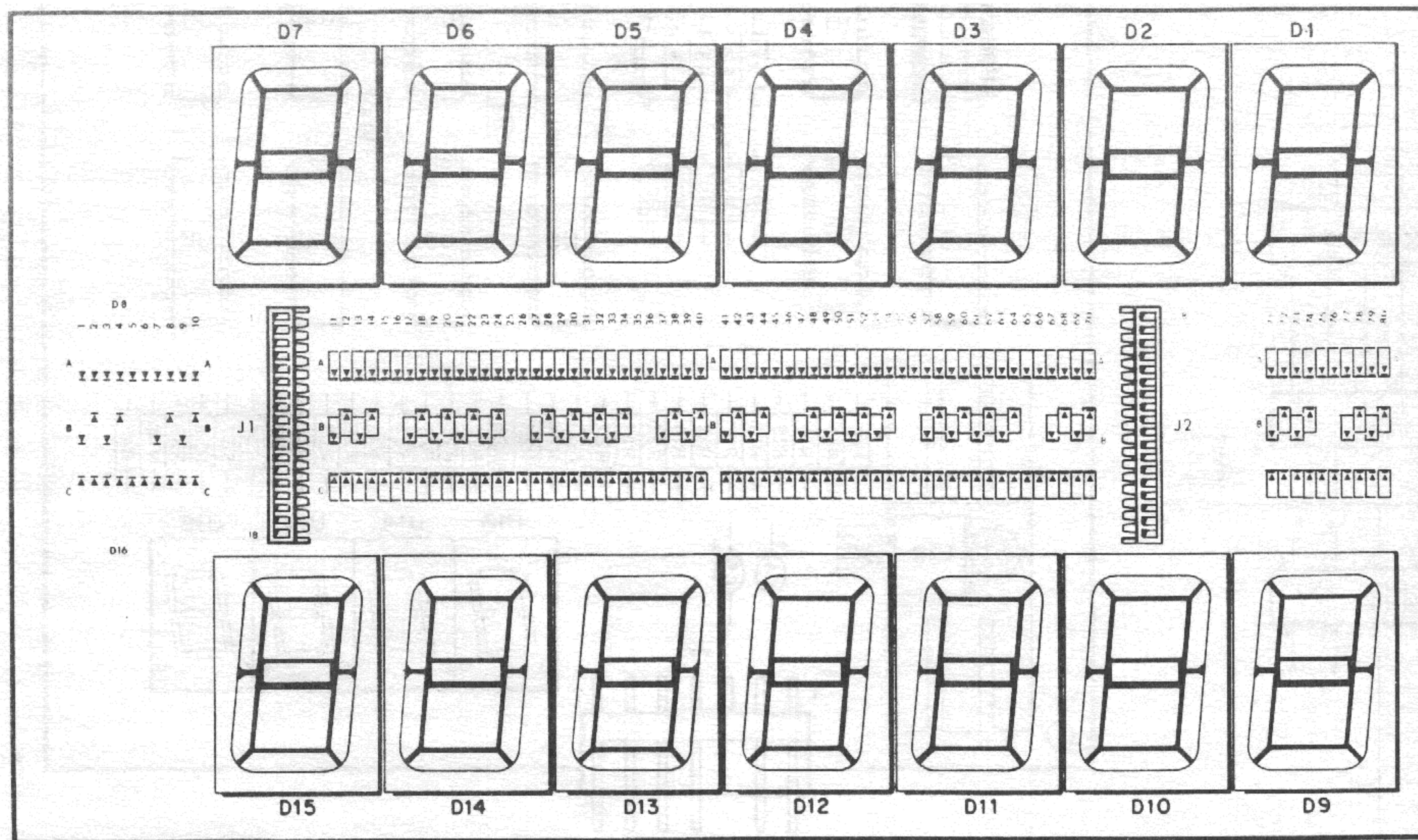
DISPLAY NO.	Sa		Sb		Sc		Sd		Se		Sf		Sg	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
D1	B73	A76	A79	A78	B79	A80	A75	A74	B71	A71	A73	A72	B77	A77
D2	B63	A66	A69	A68	B69	A70	A65	A64	B61	A61	A63	A62	B67	A67
D3	B53	A56	A59	A58	B59	A60	A55	A54	B51	A51	A53	A52	B57	A57
D4	B43	A46	A49	A48	B49	A50	A45	A44	B41	A41	A43	A42	B47	A47
D5	B33	A36	A39	A38	B39	A40	A35	A34	B31	A31	A33	A32	B37	A37
D6	B23	A26	A29	A28	B29	A30	A25	A24	B21	A21	A23	A22	B27	A27
D7	B13	A16	A19	A18	B19	A20	A15	A14	B11	A11	A13	A12	B17	A17
D8	B3	A6	A9	A8	B9	A10	A5	A4	B1	A1	A3	A2	B7	A7
D9	B74	C76	C79	C78	B80	C80	C75	C74	B72	C71	C73	C72	B78	C77
D10	B64	C66	C69	C68	B70	C70	C65	C64	B62	C61	C63	C62	B68	C67
D11	B54	C56	C59	C58	B60	C60	C55	C54	B52	C51	C53	C52	B58	C57
D12	B44	C46	C49	C48	B50	C50	C45	C44	B42	C41	C43	C42	B48	C47
D13	B34	C36	C39	C38	B40	C40	C35	C34	B32	C31	C33	C32	B38	C37
D14	B24	C26	C29	C28	B30	C30	C25	C24	B22	C21	C23	C22	B28	C27
D15	B14	C16	C19	C18	B20	C20	C15	C14	B12	C11	C13	C12	B18	C17
D16	B4	C6	C9	C8	B10	C10	C5	C4	B2	C1	C3	C2	B8	C7



ELECTRO MAGNETIC NUMERIC DISPLAY  
(Viewed From Pin Connections)

E-1010 (W-1217-9)

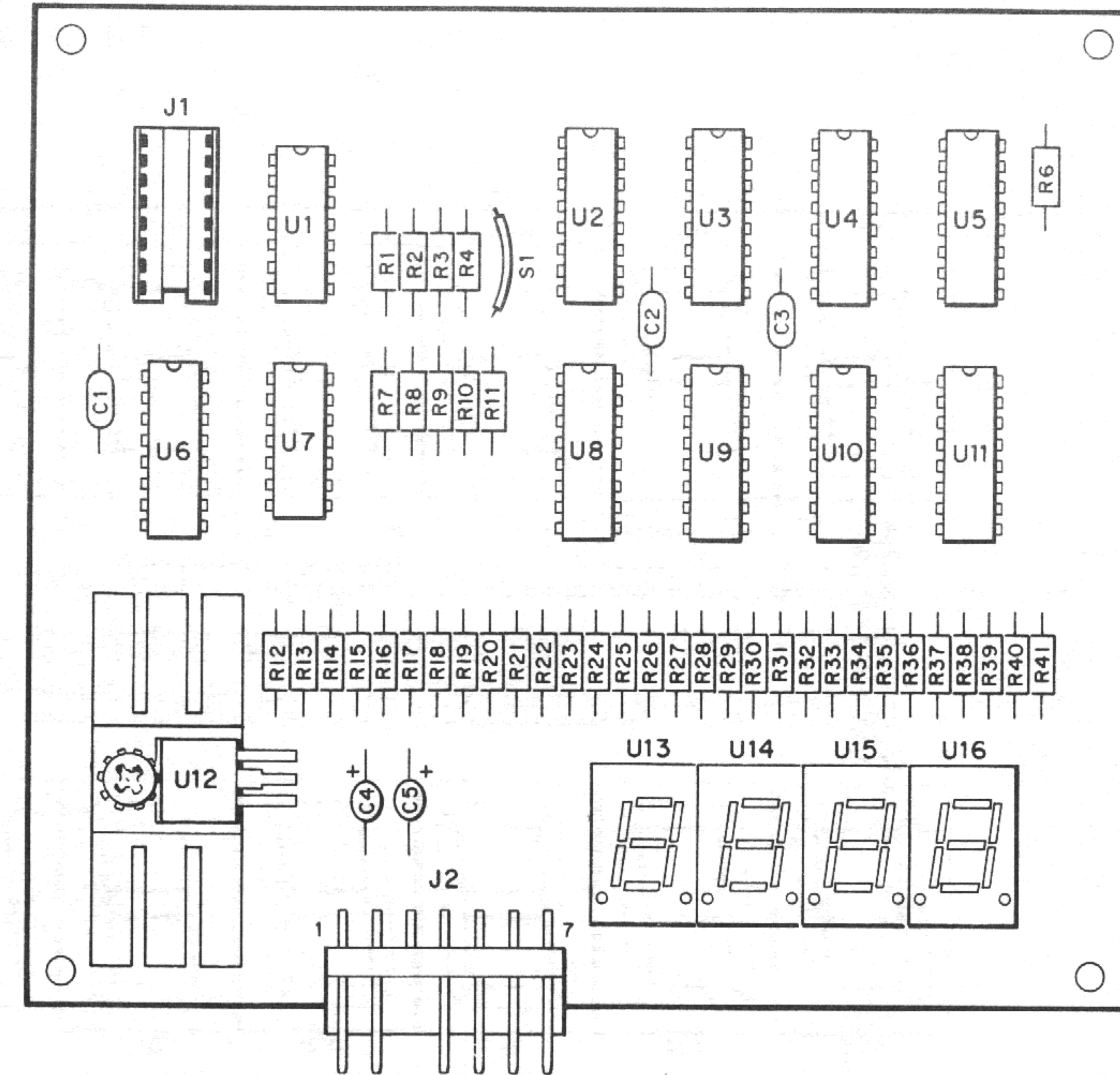
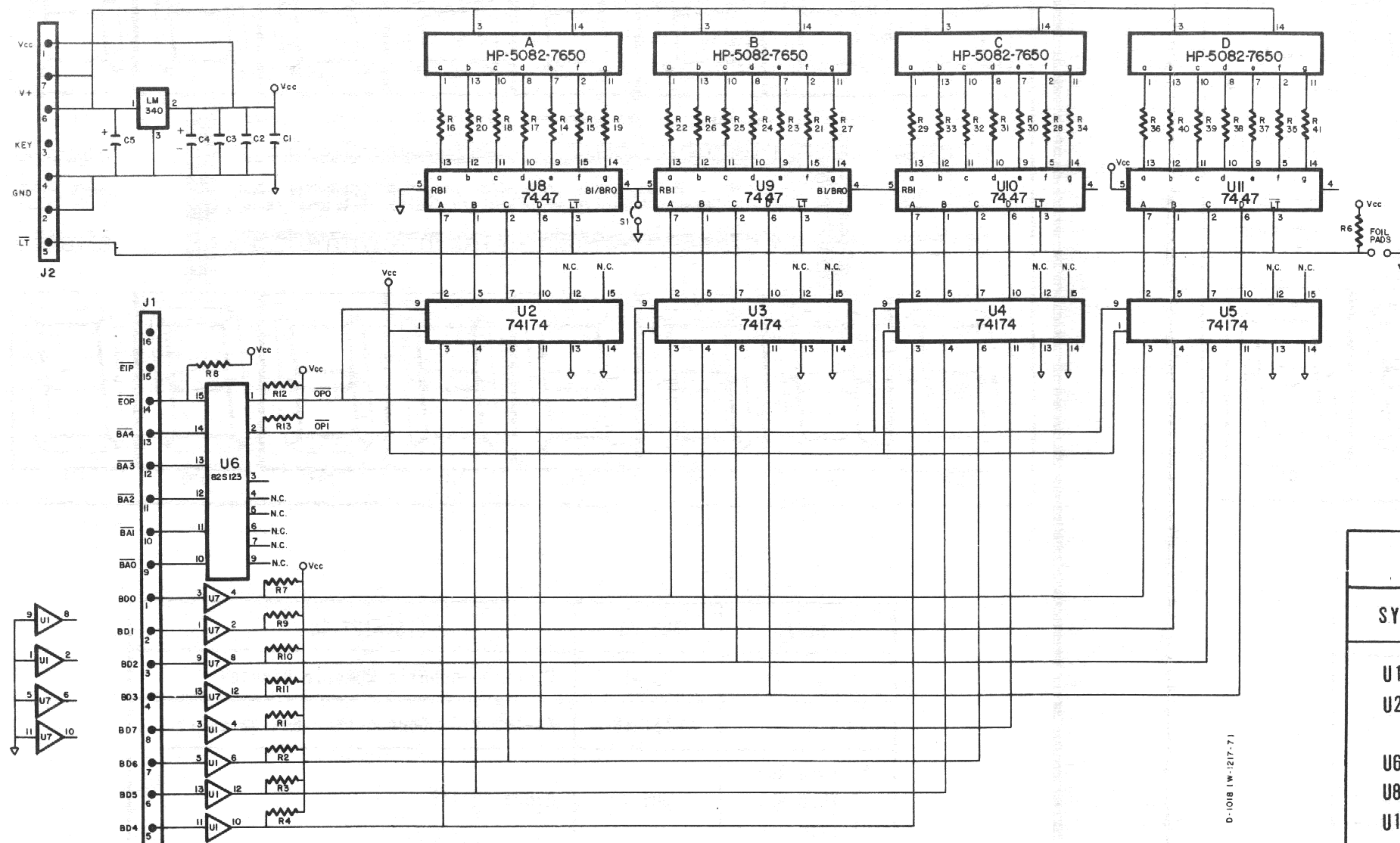
# 14 & 16 DIGIT PROGRESSIVE DISPLAY BOARDS



SYMBOL	PART NO.	DESCRIPTION
D1 Thru D7	E-837-1	Electro-Magnetic Numeric Display
D8	—	Not Used
D9 Thru D15	E-837-1	Electro-Magnetic Numeric Display
D16	—	Not Used
J1 J2	E-771-18	KK-100 P.C. Connector - Bottom Entry
A1 Thru A10 B1 Thru B10 C1 Thru C10	—	Not Used
A11 Thru A80 B11 Thru B80 C11 Thru C80	E-587-14	Diode 1N4148

SYMBOL	PART NO.	DESCRIPTION
D1 Thru D16	E-837-1	Electro-Magnetic Numeric Display
J1 & J2	E-771-18	KK-100 P.C. Connector - Bottom Entry
A1 Thru A80 B1 Thru B80 C1 Thru C80	E-587-14	Diode 1N4148

