

Servicing Data

OHIO SCIENTIFIC  
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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



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## GENERAL SERVICING/SAFETY PRECAUTIONS

Use an isolation transformer for bench servicing.

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

Maintain line voltage at 120VAC.

Use an isolation (times 10) probe on scope.

Remove power from unit before removing or installing chips.

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

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

Install RAM in Chip Enable sequence only.

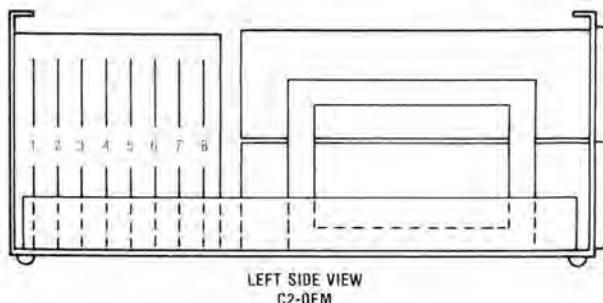
**Caution:** Ground path on the boards is parallel to the B+ path on the opposite side of the board.

## 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.

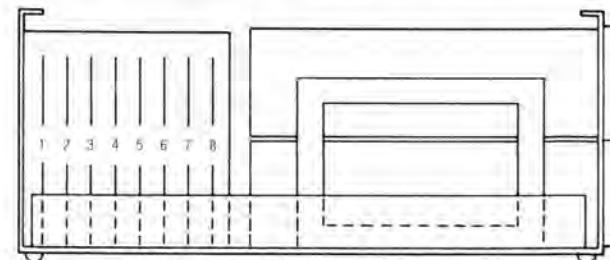


LEFT SIDE VIEW  
C2-OEM

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.



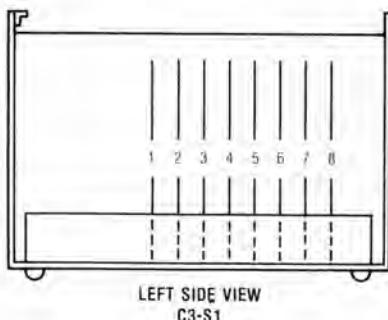
LEFT SIDE VIEW  
C3-OEM

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



LEFT SIDE VIEW  
C3-S1

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

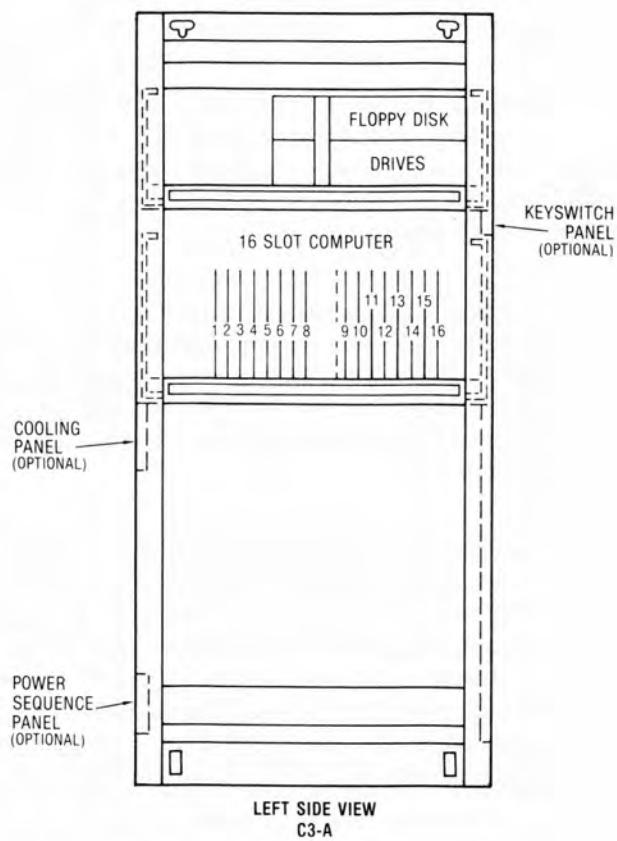
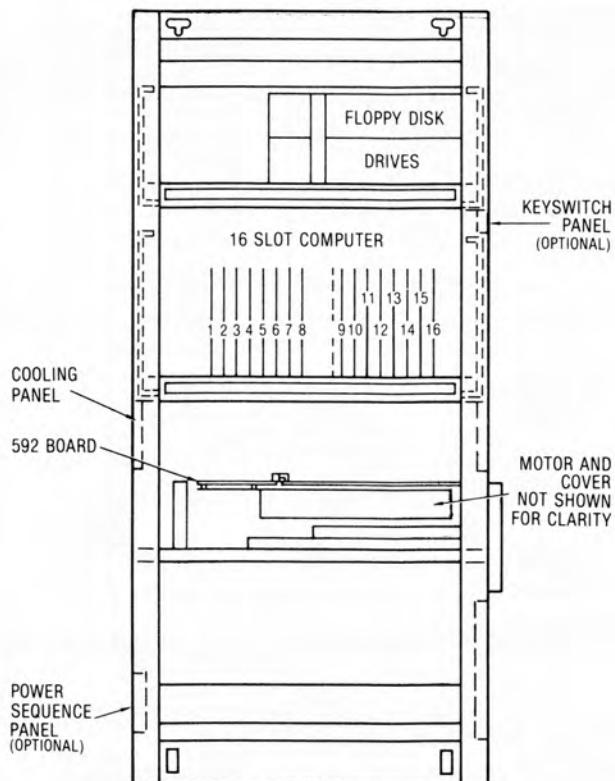


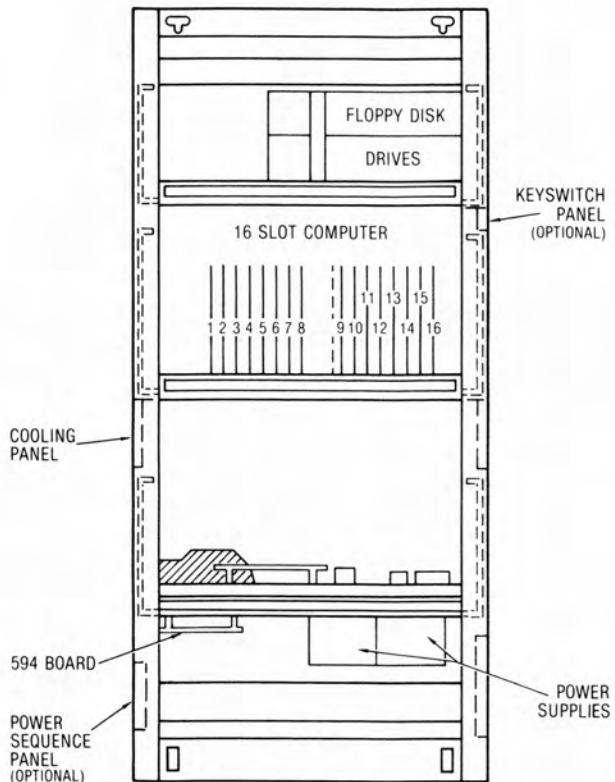
FIGURE 4

## 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.	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 U1A U1B	IN914 DM7417N MC68B21F	0-1N914 IC-7417 IC-68821	GE-514	PTC214	SK3100/519	ECG519 ECG7417	TM519	WEP925/519	103-131
U1C	6820 6850P 68850	IC-68850							
U1D-U1E	N8T26N DM7417N	IC-8T26 IC-7417							
U2A U2B U3A U3C	7400 DM7417N DM7404N	IC-7400 IC-7417 IC-7404	GE-7400 GE-7404 GE-74123		SK7400 SK7404 SK74123	ECG7417 ECG7400 ECG7417 ECG7404		WEP7400/7400	221-Z9075 221-Z9076
U4A U4C	DM7417N S5400F	IC-7417 7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075
U4D U4E-U4F	DM7404N SN74123N	IC-7404 IC-74123	GE-7404 GE-7410		SK7404 SK7410	ECG7404 ECG7410			221-Z9076 221-Z9086
U4G USA	DM7410N S5400F	IC-7410 7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075
USB USC-USUE	7493N SN74390N	IC-7493 IC-74390			SK7493	ECG7493A		WEP2279/7493A	221-Z9078
USF USG U5H	DM7404N 7430N DM7404N	IC-7404 IC-7430 IC-7404	GE-7404 GE-7404 GE-7404		SK7404 SK7430 SK7404	ECG7404 ECG7430 ECG7404			221-Z9076 221-Z9078

## ELECTROLYtic CAPACITORS

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

## CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	Q-LINE
C1 C2 C3 C6 C7	.1 10V .1 10V .1 10V .1 10V 220 1KV 10%	CB-10410 CB-10410 CB-10410 CB-10410 C-221	MAG1201 MAG1201 MAG1201 MAG1201 GP322	QC1-223 QC1-223 QC1-223 QC1-223 10TS-T22	HY-360 HY-360 HY-360 HY-360 10TS-T22
C8 C9 C10 C11 C12	.001 100V 10% .1 10V .1 10V 27 1KV 10% 220 1KV 10%	C-102 CB-10410 CB-10410 C-270 C-221	EWFTA210 MAG1201 MAG1201 CN0427 GP322	QF1-1 QC1-223 QC1-223 QC1-223 10TS-T22	1PB-D10 HY-360 HY-360 10TCQ-027 10TS-T22
C13 C14 C15 C16 C17	.001 100V 10% .1 10V .1 10V .1 10V .1 10V	C-102 CB-10410 CB-10410 CB-10410 CB-10410	EWFTA210 MAG1201 MAG1201 MAG1201 MAG1201	QF1-1 QC1-223 QC1-223 QC1-223 QC1-223	1PB-D10 HY-360 HY-360 HY-360 HY-360

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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	RT-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.	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-D3	1N914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	2N5225	Q-2N5225	GE-20	PTC136	SK344A/123A	ECG123AP	TM123AP	WEP54	121-Z9000A
Q2	2N5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-Z9003*
U1	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-Z9077
U11	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U12	7420N	IC-7420	GE-7420		SK7402	ECG7420			221-Z9077
U13	SN74148N	IC-74148							
U14	N8T26N	IC-8T26							
U15-U16	SN7417N	IC-7417							
U17	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			
U18	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			
U19	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			
U20-U22	7493N	IC-7493			SK7493	ECG7493A			221-Z9078
U24-U25	SN7417N	IC-7417				ECG7417			
U26	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-Z9086
U27	DM7410N	IC-7410	GE-7410		SK7410	ECG7410			221-Z9075
U28	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U29	74LS163AN	IC-74LS163			SK74LS163	ECG74LS163			
	74163	IC-74163				ECG74163			
U30	7420N	IC-7420	GE-7420		SK7420	ECG7420			121-Z9077
U31-U32	SN74390N	IC-74390	GE-74390						
U33-U35	SN7417N	IC-7417				ECG7417			
U36	DM7430N	IC-7430			SK7430	ECG7430			
U37	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U38	DM7430N	IC-7430			SK7430	ECG7430			
U39	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			
U40	SN74390N	IC-74390						WEP7400/7400	221-Z9075

\* Lead configuration may vary from original.

## ELECTROLYtic CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C29	47 16V 25 16V	C-506	VTT47D16 TT15X25A	QV1-73 QE1-291	EV-1226 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	MFGR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1	.150 50V 5%	C-151	SX315	QW1-31	MWA-151
C2	.150 50V 5%	C-151	SX315	QW1-31	MWA-151
C3	.001 100V 10%	C-102	EWF1A210	QF1-1	1PB-D10
C4	.001 100V 10%	C-102	EWF1A210	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	10TCC-Q27

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFGR. 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
R1	470 5% 1/4W Carbon Film	R1-471	22-1088	R22	390 5% 1/4W Flameproof	R1-391	22-1086
R2	470 5% 1/4W Carbon Film	R1-471	22-1088	R23	220 5% 1/4W Flameproof	R1-221	22-1080
R3	470 5% 1/4W Carbon Film	R1-471	22-1088	R24	390 5% 1/4W Flameproof	R1-391	22-1086
R4	470 5% 1/4W Carbon Film	R1-471	22-1088	R25	220 5% 1/4W Flameproof	R1-221	22-1080
R5	470 5% 1/4W Carbon Film	R1-471	22-1088	R26	390 5% 1/4W Flameproof	R1-391	22-1086
R6	470 5% 1/4W Carbon Film	R1-471	22-1088	R27	220 5% 1/4W Flameproof	R1-221	22-1080
R7	470 5% 1/4W Carbon Film	R1-471	22-1088	R28	390 5% 1/4W Flameproof	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	R1-472	22-1112
R11	220 5% 1/4W Flameproof	R1-221	22-1080	R32	4700 5% 1/4W Flameproof	R1-472	22-1112
R12	390 5% 1/4W Flameproof	R1-391	22-1086	R33	4700 5% 1/4W Flameproof	R1-472	22-1112
R13	220 5% 1/4W Flameproof	R1-221	22-1080	R34	4700 5% 1/4W Flameproof	R1-472	22-1112
R14	390 5% 1/4W Flameproof	R1-391	22-1086	R35	10K 5% 1/4W Flameproof	R1-103	22-1120
R15	220 5% 1/4W Flameproof	R1-221	22-1080	R36	470 5% 1/4W Carbon Film	R1-471	22-1088
R16	390 5% 1/4W Flameproof	R1-391	22-1086	R37	10K 5% 1/4W Flameproof	R1-103	22-1120
R17	220 5% 1/4W Flameproof	R1-221	22-1080	R38	10K 5% 1/4W Flameproof	R1-103	22-1120
R18	390 5% 1/4W Flameproof	R1-391	22-1086	R39	1000 5% 1/4W Flameproof	R1-102	22-1096
R19	220 5% 1/4W Flameproof	R1-221	22-1080	R40	470 5% 1/4W Carbon Film	R1-471	22-1088
R20	390 5% 1/4W Flameproof	R1-391	22-1086				
R21	220 5% 1/4W Flameproof	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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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-14FI	Monitor Select
X1	Crystal	X-405	4MHz
	P.C. Board	PC-505B	CPU With Floppy Interface
	Socket	SC-16FI	16 Pin IC Socket (7 used)
	Socket	SC-24FI	24 Pin IC Socket (3 used)
	Socket	SC-40FI	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.	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	IN914	Q-IN914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
D3-D8	IN914	Q-IN914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	ZN5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-Z9003*
Q2-Q3	ZN5225	Q-2N5225	GE-20	PTC136	SK3444/123A	ECG123AP	TM123AP	WEP54	121-Z9000A
U1	S6821P	IC-6821							
	6820	IC-6820							
U2	MC6850P	IC-6850							
U3	MCM68B10P	IC-68B10							
	6810								
U4	CN7157N	IC-7157							
	2716/2316B								
U5	DM7476N	IC-7476	GE-7476		SK7476	ECG7476		WEP7476/7476	
U6	SN7402N	IC-7402	GE-7402		SK7402	ECG7402		WEP7402/7402	
U7	MC68800L	IC-68800							
	6800								
U8-U11	N8T26N	IC-8T26							
U12	555	IC-555							
U13	DM7404N	IC-7404	GE-7404		SK7404	ECG7404		WEP7473/7473	221-Z9076
U14	SN7473N	IC-7473	GE-7473		SK7473	ECG7473			
U15	MC8T95P	IC-8T95							
U16	N8T95N	IC-8T95							
U17-U18	MC8T95P	IC-8T95							
U19	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U20	MC8T95P	IC-8T95							
U21-U22	SN7493AN	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-Z9078
U23	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075
U24	74163N	IC-74163							
U25	SN7420N	IC-7420	GE-7420		SK7420	ECG7420			221-Z9077
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.	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.
U28	Z-80	IC-Z80							
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							
U42	DM7475N	IC-7475	GE-7475	SK7475	ECG7475				
U43	DM7404N	IC-7404	GE-7404	SK7404	ECG7404				
U44	SN7400N	IC-7400	GE-7400	SK7400	ECG7400			WEP7400/7400	221-29076
U45	74148N	IC-74148							
U46	C38085	IC-Synmon							
	2716/2316B								
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				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					
		MFGR. PART No.	MALLORY PART No.	SPRAGUE PART No.			
				Q-LINE	GENERAL LINE		
C26	.47 16V	C-506	TT15X50A	QE1-351		TVA-1150	
	.33 16V		VTT33D25	QV1-63		EV-1325	
C27	.47 16V	C-506	TT15X50A	QE1-351		TVA-1150	
	.33 16V		VTT33D25	QV1-63		EV-1325	

## CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			MALLORY PART No.	SPRAGUE PART No.		
				Q-LINE	GENERAL LINE	
C1	.2 16V			QC1-245		HY-470
C2	.01 100V	C-103	EWF1A110	QF1-91		IPB-S10
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	.082		EWF1A182			IPB-S82
C9	27 1KV 10%	C-270	CNO427			10TCC-027
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	EWF1A210	QF1-1		IPB-D10
C18	.01 100V	C-103	EWF1A110	QF1-91		IPB-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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
R1	470 5% 1/4W Carbon Film	R1-471	22-1088	R10	10K 5% 1/4W Flameproof	R1-103	22-1120
R2	220 5% 1/4W Carbon Film	R1-221	22-1080	R11	10K 5% 1/4W Flameproof	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 2200 5% 1/4W Flameproof	R1-223	22-1128	R43	2200 5% 1/4W Flameproof Carbon Film	R1-222	22-1104
		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
R29	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 P.C. Board	X-805 PC-510C	8MHz 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	IN914	Q-IN914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
Q1	2N5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-Z9003*
IC-1	4300BCD	IC-4300							
IC-32	4200	IC-4200							
IC-A	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
IC-B	N8T26N	IC-8T26							
IC-C									
IC-D									
IC-E	SN7404AN	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
IC-H									
IC-I	DM7417N	IC-7417							
IC-J	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
IC-K	SN7420J	IC-7420	GE-7420		SK7420	ECG7420			221-Z9077
IC-L									
IC-N	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
IC-O	SN7400N	IC-7400	GE-7400		SK7400	ECG7400			221-Z9075
IC-P	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-Z9086

\* 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			
		MFGR. 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	MFGR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C1					
C2A	.82 5%	C-820	SX482	QW1-25	MWA-820
C2B	.82 5%	C-820	SX482	QW1-25	MWA-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			
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.		
						ITEM No.	RATING		
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.	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.
D2	1N752A				SK3777/5011A	ECG5011A		WEP1412/5011	103-Z9007
D3-D4	1N4001	Q-1N4001	GE-504A	ZM5 .6B PTC201	SK3311	ECG116	TM116	WEP156	212-76-02
PS1	MC79L05ACP	IC-79L05	GEVR-105		SK3671/961	ECG961			
Q1	2N5226	Q-2N5226	GE-82	PTC103	SK3466/159	ECG159	TM159	WEP716	121-Z9003*
U1A	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U1B	N8T26N	IC-8T26							
U2A-U2H	4300BCD	IC-4300							
	4200								
U2I	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U2J	N8T26N	IC-8T26							
U3A-U3H	4300BCD	IC-4300							
	4200								
U3I	7430N	IC-7430			SK7430	ECG7430			
U4A-U4H	4300BCD	IC-4300							
	4200								
U4I	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U5A-U5H	4300BC8	IC-4300							
	4200								
U5I	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U5J	DM74S10N	IC-74S10				ECG74S10			
U5K	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U6A	DM7417N	IC-7417				ECG7417			
U6B	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U6C-U6D	DM74S20N	IC-74S20				ECG74S20			
U6E	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-Z9086
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			
		MFGR. 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	MFGR. 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	QWT-23	MWA-680	
C10	220 1KV 10%	C-221	GP322		TOTS-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	MFGR. 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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-14F1 SC-16F1 SC-22F1	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.	MFGR. PART No.	REPLACEMENT DATA					
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.
D1-D7	IN914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519
ICA-ICD	N8T26N	IC-8T26						103-131
ICE-ICJ	MCB795N	IC-B795						
ICK	DM7404N	IC-7404	GE-7404		SK7404 SK7430	ECG7404 ECG7430		
ICL	7430N	IC-7430						221-Z9076
ICM	SN7400N	IC-7400	GE-7400		SK7400	ECG7400		
ICN	DM7404N	IC-7404	GE-7404		SK7404	ECG7404	WEP7400/7400	221-Z9075
ICO	SN7400N	IC-7400	GE-7400		SK7400	ECG7400	WEP7400/7400	221-Z9076
ICP	DM7404N	IC-7404	GE-7404		SK7404	ECG7404	221-Z9075	
ICQ	SN74154N	IC-74154	GE-74154		SK74154	ECG74154		221-Z9076
ICR	F7430PC	IC-7430			SK7430	ECG7430		
ICS	DM7404N	IC-7404	GE-7404		SK7404	ECG7404		
ICT-ICZ	2114-1	IC-2114-300	GE-7404					
ICAA-ICZ	2114-L	IC-2114-300						221-Z9076
ICYY								

## ELECTROLYtic CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. 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	MFGR. 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	MWA-B20

### RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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-14F1	14 Pin {8 used} IC
	Socket	SC-16F1	16 Pin {10 used} IC
	Socket	SC-18F1	18 Pin {8 used} IC
	Socket	SC-24F1	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.	MFGR. PART No.	REPLACEMENT DATA					
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.
D1 UA1-UAA4	1N914 2114L-3	Q-1N914 IC-2114-300	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519
UA5-UAB8	UPD2114LC-1	IC-2114-300						103-131
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						
UC10	DM7404N 74LS04	IC-74LS04	GE-7404	SK74LS138 SK7404 SK74LS04	SK7404	ECG74LS138 ECG7404 ECG74LS04		221-29076
UC11	74LS20N 7420	IC-7420	GE-7420		SK74LS20 SK7420	ECG74LS20 ECG7420		221-29077
UD1-UD8	UPD2114LC-1	IC-2114-300						
UD9	74LS138PC	IC-74LS138PC						
UD10	SN7404N 74LS04	IC-74LS04	GE-7404	SK74LS138 SK7404 SK74LS04	SK7404	ECG74LS138 ECG7404 ECG74LS04		221-29076
UE1-UE8	UPD2114LC-1	IC-2114-300						
UE9	74LS138PC	IC-74LS138						
UE10	7410N	IC-7410	GE-7410	SK74LS138 SK7410	SK7410	ECG74LS138 ECG7410		
UE11	DM7404N 74LS04	IC-74LS04	GE-7404	SK7404	SK7404	ECG7404		221-29076
UF1-UF8	UPD2114LC-1	IC-2114-300						
UF9	74LS138PC	IC-74LS138						
UF10	DM7404N 74LS04	IC-74LS04	GE-7404	SK74LS138 SK7404 SK74LS04	SK7404	ECG74LS138 ECG7404 ECG74LS04		221-29076

# 527 BOARD PARTS LIST AND DESCRIPTION (CONTINUED)

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

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA				
		MFGR. 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	MFGR. 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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	SC-16F1	4 Pin Molex
	Socket	SC-18F1	16 Pin IC Socket (6 used)
	P.C. Board	PC-527P	18 Pin IC Socket (48 used) 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.	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	IN914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131
D2-D3	IN4001	Q-14001	GE-504A	PTC201	SK3311	ECG116	TM116	WEP156	212-76-02
D4	IN752A			ZM5.6B	SK3777/5011A	ECG5011A		WEP1412/5011	103-Z9007
PS1	MC79L05ACP	IC-79L05	GEVR-105	PTC103	SK3671/961	ECG961	ECG159	TM159	WEP716
Q1	2N5226		GE-82		SK3466/159	ECG159			121-Z9003*
U1A-U1H	MKA116N-4	IC-4116							
U1I-U1J	NBT26N	IC-8726							
U2A-U2H	MKA116N-4	IC-4116							
U2I	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U3A-U3H	MKA116N-4	IC-4116							
U3I	D3242	IC-3242							
U4B	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-Z9086
U4C	74163	IC-74163							
U4D	F7493APC	IC-7493			SK7493	ECG7493A			WEP2279/7493A
U4E	74157N	IC-74157			SK74157	ECG7493A			221-Z9078
U4F	DM74164N	IC-74164N			SK74164	ECG74164			
U4G	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U4H	SN74121N	IC-74121			SK74121	ECG74121			
U4I	F745138PC	IC-745138				ECG745138			

# 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.	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.
U4J-U4K	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
USA	DM7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075
USC	DM7402N	IC-7402	GE-7402		SK7402	ECG7402		WEP7402/7402	
USD	SN7410N	IC-7410	GE-7410		SK7410	ECG7410			
USE	DM74164N	IC-74164			SK74164	ECG74164			
USF-USG	DM7400N	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075
USH	F7408PC	IC-7408	GE-7408		SK7408	ECG7408		WEP7408/7408	
USI	7430PC	IC-7430	GE-7430		SK7430	ECG7430			

\*Lead configuration may vary from original.

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C2	.47 16V 25 16V	C-506	VTT47D16 TT15X25A*	QV1-73 QE1-291*	EV-1226 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	MFGR. 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	EWF1A210	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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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.	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.
U1-U3	1N914 SN7417N SN7414N F5404DM	Q-1N914 IC-7417 IC-7414 7404	GE-514 PTC214	SK3100/519 SK7414	SK7404	ECG519 ECG7417 ECG7414	TM519	WEP925/519	103-131
U4	SN7417N	IC-7417				ECG7417			221-Z9076
U5	SN7414N	IC-7414			SK7414	ECG7414			
U6	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U7	SN7417N	IC-7417			SK7414	ECG7417			
U8	SN7414N	IC-7414			SK7414	ECG7414			
U9	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U10	SN7417N	IC-7417				ECG7417			
U11	MC1488	IC-1488							221-Z9076
U12	SN75188N MC1489 SN75189N	SN75188N MC1489 SN75189N							
U13	MC1488	IC-1488							
U14	MC1489	IC-1489							
U15	SN75188N MC1488	SN75188N MC1488							
U16	MC1489	IC-1489							
U17	SN75189N MC1488	SN75189N MC1488							
U18	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.	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.
U38-U39	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U40-U42	F7493APC	IC-7493			SK7493	ECG7493A		HEP2279/7493A	221-Z9078
U43	F7415APC	IC-74154	GE-74154		SK74154	ECG74154			
U44	SN74LS163AN	IC-74LS163	74163		SK74LS163	ECG74LS163A			
U45	SN7420N	IC-7420		GE-7420	SK7420	ECG7420			221-Z9077
U46	7404N	IC-7404		GE-7404	SK7404	ECG7404			221-Z9076
U47	SN74123N	IC-74123		GE-74123	SK74123	ECG74123			221-Z9086
U48	SN7400N	IC-7400		GE-7400	SK7400	ECG7400		WE7400/7400	221-Z9075
U49	DM7430N	IC-7430			SK7430	ECG7430			
U50	7404N	IC-7404		GE-7404	SK7404	ECG7404			221-Z9076

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C68	47 16V	C-506	VTT47016	QV1-73	EV-1226
C69	47 16V	C-506	VTT47016	QV1-73	EV-1226
C71	47 16V	C-506	VTT47016	QV1-73	EV-1226

## CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C33	220 10%	C-221	GP322	QCT2-28	10TS-T22
	200 10%	C-201	GP320	QCT1-223	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	QC1-223	10TCC-027

## RESISTORS

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

# 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
R79	220 5% 1/4W Carbon Film	R1-221	22-1080	R84	390 5% 1/4W Flameproof	R1-391	22-1086
R80	390 5% 1/4W Flameproof	R1-391	22-1086	R101	1000 5% 1/4W Carbon Film	R1-102	22-1096
R81	Carbon Film 220 5% 1/4W	R1-221	22-1080	R102	470 5% 1/4W Carbon Film	R1-471	22-1088
R82	Carbon Film 390 5% 1/4W Flameproof	R1-391	22-1086	R103	470 5% 1/4W Carbon Film	R1-471	22-1088
R83	Carbon Film 220 5% 1/4W	R1-221	22-1080	R104	22K 5% 1/4W Flameproof	R1-223	22-1128
	Carbon Film			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 P.C. Board	X-405 PC-550AP	4MHz 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.	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	TN914	Q-1N914	GE-514	PTC214	SK3100/519	ECG519 ECG7417 ECG74174	TM519	WEP925/519	103-131
U1A-U1E	F7417PC	IC-7417							
U1F	74174	IC-74174							
U1G	NBT26N	IC-8T26							
U2A-U2D	F6850P	IC-6850							
U2E-U2F	MC68B21P 6820	IC-68B21							
U2G	NBT26N	IC-8T26							
U3A	MC1488	IC-1488							
U3B	SN75188N F7417PC	IC-7417				ECG7417			
U3C	F6850P	IC-6850							
U3D-U3K	SYL2114L	IC-2114-300							
U4A	MC1489	IC-1489							
U4B	SN75189N F7417PC	IC-7417				ECG7417			
U4C-U4J	SY2114L	IC-2114-300							
U5A	SN75183N	IC-75183							
U5B	DS8830								
U5C-U5D	74LS14N DM7404N	IC-74LS14 IC-7404	GE-7404		SK74LS14 SK7404	ECG74LS14 ECG7404			221-Z9076
U5E	F74154PC	IC-74154	GE-74154		SK74154	ECG74154			
U5F	SN7430N	IC-7430			SK7430	ECG7430			
U5G	SN7410N	IC-7410		GE-7410	SK7410	ECG7410			
U5H	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U6A	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U6B	S5400F 7400	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075
U6C	74LS163AN	IC-74LS163			SK74LS163	ECG74LS163A			
U6D	7493N	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-Z9078
U6E	DM7430N	IC-7430			SK7430	ECG7430			
U6F	74LS138PC 74138	IC-74LS138			SK74LS138	ECG74LS138			
U6G	7402	IC-7402	GE-7402		SK7402	ECG7402		WEP7402/7402	221-Z9076
U6H	DM7404N	IC-7404	GE-7404		SK7404	ECG7404			
U6I	S5400F 7400	IC-7400	GE-7400		SK7400	ECG7400			
U6J	DM7404N	IC-7404	GE-7404		SK7404	ECG7404		WEP7400/7400	221-Z9075
U7A	74LS14	IC-74LS14			SK74LS14	ECG74LS14			221-Z9076
U7B	F7493APC	IC-7493			SK7493	ECG7493A		WEP2279/7493A	221-Z9078
U7C	SN74123N	IC-74123	GE-74123		SK74123	ECG74LS123			
U7D	7493N	IC-7493			SK7493	ECG7493A			
U7E	SN75182N DS8820A	IC-75182						WEP2279/7493A	221-Z9086 221-Z9078
U7F	SN74LS138PC 74138	IC-74LS138			SK74LS138	ECG74LS138			
U7G	S5400F 7400	IC-7400	GE-7400		SK7400	ECG7400			
U7H	F74LS138PC 74138	IC-74LS138	GE-7400		SK74LS138	ECG74LS138		WEP7400/7400	221-Z9075

# 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.	MFGR. PART No.	REPLACEMENT DATA					
			GENERAL ELECTRIC PART No.	MALLORY PART No.	RCA PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.
U7I	SN74LS139N 74139	IC-74LS139						
U7J	DM704N	IC-7404	GE-7404		SK7404	ECG7404		221-Z9076

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. 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		VTT3D25	QV1-63	EV-1325
C3	.47 16V	C-506	TT15X50A	QE1-351	TVA-1150
	33 16V		VTT3D25	QV1-63	EV-1325
C4	.47 16V	C-506	TT15X50A	QE1-351	TVA-1150
	33 16V		VTT3D25	QV1-63	EV-1325

## CAPACITORS

ITEM No.	RATING	MFGR. 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. PART No.	WORKMAN PART No.
R1	220 5% 1/4W Carbon Film	R1-221	22-1080	R61	220 5% 1/4W Flameproof	R1-221	22-1080
R2	220 5% 1/4W Carbon Film	R1-221	22-1080	R62	220 5% 1/4W Flameproof	R1-221	22-1080
R3	220 5% 1/4W Carbon Film	R1-221	22-1080	R63	220 5% 1/4W Flameproof	R1-391	22-1086
R4	220 5% 1/4W Carbon Film	R1-221	22-1080	R64	390 5% 1/4W Flameproof	R1-391	22-1086
R5	220 5% 1/4W Carbon Film	R1-221	22-1080	R65	390 5% 1/4W Flameproof	R1-391	22-1086
R6	390 5% 1/4W Flameproof	R1-391	22-1086	R66	390 5% 1/4W Flameproof	R1-391	22-1086
R7	390 5% 1/4W Flameproof	R1-391	22-1086	R67	390 5% 1/4W Flameproof	R1-391	22-1086
R8	390 5% 1/4W Flameproof	R1-391	22-1086	R68	390 5% 1/4W Flameproof	R1-391	22-1086
R9	390 5% 1/4W Flameproof	R1-391	22-1086	R69	470 5% 1/4W Carbon Film	R1-471	22-1088
R10	390 5% 1/4W Flameproof	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	R1-391	22-1086
R12	390 5% 1/4W Flameproof	R1-391	22-1086	R76	390 5% 1/4W Flameproof	R1-391	22-1086
R13	220 5% 1/4W Carbon Film	R1-221	22-1080	R77	220 5% 1/4W Flameproof	R1-221	22-1080
R14	220 5% 1/4W Carbon Film	R1-221	22-1080	R78	390 5% 1/4W Flameproof	R1-391	22-1086
R15	220 5% 1/4W Carbon Film	R1-221	22-1080	R81	220 5% 1/4W Flameproof	R1-221	22-1080
R16	4700 5% 1/4W Carbon Film	R1-472	22-1112	R82	220 5% 1/4W Flameproof	R1-221	22-1080
R17	220 5% 1/4W Carbon Film	R1-221	22-1080	R83	220 5% 1/4W Flameproof	R1-221	22-1080
R18	390 5% 1/4W Flameproof	R1-391	22-1086	R84	220 5% 1/4W Flameproof	R1-221	22-1080
R19	390 5% 1/4W Flameproof	R1-391	22-1086	R87	22K 5% 1/4W Flameproof	R1-223	22-1128
R20	390 5% 1/4W Flameproof	R1-391	22-1086	R88	4700 5% 1/4W Carbon Film	R1-472	22-1112
R21	390 5% 1/4W Flameproof	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	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	R1-221	22-1080	R97	16K 5% 1/4W Flameproof	R1-163	
R58	220 5% 1/4W Flameproof	R1-221	22-1080				
R59	220 5% 1/4W Flameproof	R1-221	22-1080				
R60	220 5% 1/4W Flameproof	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 P.C. Board	X-405 PC-555	4MHz 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.	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	TN914	Q-TN914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131	
D50-D51	TN914	Q-TN914	GE-514	PTC214	SK3100/519	ECG519	TM519	WEP925/519	103-131	
Q1	2N5225	Q-2N5225	GE-20	PTC136	SK3444/123A	ECG123AP	TM123AP	WEP54	121-Z9000A	
UA2	SN7417N	IC-7417				ECG7417				
UB1-UB2	N8T26N	IC-8T26								
UB3-UB4	SN75182N	IC-75182								
UB5	DS8820AN	DS8820AN								
UB6	SN75183N	IC-75183								
	DS8830									
	F-5404DM	F-5404DM								
	7404	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076	
UC8-UC9	N8T26N	IC-8T26								
UC1	SN74165	IC-74165				ECG74165				
UC2	F-74174PC	IC-74174				ECG74174				
UC3	F-74164PC	IC-74164				ECG74164				
UC4	74163N	IC-74163				ECG74163				
UC5	DM7410N	IC-7410	GE-7410		SK7410	ECG7410				
UC6	74163N	IC-74163	GE-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				ECG74174				
UD2	F74174PC	IC-74174				ECG74123				
UD3	SN74123N	IC-74123	GE-74123		SK74123	ECG7474		WEP7474/7474	221-Z9086	
UD4-UD5	7474N	IC-7474	GE-7474		SK7474	ECG7474				
UD6	F-5404DM	F-5404DM				ECG7404			221-Z9076	
	7404	IC-7404	GE-7404		SK7404	ECG7404				
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				ECG7471				
UE1	7493N	IC-7493				SK7493	ECG7493A	WEP2279/7493A	221-Z9078	
UE2-UE10	74L5193N	74L5193N				SK74L5193	ECG74L5193			
	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-Z9077	
UF7	F-5404DM	F-5404DM								
	7404	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076	
UF8	SN7404J	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076	
UF9	SN7400J	IC-7400	GE-7400		SK7400	ECG7400		WEP7400/7400	221-Z9075	
UF10	F7430PC	F-7430				SK7430	ECG7430			
UF11	F-5404DM	7404	IC-7404	GE-7404	SK7404	ECG7404			221-Z9076	

## ELECTROLYTIC CAPACITORS

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

\* Lead configuration may vary from original.

## CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C7	.0047 100V 10%	C-472	EWF1A247	QF1-57	TPB-D47
C8	.0022 200V 10%	C-222	EWF6222		6PS-D22
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	MFGR. 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		
			MFGR. 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	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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.	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.
U3	SN74123N	IC-74123	GE-74123		SK74123	ECG74123			221-Z9086
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-Z9075
U15	DS8831								
U16	SN75183N	IC-75183							
	DS8830								
U17	F-74175PC	IC-74175				ECG74175			
U18	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076
U19	SN75182N	IC-75182							
	DS8820A								
U20	SN7420N	IC-7420	GE-7420		SK7420	ECG7420			221-Z9077
U21	SN7404N	IC-7404	GE-7404		SK7404	ECG7404			221-Z9076

## ELECTROLYtic CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. 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	MFGR. 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		
			MFGR. 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				ECG74175			
U3D-U3E	F-74175PC	IC-74175				ECG7417			
U3F	F-7417PC	IC-7417				ECG7404			
U3G	DM7404N	IC-7404							
U4D	N8T26N	IC-8T26	GE-7404		SK7404				221-Z9076
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	MFGR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
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
C15	.3 16V	CB-30416	CN7327	QC1-223	HY-360
					10TCU-T27

## RESISTORS

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		MFGR. PART No.	WORKMAN PART No.			MFGR. 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 Socket	PC-594 SC-12FM	Shugart Interface 12 Pin Molex
J2	Cable Assembly	W-50SF	50 Wire Interconnect
J3	Socket	SC-4FM	4 Pin Molex
J4C	Socket	SC-16FI	Interconnect
J5A	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  $8FFF_{16}$

## 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 } 28K	UA1
	0400 - 07FF	6400 - 67FF		UA2
	0800 - 0BFF	6800 - 6BFF		UA3
	0C00 - 0FFF	6C00 - 6FFF		UA4
8K {	1000 - 13FF	7000 - 73FF	32K } 32K	UA5
	1400 - 17FF	7400 - 77FF		UA6
	1800 - 1BFF	7800 - 7BFF		UA7
	1C00 - 1FFF	7C00 - 7FFF		UA8
12K {	2000 - 23FF	8000 - 83FF	36K } 36K	UC1
	2400 - 27FF	8400 - 87FF		UC2
	2800 - 2BFF	8800 - 8BFF		UC3
	2C00 - 2FFF	8C00 - 8FFF		UC4
16K {	3000 - 33FF	9000 - 93FF	40K } 40K	UC5
	3400 - 37FF	9400 - 97FF		UC6
	3800 - 3BFF	9800 - 9BFF		UC7
	3C00 - 3FFF	9C00 - 9FFF		UC8
20K {	4000 - 43FF	A000 - A3FF	44K } 44K	UE1
	4400 - 47FF	A400 - A7FF		UE2
	4800 - 4BFF	A800 - ABFF		UE3
	4C00 - 4FFF	AC00 - AFFF		UE4
24K {	5000 - 53FF	B000 - B3FF	48K } 48K	UE5
	5400 - 57FF	B400 - B7FF		UE6
	5800 - 5BFF	B800 - BBFF		UE7
	5C00 - 5FFF	BC00 - BFFF		UE8

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

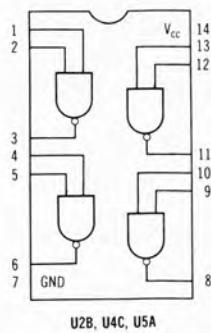
# 470 (FLOPPY) BOARD PINOUTS

F6850P

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

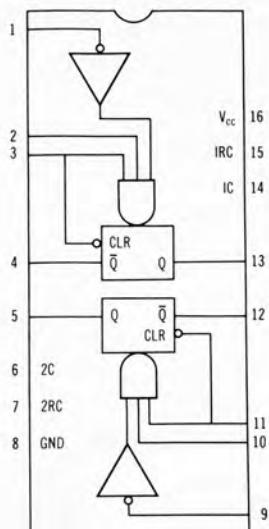
U1C

S5400F



U2B, U4C, USA

SN74123N



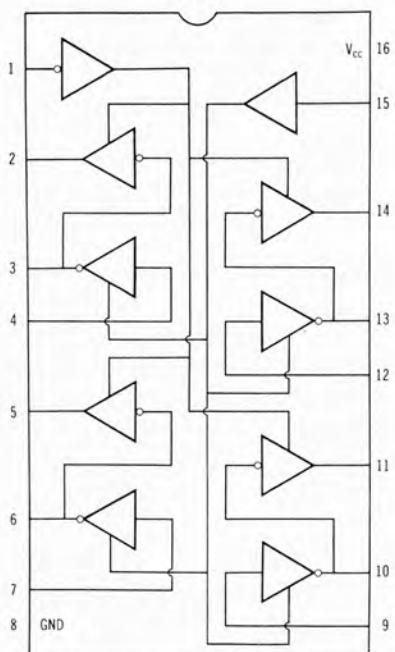
U4E, U4F

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

U5B

N8T26N



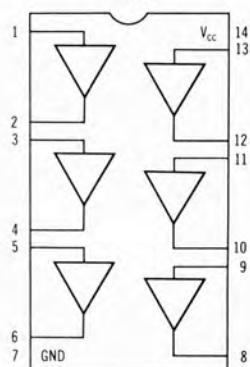
U1D,U1E

SN74390N

1	IA	V <sub>cc</sub>	16
2	1 CLEAR	2A	15
3	1QA	2 CLEAR	14
4	1B	2QA	13
5	1QB	2B	12
6	1QC	2QB	11
7	1QD	2QC	10
8	GND	2QD	9

U5C,U5D,U5E

DM7417N



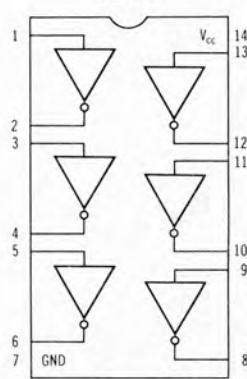
U1A,U2A,U3A,U4A

MC68B21P

1	V <sub>SS</sub>	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

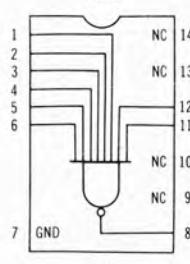
U1B

DM7404N



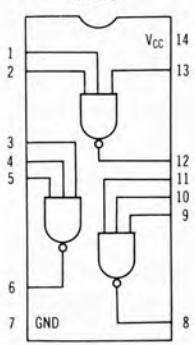
U3C,U4D,U5F,U5H

7430N

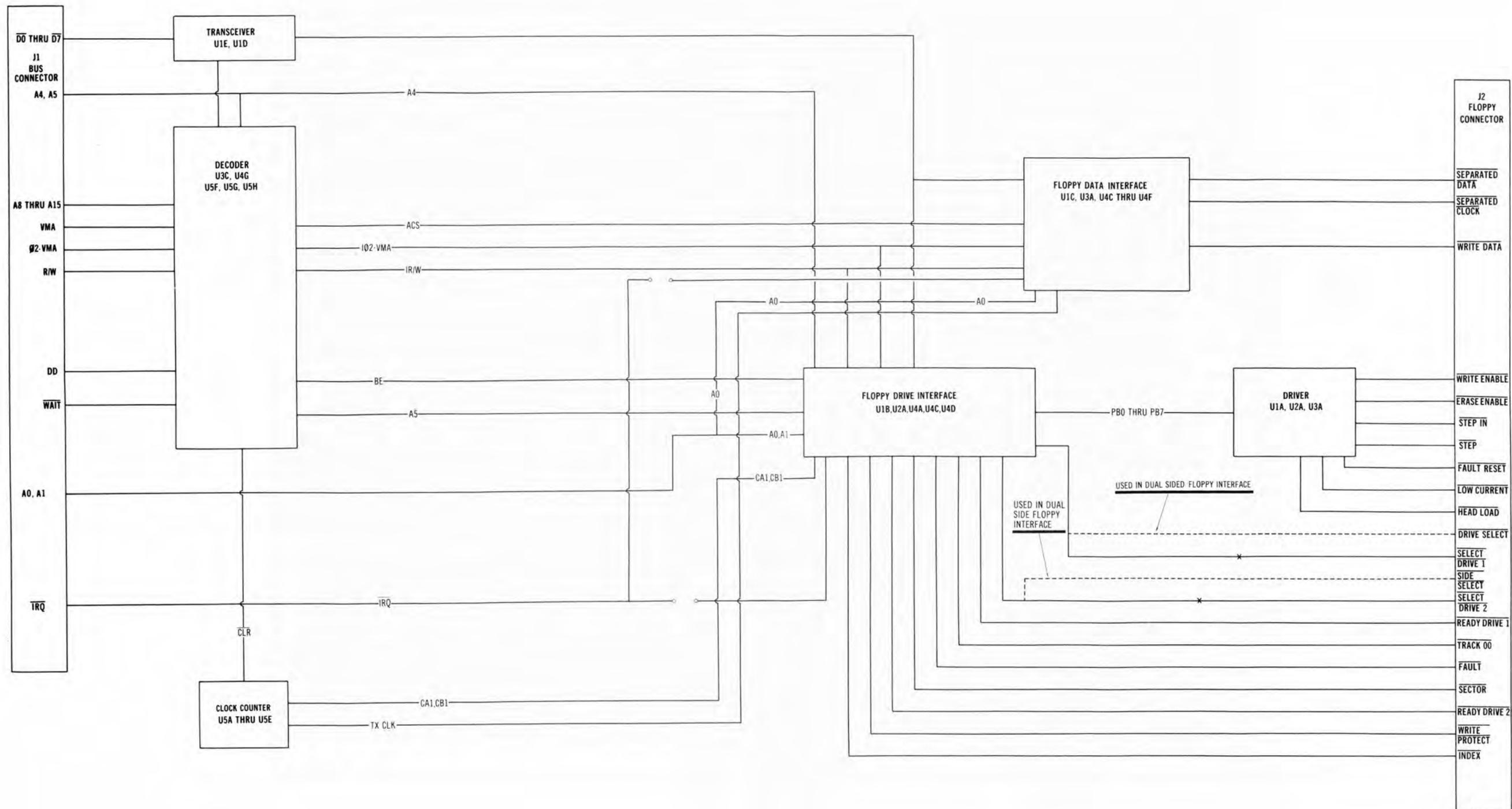


U5G

DM7410N

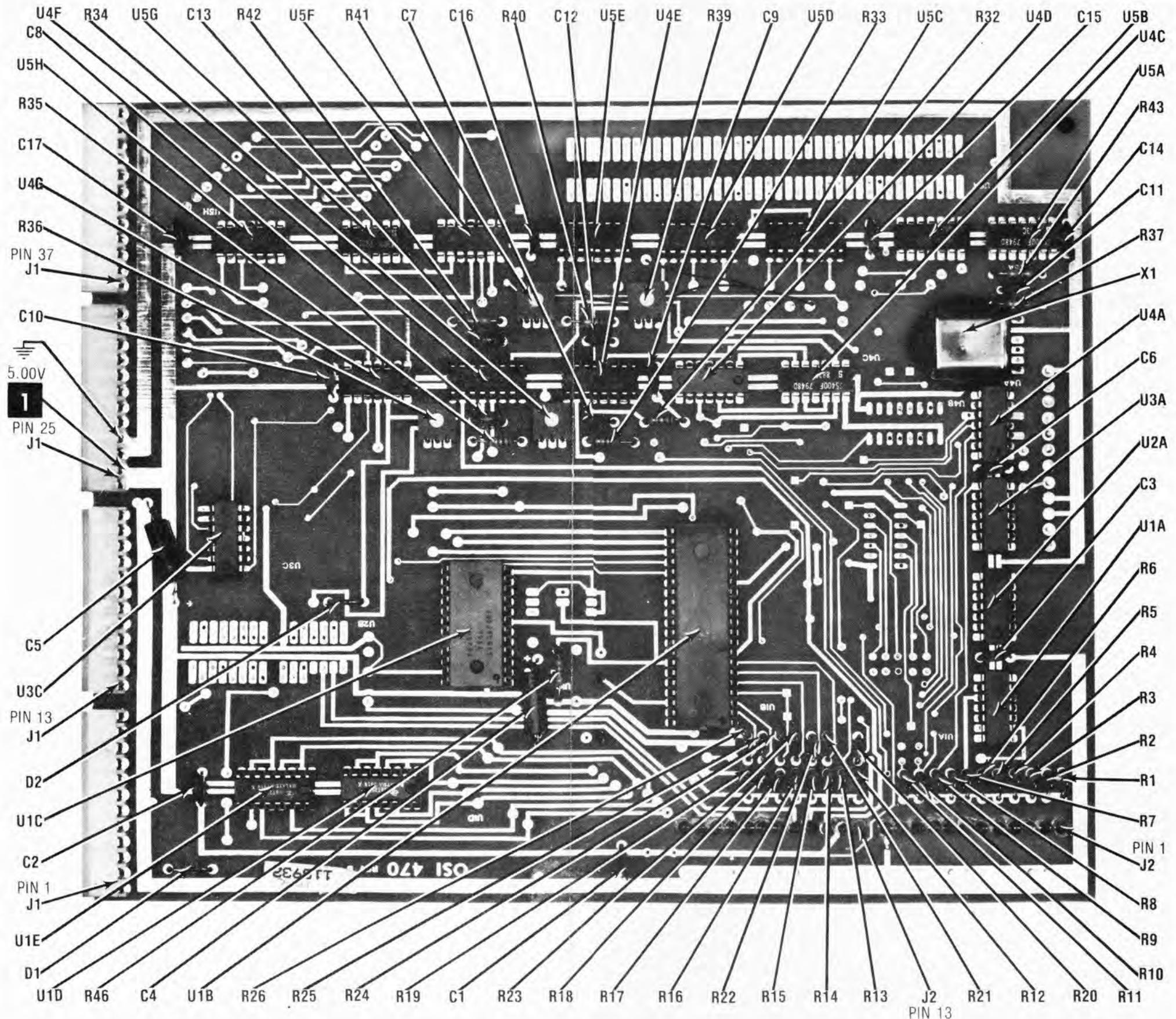


U4G



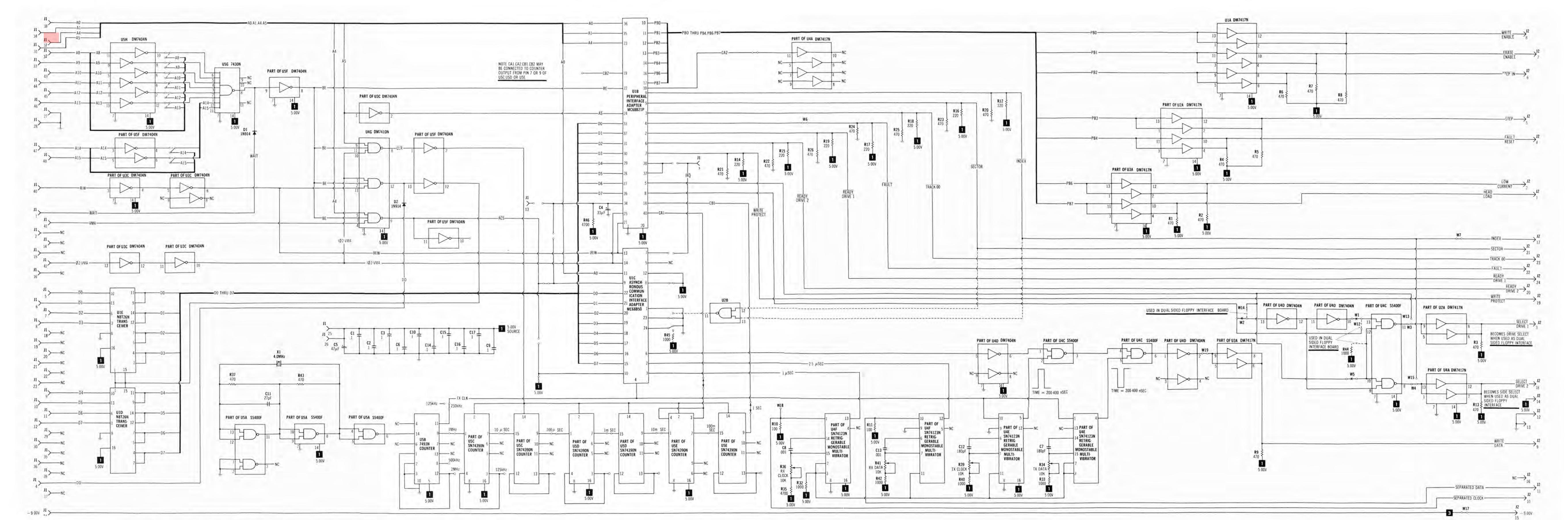
## 470 (FLOPPY) BOARD BLOCK

## **470 (FLOPPY) BOARD BLOCK**



470 (FLOPPY) BOARD

470 (FLOPPY) BOARD



470 (FLOPPY) BOARD

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH CIRCUITTRACE®  
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FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 177 & REAR COVER.

470 (FLOPPY) BOARD

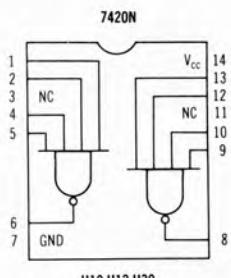
# 505 REV. A BOARD PINOUTS

6820			6502A			6850		
1	GND	CA1	40	1	VSS	RES	40	1
2	PA0	CA2	39	2	RDY	Ø2 (OUT)	39	2
3	PA1	IRQ A	38	3	Ø1 (OUT)	S.O.	38	3
4	PA2	IRQ B	37	4	ØRQ	Ø0(IN)	37	4
5	PA3	RS0	36	5	N.C.	N.C.	36	5
6	PA4	RS1	35	6	NMI	N.C.	35	6
7	PA5	RESET	34	7	SYNC	R/W	34	7
8	PA6	D0	33	8	VCC	DB0	33	8
9	PA7	D1	32	9	AB0	DB1	32	9
10	PB0	D2	31	10	AB1	DB2	31	10
11	PB1	D3	30	11	AB2	DB3	30	11
12	PB2	D4	29	12	AB3	DB4	29	12
13	PB3	D5	28	13	AB4	DB5	28	13
14	PB4	D6	27	14	AB5	DB6	27	13,U4
15	PB5	D7	26	15	AB6	DB7	26	
16	PB6	E	25	16	AB7	AB15	25	
17	PB7	CS1	24	17	AB8	AB14	24	
18	CB1	CS2	23	18	AB9	AB13	23	
19	CB2	CS0	22	19	AB10	AB12	22	
20	V <sub>CC</sub>	R/W	21	20	AB11	VSS	21	

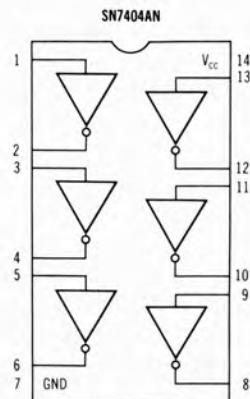
U1

U2

U3,U4



U10,U12,U30



U11,U19,U28,U37

SN74148N

1	INPUT 4	V <sub>CC</sub>	16
2	INPUT 5	OUTPUT E0	15
3	INPUT 6	OUTPUT GS	14
4	INPUT 7	INPUT 3	13
5	INPUT E1	INPUT 2	12
6	OUTPUT A2	INPUT 1	11
7	OUTPUT A1	INPUT 0	10
8	GND	A0	9

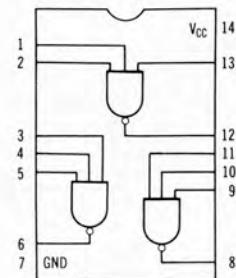
U13

**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

DM7410N



U27

74163

1	CLEAR	V <sub>CC</sub>	16
2	CLOCK	CARRY OUTPUT	15
3	A	OA	14
4	B	OB	13
5	C	OC	12
6	D	OD	11
7	ENABLE P	ENABLE T	10
8	GND	LOAD	9

U29

# 505 REV. A BOARD PINOUTS (CONTINUED)

1702

1	A2	V <sub>DD</sub>	24
2	A1	(NC) 01	23
3	A0	(NC) 02	22
4	D0	A3	21
5	D1	A4	20
6	D2	A5	19
7	D3	A6	18
8	D4	A7	17
9	D5	V <sub>GG</sub>	16
10	D6	V <sub>BB</sub>	15
11	D7	CS	14
12	V <sub>CC</sub>	PROG	13

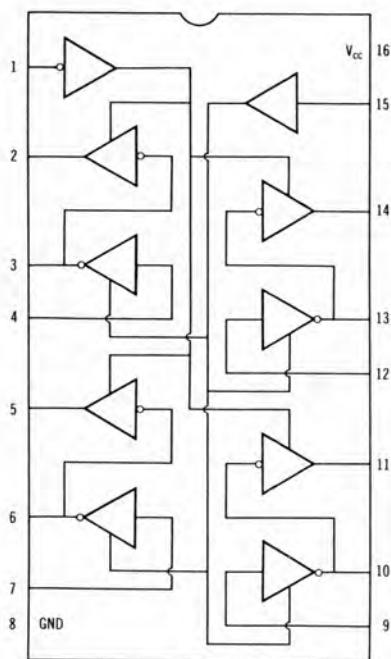
U5,U6,U7

2316B/2716

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

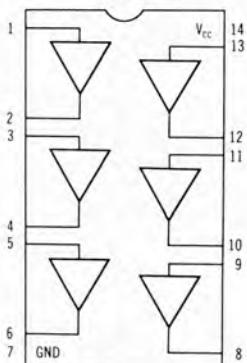
U8

N8T26AN



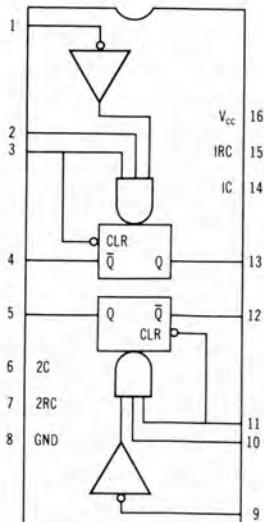
U9,U14

SN7417N



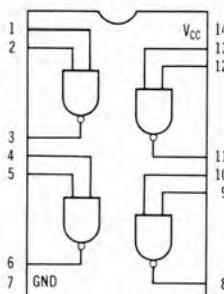
U15,U16,U24,U25,  
U33,U34,U35

SN74123N



U17,U26

SN7400N



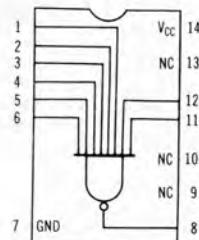
U18,U39

SN74390N

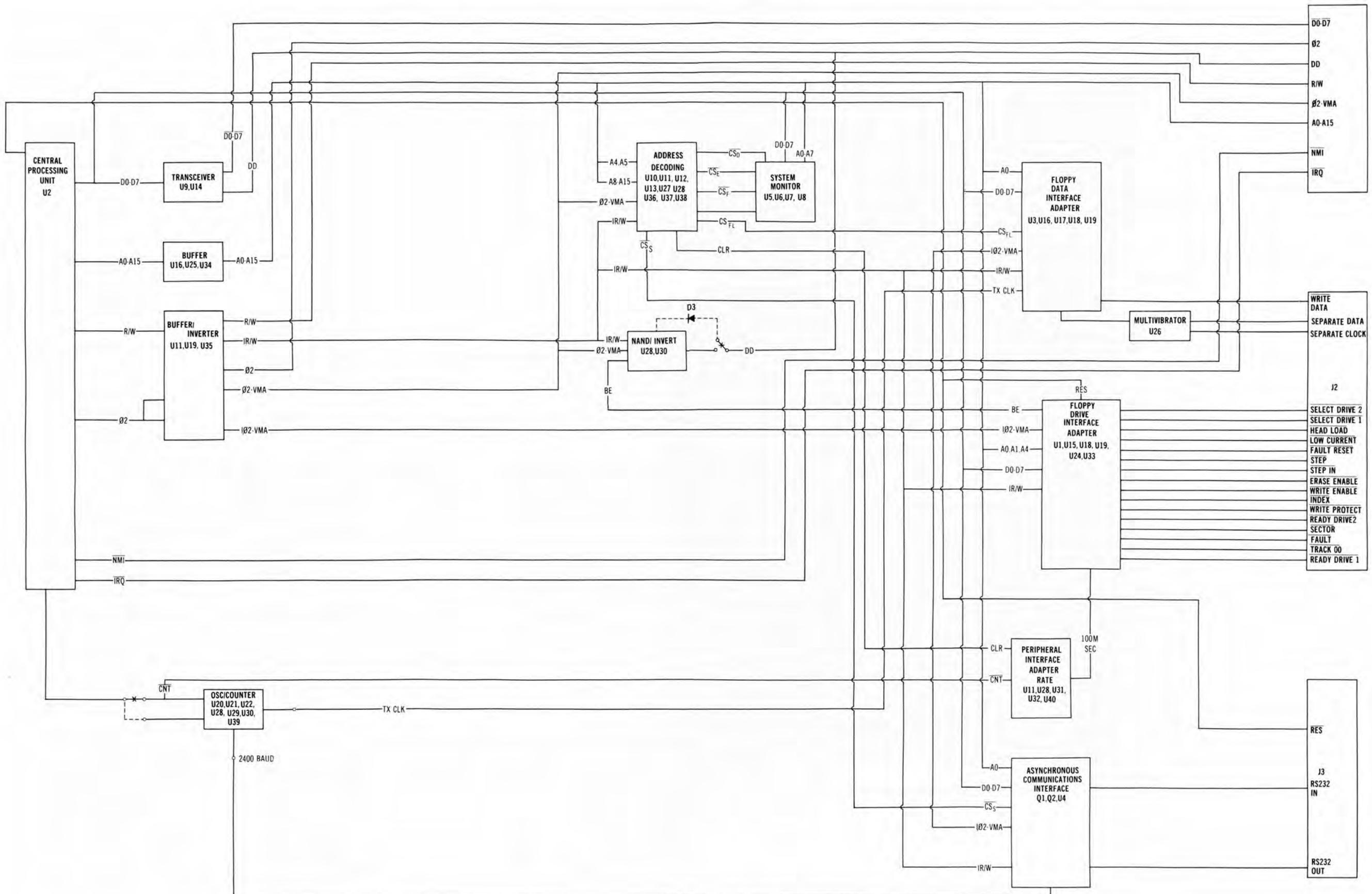
1	1A	V <sub>CC</sub>	16
2	1 CLEAR	2A	15
3	1QA	2CLEAR	14
4	1B	2QA	13
5	1QB	2B	12
6	1QC	2QB	11
7	1QD	2QC	10
8	GND	2QD	9

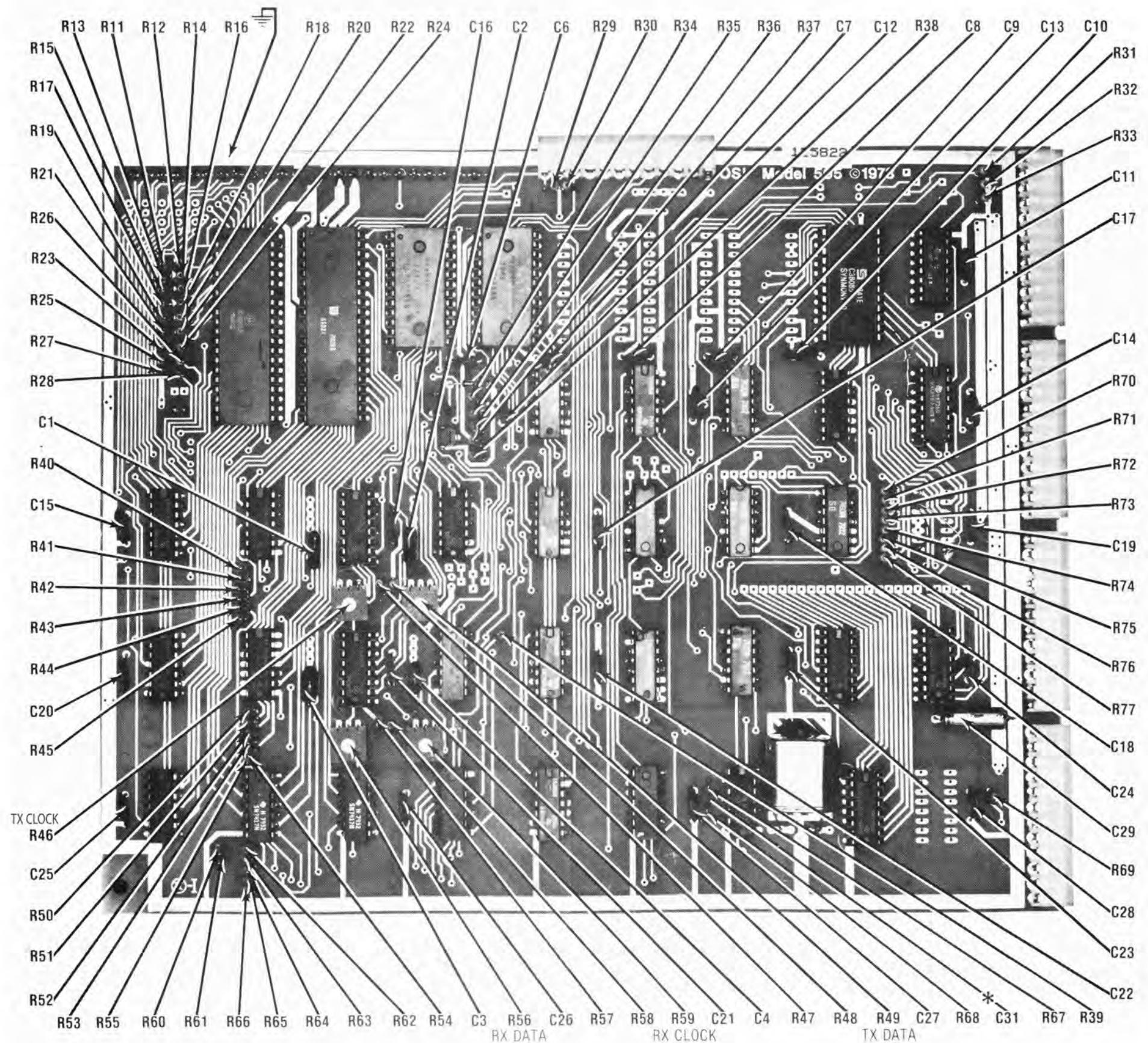
U31,U32,U40

DM7430N



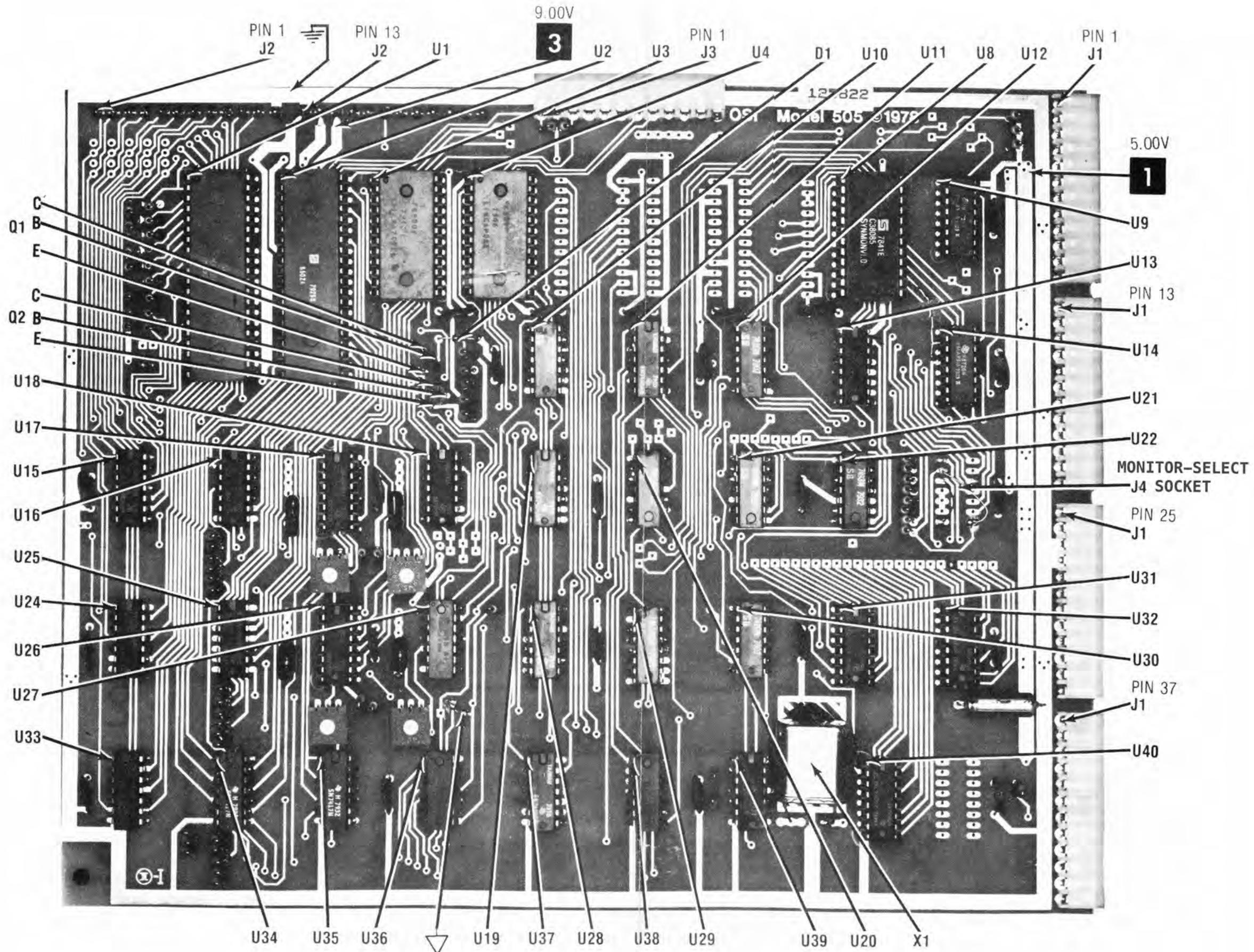
U36,U38

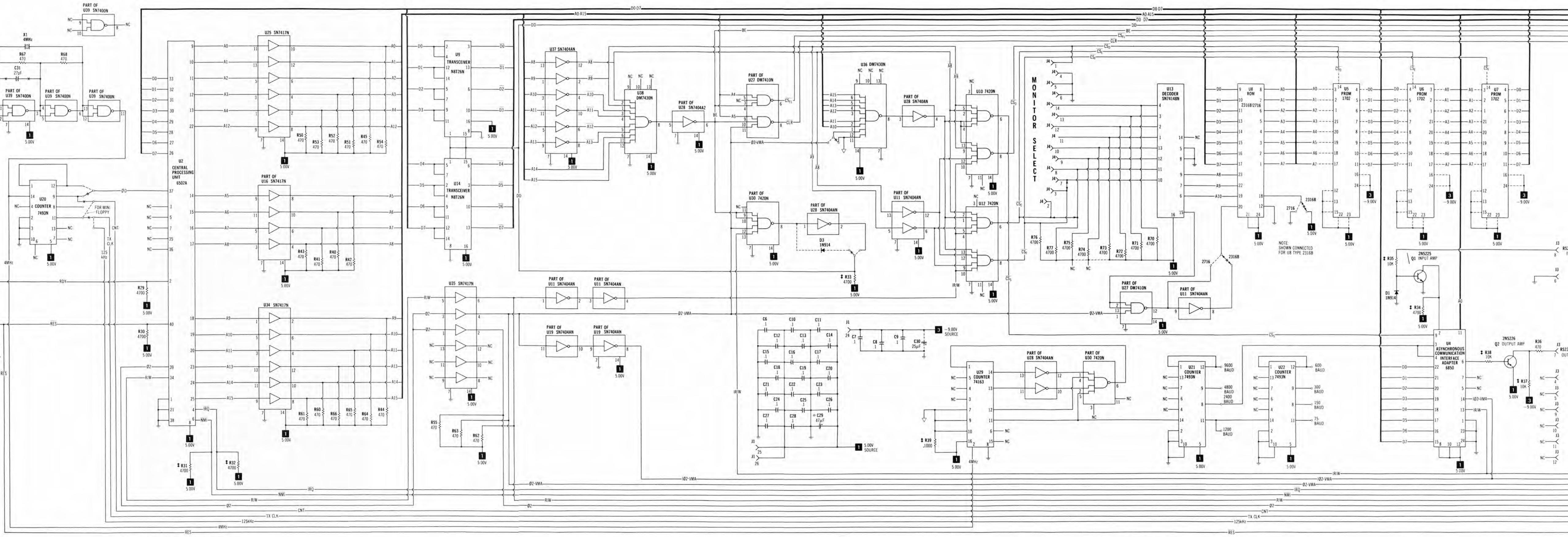




\*LOCATED OTHER SIDE OF BOARD

505 REV. A BOARD



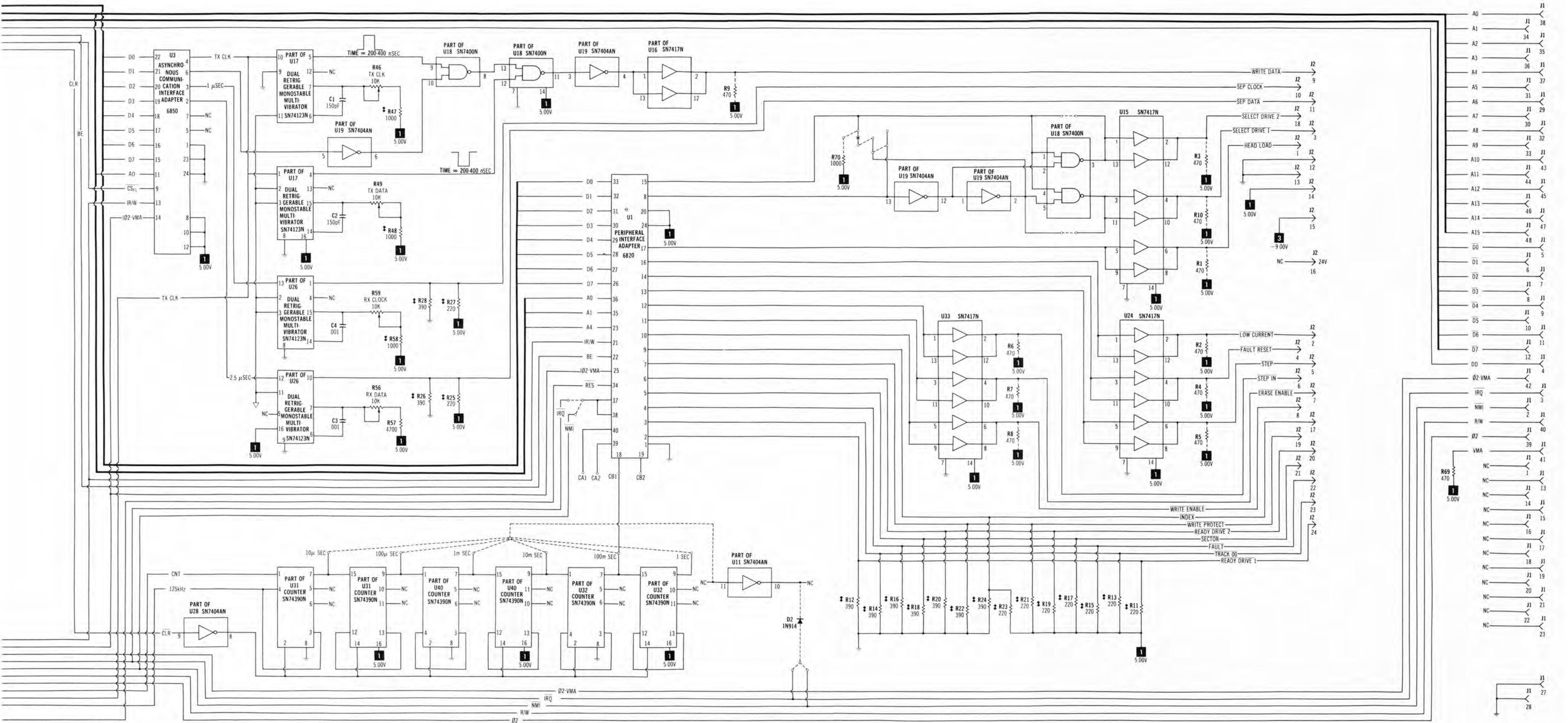


OFAC T STANDARD NOTATION SCHEMATIC  
WITH **CIRCUITTRACE™**  
Howard W. Sams & Co., Inc. 1980

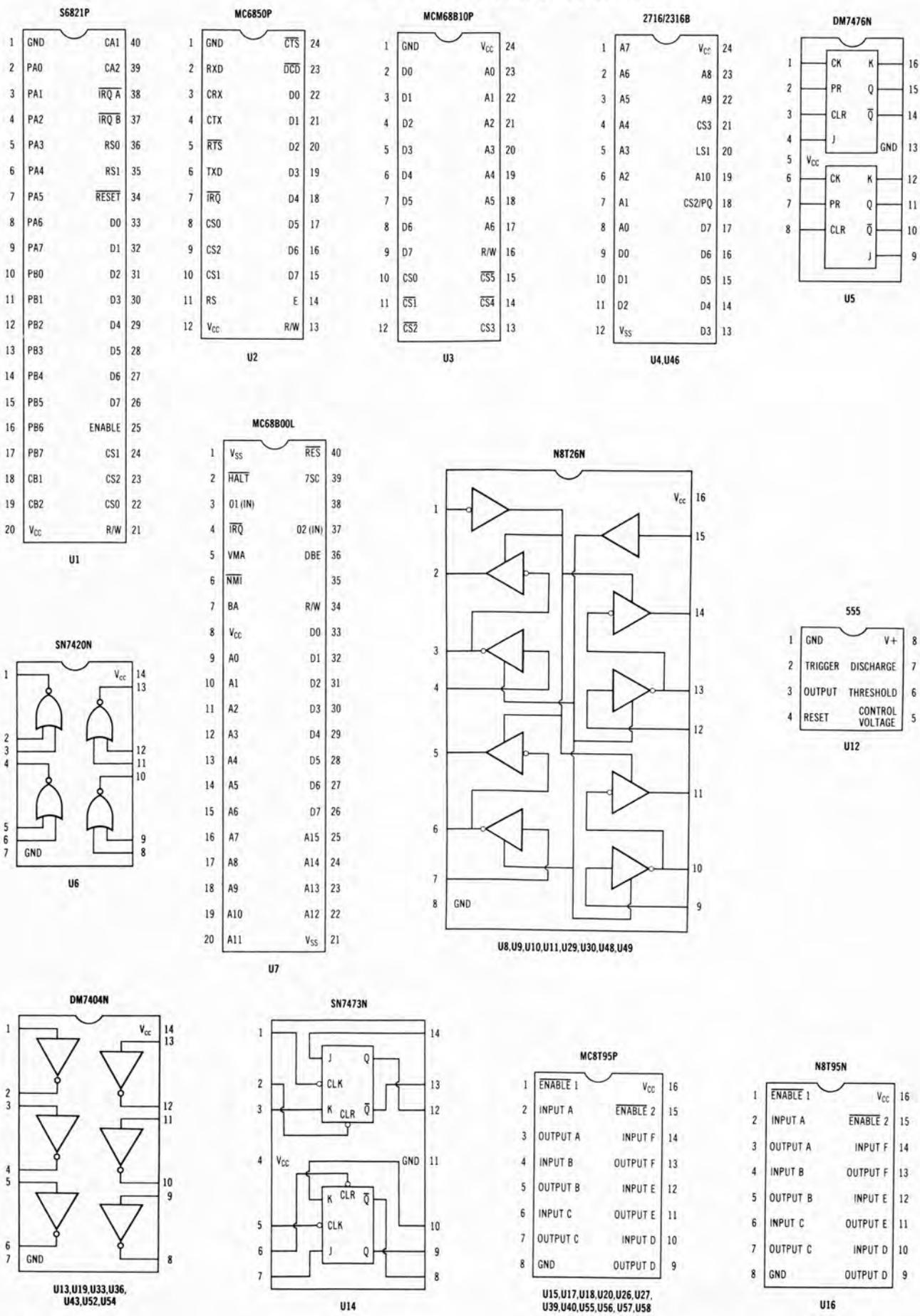
95 REV. A BOARD

47

**C LEGEND AND NOTES SEE PAGES 177,178 & REAR COVER.**



# 510 REV. C BOARD PINOUTS



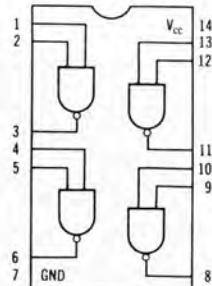
# 510 REV. C BOARD PINOUTS (CONTINUED)

