

# OHIO SCIENTIFIC

## Servicing Data

for

**COMPUTER BOARDS 470 (Floppy), 505 Rev. A,  
510 Rev. C, 520 Rev. B, 520 Rev. C, 525, 527,  
535, 550, 555, 590, 592, 594**

as used in

### Challenger II and III Series

#### Models

C2-OEM

C3-OEM

C3-A

C3-B

C3-C

C3-S1



# TABLE OF CONTENTS

	Page
<b>Block Diagrams</b>	
470 (Floppy) Board .....	31,32
505 Rev. A Board .....	41,42
510 Rev. C Board .....	56,57,58
520 Rev. B Board .....	81
520 Rev. C Board .....	81
525 Board .....	91
527 Board .....	105
535 Board .....	106
550 Board .....	108
555 Board .....	150
590 Board .....	155,156
592 Board .....	165
594 Board .....	173
General Servicing/Safety Precautions .....	1
<b>Legends</b>	
470 (Floppy) Board .....	177
505 Rev. A Board .....	177,178
510 Rev. C Board .....	178,179
520 Rev. B Board .....	179
520 Rev. C Board .....	179
525 Board .....	179
527 Board .....	179,180
535 Board .....	180
550 Board .....	180
555 Board .....	180,181
590 Board .....	181,182
592 Board .....	182, Rear Cover
594 Board .....	Rear Cover
Memory Maps .....	28,29
Model Description .....	2,3,4,5
Parts List .....	6 thru 27
<b>Photos</b>	
470 (Floppy) Board .....	33,34
505 Rev. A Board .....	43,44,45,46
510 Rev. C Board .....	59,60,61,62
520 Rev. B Board .....	74,75
520 Rev. C Board .....	83,84,89,90
525 Board .....	92
527 Board .....	98,99
535 Board .....	109 thru 112
550 Board .....	119 thru 122
555 Board .....	135 thru 138
590 Board .....	151 thru 154
592 Board .....	167,168
594 Board .....	175

## TABLE OF CONTENTS (CONTINUED)

Pinouts	
470 Board	30
505 Rev. A Board	39,40
510 Rev. C Board	54,55,59
520 Rev. B Board	73
520 Rev. C Board	82
525 Board	97
527 Board	105
535 Board	107,108
550 Board	134
555 Board	148,149
590 Board	162,163,164
592 Board	166
594 Board	174
Schematics	
470 (Floppy) Board	35,36,37,38
505 Rev. A Board	47 thru 53
510 Rev. C Board	63 thru 72
520 Rev. B Board	76 thru 80
520 Rev. C Board	85 thru 88
525 Board	93 thru 96
527 Board	100 thru 104
535 Board	113 thru 118
550 Board	123 thru 133
555 Board	139 thru 147
590 Board	157 thru 162
592 Board	169 thru 172
594 Board	176
Schematic Notes	Rear Cover

## GENERAL SERVICING/SAFETY PRECAUTIONS

Use an isolation transformer for bench servicing.

Maintain line voltage at 120VAC.

Remove power from unit before removing or installing chips.

Use extreme caution when handling printed circuit boards. Ground yourself before handling boards.

Do not use a soldering device which has current flowing in its tip.

Use an isolation (times 10) probe on scope.

Do not remove or install boards or minifloppy with unit turned on.

Install RAM in Chip Enable sequence only.

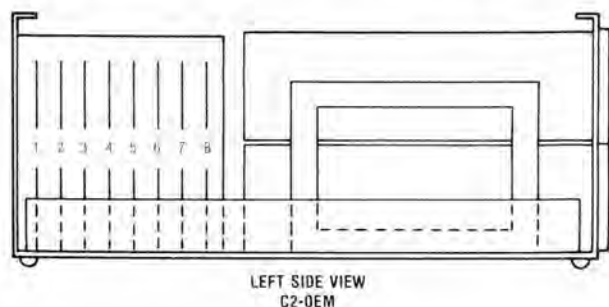
**Caution:** Ground path on the boards is parallel to the B+ path on the opposite side of the board.

## MODEL DESCRIPTION

This manual contains information on the most common boards used in the C2-OEM systems and the C3 systems. The boards covered are the 470 floppy interface board, 505 Rev. A CPU, 510 Rev. C CPU, 520 Rev. B and Rev. C memory boards, 525 memory boards, 535 memory boards, 550 serial interface, 555 multiple interface, 590 hard disk controller, 592 Okidata hard disk interface and 594 Shugart hard disk interface. Different board configurations are used in the various systems. The purpose of this section is to indicate the proper location of these boards in the different configurations. The following systems are described in this section: C2-OEM, C3-OEM, C3-S1, C3-A, C3-B, C3-C.

Figures 1 through 6 illustrate normal board placement and should be used as a guide in locating or installing circuit boards in the different systems. These figures illustrate the majority of systems in the field. There may be variations of these schemes in the field. Certainly if a system is working with a different card placement sequence, there is no need to move them to the recommended sequence just for the sake of conformity. Since the computers are bus oriented, the computers will function with different circuit board placements.

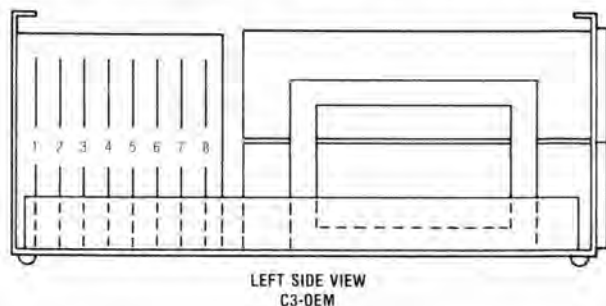
The C2-OEM computer consists of the 505 Rev. A CPU board and the 535 48K dynamic memory board. These two boards, in conjunction with dual floppy disk drives, form an economical but powerful computer system. As shown in Figure 1, the 505 Rev. A board occupies slot 5 of the motherboard and the 535 memory board occupies slot 6 of the motherboard. Slots 7 and 8 are available for accessory boards. Slots 1 through 3 are not available as +5 volts are not routed to these slots. This is done to decrease the possibility of overloading the C2-OEM's power supply by attempting to use these slots for additional accessory boards.



SLOT #	BOARD #	DESCRIPTION
1	NONE	
2	NONE	
3	NONE	
4	NONE	
5	505 REV A	CPU
6	535	48K DYNAMIC MEMORY
7	ACCESSORY	ACCESSORY
8	ACCESSORY	ACCESSORY

FIGURE 1

The C3-OEM computer consists of a 510 CPU board, a 470 floppy interface board and up to 48K of memory. As shown in Figure 2, the 510 board is installed in slot 3 of the motherboard. The 470 floppy interface board is installed in slot 8. Slots 4, 5 and 6 are for memory boards. Normally, 520 memory boards are used and either two or three of these slots are used, depending upon whether the system has 32 kilobytes or 48 kilobytes. There are options available, where 527 memory boards may be used in conjunction with special power supplies instead of 520 memory boards. Since only two 527 boards are needed for 48K of memory, this allows the use of the additional memory slot for an accessory board if needed. Slots 1, 2 and 7 are available for accessory boards.

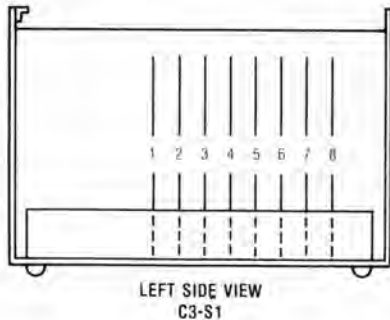


SLOT #	BOARD #	DESCRIPTION	NOTES
1	ACCESSORY	ACCESSORY	
2	ACCESSORY	ACCESSORY	
3	510	CPU	
4	520	MEMORY	OTHER MEMORY BOARDS MAY BE USED WITH SOME OPTIONS
5	520	MEMORY	
6	520	MEMORY	
7	ACCESSORY	ACCESSORY	
8	470	FLOPPY INTERFACE	

FIGURE 2

## MODEL DESCRIPTION (CONTINUED)

The C3-S1 computer is configured with the same boards as a C3-OEM. The difference between the two is that the C3-S1 has its floppy disk drives in a separate case, whereas the C3-OEM drives are in the same case. Board placement for the C3-S1 is shown in Figure 3. The 470 floppy interface board is installed in slot 1. The 510 CPU board is installed in slot 2. Slots 3, 4 and 5 are for memory boards. As is the case with the C3-OEM, the memory boards are normally 520 boards, but can be 527 boards with certain options. Slots 6, 7 and 8 are for accessory boards.



SLOT #	BOARD #	DESCRIPTION	NOTES
1	470	FLOPPY INTERFACE	
2	510	CPU	
3	520	MEMORY	OTHER MEMORY BOARDS MAY BE USED WITH SOME OPTIONS
4	520	MEMORY	
5	520	MEMORY	
6	ACCESSORY	ACCESSORY	
7	ACCESSORY	ACCESSORY	
8	ACCESSORY	ACCESSORY	

FIGURE 3

The C3-A, C3-B and C3-C computers are very similar to one another, with the major difference being whether they have a hard disk drive and what type of hard disk they have. The C3-A consists of a 16-slot computer and two floppy disk drives mounted in a standard 19" equipment rack. The C3-B is a C3-A with the addition of a CD-74, 74 million byte Winchester disk drive. The C3-C is a C3-A with the addition of CD-23, 29 million byte Winchester disk drive.

Board placement for the C3-A, C3-B and C3-C is the same except for the hard disk interface boards. On the C3-B systems, the 592 hard disk interface board is installed on the CD-74 disk drive as shown in Figure 5. On the C3-C systems, the 594 hard disk interface board is installed on the CD-23 disk drive assembly as shown in Figure 6. Other than the 592 and the 594, all other boards are located in the 16-slot computer. The recommended circuit board placement is shown in Figure 4. This board placement applies to the C3-A, C3-B and C3-C.

Starting with slot 1, which is at the rear of the computer and working forward, the boards are consecutively: 470, 510, 525, 590 and the memory boards. If the system is a C3-A, the 525 and 590 boards will not be installed. The 525 and 590 boards are connected together with a two-slot motherboard and normally would be installed or removed together from the system motherboard in C3-B and C3-C systems.

The location of memory boards in the 16-slot computer can vary dependent upon options installed. In general, slots 5, 6, and 7 are where 520 memory boards would be installed in a single user system with 48K of memory. Multiple user systems use additional slots for each partition. This will vary dependent upon whether 520, 527 or 535 memory boards are used for the additional partitions. Care must be taken when using 527 memory boards to make sure power supply loading is distributed properly across the two supplies in the system and that power supply capabilities are not exceeded. Switching power supplies are recommended for multiple user systems using 527 boards.

The remaining slots are available for accessory boards such as the 555 or 550 board. The main consideration is power supply loading which should be taken into account. If a system is fully populated, the printer interface card in the system may have to be installed in slot 16 to avoid a connector clearance problem.

# MODEL DESCRIPTION (CONTINUED)

SLOT #	BOARD #	DESCRIPTION	NOTES
1	470	FLOPPY INTERFACE	
2	510	CPU	
3	525	DUAL PORT	BOARDS NOT USED IN C3-A
4	590	HARD DISK CONTROLLER	BOARDS NOT USED IN C3-A
5	520	MEMORY	OTHER MEMORY BOARDS MAY BE USED WITH SOME OPTIONS
6	520	MEMORY	
7	520	MEMORY	
8		MEMORY OR ACCESSORY	
9		MEMORY OR ACCESSORY	
10		MEMORY OR ACCESSORY	
11		MEMORY OR ACCESSORY	
12		MEMORY OR ACCESSORY	
13		MEMORY OR ACCESSORY	
14		MEMORY OR ACCESSORY	
15		MEMORY OR ACCESSORY	
16		MEMORY OR ACCESSORY	

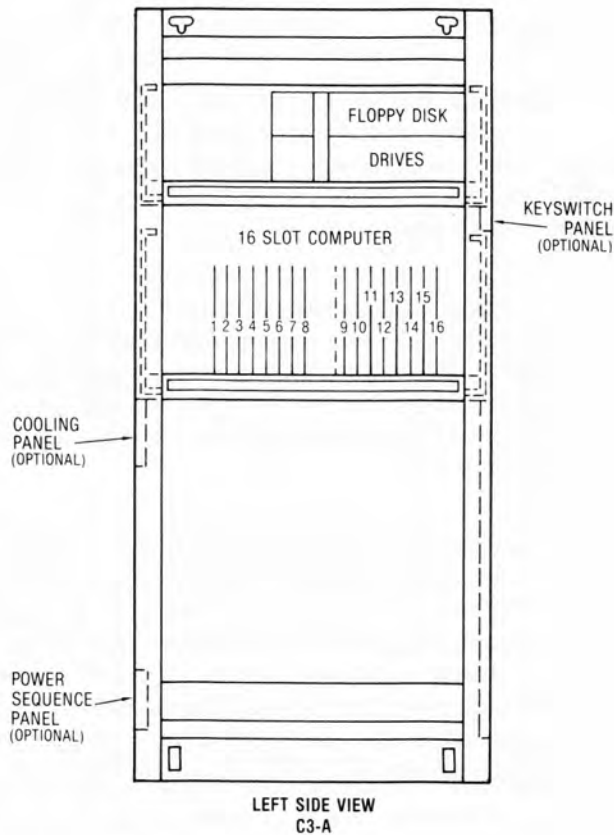
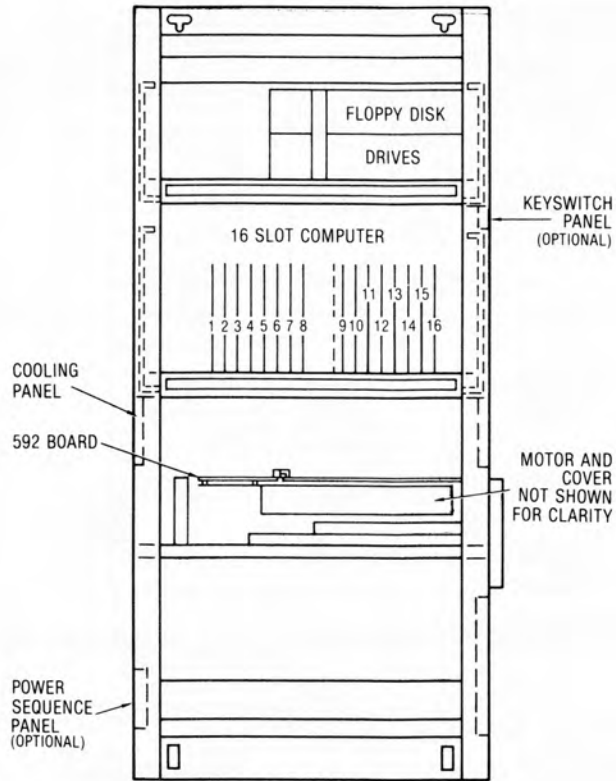


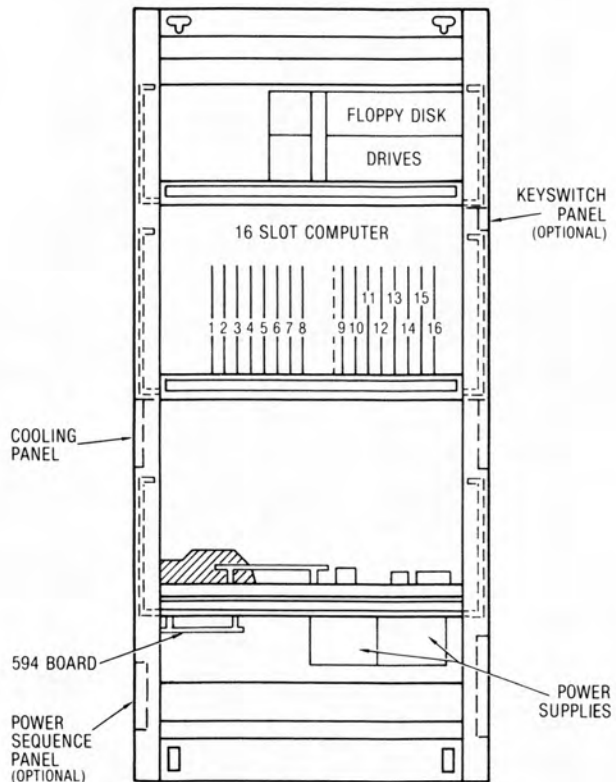
FIGURE 4

# MODEL DESCRIPTION (CONTINUED)



LEFT SIDE VIEW  
C3-B

FIGURE 5



LEFT SIDE VIEW  
C3-C

FIGURE 6

# 470 (FLOPPY) BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.	
D1, D2	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519				
U1A	DM7417N	IC-7417				ECG7417	TM519	WEP925/519	103-131	
U1B	MC68821F	IC-68821								
	6820									
U1C	6850P									
	68B50	IC-68B50								
U1D-U1E	N8T26N	IC-8T26								
U2A	DM7417N	IC-7417				ECG7417				
U2B	7400	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075	
U3A	DM7417N	IC-7417				ECG7417				
U3C	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076	
U4A	DM7417N	IC-7417				ECG7417				
U4C	S5400F									
	7400	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075	
U4D	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076	
U4E-U4F	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-29086	
U4G	DM7410N	IC-7410	GE-7410		SK7410	ECG7410				
U5A	S5400F									
	7400	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075	
U5B	7493N	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-29078	
U5C-U5E	SN74390N	IC-74390								
U5F	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076	
U5G	7430N	IC-7430			SK7430	ECG7430				
U5H	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076	

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
					Q-LINE	GENERAL LINE	
C4	47 16V	C-506	PC50-16	VTT47D16	QV1-73	EV-1226	
C5	47 16V	C-506	PC50-16	VTT47D16	QV1-73	EV-1226	

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			MALLORY PART No.	SPRAGUE PART No.		
				Q-LINE	GENERAL LINE	
C1	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C2	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C3	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C6	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C7	220 1KV 10%	C-221	GP322		10TS-T22	
C8	.001 100V 10%	C-102	EFW1A210	QF1-1	1PB-D10	
C9	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C10	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C11	27 1KV 10%	C-270	CN0427		10TCC-Q27	
C12	220 1KV 10%	C-221	GP322		10TS-T22	
C13	.001 100V 10%	C-102	EFW1A210	QF1-1	1PB-D10	
C14	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C15	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C16	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	
C17	.1 10V	CB-10410	MAG1201	QC1-223	HY-360	

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	470 5% 1/4W Carbon Film	R1-471	22-1088	R14	220 5% 1/4W Carbon Film	R1-221	22-1080
R2	470 5% 1/4W Carbon Film	R1-471	22-1088	R15	220 5% 1/4W Carbon Film	R1-221	22-1080
R3	470 5% 1/4W Carbon Film	R1-471	22-1088	R16	220 5% 1/4W Carbon Film	R1-221	22-1080
R4	470 5% 1/4W Carbon Film	R1-471	22-1088	R17	220 5% 1/4W Carbon Film	R1-221	22-1080
R5	470 5% 1/4W Carbon Film	R1-471	22-1088	R18	220 5% 1/4W Carbon Film	R1-221	22-1080
R6	470 5% 1/4W Carbon Film	R1-471	22-1088	R19	220 5% 1/4W Carbon Film	R1-221	22-1080
R7	470 5% 1/4W Carbon Film	R1-471	22-1088	R20	470 5% 1/4W Carbon Film	R1-471	22-1088
R8	470 5% 1/4W Carbon Film	R1-471	22-1088	R21	470 5% 1/4W Carbon Film	R1-471	22-1088
R9	470 5% 1/4W Carbon Film	R1-471	22-1088	R22	470 5% 1/4W Carbon Film	R1-471	22-1088
R10	100 5% 1/4W Carbon Film	R1-101	22-1072	R23	470 5% 1/4W Carbon Film	R1-471	22-1088
	220 5% 1/4W Carbon Film	R1-221	22-1080	R24	470 5% 1/4W Carbon Film	R1-471	22-1088
R11	100 5% 1/4W Carbon Film	R1-101	22-1072	R25	470 5% 1/4W Carbon Film	R1-471	22-1088
R12	220 5% 1/4W Carbon Film	R1-221	22-1080	R26	470 5% 1/4W Carbon Film	R1-471	22-1088
R13	220 5% 1/4W Carbon Film	R1-221	22-1080	R32	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096



## 470 (FLOPPY) BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

### RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R33	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R42	4700 5% 1/4W Carbon Film	R1-472	22-1112
R35	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R43	470 5% 1/4W Carbon Film	R1-471	22-1088
R37	470 5% 1/4W Carbon Film	R1-471	22-1088	R44	1000 5% 1/4W Carbon Film	R1-102	22-1096
R40	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R46	4700 5% 1/4W Carbon Film	R1-472	22-1112

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-12FM	12 Pin Molex
J2	Socket	SC-12FM	12 Pin Molex
J3	Socket	SC-12FM	12 Pin Molex
J4	Socket	SC-12FM	12 Pin Molex
J5	Plug	SC-12MM	12 Pin Connector
J6	Plug	SC-12MM	12 Pin Connector
XTAL	Crystal	X-405	4MHz
	P.C. Board	PC-470B	Floppy-Disk Interface
	Socket	SC-16FI	16 Pin IC Socket (7 used)
	Socket	SC-24FI	24 Pin IC Socket (1 used)
	Socket	SC-40FI	40 Pin IC Socket (1 used)

## 505 REV. A BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1-D3	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	2N5225	Q-2N5225	GE-20	PTC136	SK3444/123A	ECG123AP	TM123AP	WEP54	121-29000A
Q2	2N5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-29003*
U1	6820								
U2	6502A	IC-6502A							
	6502	IC-6502							
U3-U4	6850	IC-6850							
U5-U7	1702	IC-1702							
U8	2316B/2716								
U9	N8T26N	IC-8T26							
U10	7420N	IC-7420	GE-7420		SK7420	ECG7420			221-29077
U11	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U12	7420N	IC-7420	GE-7420		SK7402	ECG7420			221-29077
U13	SN74148N	IC-74148							
U14	N8T26N	IC-8T26							
U15-U16	SN7417N	IC-7417				ECG7417			
U17	SN74123N	IC-74123	GE-74123		SK74123	ECG74123		WEP7400/7400	221-29086
U18	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			221-29075
U19	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U20-U22	7493N	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-29078
U24-U25	SN7417N	IC-7417				ECG7417			
U26	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-29086
U27	DM7410N	IC-7410	GE-7410		SK7410	ECG7410			
U28	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U29	74LS163AN	IC-74LS163			SK74LS163	ECG74LS163			
	74163	IC-74163				ECG74163			
U30	7420N	IC-7420	GE-7420		SK7420	ECG7420			121-29077
U31-U32	SN74390N	IC-74390				ECG7417			
U33-U35	SN7417N	IC-7417							
U36	DM7430N	IC-7430			SK7430	ECG7430			
U37	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U38	DM7430N	IC-7430			SK7430	ECG7430			
U39	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
U40	SN74390N	IC-74390							

\* Lead configuration may vary from original.

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C29	47 16V	C-506	VTT47D16	QV1-73	EV-1226
	25 16V		TT15X25A	QE1-291	TVA-1148
C30	25 16V		TT15X25A	QE1-291	TVA-1148

# 505 REV. A BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	150 50V 5%	C-151	SX315	QW1-31	MMA-151
C2	150 50V 5%	C-151	SX315	QW1-31	MMA-151
C3	.001 100V 10%	C-102	EWFA210	QF1-1	1PB-D10
C4	.001 100V 10%	C-102	EWFA210	QF1-1	1PB-D10
C6	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C7	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C8	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C9	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C10	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C11	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C12	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C13	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C14	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C15	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C16	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C17	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C18	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C19	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C20	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C23	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C24	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C25	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C26	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C27	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C28	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C31	27 10%	C-270	CN0427	QC1-223	10TEC-Q27

## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFR. PART No.	MALLORY PART No.	TRW PART No.
R46	TX Clock	10K	RP-103	RVA0911V103	X260R103B
R49	TX Data	10K	RP-103	RVA0911V103	X260R103B
R56	RX Data	10K	RP-103	RVA0911V103	X260R103B
R59	RX Clock	10K	RP-103	RVA0911V103	X260R103B

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	470 5% 1/4W Carbon Film	R1-471	22-1088	R22	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R2	470 5% 1/4W Carbon Film	R1-471	22-1088	R23	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R3	470 5% 1/4W Carbon Film	R1-471	22-1088	R24	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R4	470 5% 1/4W Carbon Film	R1-471	22-1088	R25	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R5	470 5% 1/4W Carbon Film	R1-471	22-1088	R26	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R6	470 5% 1/4W Carbon Film	R1-471	22-1088	R27	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R7	470 5% 1/4W Carbon Film	R1-471	22-1088	R28	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R8	470 5% 1/4W Carbon Film	R1-471	22-1088	R29	4700 5% 1/4W Carbon Film	R1-472	22-1112
R9	470 5% 1/4W Carbon Film	R1-471	22-1088	R30	4700 5% 1/4W Carbon Film	R1-472	22-1112
R10	470 5% 1/4W Carbon Film	R1-471	22-1088	R31	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112
R11	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R32	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112
R12	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R33	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112
R13	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R34	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112
R14	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R35	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R15	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R36	470 5% 1/4W Carbon Film	R1-471	22-1088
R16	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R37	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R17	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R38	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R18	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R39	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R19	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R40	470 5% 1/4W Carbon Film	R1-471	22-1088
R20	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086				
R21	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080				

# 505 REV. A BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFRG. PART No.	WORKMAN PART No.			MFRG. PART No.	WORKMAN PART No.
R41	470 5% 1/4W Carbon Film	R1-471	22-1088	R62	470 5% 1/4W Carbon Film	R1-471	22-1088
R42	470 5% 1/4W Carbon Film	R1-471	22-1088	R63	470 5% 1/4W Carbon Film	R1-471	22-1088
R43	470 5% 1/4W Carbon Film	R1-471	22-1088	R64	470 5% 1/4W Carbon Film	R1-471	22-1088
R44	470 5% 1/4W Carbon Film	R1-471	22-1088	R65	470 5% 1/4W Carbon Film	R1-471	22-1088
R45	470 5% 1/4W Carbon Film	R1-471	22-1088	R66	470 5% 1/4W Carbon Film	R1-471	22-1088
R47	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R67	470 5% 1/4W Carbon Film	R1-471	22-1088
R48	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R68	470 5% 1/4W Carbon Film	R1-471	22-1088
R50	470 5% 1/4W Carbon Film	R1-471	22-1088	R69	470 5% 1/4W Carbon Film	R1-471	22-1088
R51	470 5% 1/4W Carbon Film	R1-471	22-1088	R70	4700 5% 1/4W Carbon Film	R1-472	22-1112
R52	470 5% 1/4W Carbon Film	R1-471	22-1088	R71	4700 5% 1/4W Carbon Film	R1-472	22-1112
R53	470 5% 1/4W Carbon Film	R1-471	22-1088	R72	4700 5% 1/4W Carbon Film	R1-472	22-1112
R54	470 5% 1/4W Carbon Film	R1-471	22-1088	R73	4700 5% 1/4W Carbon Film	R1-472	22-1112
R55	470 5% 1/4W Carbon Film	R1-471	22-1088	R74	4700 5% 1/4W Carbon Film	R1-472	22-1112
R57	4700 5% 1/4W Carbon Film	R1-472	22-1112	R75	4700 5% 1/4W Carbon Film	R1-472	22-1112
R58	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R76	4700 5% 1/4W Carbon Film	R1-472	22-1112
R60	470 5% 1/4W Carbon Film	R1-471	22-1088	R77	4700 5% 1/4W Carbon Film	R1-472	22-1112
R61	470 5% 1/4W Carbon Film	R1-471	22-1088				

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-12FM	12 Pin Molex (4 used)
J2	Connector	SC-12MM	12 Pin Interconnect (2 used)
J3	Socket	SC-12FM	12 Pin Molex (1 used)
J4	Socket	SC-14F1	Monitor Select
X1	Crystal	X-405	4MHz
	P.C. Board	PC-505B	CPU With Floppy Interface
	Socket	SC-16F1	16 Pin IC Socket (7 used)
	Socket	SC-24F1	24 Pin IC Socket (3 used)
	Socket	SC-40F1	40 Pin IC Socket (2 used)

## 510 REV. C BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFRG. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
D3-D8	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	2N5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-29003*
Q2-Q3	2N5225	Q-2N5225	GE-20	PTC136	SK3444/123A	ECG123AP	TM123AP	WEP54	121-29000A
U1	56821P 6820	IC-6821 IC-6820							
U2	MC6850P	IC-6850							
U3	MCM68B10P 6810 CN7157N	IC-68B10							
U4	2716/2316B	IC-7157							
U5	DM7476N	IC-7476	GE-7476		SK7476	ECG7476		WEP7476/7476	
U6	SN7402N	IC-7402	GE-7402		SK7402	ECG7402		WEP7402/7402	
U7	MC68B00L 6800	IC-68B00							
U8-U11	N8T26N	IC-8T26							
U12	555	IC-555							
U13	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U14	SN7473N	IC-7473	GE-7473		SK7473	ECG7473		WEP7473/7473	
U15	MC8T95P	IC-8T95							
U16	N8T95N	IC-8T95							
U17-U18	MC8T95P	IC-8T95							
U19	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U20	MC8T95P	IC-8T95							
U21-U22	SN7493AN	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-29078
U23	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
U24	74163N	IC-74163				ECG74163			
U25	SN7420N	IC-7420	GE-7420		SK7420	ECG7420			221-29077
U26-U27	MC8T95P	IC-8T95							

# 510 REV. C BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.	
U28	Z-80	IC-280								
U29-U30	N8T26N	IC-8T26								
U31	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U32	74123N	IC-74123	GE-74123		SK74123	ECG74123				221-29086
U33	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U34	F5410DM 7410	IC-7410	GE-7410		SK7410	ECG7410				
U35	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U36	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U37	F5410DM 7410	IC-7410	GE-7410		SK7410	ECG7410				
U38	SN74154N	IC-74154	GE-74154		SK74154	ECG74154				
U39-U40	MC8T95P	IC-8T95								
U41	F74155PC	IC-74155				ECG74155				
U42	DM7475N	IC-7475	GE-7475		SK7475	ECG7475				
U43	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U44	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U45	74148N	IC-74148								
U46	C38085 2716/2316B	IC-Symmon								
U47	6502	IC-6502								
U48-U49	N8T26N	IC-8T26								
U50-U51	SN74123N	IC-74123	GE-74123		SK74123	ECG74123				221-29086
U52	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U53	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U54	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U55-U57	MC8T95P	IC-8T95								
U58	N8T95N	IC-8T95								

\* Lead configuration may vary from original.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C26	47 16V 33 16V	C-506	TT15X50A VTT33D25	QE1-351 QV1-63	TVA-1150 EV-1325
C27	47 16V 33 16V	C-506	TT15X50A VTT33D25	QE1-351 QV1-63	TVA-1150 EV-1325

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	.2 16V			QC1-245	HY-470
C2	.01 100V			QF1-91	1PB-S10
C3	.1 10V	C-103	EFW1A110	QC1-223	HY-360
C4	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C5	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C6	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C7	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C8	.082		EFW1A182		1PB-S82
C9	27 1KV 10%	C-270	CN0427		10TCC-Q27
C10	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C11	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C12	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C13	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C14	220 10%	C-221	GP322		10TS-T22
C15	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C16	.001 100V	C-102	ENF1A210	QF1-1	1PB-D10
C18	.01 100V	C-103	EFW1A110	QF1-91	1PB-S10
C19	.0033 10%	C-332	GP233	QC2-107	5GA-D33
C20	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C23	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C24	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	470 5% 1/4W Carbon Film	R1-471	22-1088	R10	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R2	220 5% 1/4W Carbon Film	R1-221	22-1080	R11	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R3	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R12	4700 5% 1/4W Carbon Film	R1-472	22-1112
R4	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R14	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R9	470 5% 1/4W Carbon Film	R1-471	22-1088	R15	330 5% 1/4W Carbon Film		22-1084

# 510 REV. C BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
R16	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R32	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R17	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120	R33	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R18	100 5% 1/4W Carbon Film	R1-101	22-1072	R34	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R20	4700 5% 1/4W Carbon Film	R1-472	22-1112	R35	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R21	1000 5% 1/4W Carbon Film	R1-102	22-1096	R38	22K 5% 1/4W Flameproof Carbon Film	R1-223	22-1128
R22	470 5% 1/4W Carbon Film	R1-471	22-1088	R40	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R23	470 5% 1/4W Carbon Film	R1-471	22-1088	R41	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R24	22K 5% 1/4W Flameproof Carbon Film	R1-223	22-1128	R43	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104	R44	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R26	220 5% 1/4W Carbon Film	R1-221	22-1080	R45	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R27	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120	R46	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R30	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104				
R31	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104				

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-4FM	4 Pin Molex
J2	Socket	SC-12FM	12 Pin Molex
J3	Socket	SC-12FM	12 Pin Molex
J4	Socket	SC-12FM	12 Pin Molex
J5	Socket	SC-12FM	12 Pin Molex (4 used)
X1	Crystal	X-805	8MHz
	P.C. Board	PC-510C	CPU W3 Processor
	Socket	SC-16FI	16 Pin IC Socket (27 used)
	Socket	SC-24FI	24 Pin IC Socket (5 used)
	Socket	SC-40FI	40 Pin IC Socket (4 used)

# 520 REV. B BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1-D2	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	2N5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-29003*
IC-1-	4300BCD	IC-4300							
IC-32	4200 UPD410	IC-4200							
IC-A-	SM7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-29076
IC-B									
IC-C-	N8T26N	IC-8T26							
IC-D									
IC-E-	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-29076
IC-H									
IC-I	DM7417N	IC-7417				ECG7417			
IC-J	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
IC-K-	SN7420J	IC-7420	GE-7420		SK7420	ECG7420			221-29077
IC-L									
IC-N	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
IC-O	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
IC-P	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-29086

\* Lead configuration may vary from original.

# 520 REV. B BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFRG. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C65	50 25V	C-506	TT25X50A	QE1-353	TVA-1206
C66	50 25V	C-506	TT25X50A	QE1-353	TVA-1206

## CAPACITORS

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1					
C2A	82 5%	C-820	SX482	QW1-25	MMA-820
C2B	82 5%	C-820	SX482	QW1-25	MMA-820
C3	.1 16V	CB-10416			
C40	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C41	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C42	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C43	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C44	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C45	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C46	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C47	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C60	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C61	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C62	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C63	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C64	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C67	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C68	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C69	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C70	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C71	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C72	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C73	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C74	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C75	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C76	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C77	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C78	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C79	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C80	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C81	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C82	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C83	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C84	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C85	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C86	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C87	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C89	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C90	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C91	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C92	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C93	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C94	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C95	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C96	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C97	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C98	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C99	220 10%	C-221	GP322		10TS-T22

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFRG. PART No.	WORKMAN PART No.			MFRG. PART No.	WORKMAN PART No.
R1	1000 5% 1/4W Carbon Film	R1-102	22-1096	R8	1000 5% 1/4W Carbon Film	R1-102	22-1096
R2	4700 5% 1/4W Carbon Film	R1-472	22-1112	R9	220 5% 1/4W Carbon Film	R1-221	22-1080
R3	4700 5% 1/4W Carbon Film	R1-472	22-1112	R10	390 5% 1/4W Carbon Film	R1-391	22-1086
R4	1000 5% 1/4W Carbon Film	R1-102	22-1096	R11	4700 5% 1/4W Carbon Film	R1-472	22-1112
R5	1000 5% 1/4W Carbon Film	R1-102	22-1096	R12	10 5% 1/4W Carbon Film	R1-100	22-1048
R7	1000 5% 1/4W Carbon Film	R1-102	22-1096	R99	100 5% 1/4W Carbon Film	R1-101	22-1072

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket P.C. Board Socket Socket	SC-12FM PC-520B SC-16FI SC-22FI	12 Pin Molex (4 used) CM-3 Memory 16 Pin IC Socket (3 used) 22 Pin IC Socket (32 used)

# 520 REV. C BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.	
D2	1N752A	Q-1N4001	GE-504A	ZM5.6B	SK3777/5011A	EC65011A				103-29007
D3-D4	1N4001	IC-79L05	GEVR-105	PTC201	SK3311	ECG116	TM116	WEP1412/5011		212-76-02
PS1	MC79L05ACP	Q-2N5226	GE-82		SK3671/961	ECG961		WEP156		
Q1	2N5226	Q-2N5226	GE-7404	PTC103	SK3465/159	ECG159	TM159	WEP716		121-29003*
U1A	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U1B	N8T26N	IC-8T26								
U2A-U2H	4300BCD	IC-4300								
U2I	4200									
U2J	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U2K	N8T26N	IC-8T26								
U3A-U3H	4300BCD	IC-4300								
U3I	4200									
U3J	7430N	IC-7430			SK7430	ECG7430				
U4A-U4H	4300BCD	IC-4300								
U4I	4200									
U4J	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U5A-U5H	4300BCB	IC-4300								
U5I	4200									
U5J	DM7404N	IC-7404	GE-7404		SK7404	ECG7404		ECG74S10		221-29076
U5K	DM74S10N	IC-74S10								
U6A	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U6B	DM7417N	IC-7417								
U6C	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U6C-U6D	DM74S20N	IC-74S20								
U6E	SN74123N	IC-74123	GE-74123		SK74123	ECG74S20				221-29086
U6E	SN74123N	IC-74123								
U6F	DM7410N	IC-7410	GE-7410		SK7410	ECG7410				
U6H	SN7475N	IC-7475	GE-7475		SK7475	ECG7475				

\* Lead configuration may vary from original.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	47 16V	C-506	VTT47D16	QV1-73	EV-1226
	25 16V		TT15X25A	QE1-291	TVA-1148
C2	47 16V	C-506	VTT47D16	QV1-73	EV-1226
	25 16V		TT15X25A	QE1-291	TVA-1148
C3	47 16V	C-506	VTT47D16	QV1-73	EV-1226
	25 16V		TT15X25A	QE1-291	TVA-1148
C4	47 16V	C-506	VTT47D16	QV1-73	EV-1226
	25 16V		TT15X25A	QE1-291	TVA-1148

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C5	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C6	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C9	68 5%	C-680	SX468	QW1-23	MWA-680
C10	220 1KV 10%	C-221	GP322		10TS-T22
C20	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C23	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C24	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C25	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C26	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C27	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C28	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C29	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C30	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C31	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C32	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C33	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C34	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C35	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C36	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C37	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C38	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C39	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C40	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C41	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C42	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C43	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C44	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C45	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C46	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C47	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C48	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C49	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C50	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C51	.1 16V	CB-10416	MAG1601	QC1-227	HY-650
C53	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C54	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C55	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C56	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

## 520 REV. C BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

### CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C57	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C58	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C59	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C60	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C61	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C62	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C63	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C64	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C65	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C66	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C67	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C68	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C69	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

### RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R7	100 5% 1/4W Carbon Film	R1-101	22-1072	R15	470 5% 1/2W Carbon	R2-471	22-2088
R9	470 5% 1/2W Carbon	R2-471	22-2088	R16	470 5% 1/2W Carbon	R2-471	22-2088
R10	4700 5% 1/4W Carbon Film	R1-472	22-1112	R18	4700 5% 1/4W Carbon Film	R1-472	22-1112
R11	470 5% 1/2W Carbon	R2-471	22-2088	R21	4700 5% 1/4W Carbon Film	R1-472	22-1112
R12	10 5% 1/4W Carbon Film	R1-100	22-1048	R24	4700 5% 1/4W Carbon Film	R1-472	22-1112
R13	150 5% 1/4W Carbon Film	R1-151	22-1076	R42	4700 5% 1/4W Carbon Film	R1-472	22-1112

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket P.C. Board Socket Socket Socket	SC-12FM PC-520C SC-14FI SC-16FI SC-22FI	12 Pin Molex (4 used) Static Memory 14 Pin IC Socket (12 used) 16 Pin IC Socket (4 used) 22 Pin IC Socket (32 used)

## 525 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1-D7	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
ICA-ICD	N8T26N	IC-8T26							
ICE-ICJ	MC8T95N	IC-8T95							
ICK	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
ICL	7430N	IC-7430			SK7430	ECG7430			
ICM	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
ICN	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
ICD	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
ICP	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
ICQ	SN74154N	IC-74154	GE-74154		SK74154	ECG74154			221-29076
ICR	F7430PC	IC-7430			SK7430	ECG7430			
ICS	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
ICT-ICZ	2114-1	IC-2114-300							
ICAA-ICYY	2114-L	IC-2114-300							

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C23	50 25V	C-506	TT25X50A*	QE1-353*	TVA-1206*
C24	50 25V	C-506	TT25X50A*	QE1-353*	TVA-1206*



## 525 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

### CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C2	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C3	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C4	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C5	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C6	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C7	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C8	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C9	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C10	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C11	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C12	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C13	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C14	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C15	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C16	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C17	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C18	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C19	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C20	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C29	82 50V	C-820	SX482	QW1-25	MMA-820

### RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R4	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R2	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R5	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R3	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096				

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-12FM	12 Pin Molex (4 used)
J2	Socket	SC-12FM	12 Pin Molex (4 used)
	P.C. Board	PC-525B	
	Socket	SC-14FI	14 Pin (8 used) IC
	Socket	SC-16FI	16 Pin (10 used) IC
	Socket	SC-18FI	18 Pin (8 used) IC
	Socket	SC-24FI	24 Pin (1 used) IC

## 527 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
UA1-UA4	2114L-3	IC-2114-300							
UA5-UA8	UPD2114LC-1	IC-2114-300							
UA9-UA10	N8T26N	IC-8T26							
UB1-UB4	2114L-3	IC-2114-300							
UB5-UB8	UPD2114LC-1	IC-2114-300							
UC1-UC8	UPD2114LC-1	IC-2114-300							
UC9	74LS138PC	IC-74LS138	GE-7404		SK74LS138	ECG74LS138			221-29076
UC10	DM7404N	IC-74LS04			SK7404	ECG7404			
	74LS04	IC-74LS04			SK74LS04	ECG74LS04			
UC11	74LS20N	IC-7420	GE-7420		SK74LS20	ECG74LS20			221-29077
	7420	IC-7420			SK7420	ECG7420			
UD1-UD8	UPD2114LC-1	IC-2114-300							
UD9	74LS138PC	IC-74LS138PC	GE-7404		SK74LS138	ECG74LS138			221-29076
UD10	SN7404N	IC-74LS04			SK7404	ECG7404			
	74LS04	IC-74LS04			SK74LS04	ECG74LS04			
UE1-UE8	UPD2114LC-1	IC-2114-300							
UE9	74LS138PC	IC-74LS138	GE-7410		SK74LS138	ECG74LS138			221-29076
UE10	7410N	IC-7410	GE-7404		SK7410	ECG7410			
UE11	DM7404N	IC-74LS04			SK7404	ECG7404			
	74LS04	IC-74LS04			SK74LS04	ECG74LS04			
UF1-UF8	UPD2114LC-1	IC-2114-300							
UF9	74LS138PC	IC-74LS138	GE-7404		SK74LS138	ECG74LS138			221-29076
UF10	DM7404N	IC-74LS04			SK7404	ECG7404			
	74LS04	IC-74LS04			SK74LS04	ECG74LS04			

# 527 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFRG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C30	47 16V 33 16V	C-506	PC50-16 PC30-25	VTT47D16 VTT33D25	QV1-73 QV1-63	EV-1226 EV-1325

## CAPACITORS

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C2	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C3	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C4	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C5	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C6	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C7	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C8	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C9	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C10	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C11	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C12	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C13	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C14	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C15	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C16	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C17	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C18	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C19	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C20	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C23	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C24	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C25	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C26	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C27	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C28	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C29	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFRG. PART No.	WORKMAN PART No.			MFRG. PART No.	WORKMAN PART No.
R1	4700 5% 1/4W Carbon	R1-472	22-1112	R3	4700 5% 1/4W Carbon	R1-472	22-1112
R2	4700 5% 1/4W Carbon	R1-472	22-1112	R4	4700 5% 1/4W Carbon	R1-472	22-1112

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-12FM	12 Pin (4 Required) Molex
J2	Socket		4 Pin Molex
	Socket	SC-16FI	16 Pin IC Socket (6 used)
	Socket	SC-18FI	18 Pin IC Socket (48 used)
	P.C. Board	PC-527P	CH-9 Memory

# 535 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFRG. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG6519	TM519	WEP925/519	103-131
D2-D3	1N4001	Q-14001	GE-504A	PTC201	SK3311	ECG116	TM116	WEP156	212-76-02
D4	1N752A			ZMS.6B	SK3777/5011A	ECG65011A		WEP1412/5011	103-Z9007
PS1	MC79L05ACP	IC-79L05	GEVR-105		SK3671/961	ECG961			
Q1	2N5226		GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-Z9003*
U1A-U1H	MK4116N-4	IC-4116							
U1I-U1J	NB726N	IC-8T26							
U2A-U2H	MK4116N-4	IC-4116							
U2I	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U3A-U3H	MK4116N-4	IC-4116							
U3I	D3242	IC-3242							
U4B	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-Z9086
U4C	74163	IC-74163				ECG74163			
U4D	F7493APC	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-Z9078
U4E	74157N	IC-74157			SK74157				
U4F	DM74164N	IC-74164N			SK74164	ECG74164			
U4G	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U4H	SN74121N	IC-74121			SK74121	ECG74121			
U4I	F74513BPC	IC-74513B				ECG74513B			

# 535 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
U4J-U4K	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U5A	DM7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
U5C	DM7402N	IC-7402	GE-7402		SK7402	ECG7402		WEP7402/7402	
U5D	SN7410N	IC-7410	GE-7410		SK7410	ECG7410			
U5E	DM74164N	IC-74164	GE-7400		SK74164	ECG74164			
U5F-U5G	DM7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
U5H	F7408PC	IC-7408	GE-7408		SK7408	ECG7408		WEP7408/7408	
U5I	7430PC	IC-7430			SK7430	ECG7430			

\*Lead configuration may vary from original.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C2	47 16V	C-506	VTT47D16	QV1-73	EV-1226
	25 16V		TT15K25A*	QE1-291*	TVA-1148*
C3	47 16V	C-506	VTT47D16	QV1-73	EV-1226
C7	47 16V	C-506	VTT47D16	QV1-73	EV-1226
C8	47 16V	C-506	VTT47D16	QV1-73	EV-1226
C10	47 16V	C-506	VTT47D16	QV1-73	EV-1226

\* Axial replacement for radial device.