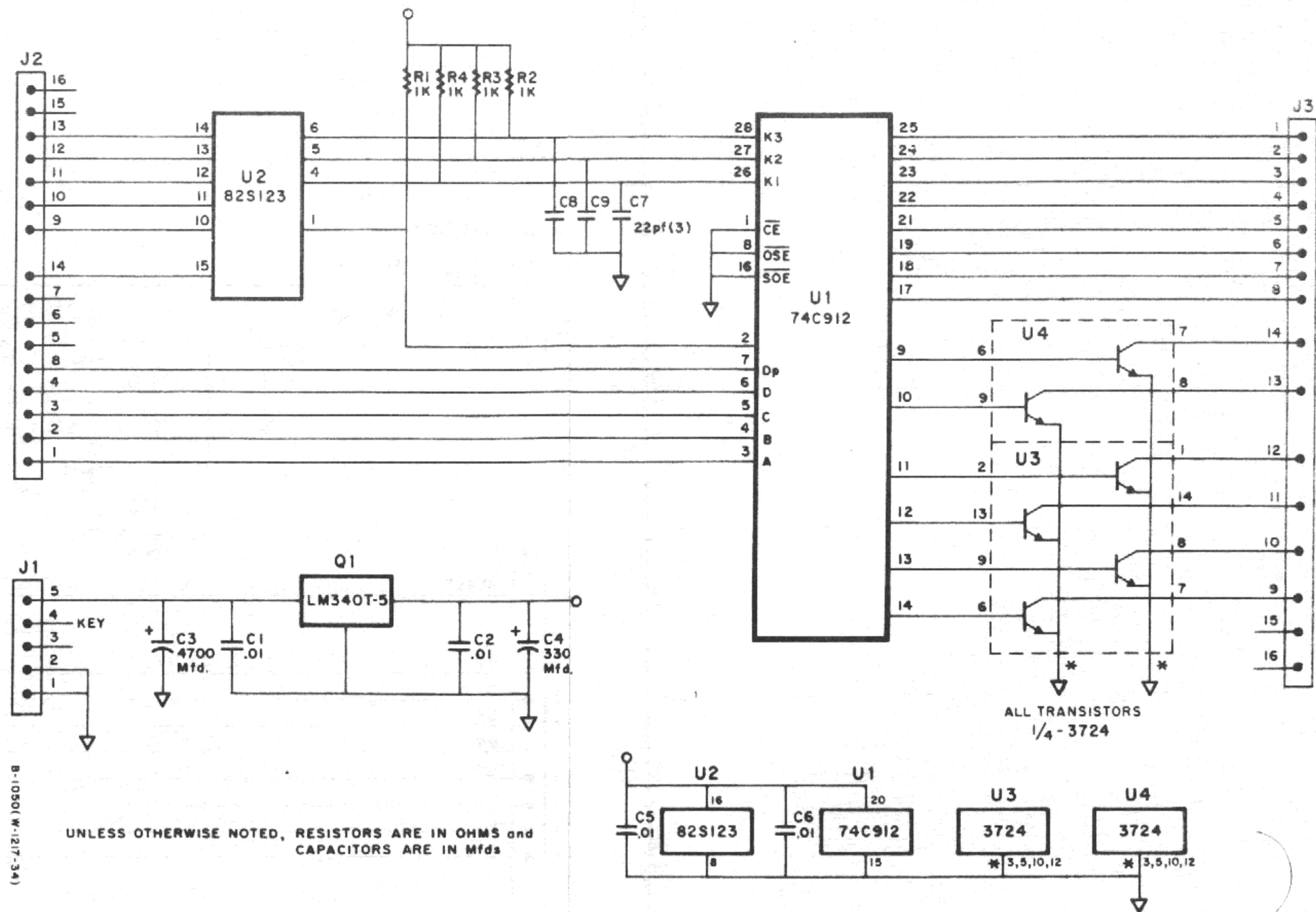
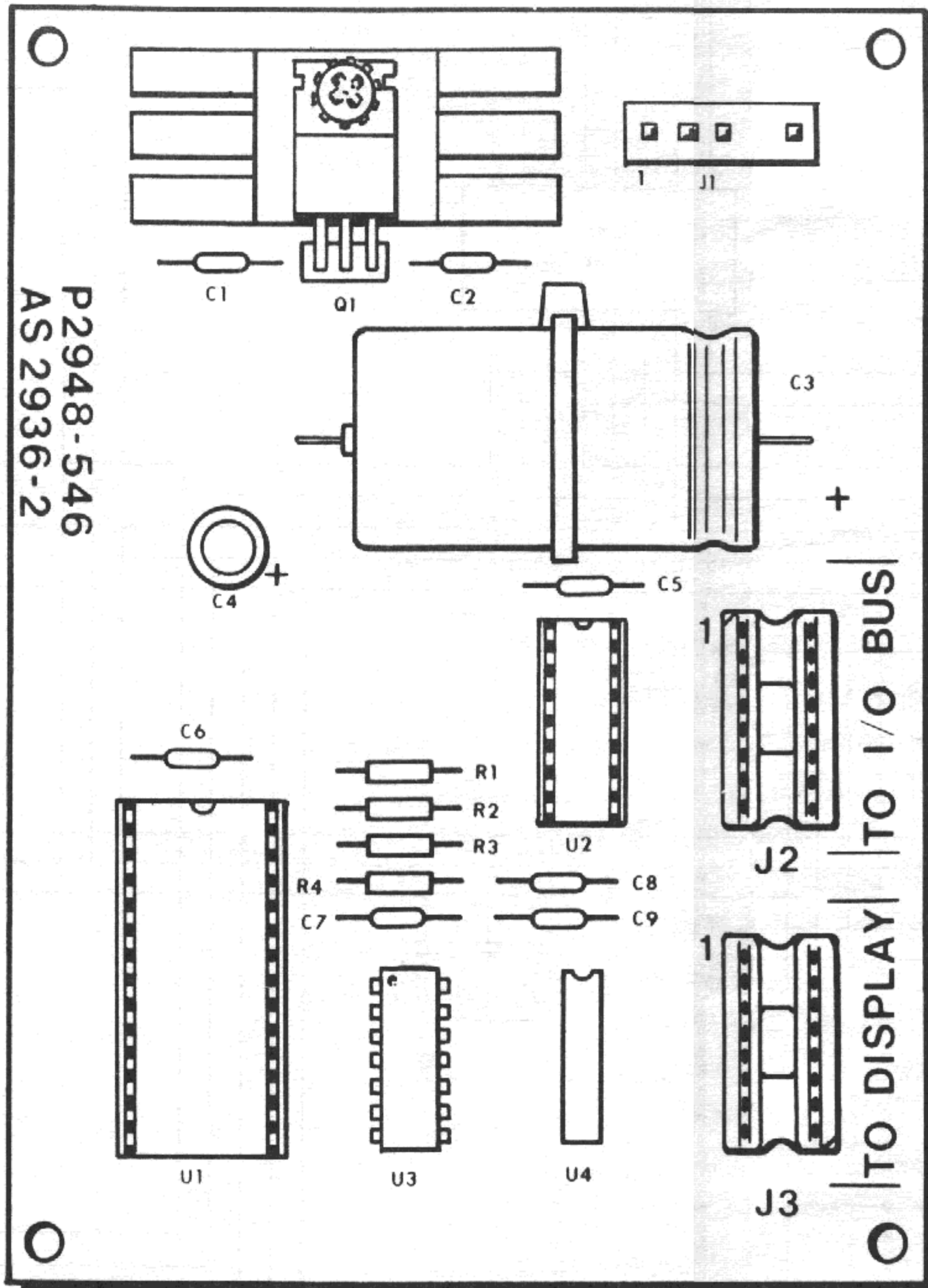
# REPLAY REGISTER DISPLAY BOARD



## AS-2936-1 REPLAY REGISTER DISPLAY BOARD ASSEMBLY

SYMBOL	PART NO.	DESCRIPTION
U1, U7	E-00620-0065	I.C. 7417 HEX BUFFER D.C.
U2, U3, U4, U5	E-00620-0064	I.C. 74174 HEX D-FF
U6	E-00712-0004	16 PIN I.C. SOCKET LOW PRO
U8, U9, U10, U11	E-00751-0013	REPLAY REG. CONTROL PROM
U12	E-00620-0008	I.C. 7447 BCD TO 7 SEG. DECODER
	E-00620-0066	L.M. 340T - 5 VOLT REGULATOR
	E-00662-0010	HEAT SINK THERMALLOY °6070°
	LSPR-632-1106	SCREW
	N-00632-2112	NUT
U13, U14, U15, U16	E-00600-0003	7 SEG. LED H.P. 5082-7650
	E-00712-6005	14 PIN I.C. SOCKET LOW PRO
R1 THRU R4	E-00105-0230	RESISTOR, 1K OHM, 1/4 WATT
R5	DELETED	
R6 THRU R13	E-00105-0230	RESISTOR, 1K OHM, 1/4 WATT
R14 THRU R41	E-00105-0280	RESISTOR, 470 OHM, 1/4 WATT
C1, C2, C3	E-00586-0085	CAPACITOR, .01 MFD, 25 V.
C4, C5	E-00586-0073	CAPACITOR, 4.7 MFD, 25 V.
J1	E-00712-0008	I.C. SOCKET (AUGUT 316-AG5D-4)
J2	E-00758-0007	KK 156 RIGHT ANGLE CONNECTOR

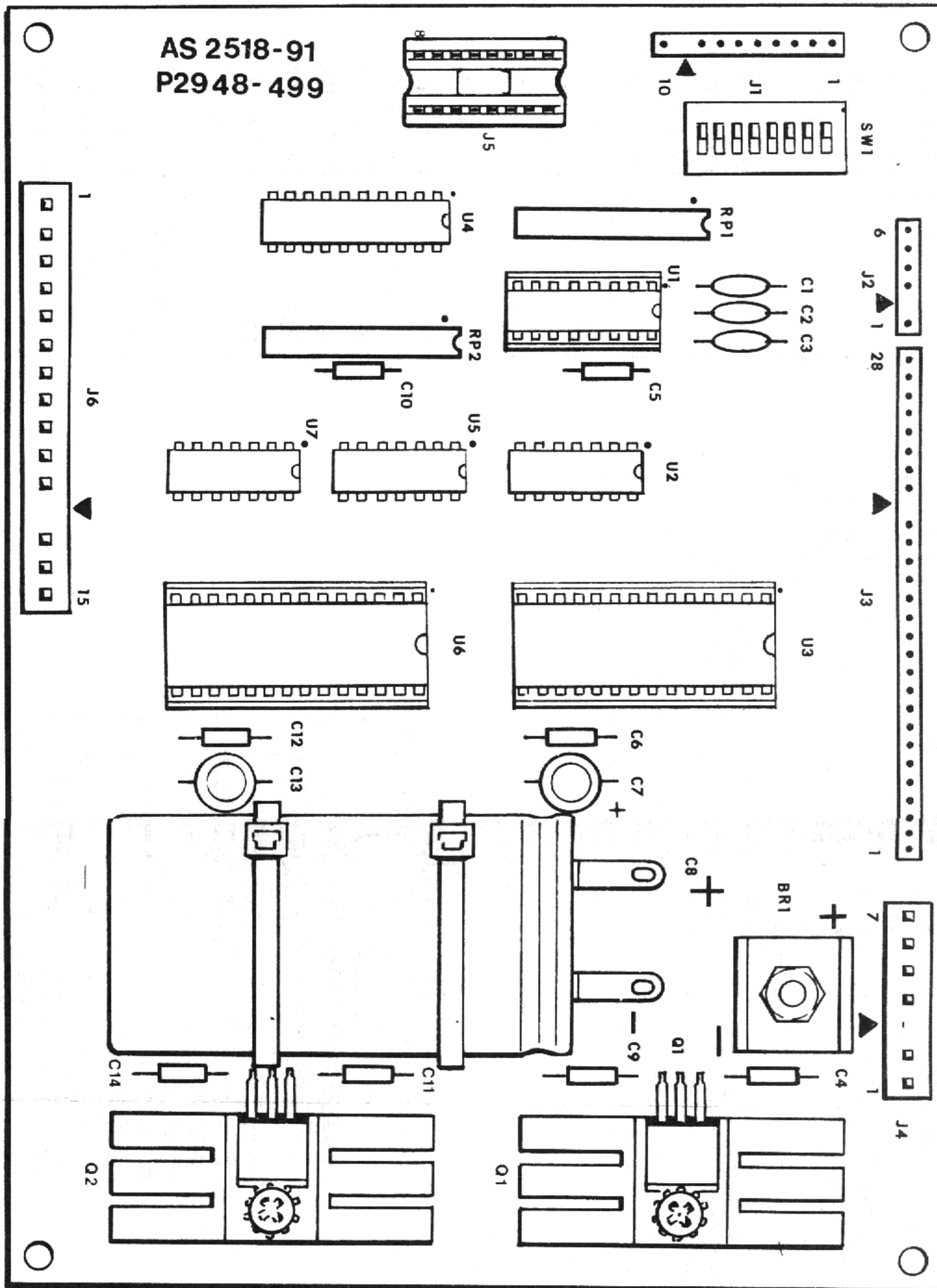
# REPLAY DISPLAY DRIVER BOARD



AS-2936-2 REPLAY DISPLAY DRIVER BOARD		
SYMBOL	PART NO.	DESCRIPTION
U1	E-620-244	I.C. 74C912 Display Driver
	E-712-28	28 Pin Dip Socket
U2	E-751-23	82S123 Prom
	E-712-4	16 Pin Dip Socket
U3	E-681-1	3724 Transistor Array
U4	—	Not Used
R1, 2, 3, 4	E-105-230	1K Ohm Resistor
C1, 2, 5, 6	E-586-85	.10 MFD., 25V., Ceramic
C3	E-586-123	4700 MFD., 25V., Electrolytic
C4	E-586-99	33 MFD., 25V., Electrolytic
C7, 8, 9	E-586-154	22 PFD., 25V., Ceramic
Q1	E-620-66	LM340T-5 5 Volt Regulator
	E-682-10	Heat Sink THM-6070
	LSPR-632-1106	Screw
	M-1700-6	Lockwasher
	N-632-2112	Nut
J1	E-736-5	5 Ckt. KK156 Wafer
J2, 3	E-712-8	I.C. Socket (AUGAT 316-AG5D-R)



# SOUND DISPLAY/SOUND INTERFACE BOARDS



ASE-2518-91 SOUND DISPLAY INTERFACE BOARD ASSEMBLY		
*ASE-2518-113 SOUND INTERFACE BOARD ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
U1	E-751-23 E-712-4	82S123 PROM 16 PIN DIP SOCKET
U2, U5, U7 U3, U6	E-681-1 E-620-244 E-712-28	3724 TRANSISTOR ARRAY I.C. 74C912 DISPLAY DRIVER 28 PIN DIP SOCKET
U4	E-620-180	I.C. 74LS273
Q1, Q2	E-620-66 E-682-9 E-682-10 LSPR-632-1106 M-1700-6 N-632-2112	LM340T-5 5 VOLTAGE REGULATOR HEAT SINK THM 6071 (UPPER) HEAT SINK THM 6070 (LOWER) SCREW LOCKWASHER NUT
BR1	E-602-3 P-6629-158 LSPR-632-1110 M-1700-6 N-632-2112	VJ248 BRIDGE RECTIFIER HEAT SINK SCREW LOCKWASHER NUT
C1-C3 C4-C6 C7, C13 C8	E-586-154 E-586-85 E-586-99 E-586-62	22 PFD 25 V. CERAMIC .01 Mfd. 25 V. CERAMIC 33 Mfd. 25 V. ELECTROLYTIC 11,000 Mfd. 20 V. ELECTROLYTIC
C9-C12, C14	E-647-5 E-586-85	TIE WRAP (2) .01 Mfd. 25 V. CERAMIC
RP1, RP2 SW1 J1 J2 J3 J4 J5 J6	E-835-8 E-677 E-766-10 E-766-6 E-766-28 E-736-7 E-712-8 E-736-15	RESISTOR SIP 1 K. OHM 8 POSITION DIP SWITCH 10 CKT. KK100 WAFER 6 CKT. KK100 WAFER 28 CKT. KK100 WAFER 7 CKT. KK156 WAFER I.C. SOCKET (AUGAT 316-AG5D-R) 15 CKT. KK156 WAFER

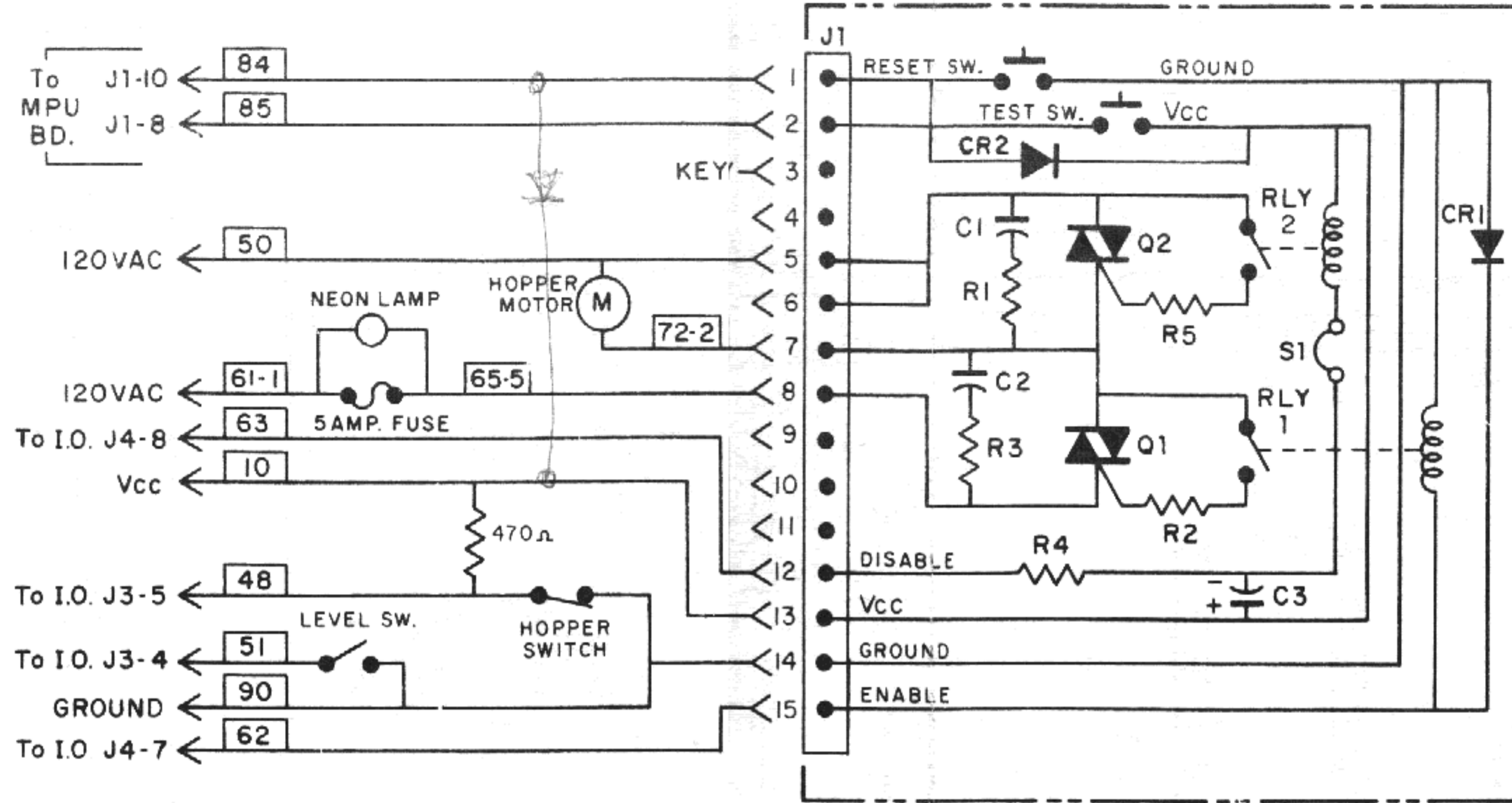
\*This note refers to applicable Electronic Slot Models.  
ASE-2518-113 Sound Interface Board Assembly uses the same components as ASE-2518-91 with the following exceptions:

These components are not used.

U2, U3, U5, U6, U7, C1 thru C3, C6, C7, C12, C13,  
SW1 and J1 thru J3.