**SN7493AN**

1	INPUT B	INPUT A	14
2	R01	NC	13
3	R02	QA	12
4	NC	QD	11
5	V <sub>CC</sub>	GND	10
6	NC	QB	9
7	NC	QC	8

U21,U22

**SN7400N**



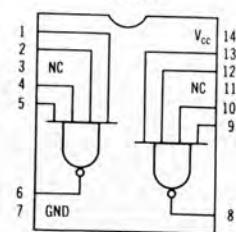
U23,U31,U34,U44,U53

**74163N**

1	CLEAR	V <sub>CC</sub>	16
2	CLOCK	CARRY OUTPUT	15
3	A	QA	14
4	B	QB	13
5	C	QC	12
6	D	QD	11
7	ENABLE P	ENABLE T	10
8	GND	LOAD	9

U24

**SN7420N**



U25

**Z-80**

1	A11	A10	40
2	A12	A9	39
3	A13	A8	38
4	A14	A7	37
5	A15	A6	36
6	CLK	A5	35
7	D4	A4	34
8	D3	A3	33
9	D5	A2	32
10	D6	A1	31
11	V <sub>CC</sub>	A0	30
12	D2	GND	29
13	D7	RFSH	28
14	D0	M1	27
15	D1	RES	26
16	IRQ	BREQ	25
17	NMI	WAIT	24
18	HALT	BUSAK	23
19	MREQ	WR	22
20	IQRQ	RD	21

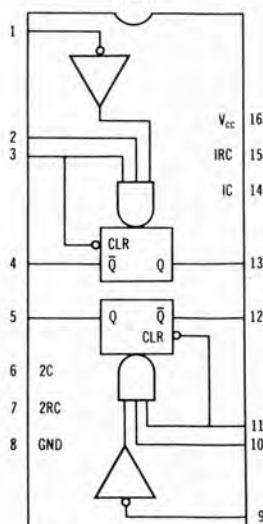
U28

**F74155PC**

1	D1C	V <sub>CC</sub>	16
2	STRB 1G	D2C	15
3	SELECT IN B	STRB 2G	14
4	1Y3	SELECT IN A	13
5	1Y2	2Y3	12
6	1Y1	2Y2	11
7	1Y0	2Y1	10
8	GND	2Y0	9

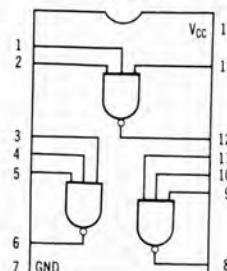
U41

**74123N**



U32

**F5410DM**



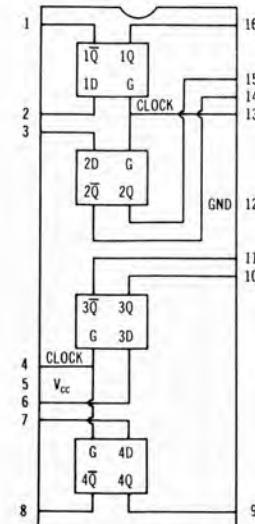
U34,U37

**SN74154N**

1	0	V <sub>CC</sub>	24
2	1	A	23
3	2	B	22
4	3	C	21
5	4	D	20
6	5	G1	19
7	6	G2	18
8	7	15	17
9	8	14	16
10	9	13	15
11	10	12	14
12	GND	11	13

U38

**DM7475N**

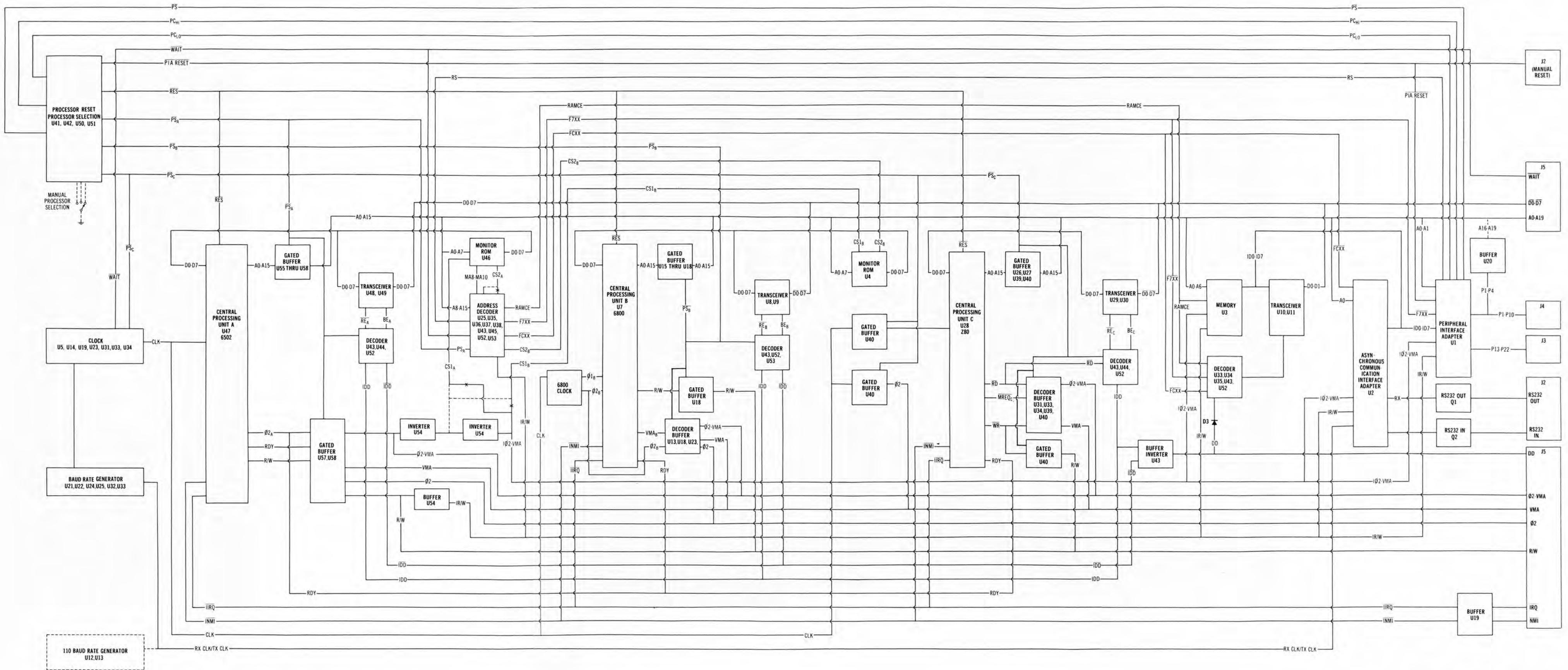


U42

**74148N**

1	INPUT 4	V <sub>CC</sub>	16
2	INPUT 5	OUTPUT E0	15
3	INPUT 6	OUTPUT GS	14
4	INPUT 7	INPUT 3	13
5	INPUT E1	INPUT 2	12
6	OUTPUT A2	INPUT 1	11
7	OUTPUT A1	INPUT 0	10
8	GND	A0	9

U45



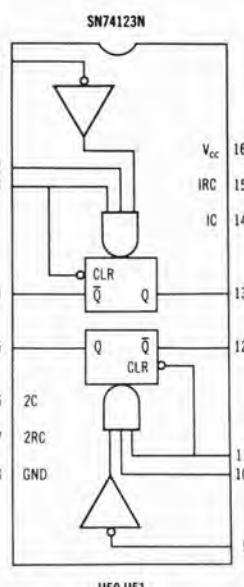
510 REV. C BOARD BLOCK

510 REV. C BOARD BLOCK

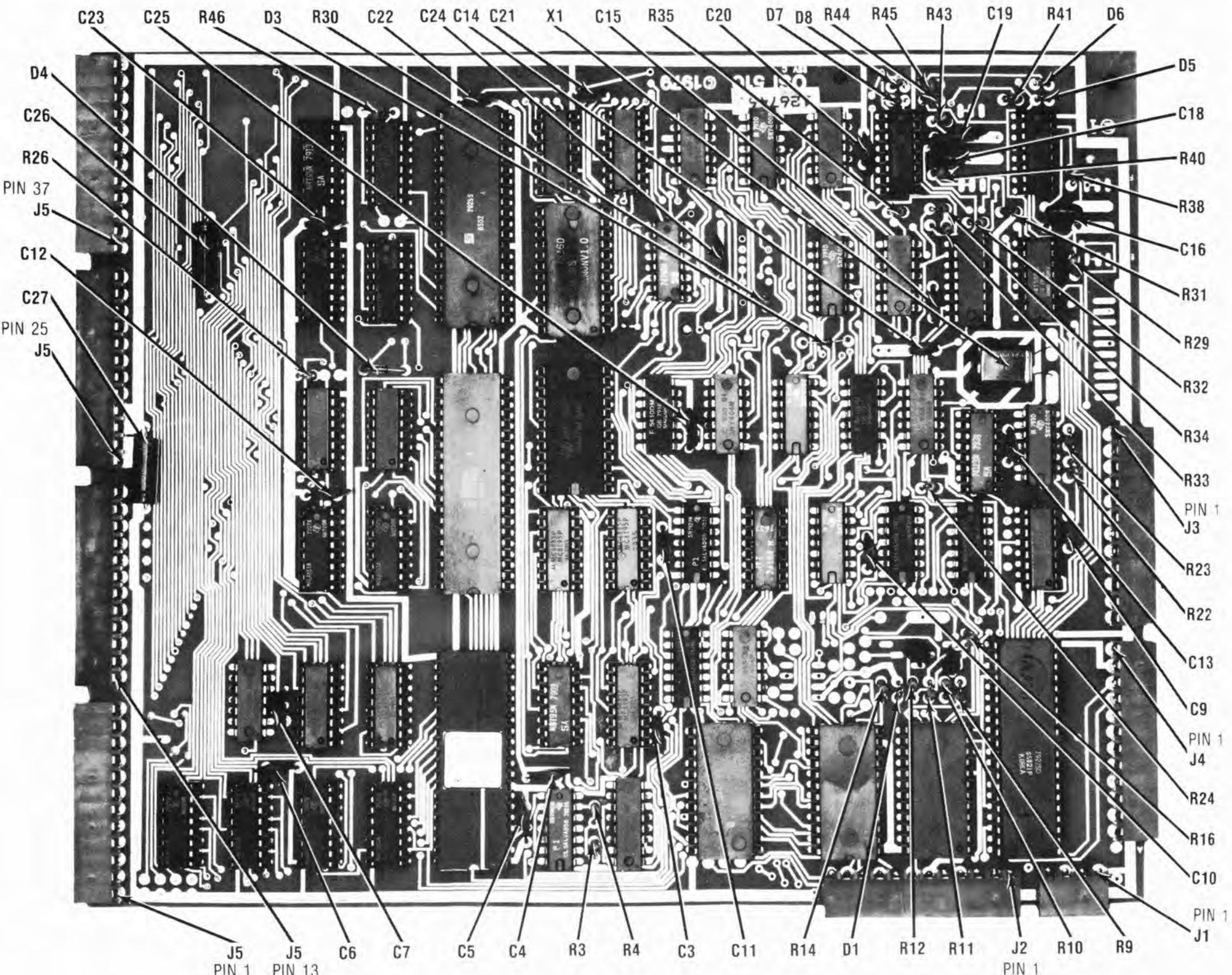
**510 REV. C BOARD  
PINOUTS (CONTINUED)**

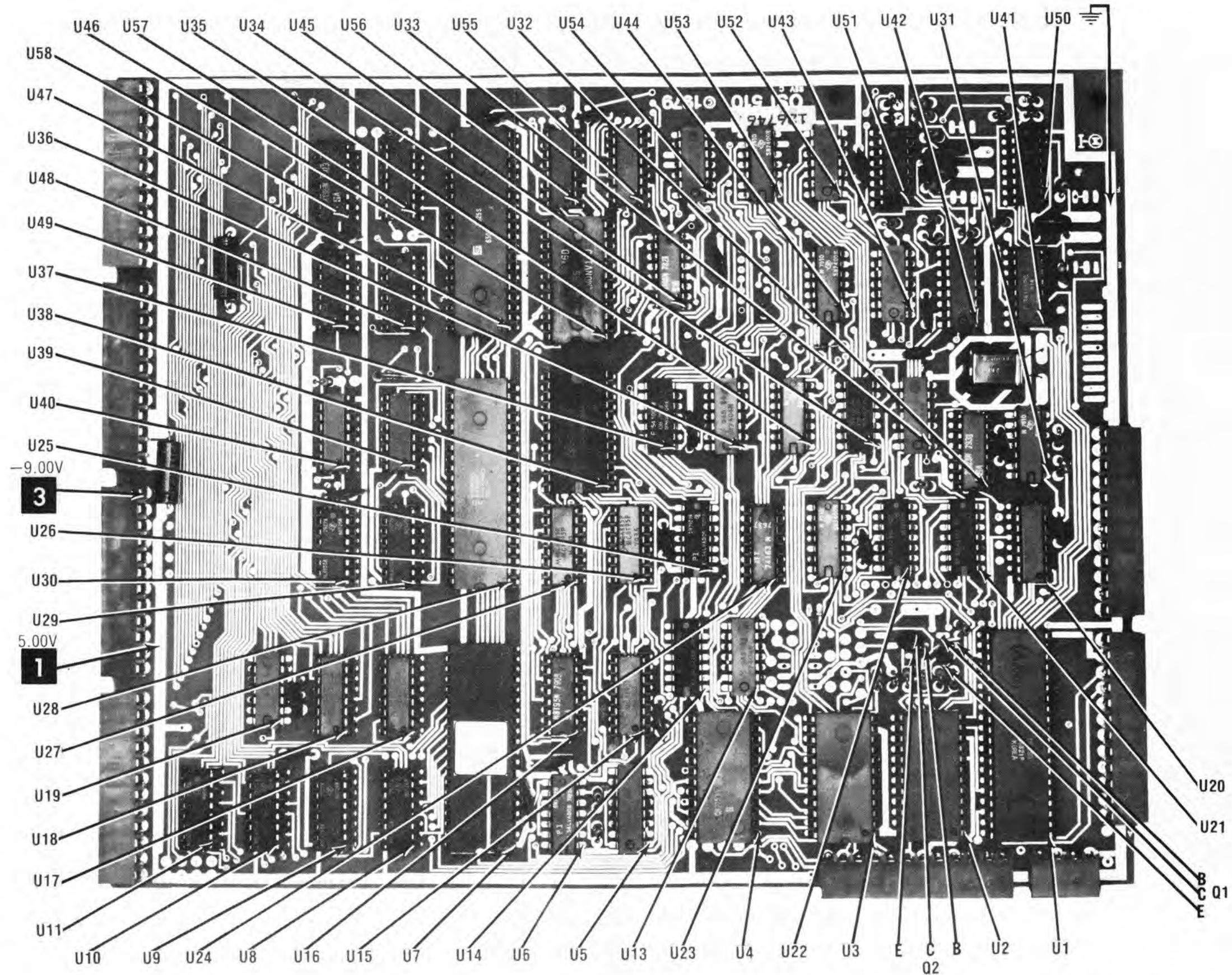
1	VSS	RES	40
2	RDY	Q2 (OUT)	39
3	Q1 (OUT)	S.O.	38
4	IRQ	Q0(IN)	37
5	N.C.	N.C.	36
6	NMI	N.C.	35
7	SYNC	R/W	34
8	VCC	DB0	33
9	AB0	DB1	32
10	AB1	DB2	31
11	AB2	DB3	30
12	AB3	DB4	29
13	AB4	DB5	28
14	AB5	DB6	27
15	AB6	DB7	26
16	AB7	AB15	25
17	AB8	AB14	24
18	AB9	AB13	23
19	AB10	AB12	22
20	AB11	VSS	21

U47



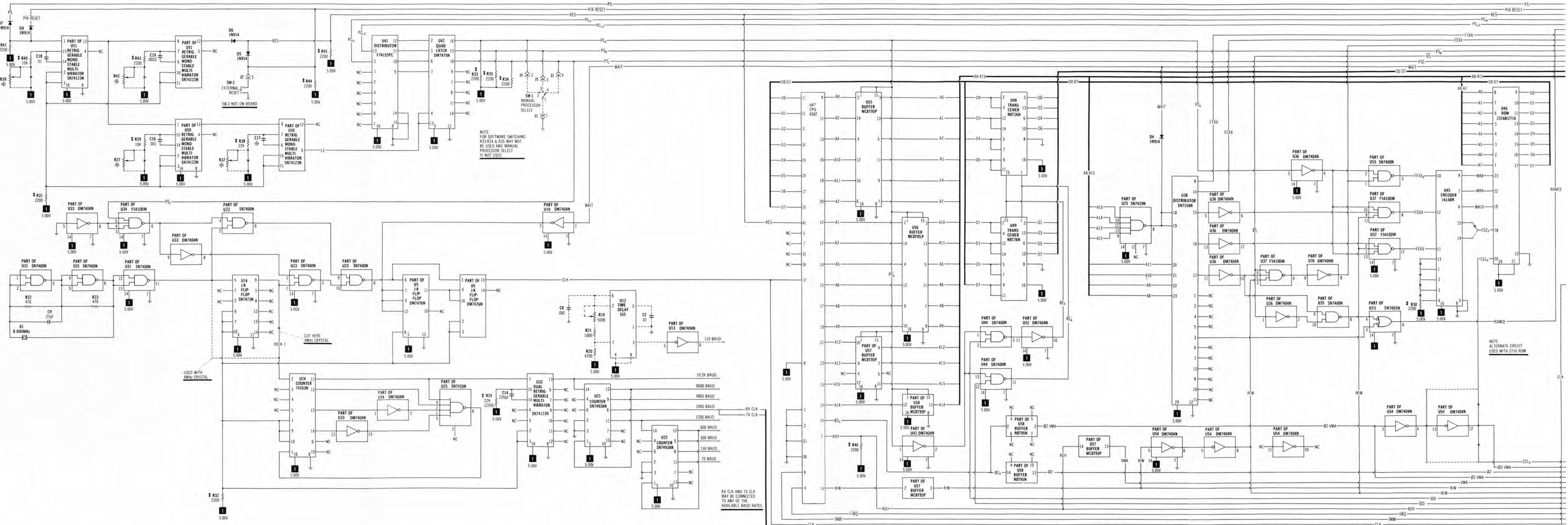
U50,U51





510 REV. C BOARD

510 REV. C BOARD

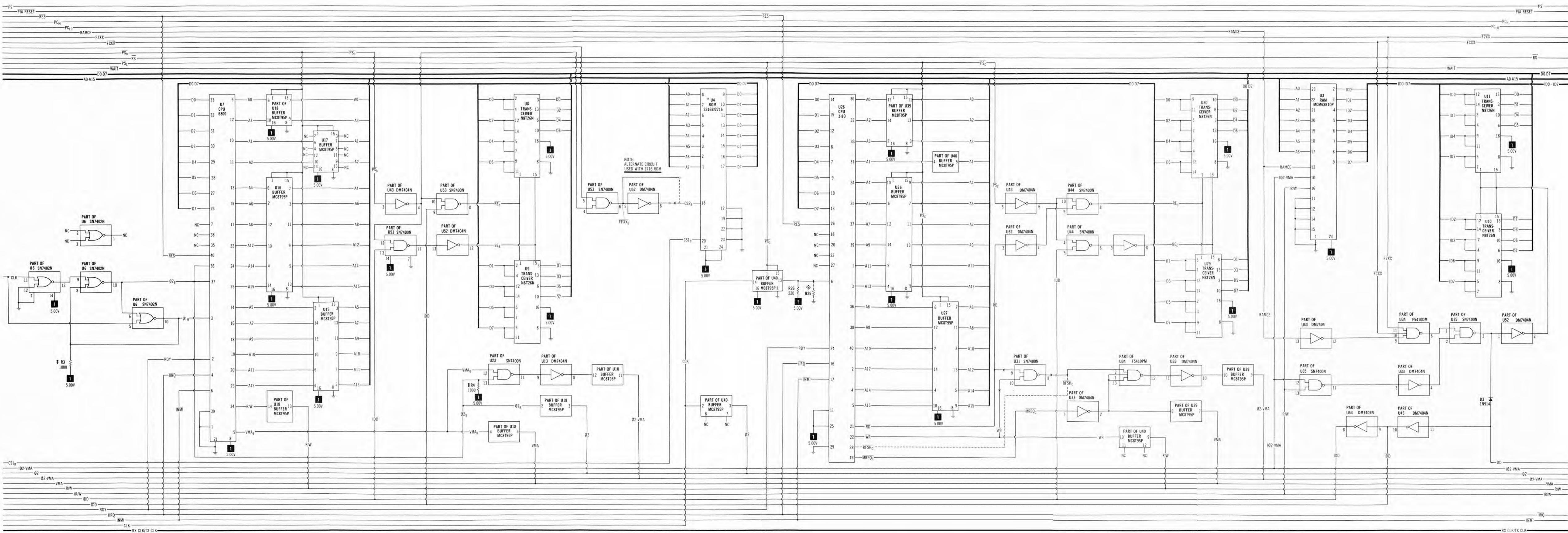


510 REV. C BOARD

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

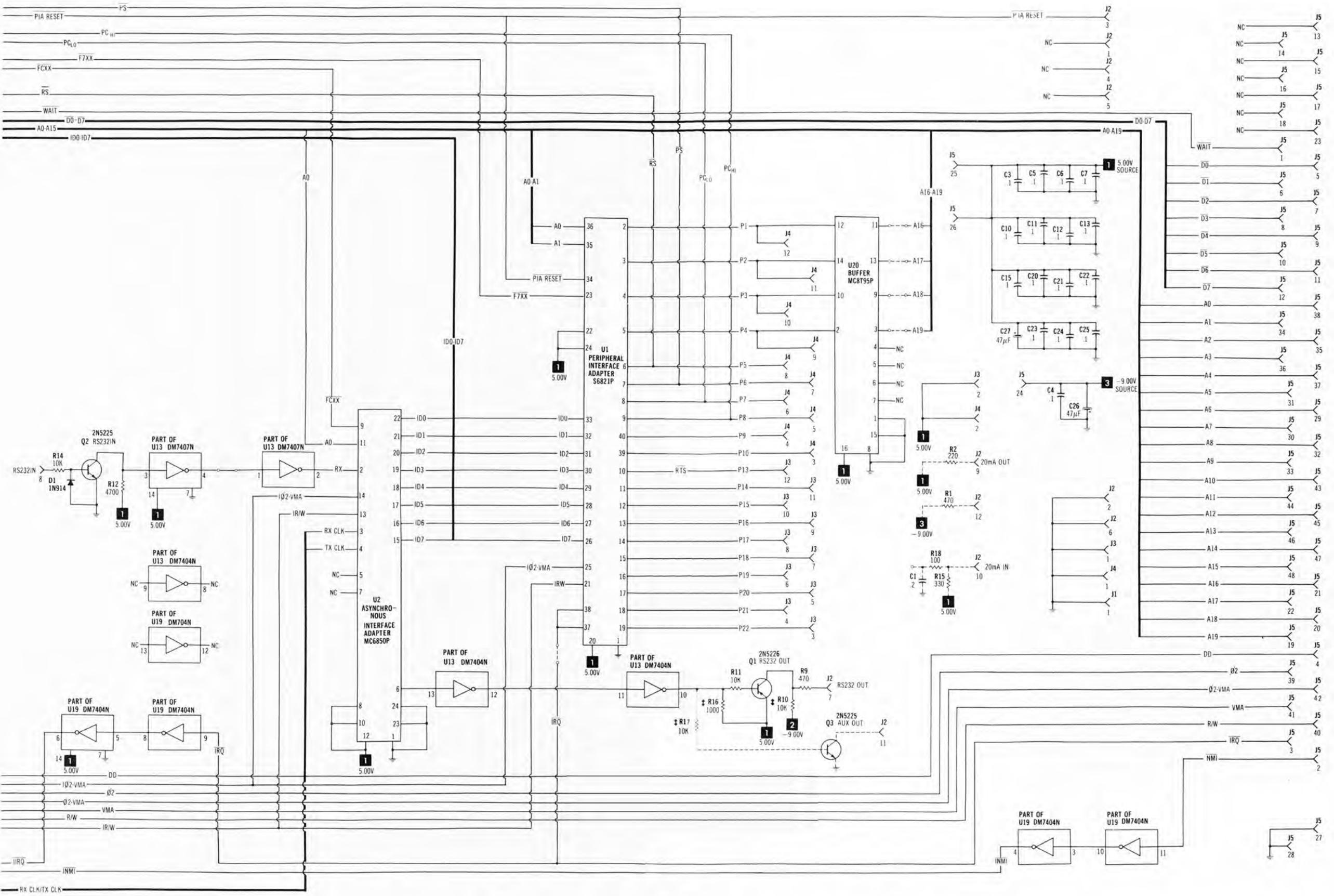
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH CIRCUITTRACE™  
© Howard W. Sams & Co., Inc. 1980

510 REV. C BOARD



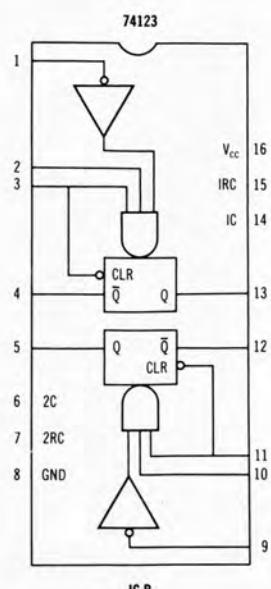
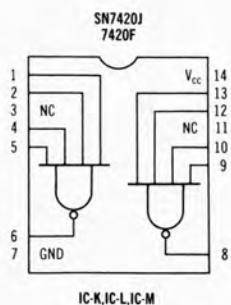
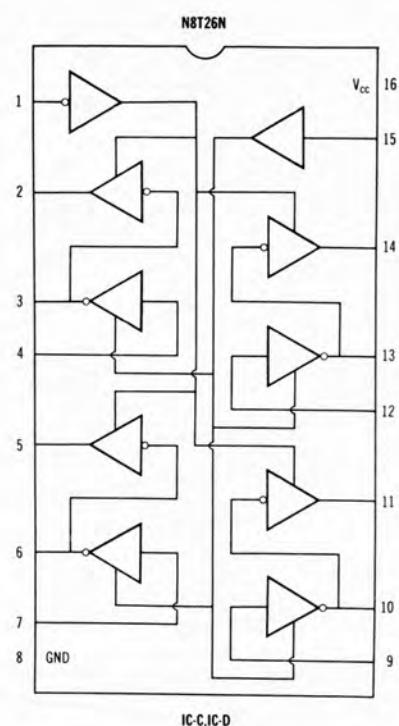
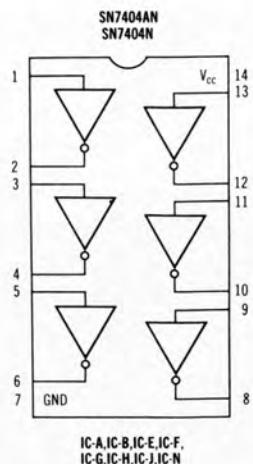
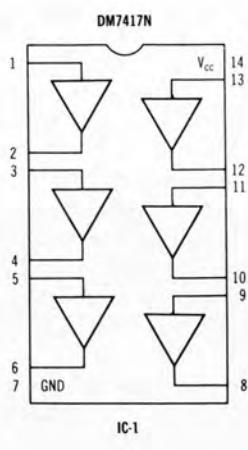
FACT STANDARD NOTATION SCHEMATIC  
WITH **CIRCUITTRACE™**  
Howard W. Sams & Co., Inc. 1980

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



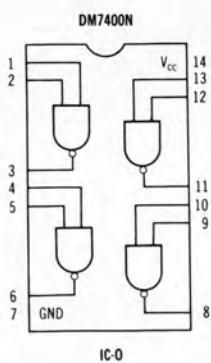
**FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 178,179 & REAR COVER.**

# 520 REV. B BOARD PINOUTS



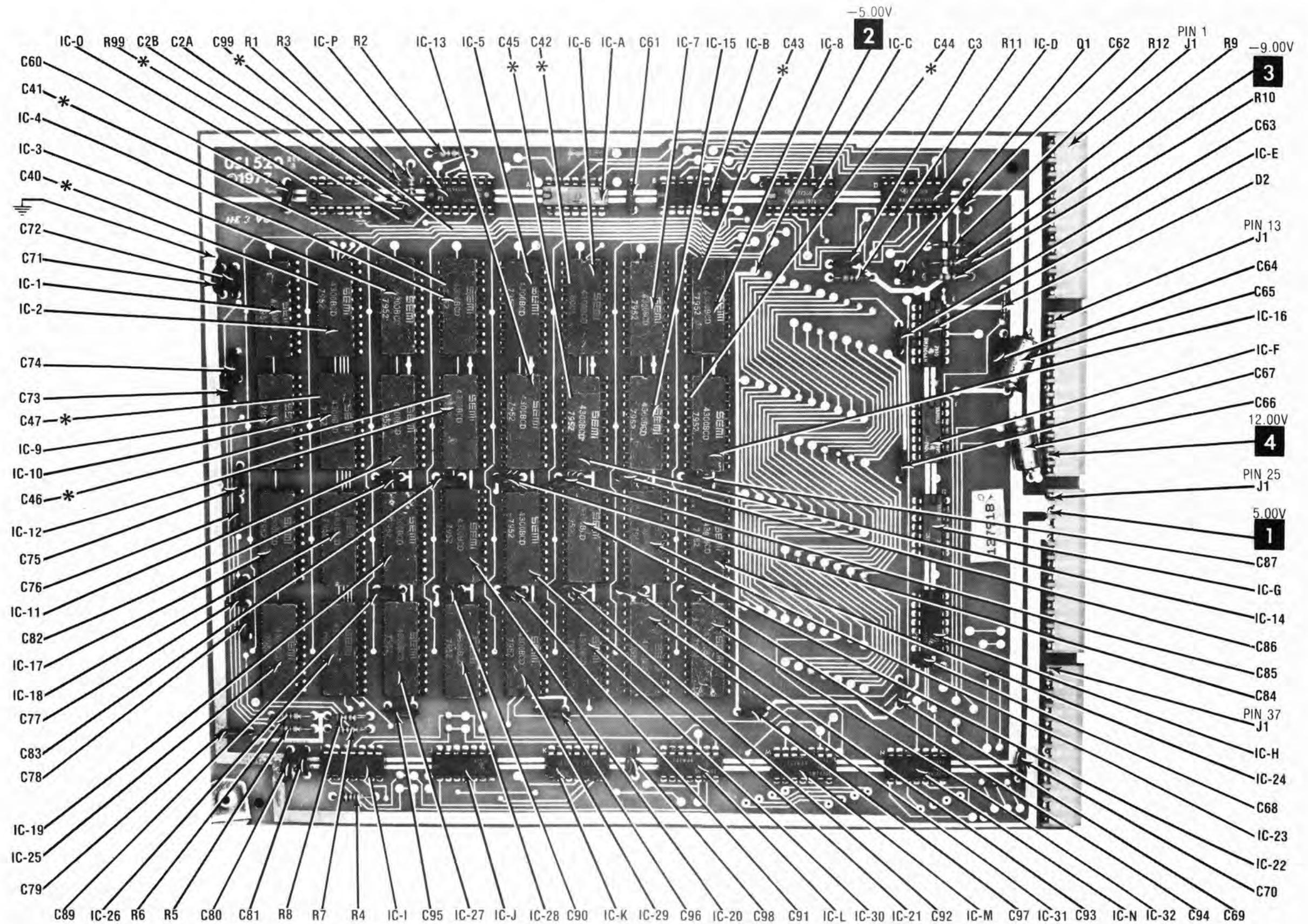
1	V <sub>SX</sub>	GND	22
2	A9	A8	21
3	A10	A7	20
4	A11	A6	19
5	NC	V <sub>DD</sub>	18
6	D <sub>I</sub> X	CS	17
7	DO <sub>X</sub>	NC	16
8	A0	A5	15
9	A1	A4	14
10	A2	A3	13
11	V <sub>RF</sub>	R/W	12

IC-1 THRU IC-32

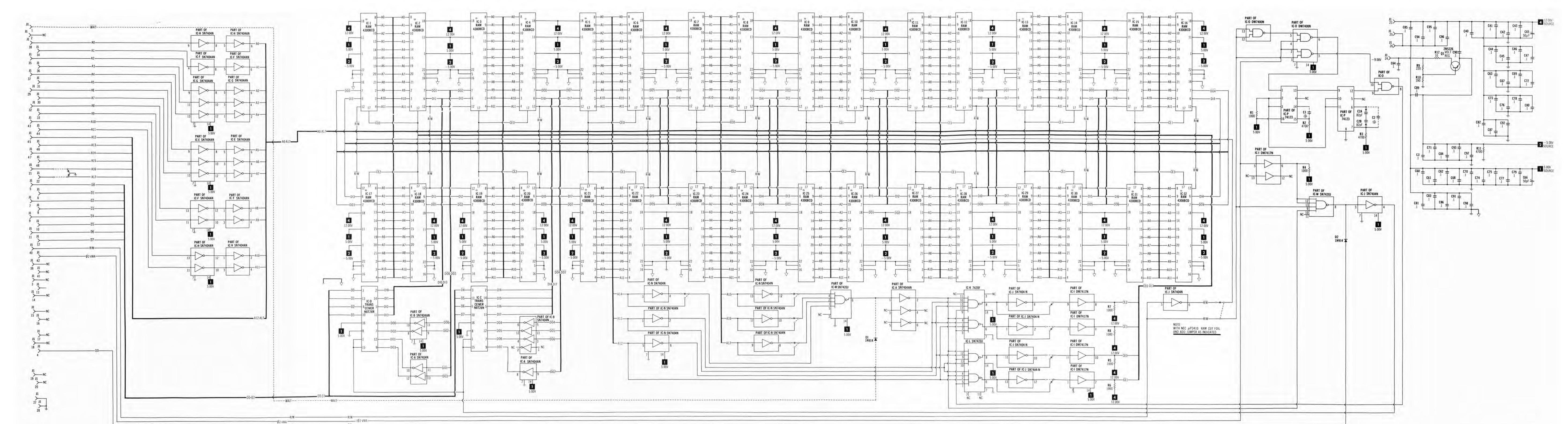


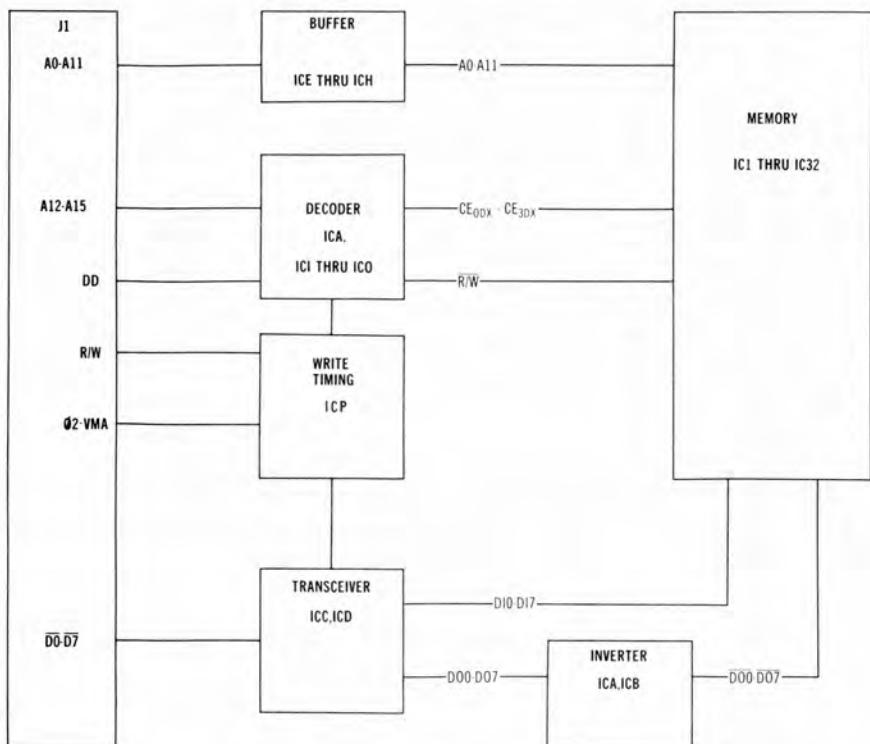
1	V <sub>SS</sub>	V <sub>SS</sub>	22
2	A9	A8	21
3	A10	A7	20
4	A11	A6	19
5	CS	V <sub>DD</sub>	18
6	D <sub>I</sub> X	CE	17
7	DO <sub>X</sub>	NC	16
8	A0	A5	15
9	A1	A4	14
10	A2	A3	13
11	V <sub>CC</sub>	WE	12