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C4	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C5	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C11	220 1KV 10%	C-221			10TCC-T22
C12	220 1KV 10%	C-221			10TCC-T22
C13	.001 100V 10%	C-102	EFW1A210	QF1-1	1PB-D10
C20	.3 16V	CB-30416		QC1-255	HY-675
C21	.3 16V	CB-30416		QC1-255	HY-675
C22	.3 16V	CB-30416		QC1-255	HY-675
C23	.3 16V	CB-30416		QC1-255	HY-675
C24	.3 16V	CB-30416		QC1-255	HY-675
C25	.3 16V	CB-30416		QC1-255	HY-675
C26	.3 16V	CB-30416		QC1-255	HY-675
C27	.3 16V	CB-30416		QC1-255	HY-675
C28	.3 16V	CB-30416		QC1-255	HY-675
C29	.3 16V	CB-30416		QC1-255	HY-675
C30	.3 16V	CB-30416		QC1-255	HY-675
C31	.3 16V	CB-30416		QC1-255	HY-675
C32	.3 16V	CB-30416		QC1-255	HY-675
C33	.3 16V	CB-30416		QC1-255	HY-675
C34	.3 16V	CB-30416		QC1-255	HY-675
C35	.3 16V	CB-30416		QC1-255	HY-675
C36	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C37	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C38	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C39	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C40	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C41	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C42	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C43	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C44	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C45	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C46	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C47	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C48	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C49	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C50	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C51	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C52	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C53	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C54	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C55	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C56	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C57	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C58	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C59	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C60	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C61	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C62	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C63	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C64	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C65	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C66	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C67	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C68	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C69	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C70	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C71	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C72	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

## 535 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

### RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R4	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R23	56 5% 1/4W Carbon Film	R1-560	22-1066
R5	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R24	56 5% 1/4W Carbon Film	R1-560	22-1066
R6	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R25	82 5% 1/4W Carbon Film	R1-820	22-1070
R7	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R26	82 5% 1/4W Carbon Film	R1-820	22-1070
R8	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R27	82 5% 1/4W Carbon Film	R1-820	22-1070
R9	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R28	10K 5% 1/4W Carbon Film	R1-103	22-1120
R12	56 5% 1/4W Carbon Film	R1-560	20-1066	R29	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R13	56 5% 1/4W Carbon Film	R1-560	20-1066	R30	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R14	56 5% 1/4W Carbon Film	R1-560	20-1066	R31	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R15	56 5% 1/4W Carbon Film	R1-560	20-1066	R32	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R16	56 5% 1/4W Carbon Film	R1-560	20-1066	R33	1000 5% 1/4W Carbon Film	R1-102	22-1096
R17	56 5% 1/4W Carbon Film	R1-560	20-1066	R34	470 5% 1/4W Carbon Film	R1-471	22-1088
R18	4700 5% 1/4W Carbon Film	R1-472	22-1112	R35	470 5% 1/4W Carbon Film	R1-471	22-1088
R19	150 5% 1/4W Carbon Film	R1-151	22-1076	R36	1000 5% 1/4W Carbon Film	R1-102	22-1096
R20	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R37	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
R21	150 5% 1/4W Flameproof Carbon Film	R1-151	22-1076	R38	56 5% 1/4W Carbon Film	R1-560	22-1066
				R39	10 5% 1/4W Flameproof Carbon Film	R1-100	22-1048

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Connector Crystal Socket Socket P.C. Board	SC-12FM X-186 SC-16FI SC-28FI PC-535	12 Pin (4 used) 18MHz IC 16 Pin (3 used) IC 28 Pin (1 used) Memory

## 550 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1-D3	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TMS19	WEP925/519	103-131
U1	SN7417N	IC-7417							
U2	SN7414N	IC-7414							
U3	F5404DM 7404	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U4	SN7417N	IC-7417	GE-7404		SK7404	ECG7417			
U5	SN7414N	IC-7414							
U6	DM7404N	IC-7404							
U7	SN7417N	IC-7417							
U8	SN7414N	IC-7414							
U9	DM7404N	IC-7404							
U10	SN7417N	IC-7417							
U11	MC1488	IC-1488							
U12	SN75188N MC1489	IC-1489	GE-7404		SK7404	ECG7404			221-29076
U13	MC1488	IC-1488	GE-7404		SK7404	ECG7417			
U14	SN75188N MC1489	IC-1489							
U15	SN75189N MC1488	IC-1488							
U16	MC1489	IC-1489							
U17	SN75189N MC1488	IC-1488							
U18	SN75188N MC1489	IC-1489							
U19-U20	NBT26N	IC-8T26							
U21-U36	MC6850P	IC-6850							

# 550 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
U38-U39	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U40-U42	F7493APC	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-29078
U43	F74154PC	IC-74154	GE-74154		SK74154	ECG74154			
U44	SN74LS163AN	IC-74LS163			SK74LS163	ECG74LS163A			
	74163				SK74163	ECG74163			
U45	SN7420N	IC-7420	GE-7420		SK7420	ECG7420			221-29077
U46	7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076
U47	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-29086
U48	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-29075
U49	DM7430N	IC-7430			SK7430	ECG7430			
U50	7404N	IC-7404	GE-7404		SK7404	ECG7404			221-29076

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C68	47 16V	C-506	VTT47D16	QV1-73	EV-1226
C69	47 16V	C-506	VTT47D16	QV1-73	EV-1226
C71	47 16V	C-506	VTT47D16	QV1-73	EV-1226

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C33	220 10%	C-221	GP322		10TS-T22
	200 10%	C-201	GP320	QCT2-28	10TS-T20
C50	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C51	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C52	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C53	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C54	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C65	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C56	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C57	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C58	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C59	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C60	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C61	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C62	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C63	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C64	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C65	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C66	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C67	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C75	27 1KV 10%	C-270	CN0427		10TCC-Q27

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R13	220 5% 1/4W Carbon Film	R1-221	22-1080	R40	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R14	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R41	220 5% 1/4W Carbon Film	R1-221	22-1080
R15	220 5% 1/4W Carbon Film	R1-221	22-1080	R42	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R16	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R55	220 5% 1/4W Carbon Film	R1-221	22-1080
R17	220 5% 1/4W Carbon Film	R1-221	22-1080	R56	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R18	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R57	220 5% 1/4W Carbon Film	R1-221	22-1080
R31	220 5% 1/4W Carbon Film	R1-221	22-1080	R58	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R32	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R59	220 5% 1/4W Carbon Film	R1-221	22-1080
R33	220 5% 1/4W Carbon Film	R1-221	22-1080	R60	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R34	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R61	220 5% 1/4W Carbon Film	R1-221	22-1080
R35	220 5% 1/4W Carbon Film	R1-221	22-1080	R62	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R36	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R63	220 5% 1/4W Carbon Film	R1-221	22-1080
R37	220 5% 1/4W Carbon Film	R1-221	22-1080	R64	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R38	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R65	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R39	220 5% 1/4W Carbon Film	R1-221	22-1080	R66	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086

## 550 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

### RESISTORS (Power and Special) (cont)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R79	220 5% 1/4W Carbon Film	R1-221	22-1080	R84	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R80	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R101	1000 5% 1/4W Carbon Film	R1-102	22-1096
R81	220 5% 1/4W Carbon Film	R1-221	22-1080	R102	470 5% 1/4W Carbon Film	R1-471	22-1088
R82	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R103	470 5% 1/4W Carbon Film	R1-471	22-1088
R83	220 5% 1/4W Carbon Film	R1-221	22-1080	R104	22K 5% 1/4W Flameproof Carbon Film	R1-223	22-1128
				R105	1000 5% 1/4W Carbon Film	R1-102	22-1096

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-12FM	12 Pin Molex (4 used)
J2	Socket	SC-12FM	12 Pin Molex (5 used)
X1	Crystal	X-405	4MHz
	P.C. Board	PC-550AP	Serial Input/Output
	Socket	SC-14FI	14 Pin IC Socket (28 used)
	Socket	SC-16FI	16 Pin IC Socket (4 used)
	Socket	SC-24FI	24 Pin IC Socket (17 used)

## 555 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.	
D1-D2	1N914	Q-1N914								
U1A-U1E	F7417PC	IC-7417	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519		103-131
U1F	74174	IC-74174				ECG7417				
U1G	N8T26N	IC-8T26				ECG74174				
U2A-U2D	F6850P	IC-6850								
U2E-U2F	MC68B21P 6820	IC-68B21								
U2G	N8T26N	IC-8T26								
U3A	MC1488	IC-1488								
	5N75188N									
U3B	F7417PC	IC-7417				ECG7417				
U3C	F6850P	IC-6850								
U3D-U3K	SYL2114L	IC-2114-300								
U4A	MC1489	IC-1489								
	5N75189N									
U4B	F7417PC	IC-7417				ECG7417				
U4C-U4J	SY2114L	IC-2114-300								
U5A	5N75183N	IC-75183								
	DS8830									
U5B	74LS14N	IC-74LS14			SK74LS14	ECG74LS14				
U5C-U5D	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U5E	F74154PC	IC-74154	GE-74154		SK74154	ECG74154				
U5F	5N7430N	IC-7430			SK7430	ECG7430				
U5G	5N7410N	IC-7410	GE-7410		SK7410	ECG7410				
U5H	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U6A	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U6B	S5400F 7400	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U6C	74LS163AN	IC-74LS163			SK74LS163	ECG74LS163A				
U6D	7493N	IC-7493			SK7493	ECG7493A			WEP2279/7493A	221-29078
U6E	DM7430N	IC-7430			SK7430	ECG7430				
U6F	74LS138PC 74138	IC-74LS138			SK74LS138	ECG74LS138				
U6G	7402	IC-7402	GE-7402		SK7402	ECG7402				
U6H	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			WEP7402/7402	221-29076
U6I	S5400F 7400	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U6J	DM7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U7A	74LS14	IC-74LS14			SK74LS14	ECG74LS14				
U7B	F7493APC	IC-7493			SK7493	ECG7493A			WEP2279/7493A	221-29078
U7C	5N74123N	IC-74123	GE-74123		SK74123	ECG74LS123				221-29086
U7D	7493N	IC-7493			SK7493	ECG7493A			WEP2279/7493A	221-29078
U7E	5N75182N DS8820A	IC-75182								
U7F	5N74LS138PC 74138	IC-74LS138			SK74LS138	ECG74LS138				
U7G	S5400F 7400	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U7H	F74LS138PC 74138	IC-74LS138			SK74LS138	ECG74LS138				

# 555 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
U7I	SN74LS139N	IC-74LS139							
U7J	74139 DM704N	IC-7404	GE-7404		SK7404		ECG7404		221-29076

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	47 16V	C-506	TT15X50A	QE1-351	TVA-1150
C2	47 16V	C-506	TT15X50A	QE1-351	TVA-1150
	33 16V		VTT33D25	QV1-63	EV-1325
C3	47 16V	C-506	TT15X50A	QE1-351	TVA-1150
	33 16V		VTT33D25	QV1-63	EV-1325
C4	47 16V	C-506	TT15X50A	QE1-351	TVA-1150
	33 16V		VTT33D25	QV1-63	EV-1325

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C13	27 10%	C-270	CN0427		10TCC-Q27
C14	220 10%	C-221	GP322		10TS-T22
C15	220 10%	C-221	GP322		10TS-T22
C16	220 10%	C-221	GP322		10TS-T22
C17	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C18	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C19	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C23	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C24	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C25	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C26	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C27	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C28	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C29	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C30	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C31	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C32	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C33	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C34	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C35	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C36	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C37	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C38	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C39	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C40	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C41	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C42	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C43	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C44	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C45	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C46	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C47	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C48	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C49	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C50	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C51	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C52	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C53	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C54	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C55	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C56	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C57	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C58	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C59	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C60	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C61	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C62	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C63	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C64	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C65	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C66	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C67	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C68	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C69	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

# 555 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	220 5% 1/4W Carbon Film	R1-221	22-1080	R61	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R2	220 5% 1/4W Carbon Film	R1-221	22-1080	R62	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R3	220 5% 1/4W Carbon Film	R1-221	22-1080	R63	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R4	220 5% 1/4W Carbon Film	R1-221	22-1080	R64	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R5	220 5% 1/4W Carbon Film	R1-221	22-1080	R65	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R6	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R66	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R7	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R67	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R8	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R68	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R9	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R69	470 5% 1/4W Carbon Film	R1-471	22-1088
R10	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R70	470 5% 1/4W Carbon Film	R1-471	22-1088
R11	220 5% 1/4W Carbon Film	R1-221	22-1080	R75	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R12	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R76	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R13	220 5% 1/4W Carbon Film	R1-221	22-1080	R77	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R14	220 5% 1/4W Carbon Film	R1-221	22-1080	R78	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R15	220 5% 1/4W Carbon Film	R1-221	22-1080	R81	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R16	4700 5% 1/4W Carbon Film	R1-472	22-1112	R82	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R17	220 5% 1/4W Carbon Film	R1-221	22-1080	R83	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R18	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R84	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R19	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R87	22K 5% 1/4W Flameproof Carbon Film	R1-223	22-1128
R20	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R88	4700 5% 1/4W Carbon Film	R1-472	22-1112
R21	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R91	4700 5% 1/4W Carbon Film	R1-472	22-1112
R22	4700 5% 1/4W Carbon Film	R1-472	22-1112	R94	4700 5% 1/4W Carbon Film	R1-472	22-1112
R23	4700 5% 1/4W Carbon Film	R1-472	22-1112	R95	220 5% 1/4W Carbon Film	R1-221	22-1080
R24	1000 5% 1/4W Carbon Film	R1-102	22-1096	R96	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R44	1000 5% 1/4W Carbon Film	R1-102	22-1096	R96A	100 5% 1/4W Carbon Film	R1-101	22-1072
R57	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R97	16K 5% 1/4W Flameproof Carbon Film	R1-163	
R58	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080				
R59	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080				
R60	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080				

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Connector	SC-12MM	12 Pin (2 used)
J2	Connector	SC-12MM	12 Pin (2 used)
J3	Socket	SC-12FM	12 Pin Molex
J4	Socket	SC-12FM	12 Pin Molex
J5	Socket	SC-12FM	12 Pin Molex (4 used)
J7	Connector	SC-12MM	12 Pin Molex (2 used)
X1	Crystal	X-405	4MHz
	P.C. Board	PC-555	Multiple Interface
	Socket	SC-40FI	40 Pin IC Socket (2 used)
	Socket	SC-24FI	24 Pin IC Socket (6 used)
	Socket	SC-18FI	18 Pin IC Socket (16 used)
	Socket	SC-16FI	16 Pin IC Socket (9 used)
	Socket	SC-14FI	14 Pin IC Socket (30 used)



# 590 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D1-D2	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
D50-D51	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	2N5225	Q-2N5225	GE-20	PTC136	SK3444/123A	ECG123AP	TM123AP	WEP54	121-29000A
UA2	SN7417N	IC-7417				ECG7417			
UB1-UB2	N8T26N	IC-8T26							
UB3-UB4	SN75182N	IC-75182							
	DS8820AN								
UB5	SN75183N	IC-75183							
	DS8830								
UB6	F-5404DM	IC-7404	GE-7404		SK7404	ECG7404			221-29076
	7404								
UB8-UB11	N8T26N	IC-8T26							
UC1	SN74165	IC-74165				ECG74165			
UC2	F-74174PC	IC-74174				ECG74174			
UC3	F-74164PC	IC-74164			SK74164	ECG74164			
UC4	74163N	IC-74163				ECG74163			
UC5	DM7410N	IC-7410	GE-7410		SK7410	ECG7410			
UC6	74163N	IC-74163				ECG74163			
UC7-UC8	7474N	IC-7474	GE-7474		SK7474	ECG7474		WEP7474/7474	
UC9	F-74125PC	IC-74125				ECG74125			
UC10	SN74154N	IC-74154	GE-74154		SK74154	ECG74154			
UD1	SN74393N	IC-74393							
UD2	F74174PC	IC-74174				ECG74174			
UD3	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-29086
UD4-UD5	7474N	IC-7474	GE-7474		SK7474	ECG7474		WEP7474/7474	
UD6	F-5404DM	IC-7404	GE-7404		SK7404	ECG7404			221-29076
	7404								
UD7-UD8	SN7402J	IC-7402	GE-7402		SK7402	ECG7402		WEP7402/7402	
UD9	F-7408PC	IC-7408	GE-7408		SK7408	ECG7408		WEP7408/7408	
UD10	7474N	IC-7474	GE-7474		SK7474	ECG7474		WEP7474/7474	
UD11	SN7417N	IC-7417				ECG7417			
UE1	7493N	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-29078
UE2-UE10	74LS193N	IC-74LS193			SK74LS193	ECG74LS193			
	74193	IC-74193	GE-74193		SK74193	ECG74193			
UE11	74193PC	IC-74193	GE-74193		SK74193	ECG74193			
UF4	7474N	IC-7474	GE-7474		SK7474	ECG7474		WEP7474/7474	
UF5	DM7410N	IC-7410	GE-7410		SK7410	ECG7410			
UF6	7420N	IC-7420	GE-7420		SK7420	ECG7420			221-29077
UF7	F-5404DM	IC-7404	GE-7404		SK7404	ECG7404			221-29076
	7404		GE-7404		SK7404	ECG7404		WEP7400/7400	221-29075
UF8	SN7404J	IC-7404	GE-7404		SK7400	ECG7400			221-29075
UF9	SN7400J	IC-7400	GE-7400		SK7400	ECG7400			221-29075
UF10	F7430PC	IC-7430			SK7430	ECG7430			
UF11	F-5404DM	IC-7404	GE-7404		SK7404	ECG7404			221-29076
	7404								

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	25 25V		TT25X25B*	QE1-293*	TVA-1205*
C6	50 25V	C-506	TT25X50A*	QE1-353*	TVA-1206*
C9	50 25V	C-506	TT25X50A*	QE1-353*	TVA-1206*

\* Lead configuration may vary from original.

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C7	.0047 100V 10%	C-472	EWF1A247	QF1-57	1PB-047
C8	.0022 200V 10%	C-222	EWF6222		6PS-022
C10	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C11	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C12	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C13	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C14	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C15	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C16	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C17	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C18	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C19	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C20	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C21	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C22	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C23	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C24	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C25	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C26	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C27	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C28	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C29	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C30	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C31	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C32	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C33	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

# 590 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C34	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C35	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C36	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C37	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C38	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFR. PART No.	MALLORY PART No.	TRW PART No.
R19	8.2uSec. - 8.3uSec.	10K	RP-103	RVA0911V103	X260R103B

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	470 5% 1/4W Flameproof Carbon Film	R1-471	22-1088	R12	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R2	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R13	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R3	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R14	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R4	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R15	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R5	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R16	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R6	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R17	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R7	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R18	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R8	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R20	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R9	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R21	10K 5% 1/4W Flameproof Carbon Film	R1-103	22-1120
R10	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R22	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096
R11	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R50	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Socket	SC-12FM	12 Pin (4 used) Molex
J2	Socket	SC-12FM	12 Pin (4 used) Molex
J3	Socket	SC-4FM	4 Pin Molex
J4	Socket	SC-12FM	12 Pin Molex
J5	Socket	SC-16FI	16 Pin
J6	Socket	SC-16FI	16 Pin
SW1	Switch	SW-T03	Test
	P.C. Board	PC-590	Disk Controller
	Socket	SC-24FI	24 Pin IC (1 used)
	Socket	SC-16FI	16 Pin IC (2 used)
	Socket	SC-14FI	14 Pin IC (28 used)

# 592 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.	
U3	SN74123N	IC-74123	GE-74123		SK74123	ECG74123				
U4	SN7474N	IC-7474	GE-7474		SK7474	ECG7474			WEP7474/7474	
U5	DM74175N	IC-74175				ECG74175				
U6	N8T26AN	IC-8T26								
U8	7408N	IC-7408	GE-7408		SK7408	ECG7408			WEP7408/7408	
U9	DS8831									
U10	SN75183N	IC-75183								
	DS8830									
U11	DM74175N	IC-74175				ECG74175				
U12	N8T26AN	IC-8T26								
U14	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			WEP7400/7400	221-29075
U15	DS8831									
U16	SN75183N	IC-75183								
	DS8830									
U17	F-74175PC	IC-74175				ECG74175				
U18	SN7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076
U19	SN75182N	IC-75182								
	DS8820A									
U20	SN7420N	IC-7420	GE-7420		SK7420	ECG7420				221-29077
U21	SN7404N	IC-7404	GE-7404		SK7404	ECG7404				221-29076

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C3	50 25V	C-506	TT25X50A	QE1-353	TVA-1206

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	82 5%	C-820	SX482	QW1-25	MWA-820
C2	82 5%	C-820	SX482	QW1-25	MWA-820
C8	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C51	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C52	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C53	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C54	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C55	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C56	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C57	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C58	.1 10V	CB-10410	MAG1201	QC1-223	HY-360
C59	.1 10V	CB-10410	MAG1201	QC1-223	HY-360

## CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFR. PART No.	MALLORY PART No.	TRW PART No.
R47	Strobe Adjust	5000	RP-502	RVA0911V502	X260R502B

## 592 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

### RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
R1	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112	R27	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R2	4700 5% 1/4W Flameproof Carbon Film	R1-472	22-1112	R28	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R3	1000 5% 1/4W Carbon Film	R1-102	22-1096	R29	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R4	1000 5% 1/4W Carbon Film	R1-102	22-1096	R30	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R21	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R33	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R22	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R34	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R23	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R48	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080
R24	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086	R49	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R25	220 5% 1/4W Flameproof Carbon Film	R1-221	22-1080	R50	1000 5% 1/4W Carbon Film	R1-102	22-1096
R26	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086				

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	Connector	SC-6ME	6 Pin
J2	Socket	SC-4FM	4 Pin Molex
J3	Socket	SC-12FM	12 Pin Molex
J4	Socket	SC-16FI	16 Pin IC Socket
J5	Socket	SC-16FI	16 Pin IC Socket
J6	Socket	SC-16FI	16 Pin IC Socket
J7	Socket	SC-16FI	16 Pin IC Socket
J8	Socket	SC-12FM	12 Pin Molex
P11	Connector	SC-40ME	40 Pin
P12	Connector	SC-40ME	40 Pin
	P.C. Board	PC-592B	Hard Disk Interface
	Socket	SC-14FI	14 Pin IC Socket (9 used)
	Socket	SC-16FI	16 Pin IC Socket (8 used)

## 594 BOARD PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA						
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
U3C	N8T26N	IC-8T26							
U3D-U3E	F-74175PC	IC-74175				ECG74175			
U3F	F-7417PC	IC-7417				ECG7417			
U3G	DM7404N	IC-7404	GE-7404		5K7404	ECG7404			221-Z9076
U4D	N8T26N	IC-8T26							
U4E	F-74175PC	IC-74175				ECG74175			
U4F	F7417PC	IC-7417				ECG7417			
U4G	DS8830								
	SN75183N	IC-75183							

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C14	47 16V	C-506	PC50-16	VTT47D16	QV1-73	EV-1226

# 594 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

## CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C8	.1 10V	CB-10410	MAG1 201	QC1-223	HY-360
C9	.1 10V	CB-10410	MAG1 201	QC1-223	HY-360
C10	.1 10V	CB-10410	MAG1 201	QC1-223	HY-360
C11	.1 10V	CB-10410	MAG1 201	QC1-223	HY-360
C12	.1 10V	CB-10410	MAG1 201	QC1-223	HY-360
C13	.1 10V	CB-10410	MAG1 201	QC1-223	HY-360
C15	.3 16V	CB-30416	CN7327	QC1-223	HY-360 10TCU-T27

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFR. PART No.	WORKMAN PART No.			MFR. PART No.	WORKMAN PART No.
R1	1000 5% 1/4W Flameproof Carbon Film	R1-102	22-1096	R11	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R2	220 5% 1/4W Carbon Film	R1-221	22-1080	R12	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R3	220 5% 1/4W Carbon Film	R1-221	22-1080	R13	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R4	220 5% 1/4W Carbon Film	R1-221	22-1080	R14	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R5	220 5% 1/4W Carbon Film	R1-221	22-1080	R15	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R6	220 5% 1/4W Carbon Film	R1-221	22-1080	R16	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R7	220 5% 1/4W Carbon Film	R1-221	22-1080	R17	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086
R8	220 5% 1/4W Carbon Film	R1-221	22-1080				
R9	220 5% 1/4W Carbon Film	R1-221	22-1080				
R10	390 5% 1/4W Flameproof Carbon Film	R1-391	22-1086				

## MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
J1	P.C. Board	PC-594	Shugart Interface
J2	Socket	SC-12FM	12 Pin Molex
J3	Cable Assembly	W-50SF	50 Wire Interconnect
J4C	Socket	SC-4FM	4 Pin Molex
J5A	Socket	SC-16FI	Interconnect
	Socket	SC-16FI	Interconnect
	Socket	SC-14FI	14 Pin IC Socket (4 used)
	Socket	SC-16FI	16 Pin IC Socket (4 used)

## MEMORY MAPS

Each of the computers can handle 48K Bytes of continuous memory from address  $0000_{16}$  to  $BFFF_{16}$  in each partition. This memory may consist of various types of memory boards. Each type of memory board has a maximum amount of memory available per board. The following table shows the maximum memory capacity per board and the number of boards required for each 48K Bytes of memory.

BOARD TYPE	MAXIMUM AMOUNT OF MEMORY PER BOARD	NUMBER OF BOARDS REQUIRED FOR 48K BYTES
520 Rev B or C	16K BYTES	3
527	24K BYTES	2
535	48K BYTES	1

### 520 Rev B BOARD

BOARD NUMBER	ADDRESS (Hexadecimal)	CHIPS ASSOCIATED WITH BITS							
		0	1	2	3	4	5	6	7
1	0000 - 0FFF								
2	4000 - 4FFF	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8
3	8000 - 8FFF								
1	1000 - 1FFF								
2	5000 - 5FFF	IC9	IC10	IC11	IC12	IC13	IC14	IC15	IC16
3	9000 - 9FFF								
1	2000 - 2FFF								
2	6000 - 6FFF	IC17	IC18	IC19	IC20	IC21	IC22	IC23	IC24
3	A000 - AFFF								
1	3000 - 3FFF								
2	7000 - 7FFF	IC25	IC26	IC27	IC28	IC29	IC30	IC31	IC32
3	B000 - BFFF								

Board No. 1 contains address  $0000_{16}$  to  $3FFF_{16}$

Board No. 2 contains address  $4000_{16}$  to  $7FFF_{16}$

Board No. 3 contains address  $8000_{16}$  to  $BFFF_{16}$

### 520 Rev C BOARD

BOARD NUMBER	ADDRESS (Hexadecimal)	CHIP ASSOCIATED WITH BITS							
		0	1	2	3	4	5	6	7
1	0000 - 0FFF								
2	4000 - 4FFF	U2A	U2B	U2C	U2D	U2E	U2F	U2G	U2H
3	8000 - 8FFF								
1	1000 - 1FFF								
2	5000 - 5FFF	U3A	U3B	U3C	U3D	U3E	U3F	U3G	U3H
3	9000 - 9FFF								
1	2000 - 2FFF								
2	6000 - 6FFF	U4A	U4B	U4C	U4D	U4E	U4F	U4G	U4H
3	A000 - AFFF								
1	3000 - 3FFF								
2	7000 - 7FFF	U5A	U5B	U5C	U5D	U5E	U5F	U5G	U5H
3	B000 - BFFF								

Board No. 1 contains address  $0000_{16}$  to  $3FFF_{16}$

Board No. 2 contains address  $4000_{16}$  to  $7FFF_{16}$

Board No. 3 contains address  $8000_{16}$  to  $BFFF_{16}$

# MEMORY MAPS (CONTINUED)

## 525 BOARD (4K HARD DISK)

ADDRESS (Hexadecimal)	CHIPS ASSOCIATED WITH BITS	
	0, 1, 2, 3	4, 5, 6, 7
E000 - E3FF	IC JJ	IC RR
E400 - E7FF	IC KK	IC SS
E800 - EBFF	IC LL	IC TT
EC00 - EFFF	IC MM	IC UU

## 527 BOARD

	ADDRESS (Hexadecimal)			CHIPS ASSOCIATED WITH BITS	
	BOARD NUMBER 1	BOARD NUMBER 2		0, 1, 2, 3	4, 5, 6, 7
4K {	0000 - 03FF	6000 - 63FF	} 28K	UA1	UB1
	0400 - 07FF	6400 - 67FF		UA2	UB2
	0800 - 0BFF	6800 - 6BFF		UA3	UB3
	0C00 - 0FFF	6C00 - 6FFF		UA4	UB4
8K {	1000 - 13FF	7000 - 73FF	} 32K	UA5	UB5
	1400 - 17FF	7400 - 77FF		UA6	UB6
	1800 - 1BFF	7800 - 7BFF		UA7	UB7
	1C00 - 1FFF	7C00 - 7FFF		UA8	UB8
12K {	2000 - 23FF	8000 - 83FF	} 36K	UC1	UD1
	2400 - 27FF	8400 - 87FF		UC2	UD2
	2800 - 2BFF	8800 - 8BFF		UC3	UD3
	2C00 - 2FFF	8C00 - 8FFF		UC4	UD4
16K {	3000 - 33FF	9000 - 93FF	} 40K	UC5	UD5
	3400 - 37FF	9400 - 97FF		UC6	UD6
	3800 - 3BFF	9800 - 9BFF		UC7	UD7
	3C00 - 3FFF	9C00 - 9FFF		UC8	UD8
20K {	4000 - 43FF	A000 - A3FF	} 44K	UE1	UF1
	4400 - 47FF	A400 - A7FF		UE2	UF2
	4800 - 4BFF	A800 - ABFF		UE3	UF3
	4C00 - 4FFF	AC00 - AFFF		UE4	UF4
24K {	5000 - 53FF	B000 - B3FF	} 48K	UE5	UF5
	5400 - 57FF	B400 - B7FF		UE6	UF6
	5800 - 5BFF	B800 - BBFF		UE7	UF7
	5C00 - 5FFF	BC00 - BFFF		UE8	UF8

Board No. 1 contains address 0000<sub>16</sub> to 5FFF<sub>16</sub>  
 Board No. 2 contains address 6000<sub>16</sub> to BFFF<sub>16</sub>

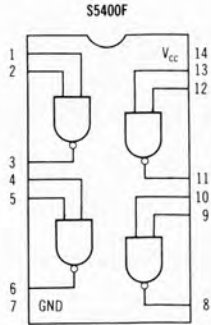
## 535 BOARD

ADDRESS (Hexadecimal)	CHIP ASSOCIATED WITH BITS									
	0	1	2	3	4	5	6	7		
16K 0000 - 3FFF	U1A	U1B	U1C	U1D	U1E	U1F	U1G	U1H		
32K 4000 - 7FFF	U2A	U2B	U2C	U2D	U2E	U2F	U2G	U2H		
48K 8000 - BFFF	U3A	U3B	U3C	U3D	U3E	U3F	U3G	U3H		

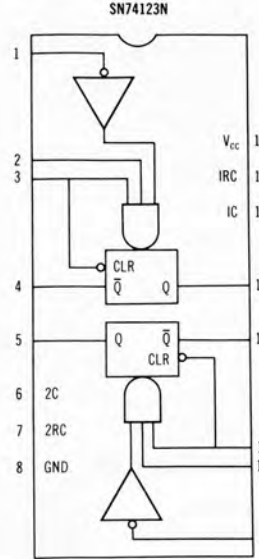
# 470 (FLOPPY) BOARD PINOUTS



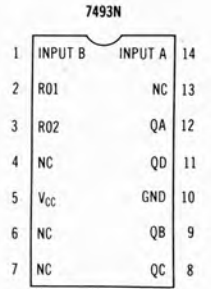
**U1C**



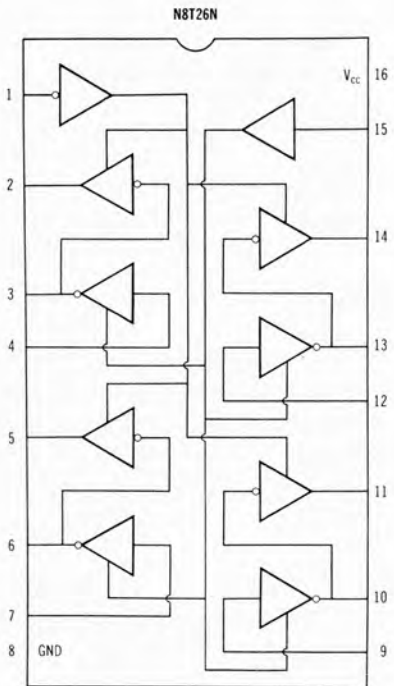
**U2B, U4C, U5A**



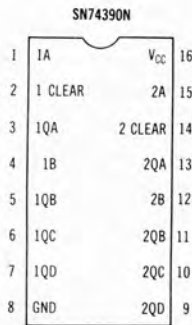
**U4E, U4F**



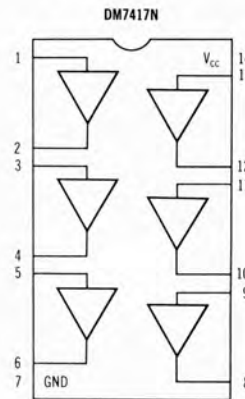
**U5B**



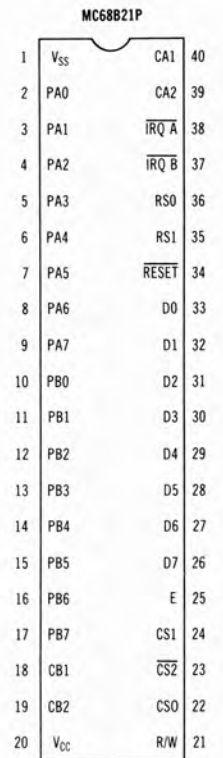
**U1D, U1E**



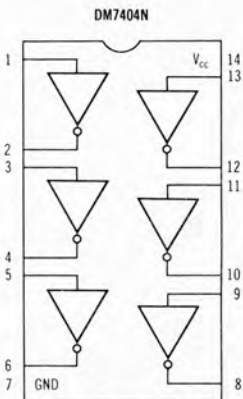
**U5C, U5D, U5E**



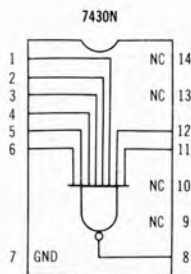
**U1A, U2A, U3A, U4A**



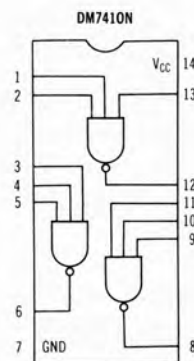
**U1B**



**U3C, U4D, U5F, U5H**

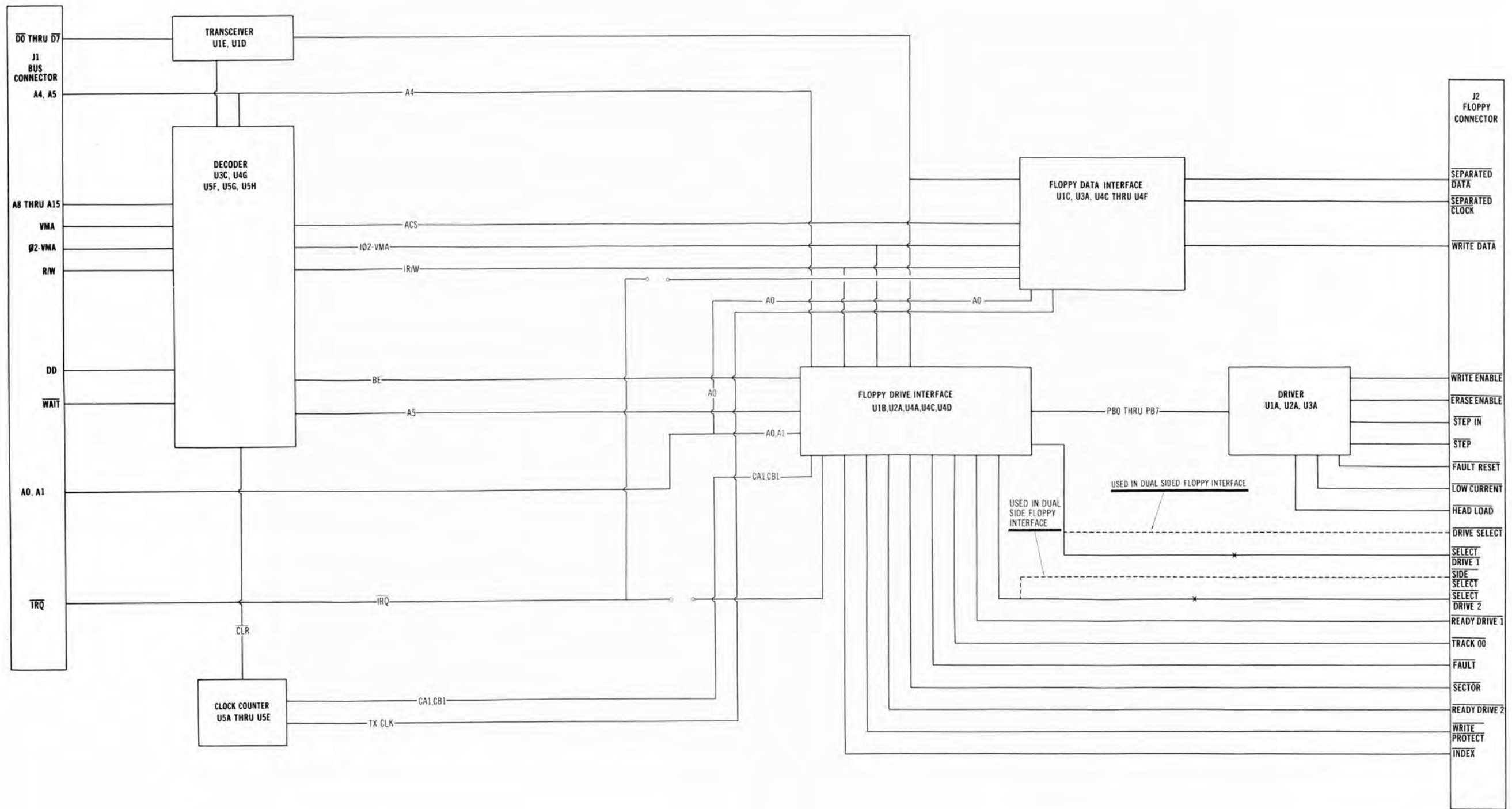


**U5G**



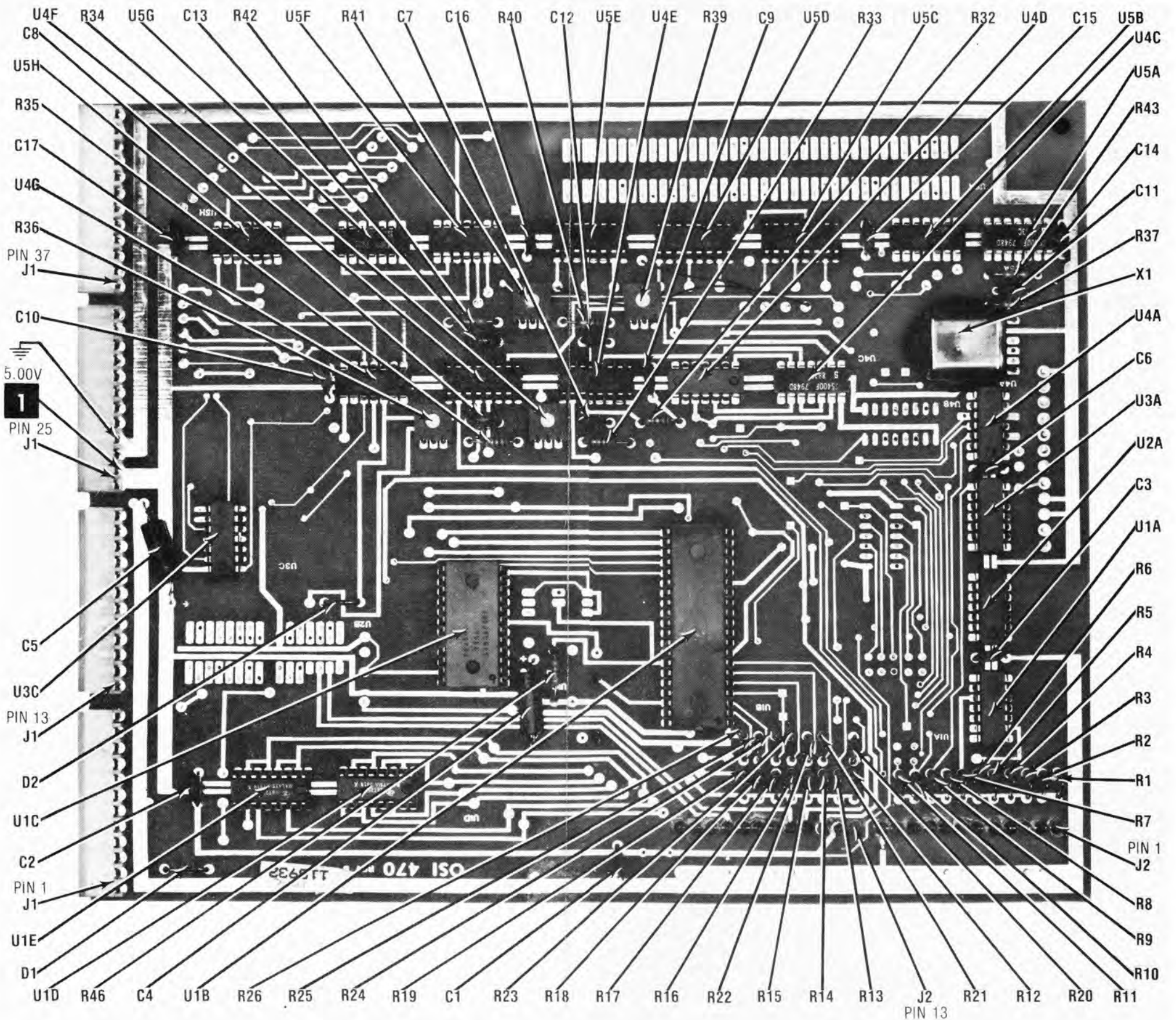
**U4G**





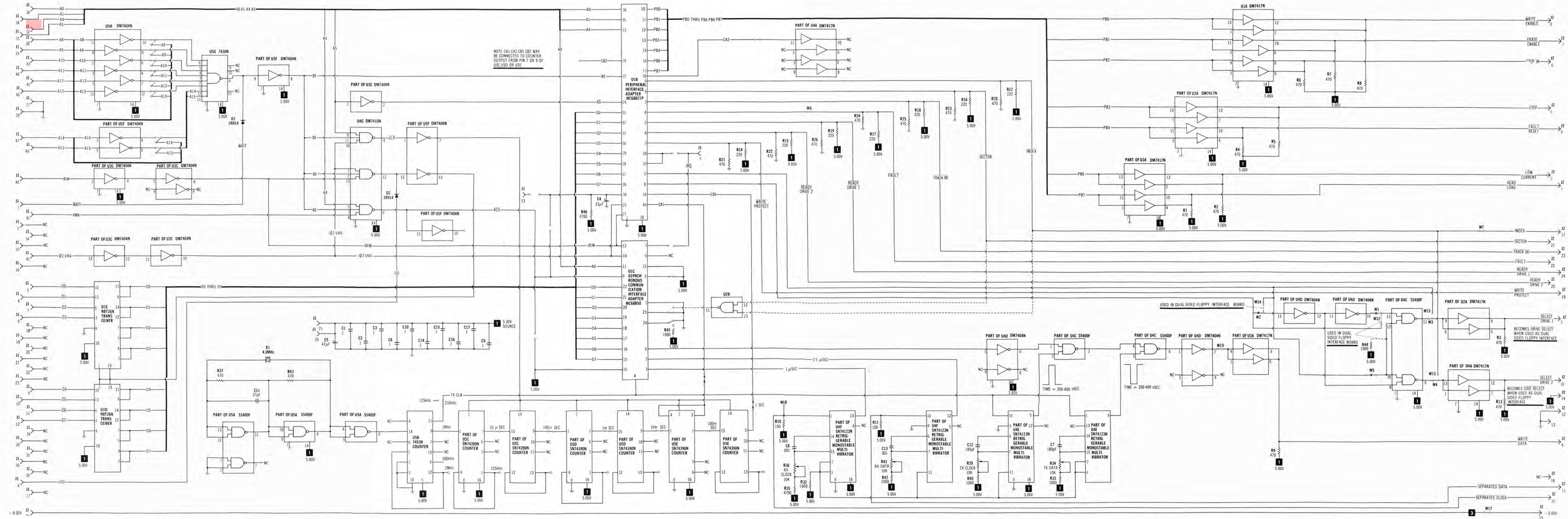
470 (FLOPPY) BOARD BLOCK

470 (FLOPPY) BOARD BLOCK



470 (FLOPPY) BOARD

470 (FLOPPY) BOARD



# 505 REV. A BOARD PINOUTS

**6820**

1	GND	CA1	40
2	PA0	CA2	39
3	PA1	IRQ A	38
4	PA2	IRQ B	37
5	PA3	RS0	36
6	PA4	RS1	35
7	PA5	RESET	34
8	PA6	D0	33
9	PA7	D1	32
10	PB0	D2	31
11	PB1	D3	30
12	PB2	D4	29
13	PB3	D5	28
14	PB4	D6	27
15	PB5	D7	26
16	PB6	E	25
17	PB7	CS1	24
18	CB1	CS2	23
19	CB2	CS0	22
20	V <sub>CC</sub>	R/W	21

U1

**6502A**

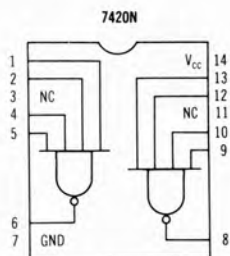
1	VSS	RES	40
2	RDY	Ø2 (OUT)	39
3	Ø1 (OUT)	S.O.	38
4	IRQ	Ø0(IN)	37
5	N.C.	N.C.	36
6	NMI	N.C.	35
7	SYNC	R/W	34
8	VCC	DB0	33
9	AB0	DB1	32
10	AB1	DB2	31
11	AB2	DB3	30
12	AB3	DB4	29
13	AB4	DB5	28
14	AB5	DB6	27
15	AB6	DB7	26
16	AB7	AB15	25
17	AB8	AB14	24
18	AB9	AB13	23
19	AB10	AB12	22
20	AB11	VSS	21

U2

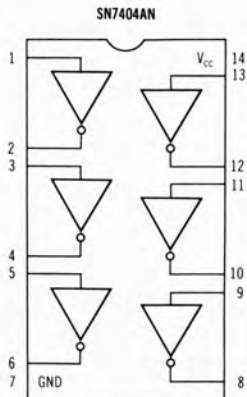
**6850**

1	GND	CTS	24
2	RXD	DCD	23
3	CRX	D0	22
4	CTX	D1	21
5	RTS	D2	20
6	TXD	D3	19
7	IRQ	D4	18
8	CS0	D5	17
9	CS2	D6	16
10	CS1	D7	15
11	RS	E	14
12	V <sub>CC</sub>	R/W	13

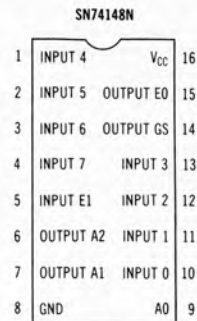
U3,U4



U10,U12,U30



U11,U19,U28,U37

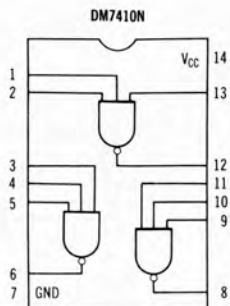


U13

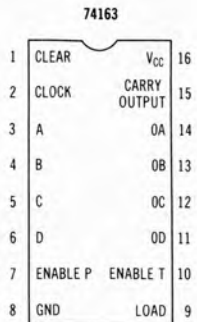
**7493N**

1	INPUT B	INPUT A	14
2	RO1	NC	13
3	RO2	QA	12
4	NC	QD	11
5	V <sub>CC</sub>	GND	10
6	NC	QB	9
7	NC	QC	8

U20,U21,U22

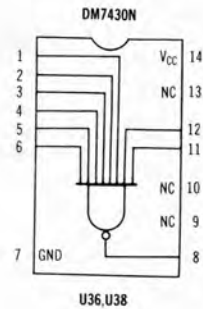
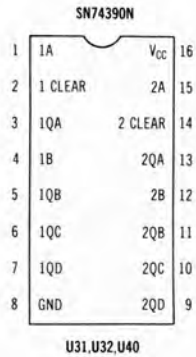
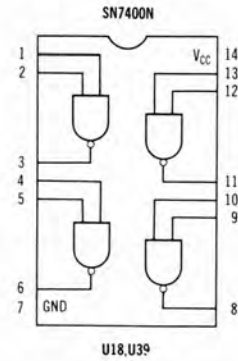
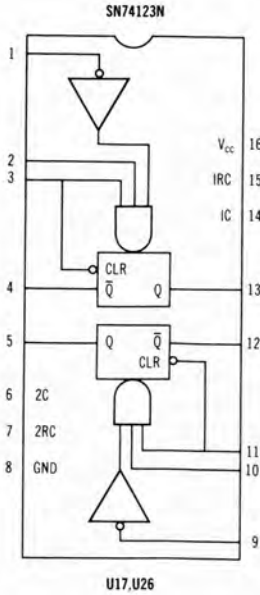
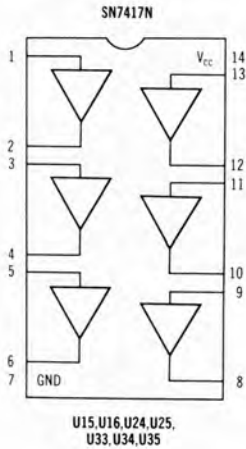
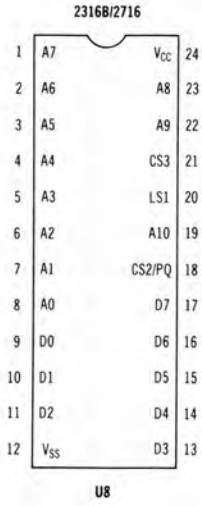