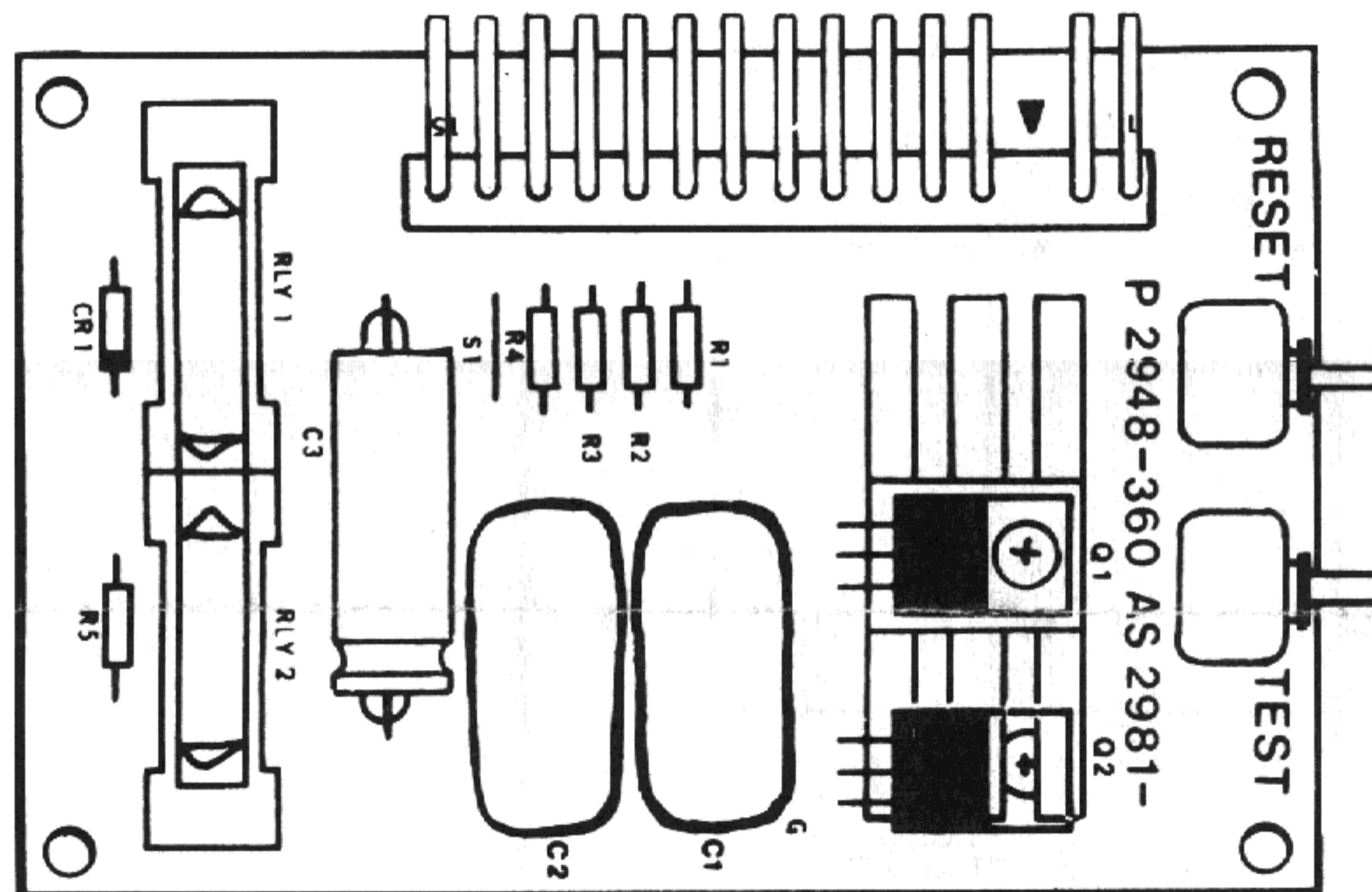
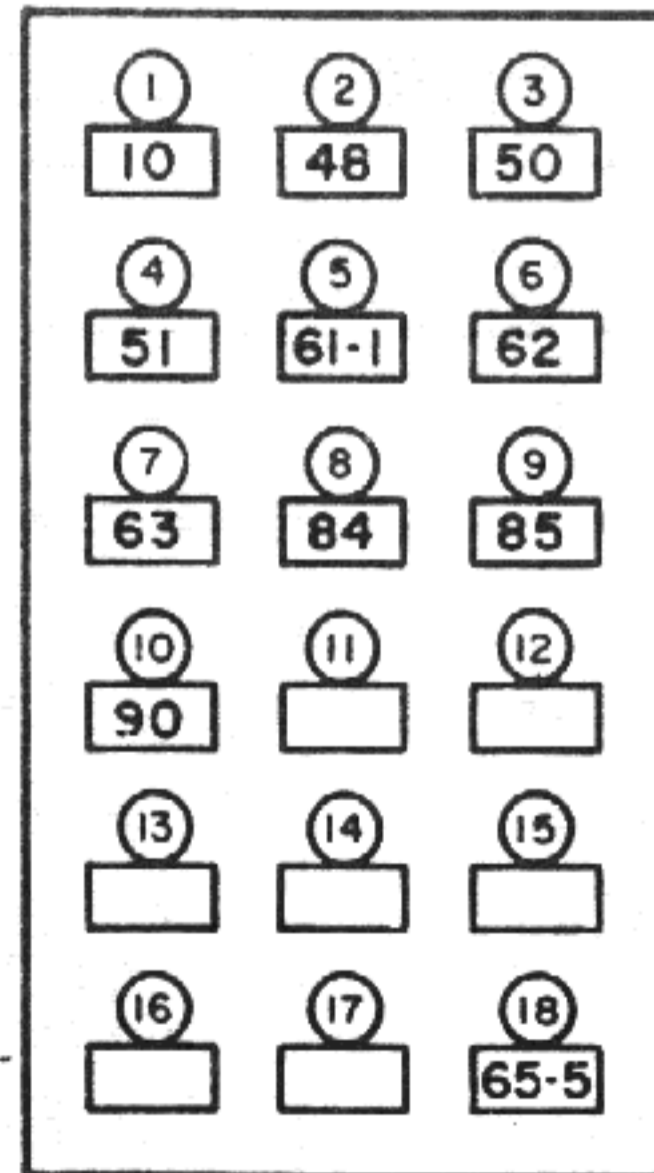
# HOPPER CONTROL BOARD

HOPPER CONTROL BOARD



B-1031 (W-1217-1)

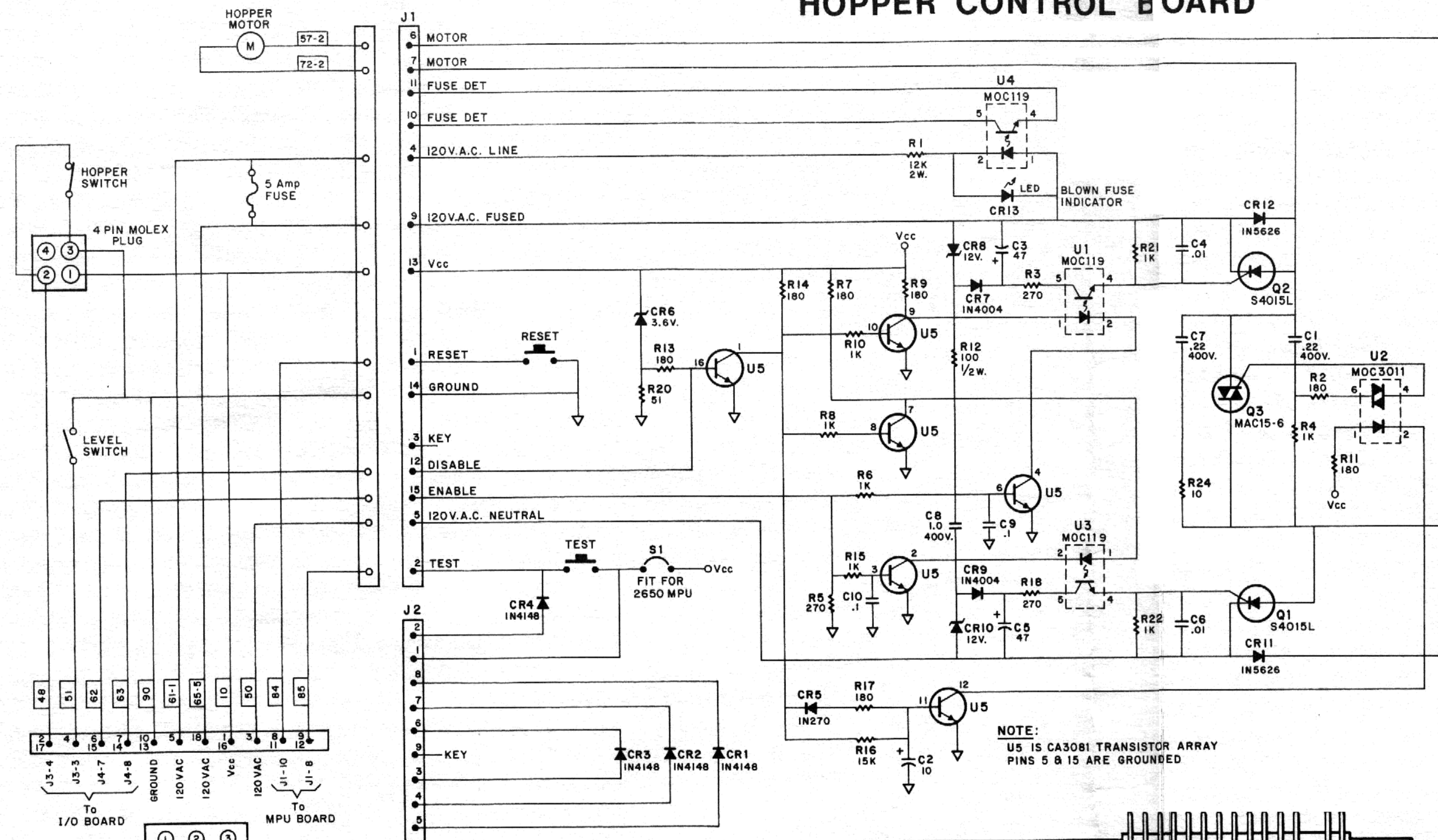
HOPPER PLUG - 18 POINT



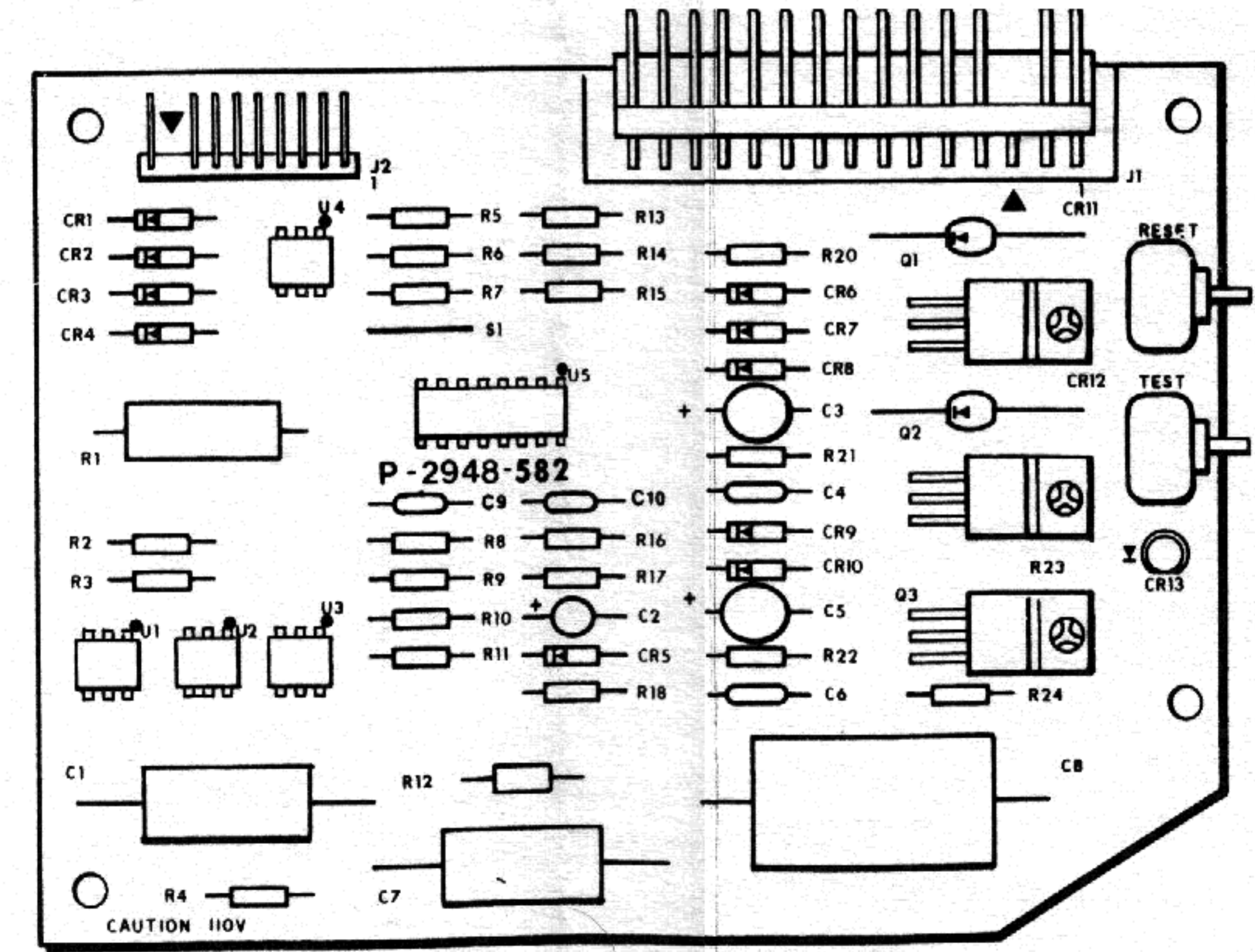
AS-2981-1 HOPPER CONTROL BOARD ASSEMBLY

SYMBOL	PART NO.	DESCRIPTION
Q1	E-585-54 E-682-10 LSPR-632-1104 M-1700-6 N-632-2112	MAC15-6 Triac Heat Sink - Thermalloy '6070' Screw Lockwasher Nut As Required Thermal Grease Or Equiv.
Q2	E-585-54 LSPR-632-1104 M-1700-6 N-632-2112	MAC15-6 Triac Screw Lockwasher Nut
C1	E-586-200	.22 MFD. 400 V. Metalized Film
C2	E-586-200	.22 MFD. 400 V. Metalized Film
C3	E-586-106	200 MFD. 16 V. Electrolytic
CR1	E-587-14	1N4148 Diode
CR2	E-587-6	1N4004 Diode (Located on Back of Board)
R1	E-105-306	10 Ohm. Resistor 1/4 Watt 5%
R2	E-105-280	470 Ohm. Resistor 1/4 Watt 5%
R3	E-105-306	10 Ohm. 1/4 Watt 5%
R4	E-105-301	100 Ohm. Resistor 1/4 Watt 5%
R5	E-105-280	470 Ohm. Resistor 1/4 Watt 5%
RLY1-RLY2	E-146-796	Electrol RA31441051 Reed Relay
Reset Sw.	E-658-1	P.B. P.C. Mount Switch
Test Sw.	E-658-1	P.B. P.C. Mount Switch
S1	Wire Jumper	
J1	E-758-15	15 Ckt. KK156 Right Angle Wafer

# HOPPER CONTROL BOARD



NOTE:  
U5 IS CA3081 TRANSISTOR ARRAY  
PINS 5 & 15 ARE GROUND



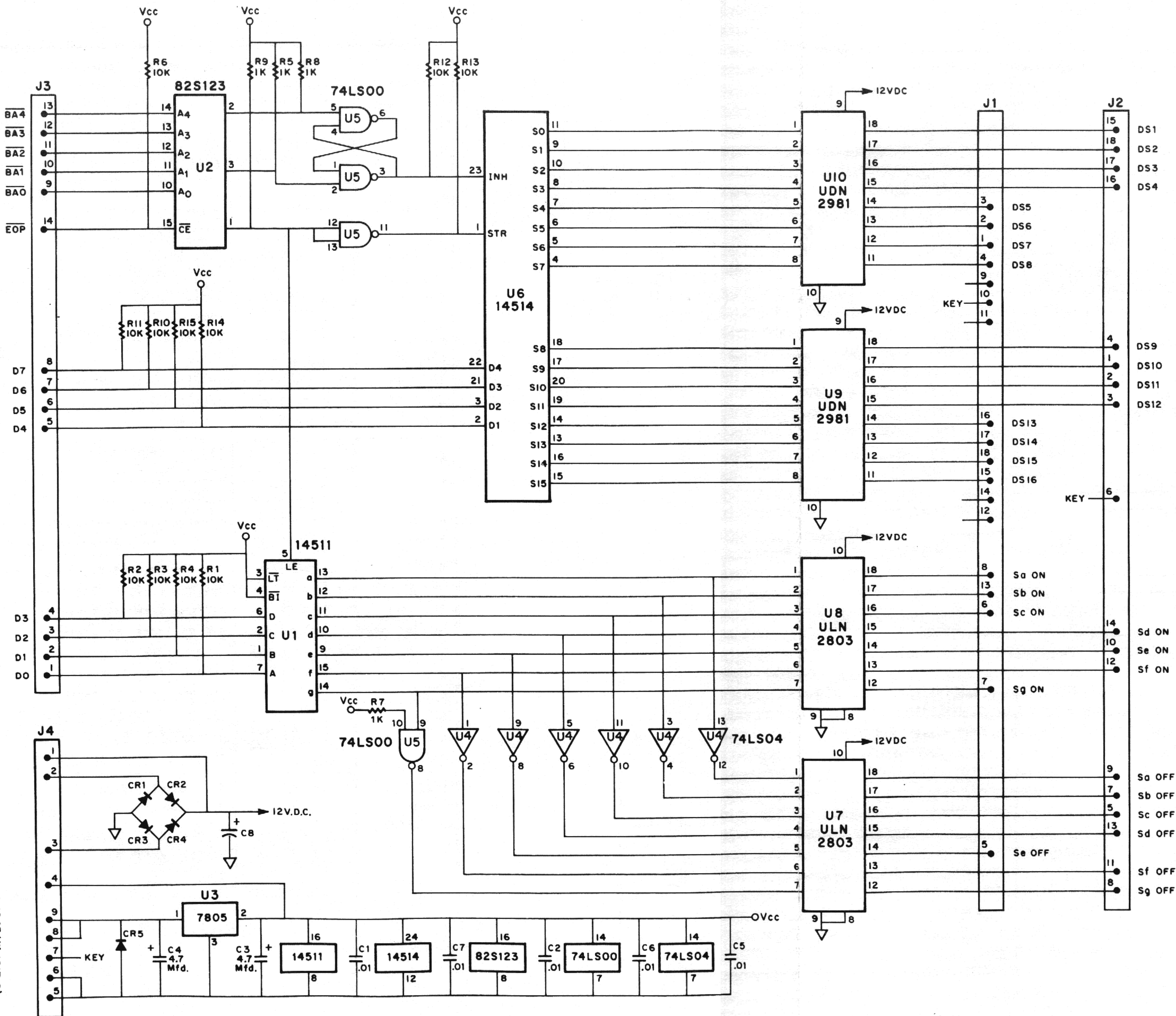
C-1073 (W-1217-19)