IC-1 THRU IC-32  
(ALTERNATE)

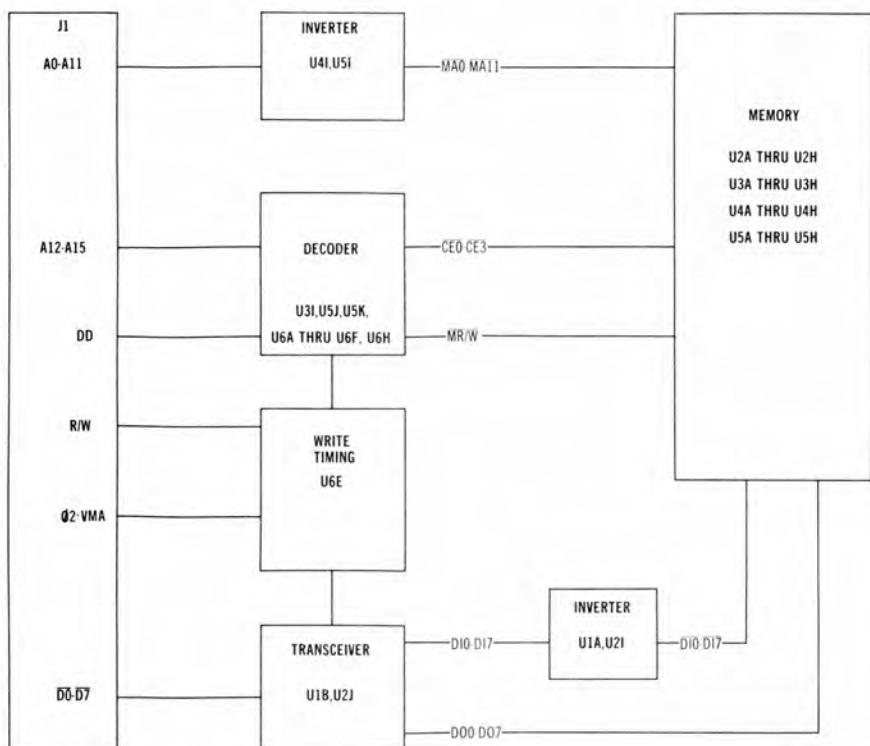


\* LOCATED ON OTHER SIDE OF BOARD



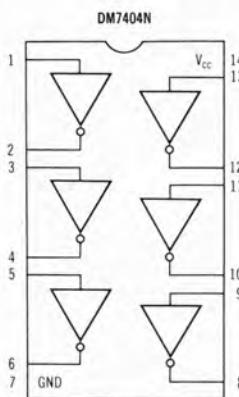


520 REV. B BOARD BLOCK

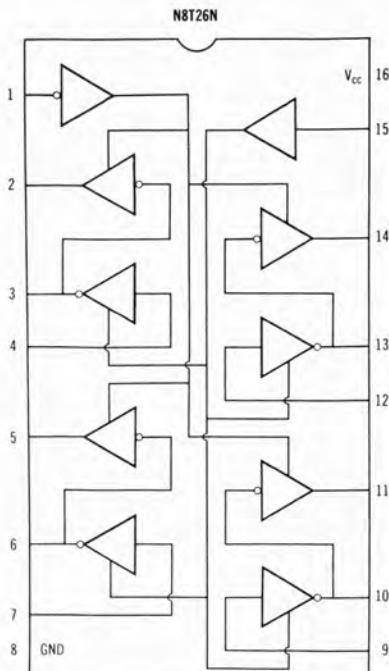


520 REV. C BOARD BLOCK

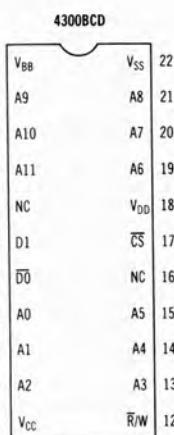
# 520 REV. C BOARD PINOUTS



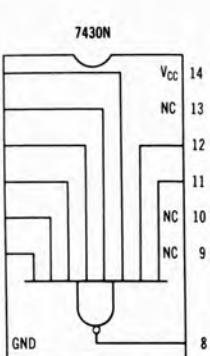
U1A,U2I,U4I,  
U5I,U5K,U6B



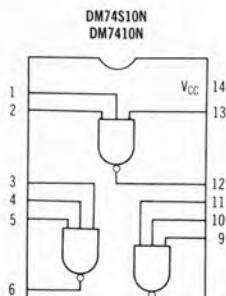
U1B,U2J



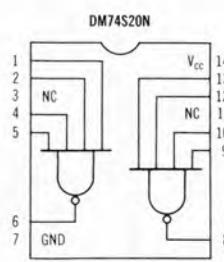
U2A THRU U2H  
U3A THRU U3H  
U4A THRU U4H  
U5A THRU U5H



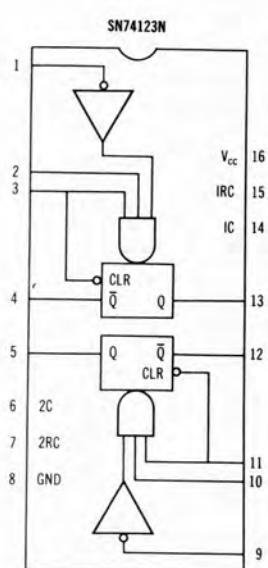
U3I



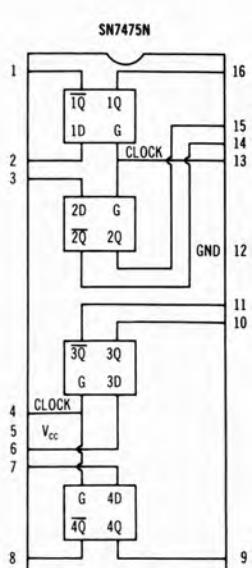
U5J  
U6F



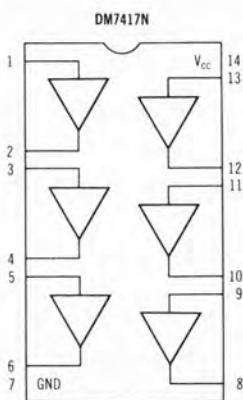
U6C,U6D



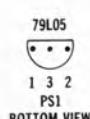
U6E

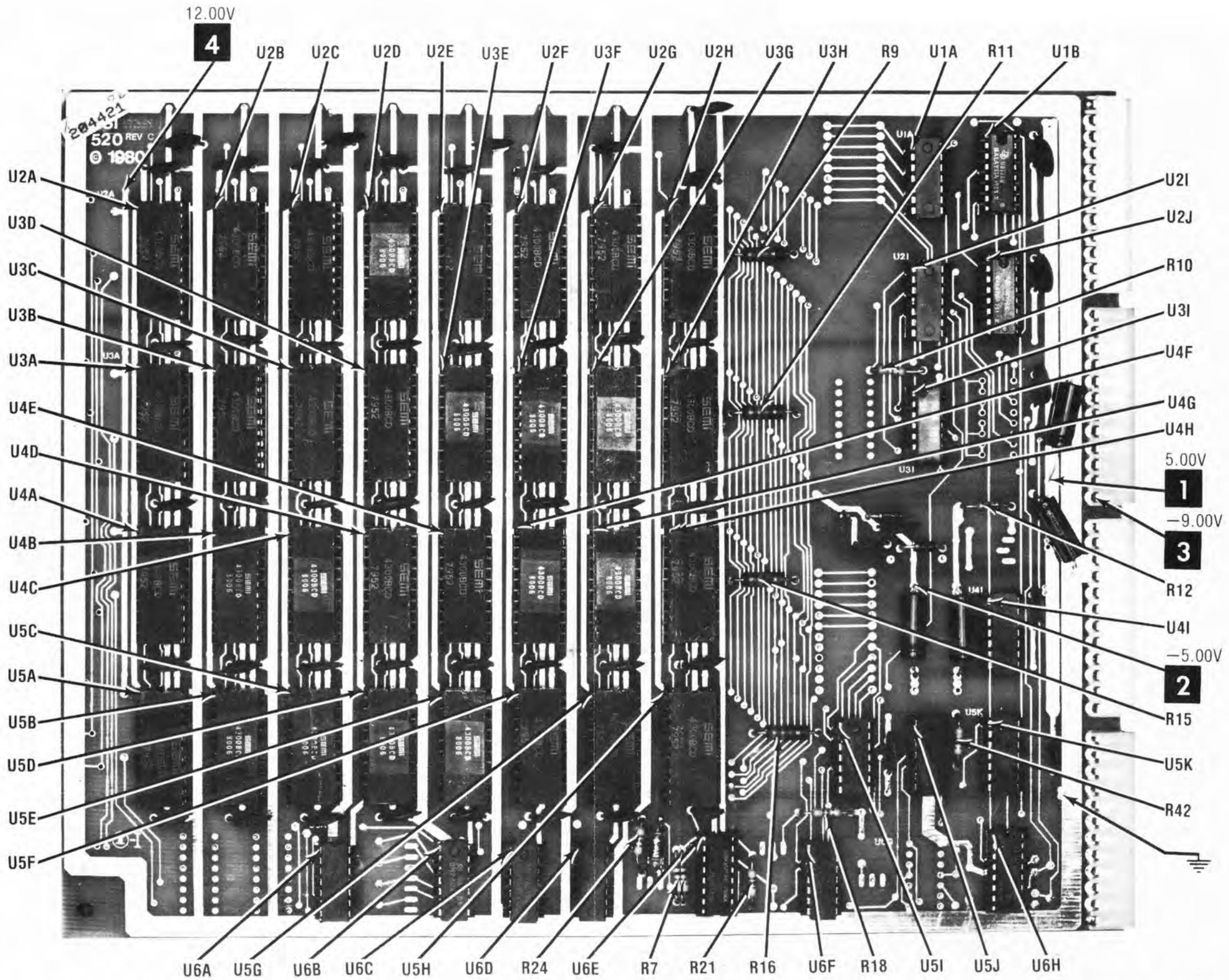


U6H



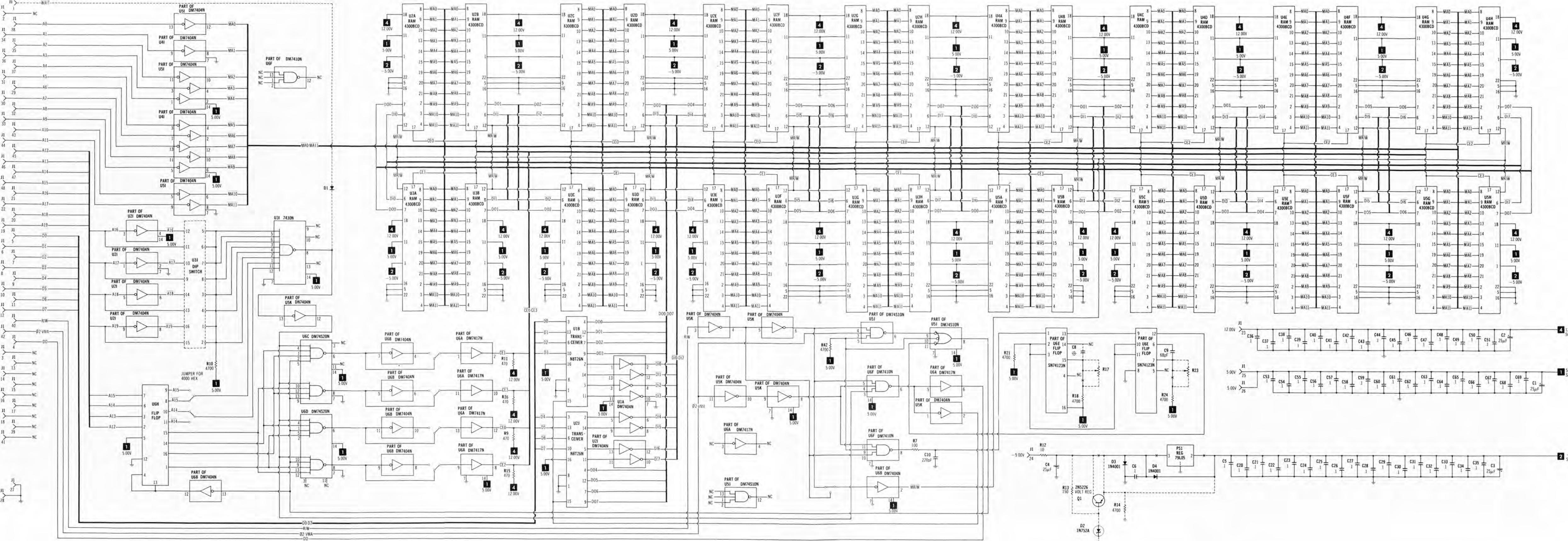
U6A

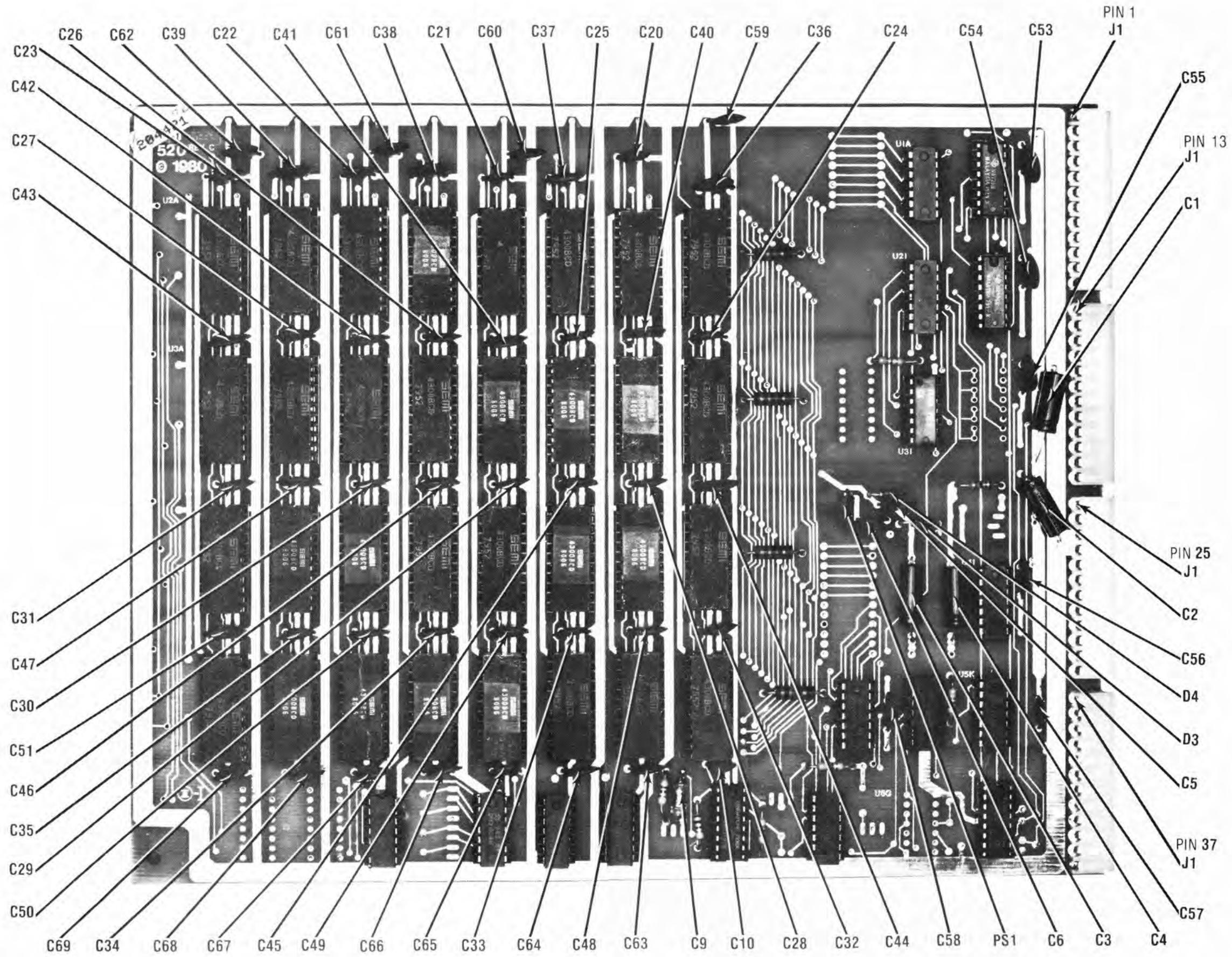


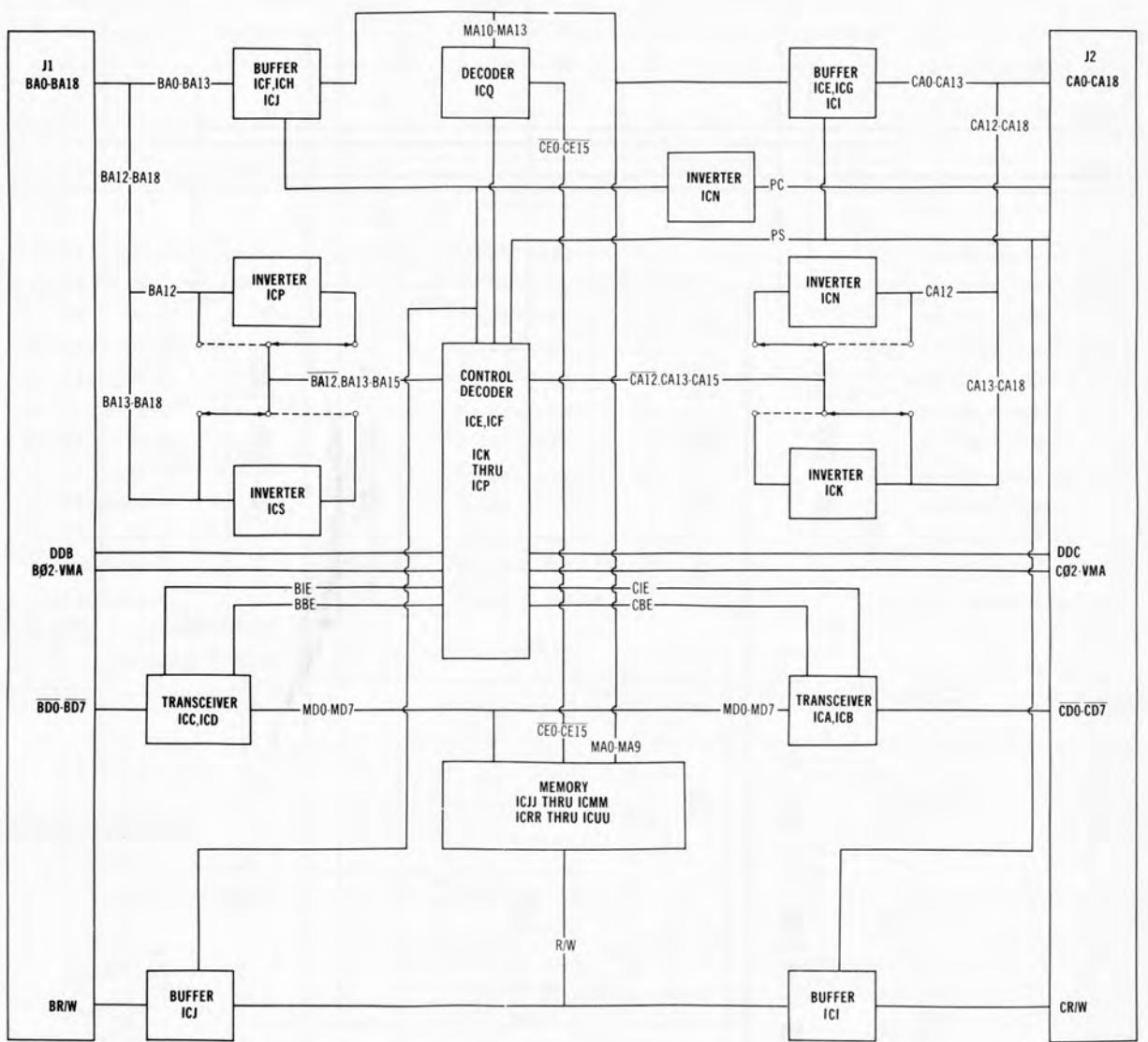


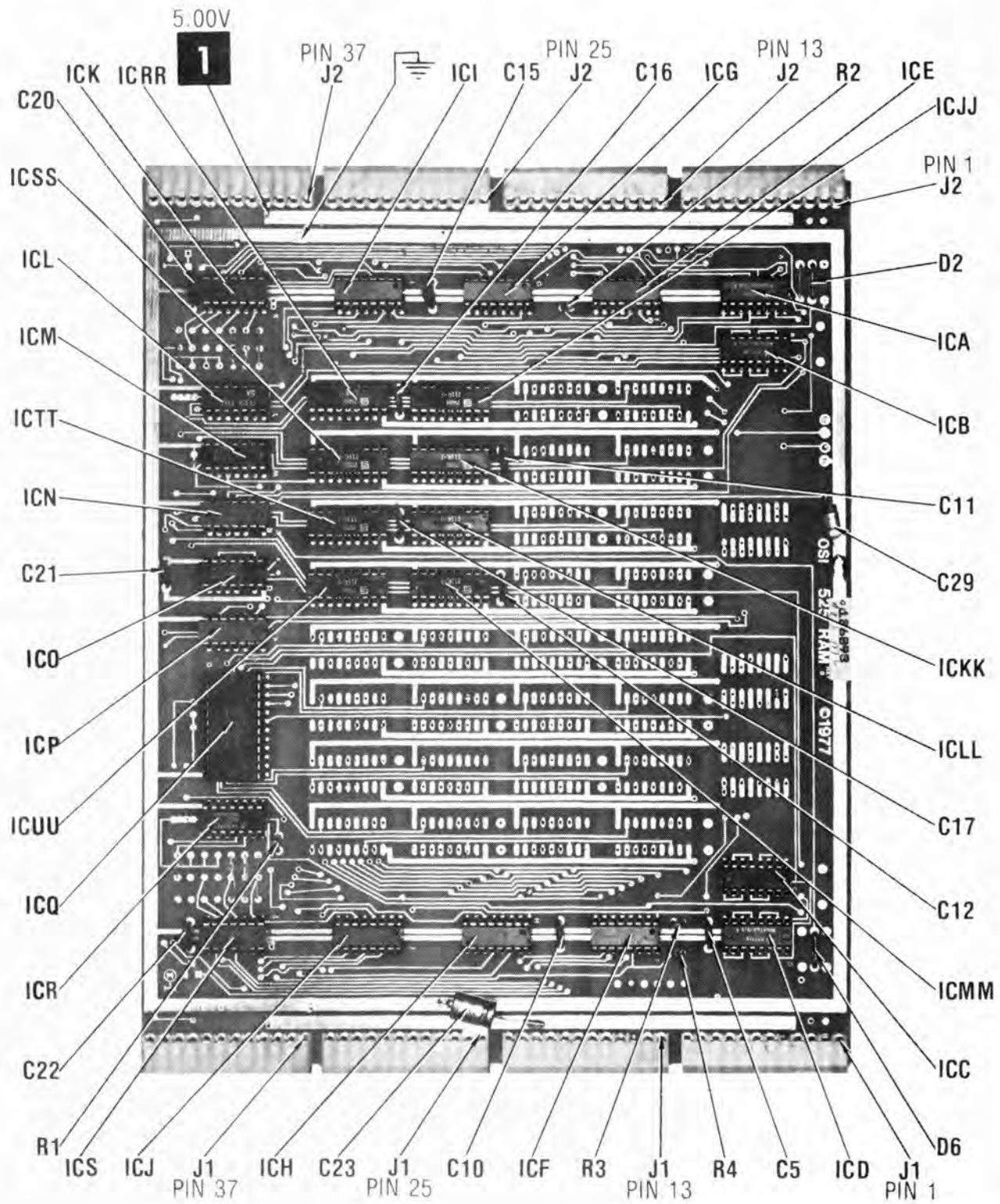
520 REV. C BOARD

520 REV. C BOARD

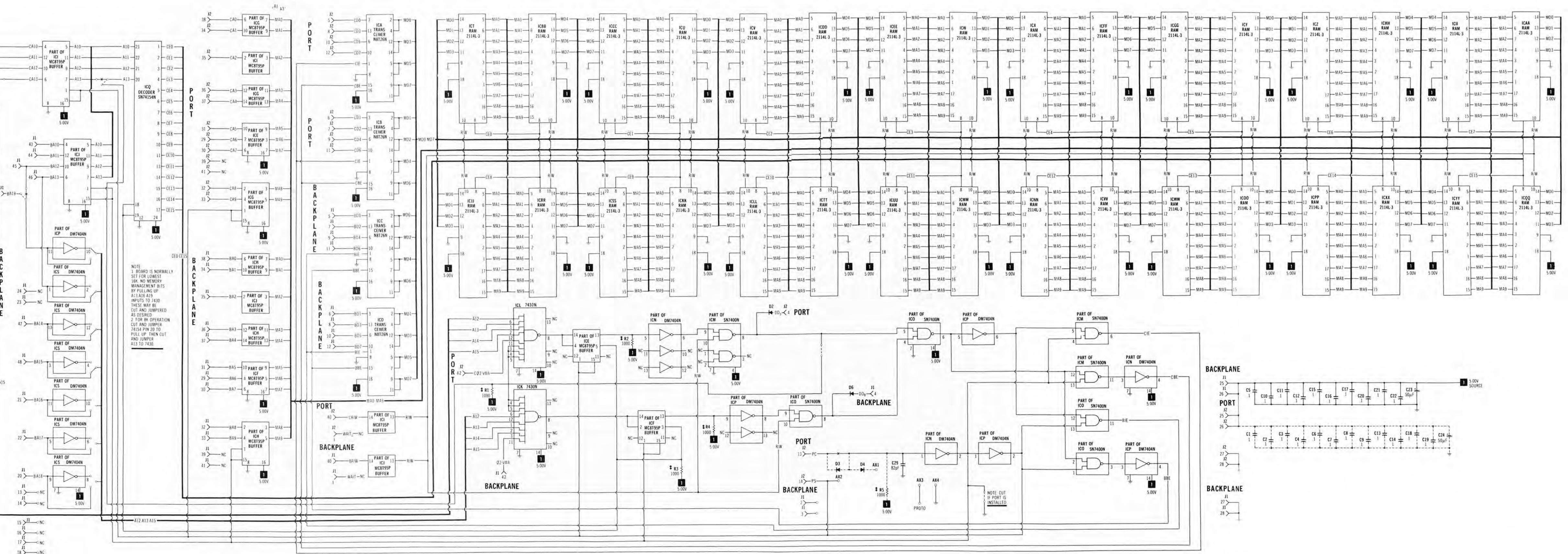








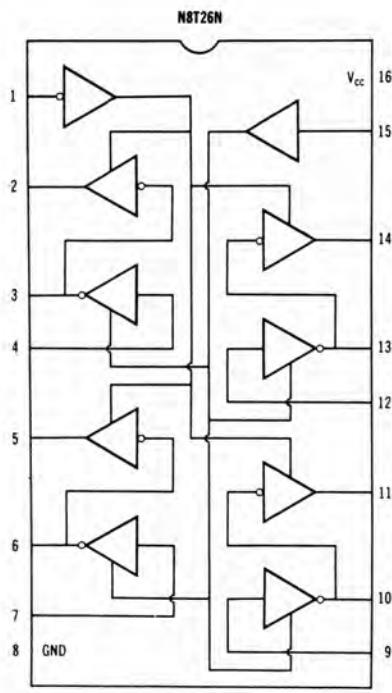
525 BOARD A Howard W. Sams CIRCUITRACE® Photo



FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 179 &amp; REAR COVER.

FOR MEMORY MAPS SEE PAGES 28 &amp; 29.

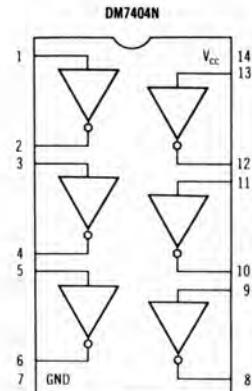
# 525 BOARD PINOUTS



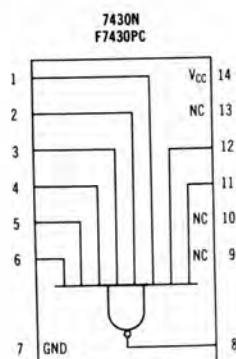
ICA,ICB,ICC,ICD

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

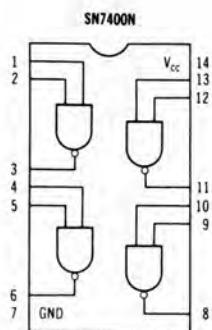
ICE THRU ICJ



ICK,ICN,ICP,ICS



ICL,ICR



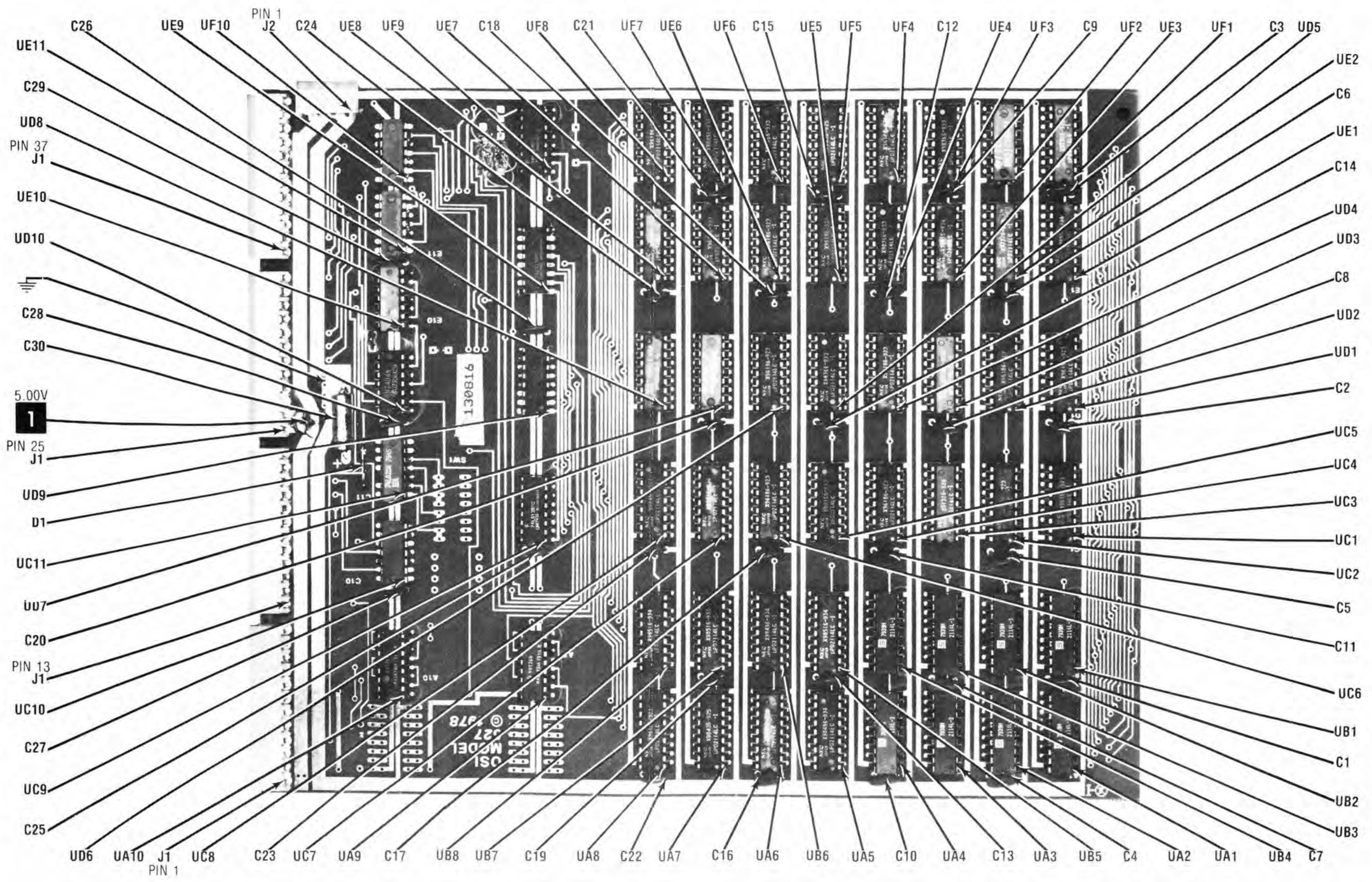
ICM,ICO

1	A <sub>6</sub>	V <sub>CC</sub>	18
2	A <sub>5</sub>	A <sub>7</sub>	17
3	A <sub>4</sub>	A <sub>8</sub>	16
4	A <sub>3</sub>	A <sub>9</sub>	15
5	A <sub>0</sub>	I/O <sub>1</sub>	14
6	A <sub>1</sub>	I/O <sub>2</sub>	13
7	A <sub>2</sub>	I/O <sub>3</sub>	12
8	CS	I/O <sub>4</sub>	11
9	GND	WE	10

ICT THRU ICZ  
ICAA THRU ICYY

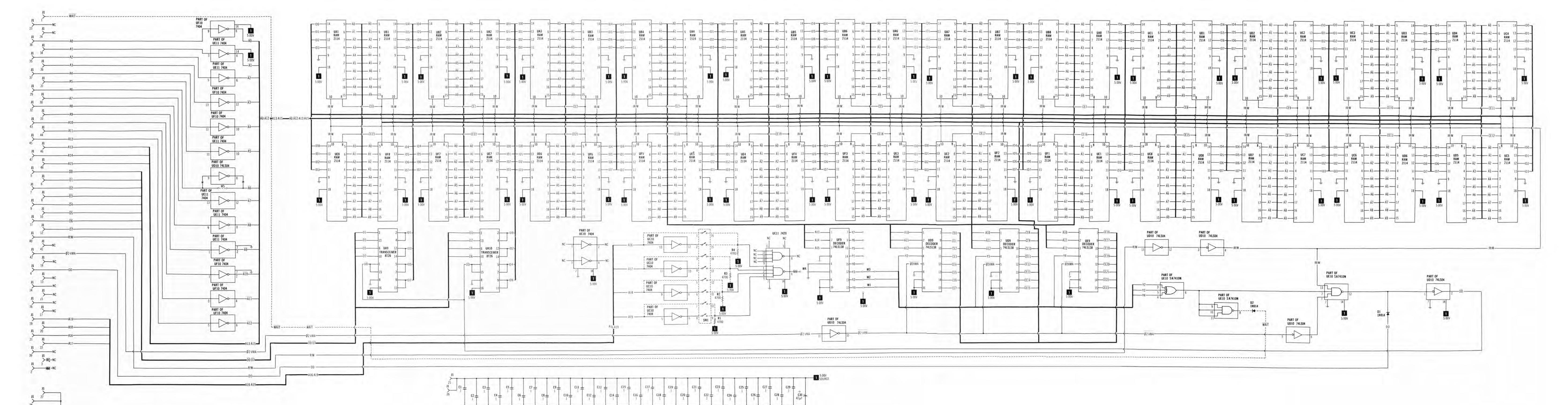
1	0	V <sub>CC</sub>	24
2	1	A	23
3	2	B	22
4	3	C	21
5	4	D	20
6	5	G <sub>2</sub>	19
7	6	G <sub>1</sub>	18
8	7	15	17
9	8	14	16
10	9	13	15
11	10	12	14
12	GND	11	13