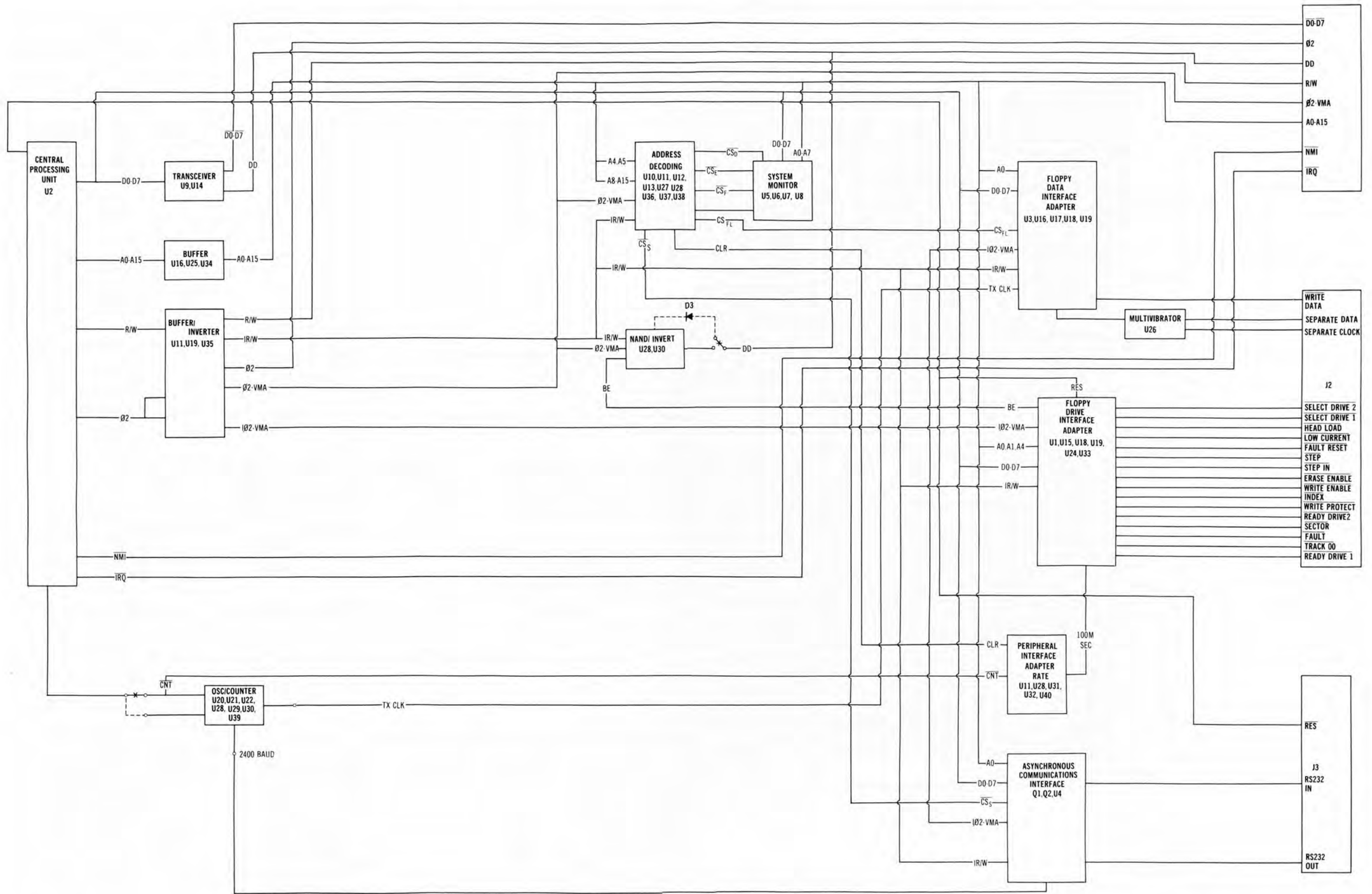
U27



U29

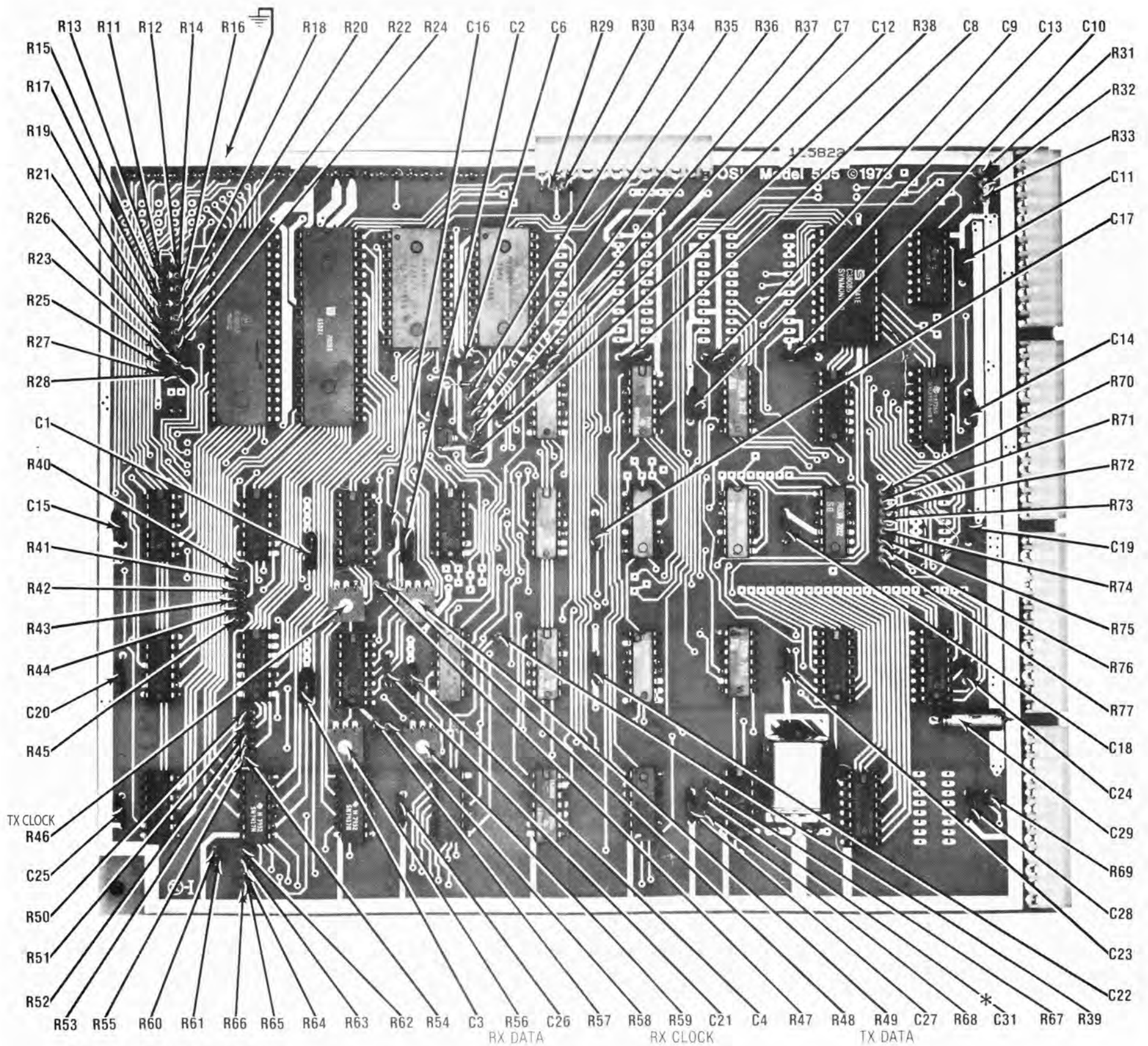
# 505 REV. A BOARD PINOUTS (CONTINUED)



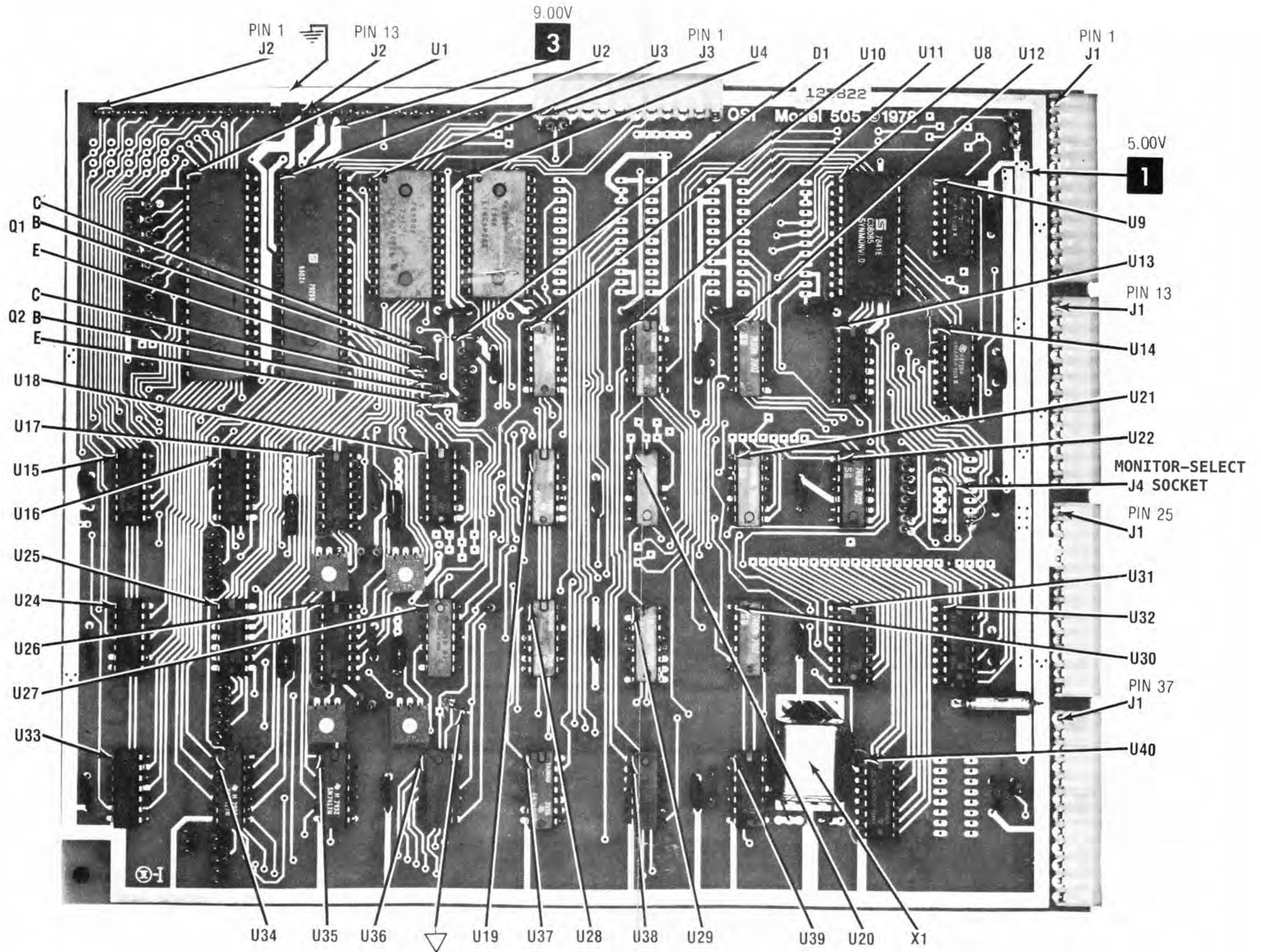


505 REV. A BOARD BLOCK

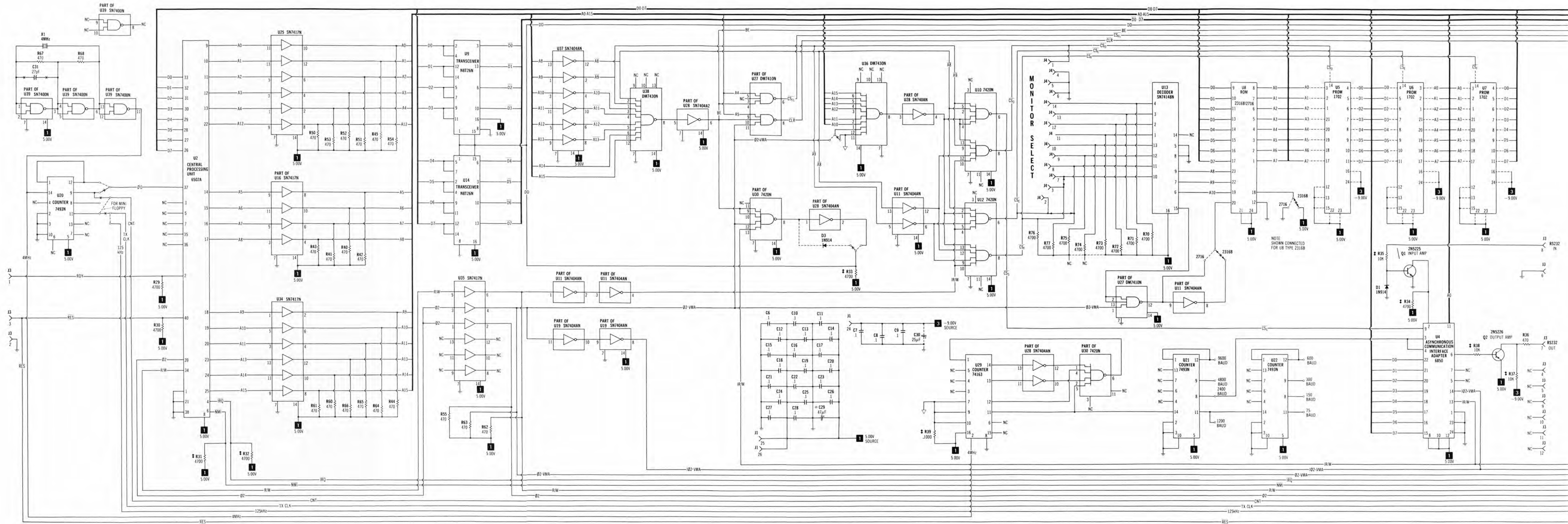
505 REV. A BOARD BLOCK



505 REV. A BOARD

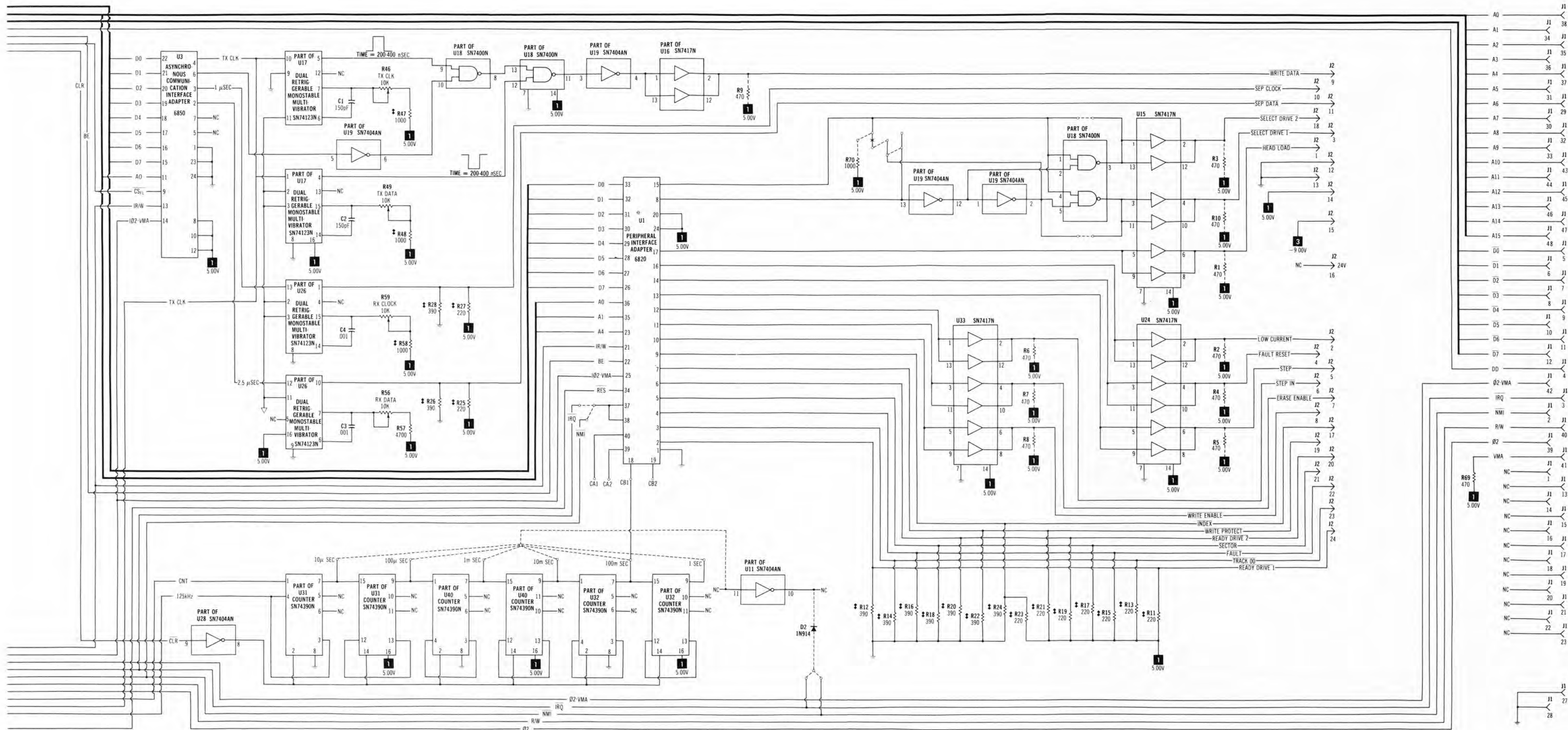






A PHOTOFAC STANDARD NOTATION SCHEMATIC  
 WITH **CircuitTrace**  
 © Howard W. Sams & Co., Inc. 1980

FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 177, 178 & REAR COVER.



# 510 REV. C BOARD PINOUTS

**S6821P**

1	GND	CA1	40
2	PA0	CA2	39
3	PA1	IRQ A	38
4	PA2	IRQ B	37
5	PA3	RS0	36
6	PA4	RS1	35
7	PA5	RESET	34
8	PA6	D0	33
9	PA7	D1	32
10	PB0	D2	31
11	PB1	D3	30
12	PB2	D4	29
13	PB3	D5	28
14	PB4	D6	27
15	PB5	D7	26
16	PB6	ENABLE	25
17	PB7	CS1	24
18	CB1	CS2	23
19	CB2	CS0	22
20	V <sub>CC</sub>	R/W	21

**U1**

**MC6850P**

1	GND	CTS	24
2	RXD	DCD	23
3	CRX	D0	22
4	CTX	D1	21
5	RTS	D2	20
6	TXD	D3	19
7	IRQ	D4	18
8	CS0	D5	17
9	CS2	D6	16
10	CS1	D7	15
11	RS	E	14
12	V <sub>CC</sub>	R/W	13

**U2**

**MCM68B10P**

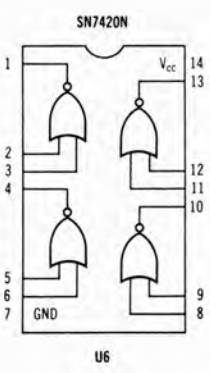
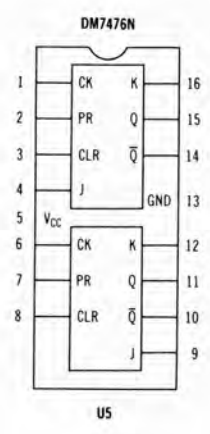
1	GND	V <sub>CC</sub>	24
2	D0	A0	23
3	D1	A1	22
4	D2	A2	21
5	D3	A3	20
6	D4	A4	19
7	D5	A5	18
8	D6	A6	17
9	D7	R/W	16
10	CS0	CS5	15
11	CS1	CS4	14
12	CS2	CS3	13

**U3**

**2716/2316B**

1	A7	V <sub>CC</sub>	24
2	A6	A8	23
3	A5	A9	22
4	A4	CS3	21
5	A3	LS1	20
6	A2	A10	19
7	A1	CS2/PQ	18
8	A0	D7	17
9	D0	D6	16
10	D1	D5	15
11	D2	D4	14
12	V <sub>SS</sub>	D3	13

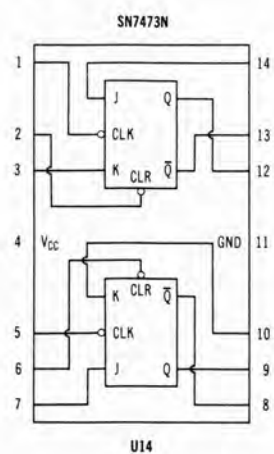
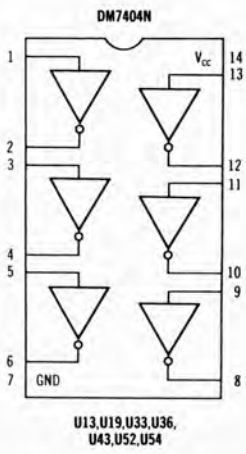
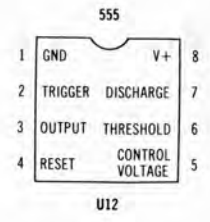
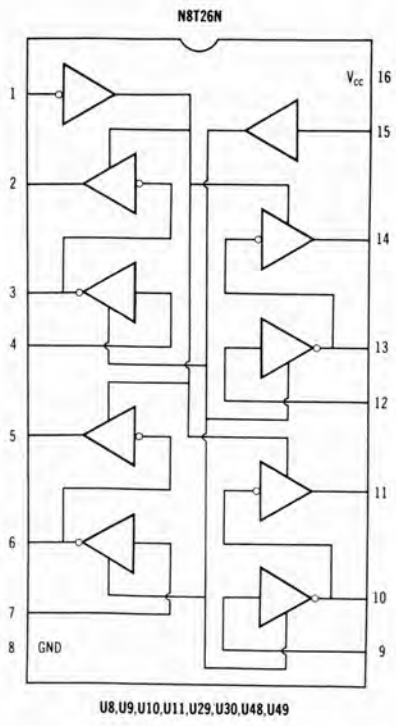
**U4,U46**



**MC68B00L**

1	V <sub>SS</sub>	RES	40
2	HALT	7SC	39
3	O1 (IN)	O2 (IN)	38
4	IRQ		37
5	VMA	DBE	36
6	NMI		35
7	BA	R/W	34
8	V <sub>CC</sub>	D0	33
9	A0	D1	32
10	A1	D2	31
11	A2	D3	30
12	A3	D4	29
13	A4	D5	28
14	A5	D6	27
15	A6	D7	26
16	A7	A15	25
17	A8	A14	24
18	A9	A13	23
19	A10	A12	22
20	A11	V <sub>SS</sub>	21

**U7**



**MC8T95P**

1	ENABLE 1	V <sub>CC</sub>	16
2	INPUT A	ENABLE 2	15
3	OUTPUT A	INPUT F	14
4	INPUT B	OUTPUT F	13
5	OUTPUT B	INPUT E	12
6	INPUT C	OUTPUT E	11
7	OUTPUT C	INPUT D	10
8	GND	OUTPUT D	9

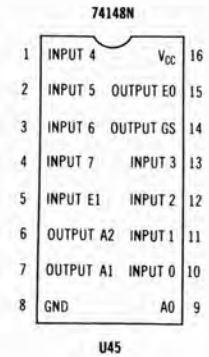
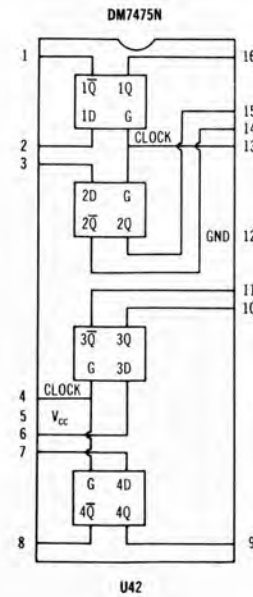
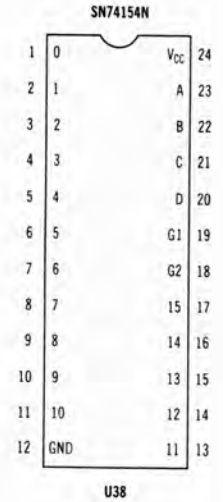
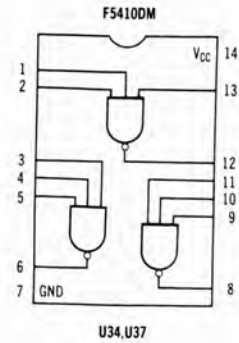
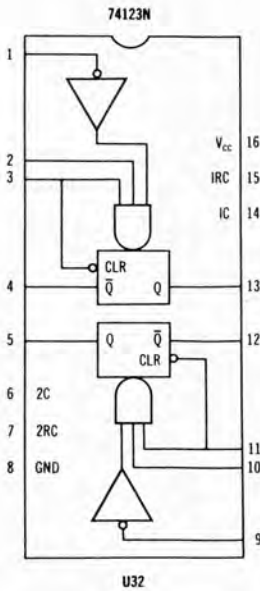
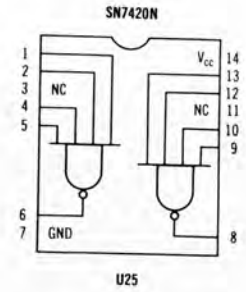
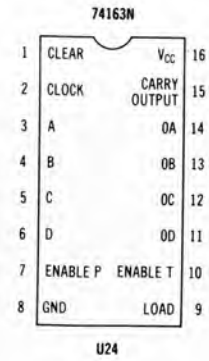
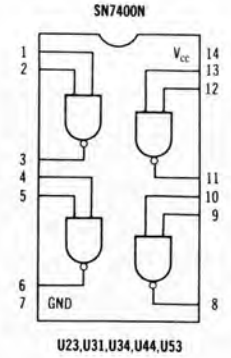
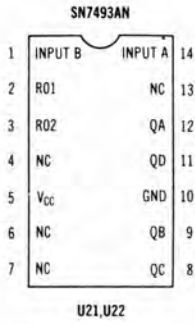
**U15,U17,U18,U20,U26,U27,U39,U40,U55,U56,U57,U58**

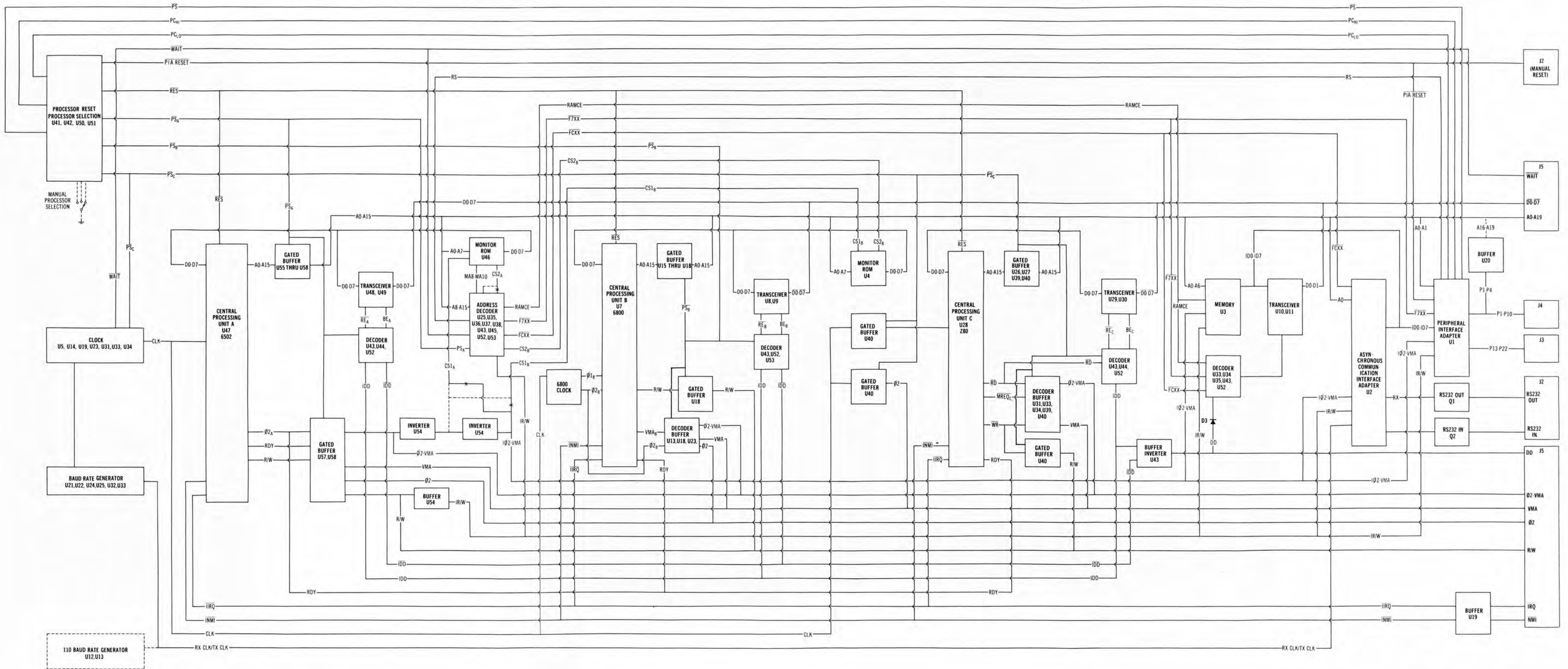
**N8T95N**

1	ENABLE 1	V <sub>CC</sub>	16
2	INPUT A	ENABLE 2	15
3	OUTPUT A	INPUT F	14
4	INPUT B	OUTPUT F	13
5	OUTPUT B	INPUT E	12
6	INPUT C	OUTPUT E	11
7	OUTPUT C	INPUT D	10
8	GND	OUTPUT D	9

**U16**

# 510 REV. C BOARD PINOUTS (CONTINUED)





510 REV. C BOARD BLOCK

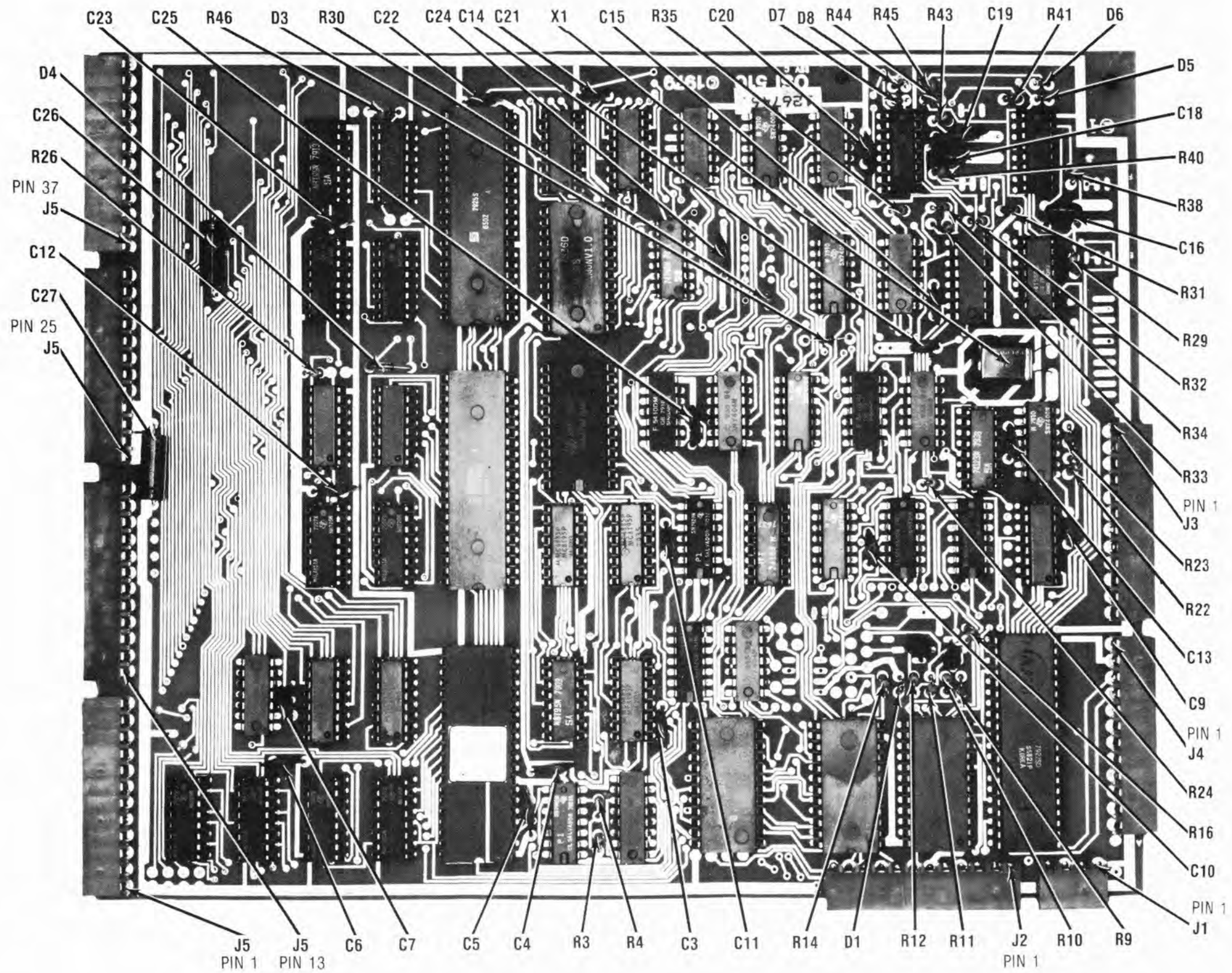
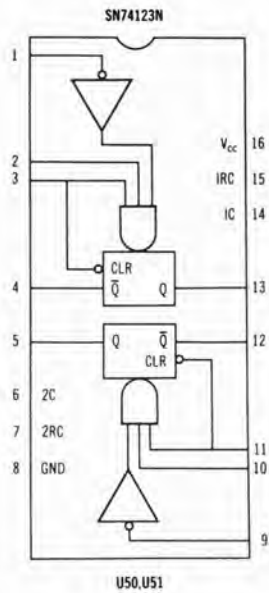
510 REV. C BOARD BLOCK

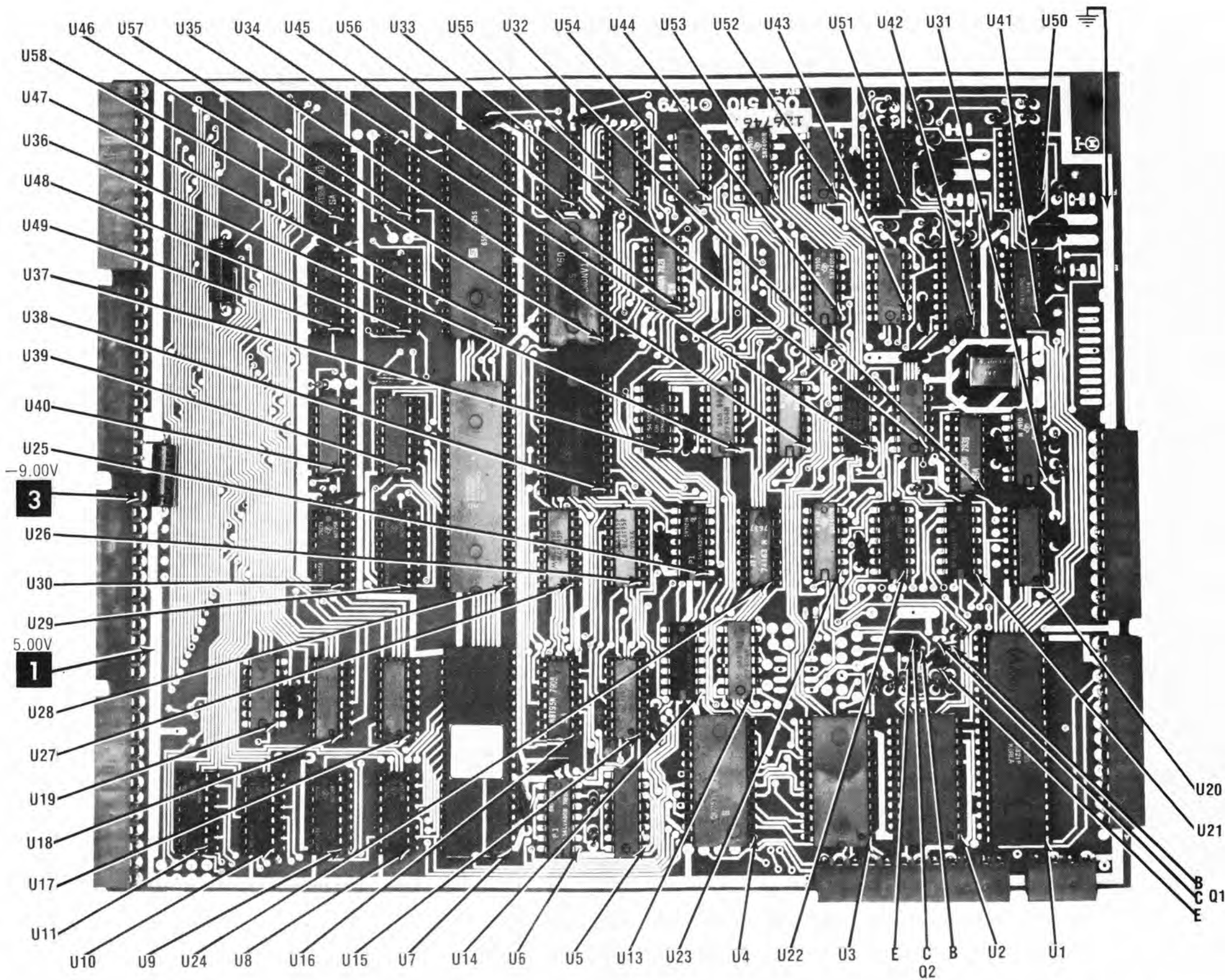
510 REV. C BOARD  
PINOUTS (CONTINUED)

6502

1	VSS	RES	40
2	RDY	Ø2 (OUT)	39
3	Ø1 (OUT)	S.O.	38
4	IRQ	Ø0(IN)	37
5	N.C.	N.C.	36
6	NMI	N.C.	35
7	SYNC	R/W	34
8	VCC	DB0	33
9	AB0	DB1	32
10	AB1	DB2	31
11	AB2	DB3	30
12	AB3	DB4	29
13	AB4	DB5	28
14	AB5	DB6	27
15	AB6	DB7	26
16	AB7	AB15	25
17	AB8	AB14	24
18	AB9	AB13	23
19	AB10	AB12	22
20	AB11	VSS	21

U47

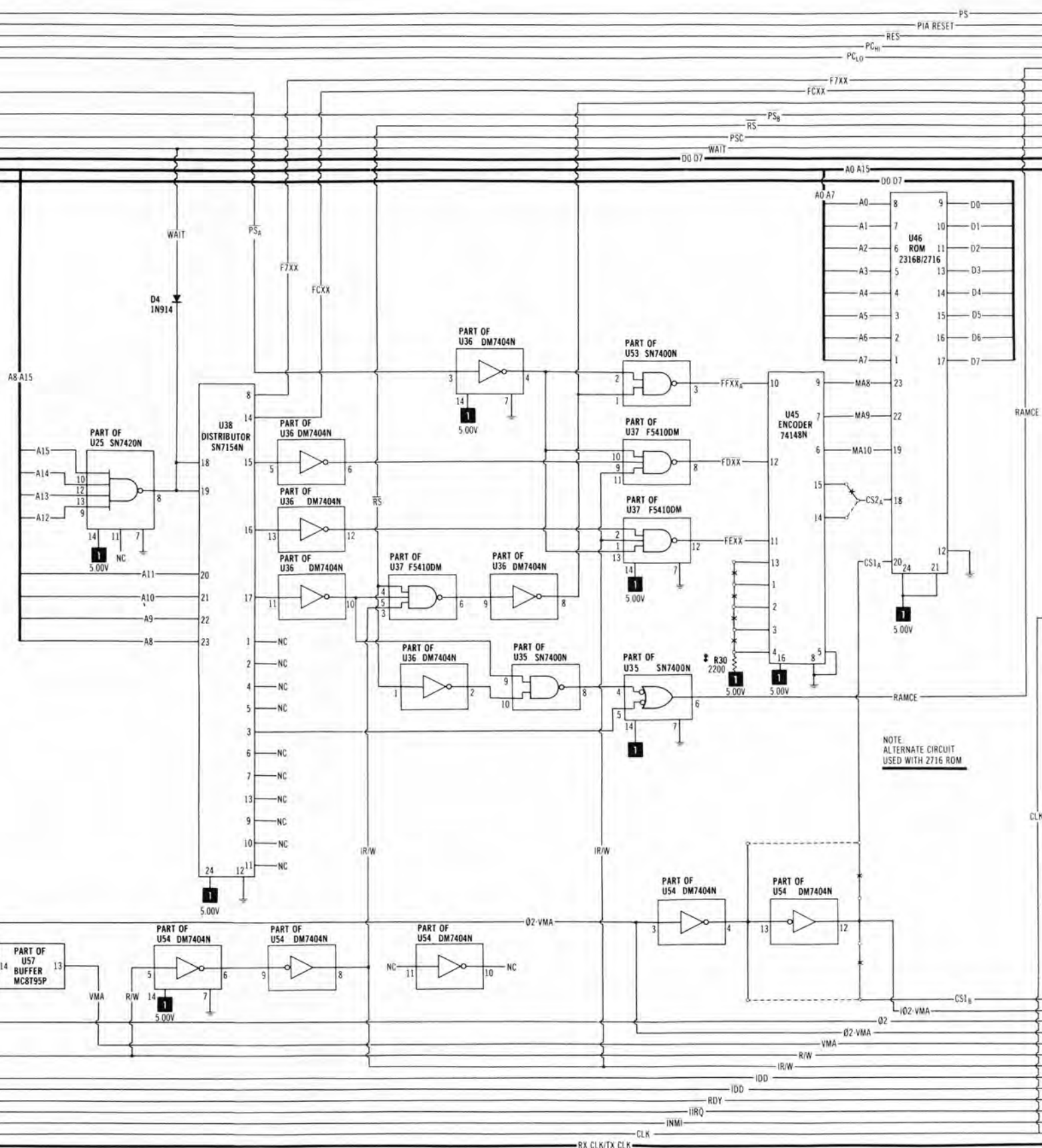
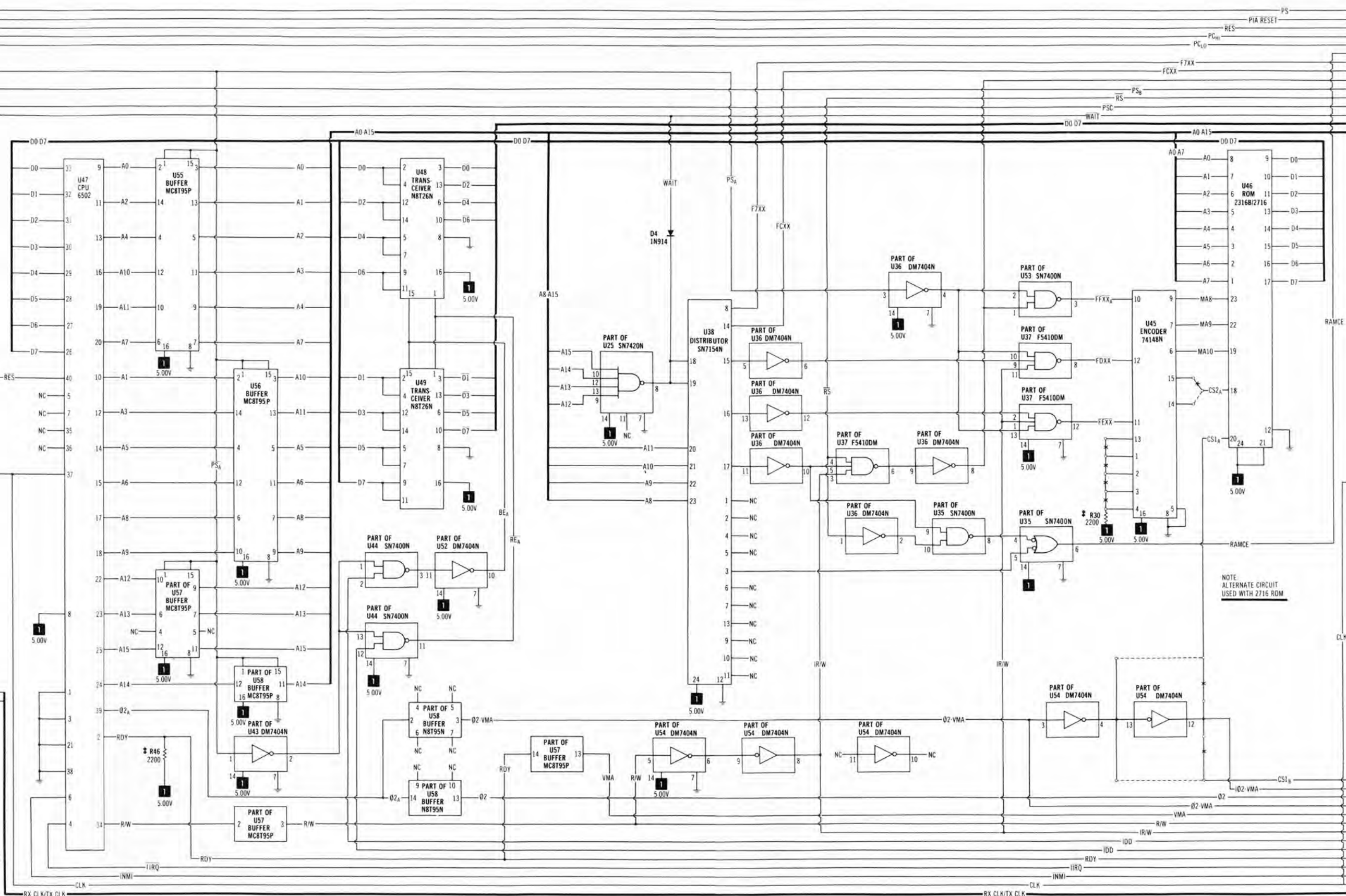
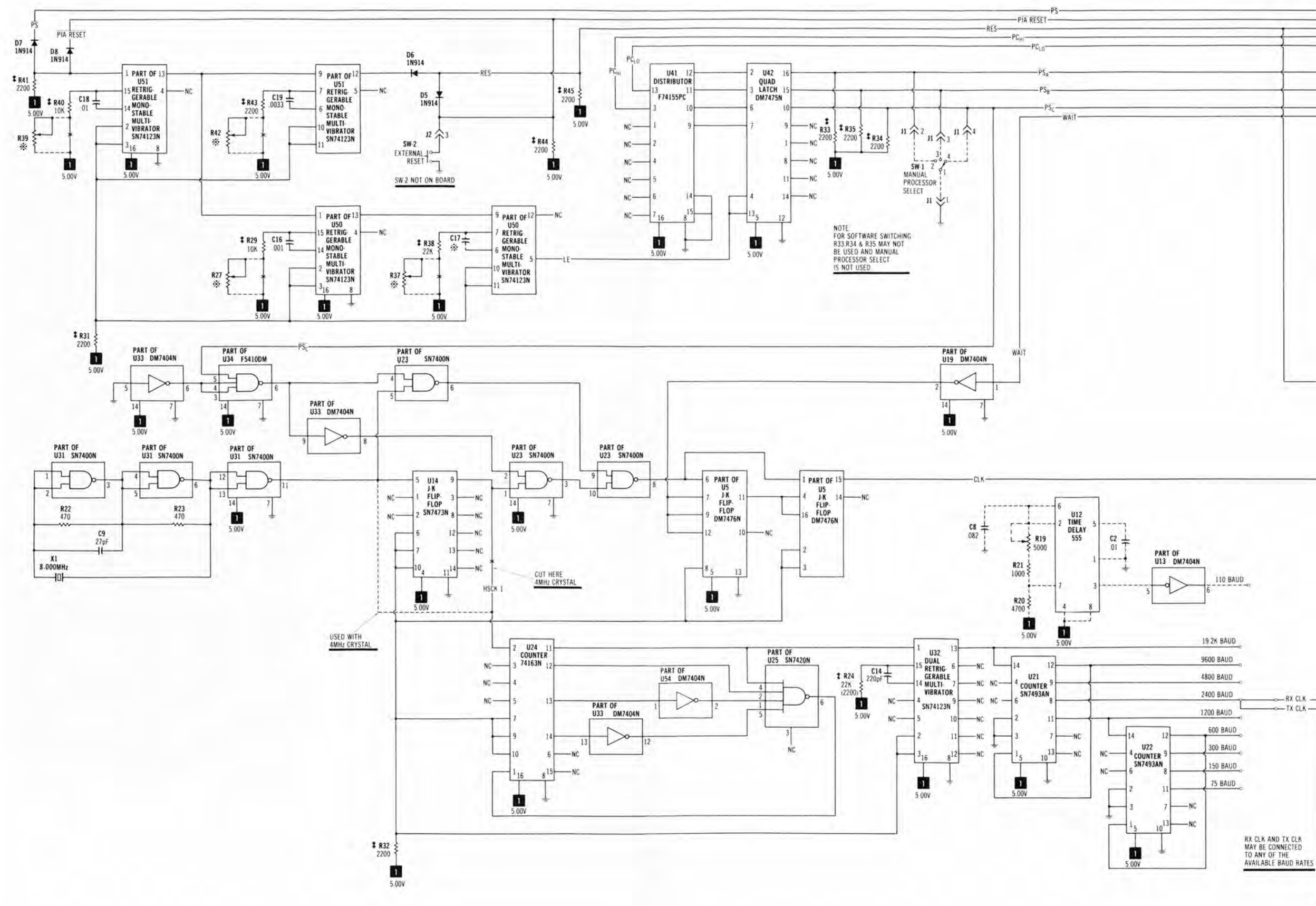