## AS-2981-5 HOPPER CONTROL BOARD

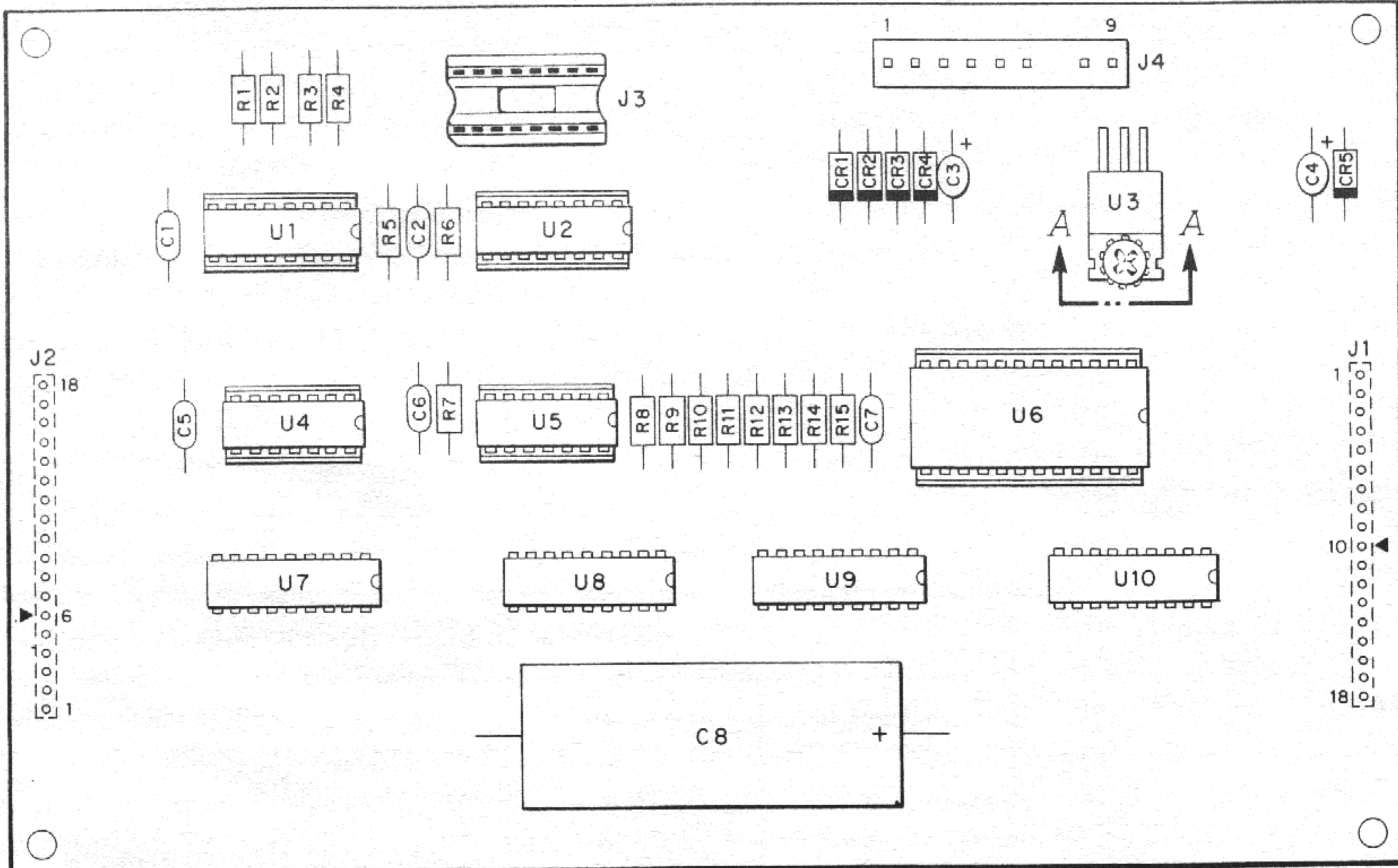
SYMBOL	PART NO.	DESCRIPTION
U1, U3, U4	E-620-243	MOC119 Opto Coupler
U2	E-620-172	Optically Isolated Triac Driver
U5	E-681	3081 NPN Transistor Array
Q1, Q2	E-585-76	S4015L 15A 400V. SCR
Q3	E-585-54	MAC15-6 15A 400V. Triac
Q1 thru Q3	M-496-1	Push Rivet Stud
CR1 thru CR4	E-587-14	1N4148 Diode
CR5	E-587	1N270 Diode
CR6	E-598-42	Z3.6C20MA Zener Diode
CR7, CR9	E-587-6	1N4004 Diode
CR8, CR10	E-598-28	1N5242A Zener Diode
CR11, CR12	E-587-25	1N5626 Diode
CR13	E-679-1	Red LED
C1, C7	E-586-207	.22MFD. 400V. Polyester Capacitor
C2	E-586-211	10MFD. 16V. Tantalum Capacitor
C3, C5	E-586-202	47MFD. 25V. Tantalum Capacitor
C4, C6	E-586-85	.01MFD. 25V. Ceramic Capacitor
C8	E-586-209	1. MFD. 400V. Polyester Capacitor
C9, C10	E-586-233	.1 MFD. 50V. Ceramic Capacitor
R1	E-105-76	12K Ohm 2W. 10% Resistor
R2, R7, R9, R11	E-105-235	180 Ohm 1/4W. 5% Resistor
R13, R14, R17	E-105-235	180 Ohm 1/4W. 5% Resistor
R3, R5, R18	E-105-264	270 Ohm 1/4W. 5% Resistor
R4, R6, R8, R10	E-105-230	1K Ohm 1/4W. 5% Resistor
R15, R21, R22	E-105-230	1K Ohm 1/4W. 5% Resistor
R12	E-105-265	100 Ohm 1/2W. 5% Resistor
R16	E-105-281	15K Ohm 1/4W. 5% Resistor
R20	E-105-134	51 Ohm 1/4W. 5% Resistor
R24	E-105-306	10 Ohm 1/4W. 5% Resistor
Test	E-658-1	P.C. Mount Switch
Reset	E-658-1	P.C. Mount Switch
J1	E-758-15	15 Ckt. KK156 Rt. Angle Wafer
J2	E-768-10	10 Ckt. KK100 Rt. Angle Wafer
S1	—	Wire Jumper



# PROGRESSIVE DISPLAY CONTROL BOARD



# PROGRESSIVE CONTROL BOARD

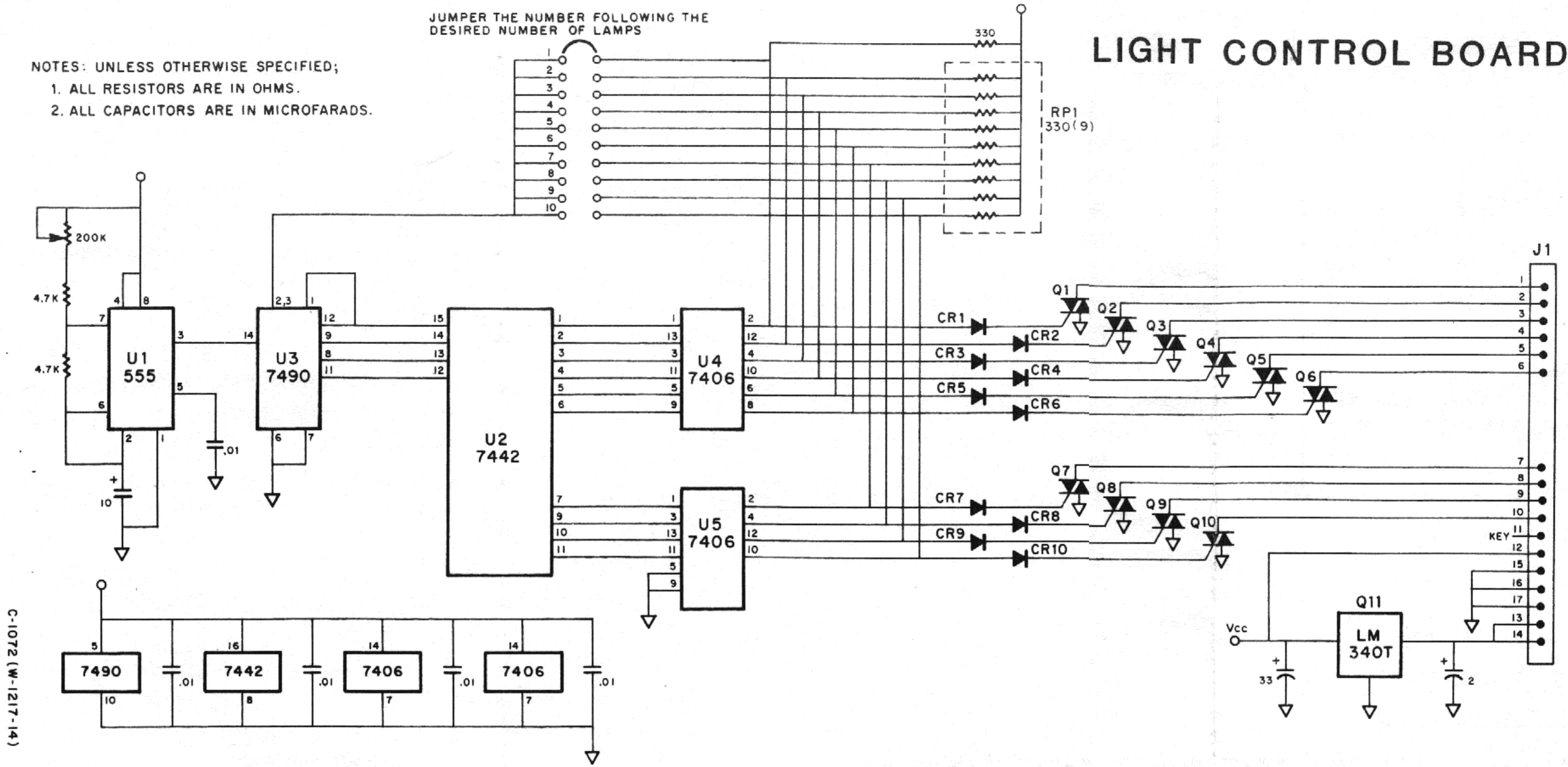


SYMBOL	PART NO.	DESCRIPTION
C1, C2	E-586-85	.01mfd. +80%-20% 25V. Capacitor
C3, C4	E-586-73	4.7mfd. 25V. Capacitor
C5, C6, C7	E-586-85	.01mfd. +80%-20% 25V. Capacitor
C8	E-586-123	4700mfd. 25V. Capacitor
CR1 Thru CR5	E-587-6	Diode 1N4004
J1, J2	E-770-18	18 Pin KK100 Wafer
J3	E-712-8	I.C. Socket
J4	E-736-9	9 Pin KK156 Wafer
R1 Thru R4	E-105-185	10K Ohm 5% 1/4 Watt Resistor
R5	E-105-230	1K Ohm 5% 1/4 Watt Resistor
R6	E-105-185	10K Ohm 5% 1/4 Watt Resistor
R7, R8, R9	E-105-230	1K Ohm 5% 1/4 Watt Resistor
R10 Thru R15	E-105-185	10K Ohm 5% 1/4 Watt Resistor
U1	E-630-177 E-712-4	I.C. 14511 Latch/Decoder/Driver 16 Pin Dip Socket
U2	E-751-20 E-712-4	I.C. 825123 Prom Progressive Controller 16 Pin Dip Socket
U3	E-620-66	LM - 340T 5 Volt Regulator
U4	E-620-60 E-712-5	I.C. 74LS04 Hex Inverter Driver 14 Pin Dip Socket
U5	E-620-148 E-712-5	I.C. 74LS00 Quad N And Gate 14 Pin Dip Socket
U6	E-620-37 E-712-0	I.C. 14514 4-16 Decoder 24 Pin Dip Socket
U7, U8	E-620-133	I.C. ULN 2803 Transistor Array
U9, U10	E-620-89	I.C. ULD 2981A Transistor Array

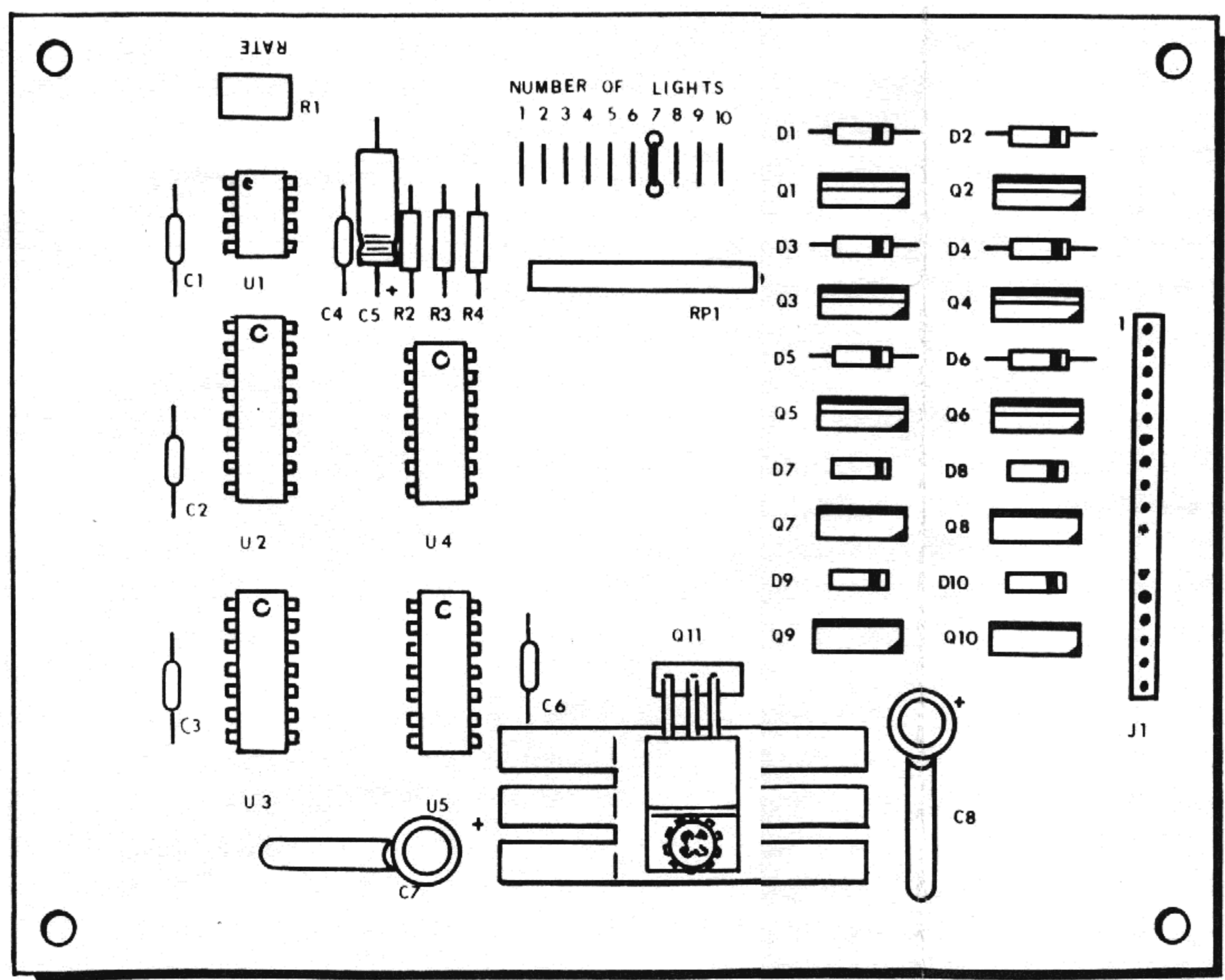
# LIGHT CONTROL BOARD

NOTES: UNLESS OTHERWISE SPECIFIED;  
 1. ALL RESISTORS ARE IN OHMS.  
 2. ALL CAPACITORS ARE IN MICROFARADS.