ICQ



527 BOARD

527 BOARD



## **MATIC LEGEND AND NOTES 179, 180 & REAR COVER.**

7 BOARD

1

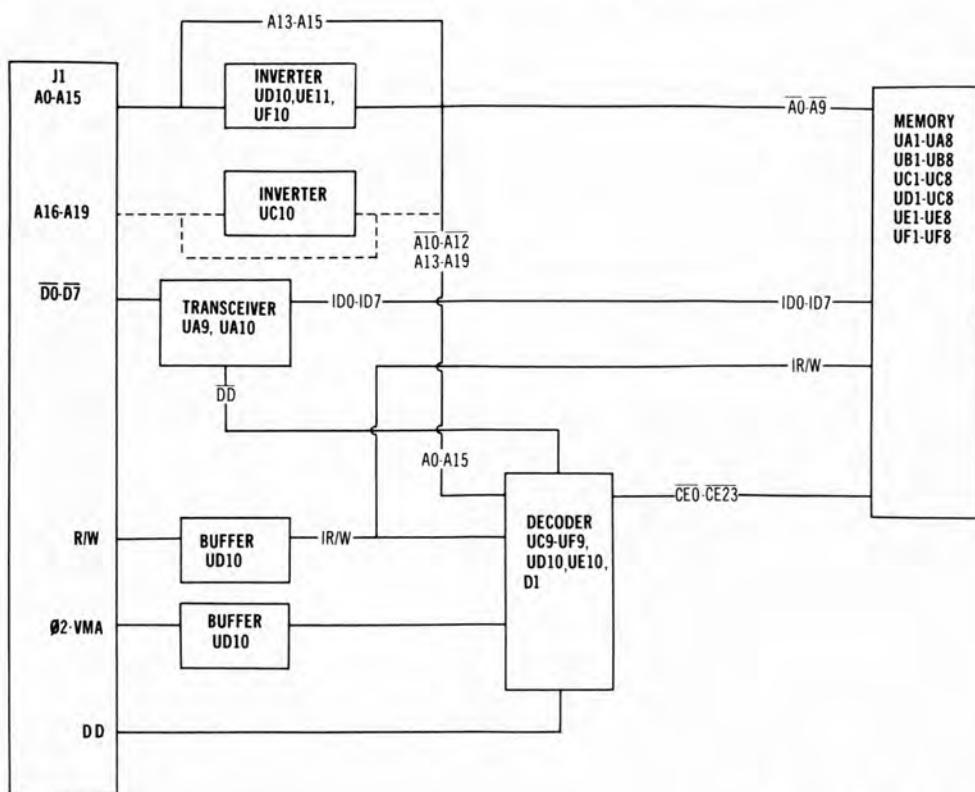
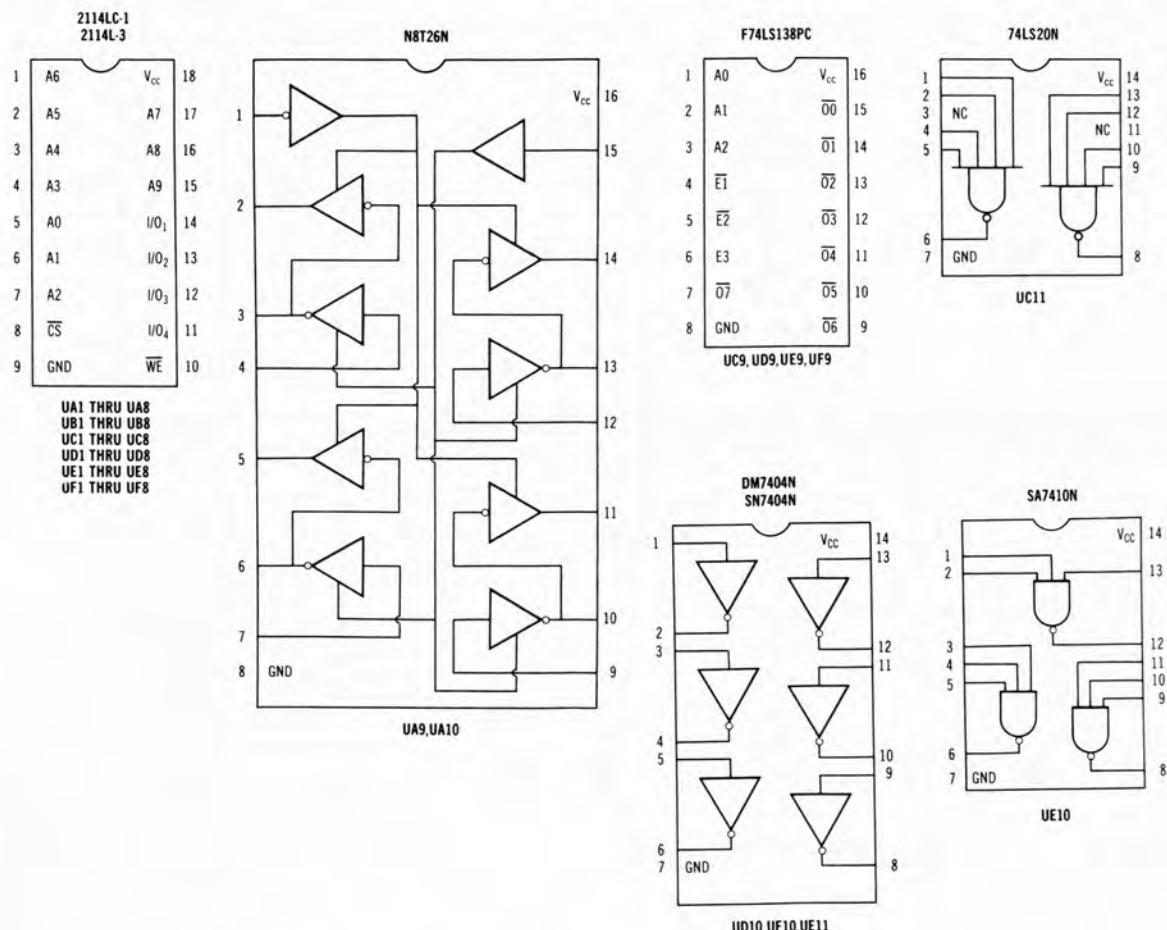
D NOTES SEE PAGE

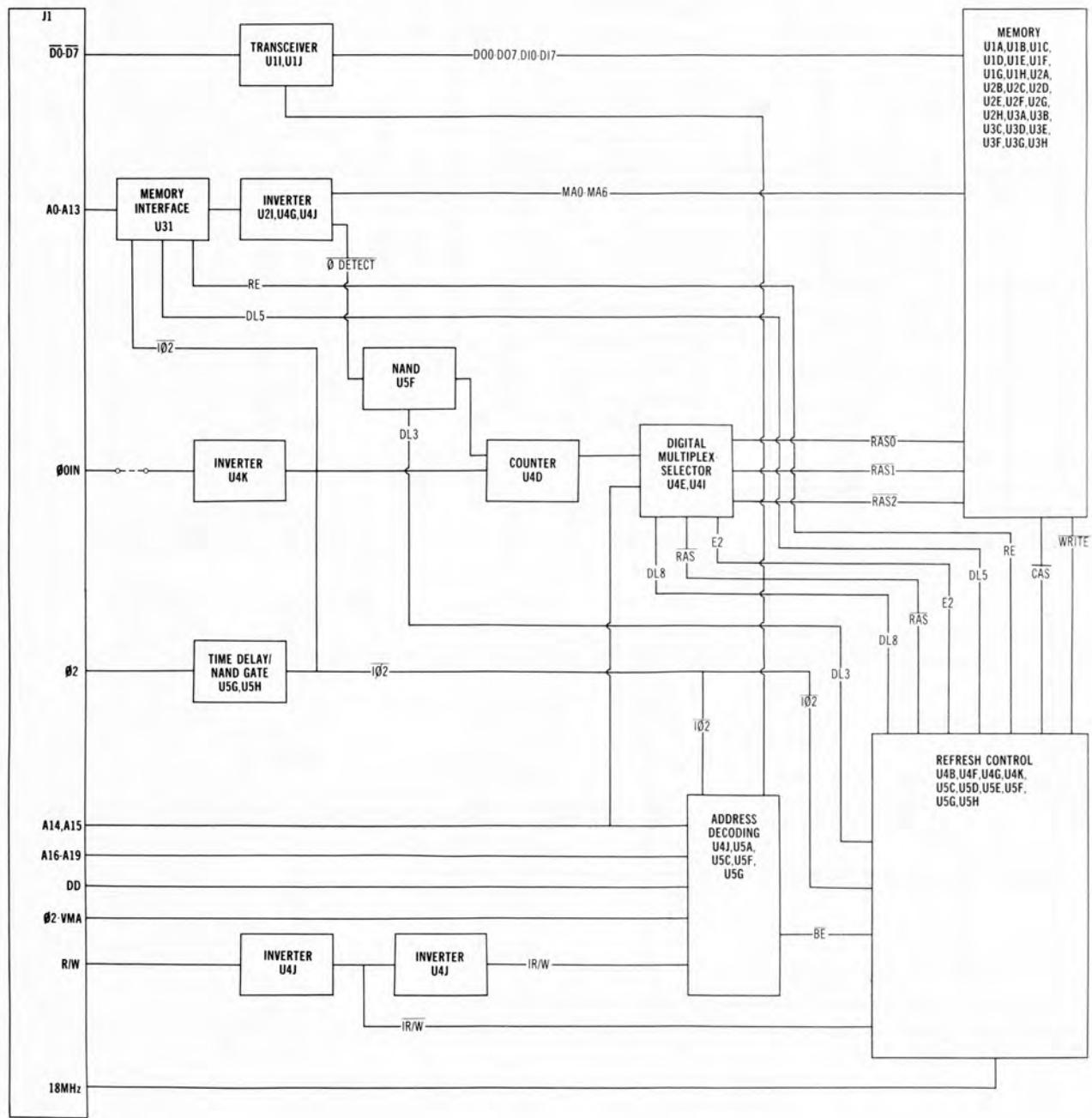
179, 180 & REAR COVER.

527 BOARD

104

# 527 BOARD PINOUTS





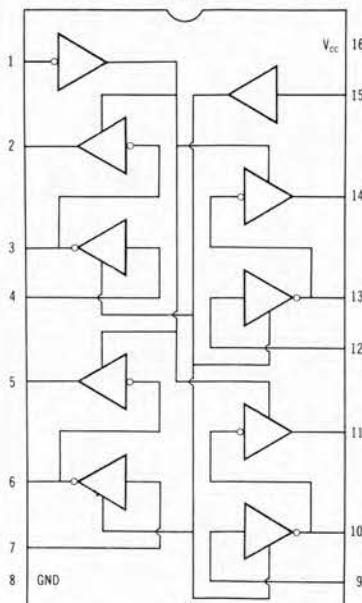
# 535 BOARD PINOUTS

MK4116N-4

1	V <sub>BB</sub>	V <sub>SS</sub>	16
2	D <sub>IN</sub>	CAS	15
3	WRITE	D <sub>OUT</sub>	14
4	RAS	A <sub>6</sub>	13
5	A <sub>0</sub>	A <sub>3</sub>	12
6	A <sub>2</sub>	A <sub>4</sub>	11
7	A <sub>1</sub>	A <sub>5</sub>	10
8	V <sub>DD</sub>	V <sub>CC</sub>	9

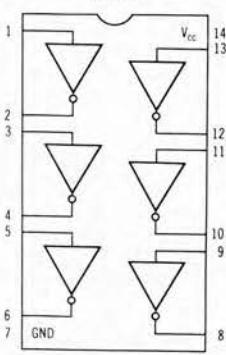
UIA THRU UIH,  
U2A THRU U2H,  
U3A THRU U3H

N8T26N



U1I, U1J

DM7404N



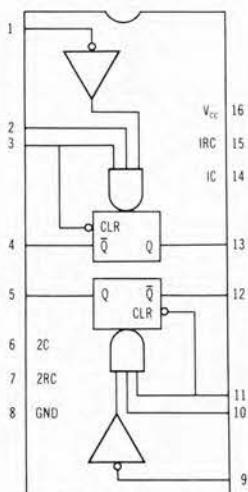
U2I, U4G, U4J, U4K

D3242

1	CNT	V <sub>CC</sub>	28
2	RFSH EN	A <sub>6</sub>	27
3	ROW	A <sub>13</sub>	26
4	NC	A <sub>5</sub>	25
5	A <sub>1</sub>	A <sub>11</sub>	24
6	A <sub>7</sub>	A <sub>4</sub>	23
7	A <sub>2</sub>	A <sub>10</sub>	22
8	A <sub>8</sub>	A <sub>3</sub>	21
9	A <sub>0</sub>	A <sub>9</sub>	20
10	A <sub>12</sub>	D <sub>6</sub>	19
11	D <sub>0</sub>	D <sub>3</sub>	18
12	D <sub>2</sub>	D <sub>4</sub>	17
13	D <sub>1</sub>	D <sub>5</sub>	16
14	GND	Φ DETECT	15

U3I

SN74123N



U4B

F7493

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

U4D

74157N

1	SELECT	V <sub>CC</sub>	16
2	1A	(STROBE) G	15
3	1B	4A	14
4	1Y	4B	13
5	2A	4Y	12
6	2B	3A	11
7	2Y	3B	10
8	GND	3Y	9

U4E

DM74164N

1	SA	V <sub>CC</sub>	14
2	S8	Q <sub>8</sub>	13
3	Q1	Q <sub>7</sub>	12
4	Q2	Q <sub>6</sub>	11
5	Q3	Q <sub>5</sub>	10
6	Q4	CLEAR	9
7	GND	CLOCK	8

U4F, U5E

SN74121N

1	Q	V <sub>CC</sub>	14
2	NC	NC	13
3	A <sub>1</sub>	NC	12
4	A <sub>2</sub>	R <sub>EXT</sub> /C <sub>EXT</sub>	11
5	B	C <sub>EXT</sub>	10
6	Q	R <sub>INT</sub>	9
7	GND	NC	8

U4H

F74S138PC

1	A <sub>0</sub>	V <sub>CC</sub>	16
2	A <sub>1</sub>	O <sub>0</sub>	15
3	A <sub>2</sub>	O <sub>1</sub>	14
4	E <sub>1</sub>	O <sub>2</sub>	13
5	E <sub>2</sub>	O <sub>3</sub>	12
6	E <sub>3</sub>	O <sub>4</sub>	11
7	O <sub>5</sub>	O <sub>5</sub>	10
8	GND	O <sub>6</sub>	9

U4I

DM7400N

1	NC	V <sub>CC</sub>	14
2	NC	NC	13
3	NC	NC	12
4	NC	NC	11
5	NC	NC	10
6	NC	NC	9
7	NC	NC	8

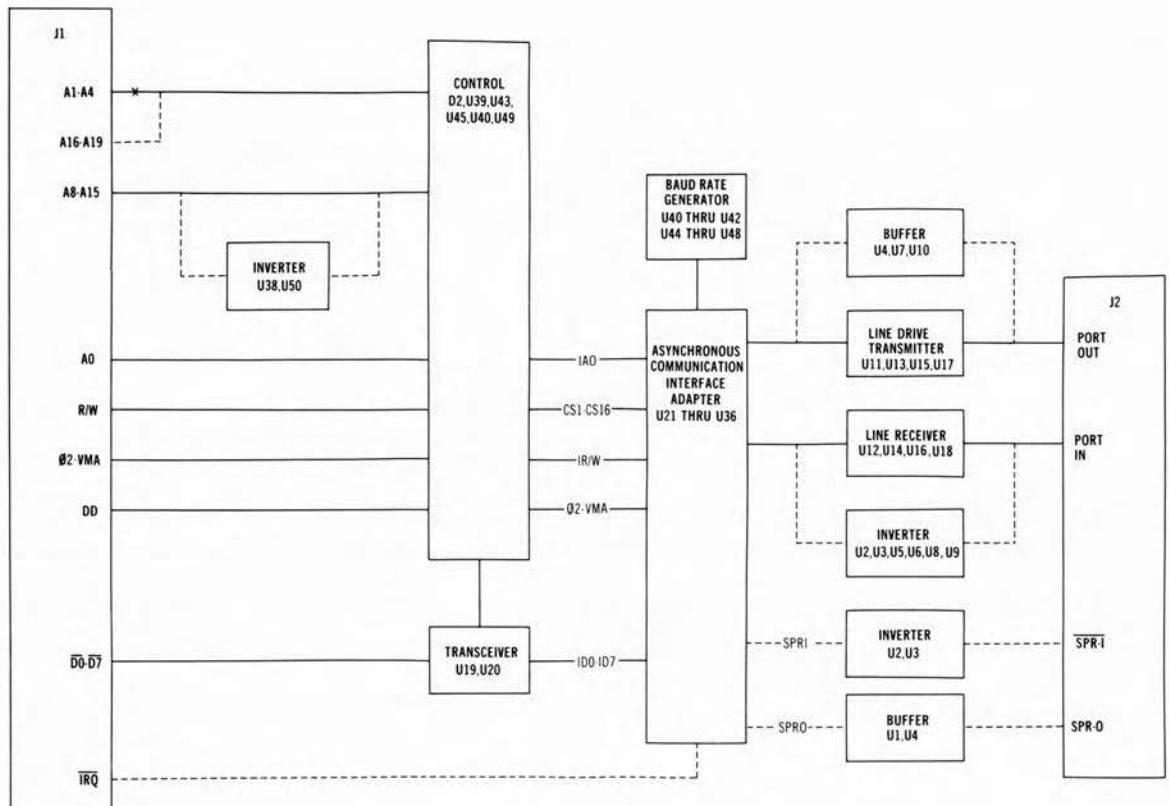
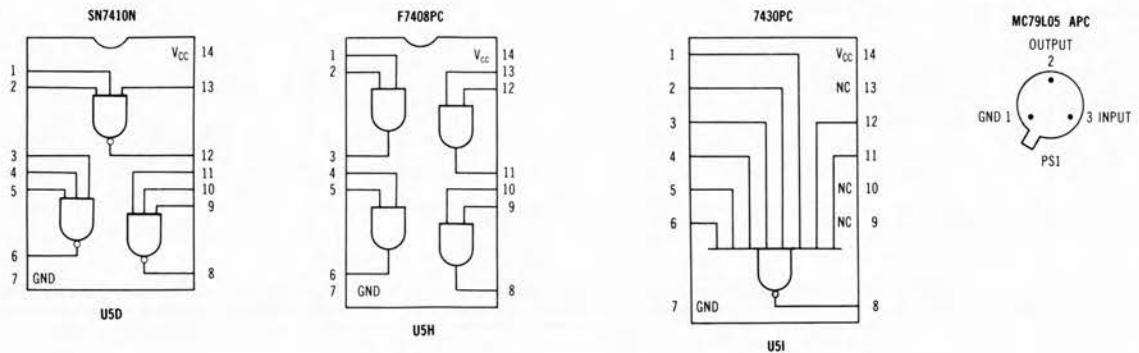
USA, USF, USG

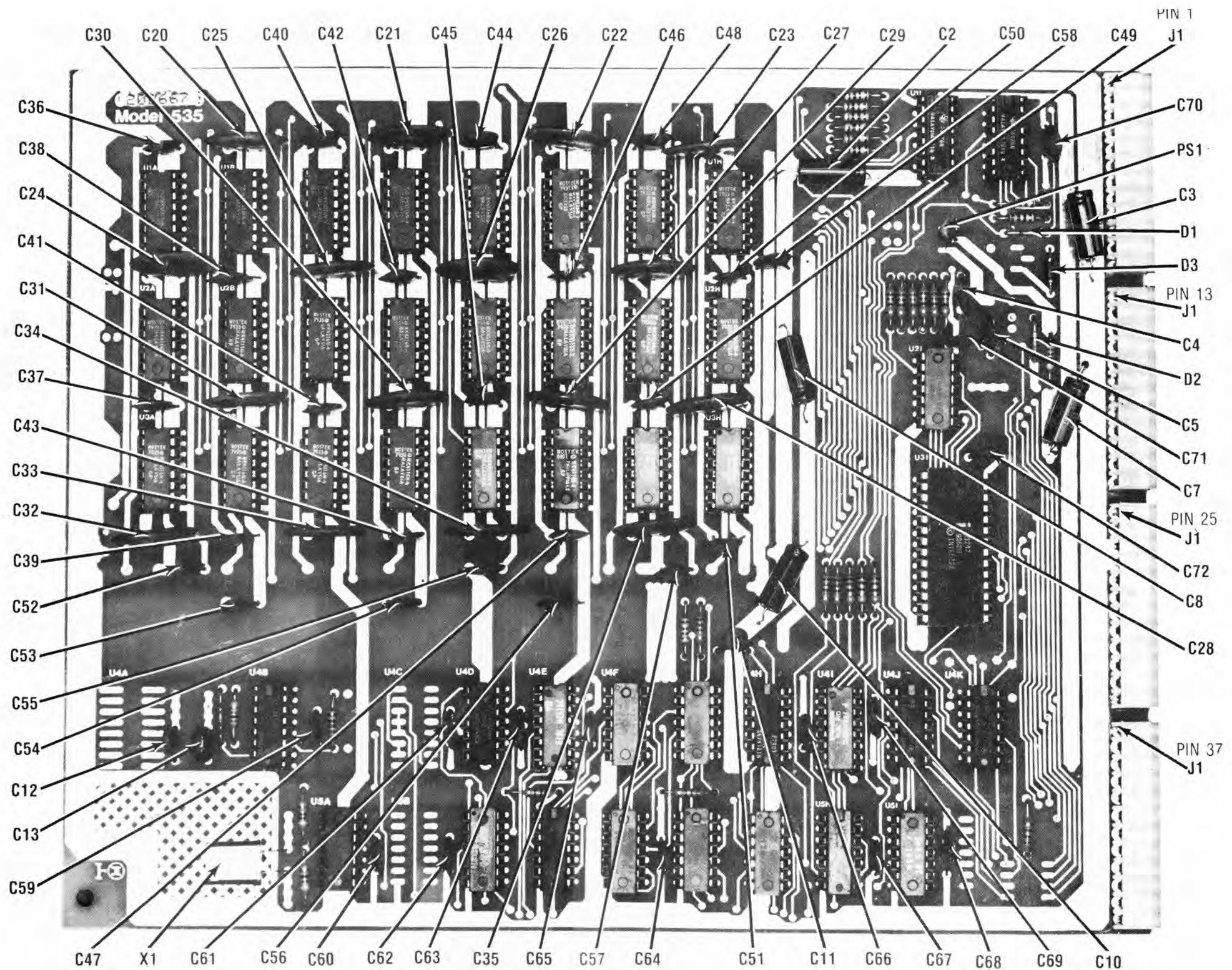
DM7402N

1	NC	V <sub>CC</sub>	14
2	NC	NC	13
3	NC	NC	12
4	NC	NC	11
5	NC	NC	10
6	NC	NC	9
7	NC	NC	8

USC

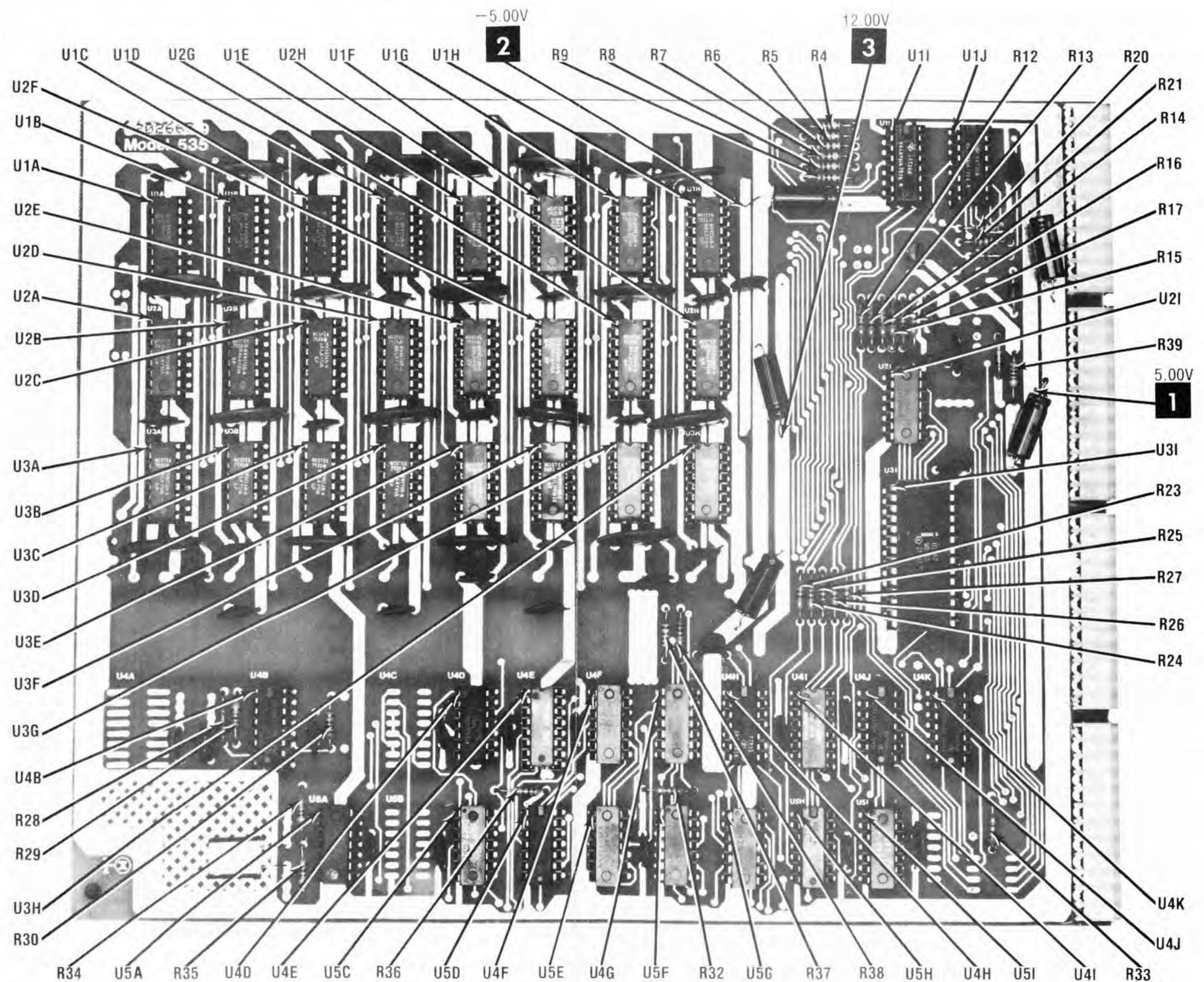
## 535 BOARD PINOUTS (CONTINUED)

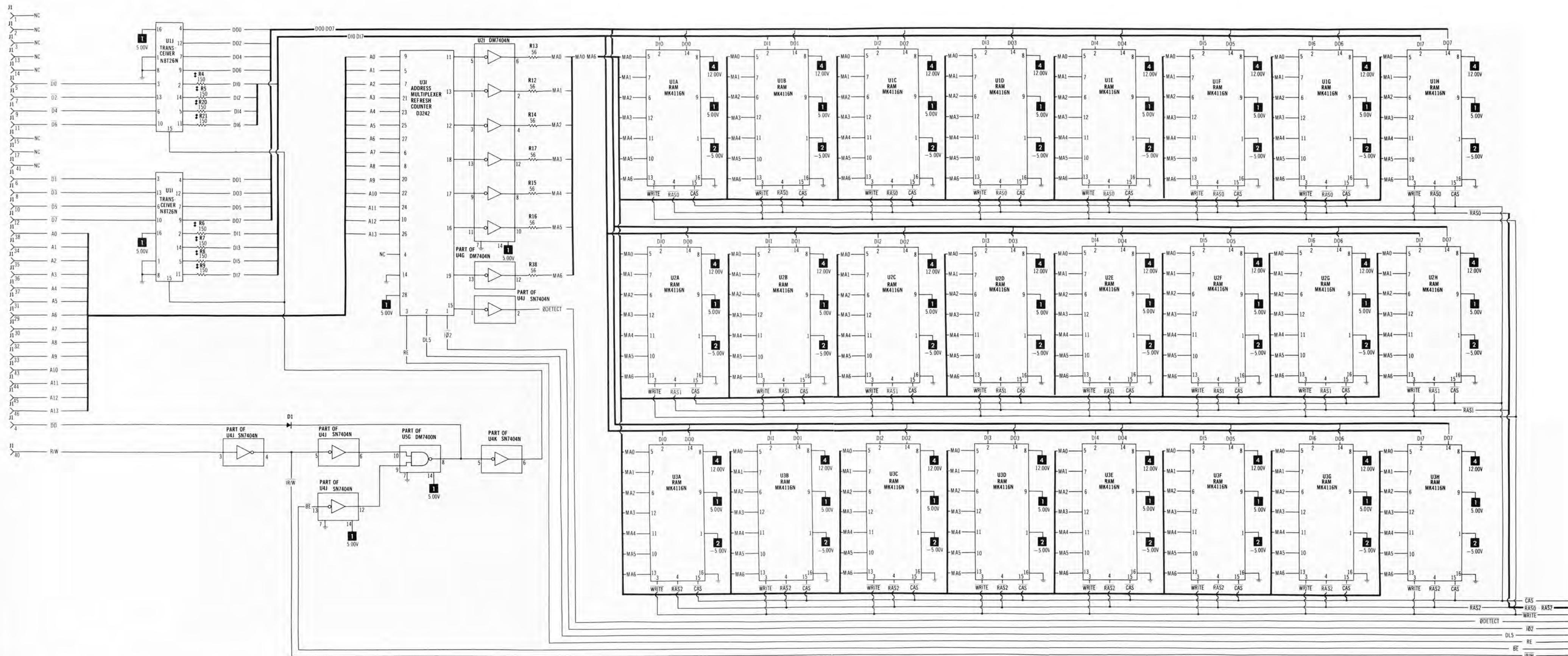


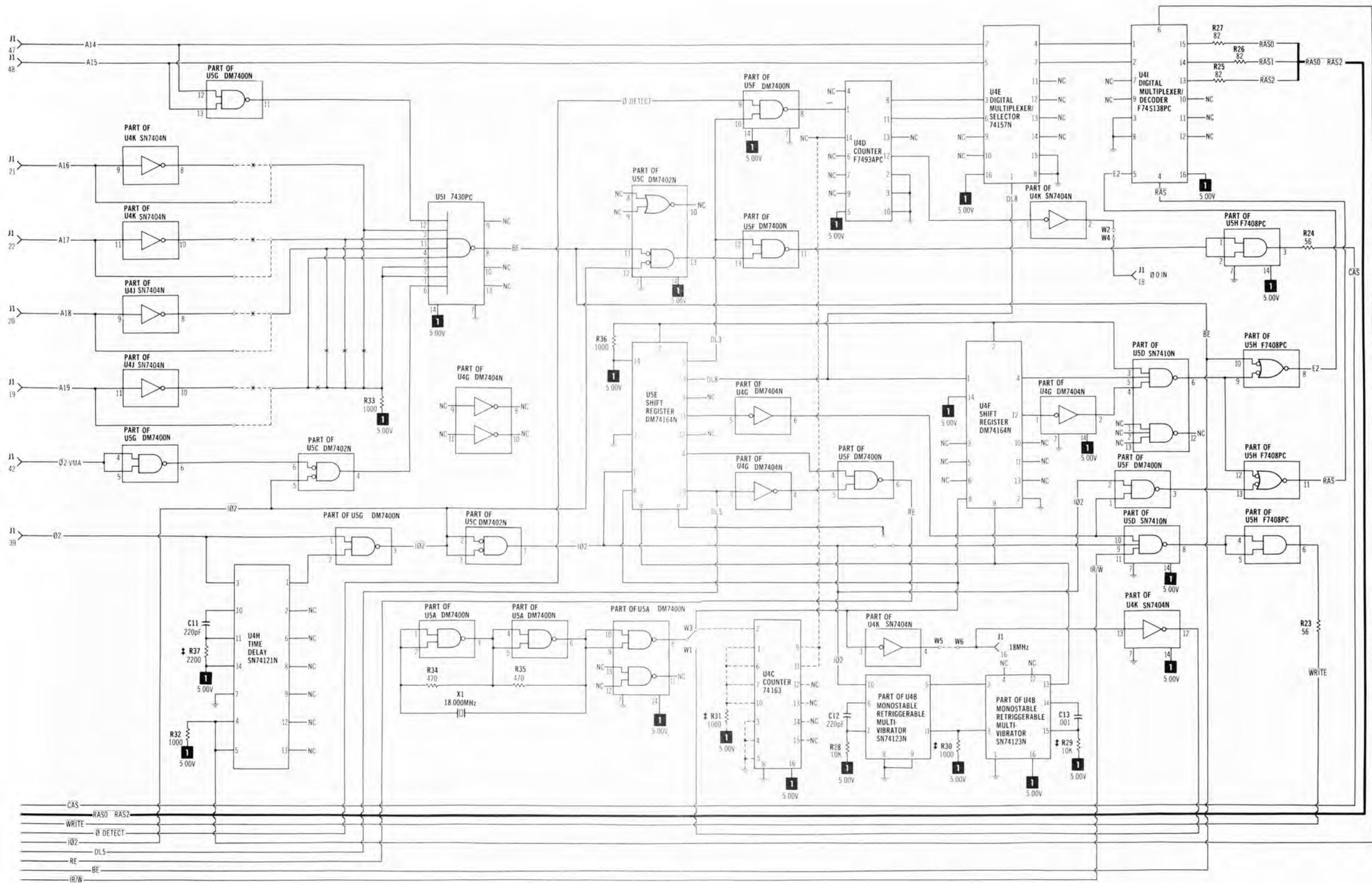


535 BOARD

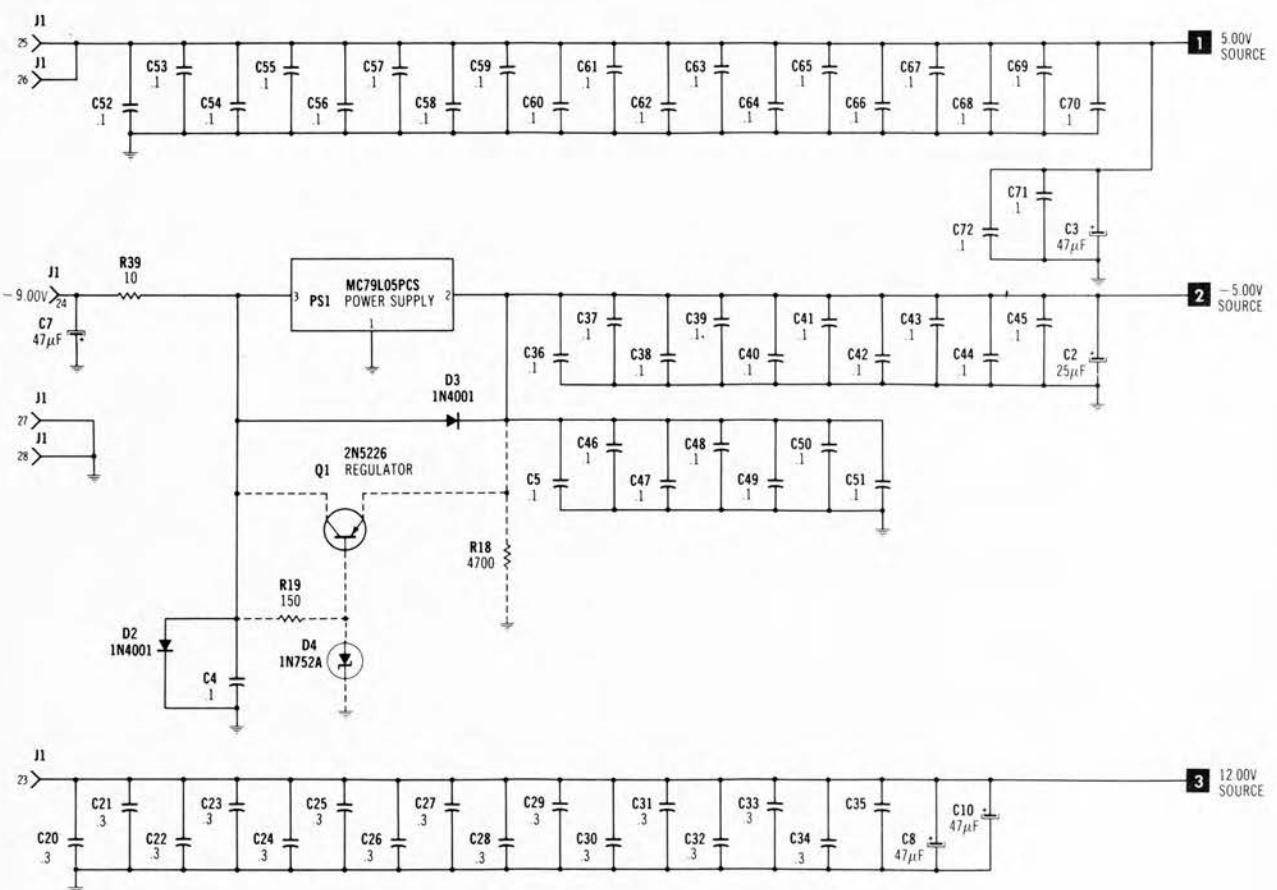
535 BOARD

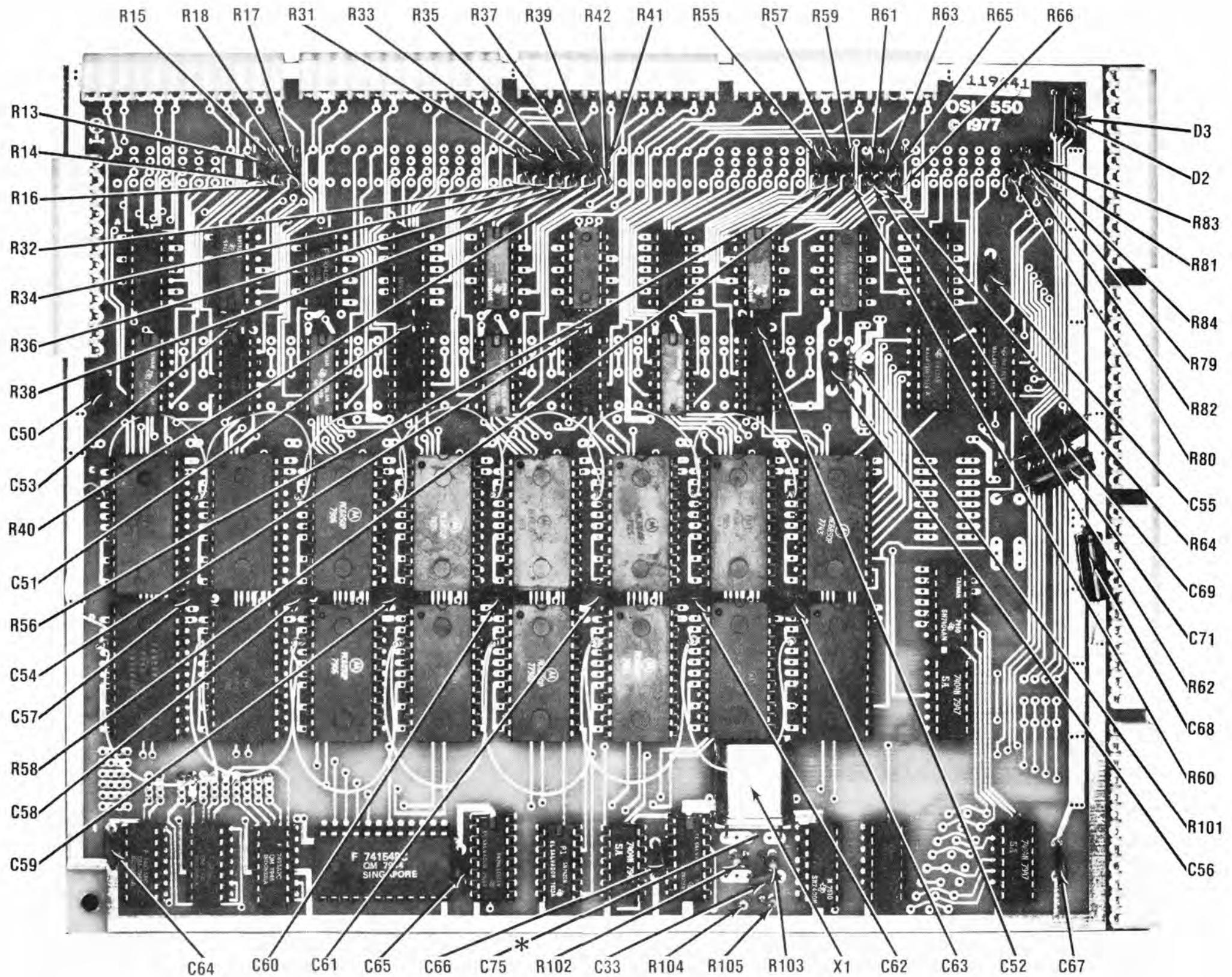




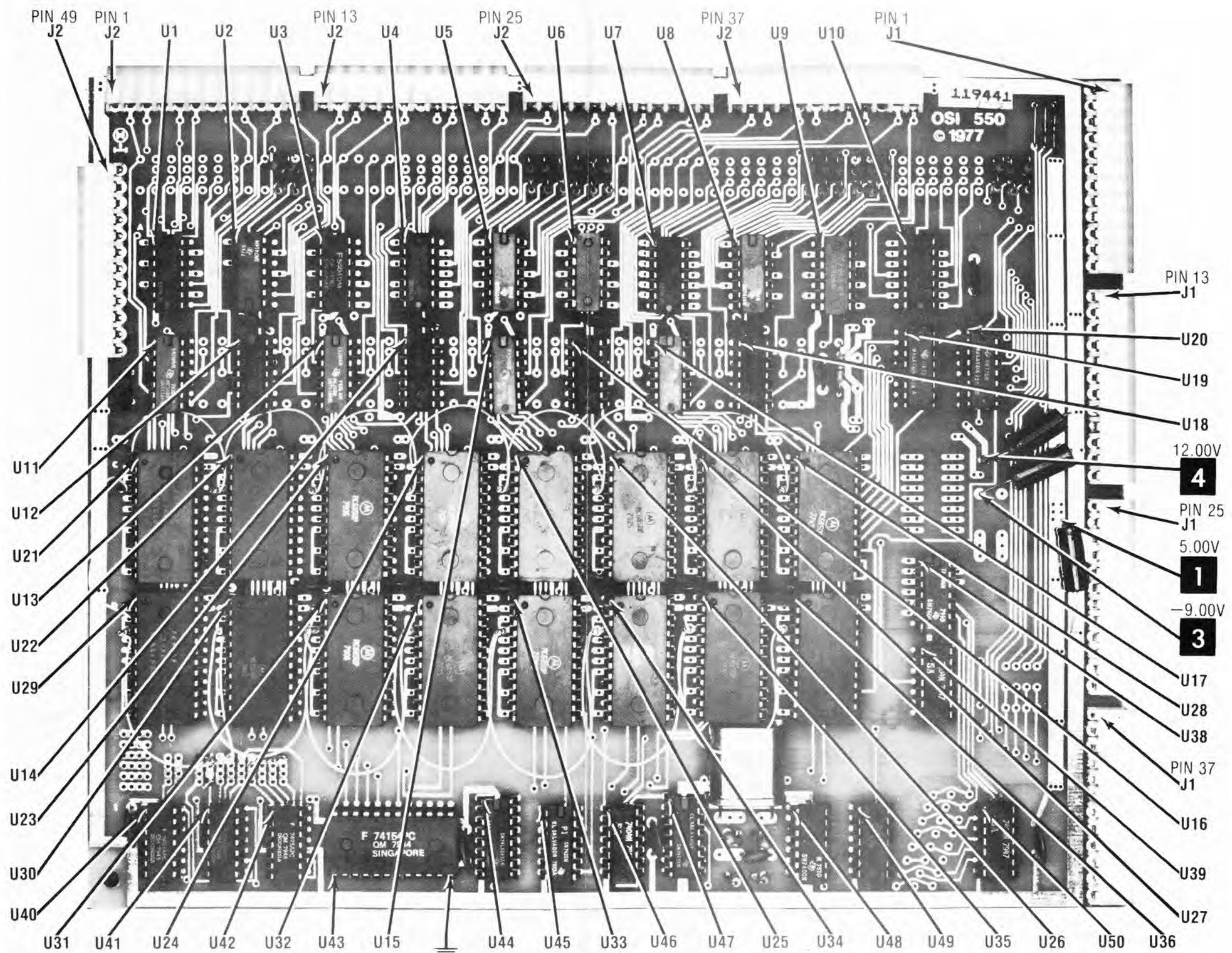


A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH CIRCUITTRACE™  
© Howard W. Sams & Co., Inc. 1980