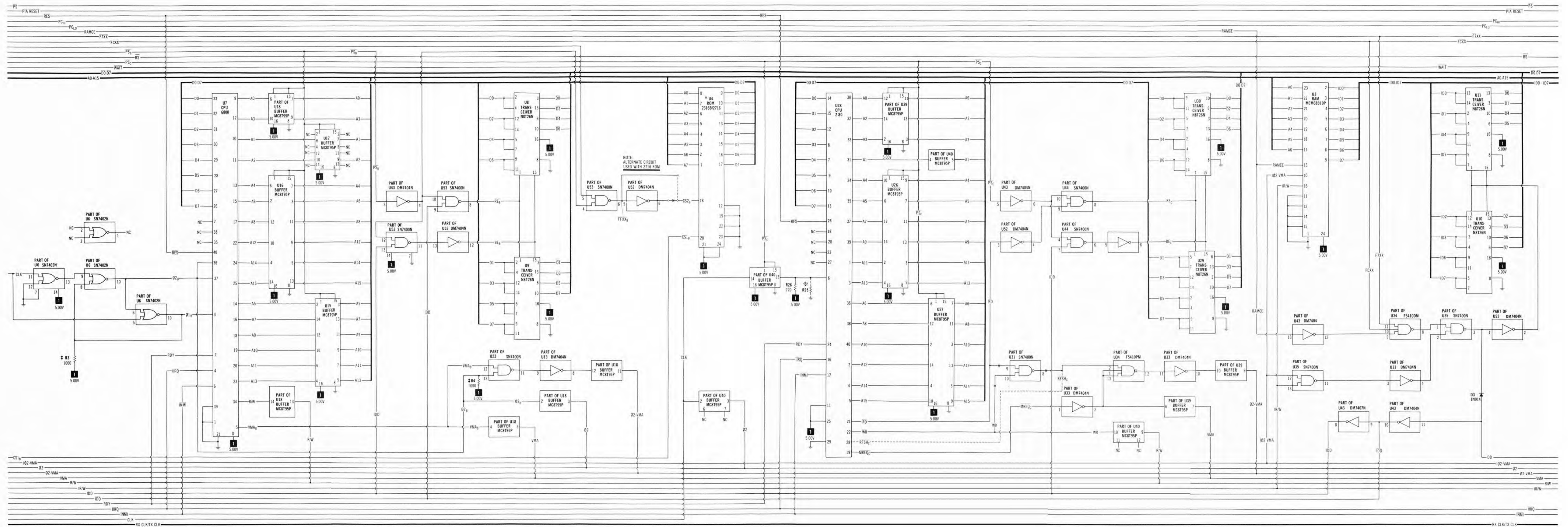
510 REV. C BOARD

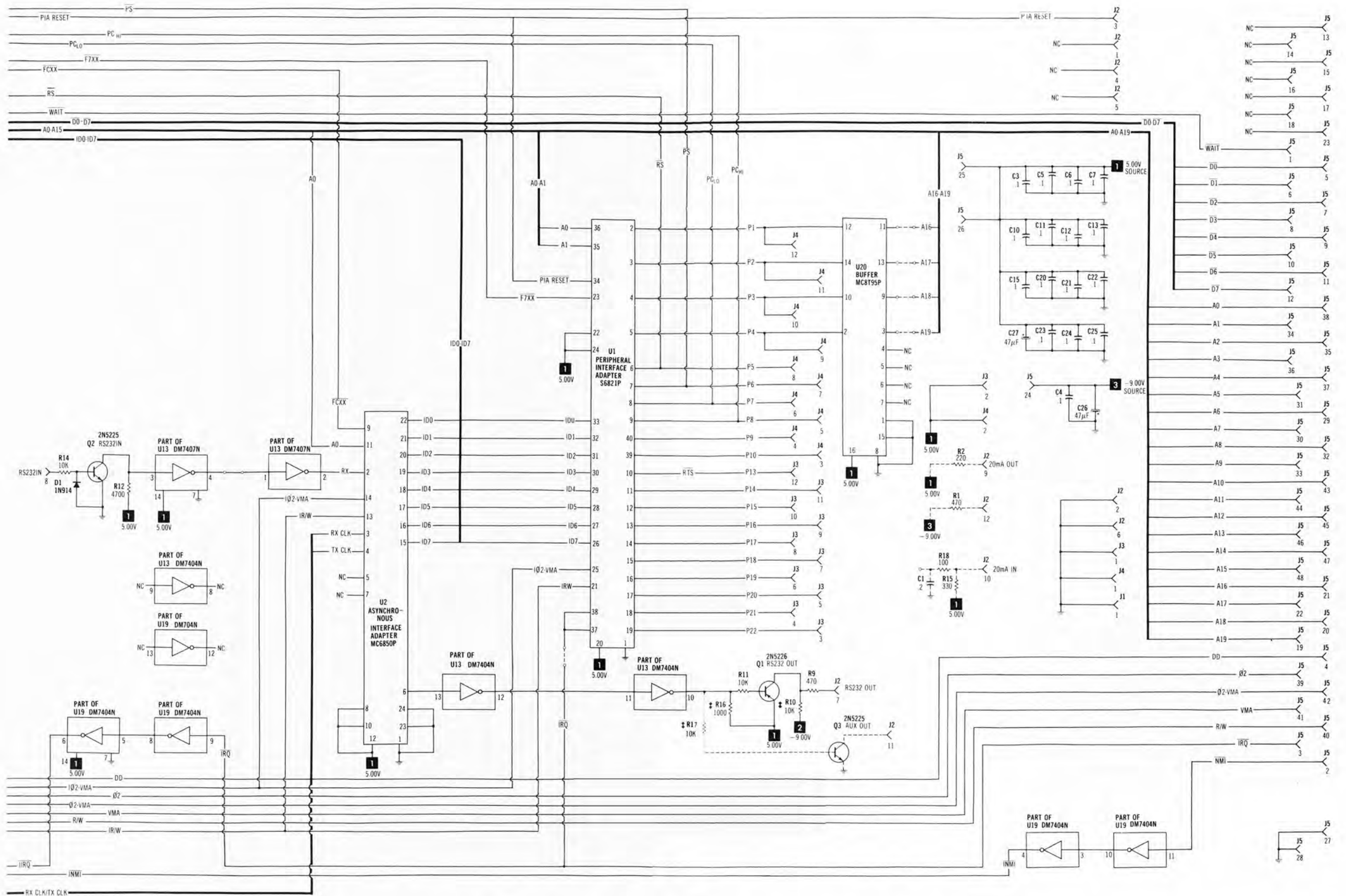
A Howard W. Sams **CIRCUITRACE** Photo

510 REV. C BOARD



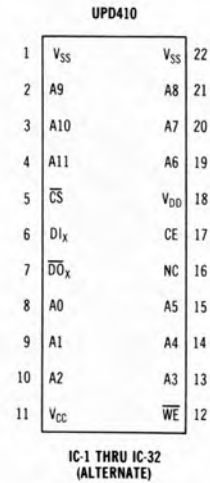
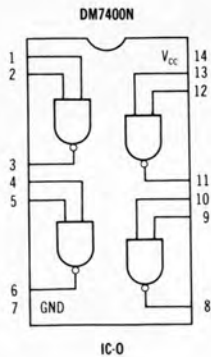
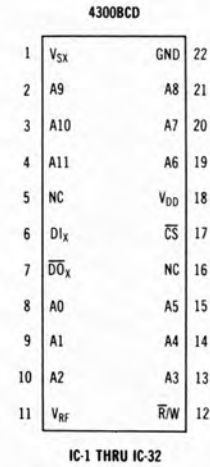
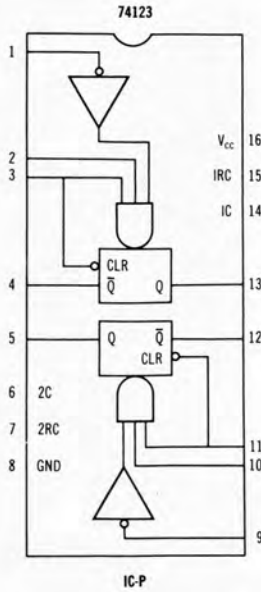
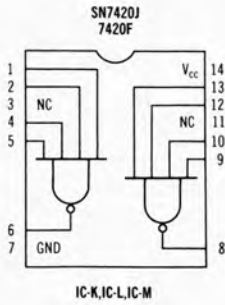
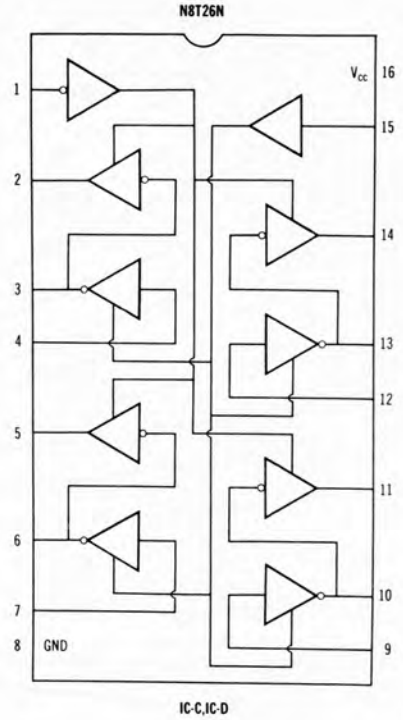
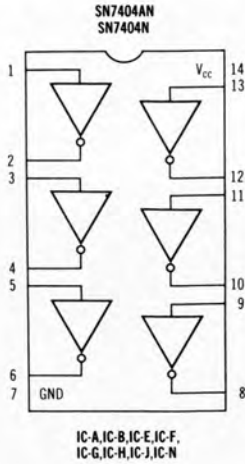
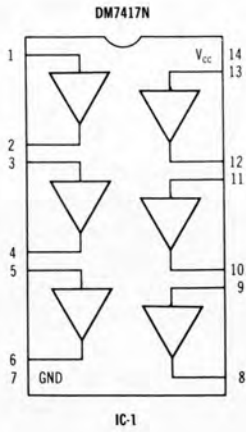


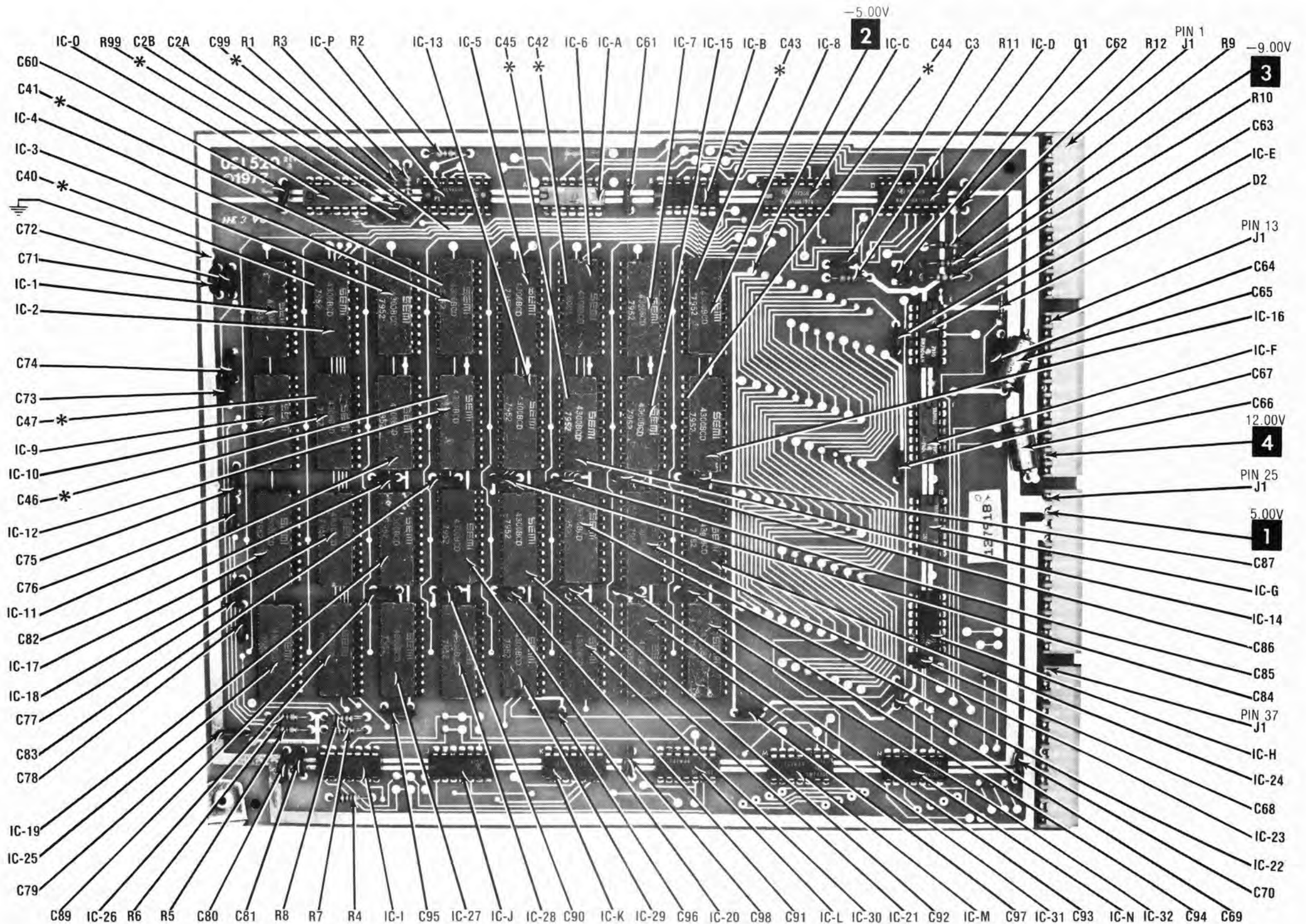




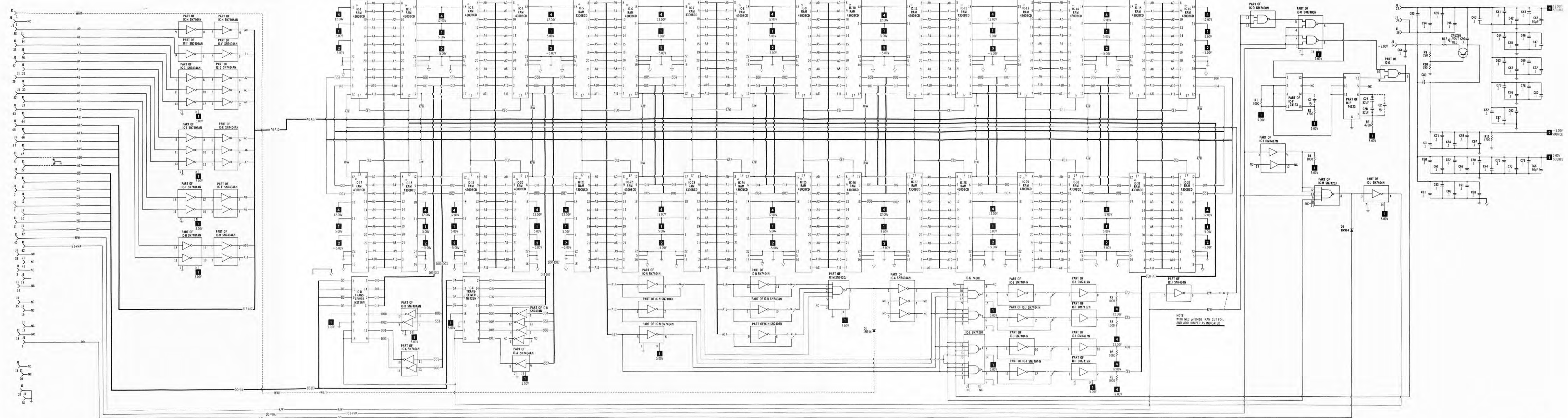
FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 178,179 & REAR COVER.

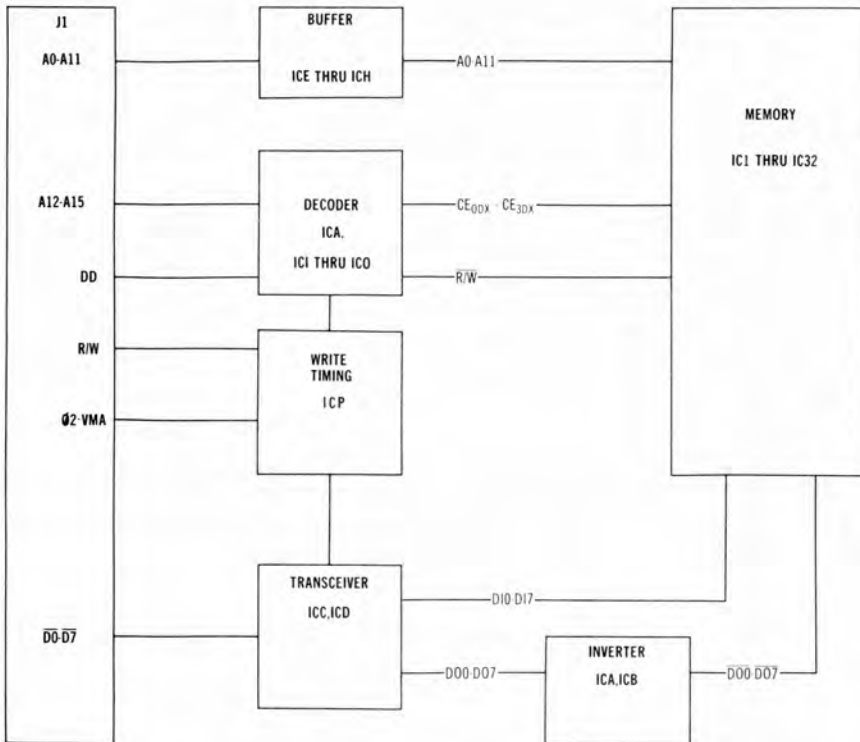
# 520 REV. B BOARD PINOUTS



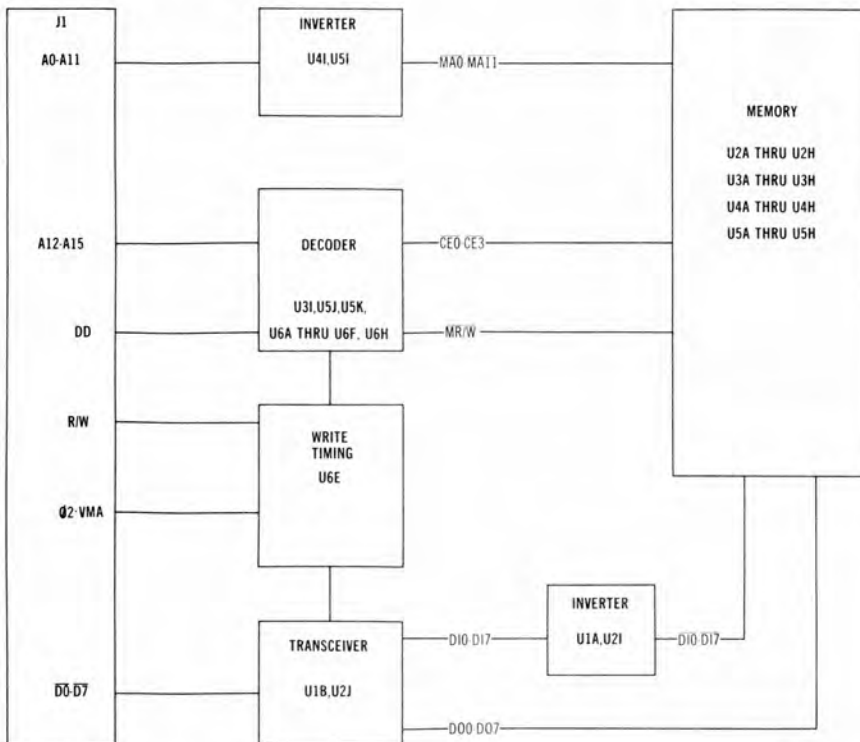


\* LOCATED ON OTHER SIDE OF BOARD



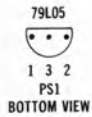
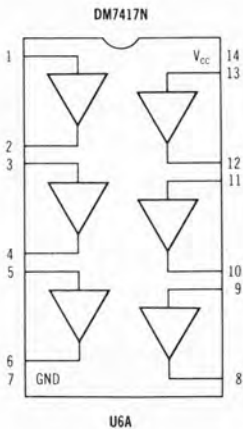
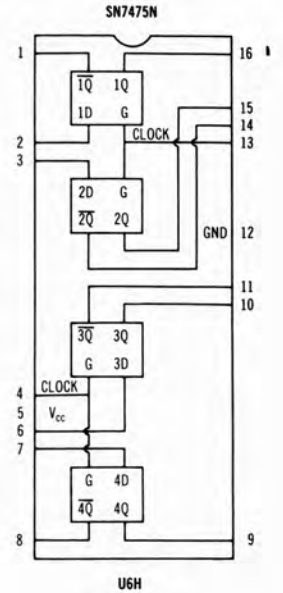
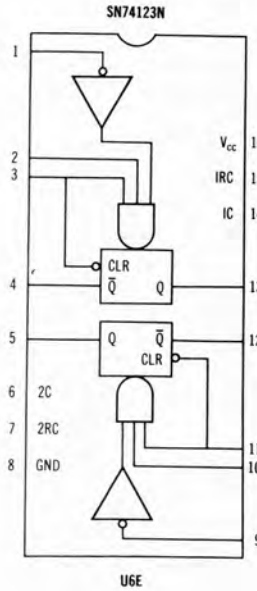
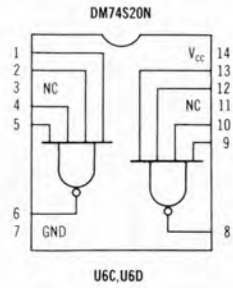
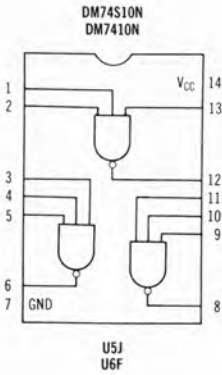
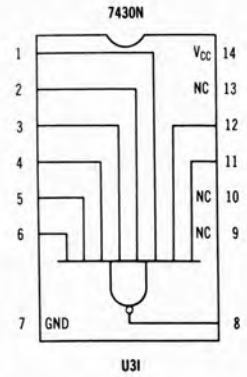
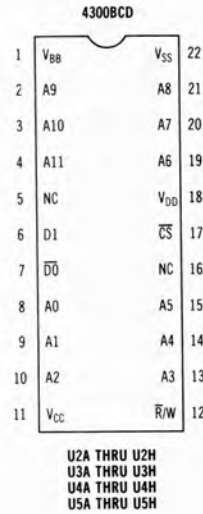
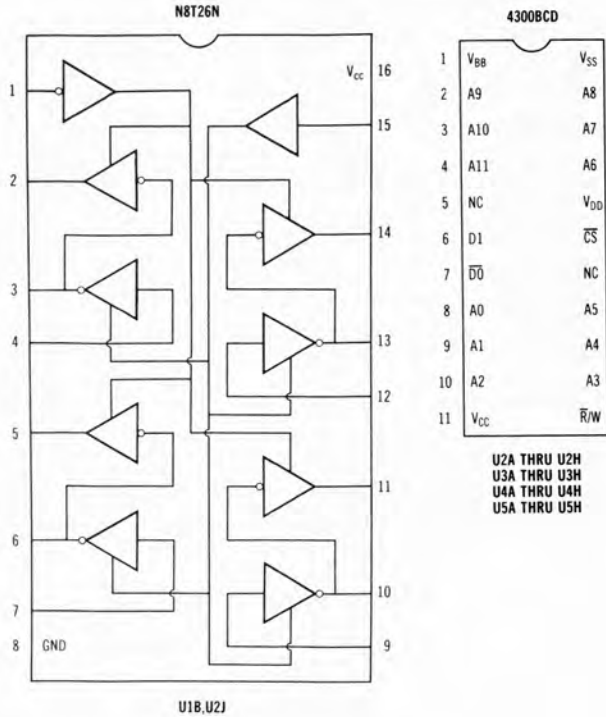
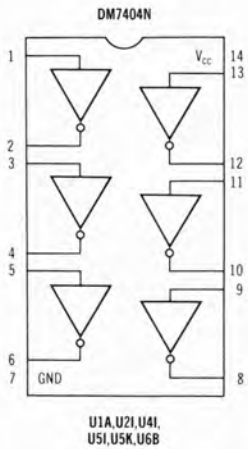


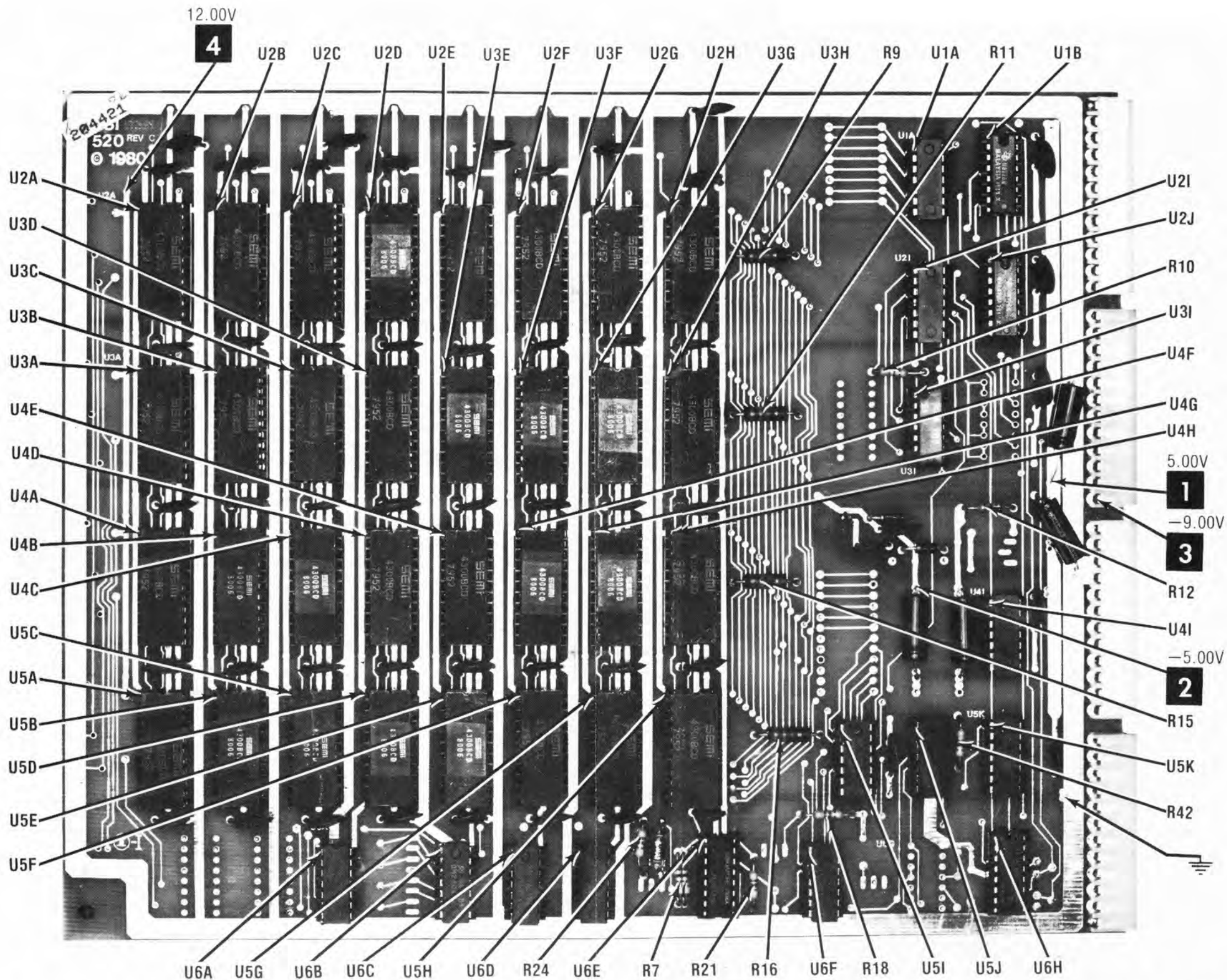
**520 REV. B BOARD BLOCK**



**520 REV. C BOARD BLOCK**

# 520 REV. C BOARD PINOUTS

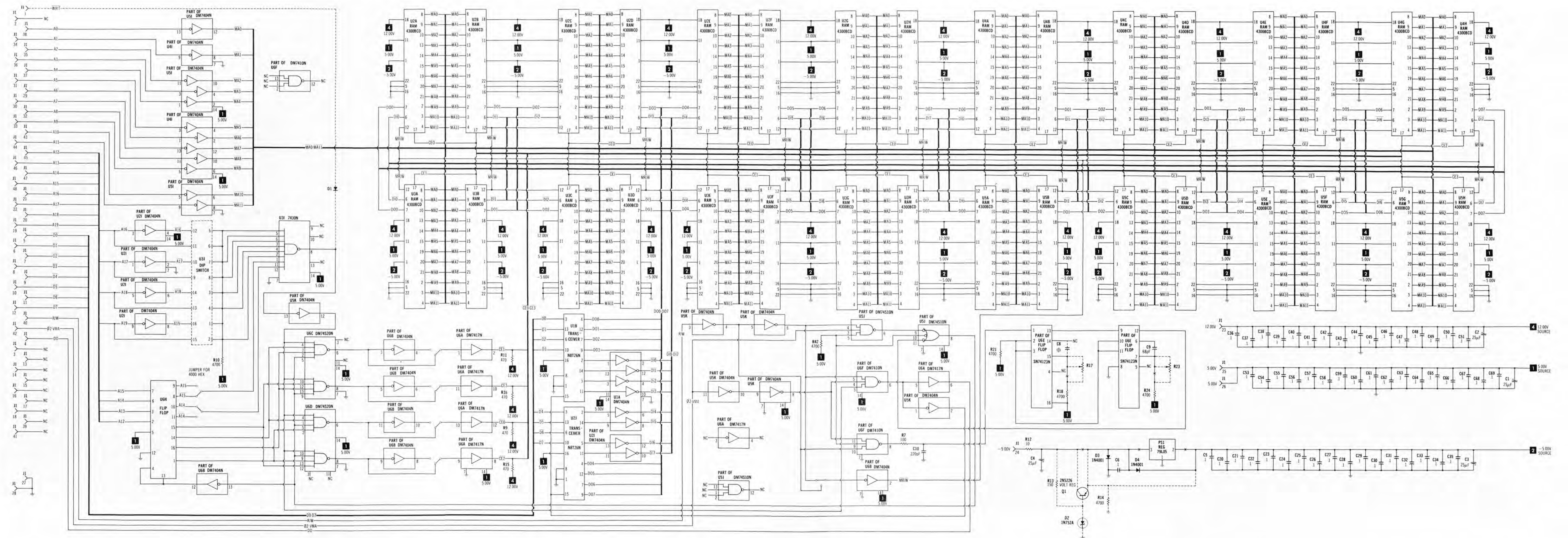


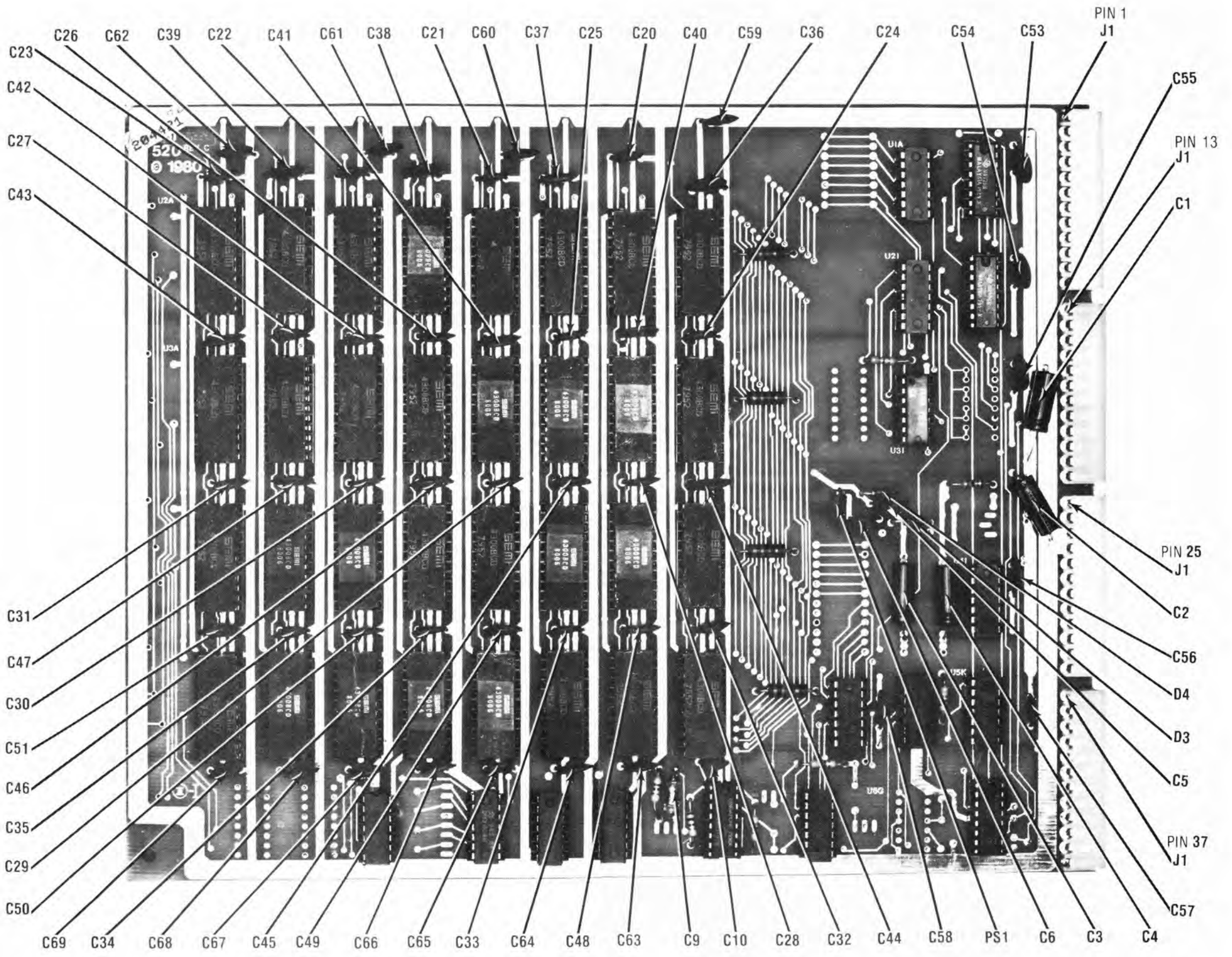


520 REV. C BOARD

520 REV. C BOARD

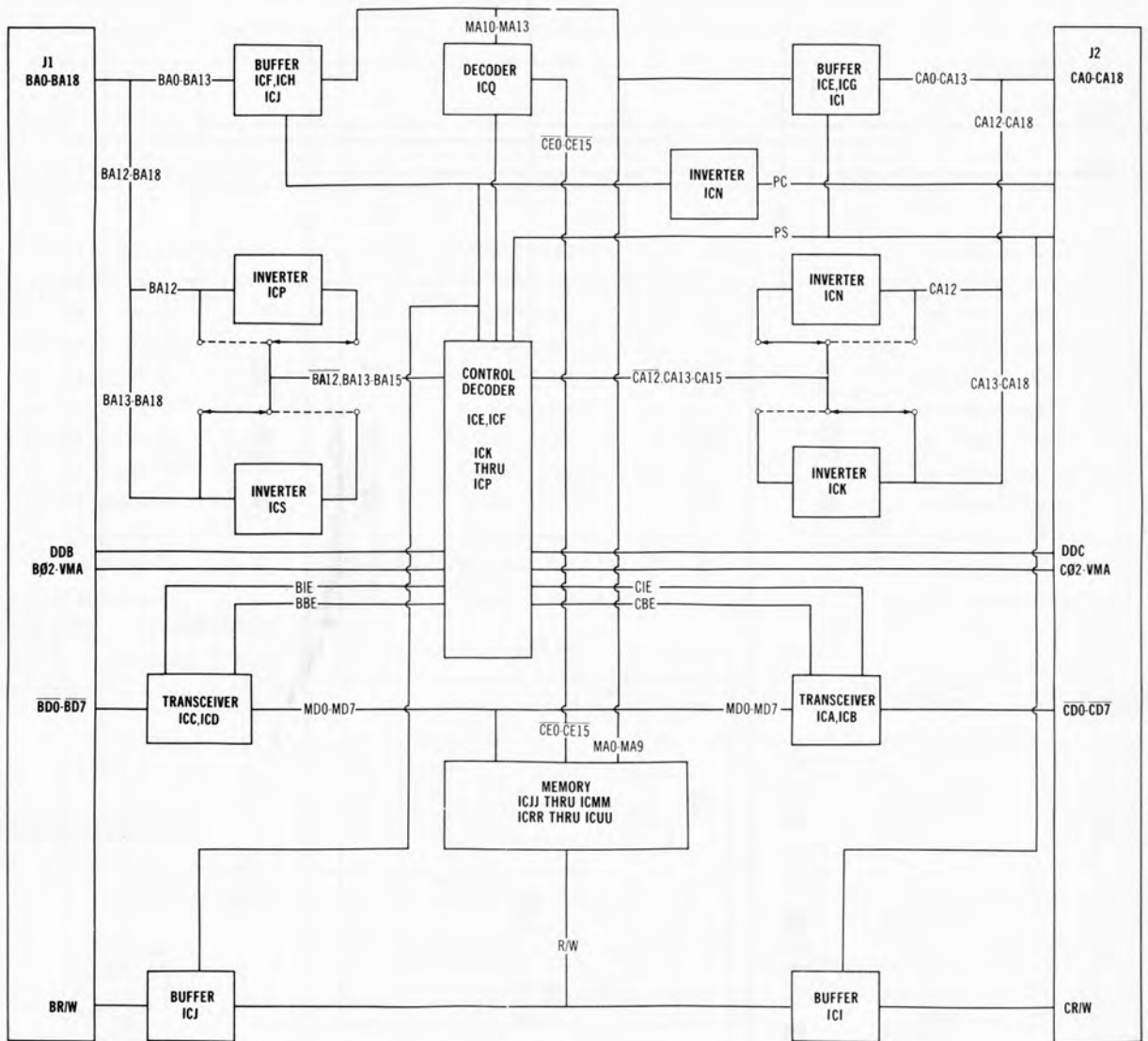


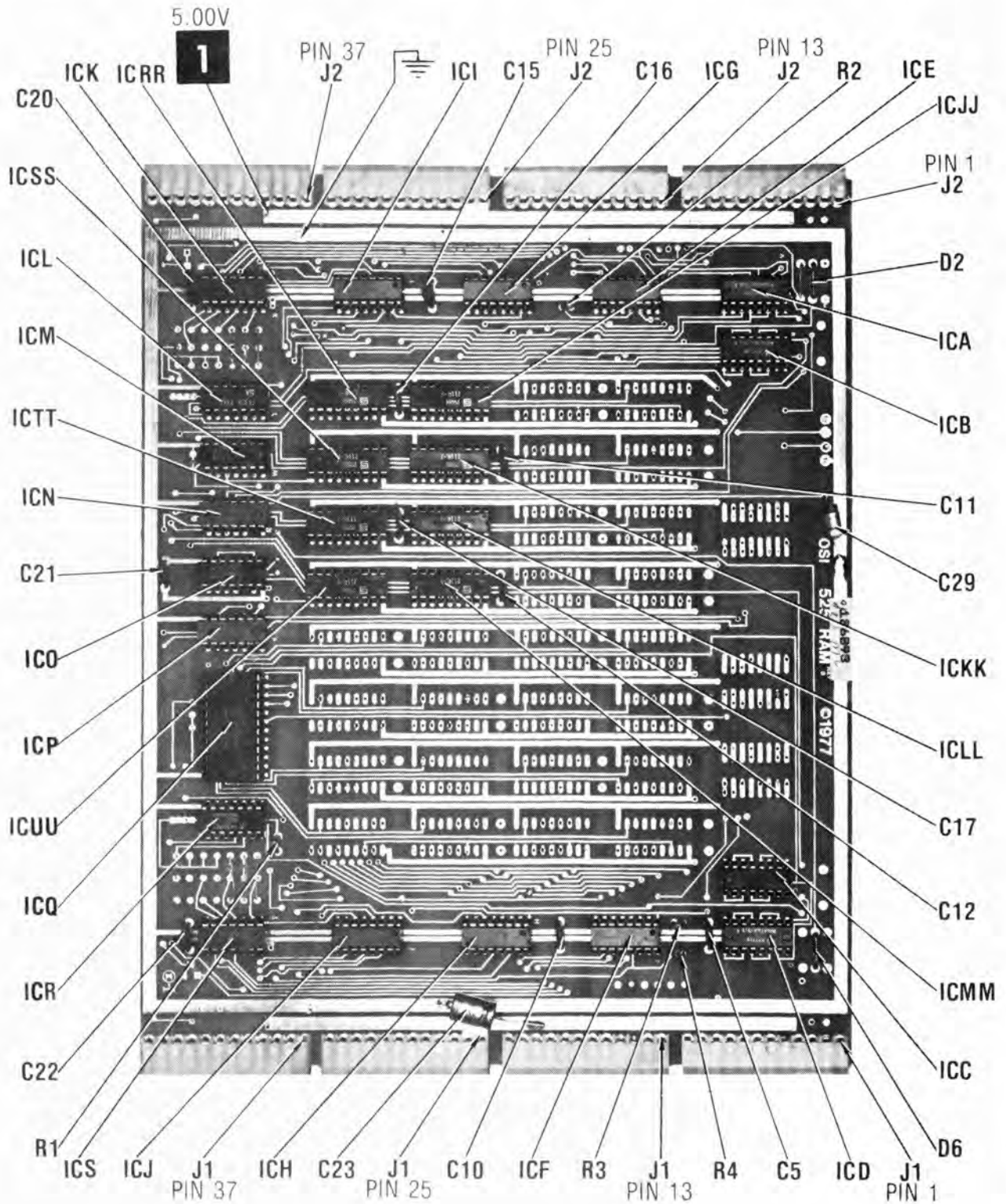




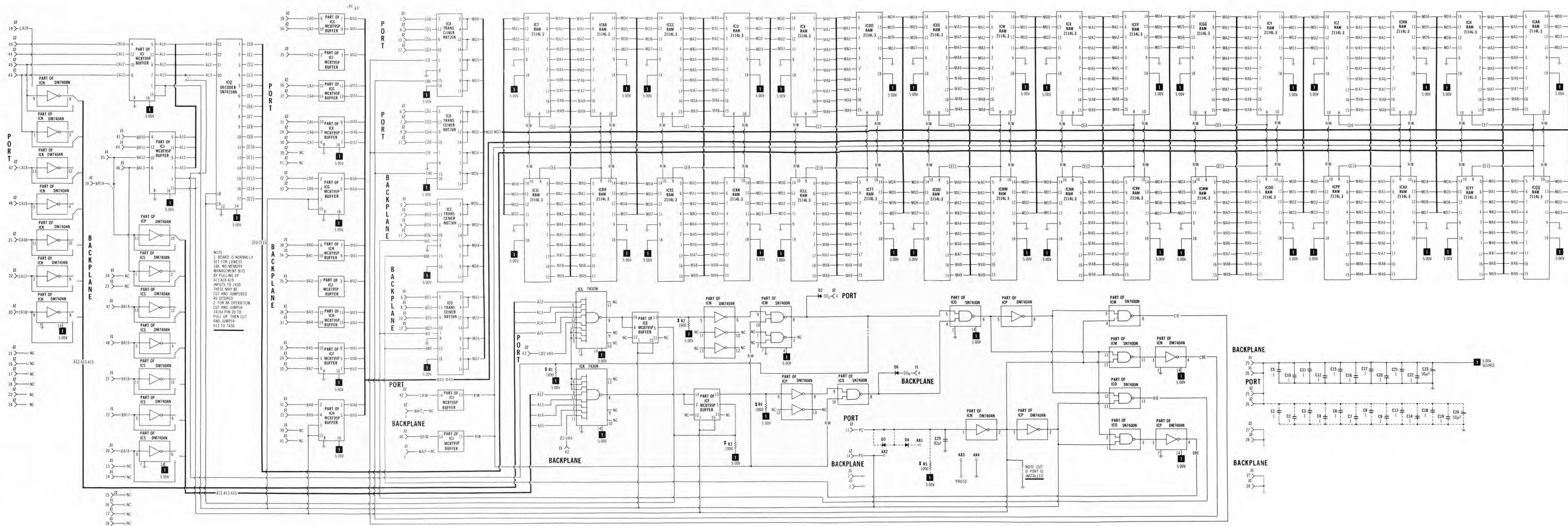
520 REV. C BOARD

520 REV. C BOARD





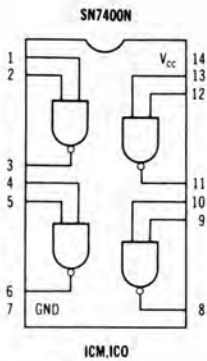
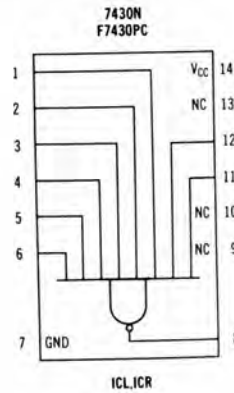
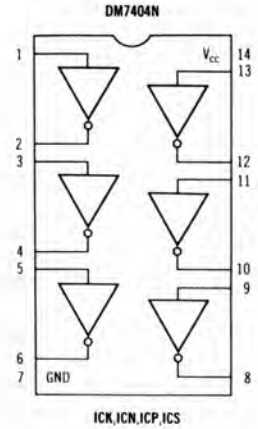
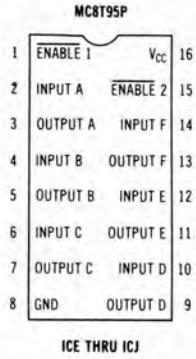
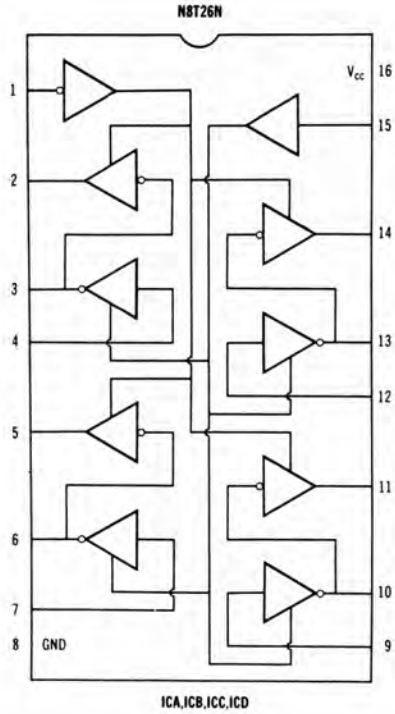
525 BOARD A Howard W. Sams **CIRCUITRACE** Photo

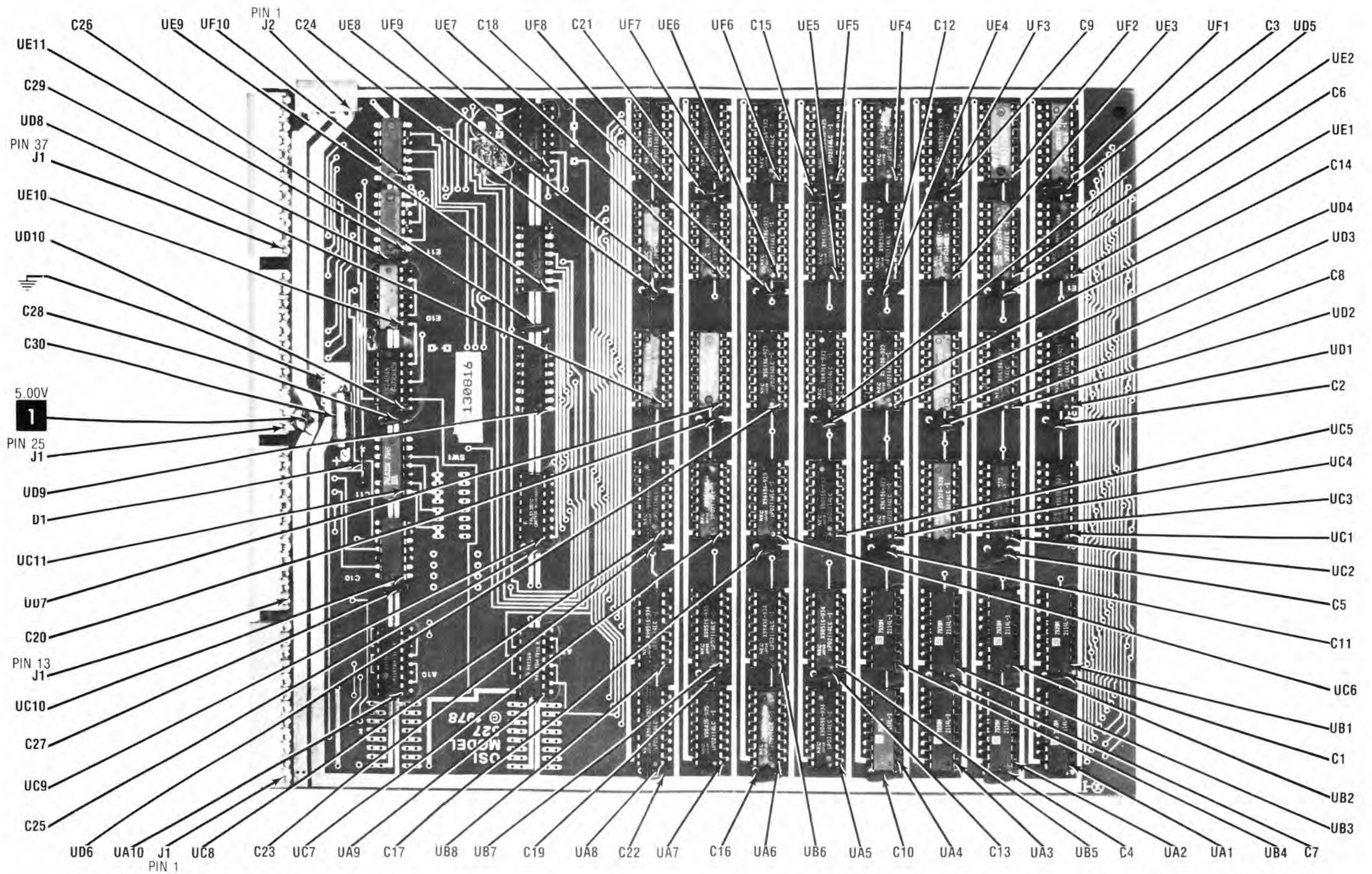


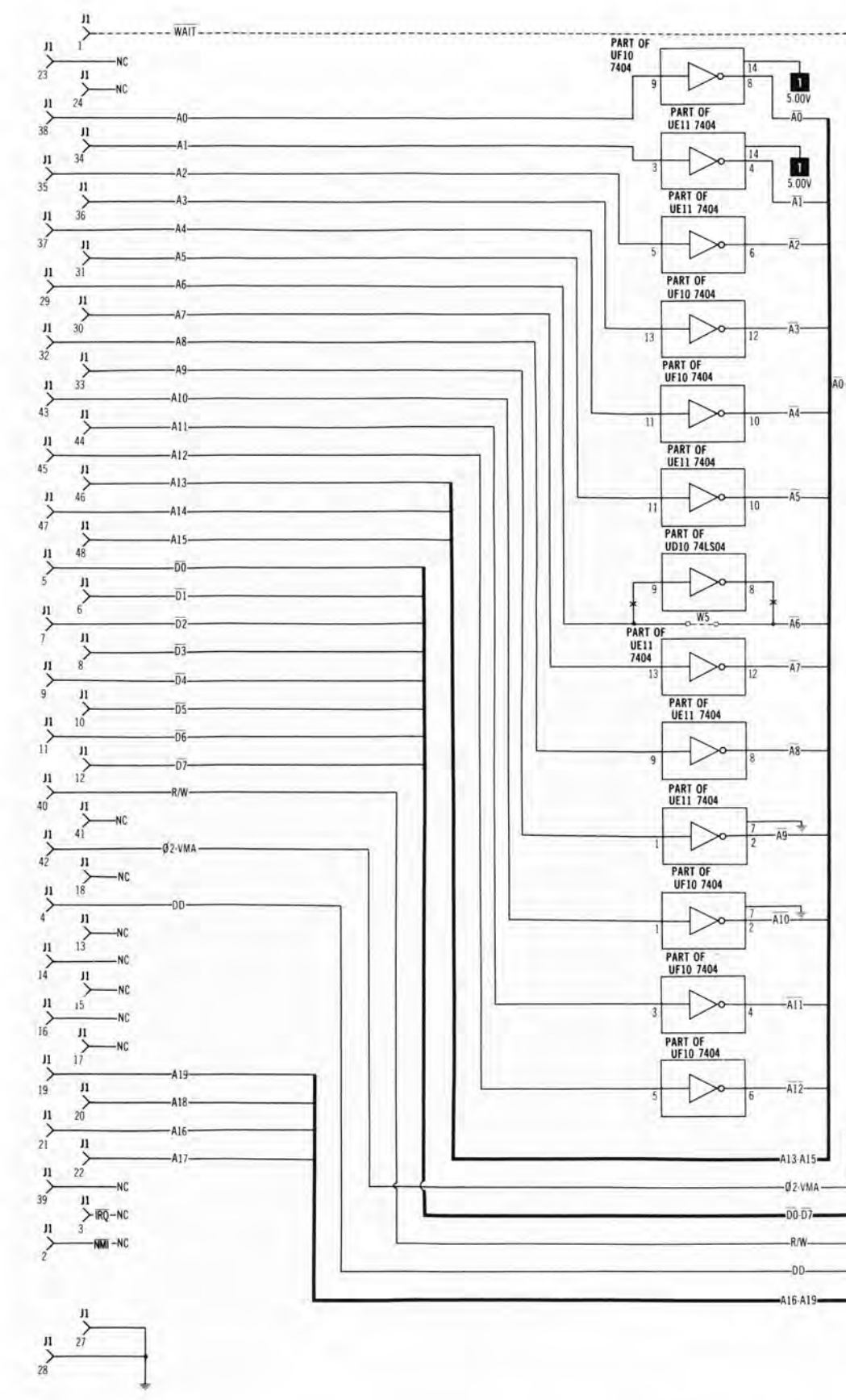
NOTE: BOARD IS NORMALLY SET FOR LOWEST 16K MEMORY MANAGEMENT BITS BY PULLING UP A13, A16, A19 INPUTS TO 7430. THESE MAY BE CUT AND JUMPED AS DESIRED. 2. FOR OPERATION CUT AND JUMPER 74154 PIN 20 TO PULL UP THEN CUT AND JUMPER A13 TO 7430.