JUMPER THE NUMBER FOLLOWING THE  
 DESIRED NUMBER OF LAMPS

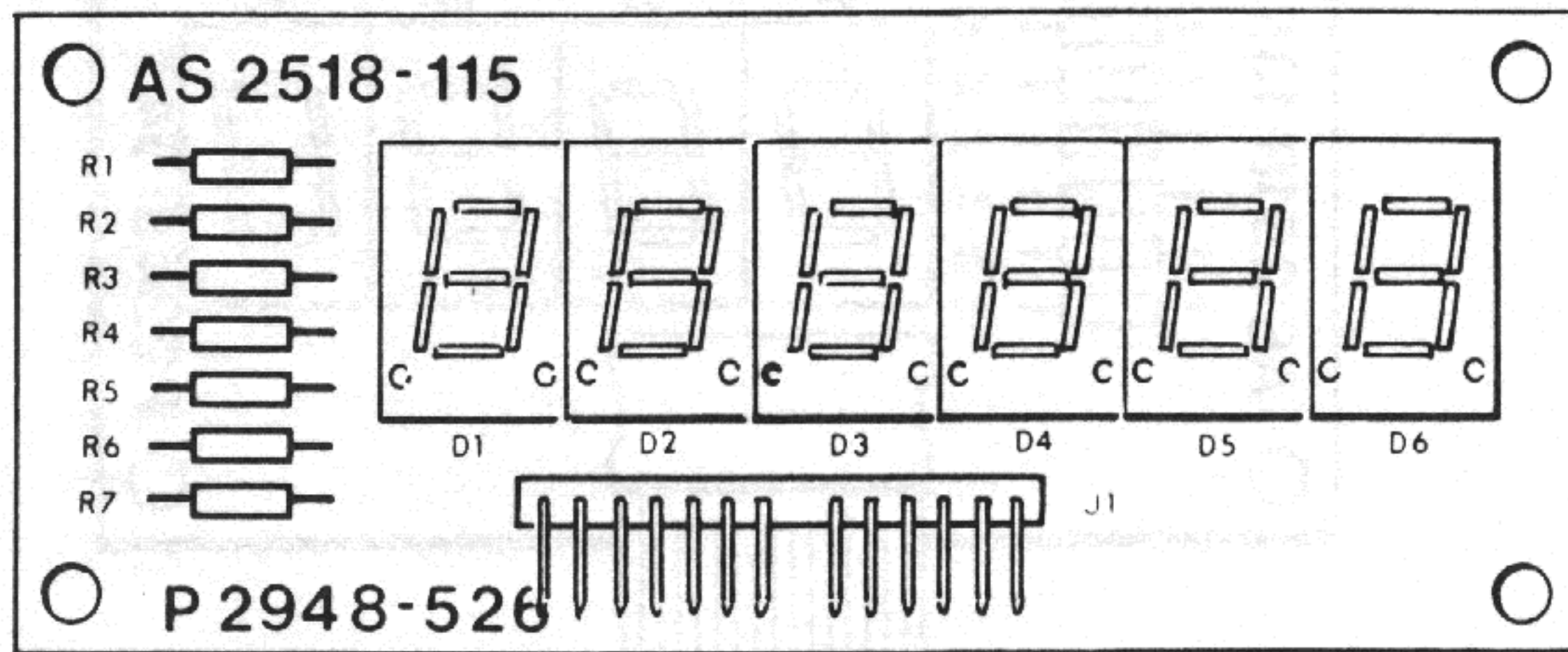
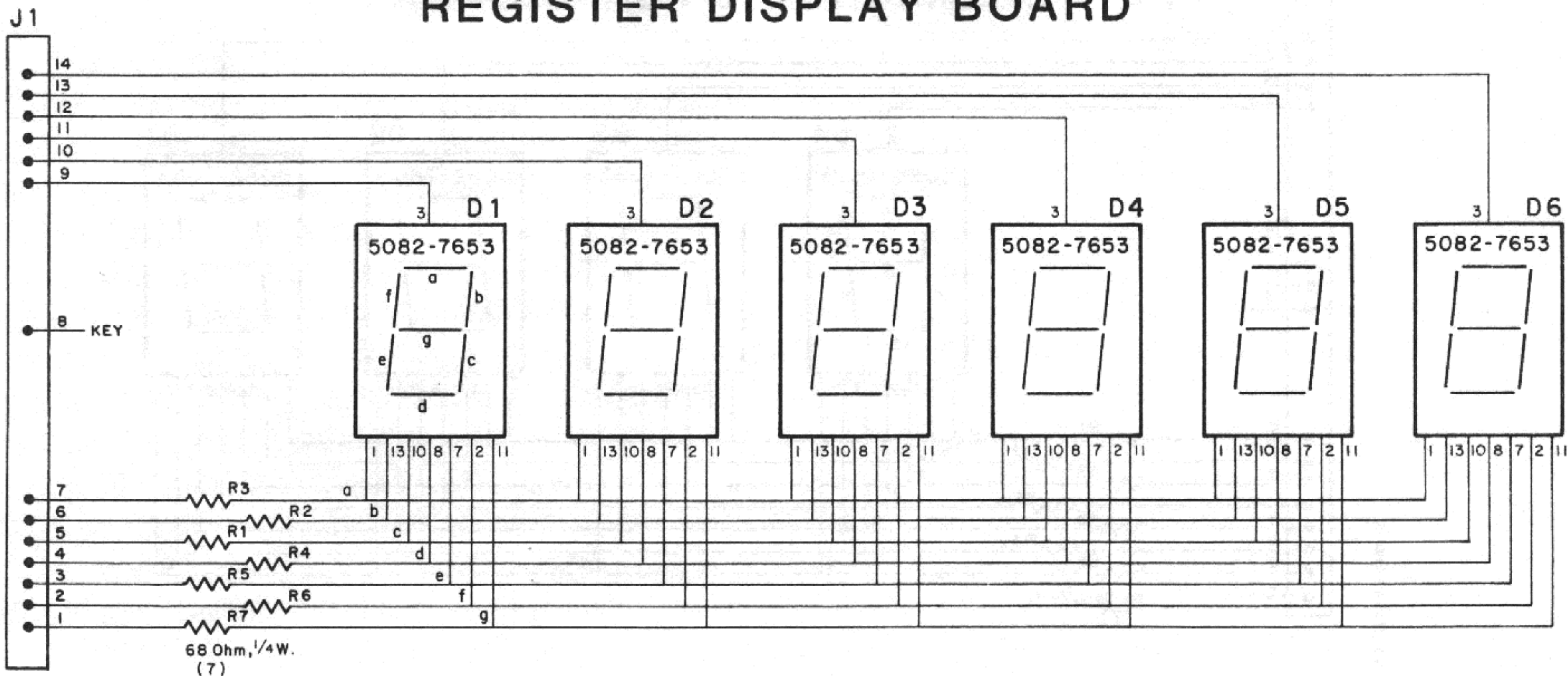


C-10722 (W-1217-14)



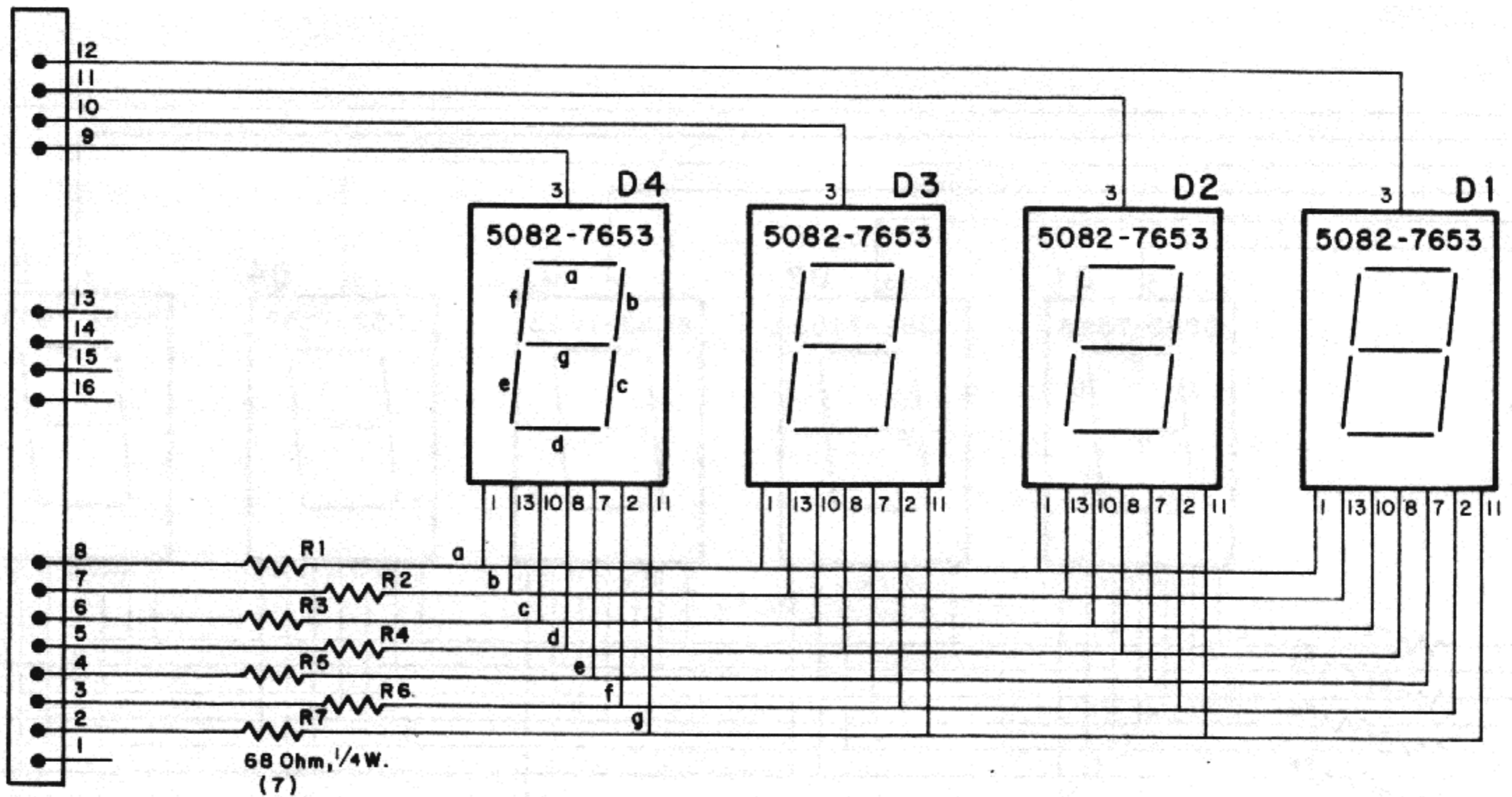
AS-2518-86 LIGHT CONTROL BOARD		SYMBOL	PART NO.	DESCRIPTION
U1	E-820-4	555 I.C. Timer		
U2	E-620-246	7442 I.C. 1 Of 10 BCD Decoder		
U3	E-620-147	7490 I.C. Decade Counter		
U4, U5	E-620-245	7406 I.C. Hex Inv. Buffer		
Q1 thru Q6	E-585-44	T106A1SG Triac		
Q7 thru Q10	—	Not Used		
Q11	E-620-66	LM-340T-5 5VDC Regulator		
	E-682-10	Heat Sink THM 6070		
	LSPR-632-1106	Screw		
	M-1700-6	Lockwasher		
	N-632-2112	Nut		
		(Thermal Compound As Needed)		
D1 thru D6	E-587-14	1N4148 Diode		
D7 thru D10	—	Not Used		
R1	E-599-24	10K Ohm Potentiometer		
R2, R3	E-105-239	4.7K Ohm Resistor, 1/4 W., 5%		
R4	E-105-219	330 Ohm Resistor, 1/4 W., 5%		
RP1	E-835-10	330 Ohm S.I.P. Resistor Network		
C1 thru C4, C6	E-586-85	.01 Mfd. Capacitor, Ceramic 25 V. Min.		
C5	E-586-135	10 Mfd. Capacitor, Electrolytic 16 V.		
C7	E-586-99	33 Mfd. Capacitor, Electrolytic		
C8	E-586-8	2 Mfd. Capacitor, Electrolytic 50 V.		
J1	E-766-17	17 Ckt. KK-100 Wafer		
Light No. 7	—	Wire Jumper in Circuit		

# REGISTER DISPLAY BOARD



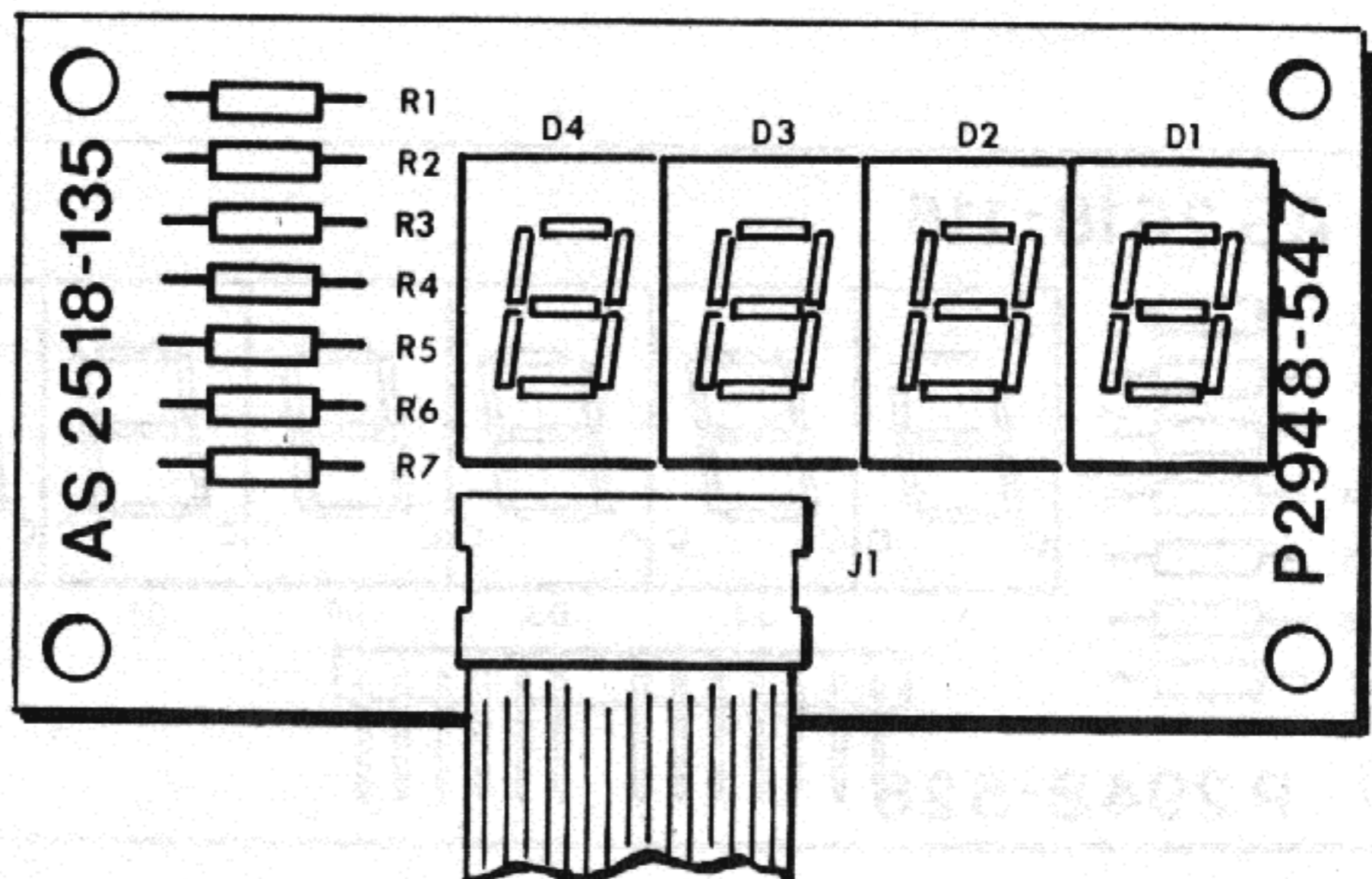
AS-2518-115 REGISTER DISPLAY BOARD		
SYMBOL	PART NO.	DESCRIPTION
D1 thru D6	E-680-14	5082-7653 Display
R1 thru R7	E-105-213	68 Ohm 1/4W. 5% Resistor
J1	E-768-14	14 Ckt. KK-100 Right Angle Wafer