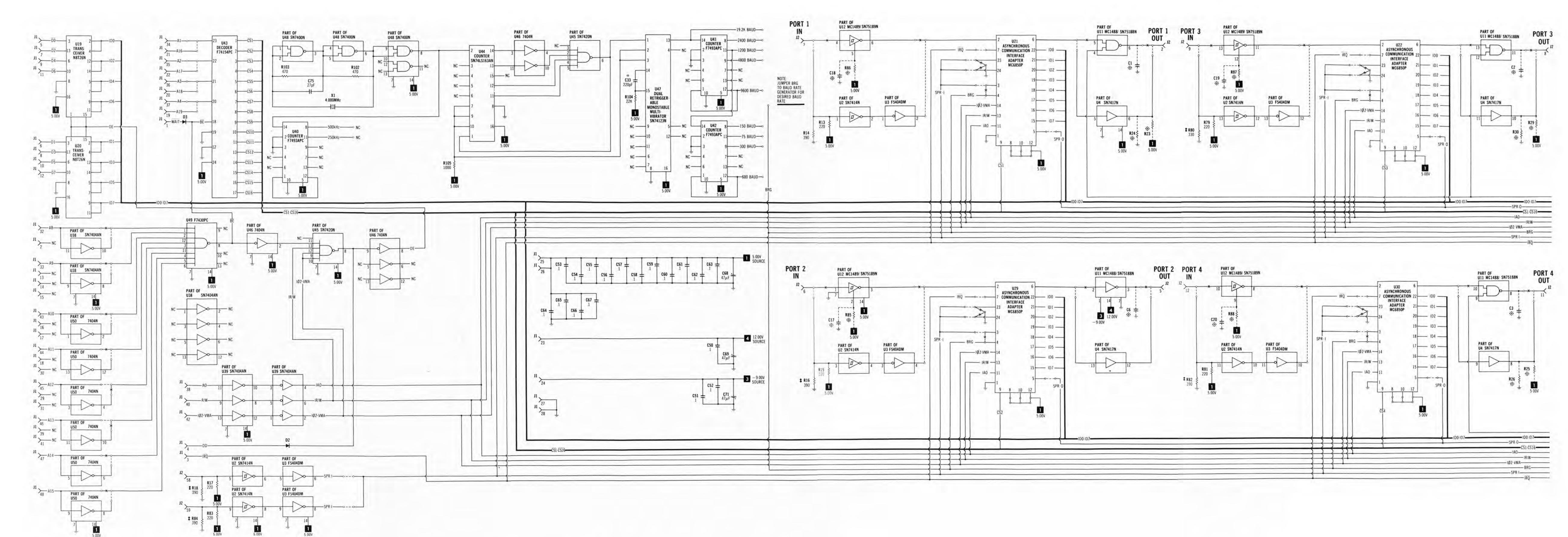


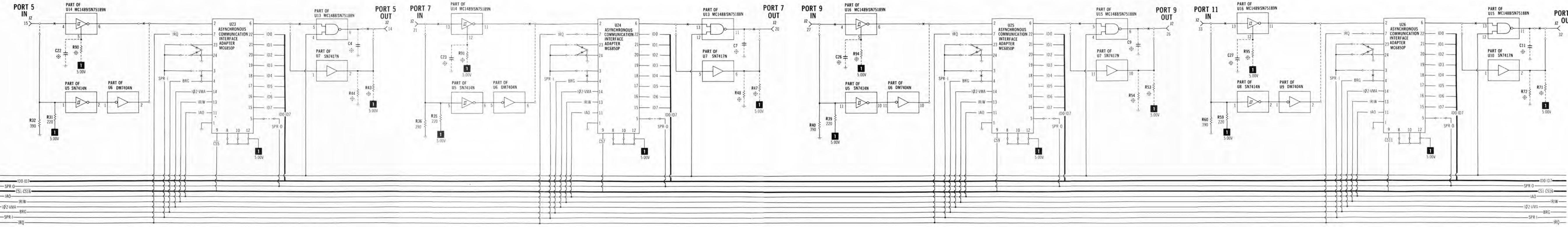
\* LOCATED ON OTHER SIDE OF BOARD

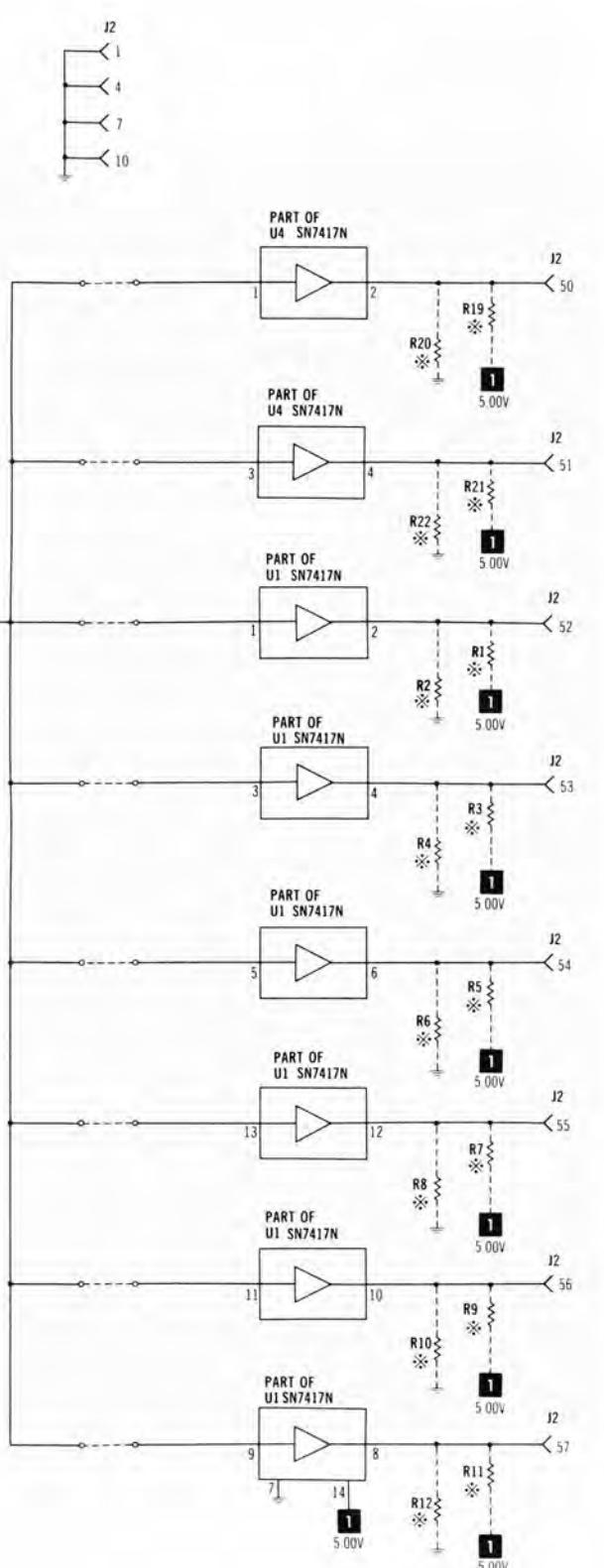
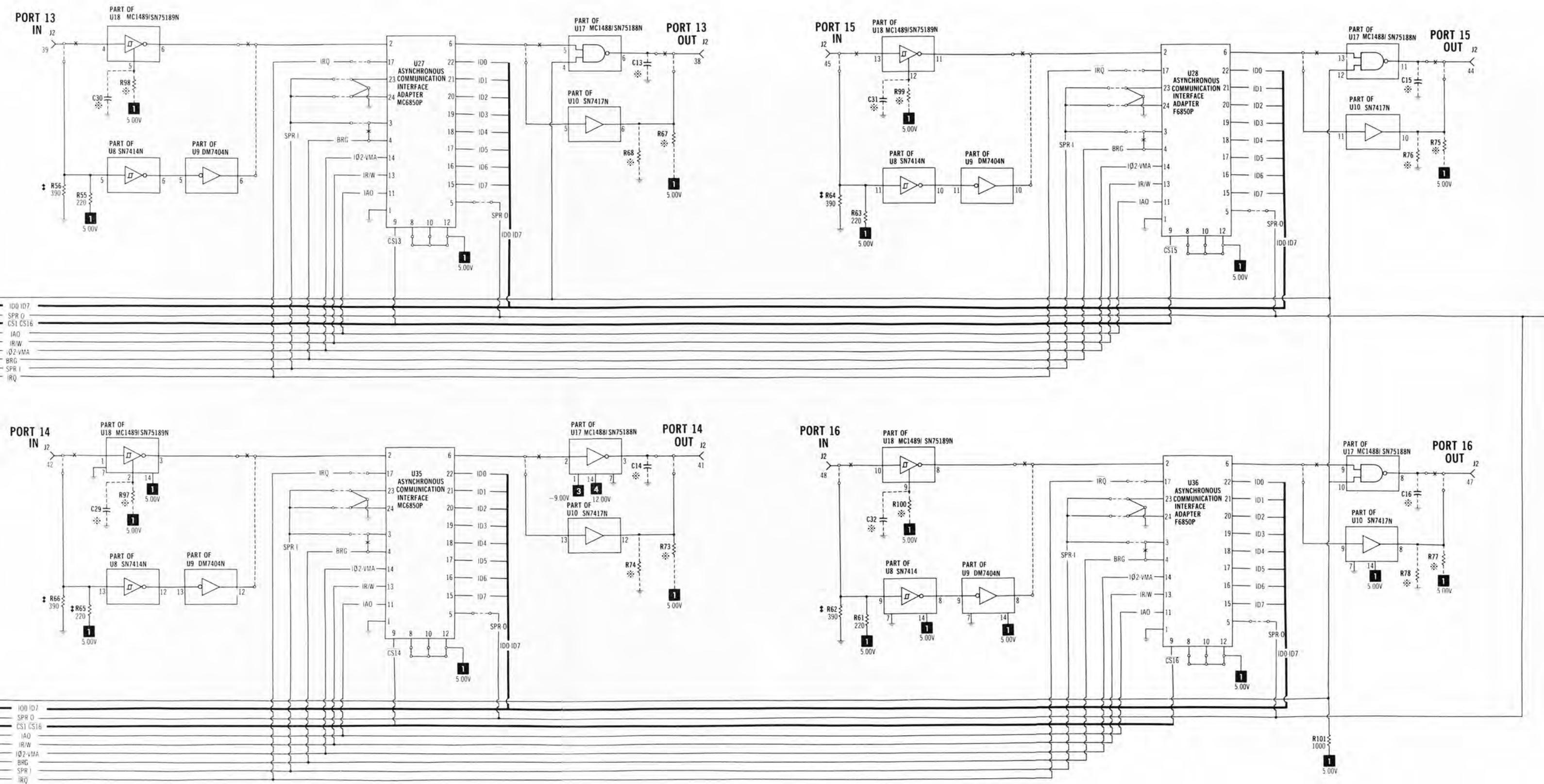


550 BOARD

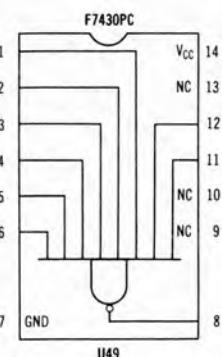
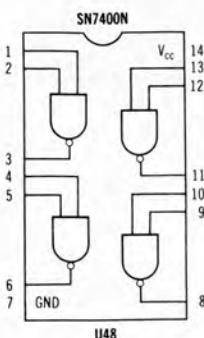
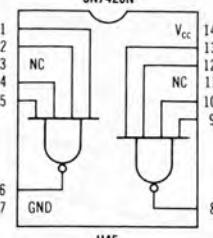
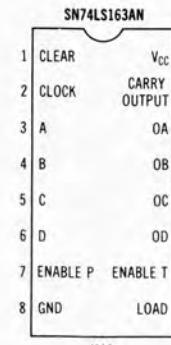
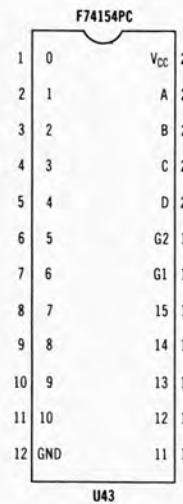
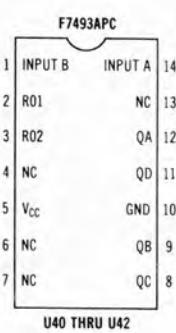
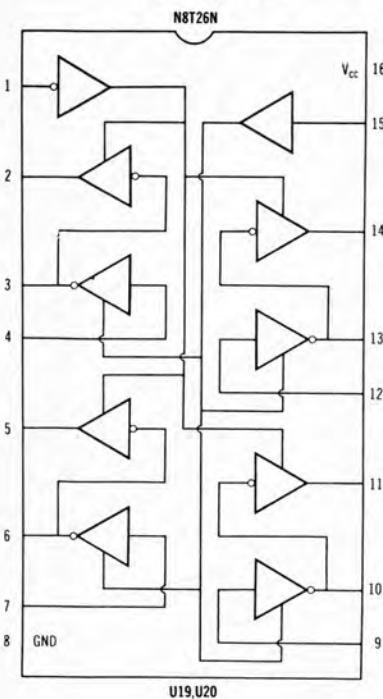
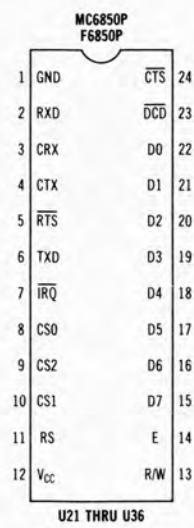
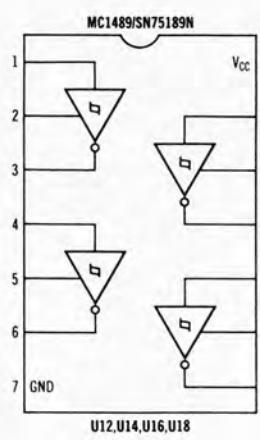
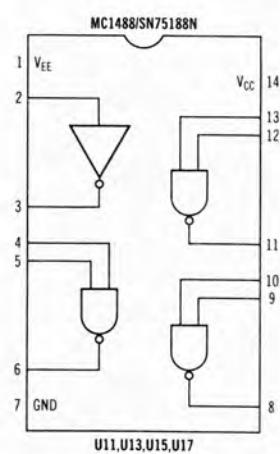
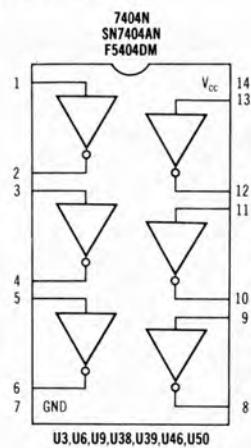
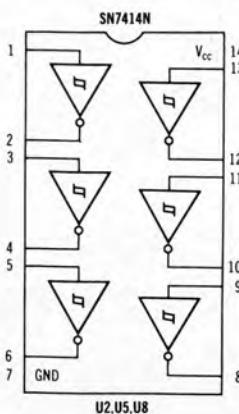
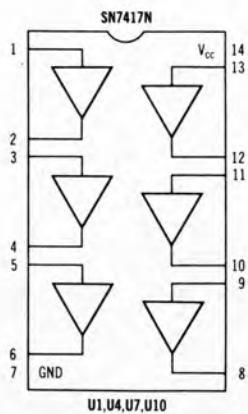
550 BOARD



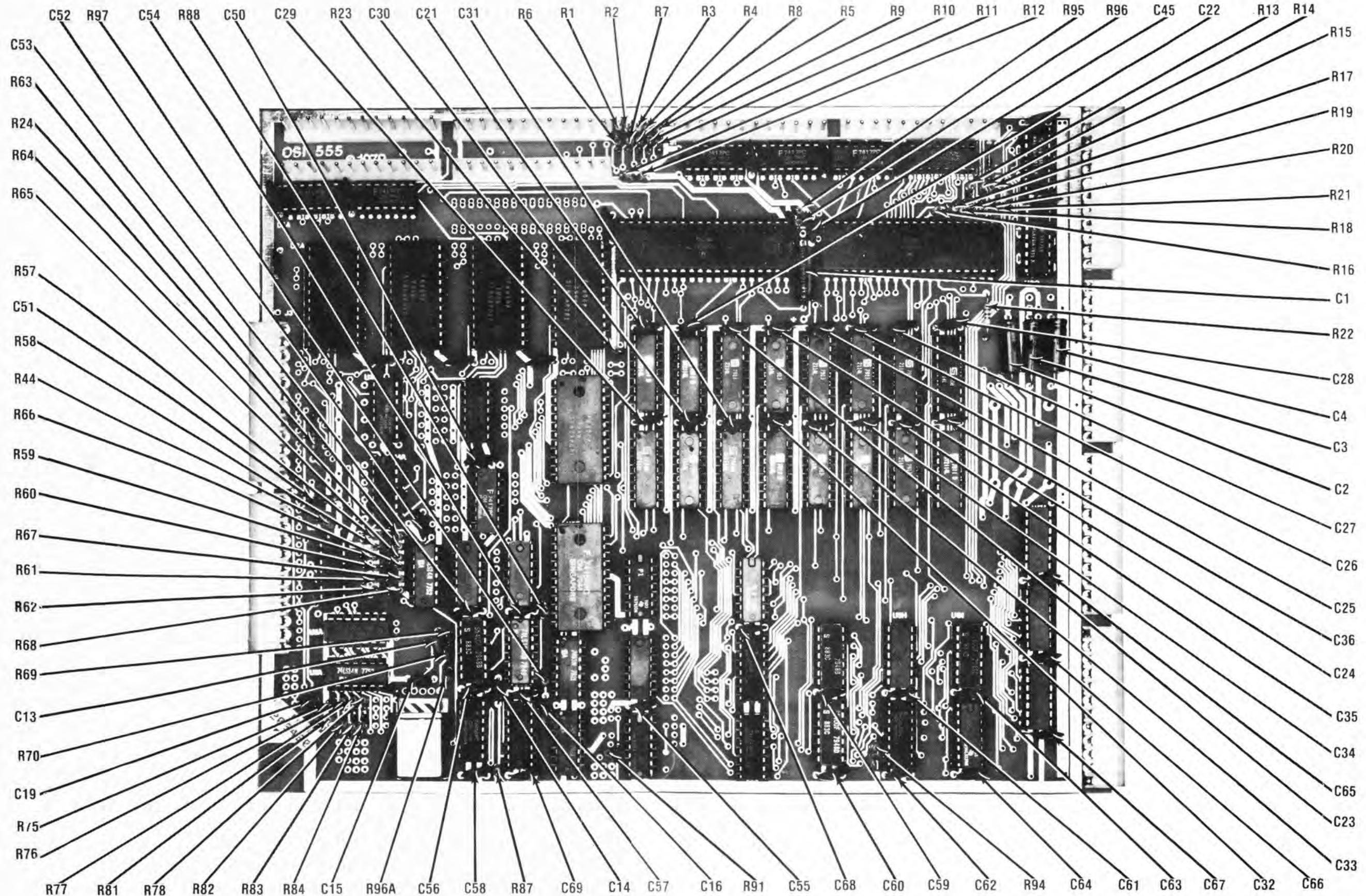




# 550 BOARD PINOUTS



550 BOARD

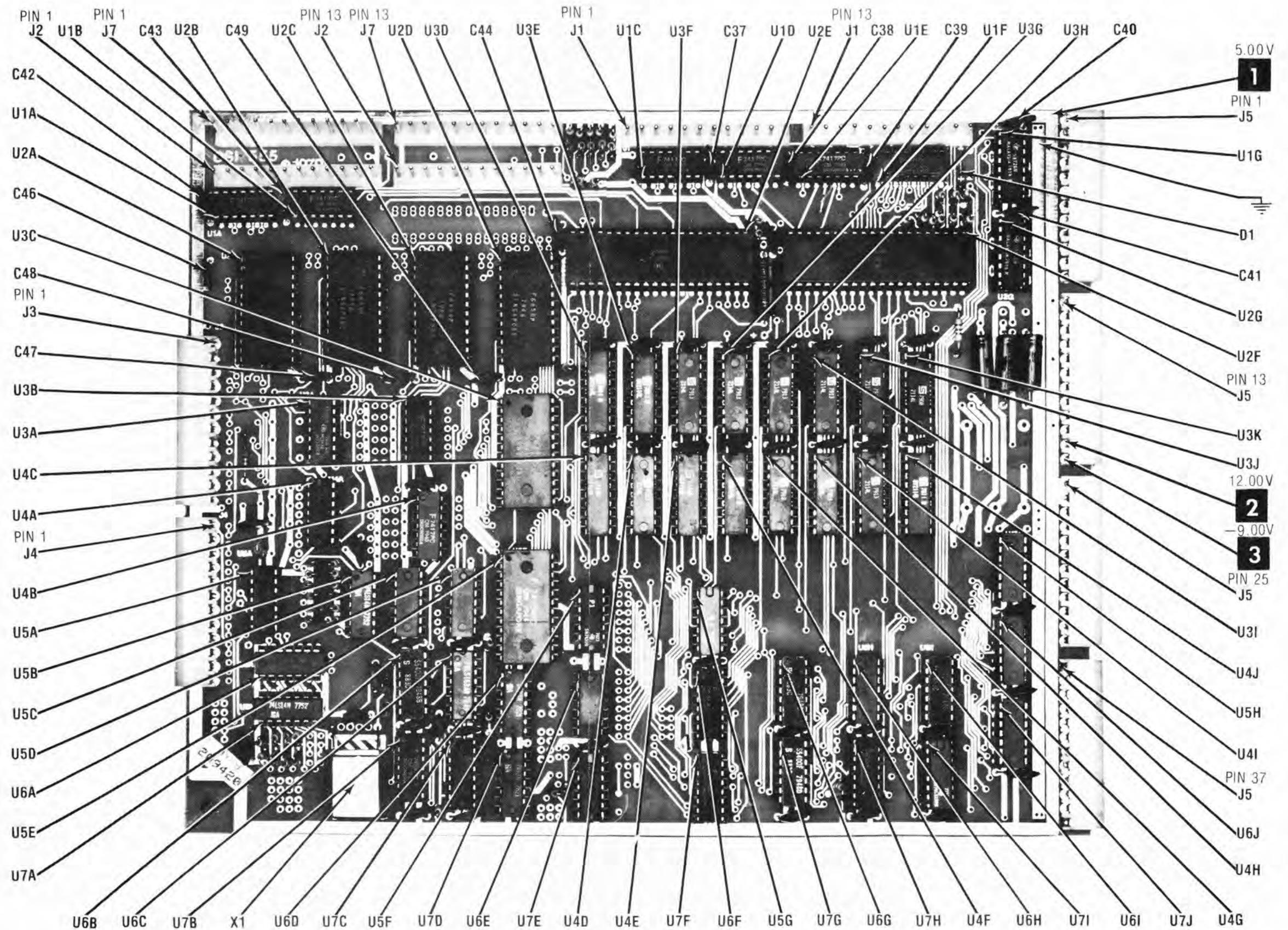


555 BOARD

135

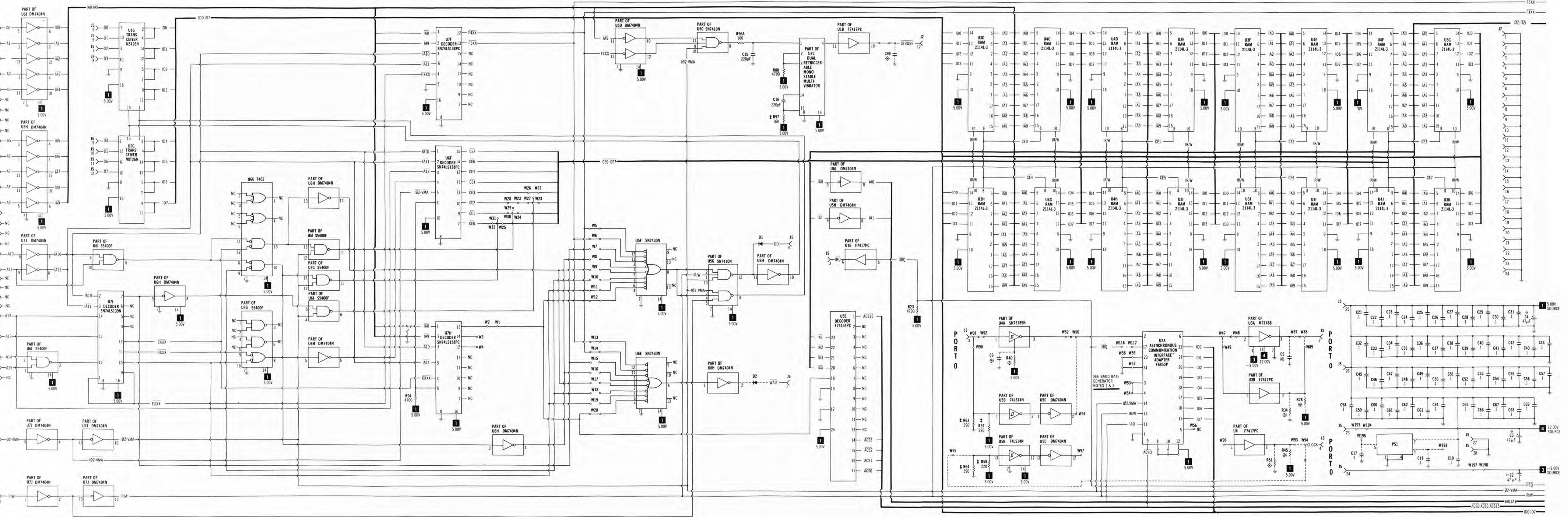
555 BOARD

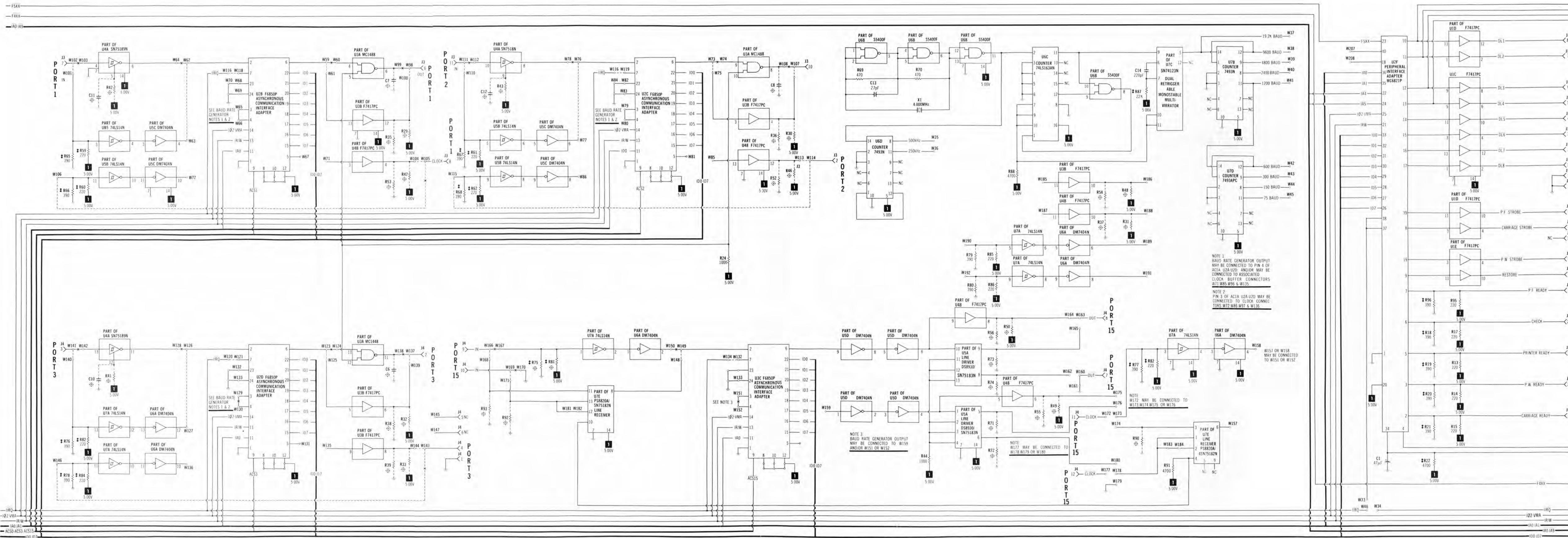
136

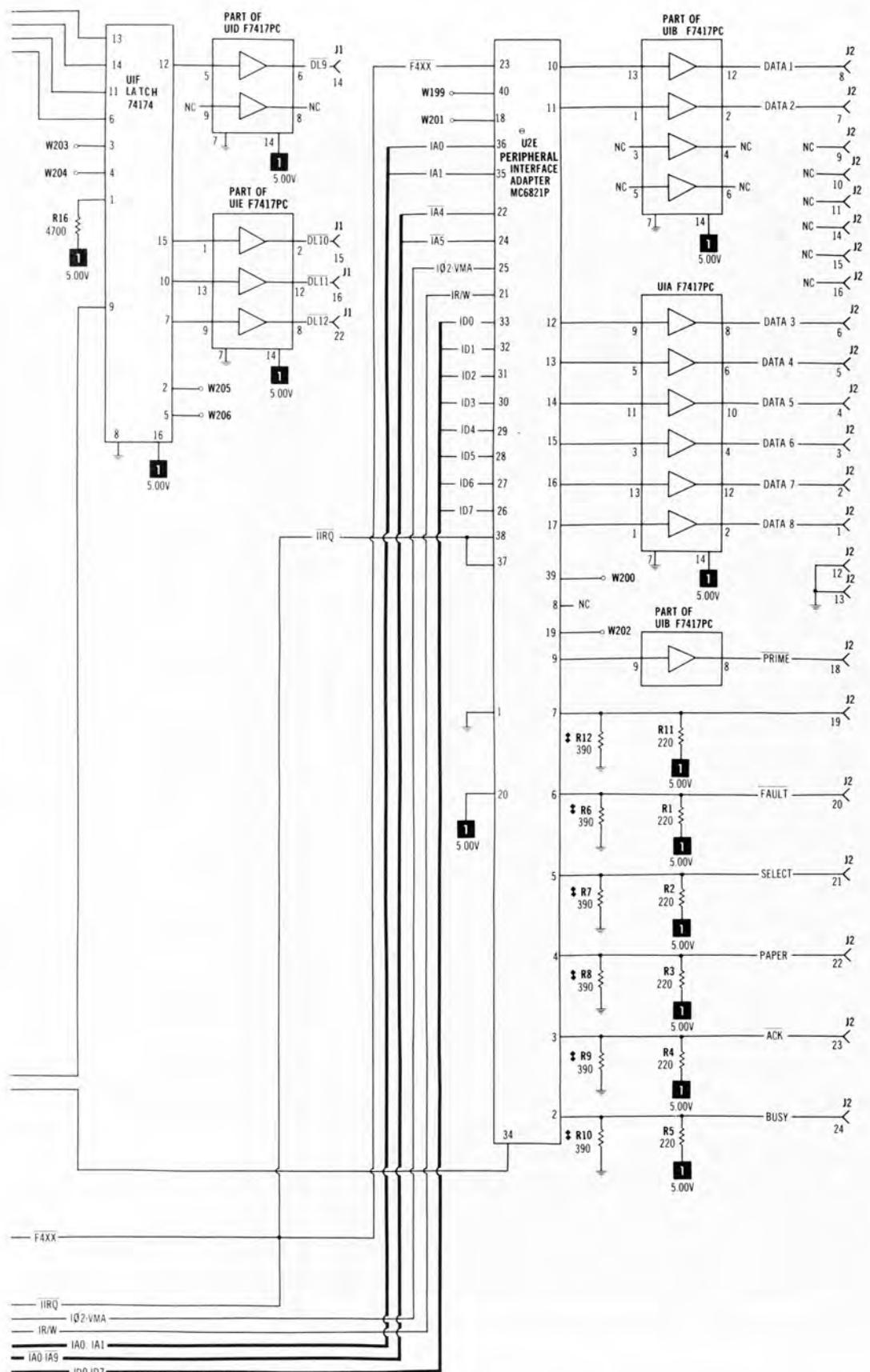


555 BOARD

555 BOARD



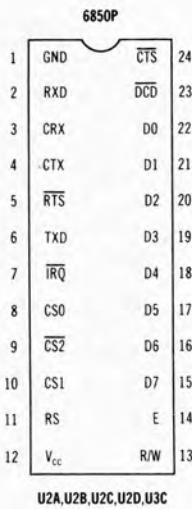
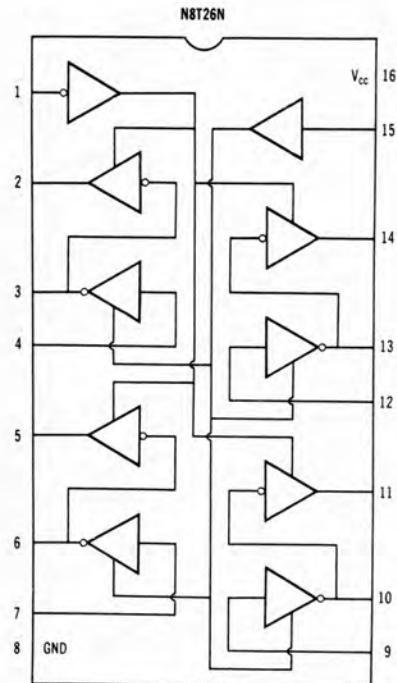
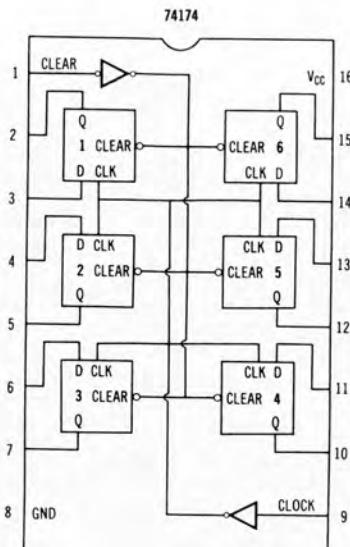
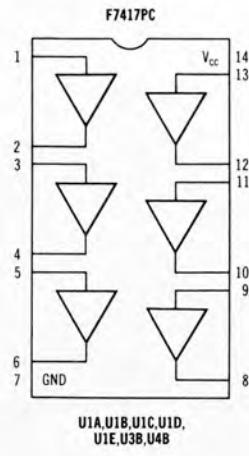