NOTE CUT IF PORT IS INSTALLED

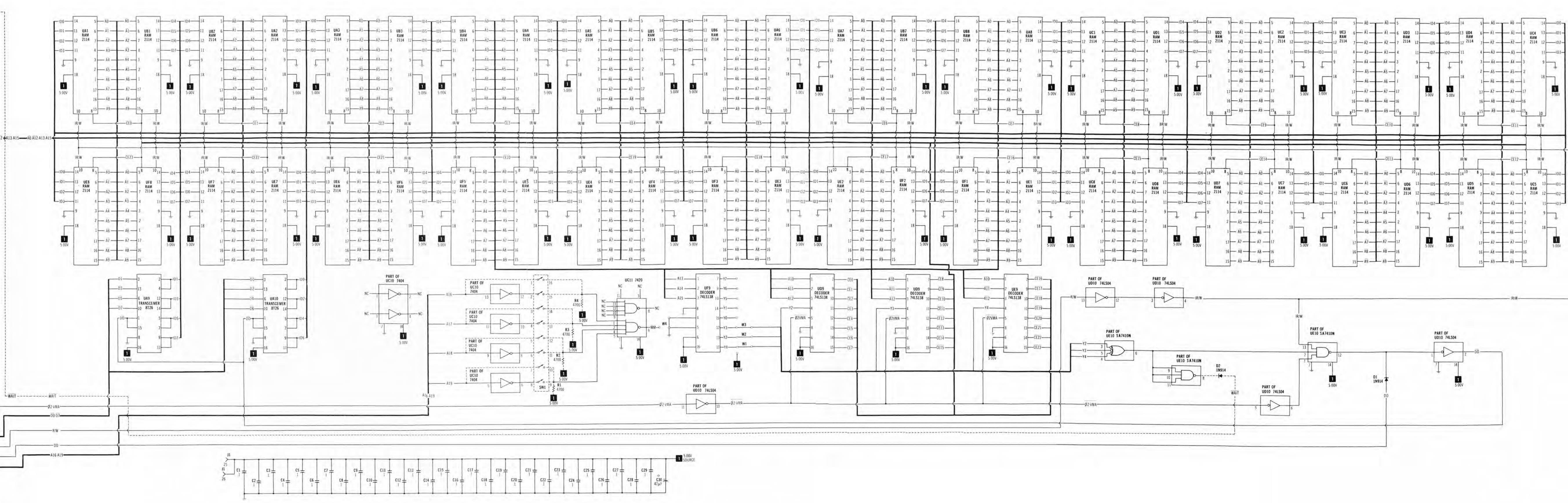
# 525 BOARD PINOUTS



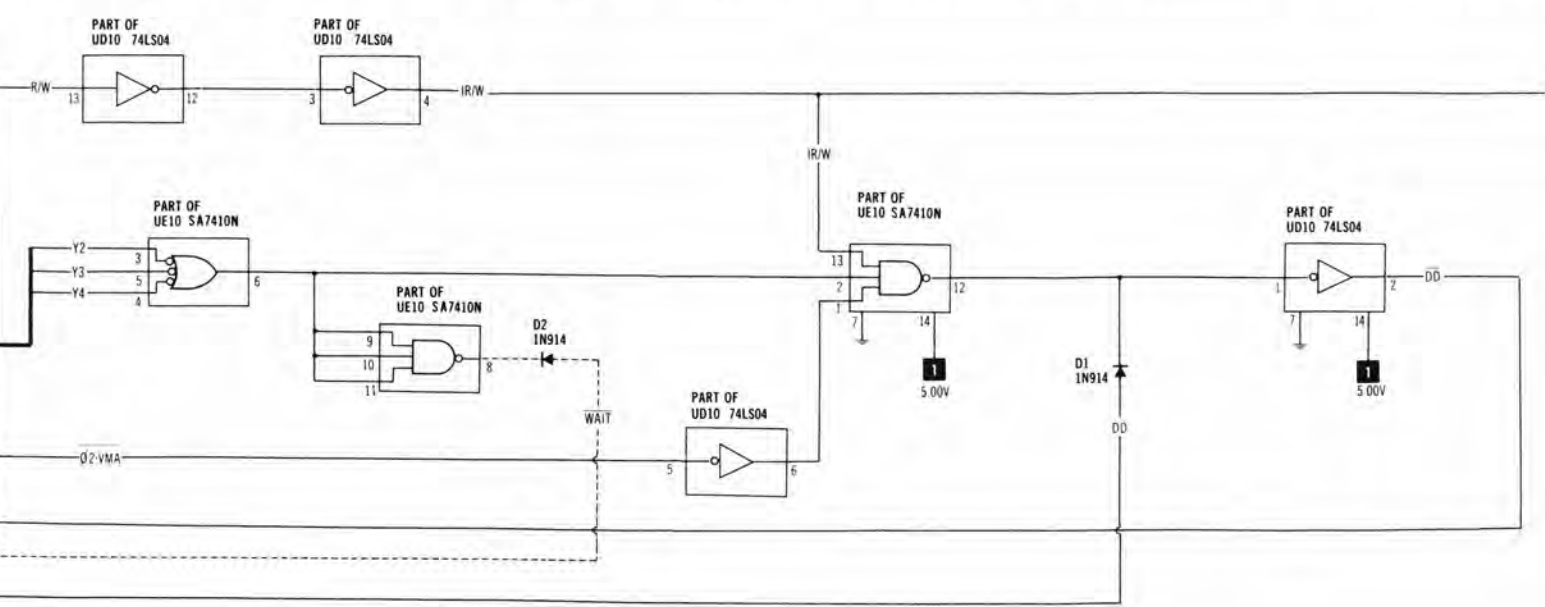




FOR SCHEMATIC LEGEND AND NOTES  
SEE PAGES 179, 180 & REAR COVER.

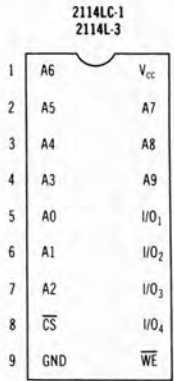


FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 179, 180 & REAR COVER.

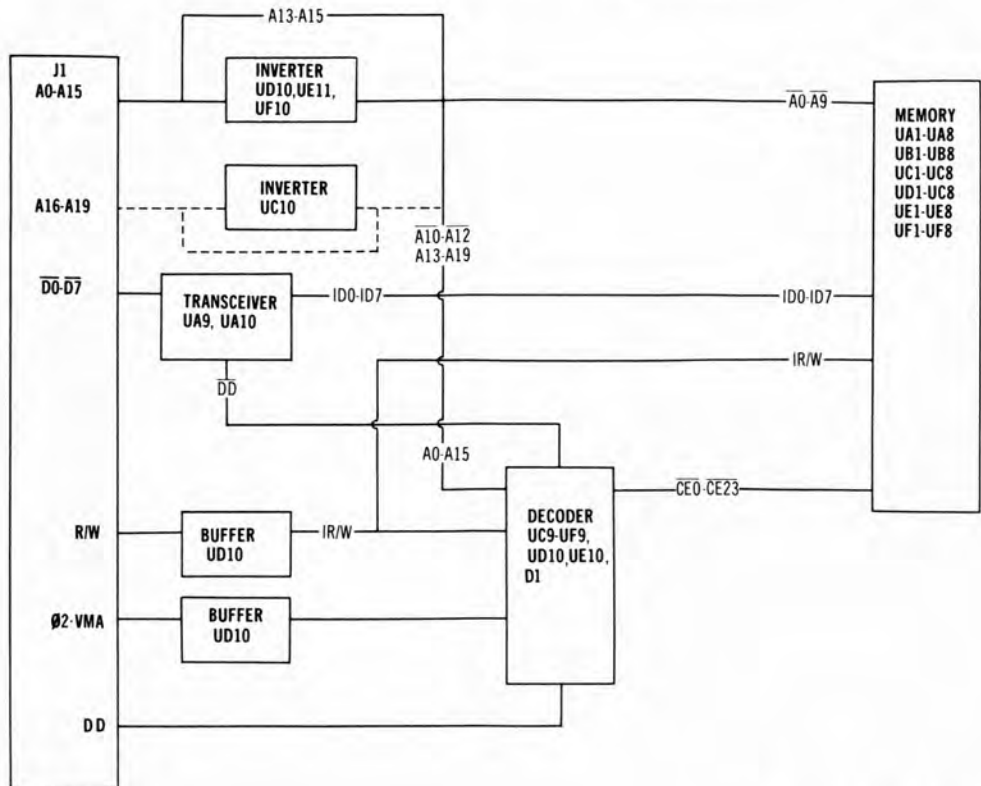
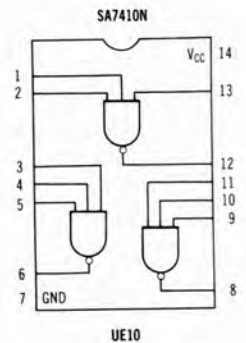
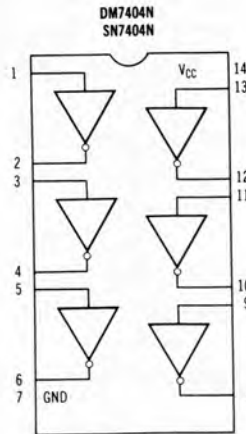
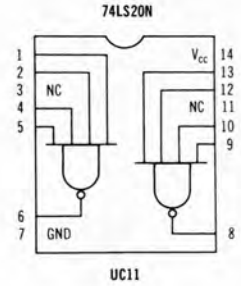
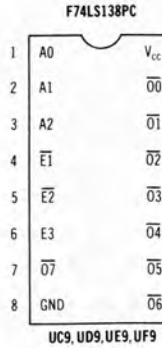
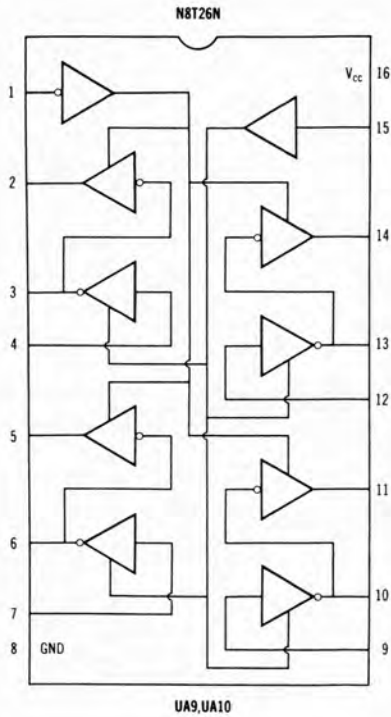


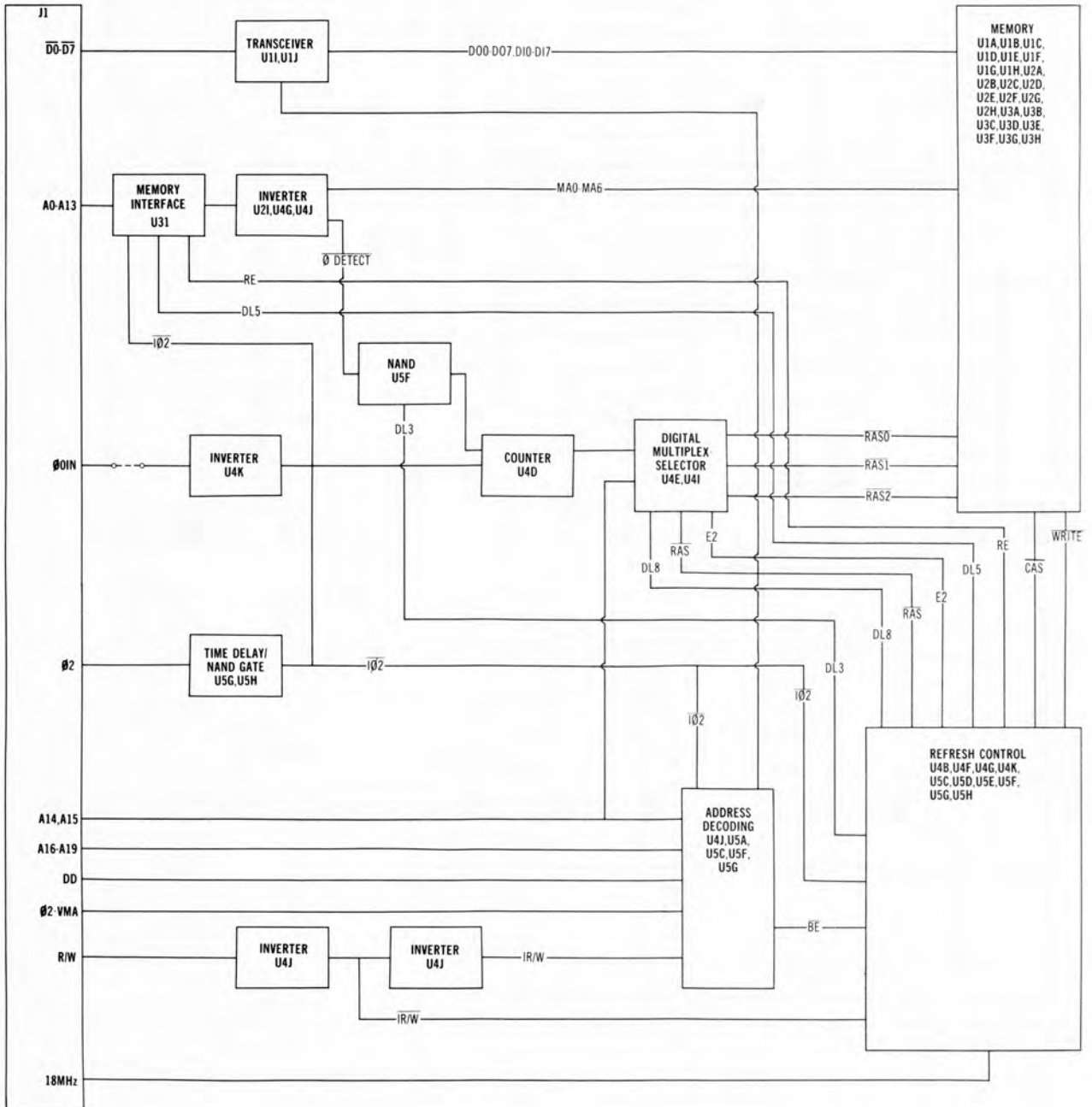


# 527 BOARD PINOUTS

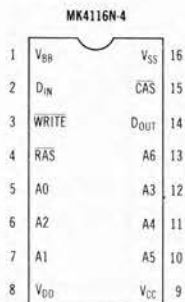


UA1 THRU UA8  
UB1 THRU UB8  
UC1 THRU UC8  
UD1 THRU UD8  
UE1 THRU UE8  
UF1 THRU UF8

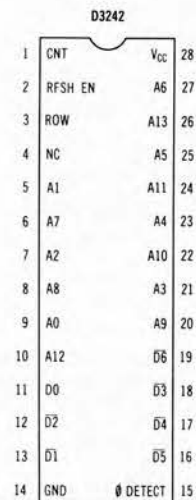
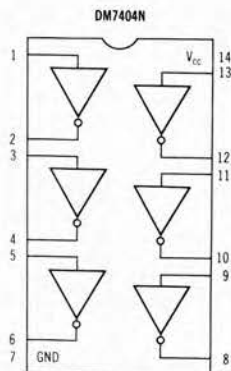
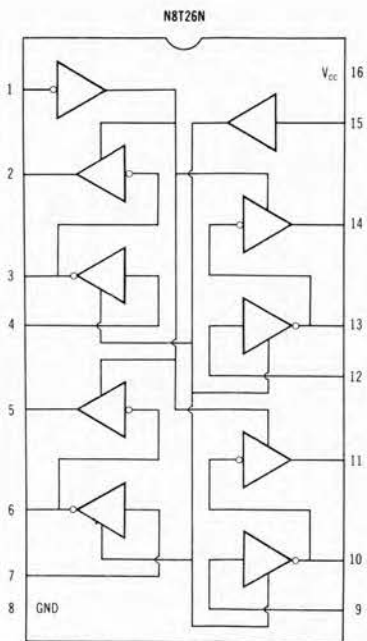




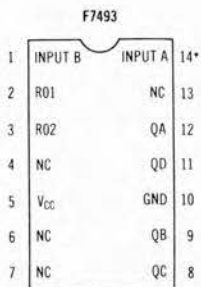
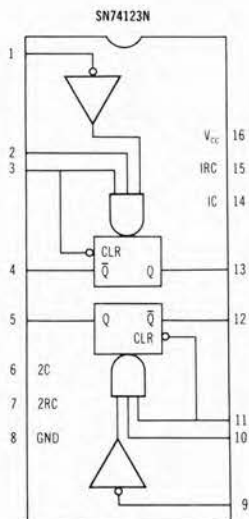
# 535 BOARD PINOUTS



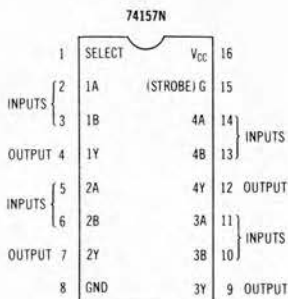
U1A THRU U1H,  
U2A THRU U2H,  
U3A THRU U3H



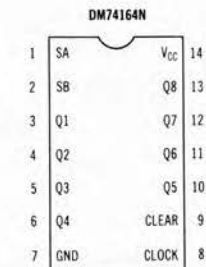
U3I



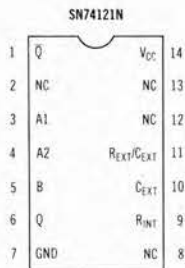
U4D



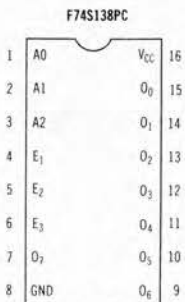
U4E



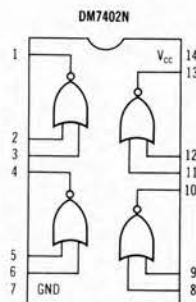
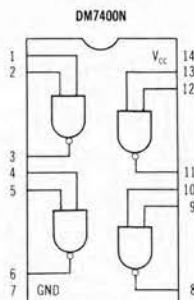
U4F, U5E



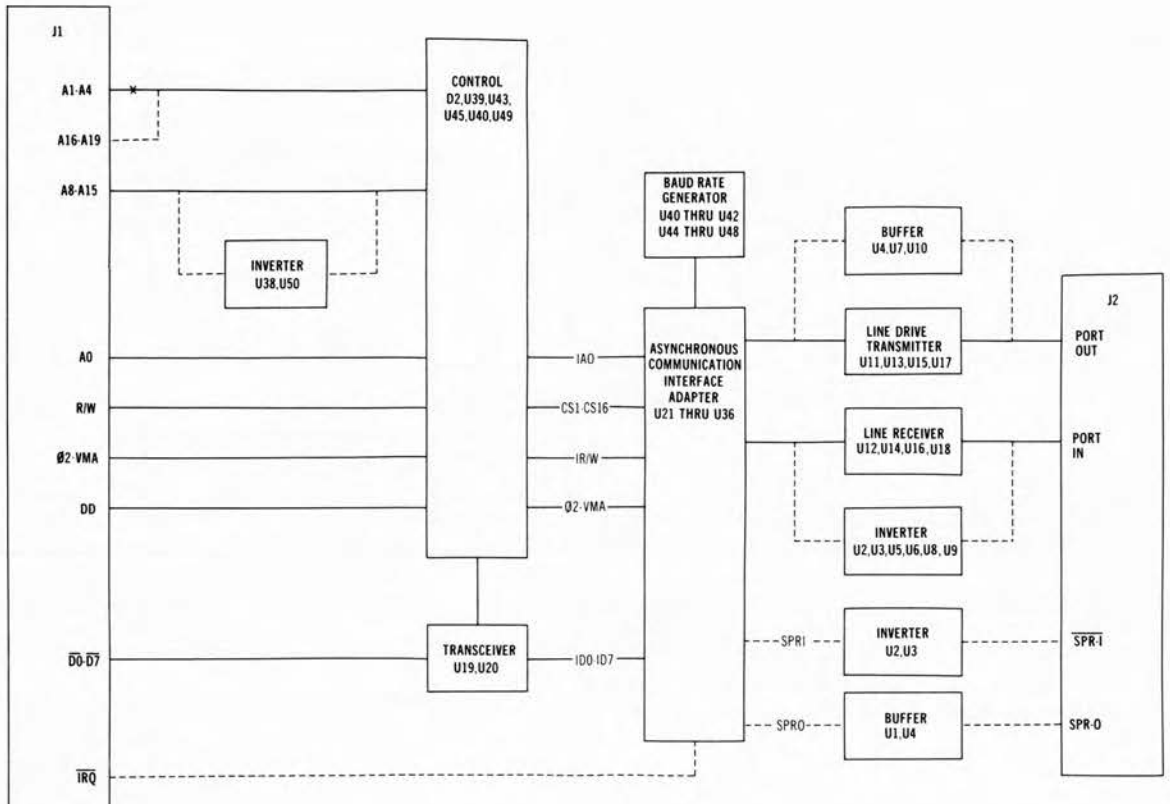
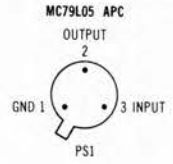
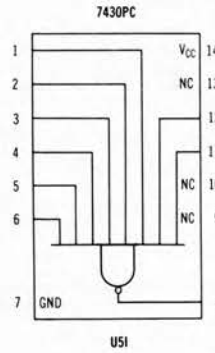
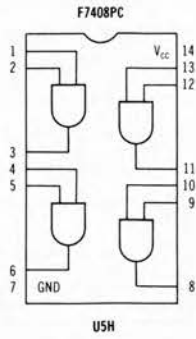
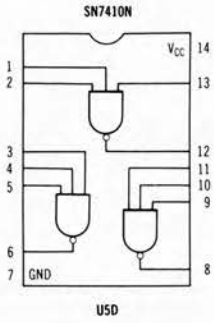
U4H

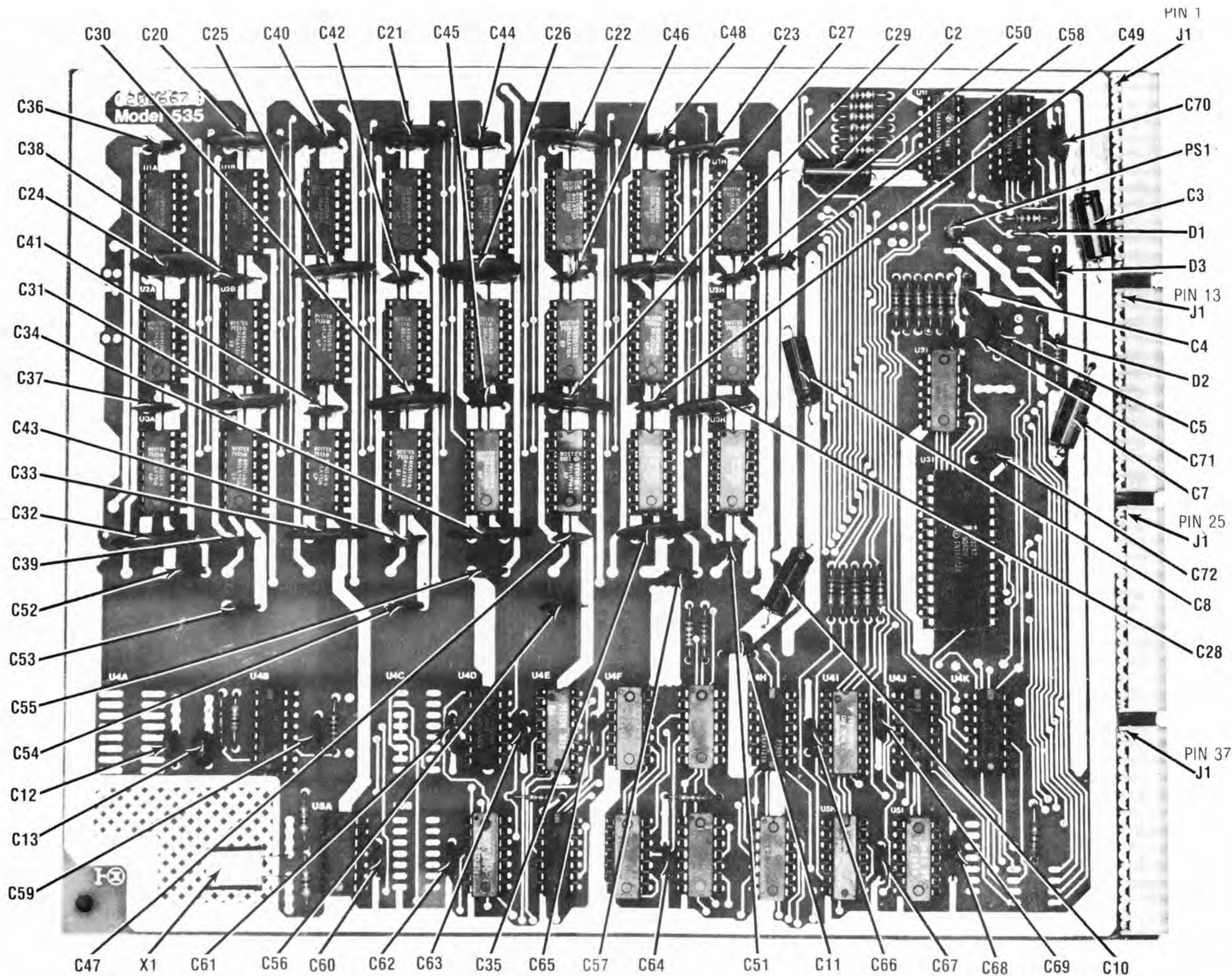


U4I



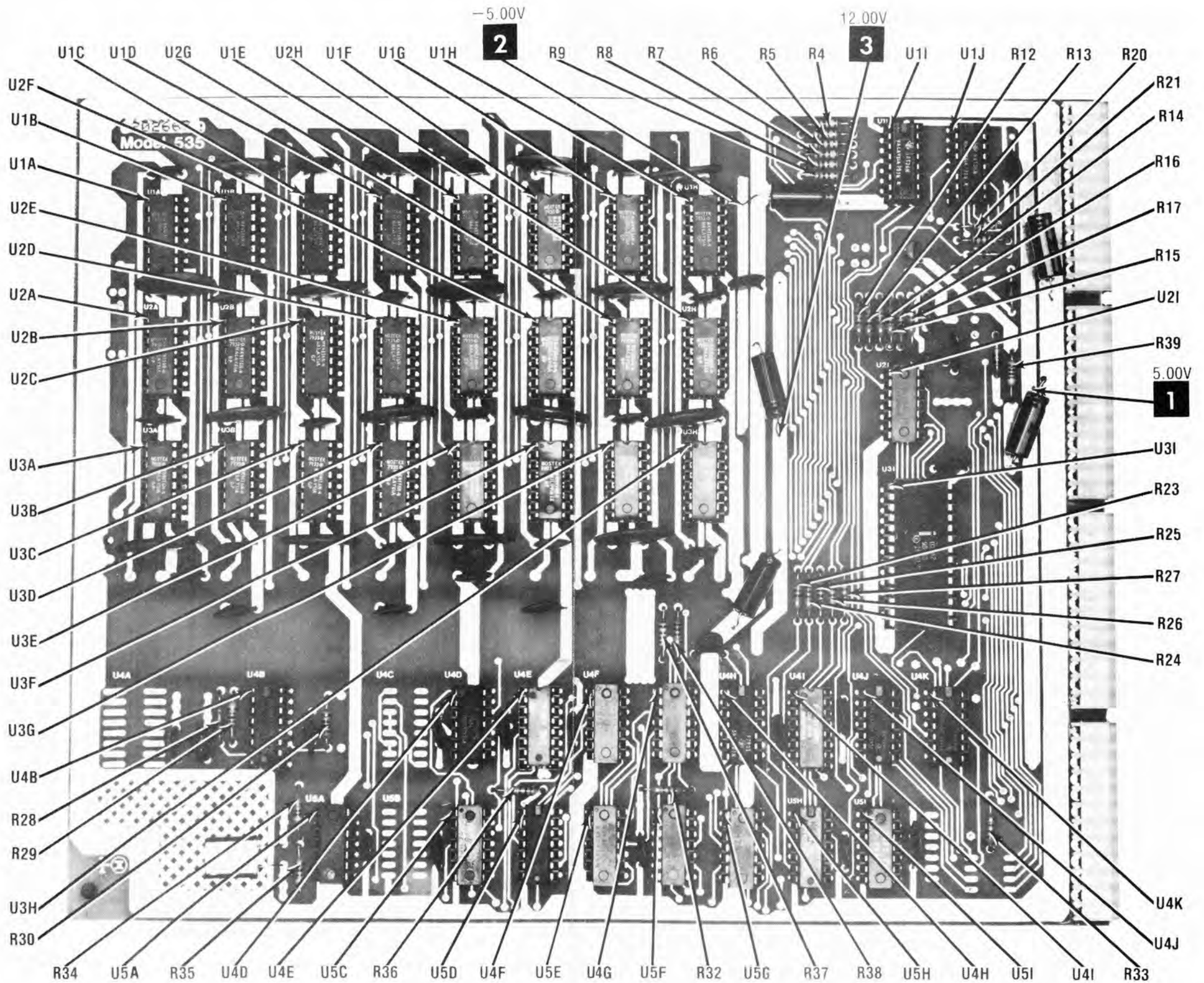
# 535 BOARD PINOUTS (CONTINUED)

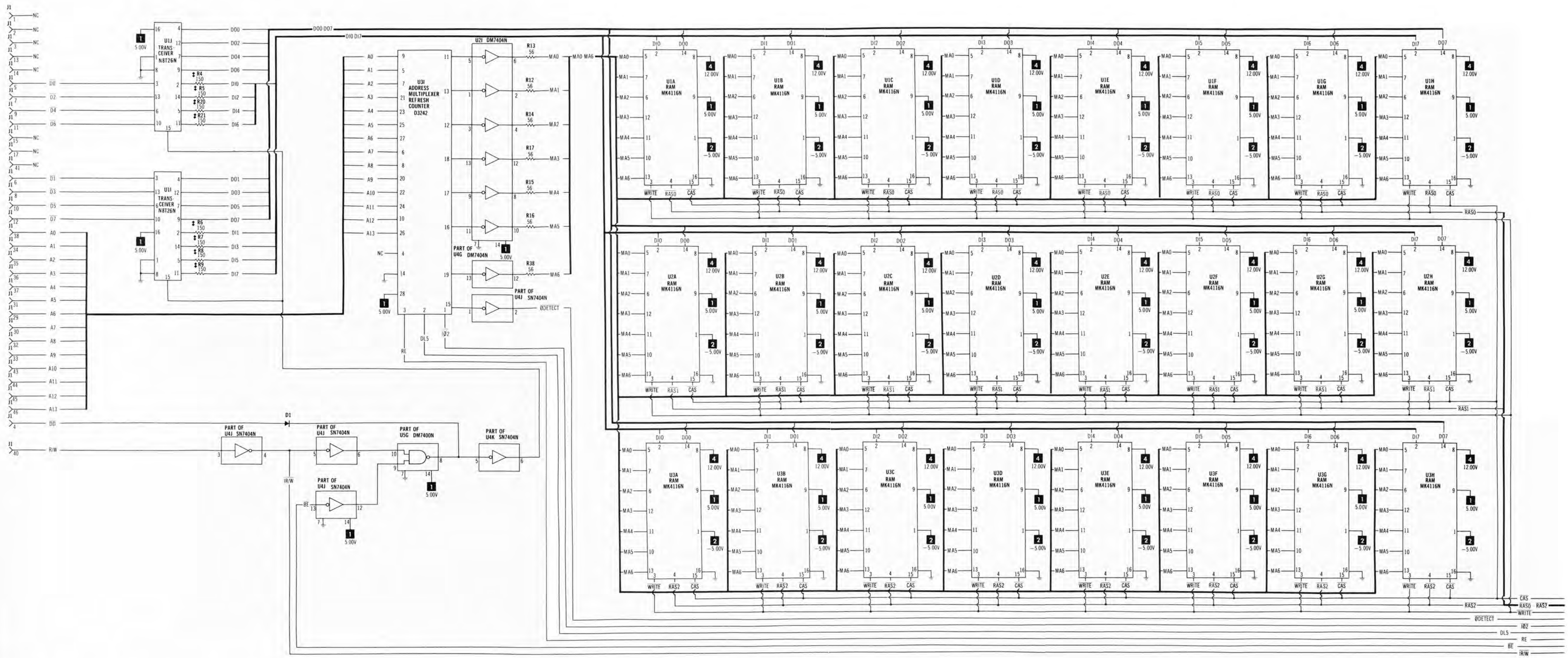


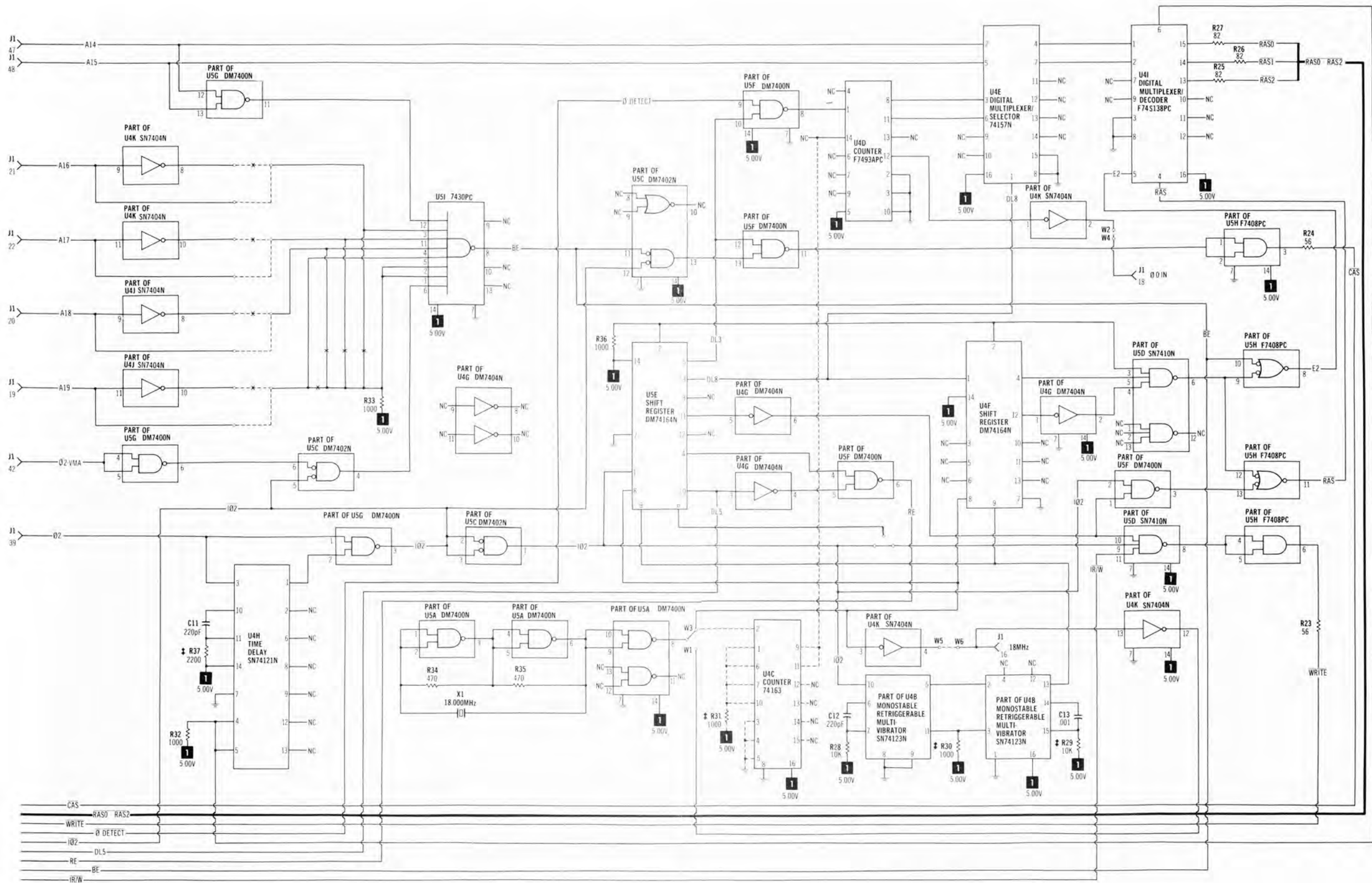


535 BOARD

535 BOARD





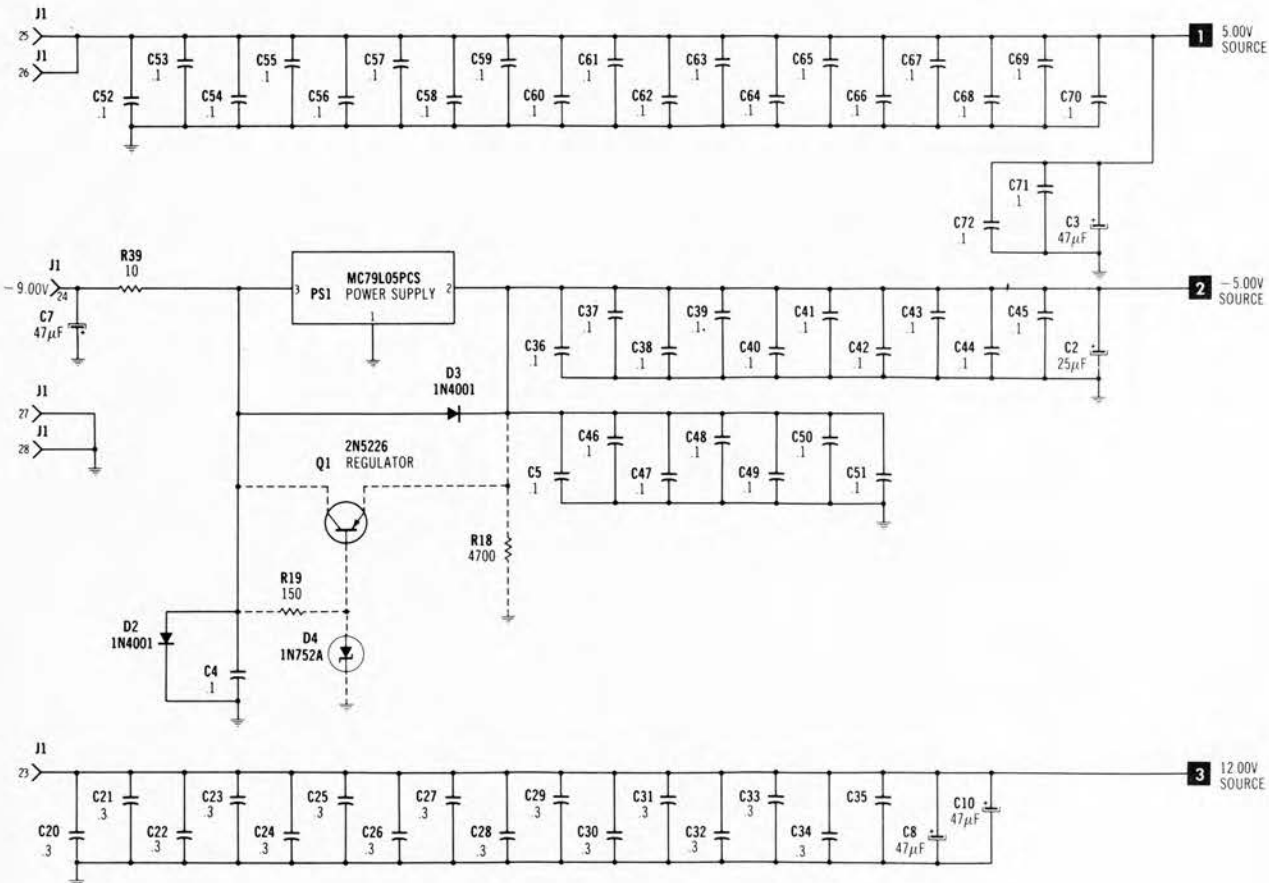


A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
 WITH **CIRCUITRACE™**  
 © Howard W. Sams & Co., Inc. 1980

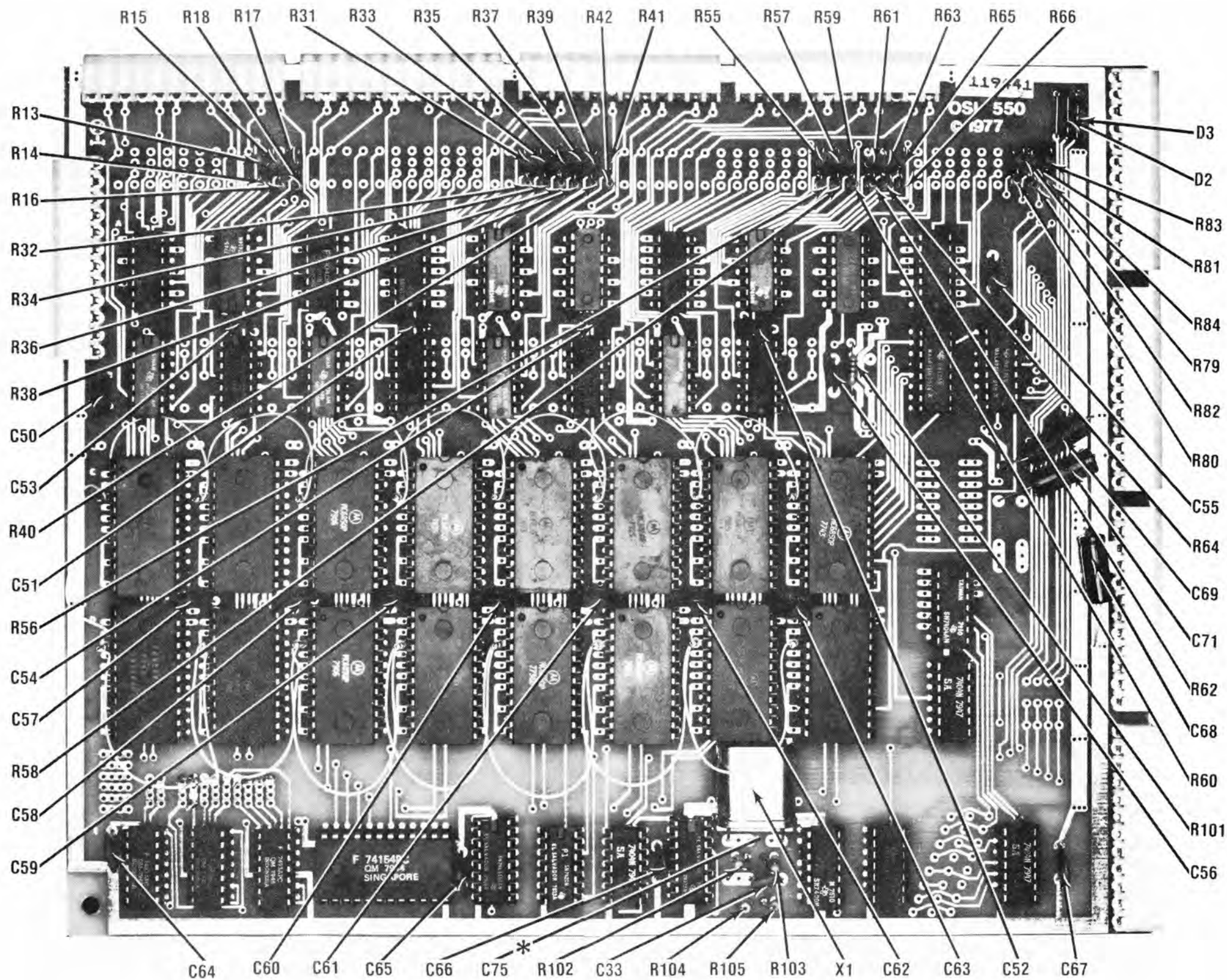
535 BOARD

FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 180 & REAR COVER. 535 BOARD