# SMALL REPLAY REGISTER DISPLAY BOARD

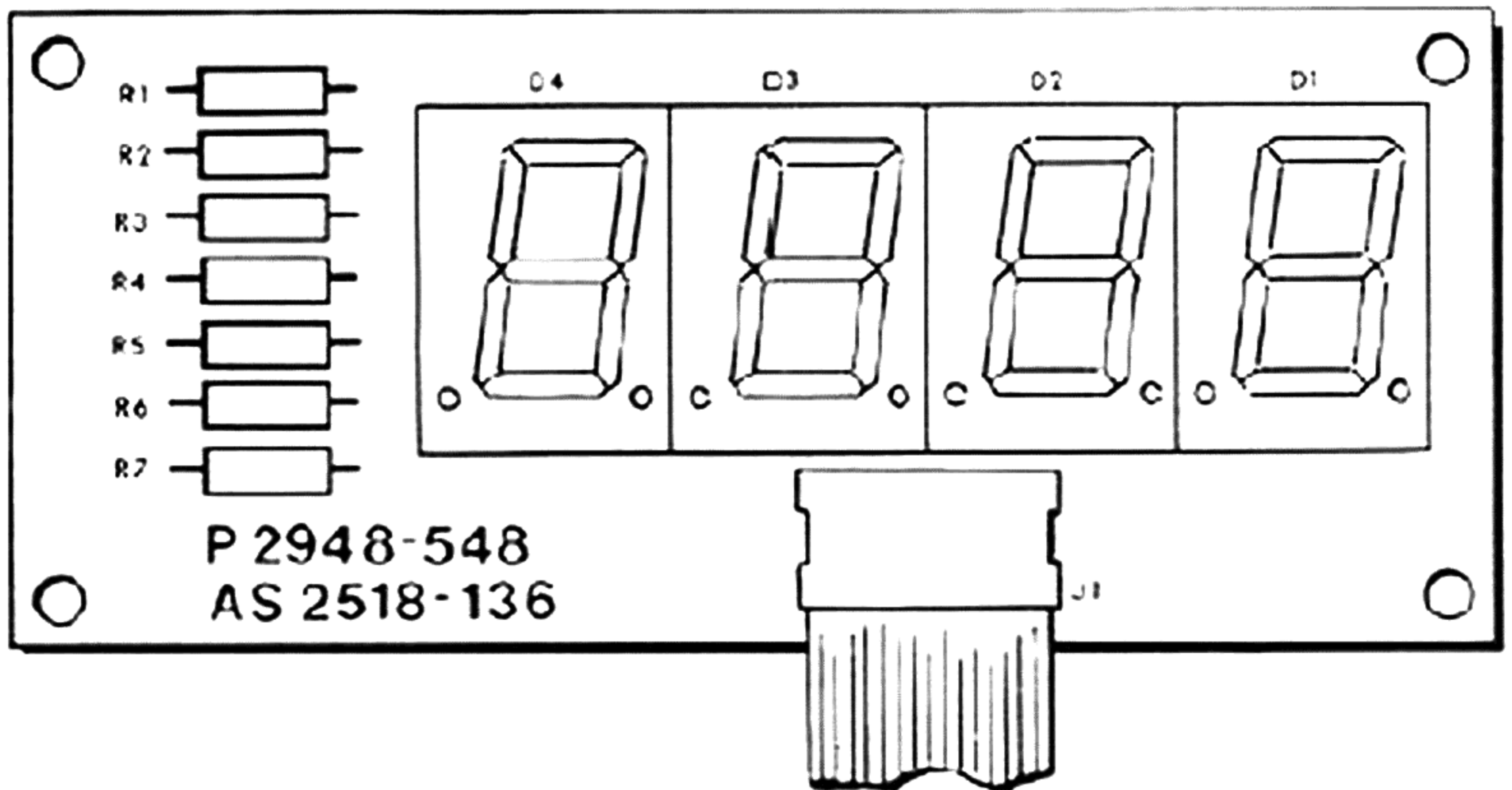
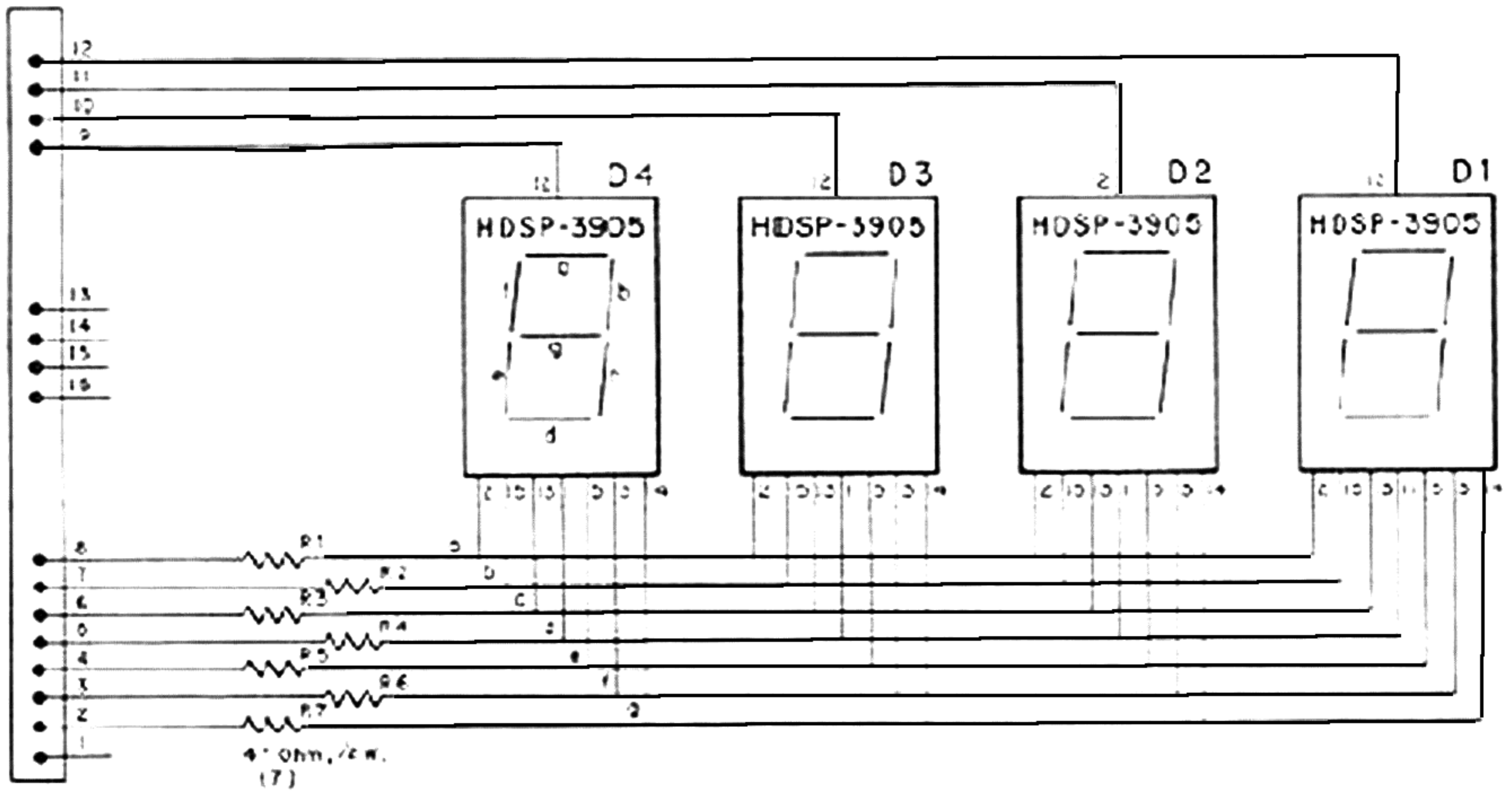


B-1046 (W-1217-35)

AS-2518-135 SMALL REPLAY REGISTER DISPLAY		
SYMBOL	PART NO.	DESCRIPTION
D1 thru D4	E-680-14	5082-7653 Display
R1 thru R7	E-105-213	68 Ohm 1/4W. 5% Resistor
J1		16 Connector Flat Cable - Installed

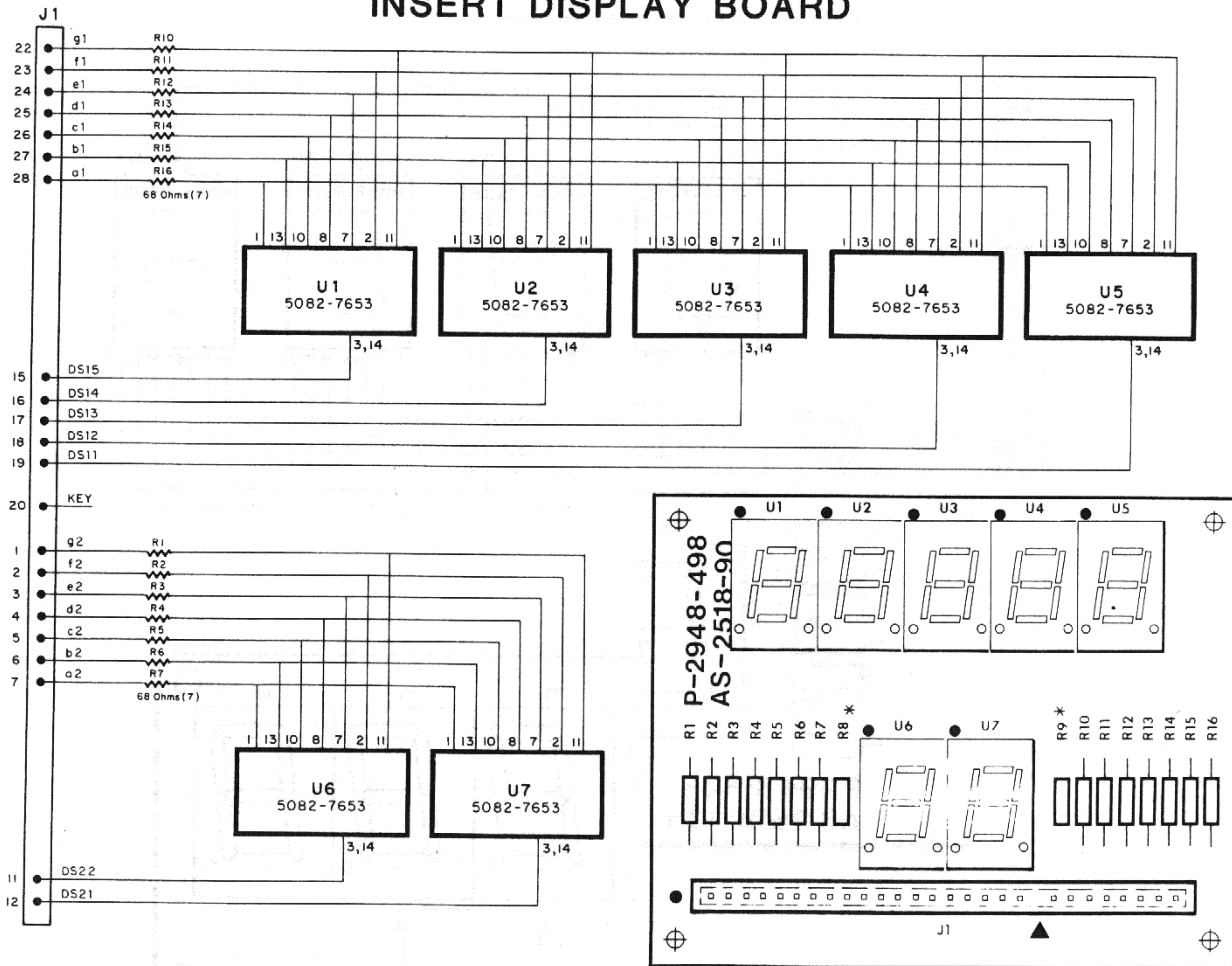


# LARGE REPLAY REGISTER DISPLAY BOARD



AS-2518-136 LARGE REPLAY REGISTER DISPLAY		
SYMBOL	PART NO.	DESCRIPTION
D1 thru D4	E-680-16	HDSP-3905 Display
R1 thru R7	E-105-84	47 Ohm 1/2W. 10% Resistor
J1		16 Connector Flat Cable - Installed

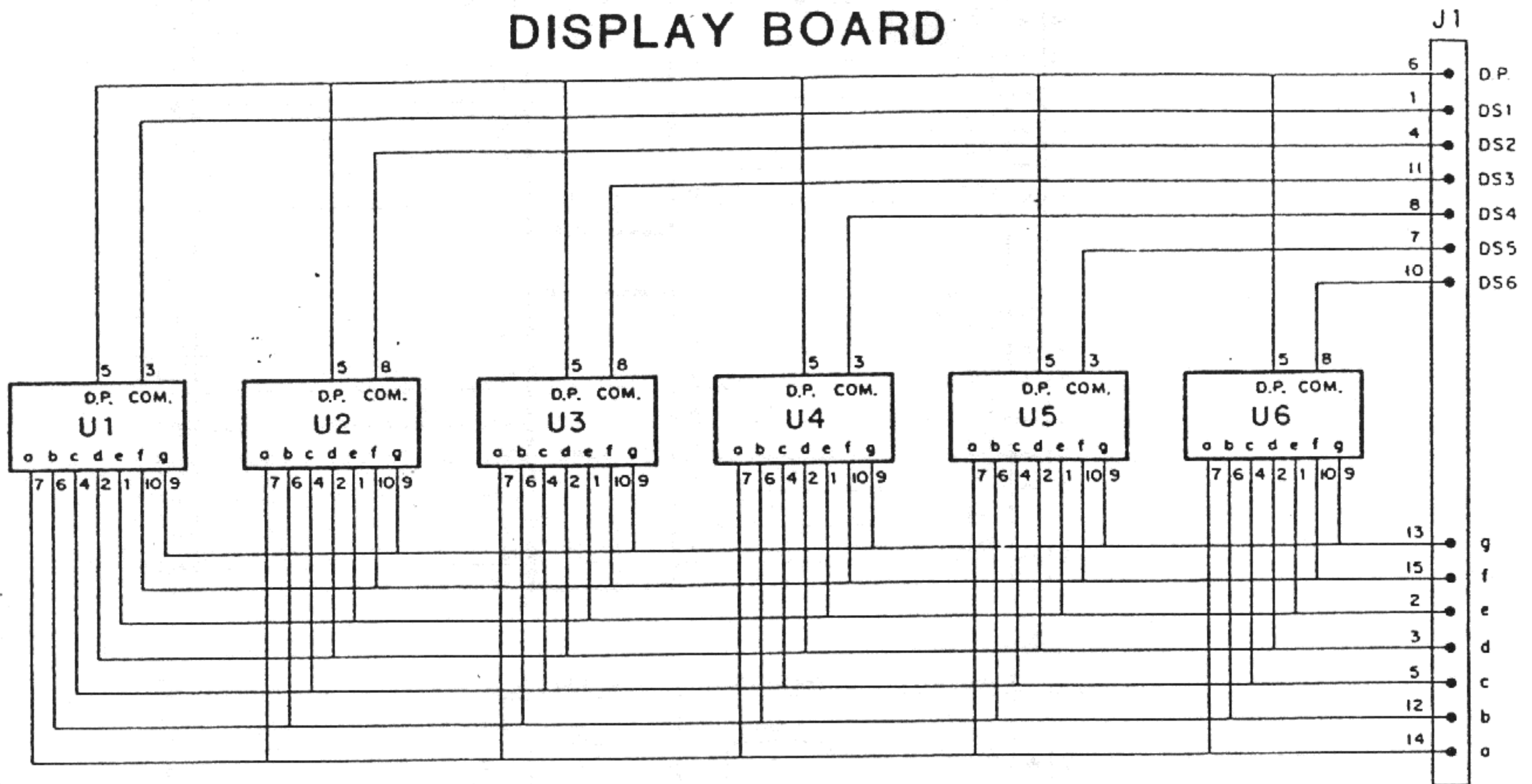
# INSERT DISPLAY BOARD



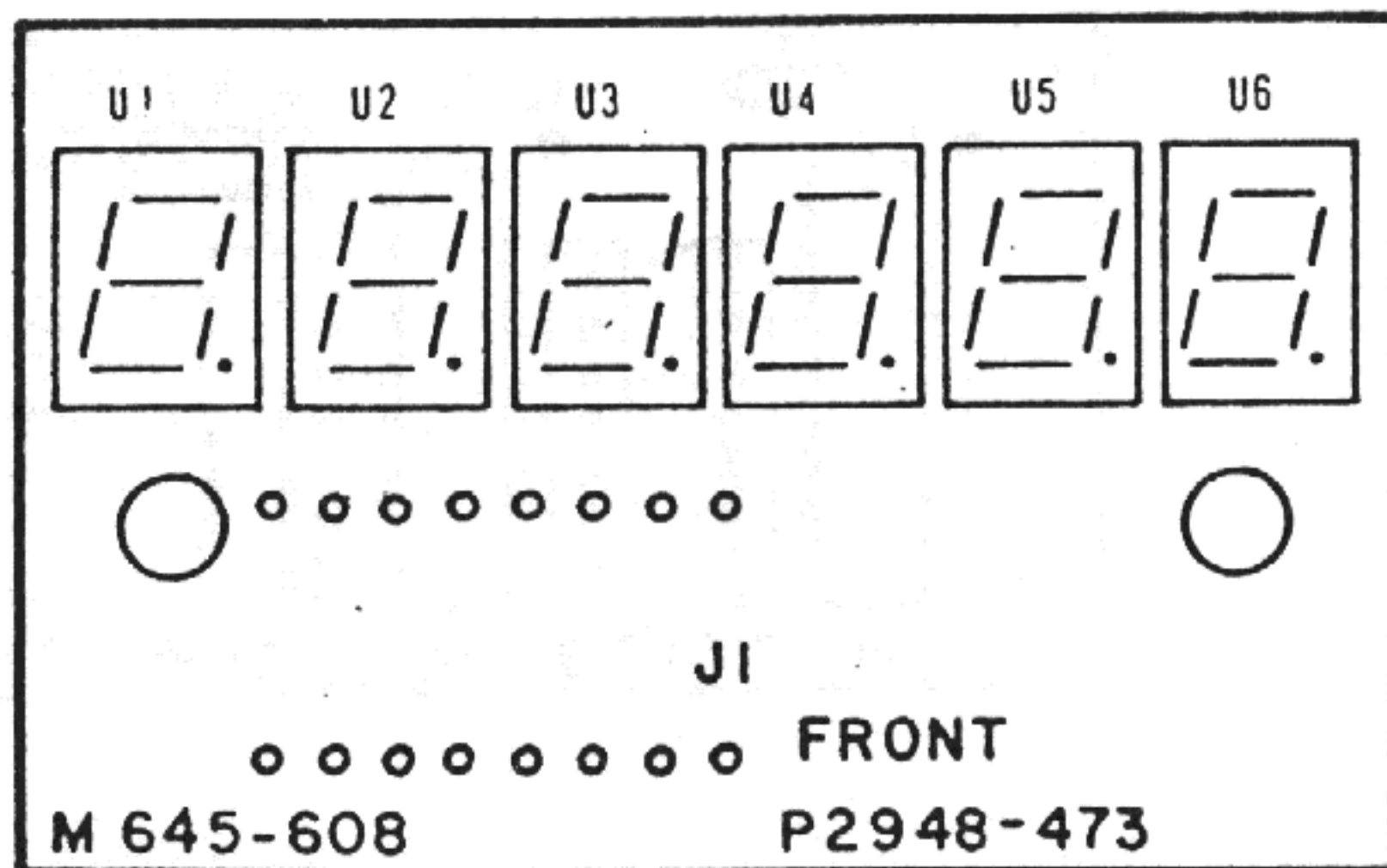
## ASE-2518-90 INSERT DISPLAY BOARD ASSEMBLY

SYMBOL	PART NO.	DESCRIPTION
U1 thru U7	E-680-14	5087 - 7653 Display
R1 thru R7	E-105-213	68 Ohm. Resistor 1/4 Watt 5%
* R8 & R9		Not Used
R10 thru R16	E-105-213	68 Ohm. Resistor 1/4 Watt 5%
J1	E-766-28	28 Pin KK100 Straight Wafer

# DISPLAY BOARD



B-1033 (W-1217-10)