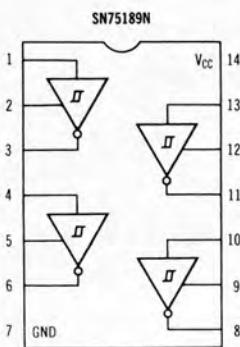
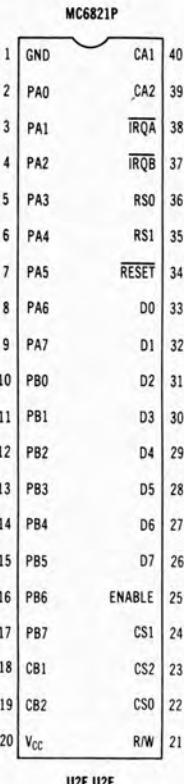
A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH **CIRCUITRACE™**

**FOR SCHEMATIC LEGEND AND NOTES  
SEE PAGES 180, 181 & REAR COVER. 555 BOARD**

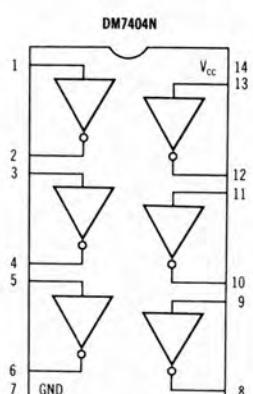
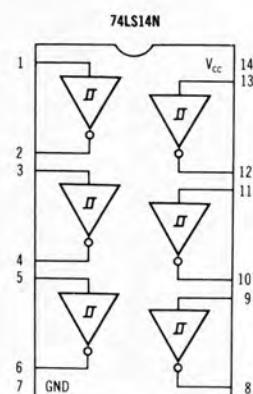
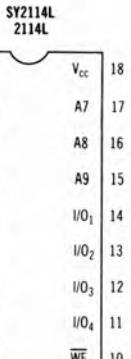
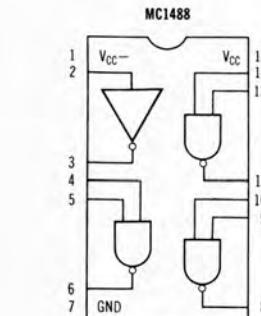
# 555 BOARD PINOUTS



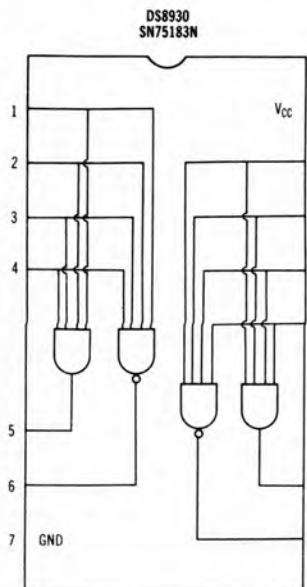
UIF



U3A



## 555 BOARD PINOUTS (CONTINUED)

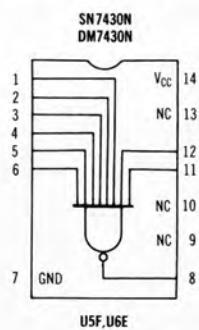


U5A

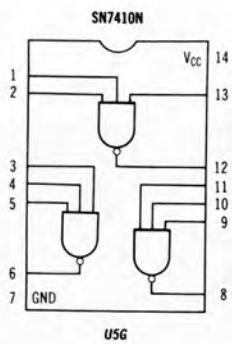
**F74154PC**

1	0	V <sub>CC</sub>	24
2	1	A	23
3	2	B	22
4	3	C	21
5	4	D	20
6	5	G <sub>2</sub>	19
7	6	G <sub>1</sub>	18
8	7	15	17
9	8	14	16
10	9	13	15
11	10	12	14
12	GND	11	13

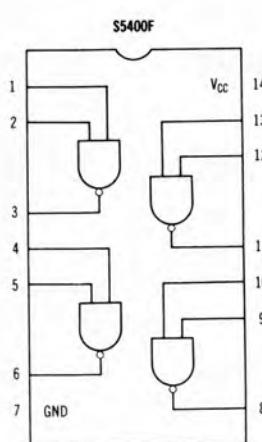
USE



U5F,U6E



U5G



U6B,U6I,U7G

**74LS163AN**

1	CLEAR	V <sub>CC</sub>	16
2	CLOCK	CARRY OUTPUT	15
3	A	OA	14
4	B	OB	13
5	C	OC	12
6	D	OD	11
7	ENABLE P	ENABLE T	10
8	GND	LOAD	9

U6C

**7493N  
7493APC**

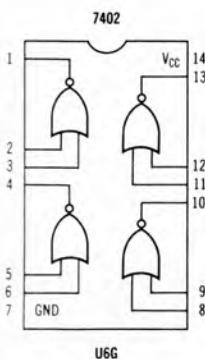
1	INPUT B	INPUT A	14
2	R01	NC	13
3	R02	QA	12
4	NC	QD	11
5	V <sub>CC</sub>	GND	10
6	NC	QB	9
7	NC	QC	8

U6D,U7B,U7D

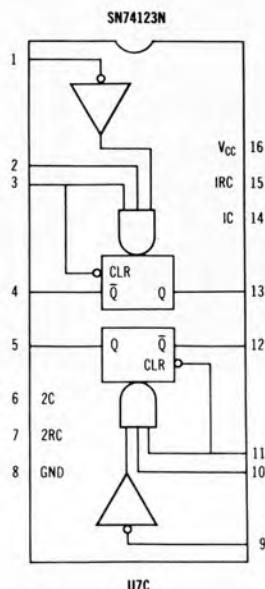
**SN74LS138PC**

1	A0	V <sub>CC</sub>	16
2	A1	$\bar{Q}_0$	15
3	A2	$\bar{Q}_1$	14
4	$\bar{E}_1$	$\bar{Q}_2$	13
5	$\bar{E}_2$	$\bar{Q}_3$	12
6	E3	$\bar{Q}_4$	11
7	$\bar{Q}_5$	$\bar{Q}_6$	10
8	GND	$\bar{Q}_7$	9

U6F,U7F,U7H



U6G

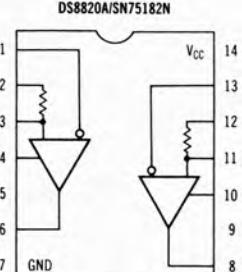


U7C

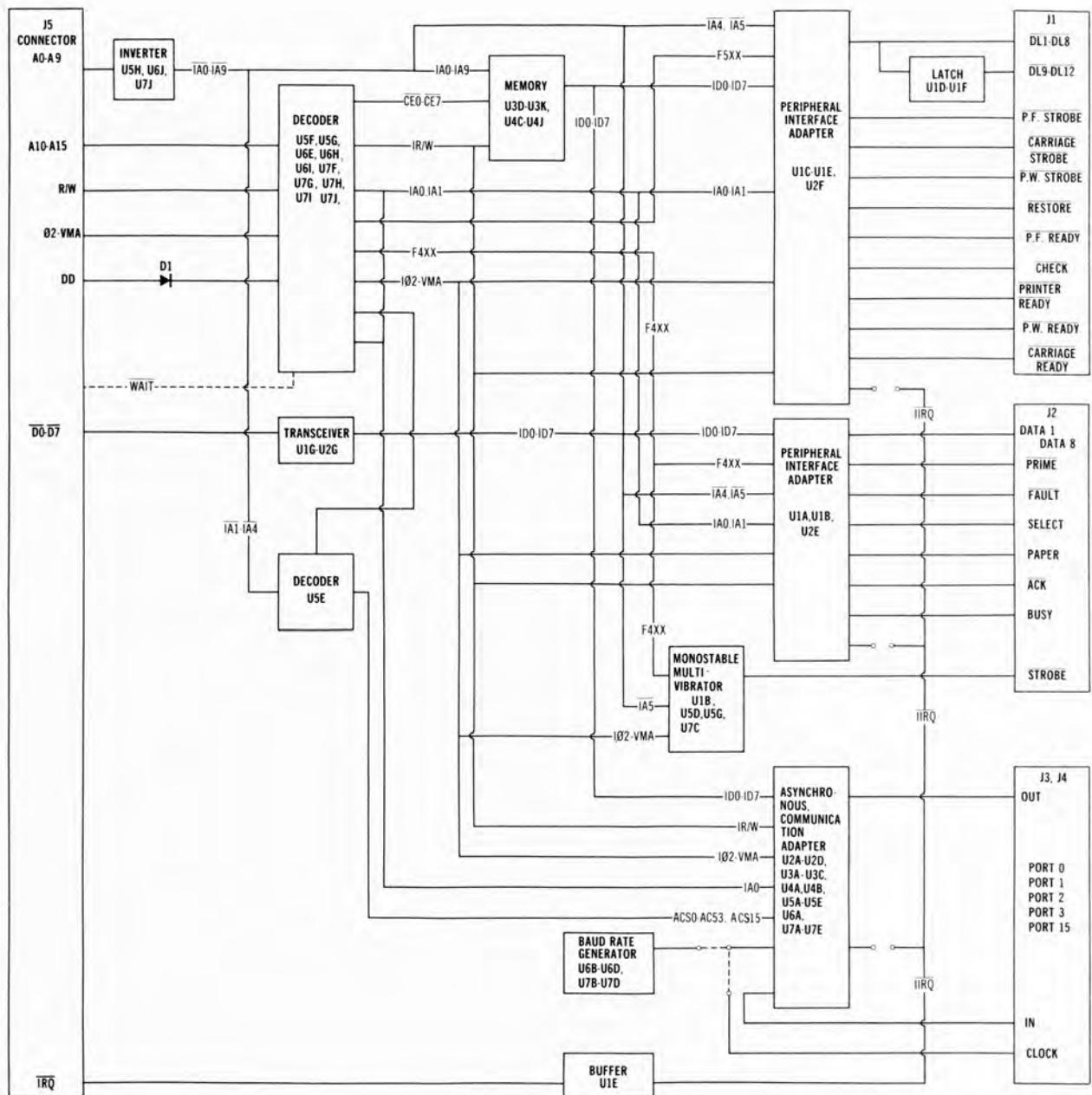
**SN74LS139N**

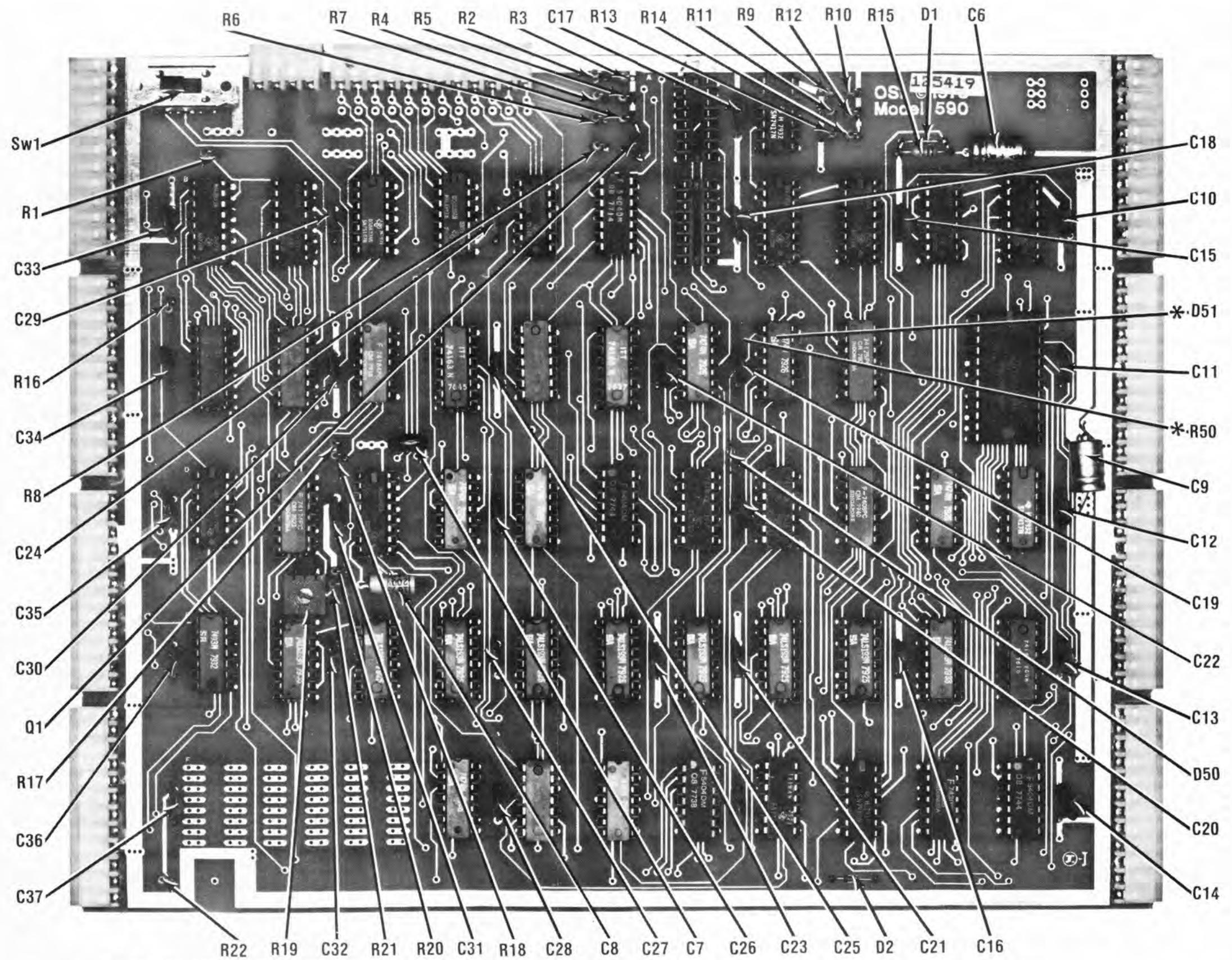
1	I <sub>1</sub> G ENABLE	V <sub>CC</sub>	16
2	I <sub>1</sub> A ENABLE 2 <sub>G</sub>	15	
3	I <sub>1</sub> B	2A	14
4	I <sub>1</sub> Y <sub>0</sub>	2B	13
5	I <sub>1</sub> Y <sub>1</sub>	2Y <sub>0</sub>	12
6	I <sub>1</sub> Y <sub>2</sub>	2Y <sub>1</sub>	11
7	I <sub>1</sub> Y <sub>3</sub>	2Y <sub>2</sub>	10
8	GND	2Y <sub>3</sub>	9

U7I

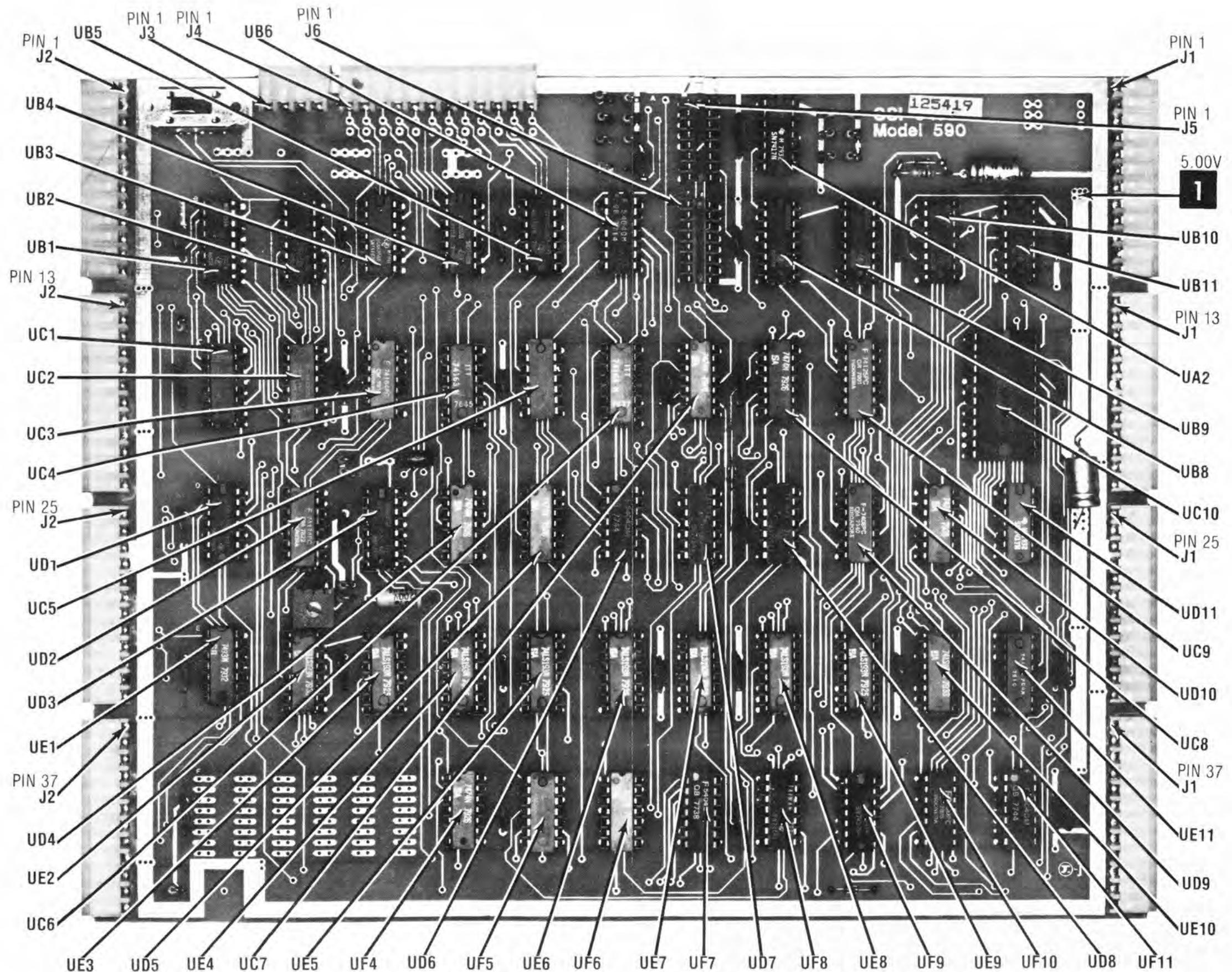


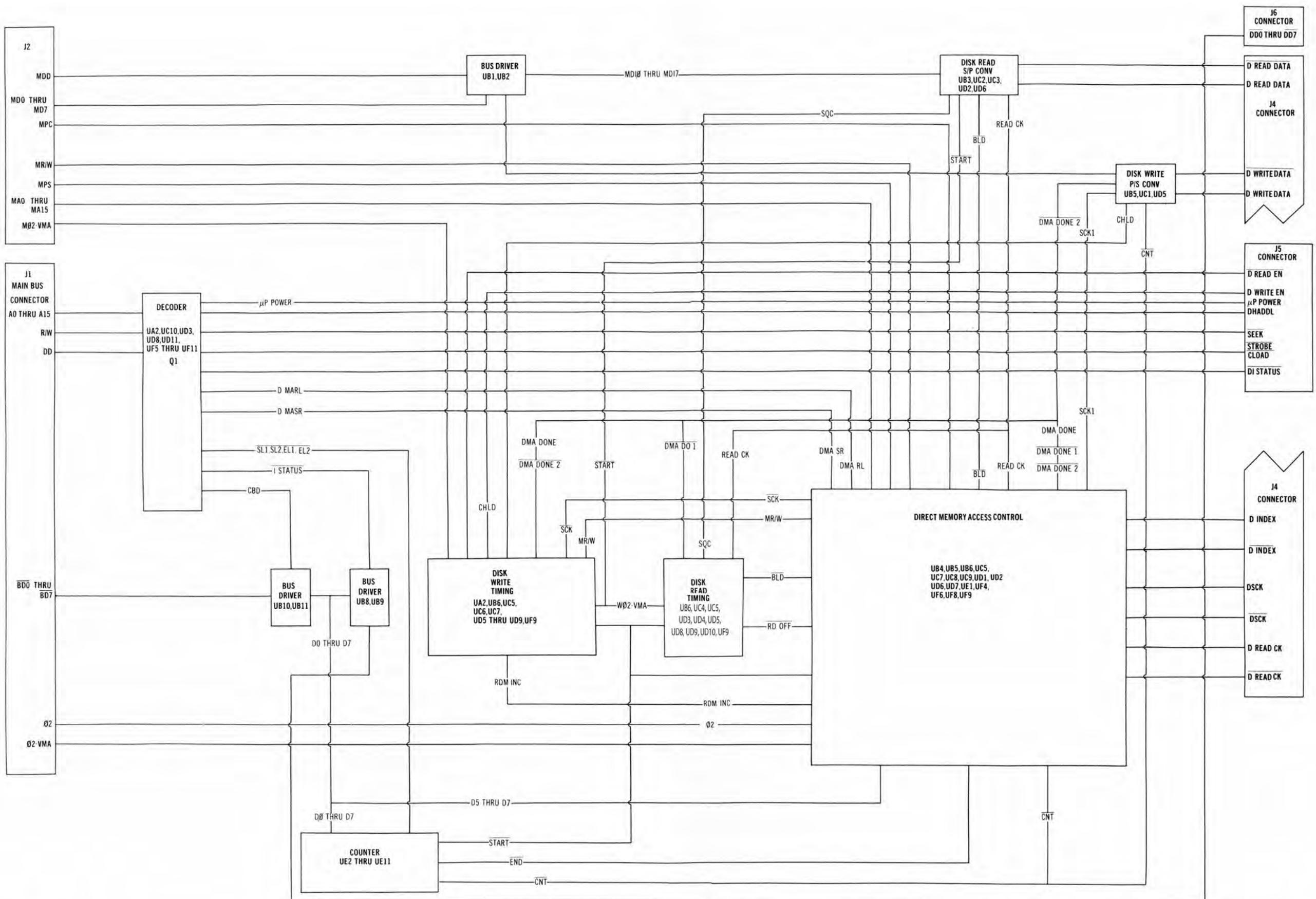
U7E

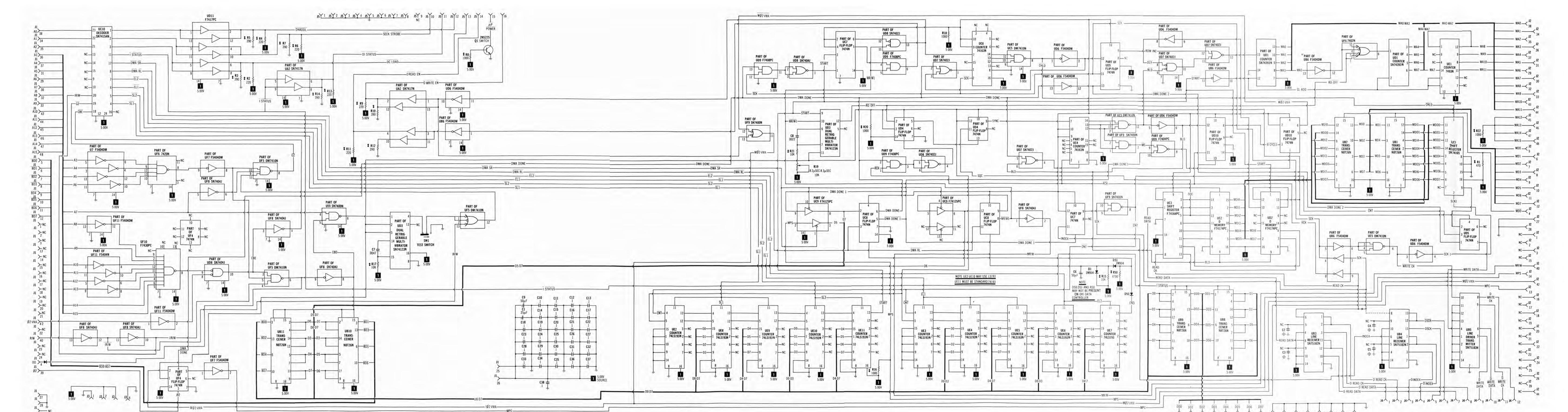




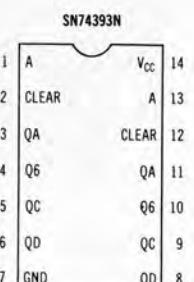
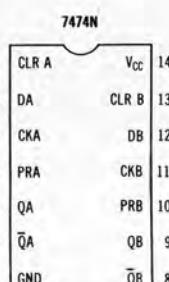
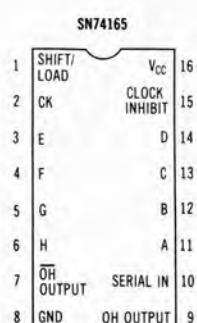
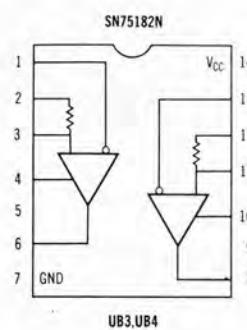
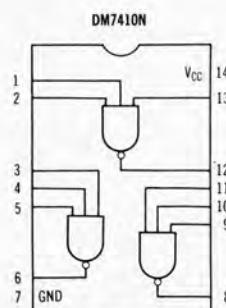
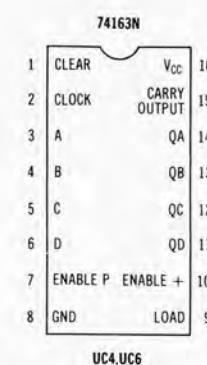
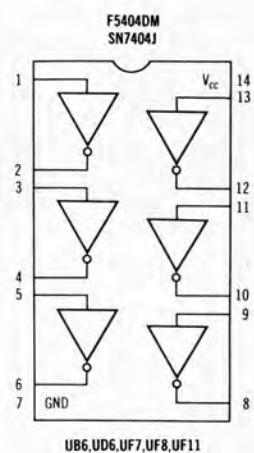
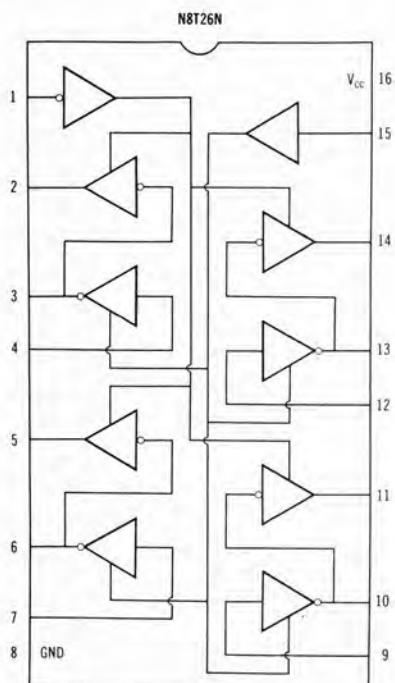
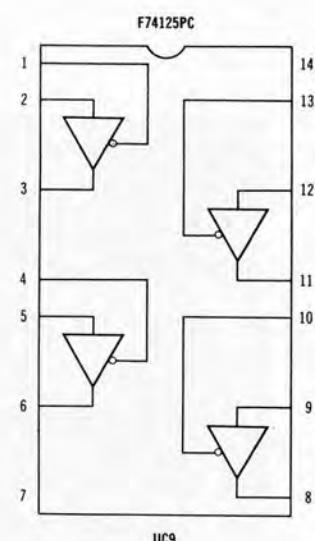
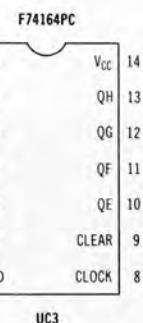
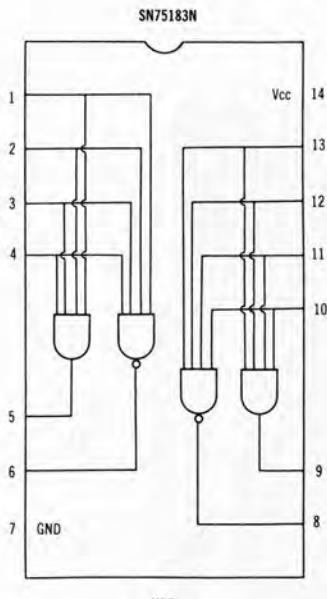
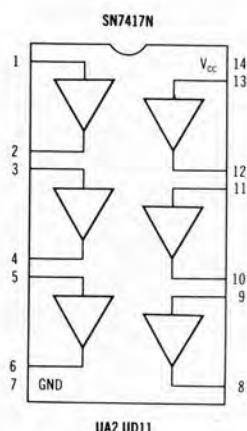
\*LOCATED OTHER SIDE OF BOARD



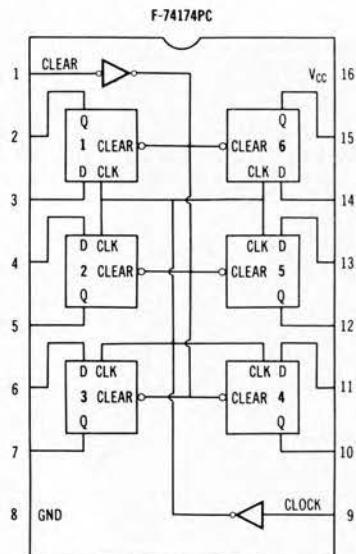




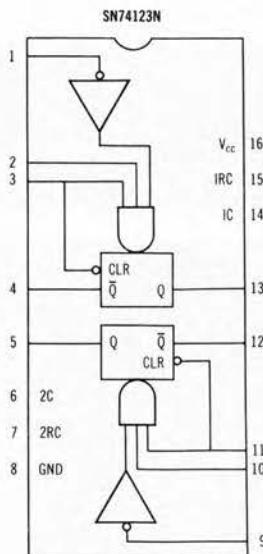
# 590 BOARD PINOUTS



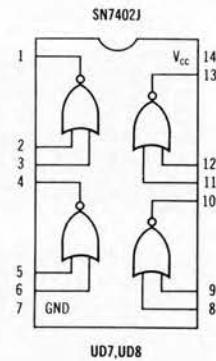
## 590 BOARD PINOUTS (CONTINUED)



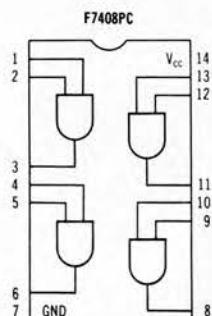
UD2,UC2



UD3



UD7,UD8



UD9

**7493N**

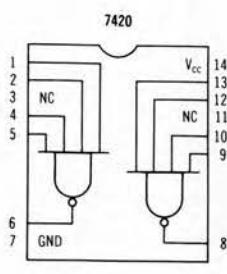
	INPUT B	INPUT A	
1	RO1	NC	14
2	RO2	QA	13
3	NC	QD	12
4	NC	GND	11
5	V <sub>cc</sub>	GND	10
6	NC	QB	9
7	NC	QC	8

UE1

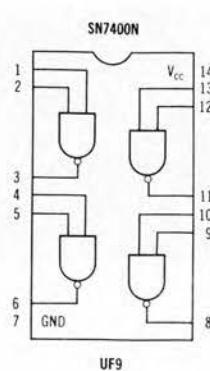
**74193PC  
74LS193N**

1	D	V <sub>cc</sub>	16
2	QB	A	15
3	QA	CLEAR	14
4	CD	BORROW	13
5	CU	CARRY	12
6	QC	LOAD	11
7	QD	C	10
8	GND	D	9

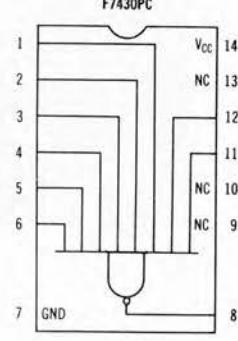
UE2 THRU UE11



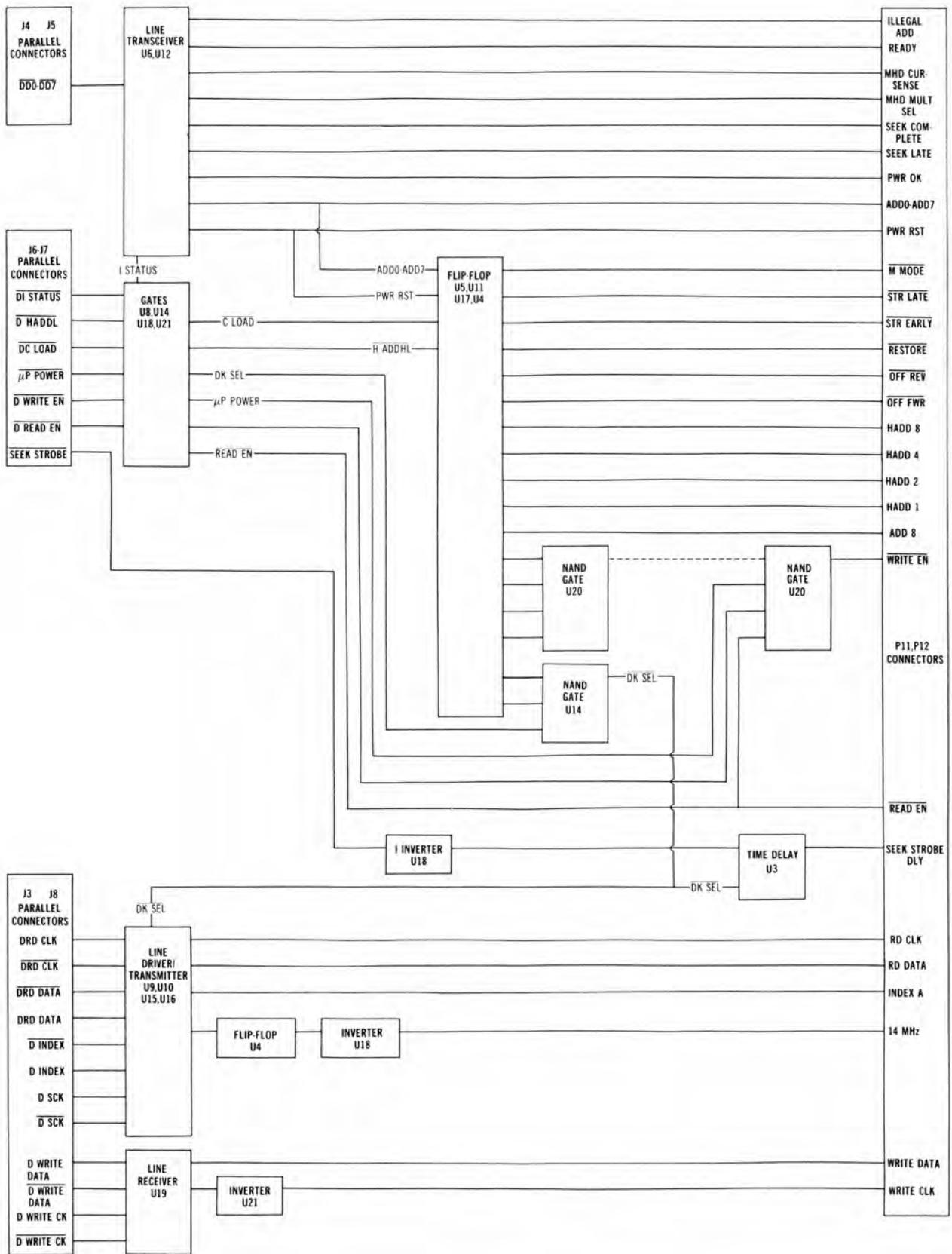
UF6



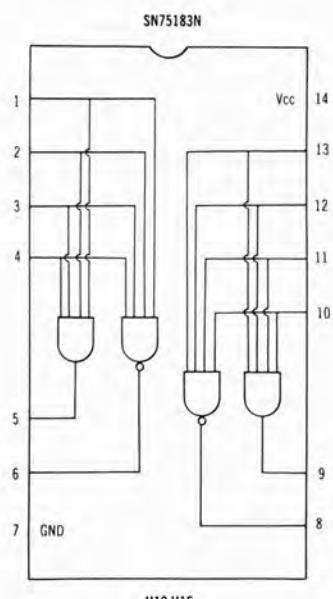
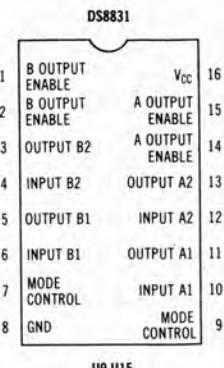
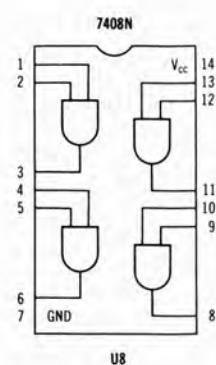
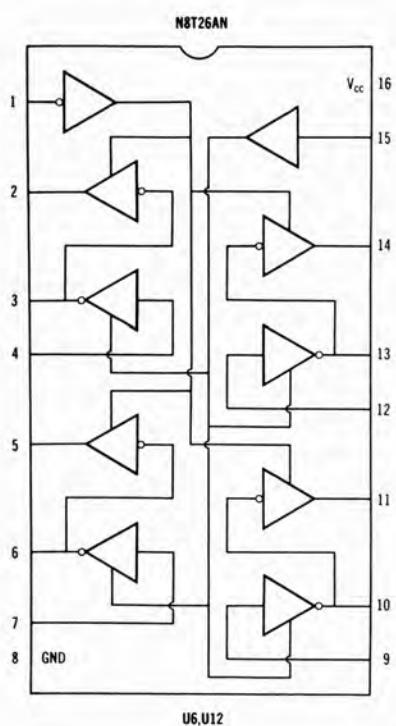
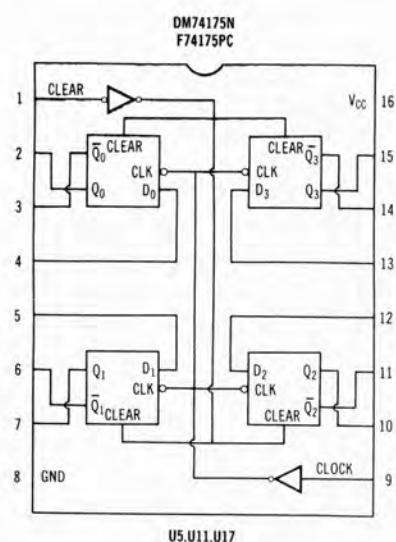
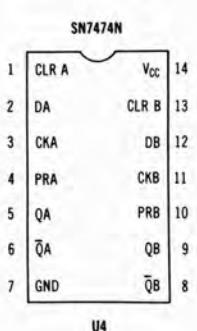
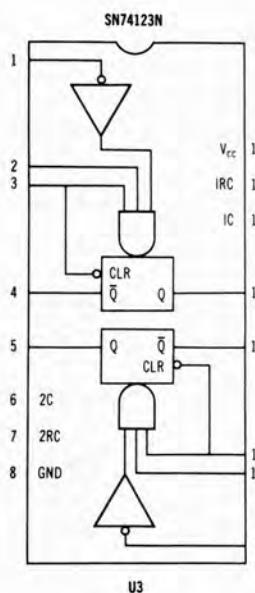
UF9