## 535 BOARD

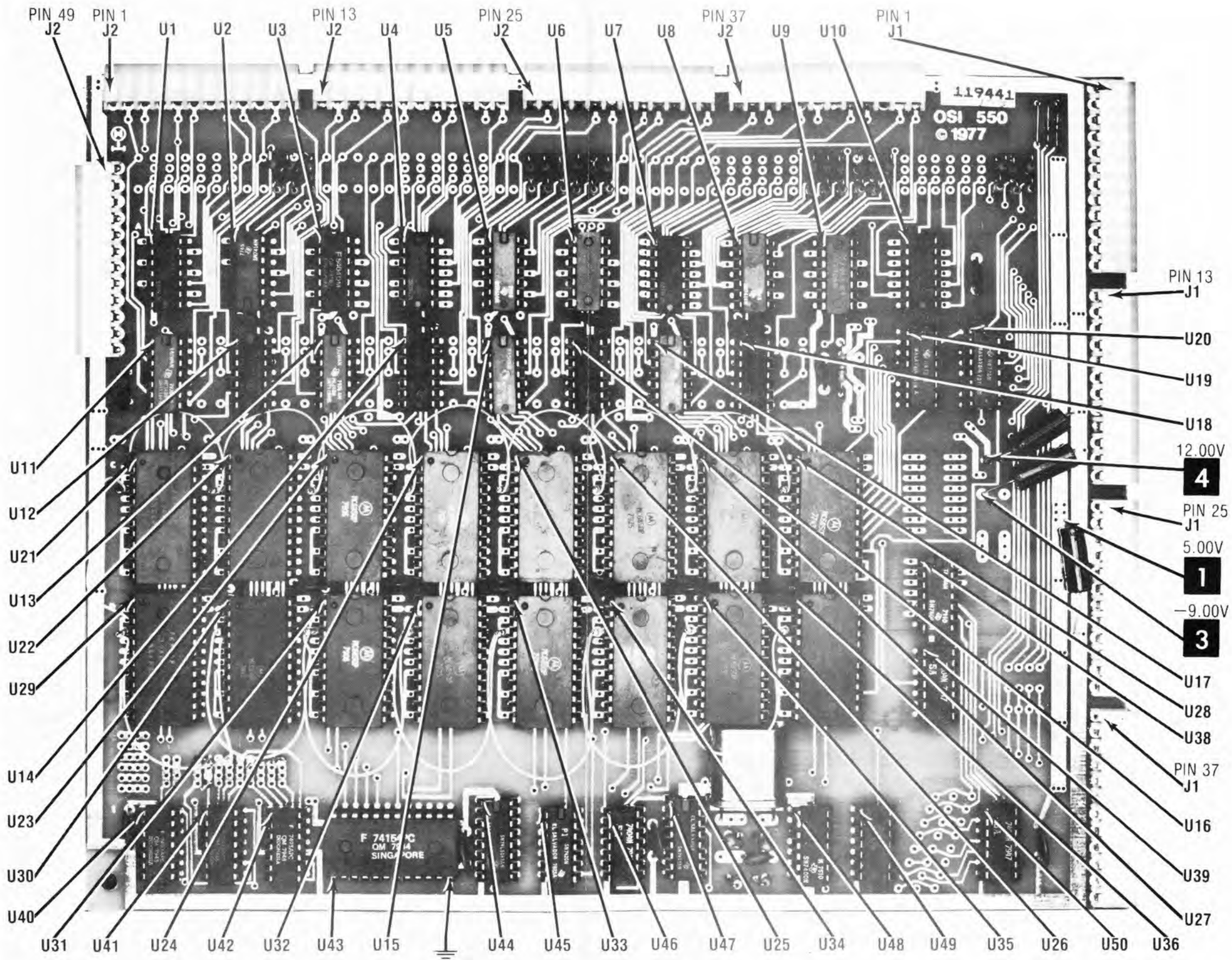


550 BOARD

119

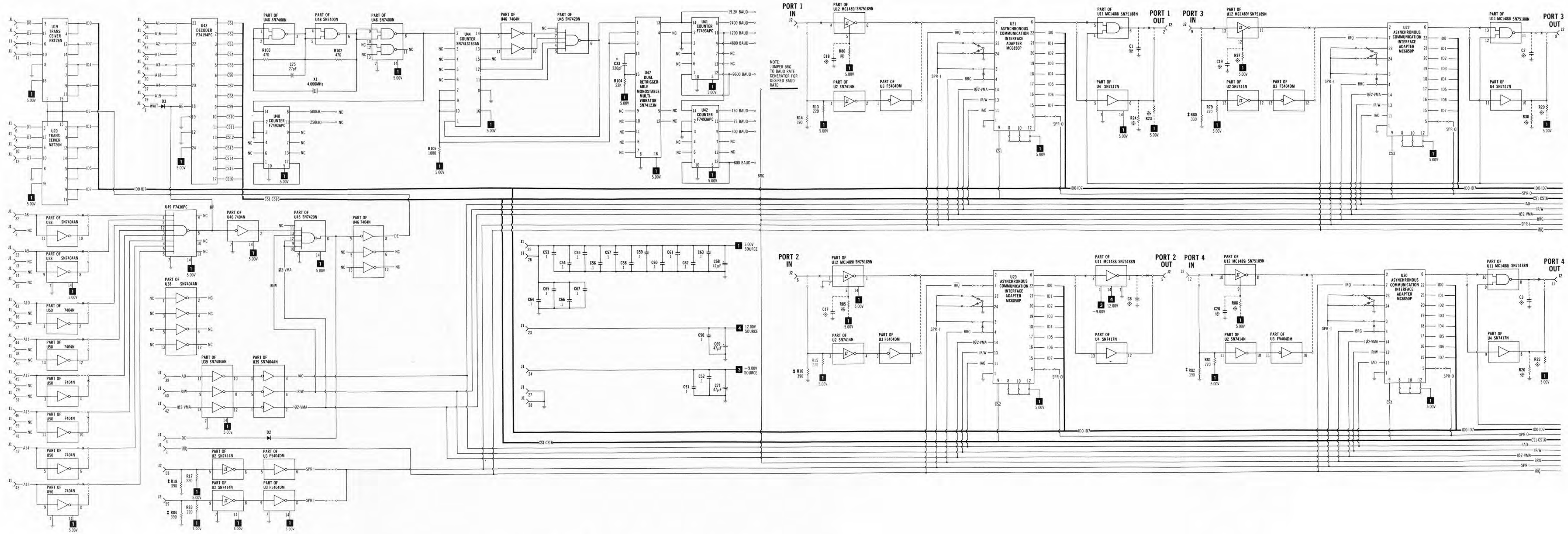
550 BOARD

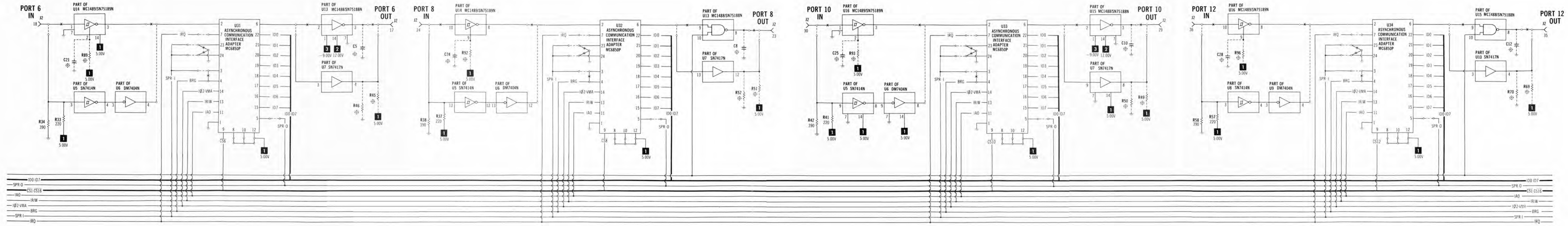
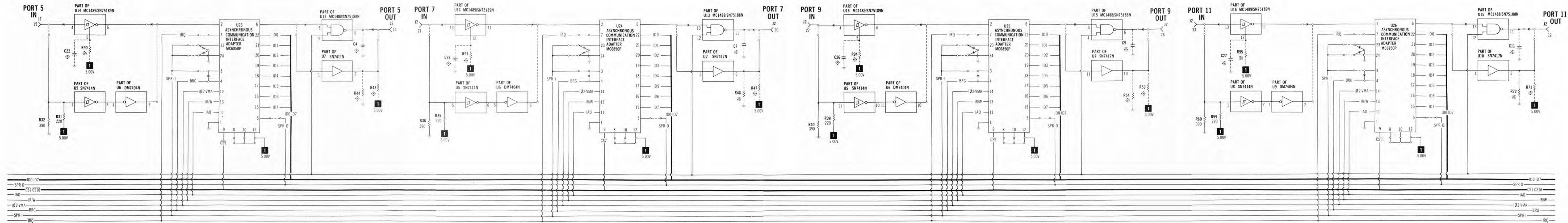
120

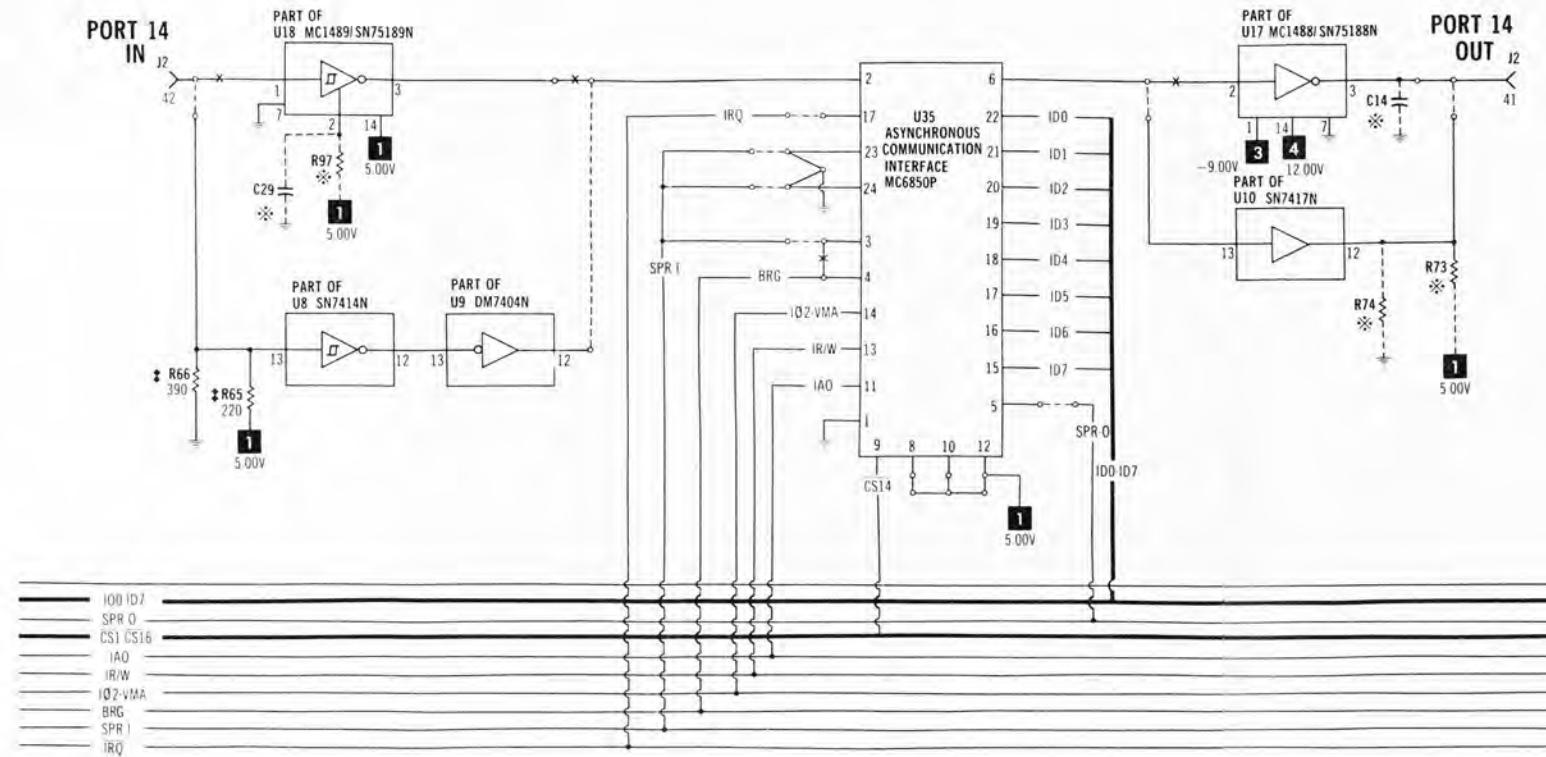
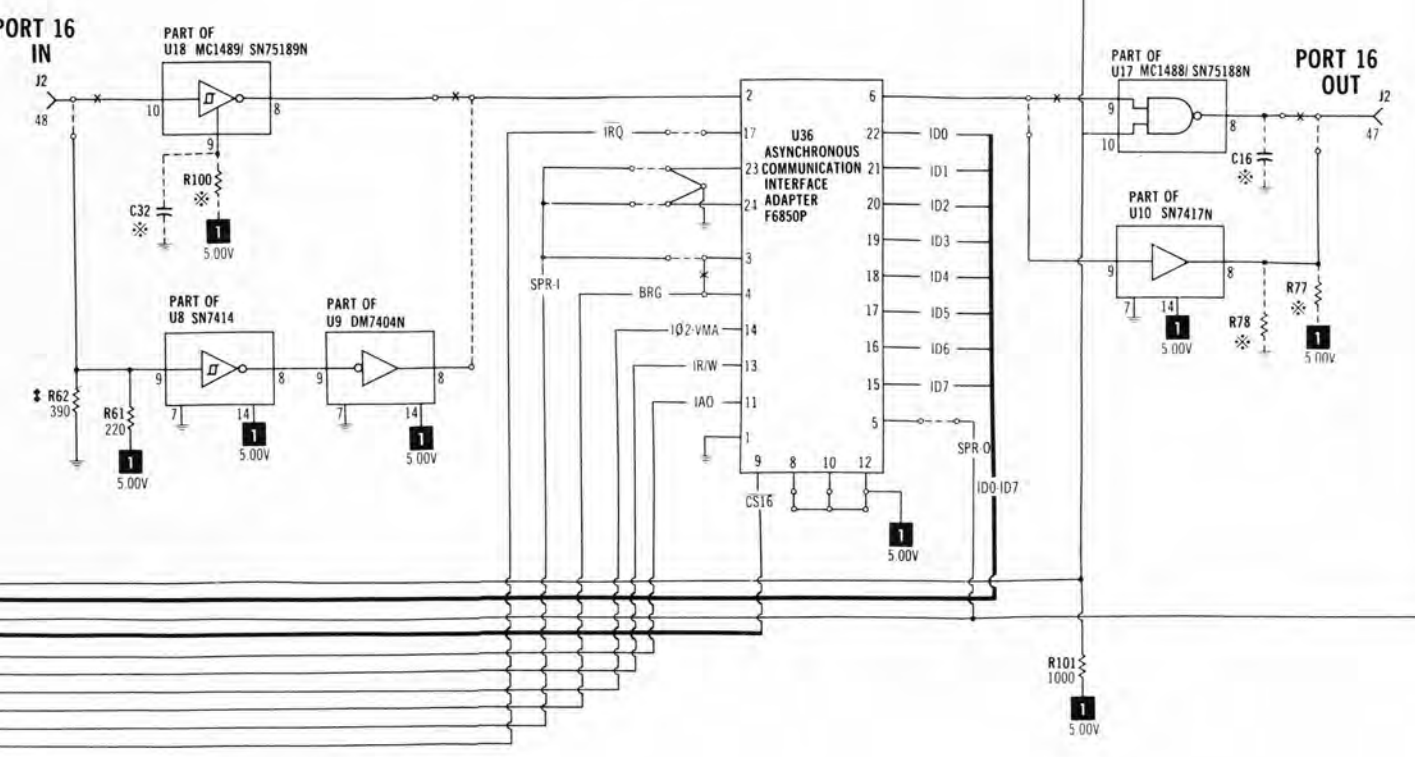
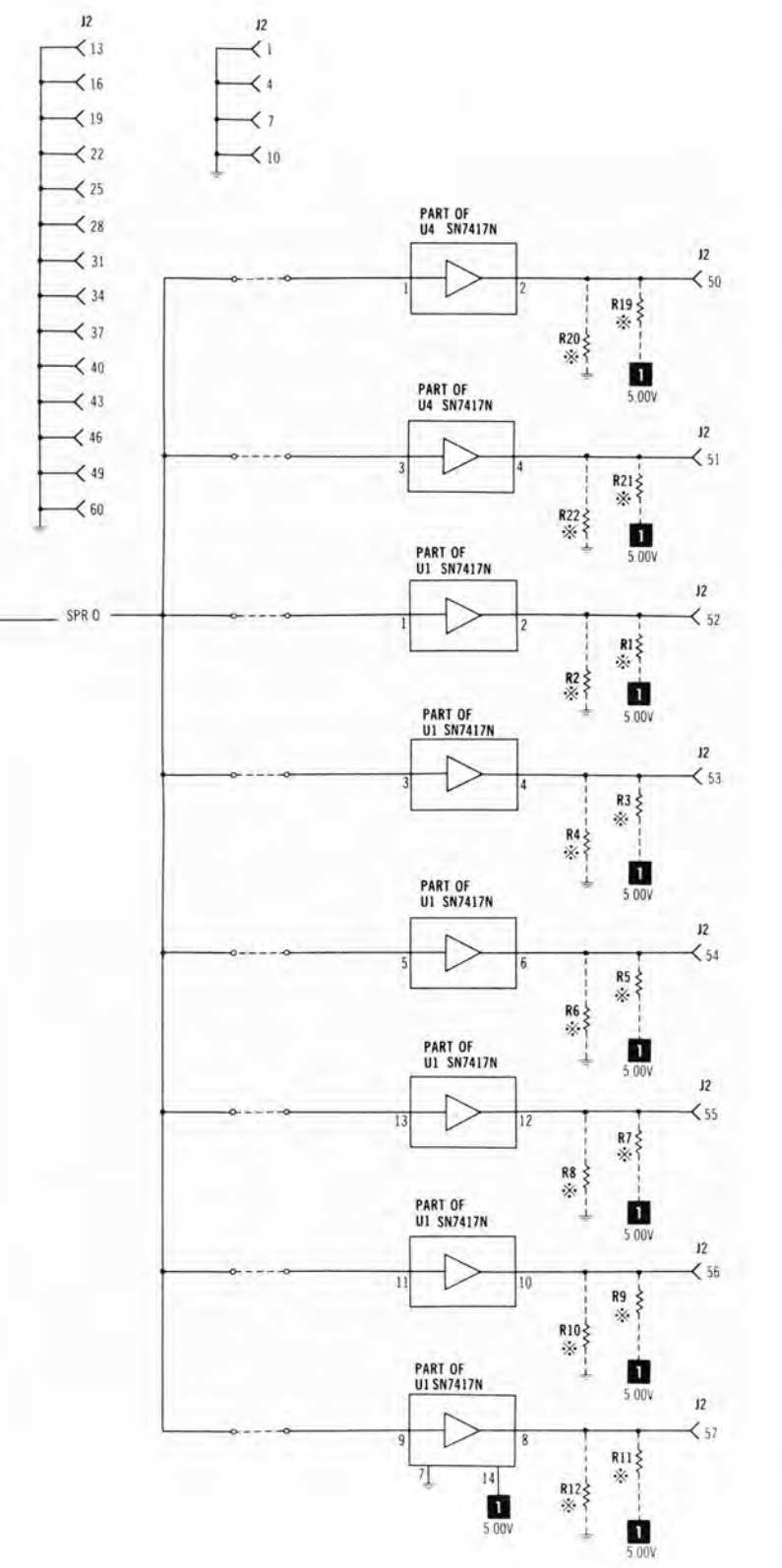
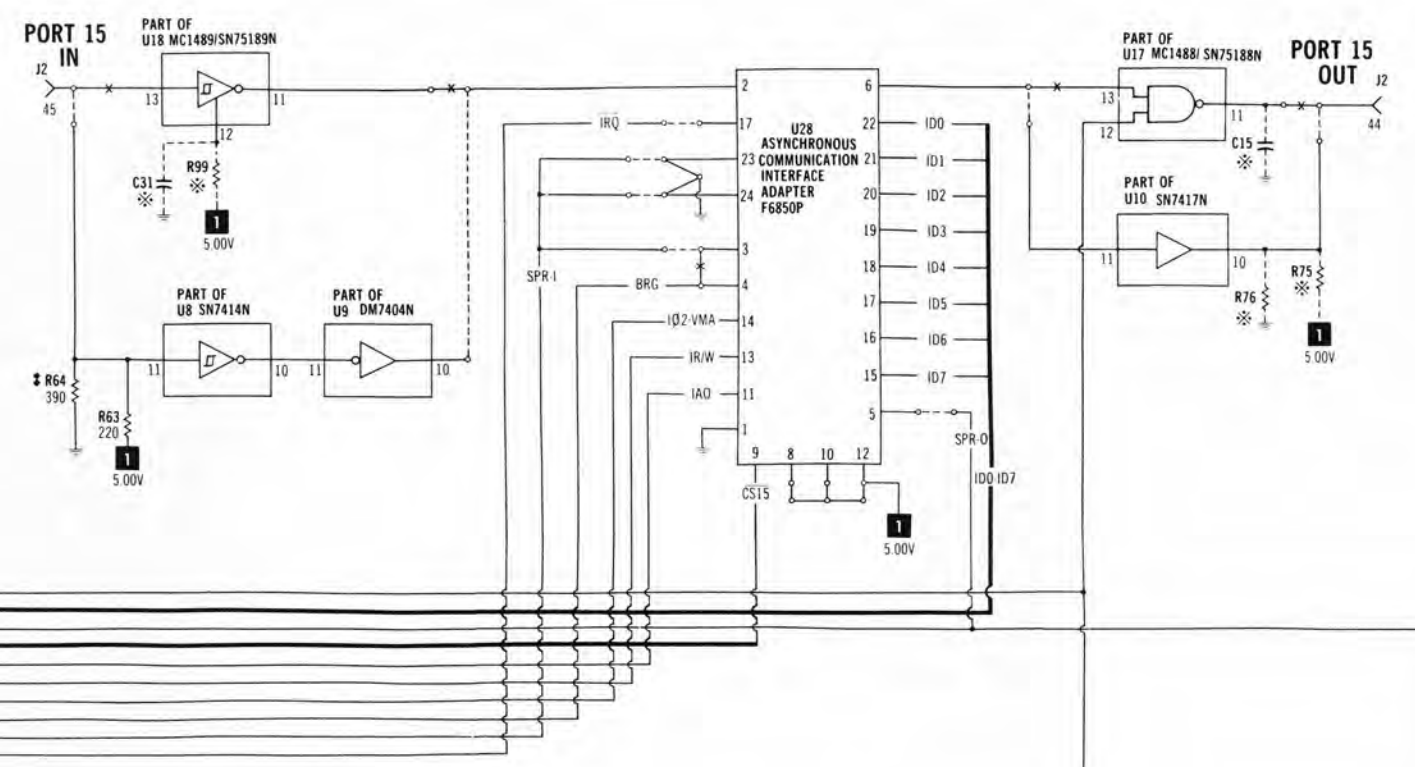
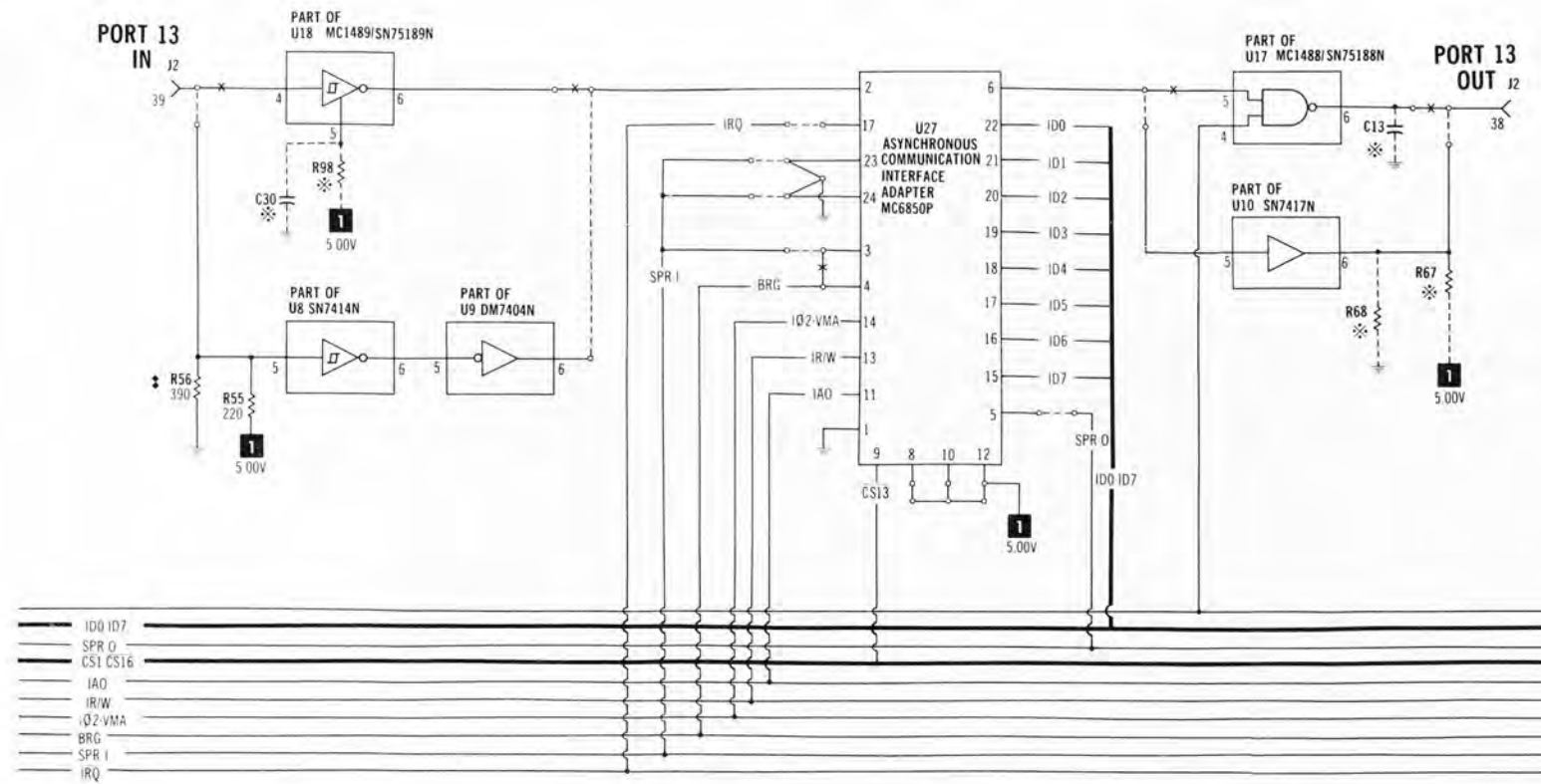


550 BOARD

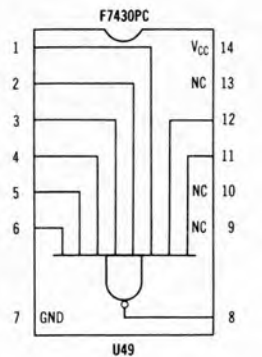
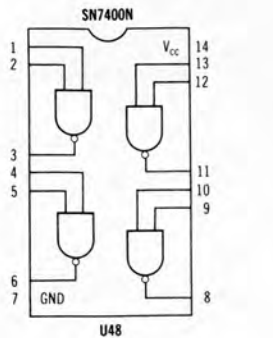
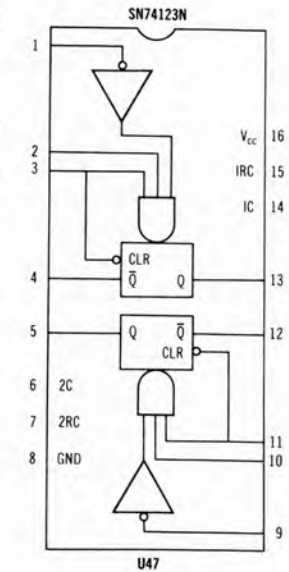
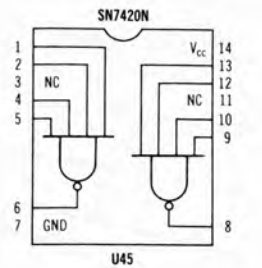
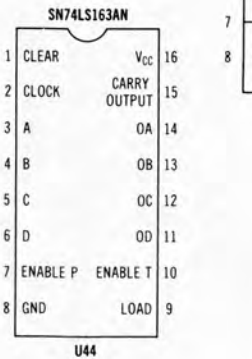
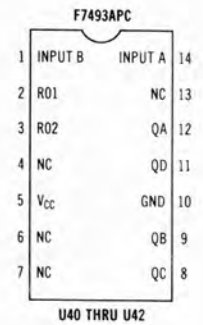
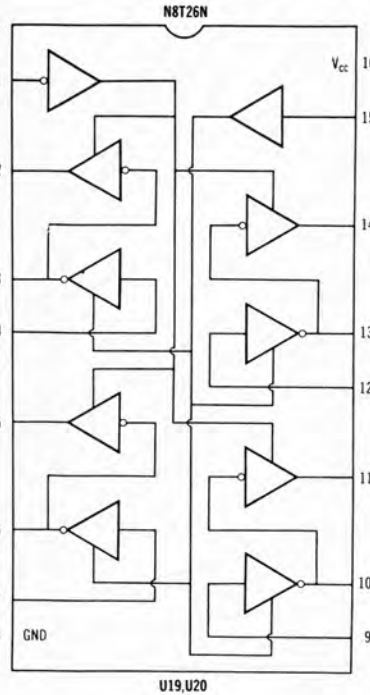
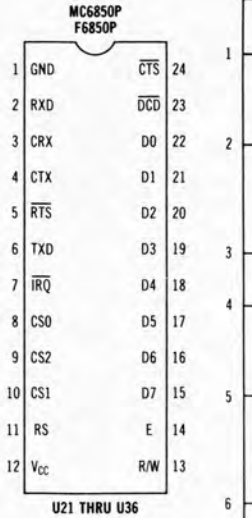
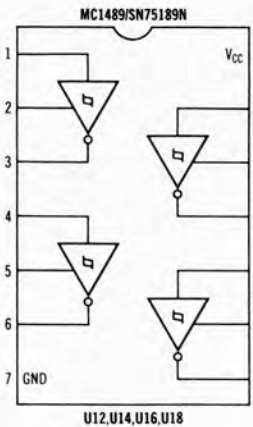
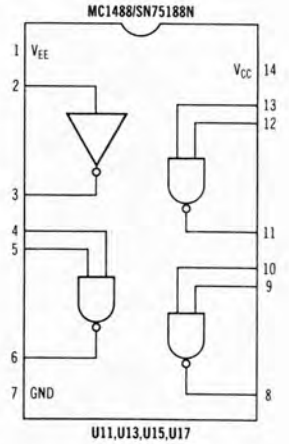
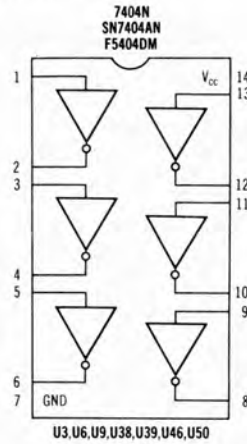
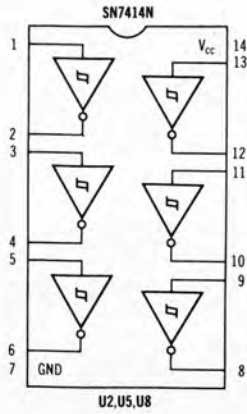
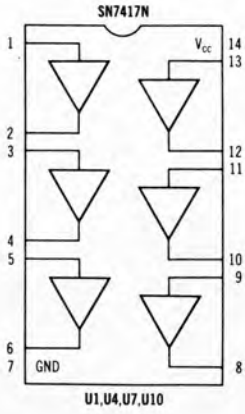
550 BOARD

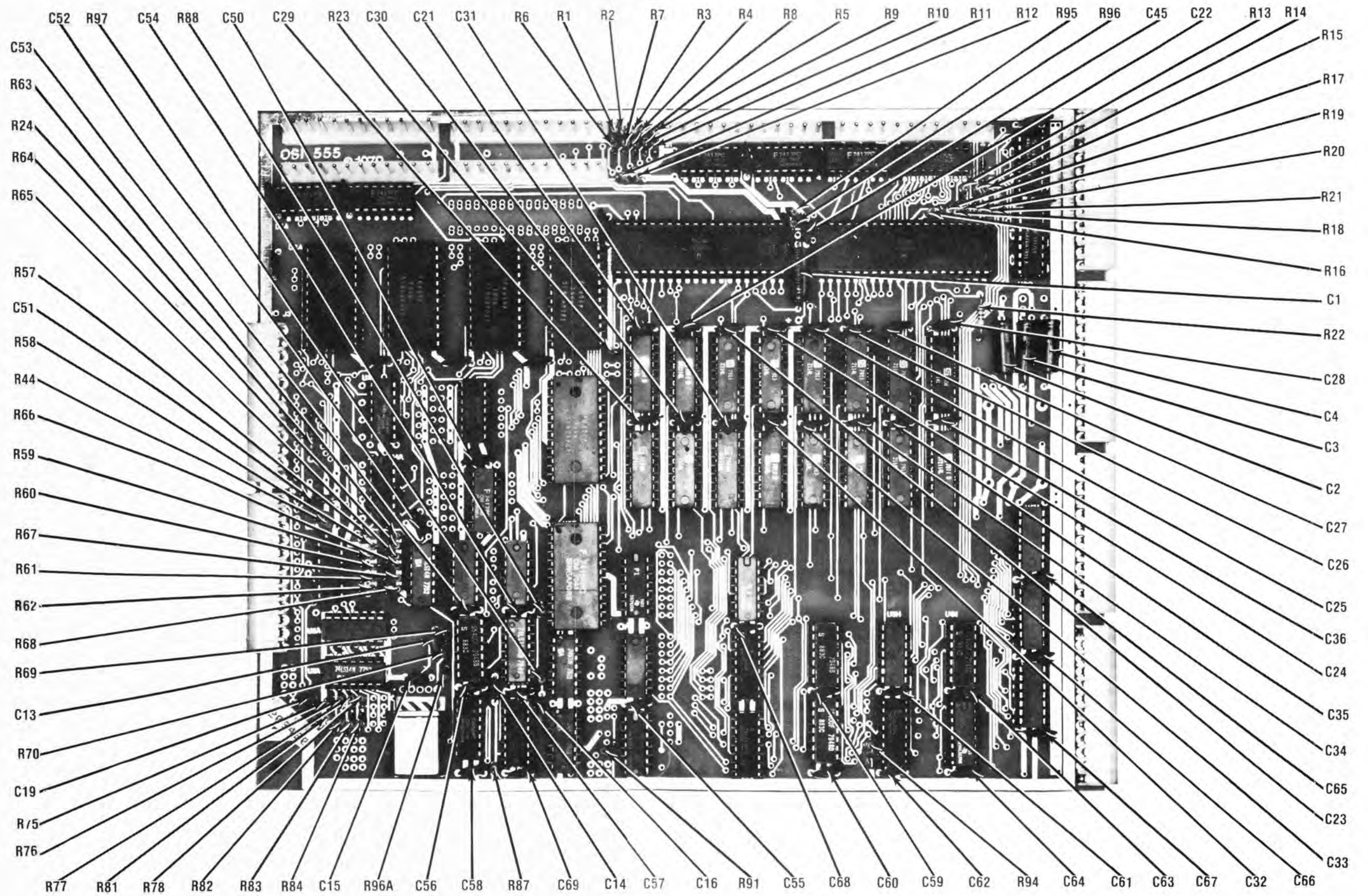






# 550 BOARD PINOUTS

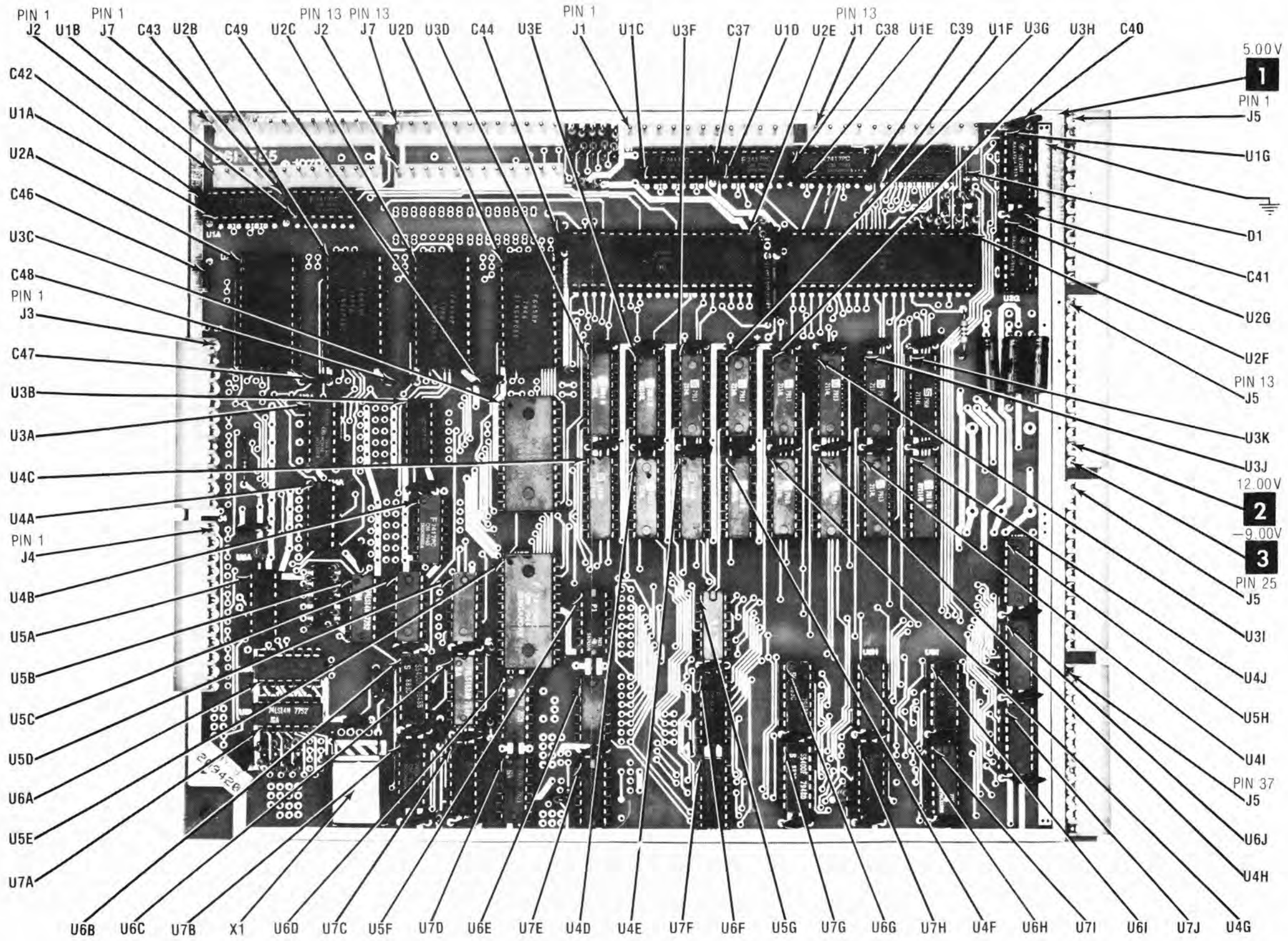


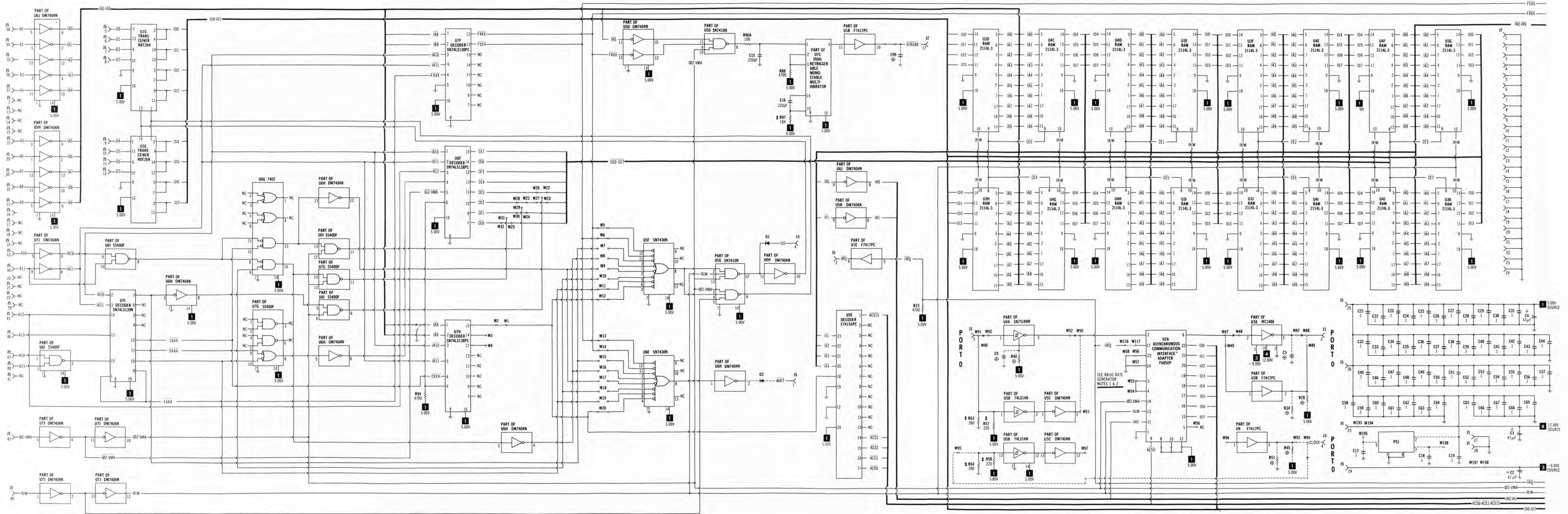


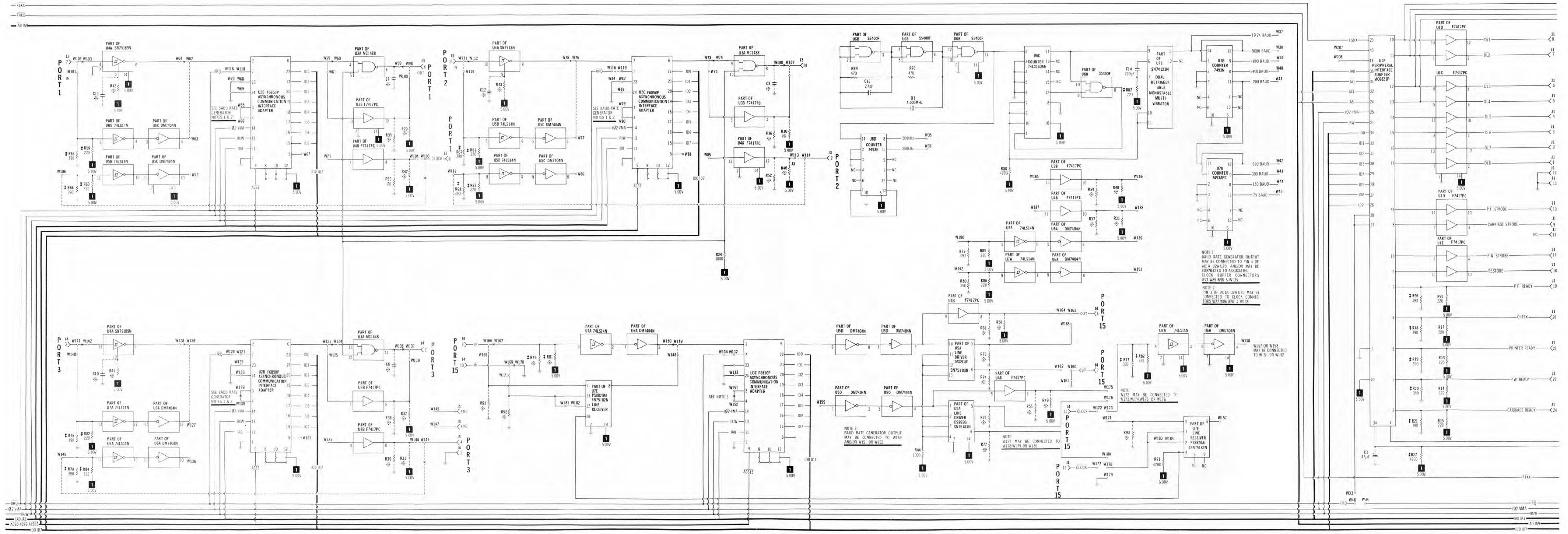
555 BOARD

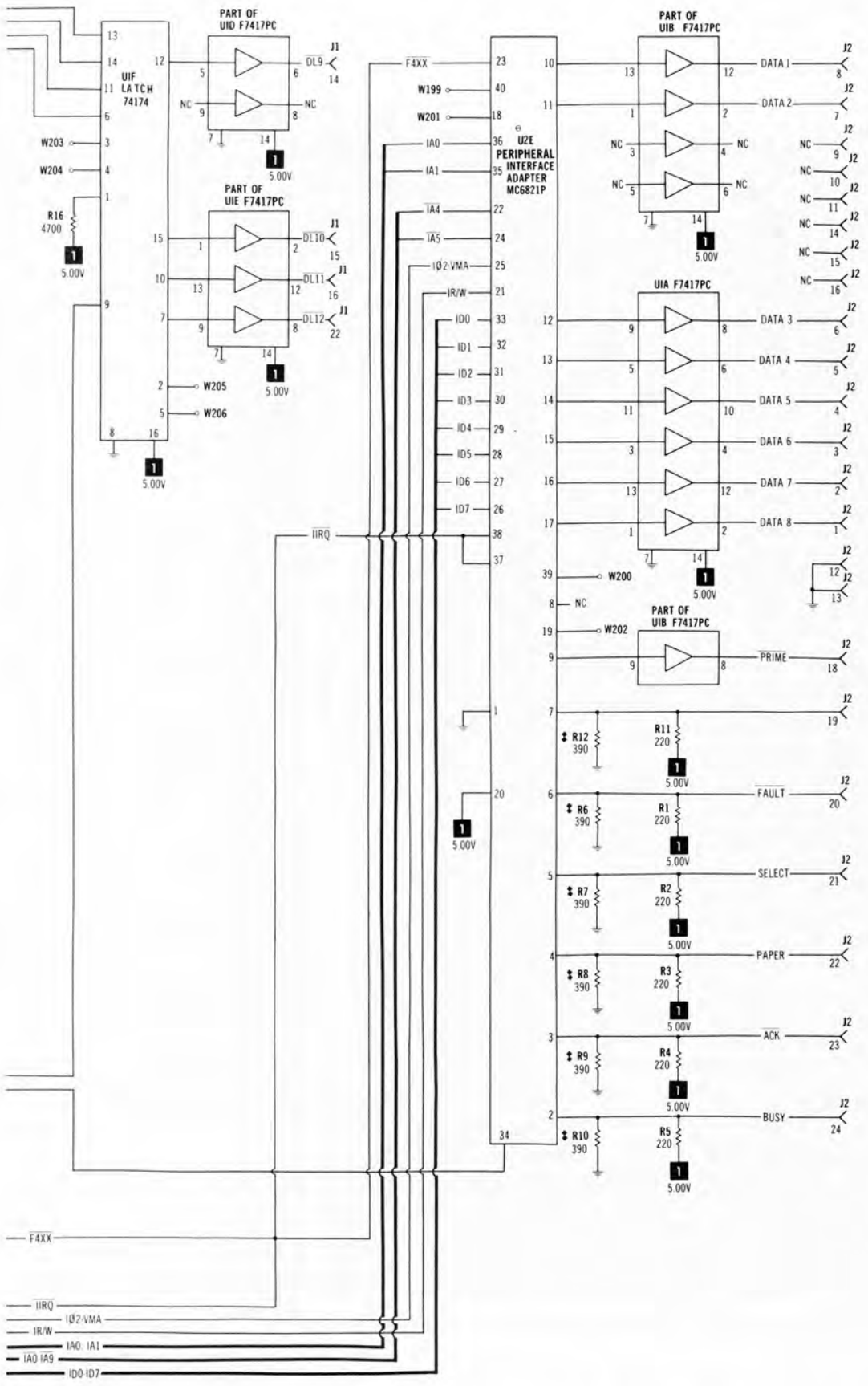
555 BOARD



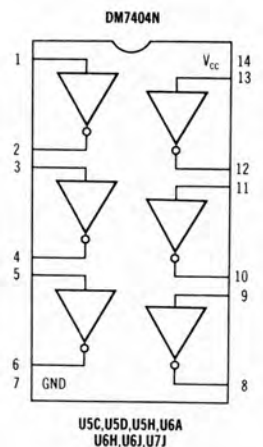
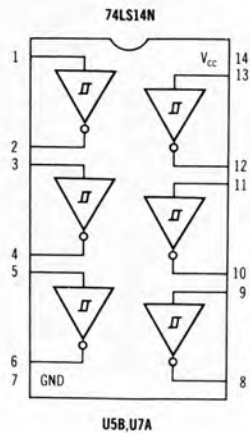
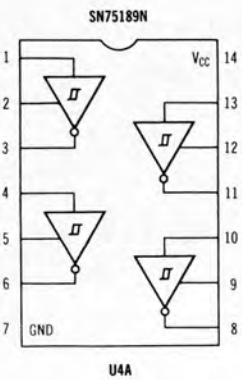
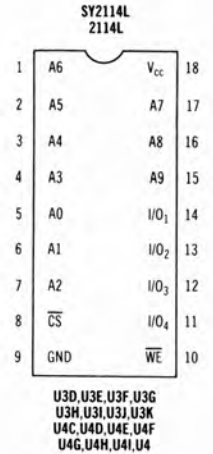
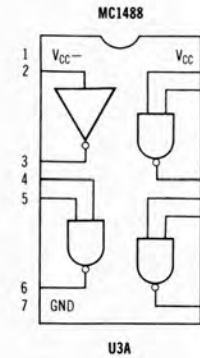
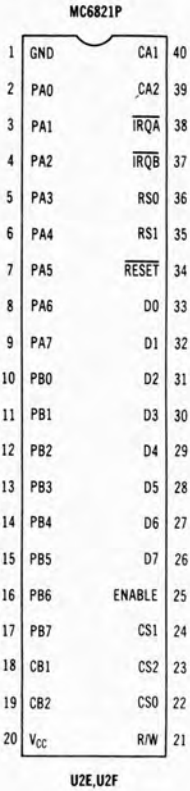
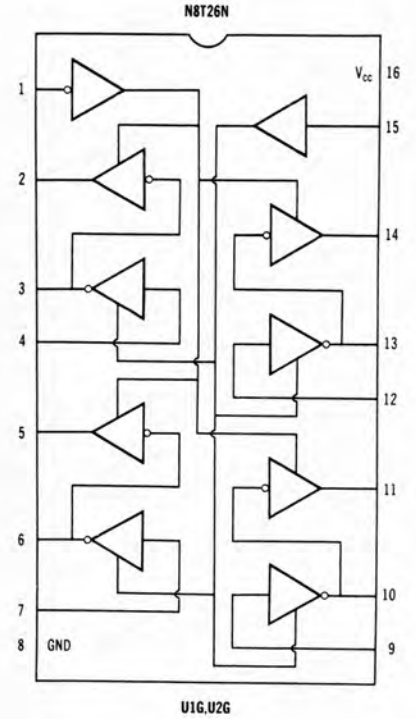
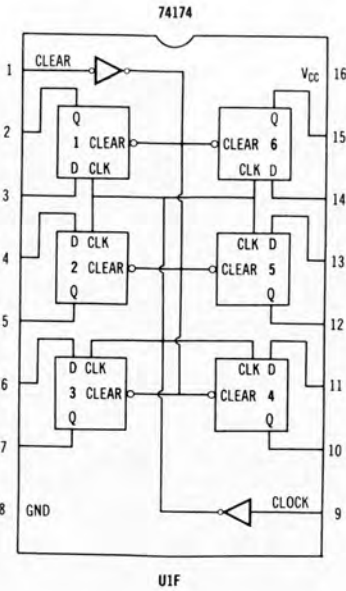
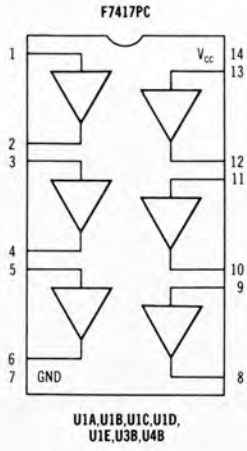