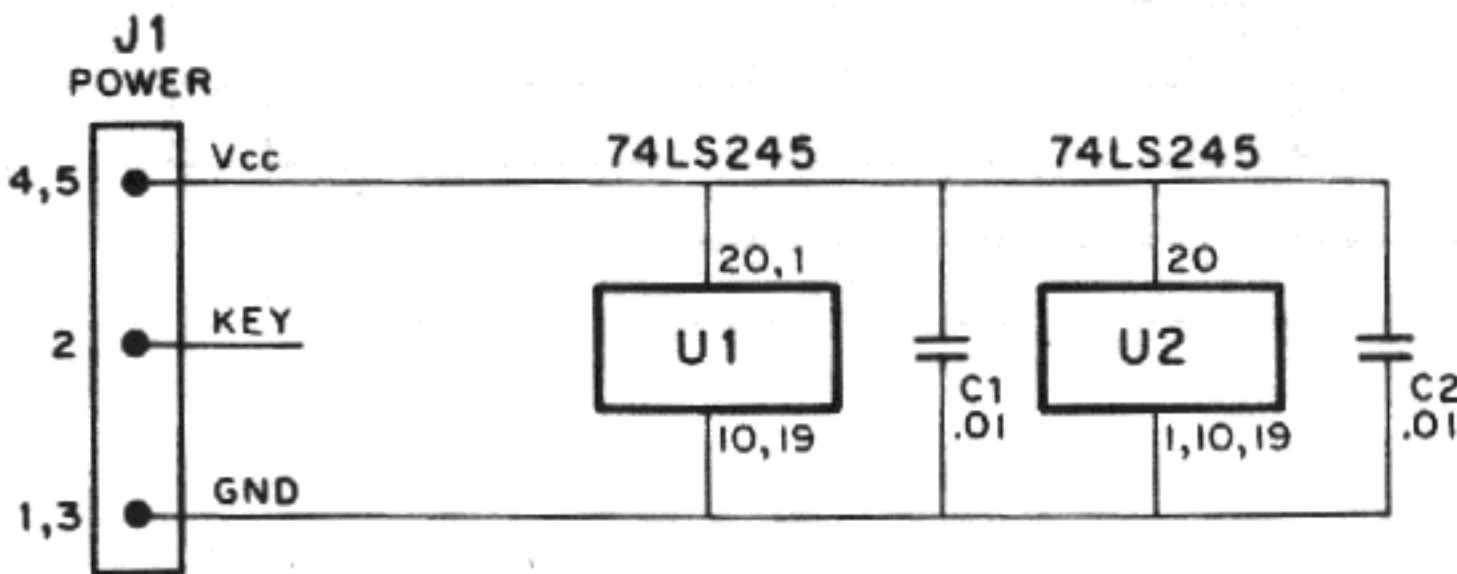
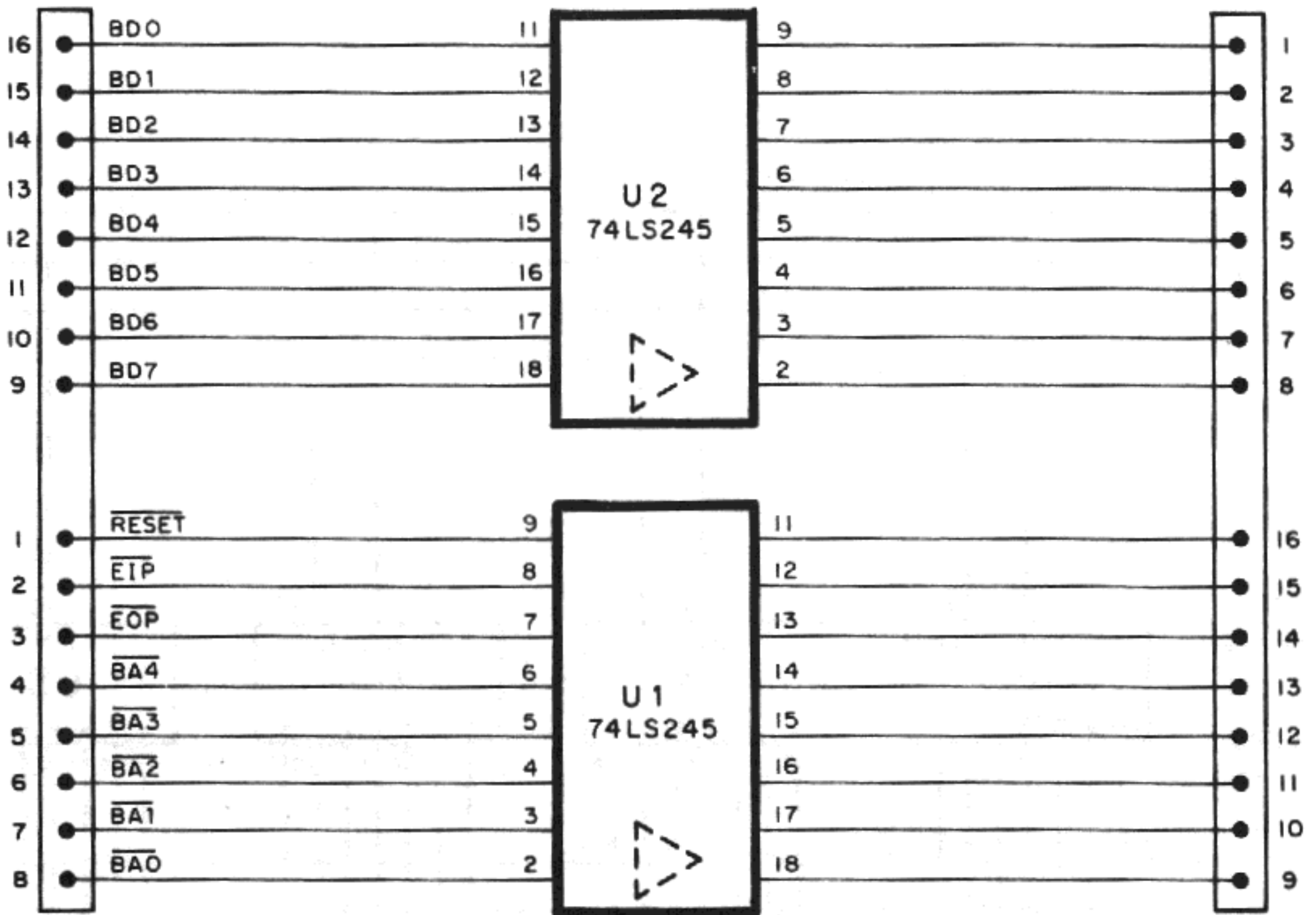


AS-2985-2 DISPLAY BOARD ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
J1	-	16 CONNECTOR FLAT CABLE - INSTALLED
U1 thru U6	E-680-11	LITRONIX HD-1077R, 7 SEG. DISPLAY

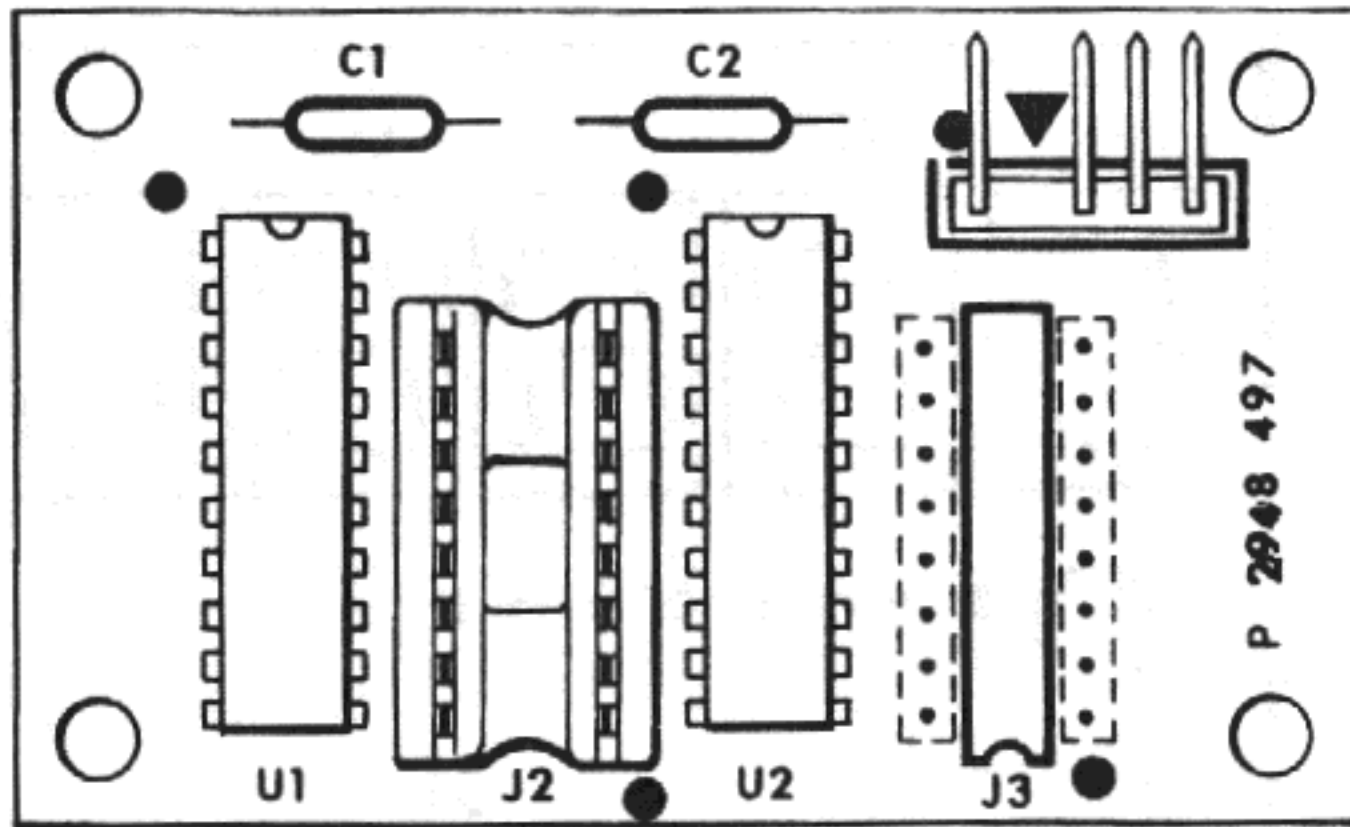
# I/O BUFFER BOARD

J3  
TO  
J6 ON  
I/O BOARD

J2  
TO DISPLAY  
CONTROLLER  
BOARD



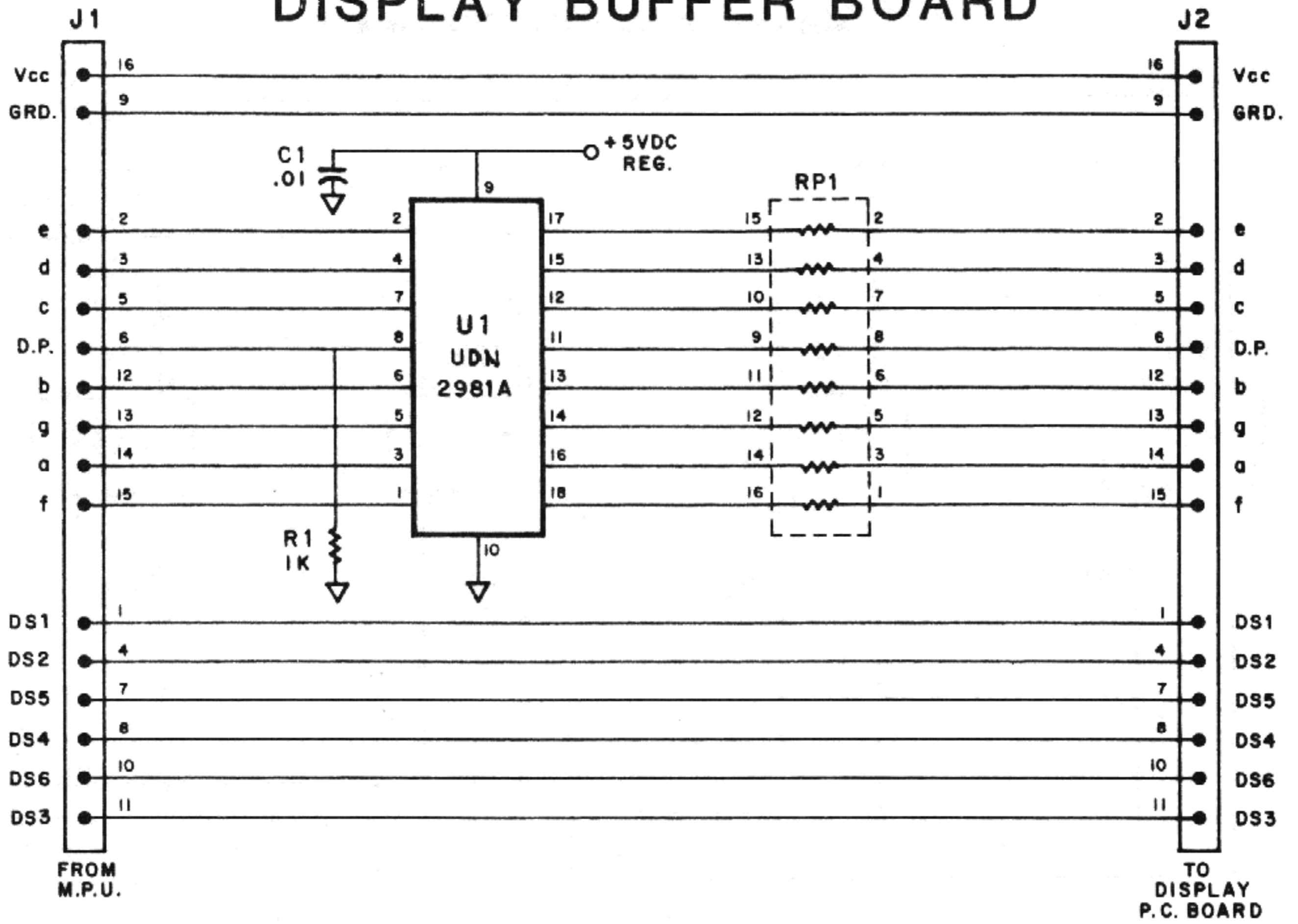
B-1032 (W-1217-16)



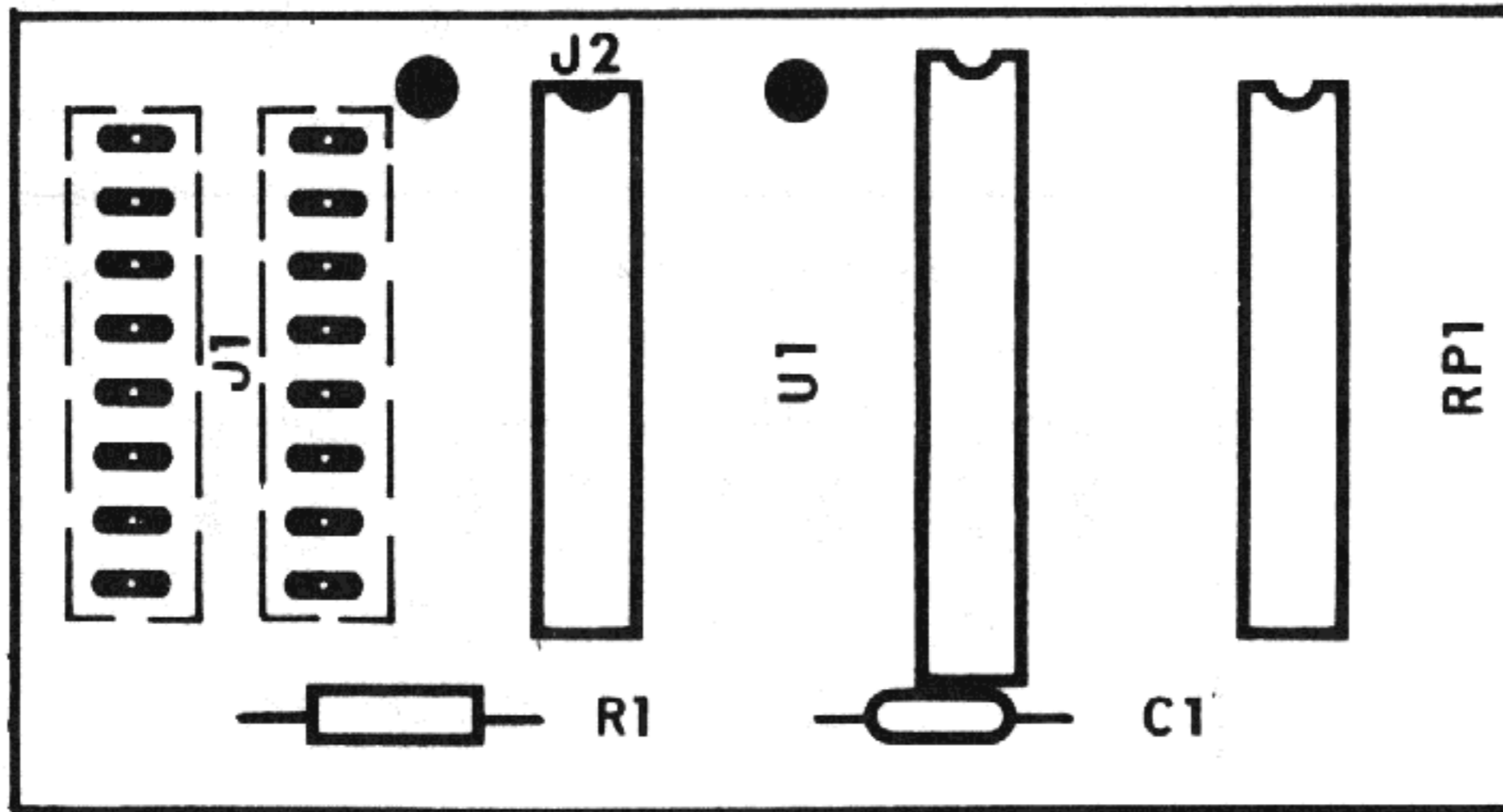
## ASE-2518-89 I/O BUFFER BOARD ASSEMBLY