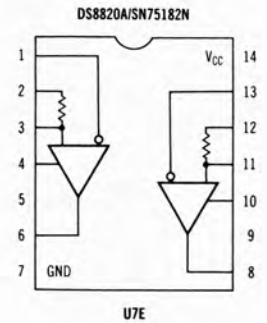
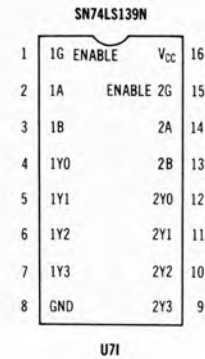
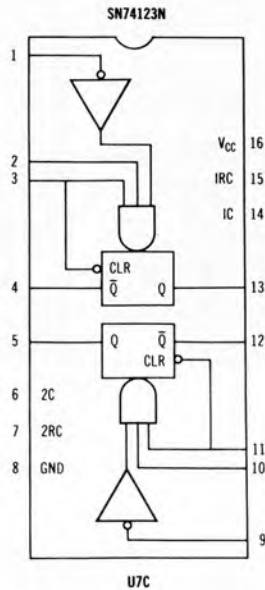
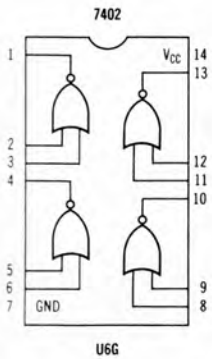
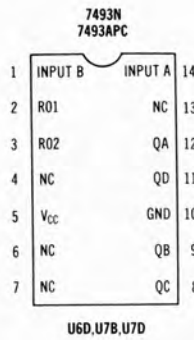
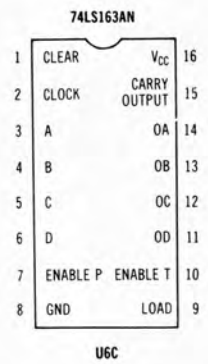
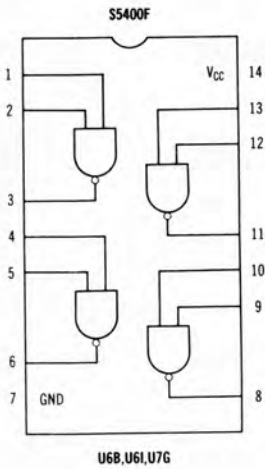
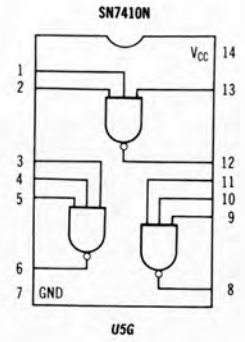
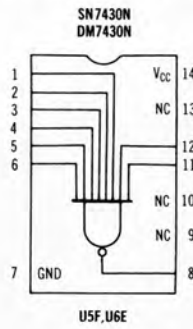
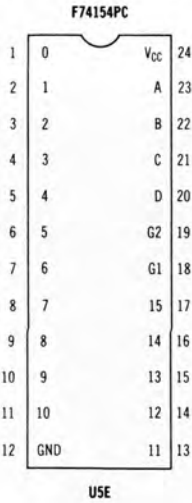
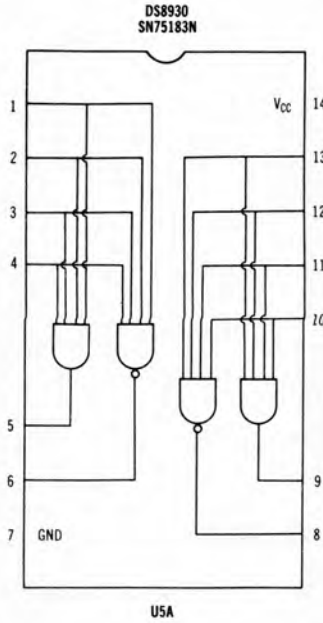


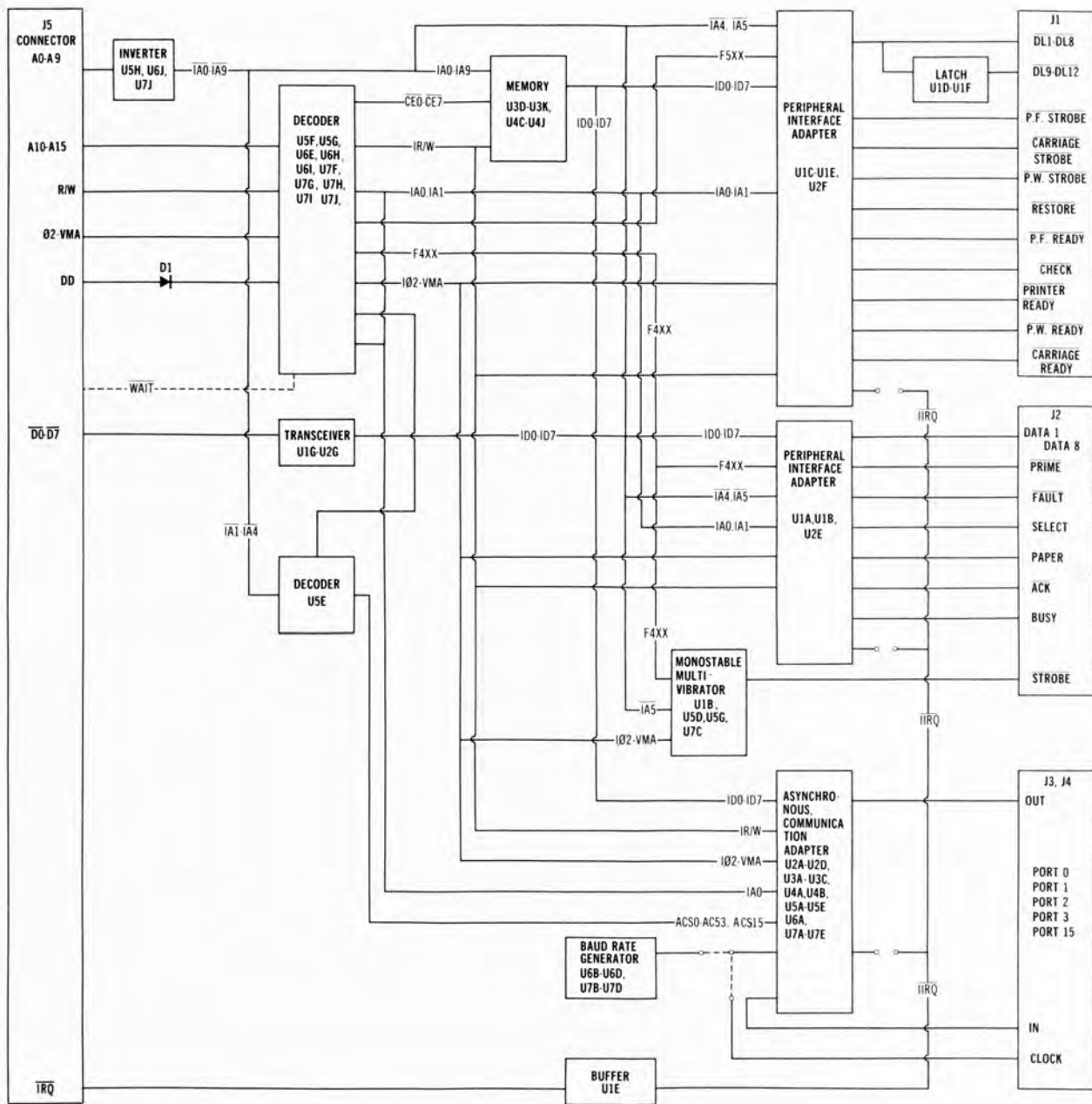


# 555 BOARD PINOUTS

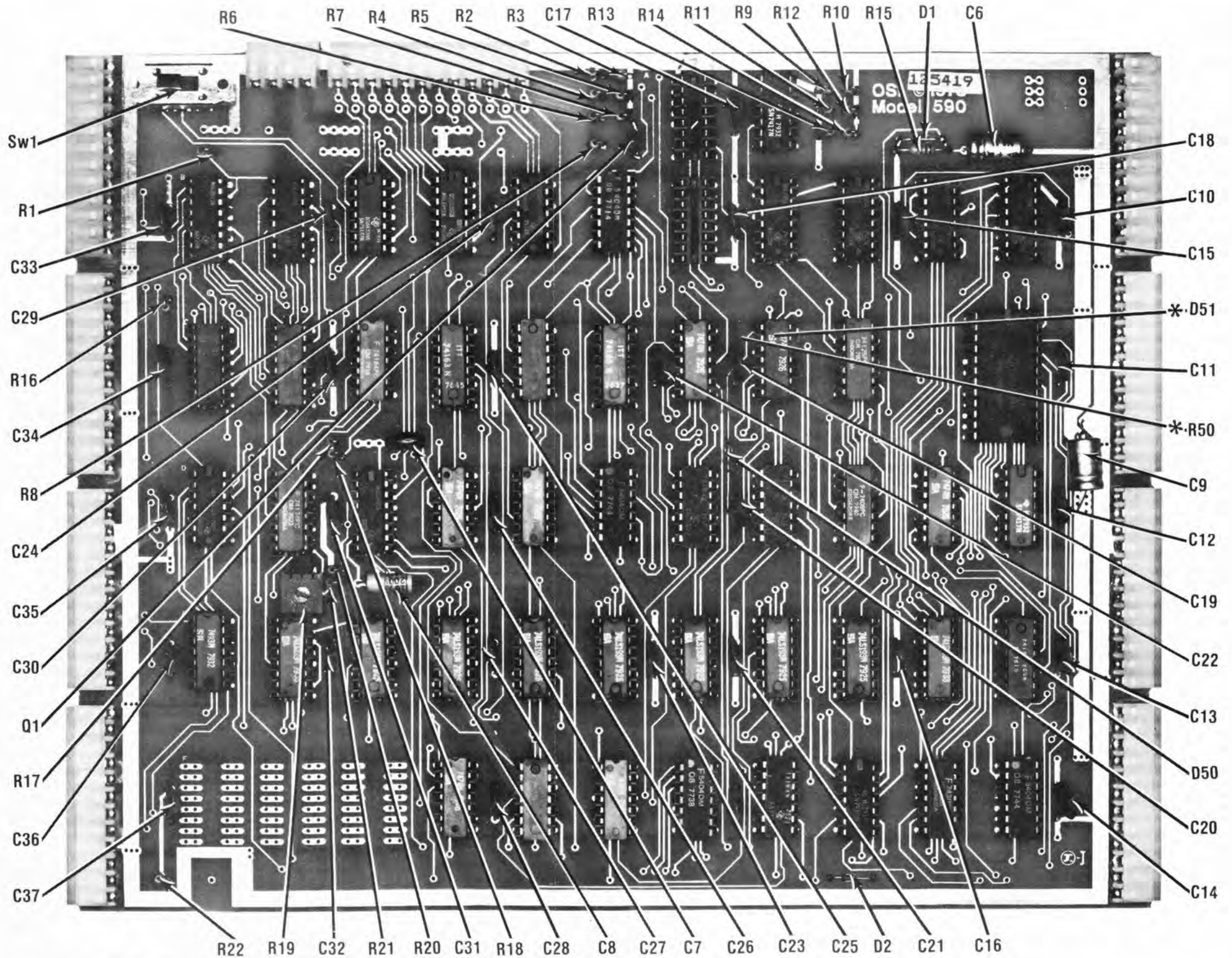


# 555 BOARD PINOUTS (CONTINUED)



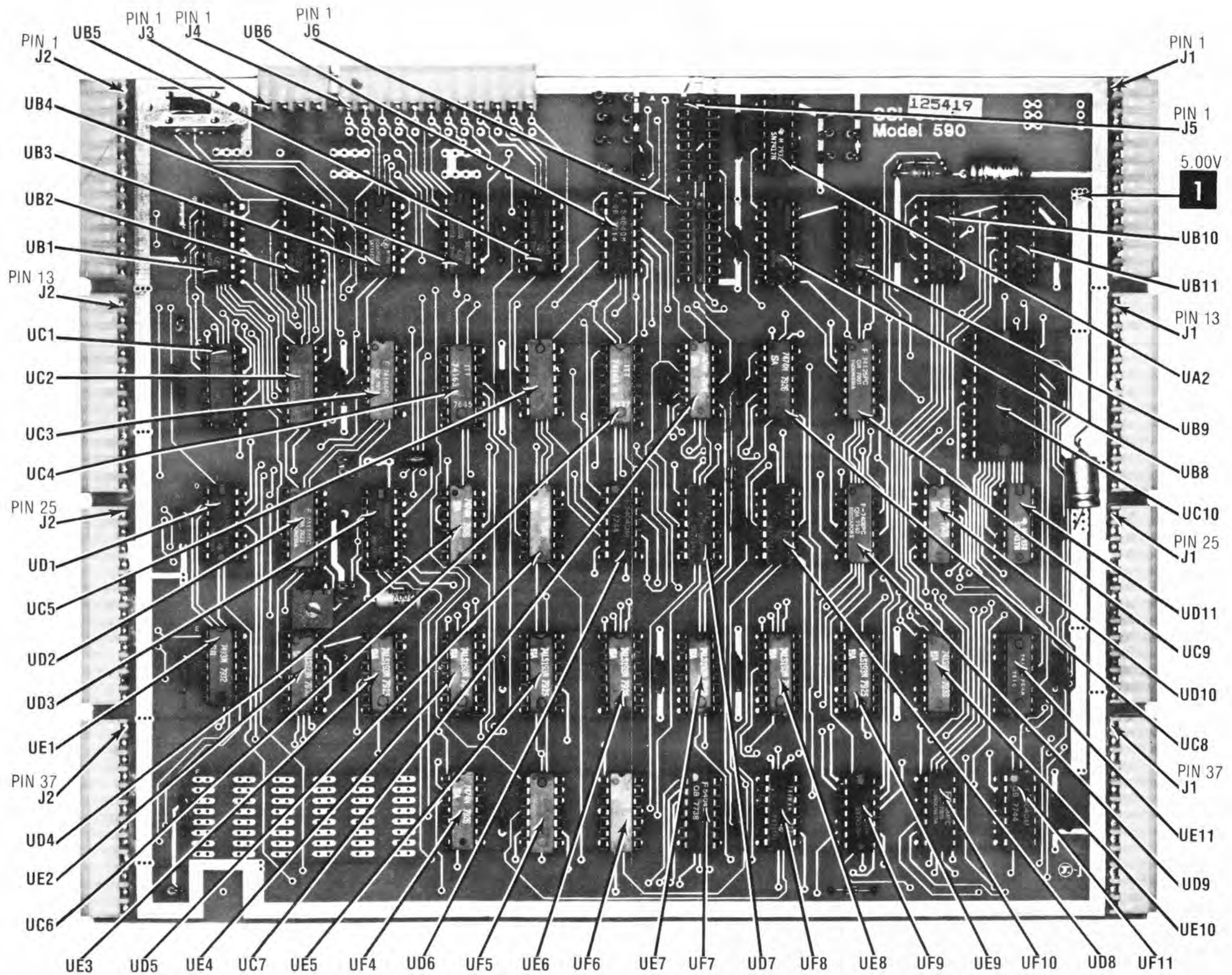


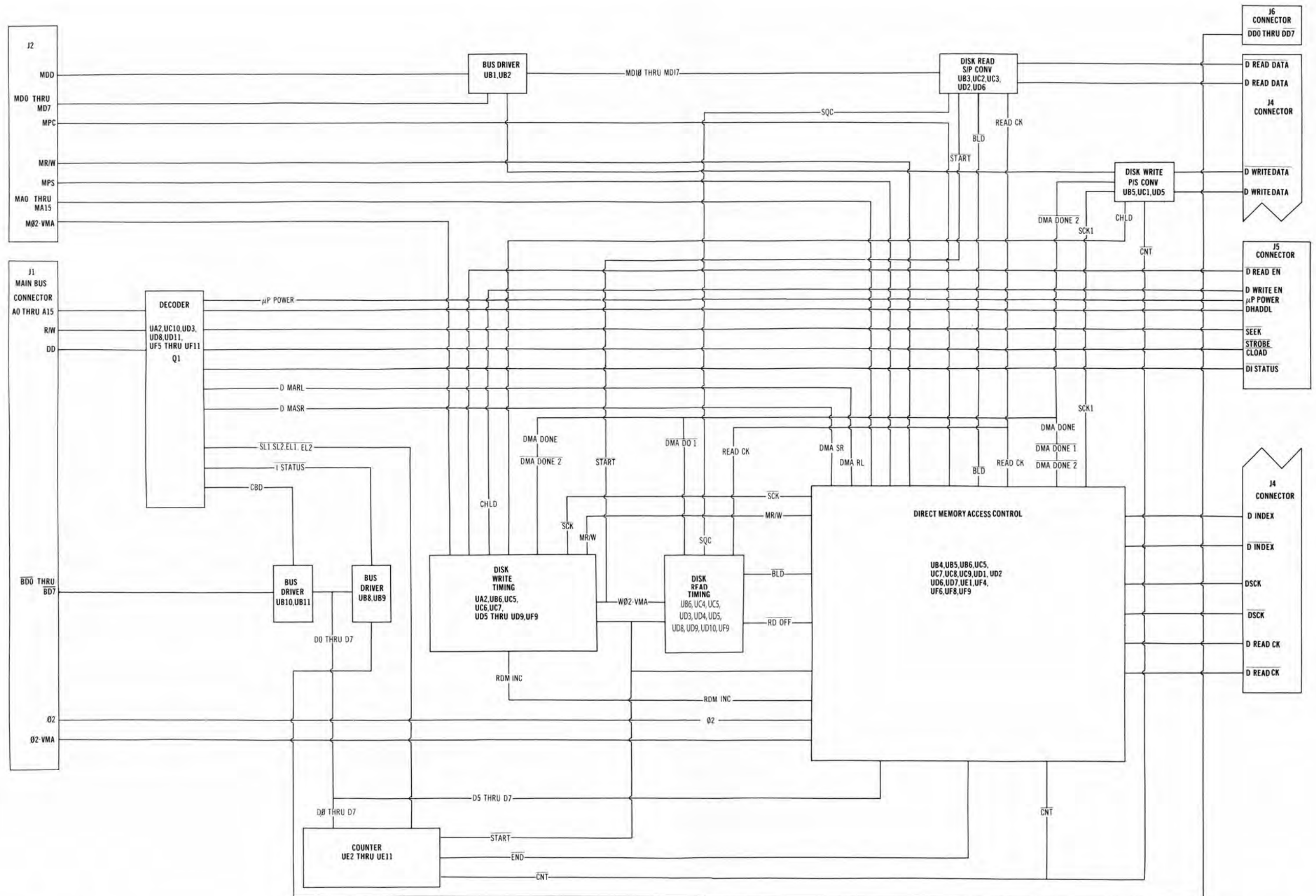
# 555 BOARD BLOCK

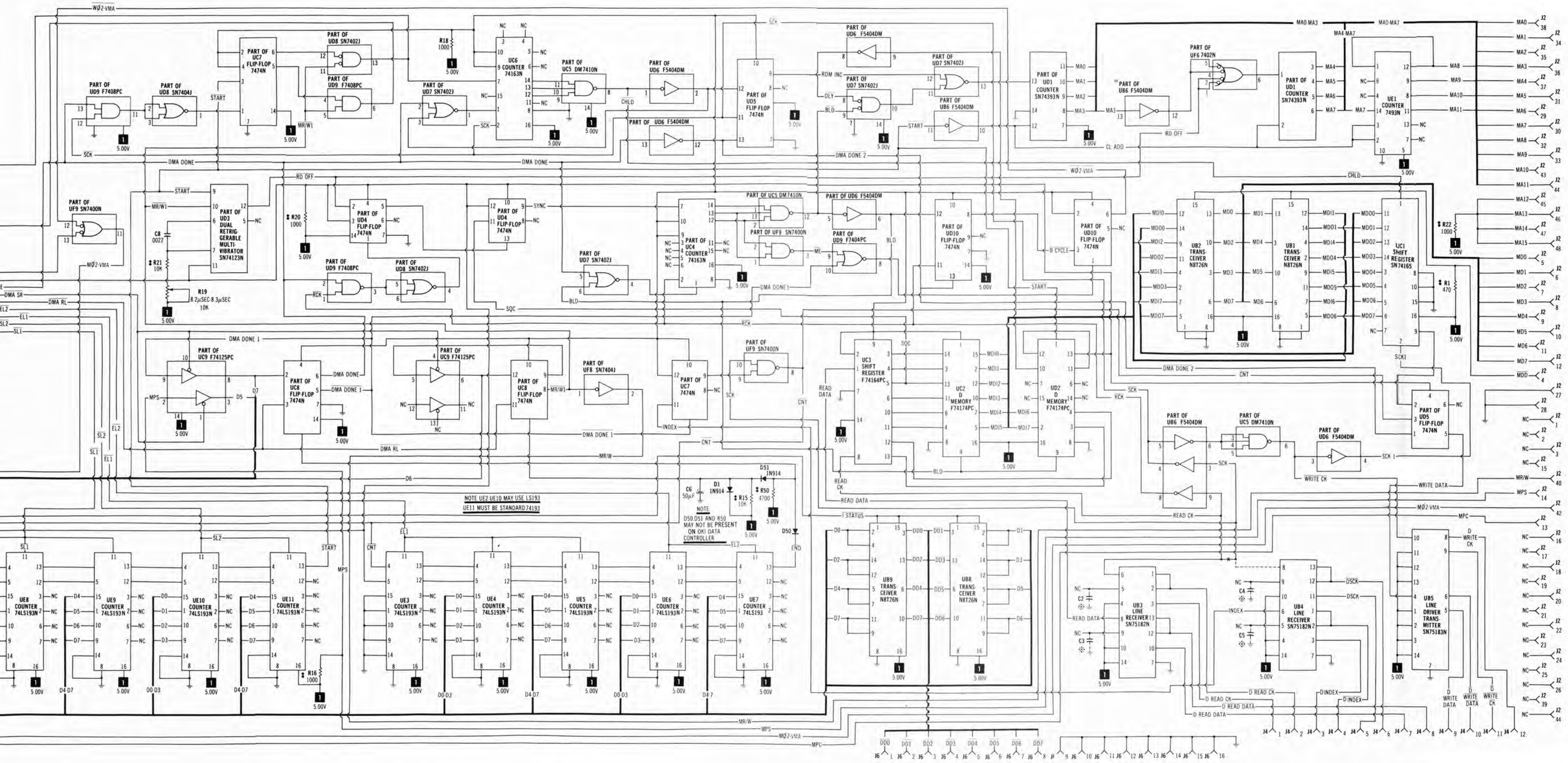
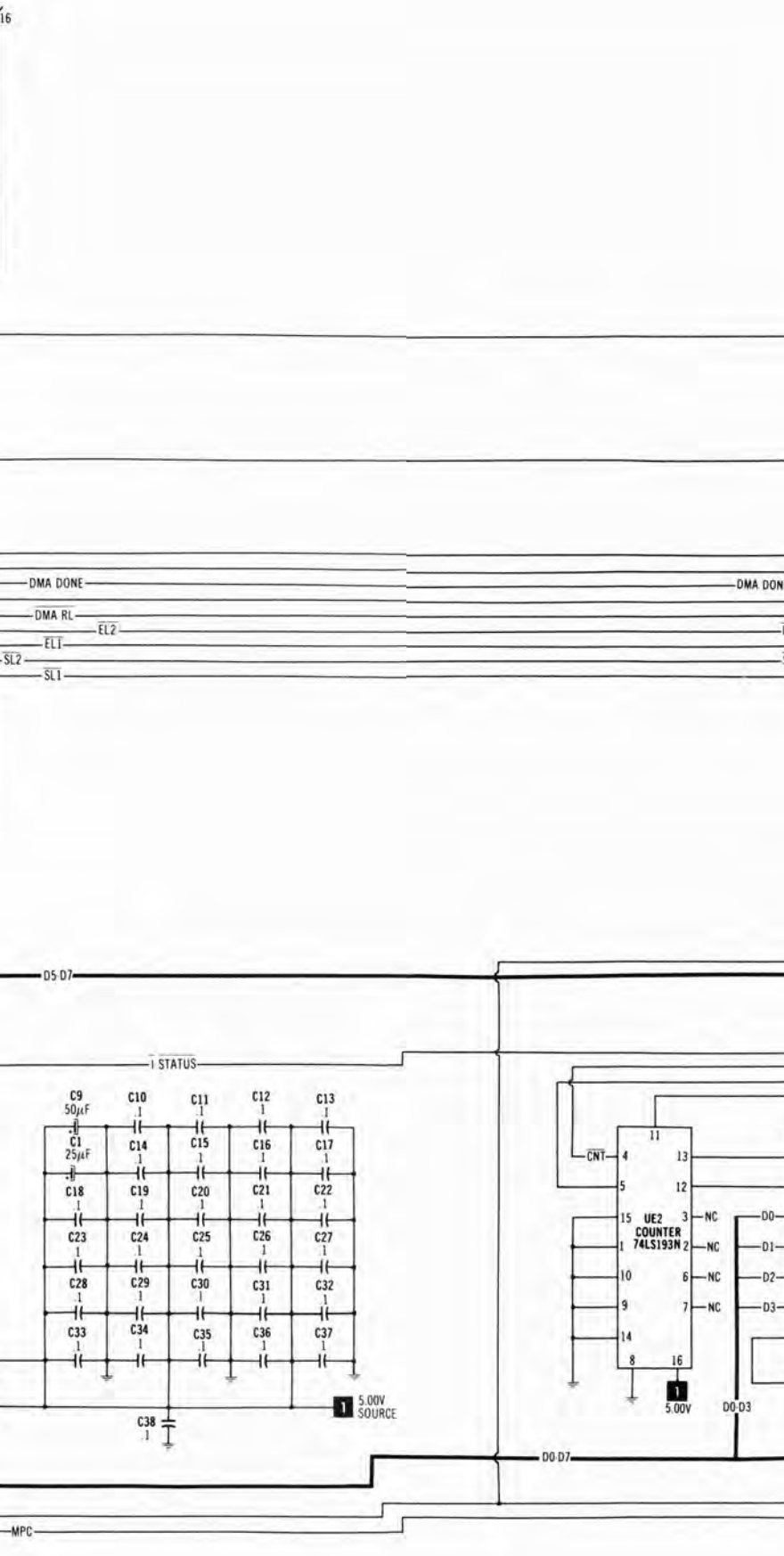
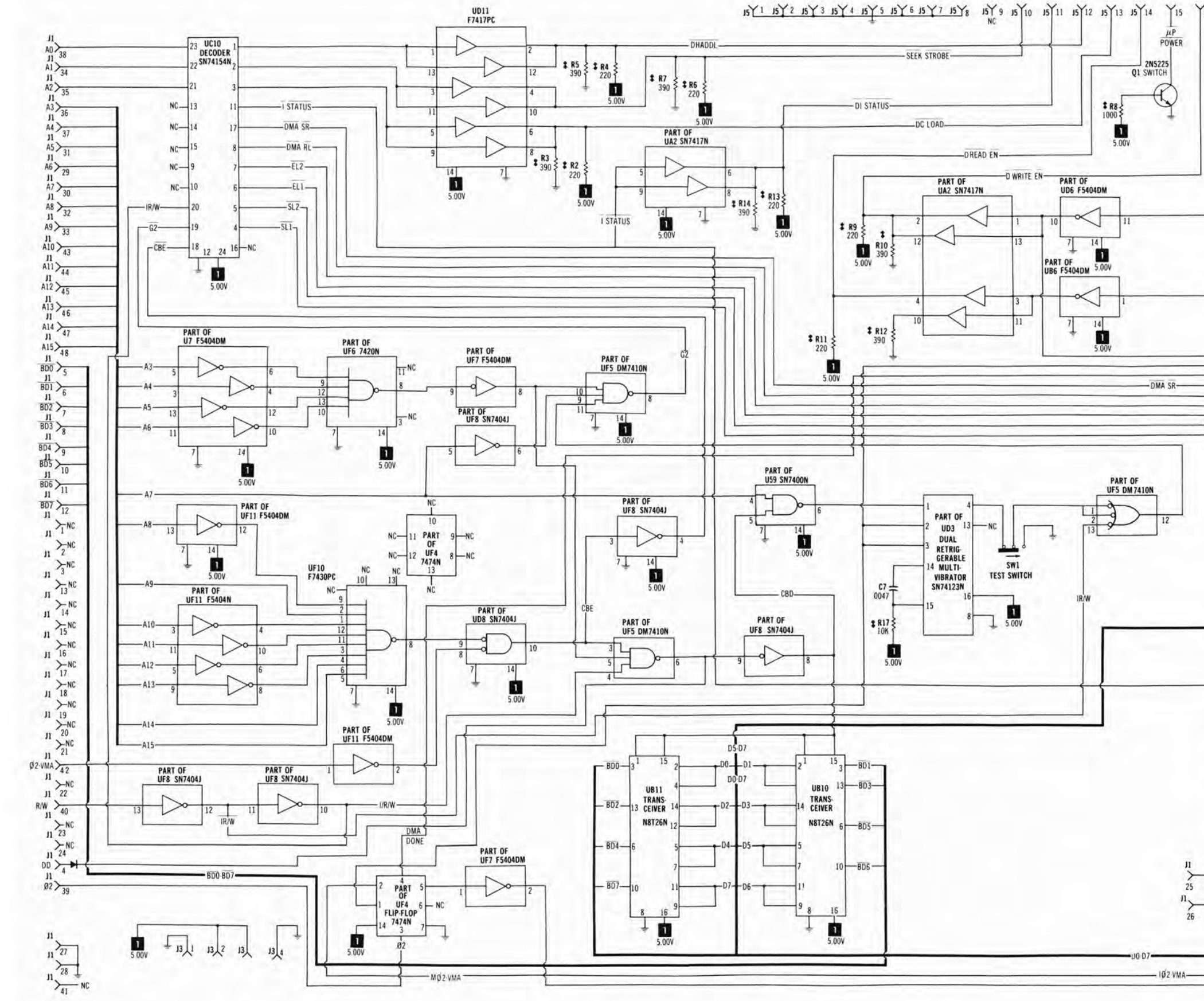


\* LOCATED OTHER SIDE OF BOARD

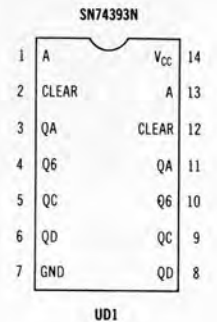
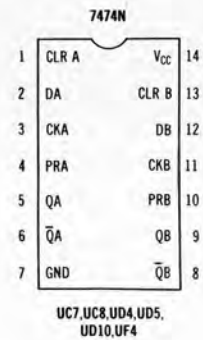
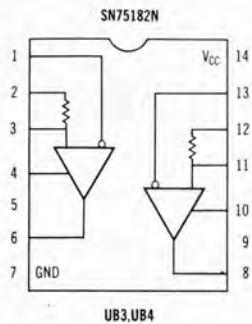
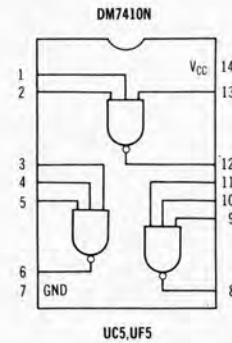
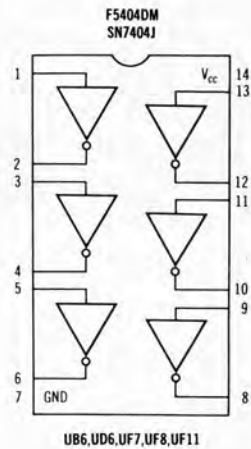
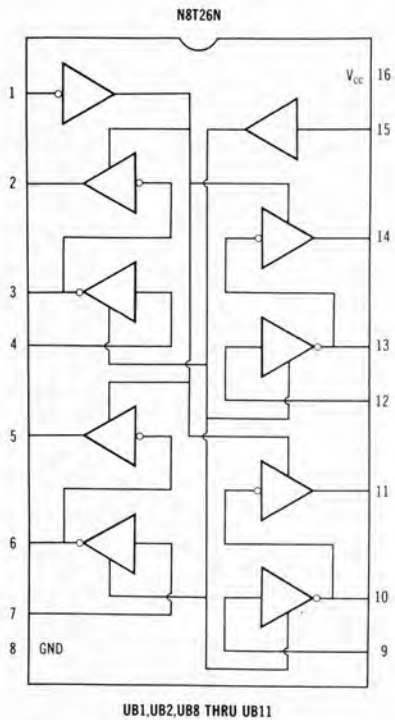
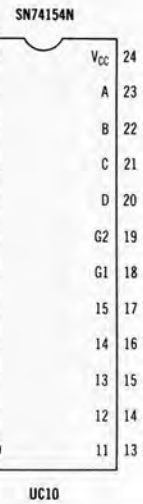
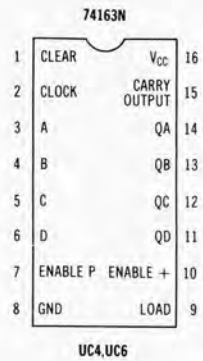
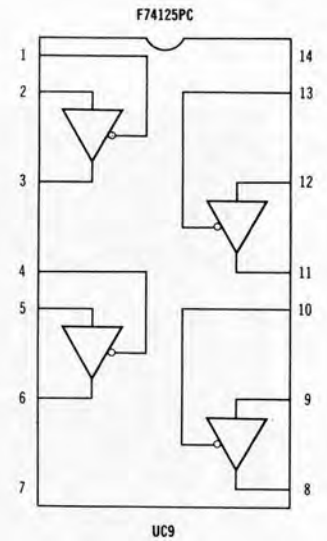
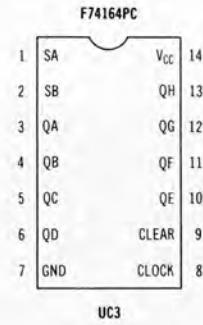
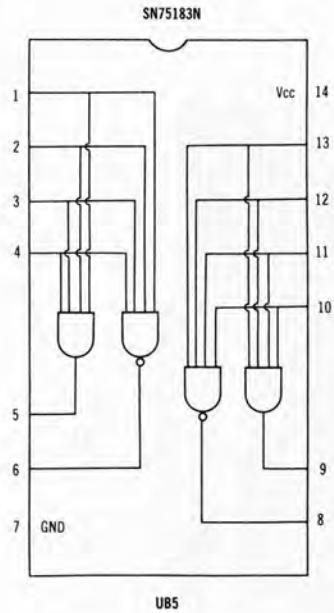
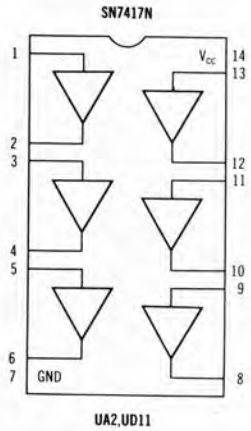




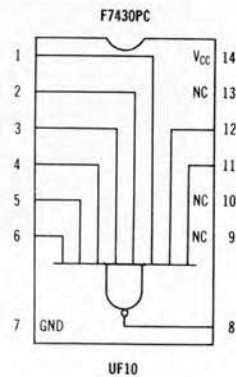
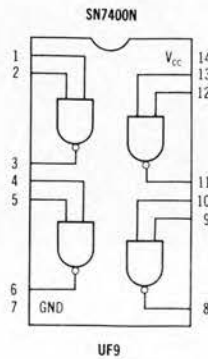
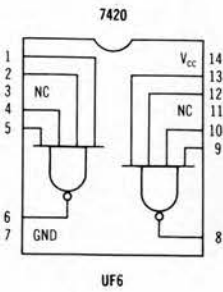
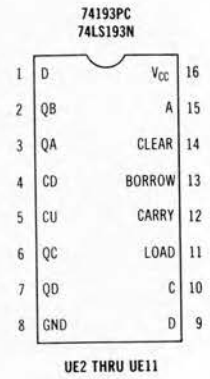
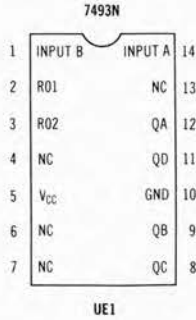
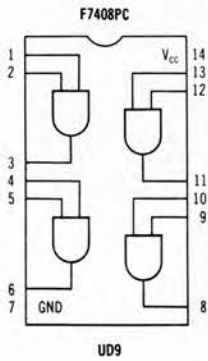
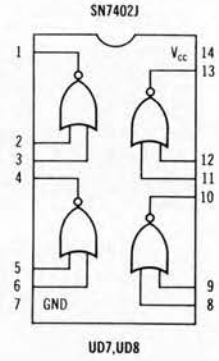
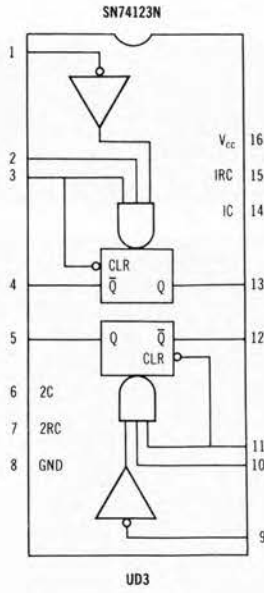
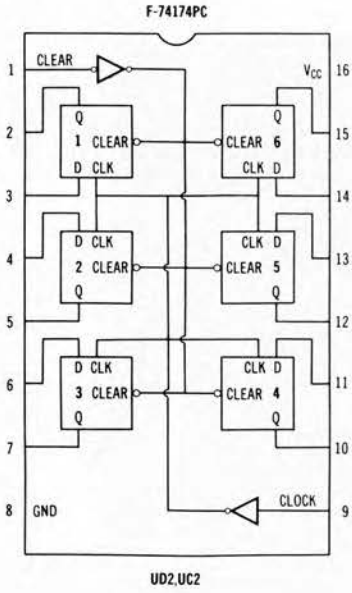


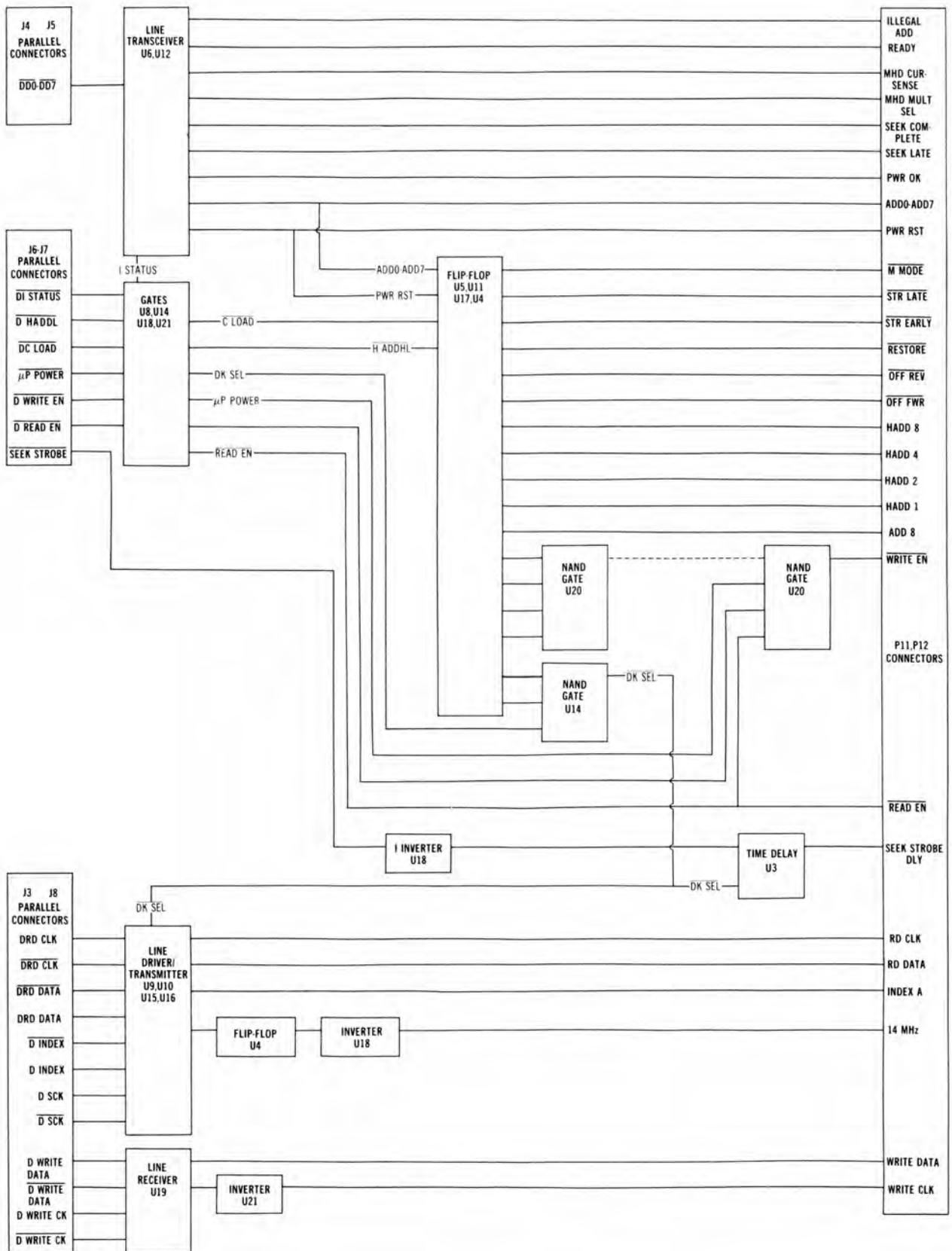


# 590 BOARD PINOUTS

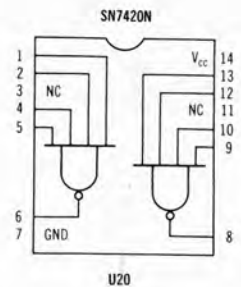
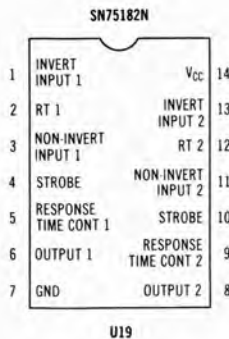
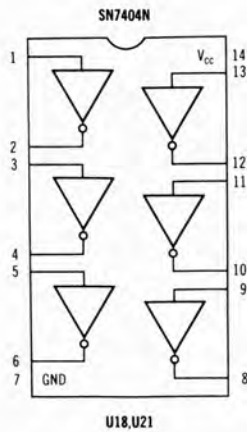
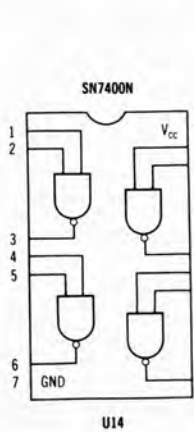
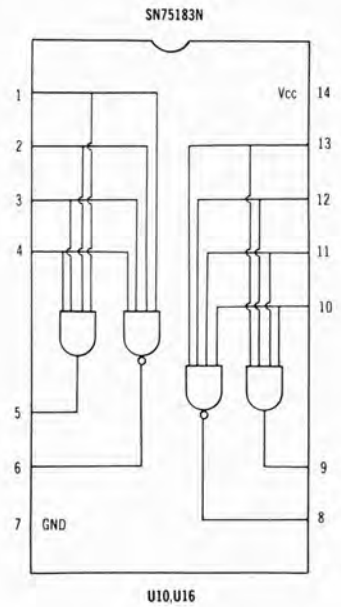
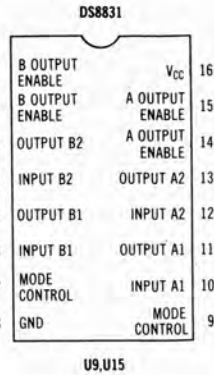
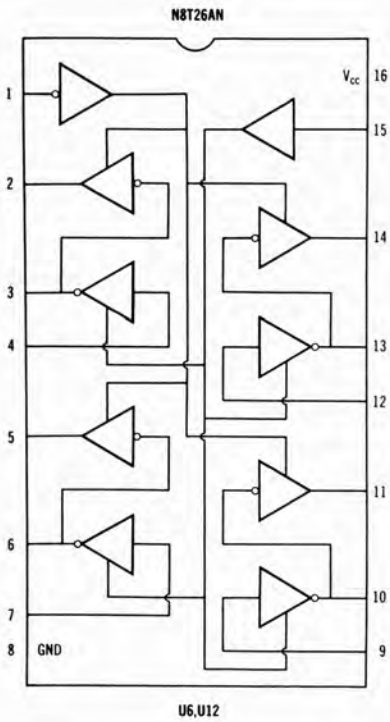
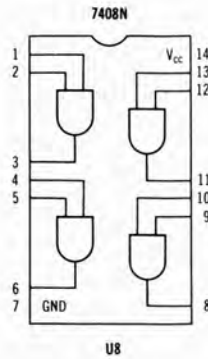
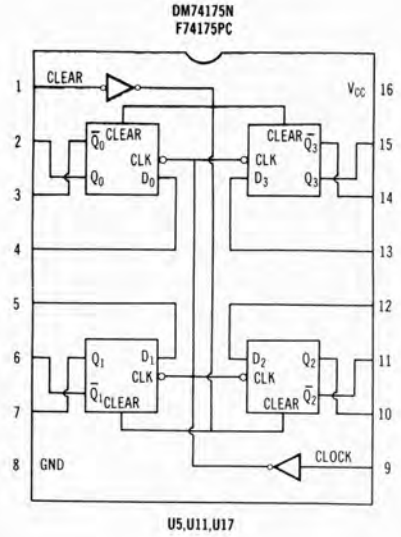
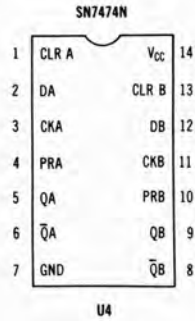
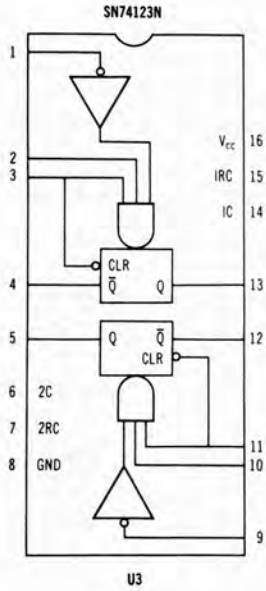


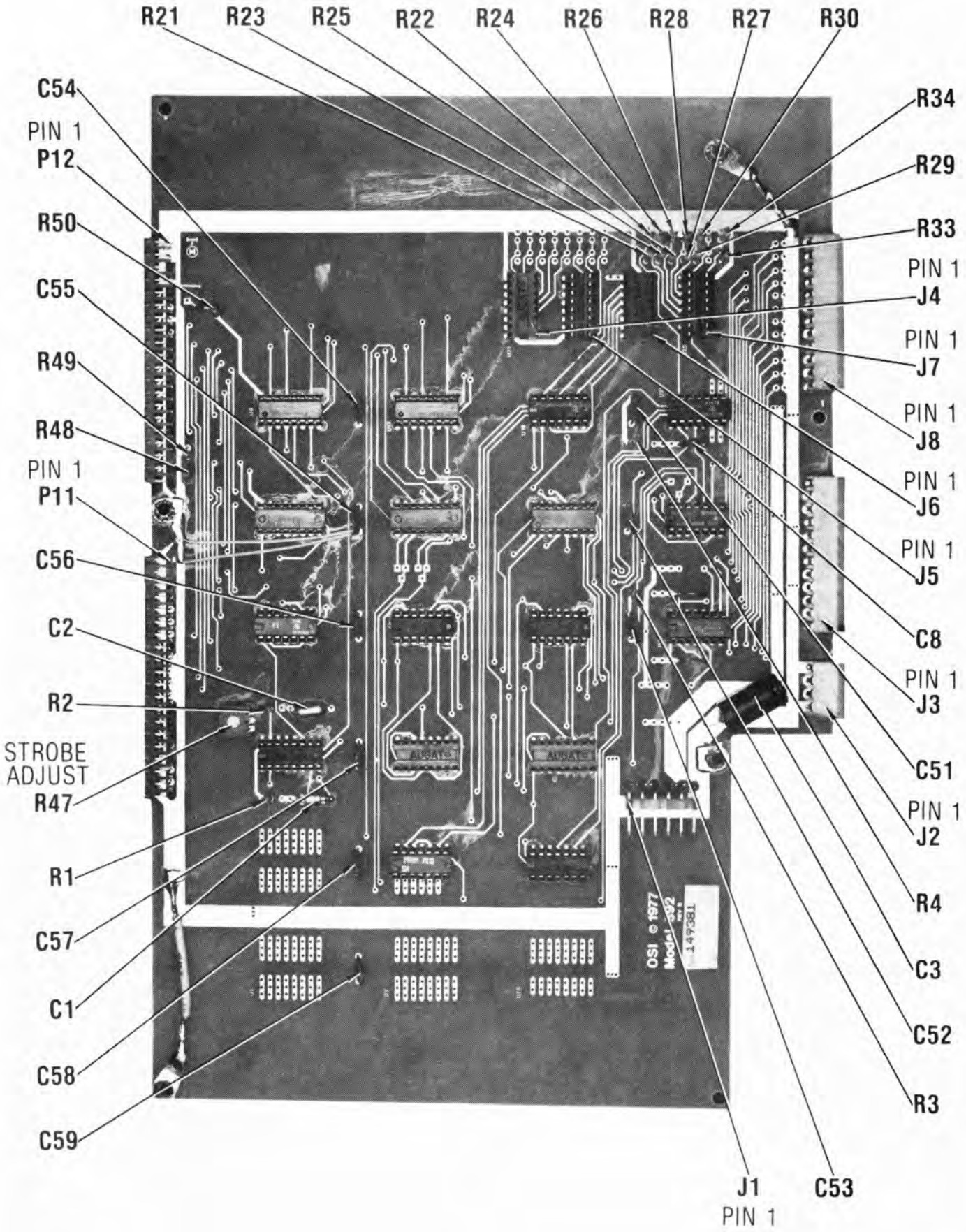
# 590 BOARD PINOUTS (CONTINUED)





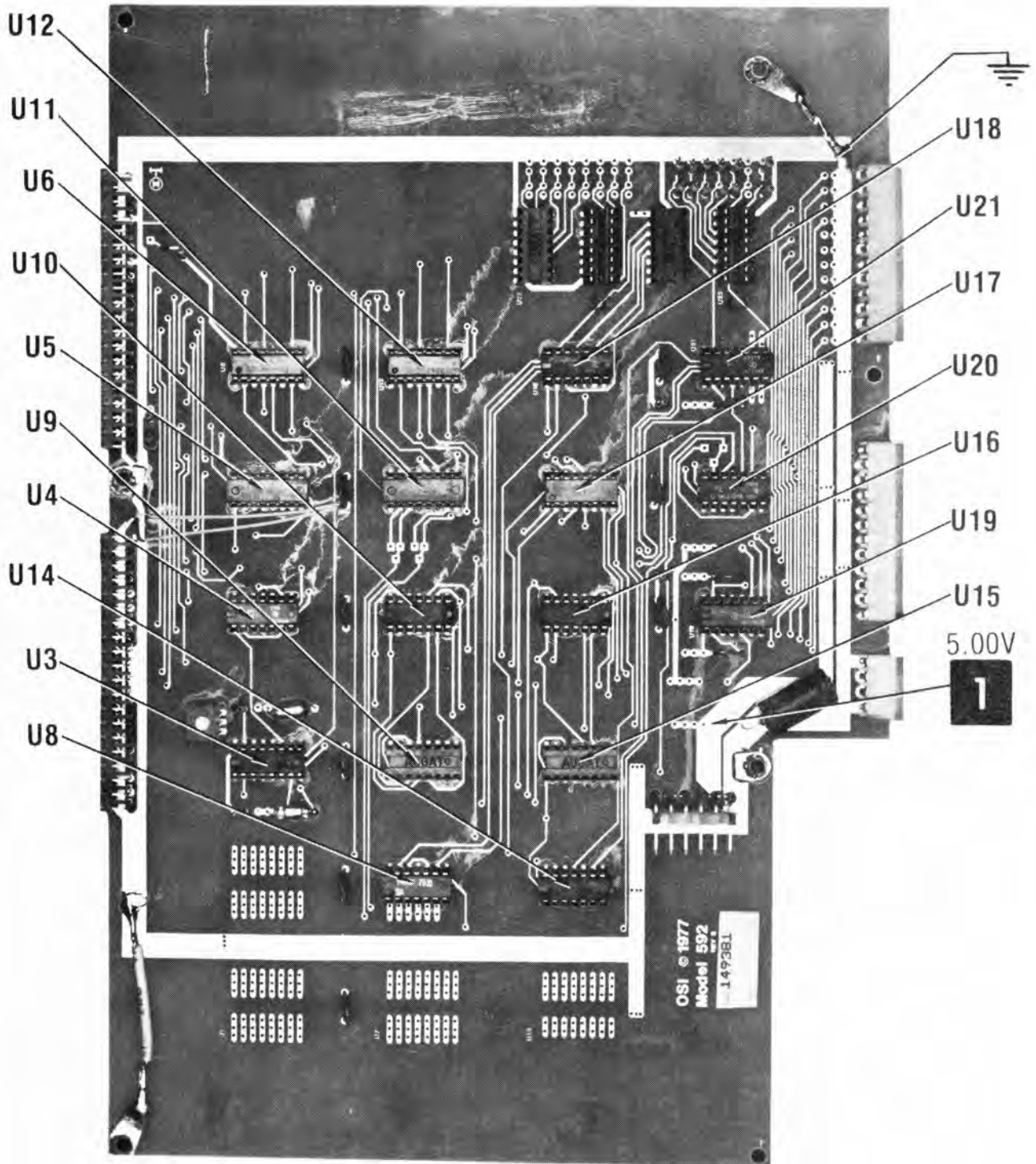
# 592 BOARD PINOUTS





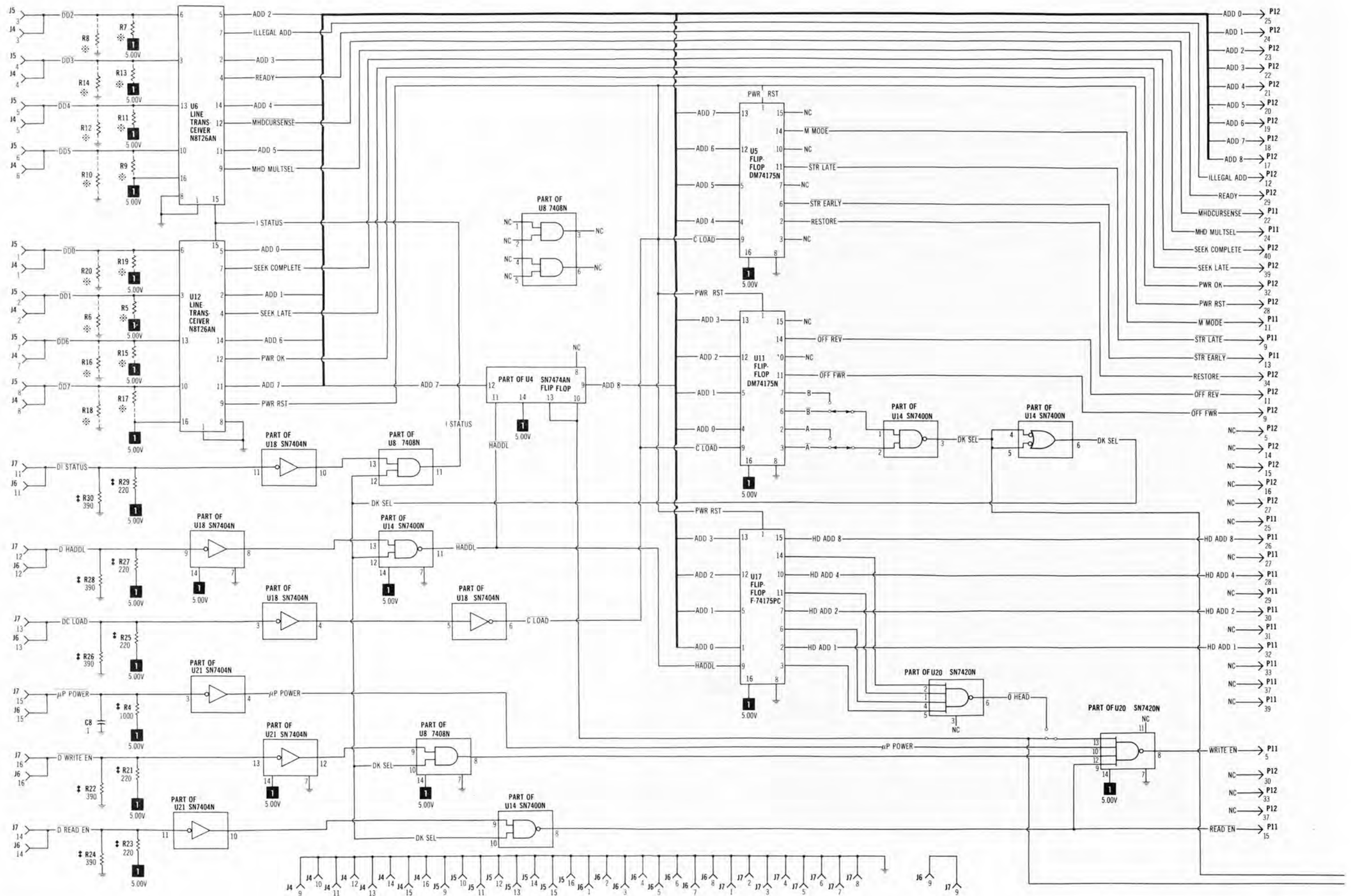
592 BOARD

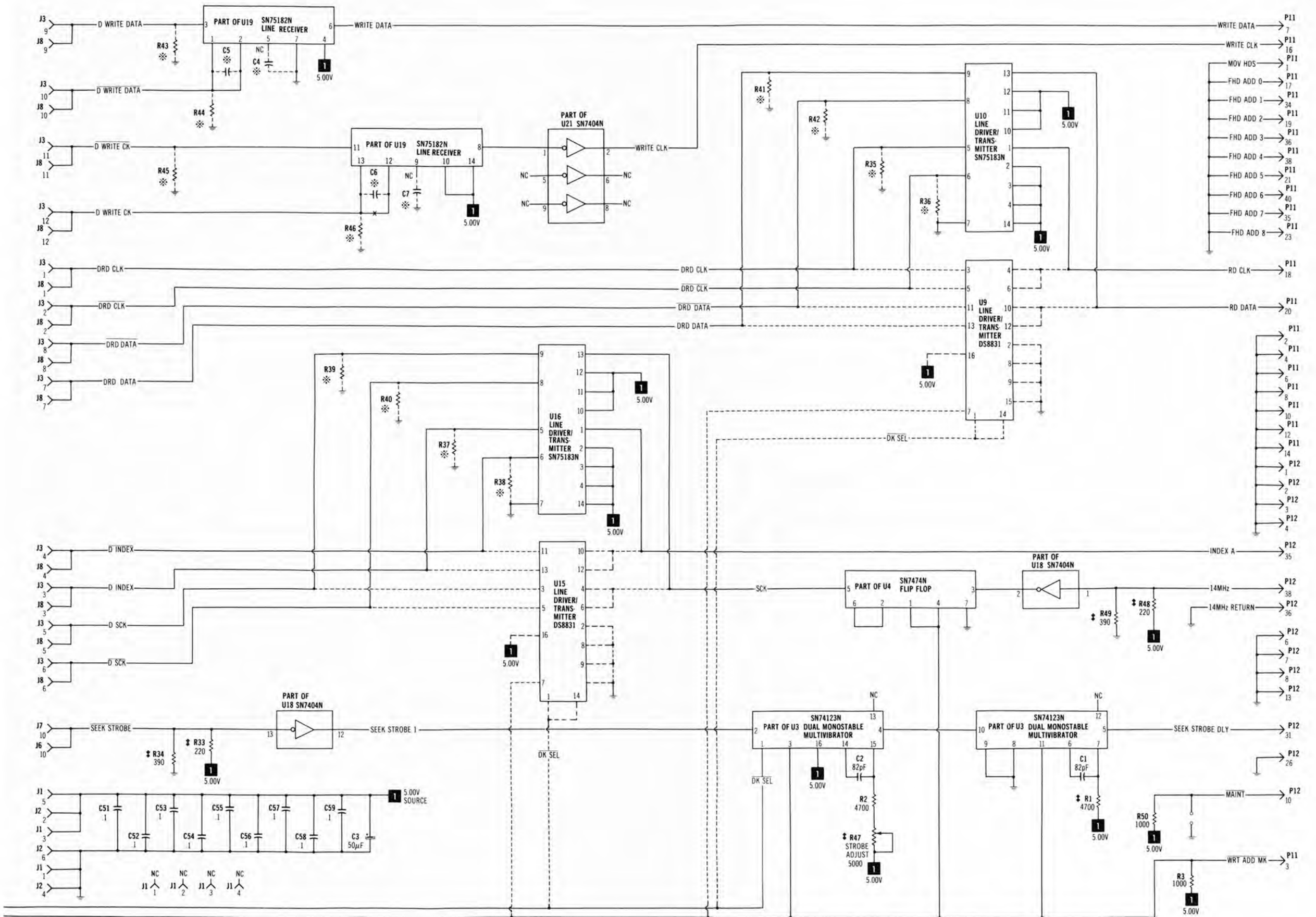


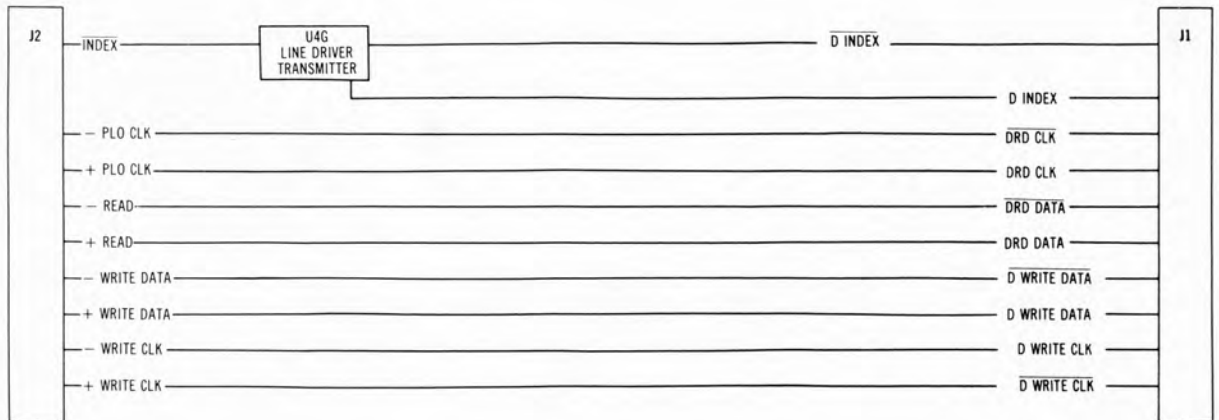
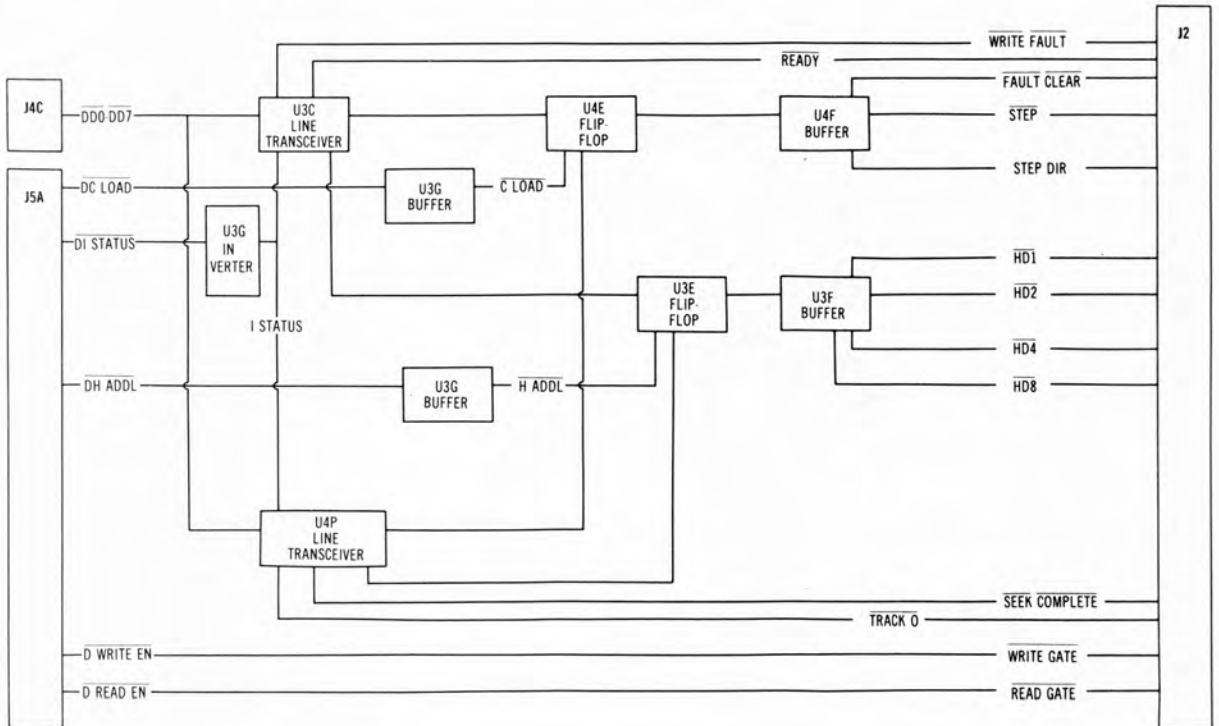


## 592 BOARD

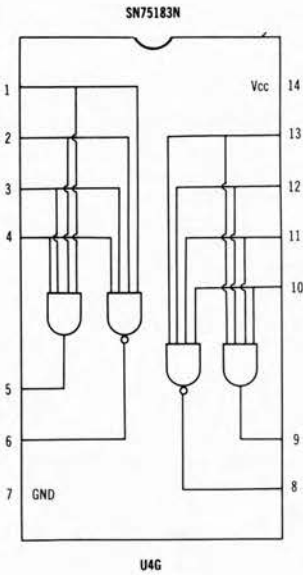
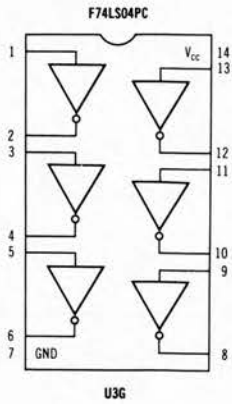
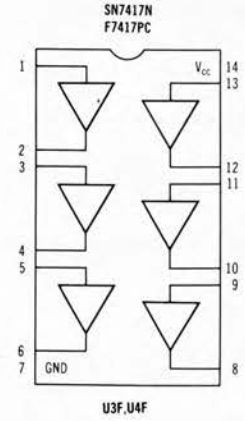
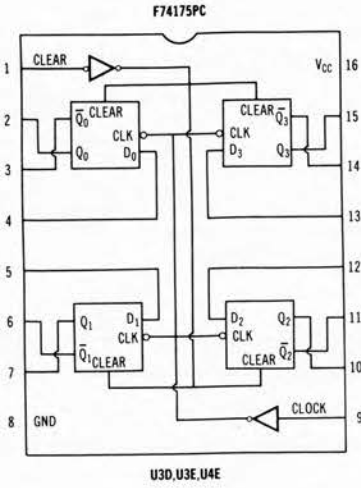
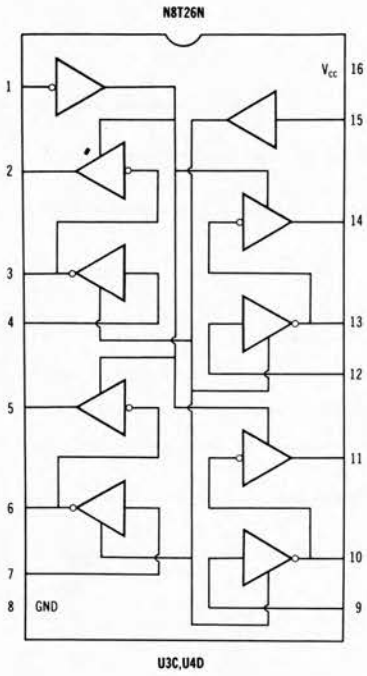
A Howard W. Sams **CIRCUITRACE** Photo

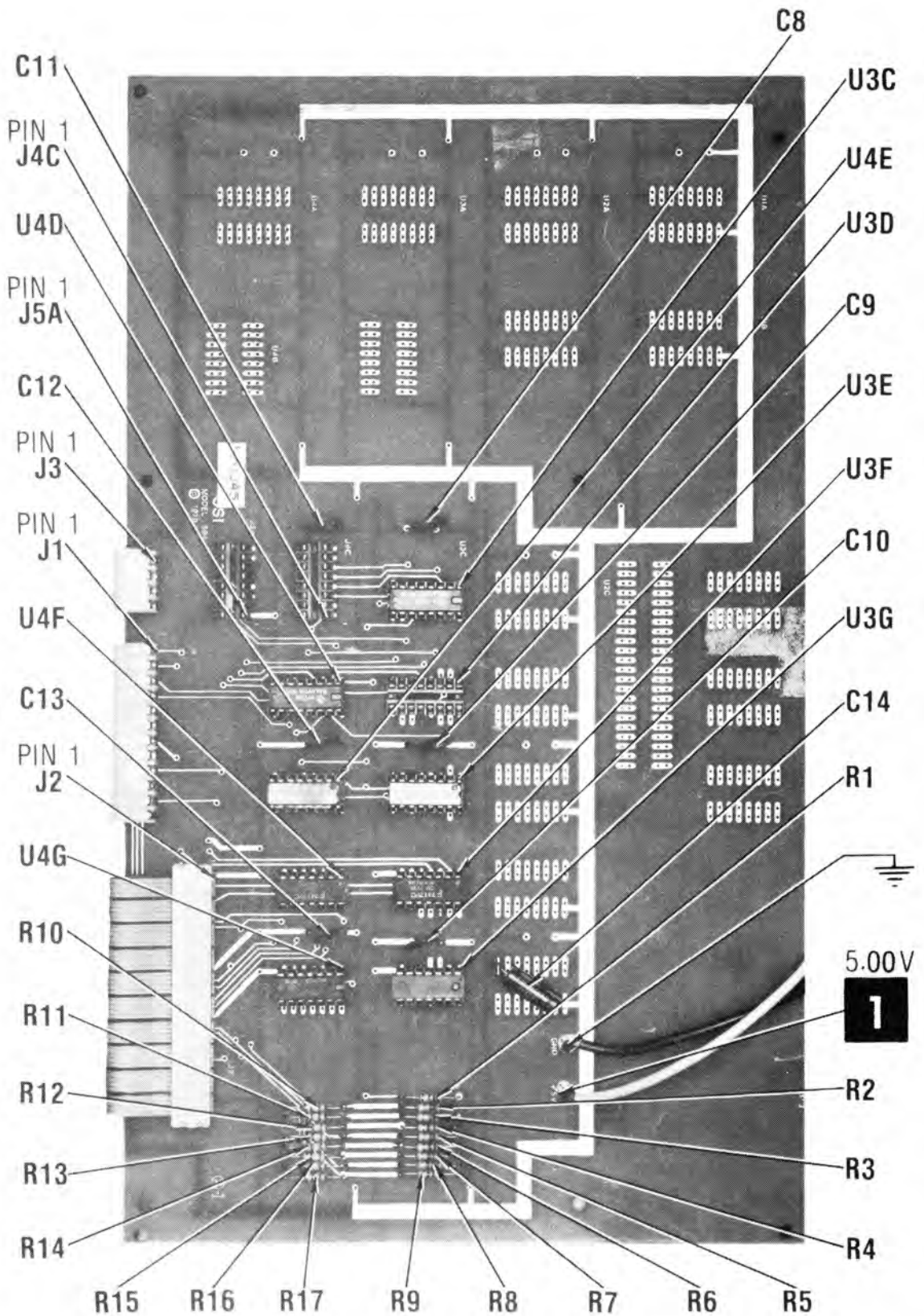


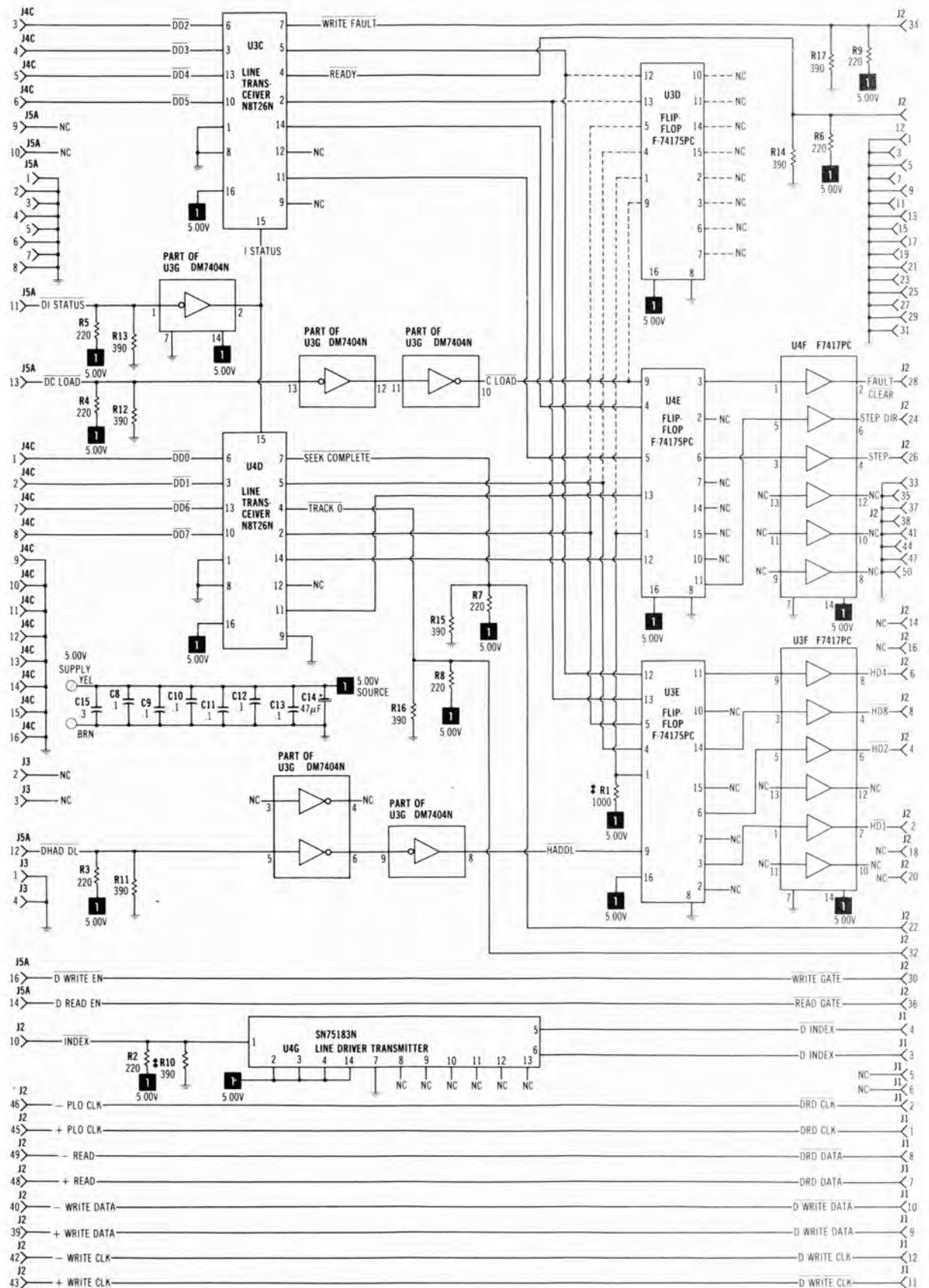




# 594 BOARD PINOUTS







A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
WITH **CIRCUITRACE™**

© Howard W. Sams & Co., Inc. 1980

**FOR SCHEMATIC LEGEND AND  
NOTES SEE REAR COVER.**

**594 BOARD**

**LEGEND FOR 470  
(FLOPPY) BOARD SCHEMATIC**

A0,A1,A2 ..... Address  
A4,A5 ..... Address  
A8-A15 ..... Address  
ACS ..... ACIA Chip Select  
BE ..... Board Enable  
CA1,CA2 ..... Peripheral A Interrupt  
                  Input-Control Line  
CB1,CB2 ..... Peripheral B Interrupt  
                  Input-Control Line  
CLR ..... Clear  
DD ..... Data Direction  
D0-D7 ..... Data  
DRIVE SELECT ..... Drive Select  
ERASE ENABLE ..... Erase Enable  
FAULT ..... Fault  
FAULT RESET ..... Fault Reset  
HEAD LOAD ..... Head Load  
INDEX ..... Index  
IRQ ..... Interrupt Request  
IR/W ..... Internal Read/Write  
IØ2·VMA ..... Internal Phase Two·Valid  
                  Memory Address  
LOW CURRENT ..... Low Current  
PBO-PB7 ..... Port B  
READY DRIVE 1 ..... Ready Drive One  
READY DRIVE 2 ..... Ready Drive Two  
R/W ..... Read/Write  
SECTOR ..... Sector  
SELECT DRIVE 1 ..... Select Drive One  
          (Single-Sided Floppy Interface)  
SELECT DRIVE 2 ..... Select Drive Two  
          (Single-Sided Floppy Interface)  
SEPARATED CLOCK ..... Separated Clock  
SEPARATED DATA ..... Separated Data  
SIDE SELECT ..... Side Select  
          (Dual-Sided Floppy Interface)  
STEP ..... Step  
STEP IN ..... Step In  
TRACK 00 ..... Track Zero

**470 BOARD  
(CONTINUED)**

TX CLK ..... Transmit Clock  
VMA ..... Valid Memory Address  
WAIT ..... Wait  
WRITE DATA ..... Write Data  
WRITE ENABLE ..... Write Enable  
WRITE PROTECT ..... Write Protect  
Ø2·VMA ..... Phase Two·Valid  
                  Memory Address

**LEGEND FOR 505 REV. A  
BOARD SCHEMATIC**

A0-A15 ..... Address  
BE ..... Board Enable  
BRG ..... Baud Rate Generator  
CA1 ..... Control A1  
CA2 ..... Control A2  
CB1 ..... Control B1  
CB2 ..... Control B2  
CLR ..... Clear  
CNT ..... Count  
CS<sub>D</sub> ..... Chip Select D  
CS<sub>E</sub> ..... Chip Select E  
CS<sub>F</sub> ..... Chip Select F  
CS<sub>FL</sub> ..... Chip Select Floppy Disk  
CS<sub>S</sub> ..... Chip Select Serial  
D0-D7 ..... Data  
DD ..... Data Direct  
ERASE ENABLE ..... Erase Enable  
FAULT ..... Fault  
FAULT RESET ..... Fault Reset  
HEAD LOAD ..... Head Load  
INDEX ..... Index  
IRQ ..... Interrupt Request  
IR/W ..... Internal Read/Write  
IØ2·VMA ..... Internal Phase Two·Valid  
                  Memory Address  
LOW CURRENT ..... Low Current

Any  $\overline{\text{Bar}}$  above any alphabetical or numerical combination indicates line active in a low (0) state.





**510 BOARD  
(CONTINUED)**

RX	Receive Data
RX CLK	Receive Clock
TX CLK	Transmit Clock
VMA	Valid Memory Address
WAIT	Wait
WR	Z80 Write
Ø1 <sub>B</sub>	Phase One(6800)
Ø2	Phase Two
Ø2 <sub>A</sub>	Phase Two(6502)
Ø2 <sub>B</sub>	Phase Two(6800)
Ø2·VMA	Phase Two·Valid Memory Address

**LEGEND FOR 520  
REV. B BOARD SCHEMATIC**

A0-A17	Address
CE0-CE3	Chip Enable
D0-D7	Data
DD	Data Direction
DIO-DI7	Data In
D00-D07	Data Out
R/W	Read/Write
WAIT	Wait
Ø2·VMA	Phase Two·Valid Memory Address

**LEGEND FOR 520 REV. C  
BOARD SCHEMATIC**

A0-A19	Address
MA0-MA11	Memory Address
D0-D7	Data
CE0-CE3	Chip Enable
DD	Data Direct
R/W	Read/Write
MR/W	Memory Read/Write

**520 BOARD  
(CONTINUED)**

DIO-DI7	Data In
D00-D07	Data Out
WAIT	Wait
Ø2·VMA	Phase Two·Valid Memory Address

**LEGEND FOR 525 BOARD SCHEMATIC**

BA0-BA19	Backplane Address
BD0-BD7	Backplane Data
BBE	Backplane Bus Enable
BIE	Backplane Input Enable
BR/W	Backplane Read/Write
BØ2 VMA	Backplane Phase Two·Valid Memory Address
CA0-CA19	Port Address
CBE	Port Bus Enable
CD0-CD7	Port Data
CE0-CE15	Chip Enable For RAM
CIE	Port Input Enable
CR/W	Port Read/Write
CØ2 VMA	Port Phase Two·Valid Memory Address
DD <sub>B</sub>	Data Direct Backplane
DD <sub>P</sub>	Data Direct Port
MA0-MA13	Memory Address
MD0-MD7	Memory Data
MR/W	Memory Read/Write
PC	Port Control
PS	Port Status
WAIT <sub>B</sub>	Wait Backplane
WAIT <sub>P</sub>	Wait Port

**LEGEND FOR 527 BOARD SCHEMATIC**

A0-A19	Address
CE0-CE23	Chip Enable RAM

Any  $\overline{\text{Bar}}$  above any alphabetical or numerical combination indicates line active in a low (0) state.

**527 BOARD  
(CONTINUED)**

DD	Data Direct
D0-D7	Data
IR/W	Internal Read/Write
MM	Memory Management
R/W	Read/Write
VMA	Valid Memory Address
WAIT	Wait
Y0-Y1-Y2	Upper Memory Decode
φ0	Phase Zero
φ2·VMA	Phase Two·Valid Memory Address

**LEGEND FOR 535 BOARD SCHEMATIC**

A0-A19	Address
BE	Bus Enable
D0-D7	Data
DD	Data Direct
D10-D17	Data In
DL1-DL16	Delay
D00-D07	Data Out
E2	Enable Two
Iφ2	Internal Phase Two
IR/W	Internal Read/Write
MA0-MA6	Memory Address
RAS0-RAS2	Row Address Strobe
RE	Row Enable
R/W	Read/Write
φ0IN	Phase Zero In
φ2	Phase Two
φ2·VMA	Phase Two·Valid Memory Address
φDETECT	Phase Detect

**LEGEND FOR 550 BOARD SCHEMATIC**

A0	Address Zero
A1-A4	Address

**555 BOARD  
(CONTINUED)**

A8-A19	Internal Data
BE	Bus Enable
BRG	Baud Rate Generator
CS1-CS16	Chip Select
D0-D7	Data
DD	Data Direct
DE	Data Enable
IA0	Internal Address Zero
ID0-ID7	Internal Data
IRQ	Interrupt Request
IR/W	Internal Read/Write
Iφ2·VMA	Internal Phase Two·Valid Memory Address
R/W	Read/Write
SPR-I	Spare In
SPR-O	Spare Out
WAIT	Wait
φ2·VMA	Phase Two·Valid Memory Address

**LEGEND FOR 555 BOARD SCHEMATIC**

A0-A15	Address
ACK	Acknowledge
ACS0-ACS3	ACIA Chip Select
ACS15	ACIA Chip Select
BUSY	Busy
CARRIAGE READY	Carriage Ready
CARRIAGE STROBE	Carriage Strobe
CE0-CE7	Chip Enable
CHECK	Check
DATA 1-DATA 8	Data Lines (Centronics Interface)
D0-D7	Data
DD	Data Direct
DL1-DL12	Data Line (NEC Interface)
FAULT	Fault
F4XX	Address F4XX <sub>16</sub>

Any  $\bar{\phantom{x}}$  above any alphabetical or numerical combination indicates line active in a low (0) state.

## 555 BOARD (CONTINUED)

F5XX	Address F5XX <sub>16</sub>
IA0-IA9	Internal Address
ID0-ID7	Internal Data
IIRQ	Internal Interrupt Request
IRQ	Interrupt Request
IR/W	Internal Read/Write
IØ2·VMA	Internal Phase Two·Valid Memory Address
PAPER	Paper
P.F. READY	Paper Feed Ready
P.F. STROBE	Paper Feed Strobe
PORT 0 CLOCK	Port 0 Clock
PORT 0 IN	Port 0 In
PORT 0 OUT	Port 0 Out
PORT 1 CLOCK	Port 1 Clock
PORT 1 IN	Port 1 In
PORT 1 OUT	Port 1 Out
PORT 2 CLOCK	Port 2 Clock
PORT 2 IN	Port 2 In
PORT 2 OUT	Port 2 Out
PORT 3 CLOCK	Port 3 Clock
PORT 3 IN	Port 3 In
PORT 3 OUT	Port 3 Out
PORT 15 CLOCK	Port 15 Clock
PORT 15 IN	Port 15 In
PORT 15 OUT	Port 15 Out
PRIME	Prime
PRINTER READY	Printer Ready
P.W. READY	Print Wheel Ready
P.W. STROBE	Print Wheel Strobe
RESTORE	Restore
R/W	Read/Write
SELECT	Select
STROBE	Strobe
WAIT	Wait
Ø2·VMA	Phase Two·Valid Memory Address

## LEGEND FOR 590 BOARD SCHEMATIC

A0-A15	Address
B CYCLE	Byte Cycle
BD0-BD7	Bus Data
BLD	Byte Load
CBD	Computer Bus Direction
CBE	Computer Bus Enable
CHLD	Character Load
CL ADD	Clear Address
CNT	Count
DC LOAD	Disk Control Load
DD	Data Direction
D0-D7	Data
DD0-DD7	Disk Data
D HADDL	Disk Head Address Load
D INDEX	Disk Index
DI STATUS	Disk Input Status
DLY	Delay
DMA DONE	Direct Memory Access Done
DMA DONE 1	Direct Memory Access Done One
DMA DONE 2	Direct Memory Access Done Two
DMA RL	Direct Memory Access Register Load
DMA SR	Direct Memory Access Status Register
D READ CK	Disk Read Clock
D READ DATA	Disk Read Data
D READ EN	Disk Read Enable
D SCK	Disk Servo Clock
D WRITE CK	Disk Write Clock
D WRITE DATA	Disk Write Data
D WRITE EN	Disk Write Enable
EL1	End Load One
EL2	End Load Two
END	End
G2	Gate Two

Any  $\overline{\text{Bar}}$  above any alphabetical or numerical combination indicates line active in a low (0) state.

## 590 BOARD (CONTINUED)

INDEX	Index
IR/W	Internal Read/Write
I STATUS	Input Status
MD0-MD7	Memory Data
MA0-MA15	Memory Address
MDD	Memory Data Direction
MDI0-MDI7	Memory Data In
MD00-MD07	Memory Data Out
MPC	Memory Process Clear
MPS	Memory Process Set
MR/W	Memory Read/Write
MR/W1	Memory Read/Write One
ME	Memory Enable
MØ2·VMA	Memory Phase Two·Valid Memory Address
PD	Partial Decode
RD OFF	Read Offset
READ CK	Read Clock
READ DATA	Read Data
RDM INC	Read Memory Increment
RCK	Read Clock
SCK	Servo Clock
SCK1	Servo Clock One
SEEK STROBE	Seek Strobe
SL1	Start Load One
SL2	Start Load Two
START	Start
SQC	Sync QC
SYNC	Sync
WRITE DATA	Write Data
WØ2·VMA	Write Phase Two·Valid Memory Address
µP POWER	Microprocessor Power
Ø2	Phase Two
Ø2·VMA	Phase Two·Valid Memory Address

## LEGEND FOR 592 BOARD SCHEMATIC

A	Disk Address A
ADD0-ADD8	Address Disk
B	Disk Address B
C LOAD	Control Load
DC LOAD	Disk Control Load
DD0-DD7	Disk Data
D HADDL	Disk Head Address Load
D INDEX	Disk Index
DI STATUS	Disk Input Status
DK SEL	Disk Select
DRD CLK	Disk Read Clock
DRD DATA	Disk Read Data
D READ EN	Disk Read Enable
D SCK	Disk Servo Clock
D WRITE CLK	Disk Write Clock
D WRITE DATA	Disk Write Data
D WRITE EN	Disk Write Enable
FHDADD0-FHDADD8	Fixed Head Address
HADDL	Head Address Load
HDADD1	Head Selection Address Line
HDADD2	Head Selection Address Line
HDADD4	Head Selection Address Line
HDADD8	Head Selection Address Line
ILLEGAL ADD	Illegal Address
INDEX A	Index A
I STATUS	Input Status
MAINT	Maintenance
MHDCURSENSE	Moving Head Current Sense
MHD MULTSEL	Multiple Moving Head Selected
M MODE	Maintenance Mode
MOV HDS	Moving Heads
OFF FWR	Offset Forward
OFF REV	Offset Reverse
PWR OK	Power OK

Any  $\overline{\text{Bar}}$  above any alphabetical or numerical combination indicates line active in a low (0) state.

**592 BOARD  
(CONTINUED)**

PWR RST	Power Reset
RDCLK	Read Clock
RDDATA	Read Data
READ EN	Read Enable
READY	Ready
RESTORE	Restore
SCK	Servo Clock
SEEK COMPLETE	Seek Complete
SEEK LATE	Seek Late
SEEK STROBE	Seek Strobe
SEEK STROBE DLY	Seek Strobe Delayed
SEEK STROBE 1	Seek Strobe One
STR EARLY	Strobe Early
STR LATE	Strobe Late
$\mu$ P POWER	Microprocessor Power
WRITE CLK	Write Clock
WRITE DATA	Write Data
WRITE EN	Write Enable
WRT ADD MK	Write Address Mark
0 HEAD	Zero Head









**LEGEND FOR 594 BOARD SCHEMATIC**

C LOAD	Control Load
D INDEX	Disk Index
D HADDL	Disk Head Address Load
D READ EN	Disk Read Enable
D WRITE CLK	Disk Write Clock
D WRITE DATA	Disk Write Data
D WRITE EN	Disk Write Enable
DC LOAD	Disk Control Load

**594 BOARD  
(CONTINUED)**

DD0-DD7	Disk Data
DI STATUS	Disk Input Status
DRD CLK	Disk Read Clock
DRD DATA	Disk Read Data
FAULT CLEAR	Fault Clear
HADDL	Head Address Load
HD1,HD2,HD4,HD8	Head Selection Address Lines
I STATUS	Input Status
PLO CLK	Phase Lock Osc Clock
READY	Ready
SEEK COMPLETE	Seek Complete
STEP DIR	Step Direction
TRACK 0	Track Zero
WRITE CLK	Write Clock
WRITE FAULT	Write Fault

**SCHEMATIC NOTES**

-  Circuitry not used in some versions.
-  Circuitry used in some versions.
-  Optional part. Value determined by application
-  Ground
-  Common tie point
-  Chassis
-  Flame retardant resistor
-  See parts list

Item numbers in rectangles appear in the alignment/adjustment instructions.  
 Supply voltage maintained as shown in input.  
 Voltages measured with digital meter.  
 Terminal identification may not be found on unit.  
 Resistors are 1/4W or less, 5% unless noted.  
 Value in ( ) used in some versions.

**OHIO SCIENTIFIC**

**1333 S. Chillicothe Road  
Aurora, Ohio 44202**