SYMBOL	PART NO.	DESCRIPTION
U1, U2	E-620-184	INTEGRATED CIRCUIT 74LS245
C1, C2	E-586-85	CAPACITOR .01 Mfd. 25 V.
J1	E-768-5	5 CKT. KK100 WAFER - RT. ANG.
J2	E-712-8	I.C. SOCKET (AUGAT 316-AG5D-4)
J3	E-766-8	8 CKT. KK100 WAFER (2)

# DISPLAY BUFFER BOARD

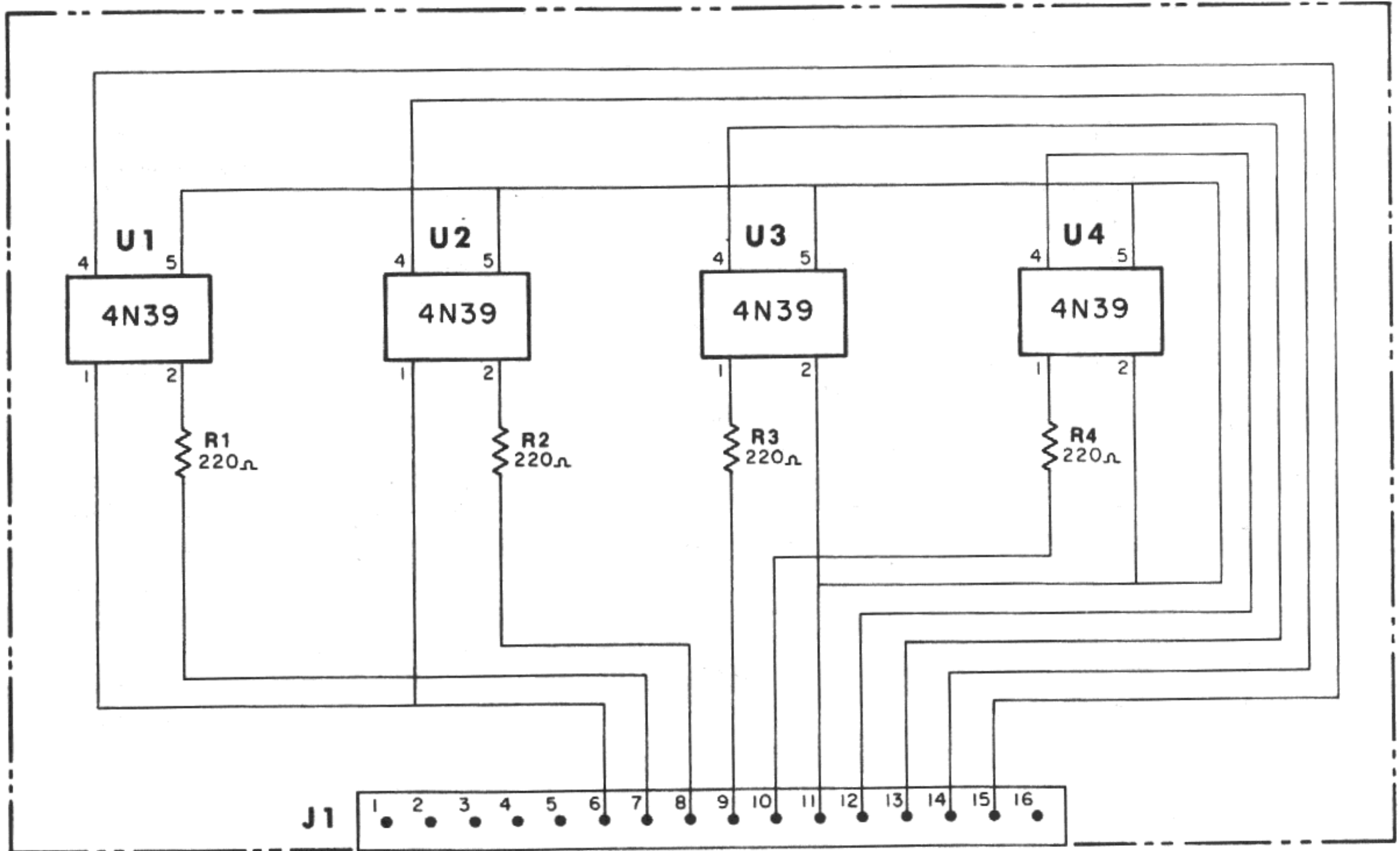


B-1048 (W-1217-11)



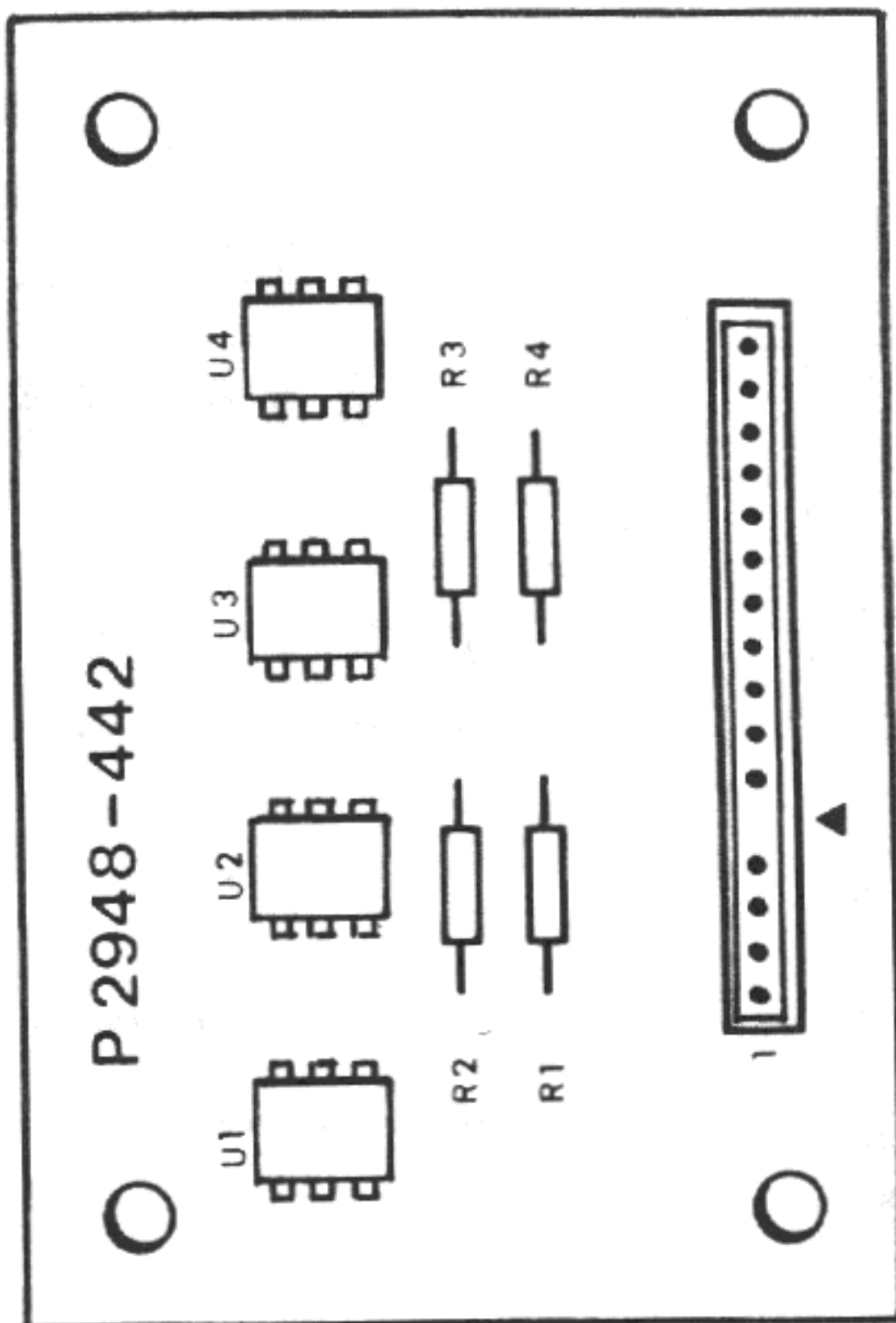
AS-3127 DISPLAY BUFFER BOARD ASSEMBLY		
SYMBOL	PART NO.	DESCRIPTION
C1	E-586-85	.01 Mfd. CAPACITOR 25V. CERAMIC
J1	E-766-8	8 CKT. KK-100 WAFER (2)
J2	E-712-8	16 PIN DIP SOCKET
R1	E-105-230	1K Ohm RESISTOR 1/4 WATT 5%
RP1	E-678-2	DIP RESISTOR
U1	E-620-89	UDN 2981A OCTAL SOURCE DRIVERS

# SDS OPTO BOARD



B-1029 (W-1243-b)

KEY  
 Vcc  
 COIN SW.  
 ARM SW.  
 P.O. ENABLE  
 HOPPER OPTO.  
 GROUND  
 TOTAL OUT  
 P.O. FEED  
 "B" SW.  
 COIN SW.



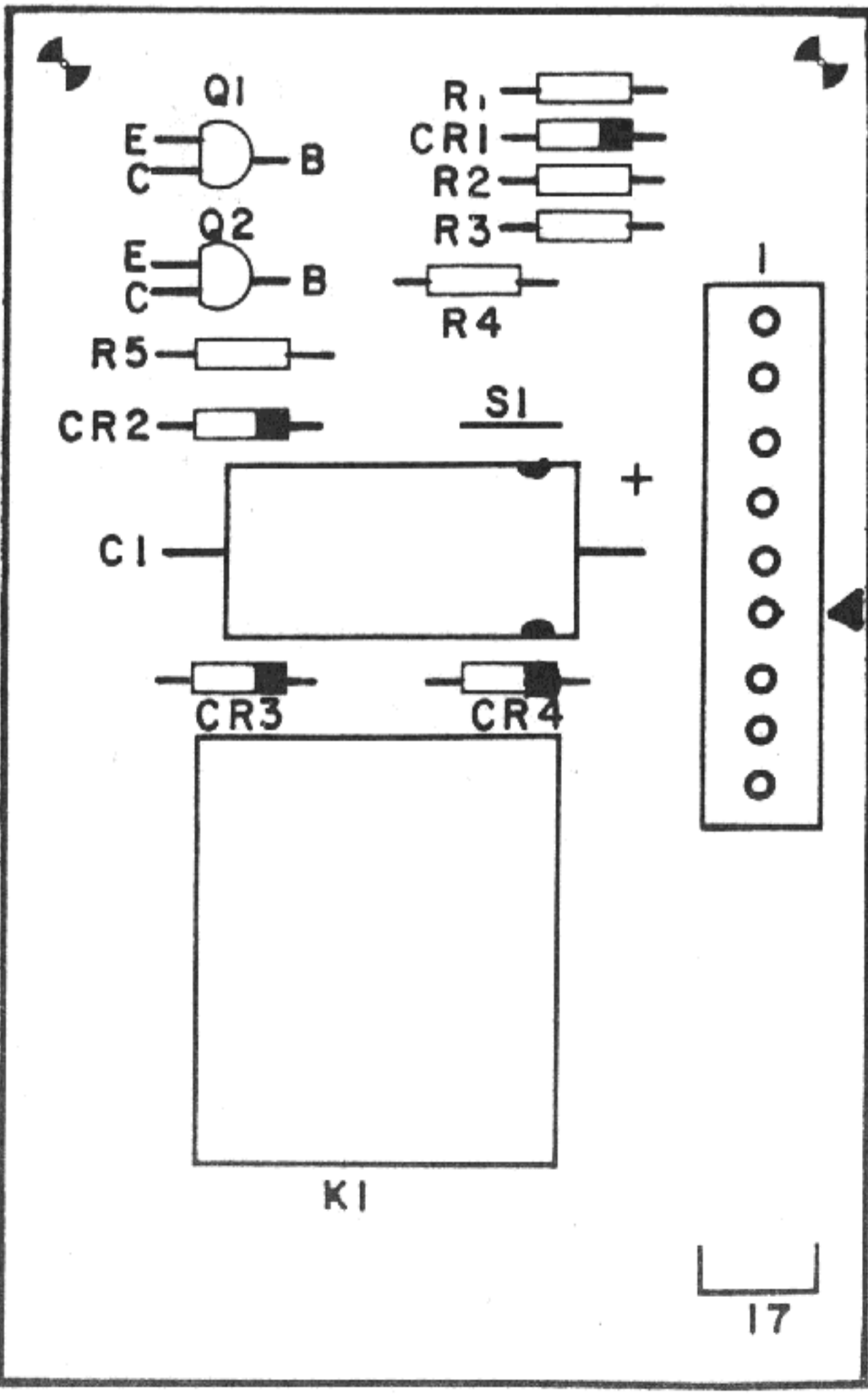
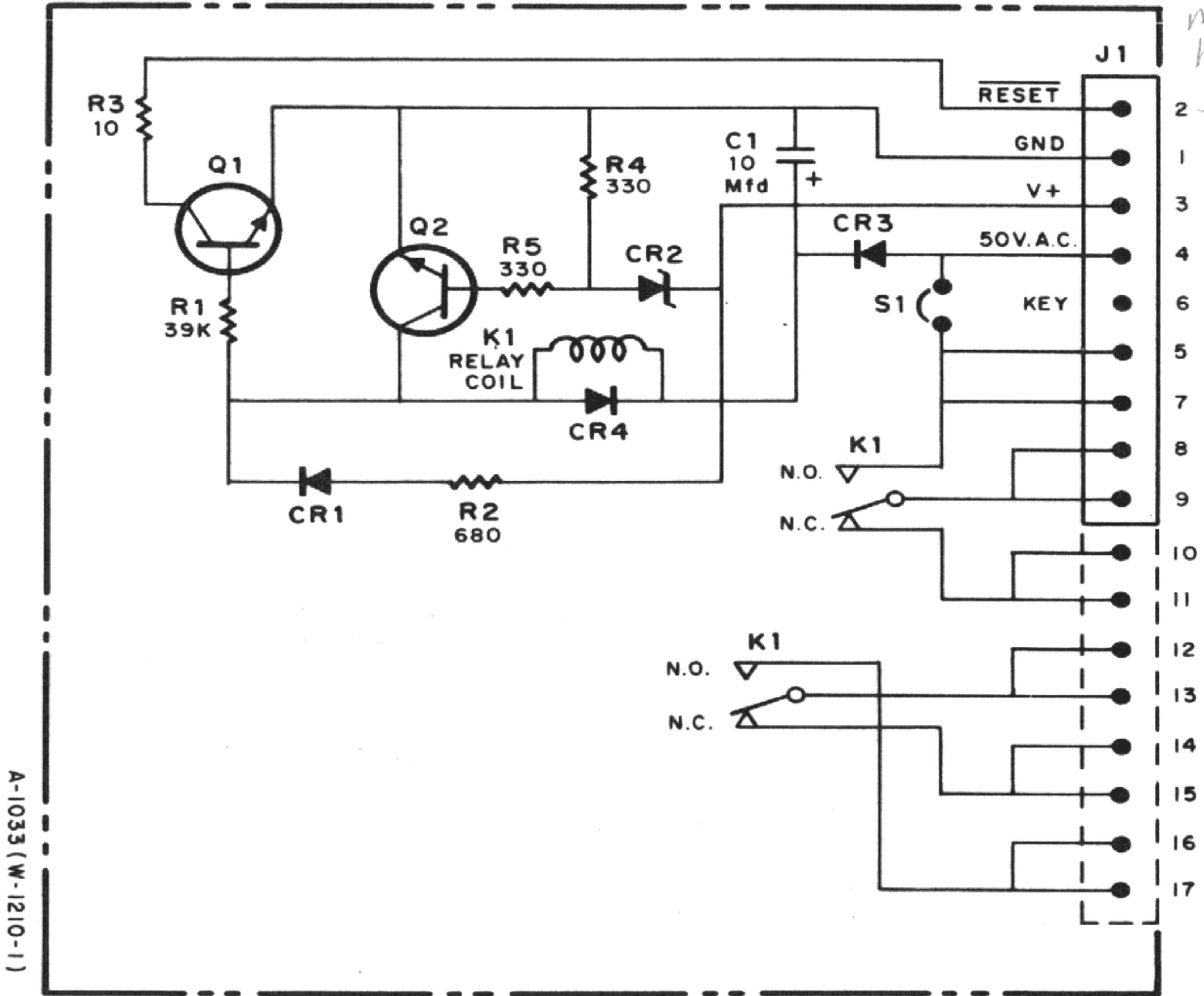
A-1041

## AS-3093 SDS OPTO BOARD

SYMBOL	PART NO.	DESCRIPTION
U1 thru U4	E-620-164	I.C. 4N39 Photo-SCR
R1 thru R4	E-105-149	Resistor, 220 Ohm, 1/2 Watt
J1	E-766-16	16 Ckt. KK100 Wafer

# DELAY RELAY BOARD

*mpu & hopper*  
84



SYMBOL	PART NO.	DESCRIPTION
C1	E-586-149	Axial 10mfd @100V. Cap.
CR1	E-587-6	1N4004 Diode
CR2	E-598-19	6.3V. @2ma 1% Zener
CR3	E-587-6	1N4004 Diode
CR4	E-587-6	1N4004 Diode
J1	E-756-9	9 Pin KK 156 Conn
K1	E-146-795	48VDC Relay
P.C.	P-2948-472	P.C. Board M-645-606
Q1	E-585-71	2N4401 Transistor
Q2	E-585-33	MPS-A42 Transistor
R1	E-105-231	39K Ohm 1/4 Watt 5%
R2	E-105-277	680 Ohm 1/4 Watt 5%
R3	E-105-306	10 Ohm 1/4 Watt 5%
R4	E-105-219	330 Ohm 1/4 Watt 5%
R5	E-105-219	330 Ohm 1/4 Watt 5%
S1	—	Wire Jumper Installed