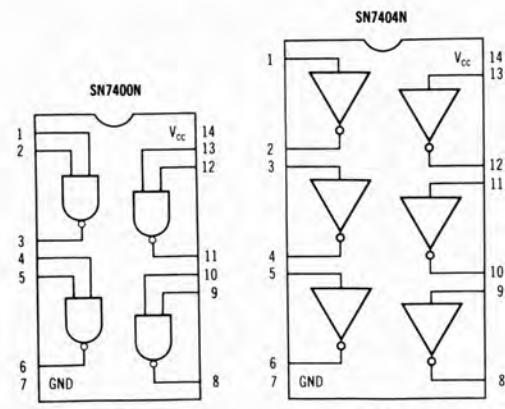
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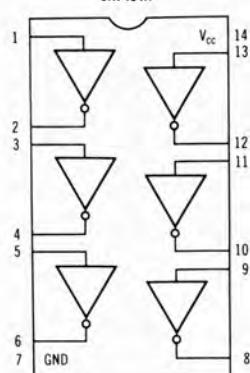
# 592 BOARD PINOUTS



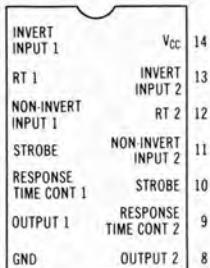
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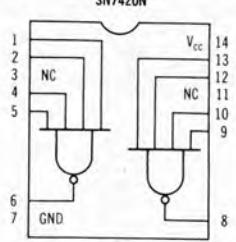
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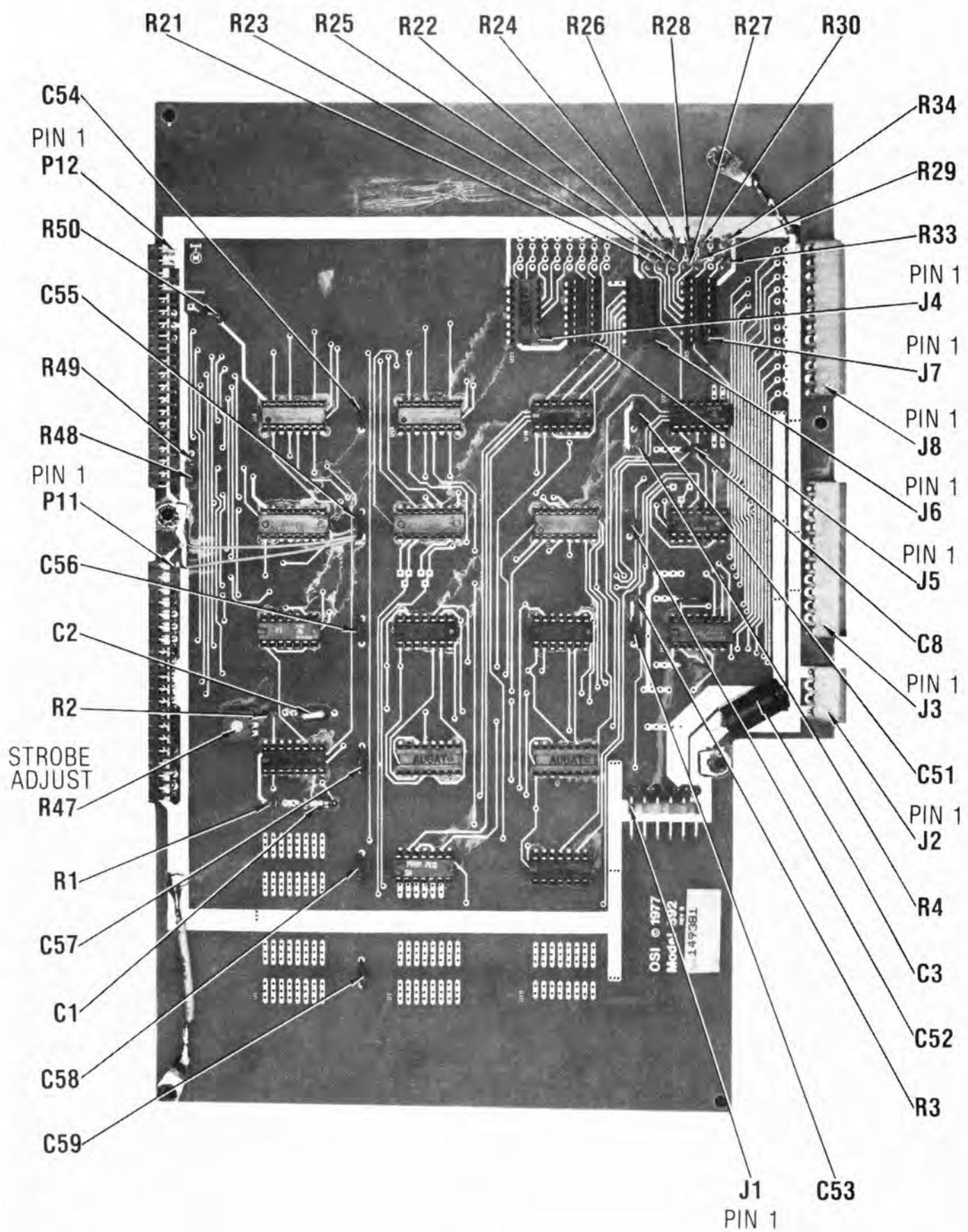


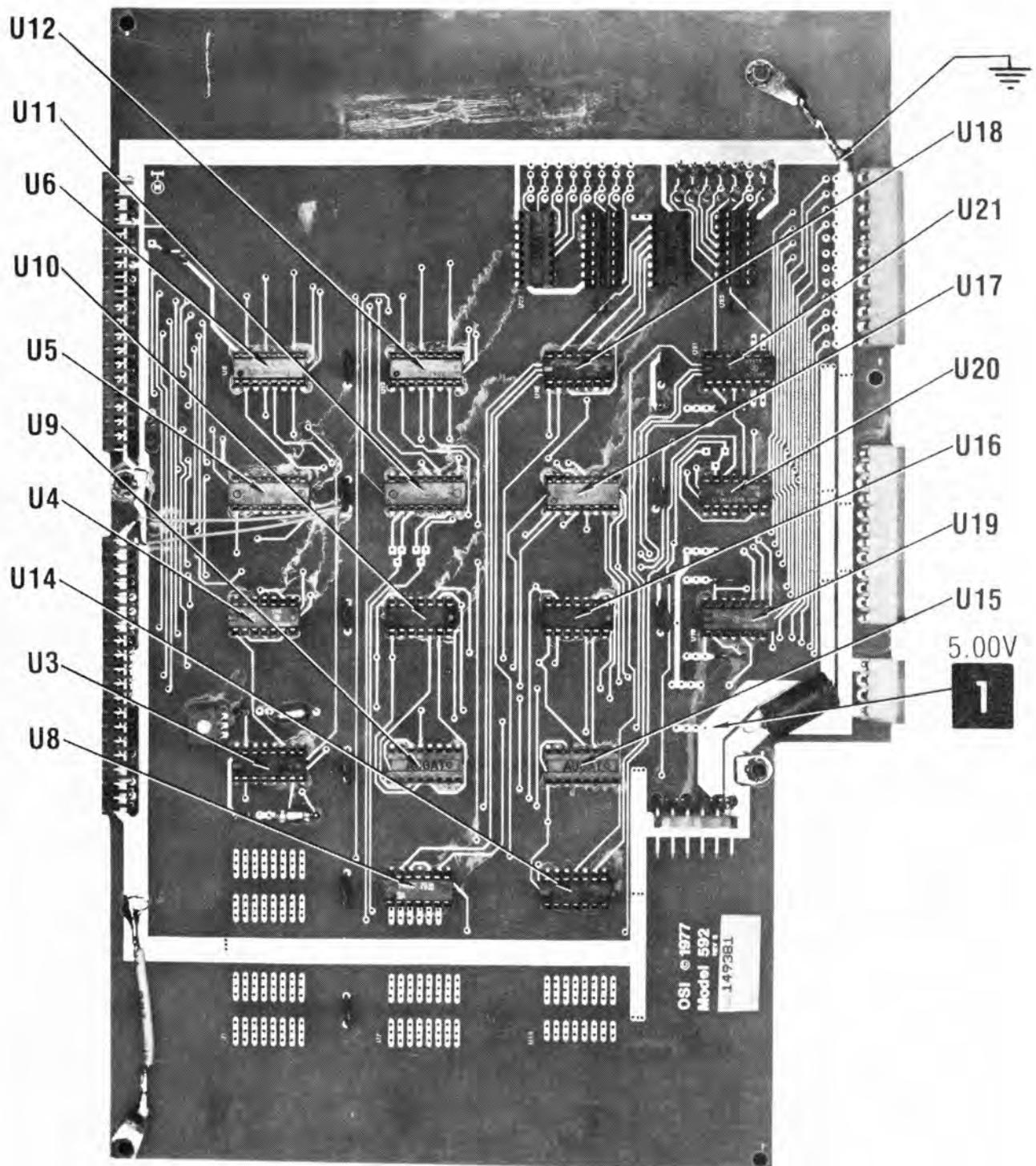
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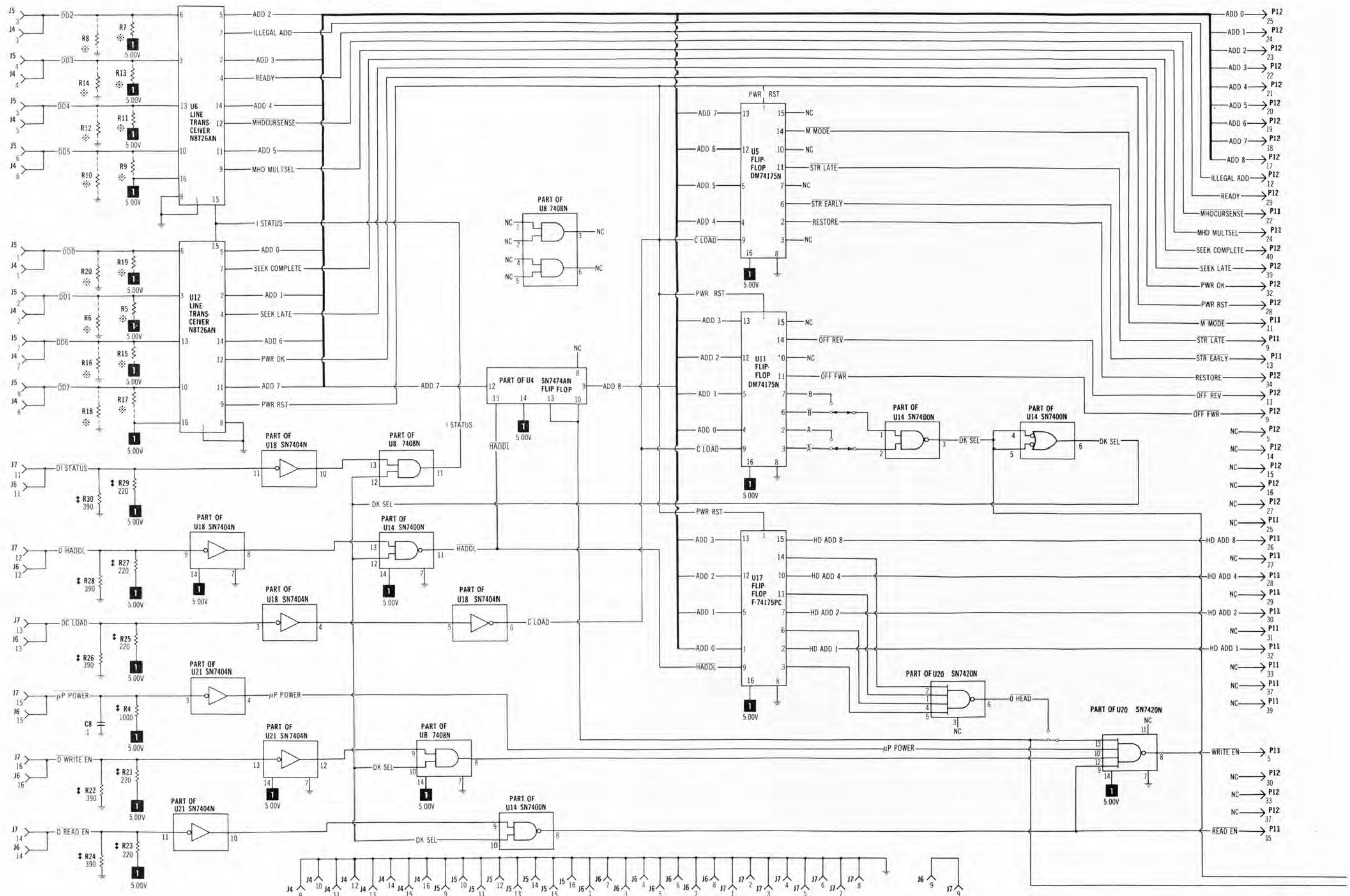


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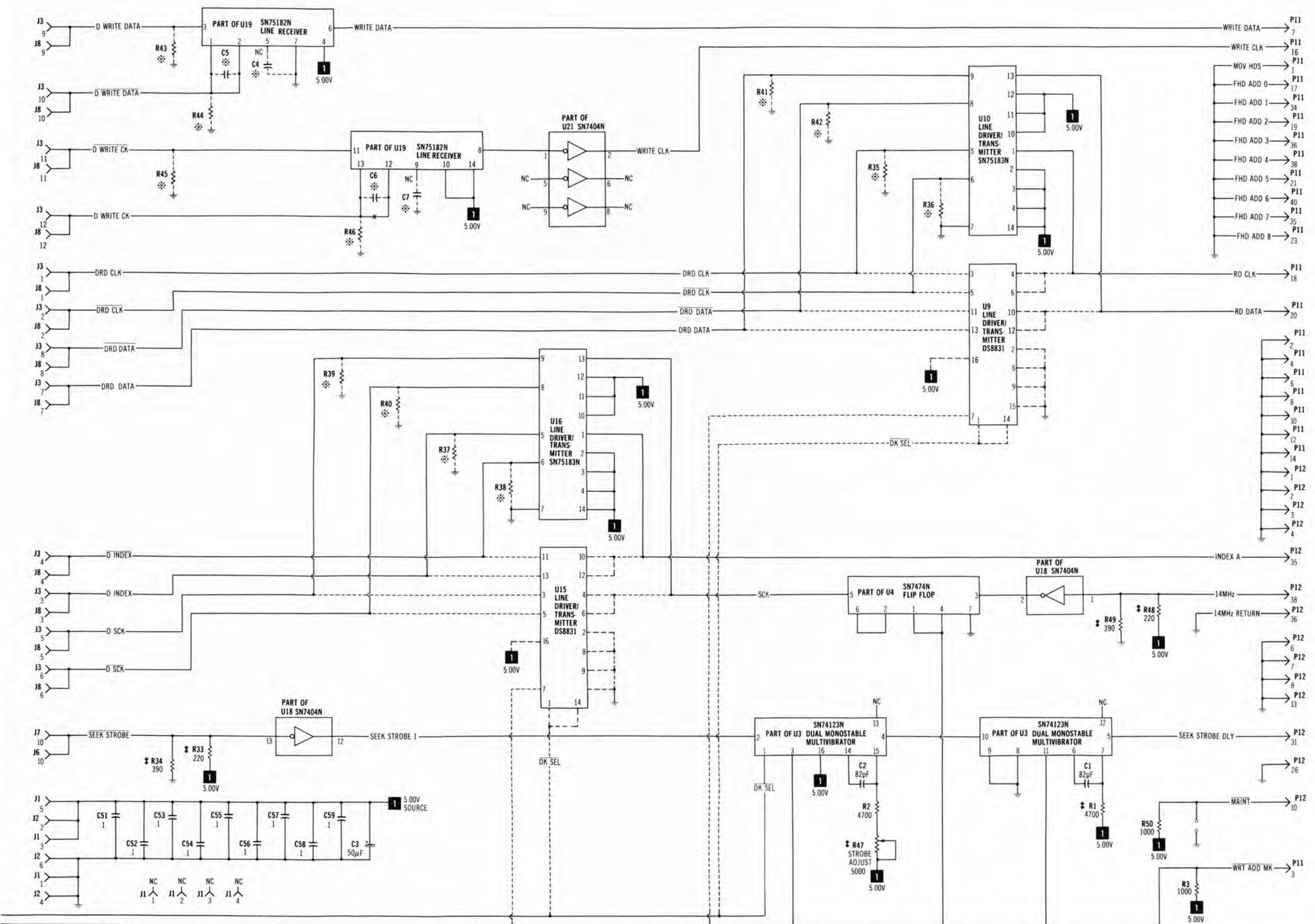


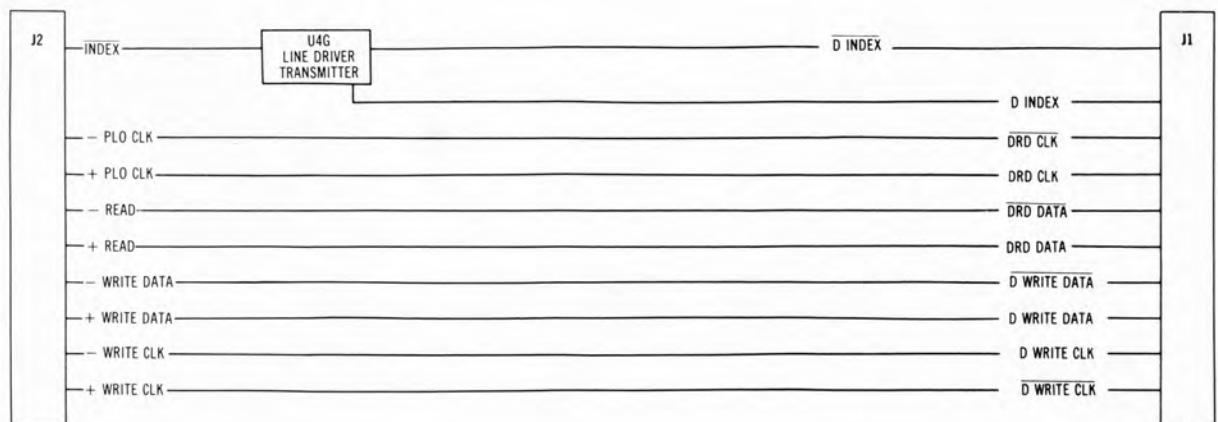
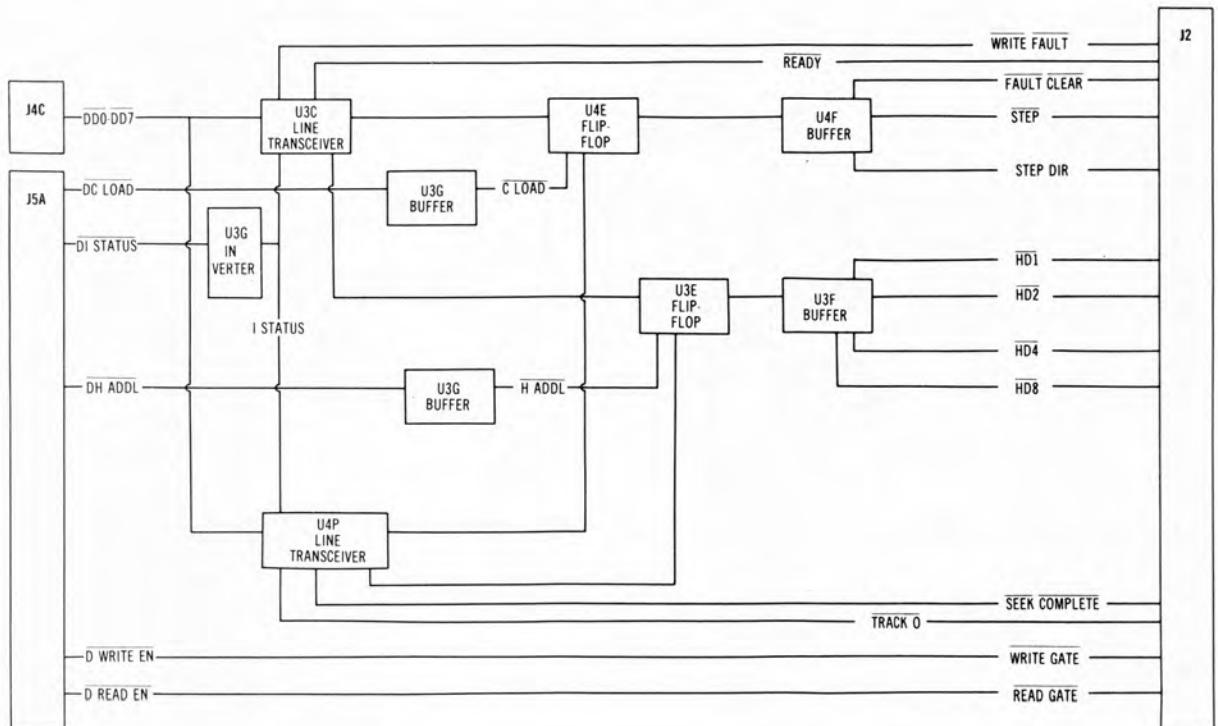




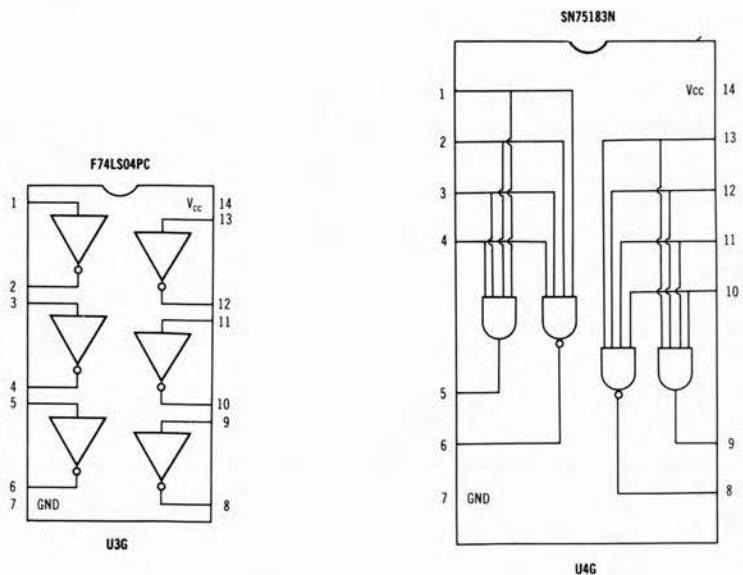
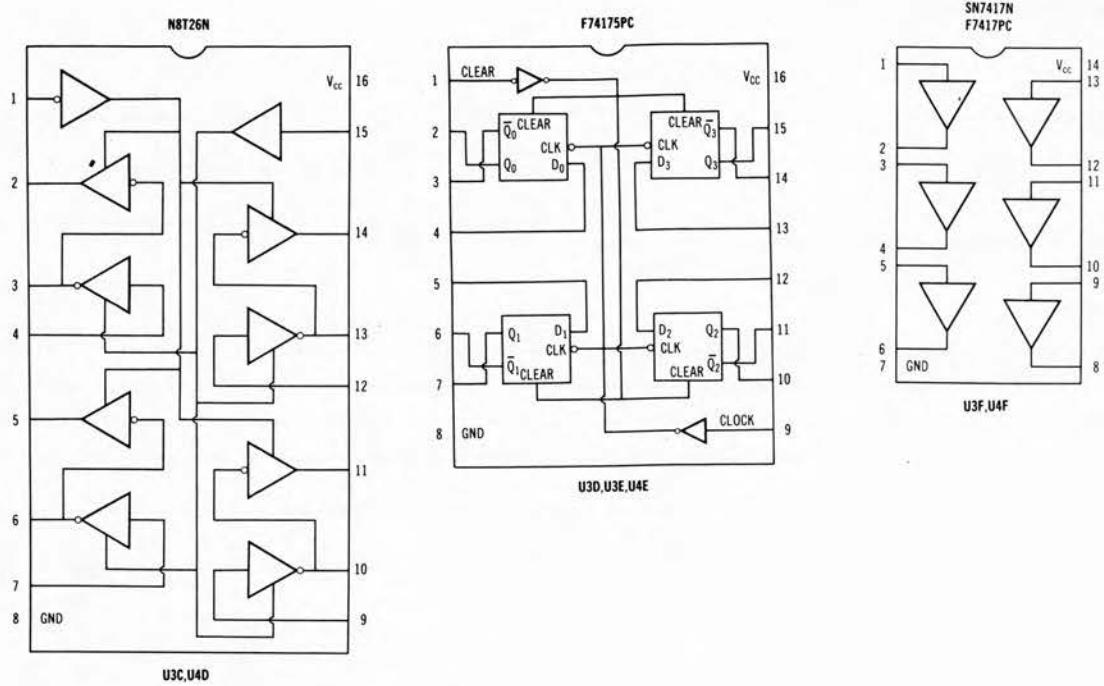


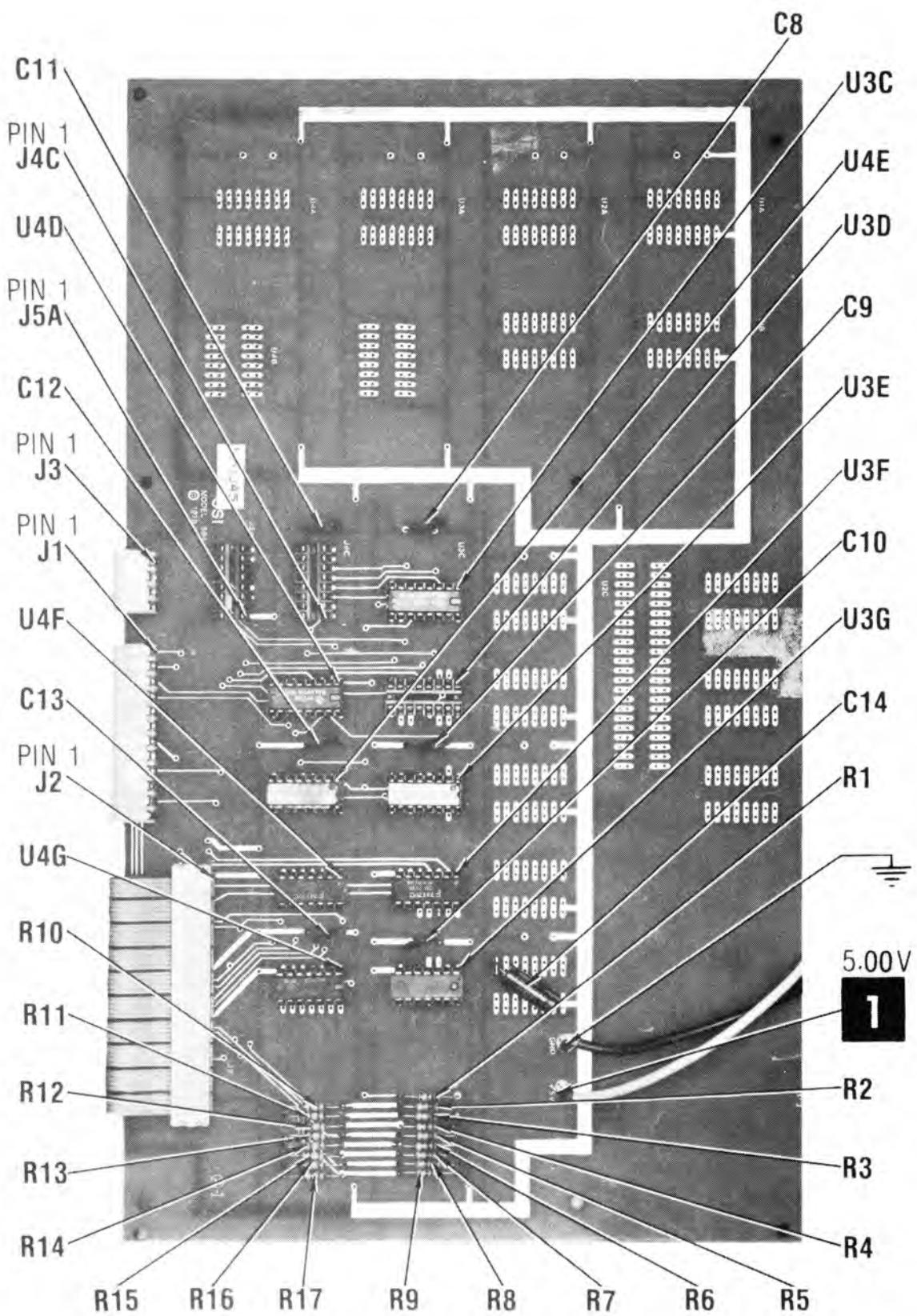
FOR SCHEMATIC LEGEND AND NOTES SEE PAGES 182 & REAR COVER

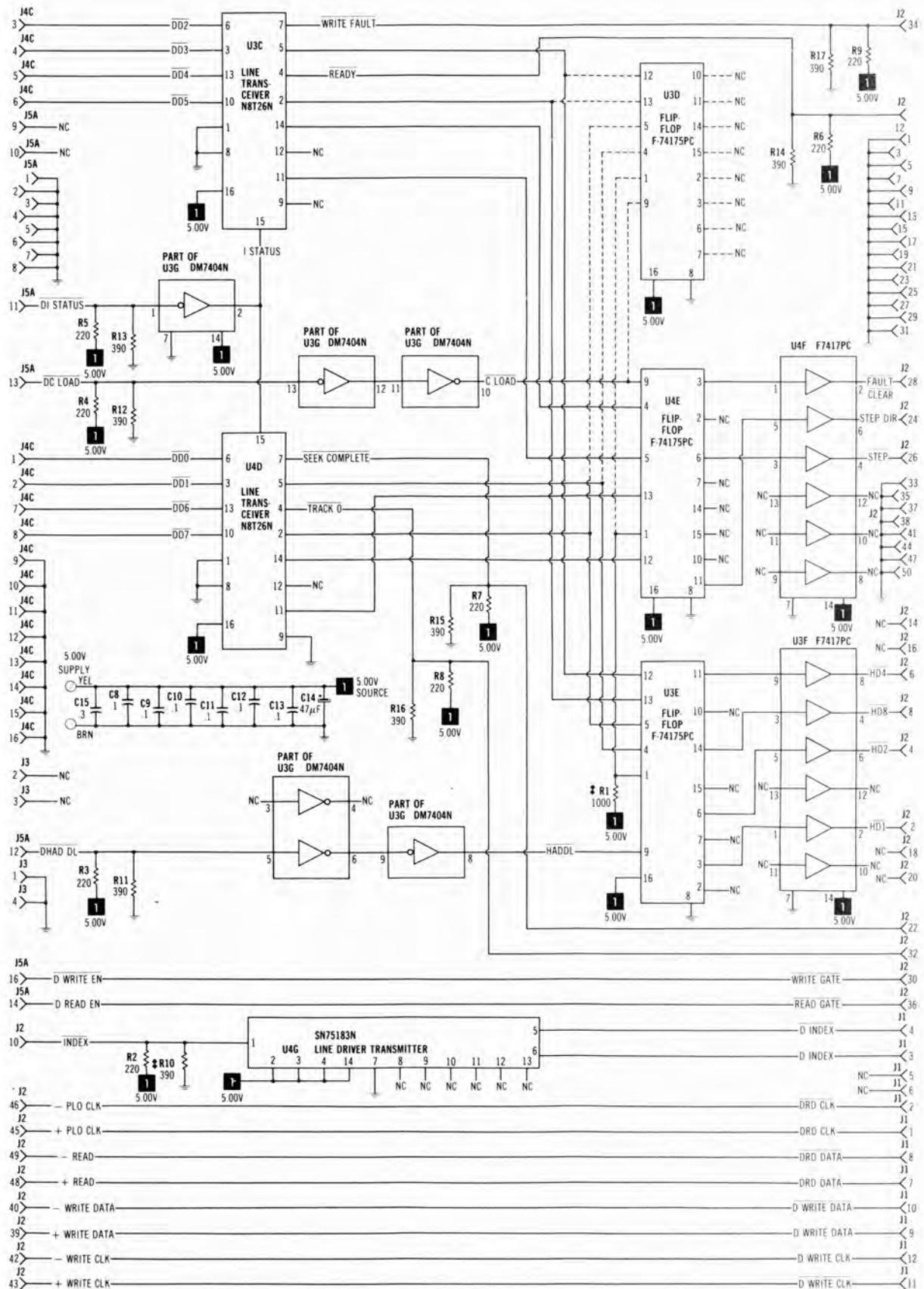




# 594 BOARD PINOUTS







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

FOR SCHEMATIC LEGEND AND  
NOTES SEE REAR COVER.

**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
I <sub>02</sub> -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
I <sub>02</sub> -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
I <sub>02</sub> -VMA .....	Internal Phase Two-Valid Memory Address
LOW CURRENT .....	Low Current

Any Bar above any alphabetical or numerical combination indicates line active in a low (0) state.

**505 BOARD  
(CONTINUED)**

NMI.....	Non-Maskable Interrupt
PA0-PA7.....	Port A
PB0-PB7.....	Port B
READY DRIVE 1 .....	Ready Drive One
READY DRIVE 2 .....	Ready Drive Two
RES.....	Reset
R/W .....	Read/Write
SECTOR.....	Sector
SELECT DRIVE 1 .....	Select Drive One
SELECT DRIVE 2.....	Select Drive Two
SEP DATA .....	Separated Data
SEP CLOCK.....	Separated Clock
STEP .....	Step
STEP IN .....	Step In
TRACK 00.....	Track Zero
TX CLK .....	Transmit Clock
VMA .....	Valid Memory Address
WRITE DATA .....	Write Data
WRITE ENABLE .....	Write Enable
WRITE PROTECT .....	Write Protect
Ø0.....	Phase Zero
Ø2 .....	Phase Two
Ø2-VMA.....	Phase Two-Valid Memory Address

**LEGEND FOR 510 REV. C  
BOARD SCHEMATIC**

A0-A19.....	Address
BØ2 .....	Buffer Phase Two
BE <sub>A</sub> .....	Bus Enable (Processor 6502)
BE <sub>B</sub> .....	Bus Enable (Processor 6800)
CLK.....	Clock
CS1 <sub>A</sub> .....	6502 Rom Chip Select
CS1 <sub>B</sub> .....	6800 Rom Chip Select
CS2 <sub>A</sub> .....	6502 Rom Chip Select
CS2 <sub>B</sub> .....	6800 Rom Chip Select
D0-D7 .....	Data

**510 BOARD  
(CONTINUED)**

DD.....	Data Direct
F7XX .....	Address F7XX <sub>16</sub>
FCXX .....	Address FCXX <sub>16</sub>
FDXX .....	Address FDXX <sub>16</sub>
FEXX .....	Address FEXX <sub>16</sub>
FFXX <sub>A</sub> .....	Address FFXX(6502)
FFXX <sub>B</sub> .....	Address FFXX(6800)
HSCK1 .....	High Speed Clock One
HIS .....	High Speed
ID0-ID7 .....	Internal Data
IDD .....	Internal Data Direct
IIRQ .....	Internal Interrupt Request
INMI .....	Internal Non-maskable Interrupt
IRQ .....	Interrupt Request
IR/W .....	Internal Read/Write
IØ2-VMA .....	Internal Phase Two-Valid Memory Address
MA8-MA10 .....	Memory Address
MREQ <sub>C</sub> .....	Memory Request
NMI.....	Non-maskable Interrupt
P1-P22 .....	Port
PC <sub>H1</sub> .....	Processor Select High
PC <sub>L0</sub> .....	Processor Select Low
PIA RESET .....	Peripheral Interface Adapter Reset
PS .....	Processor Select
PS <sub>A</sub> .....	6502 Select
PS <sub>B</sub> .....	6800 Select
PS <sub>C</sub> .....	Z-80 Select
RAMCE .....	Random Access Memory Chip Enable
RD .....	Z80 Read
RDY .....	Ready
RE <sub>A</sub> .....	Read Enable(6502)
RE <sub>B</sub> .....	Read Enable(6800)
RES .....	Reset
RFSH <sub>C</sub> .....	Refresh
RS .....	Ram Select
R/W .....	Read/Write

Any 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
$\emptyset_1_B$ .....	Phase One(6800)
$\emptyset_2$ .....	Phase Two
$\emptyset_2_A$ .....	Phase Two(6502)
$\emptyset_2_B$ .....	Phase Two(6800)
$\emptyset_2 \cdot VMA$ .....	Phase Two·Valid Memory Address

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

A0-A17.....	Address
CEO-CE3 .....	Chip Enable
D0-D7 .....	Data
DD.....	Data Direction
DIO-DI7.....	Data In
D0O-D07 .....	Data Out
R/W .....	Read/Write
WAIT .....	Wait
$\emptyset_2 \cdot VMA$ .....	Phase Two·Valid Memory Address

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

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

**520 BOARD  
(CONTINUED)**

D10-DI7 .....	Data In
D0O-D07 .....	Data Out
WAIT .....	Wait
$\emptyset_2 \cdot VMA$ .....	Phase Two·Valid Memory Address

**LEGEND FOR 525 BOARD SCHEMATIC**

BA0-BA19 .....	Backplane Address
BDO-BD7 .....	Backplane Data
BBE .....	Backplane Bus Enable
BIE .....	Backplane Input Enable
BR/W.....	Backplane Read/Write
$\emptyset_2 \cdot VMA$ .....	Backplane Phase Two·Valid Memory Address
CA0-CA19 .....	Port Address
CBE .....	Port Bus Enable
CDO-CD7 .....	Port Data
CEO-CE15 .....	Chip Enable For RAM
CIE .....	Port Input Enable
CR/W.....	Port Read/Write
$\emptyset_2 \cdot VMA$ .....	Port Phase Two·Valid Memory Address
DD <sub>B</sub> .....	Data Direct Backplane
DD <sub>P</sub> .....	Data Direct Port
MA0-MA13 .....	Memory Address
MDO-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
CEO-CE23 .....	Chip Enable RAM

Any 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
Φ2	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

Any Bar above any alphabetical or numerical combination indicates line active in a low (0) state.

**550 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
ΙΦ2·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
ACSO-ACS3	ACIA Chip Select
ACS15	ACIA Chip Select
BUSY	Busy
CARRIAGE READY	Carriage Ready
CARRIAGE STROBE	Carriage Strobe
CEO-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>

**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
BDO-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 Bar above any alphabetical or numerical combination indicates line active in a low (0) state.

**590 BOARD  
(CONTINUED)**

<b>INDEX</b>	.....	Index
<b>IR/W</b>	.....	Internal Read/Write
<b>I STATUS</b>	.....	Input Status
<b>MDO-MD7</b>	.....	Memory Data
<b>MA0-MA15</b>	.....	Memory Address
<b>MDD</b>	.....	Memory Data Direction
<b>MDIO-MDI7</b>	.....	Memory Data In
<b>MD00-MD07</b>	.....	Memory Data Out
<b>MPC</b>	.....	Memory Process Clear
<b>MPS</b>	.....	Memory Process Set
<b>MR/W</b>	.....	Memory Read/Write
<b>MR/W1</b>	.....	Memory Read/Write One
<b>ME</b>	.....	Memory Enable
<b>M02-VMA</b>	.....	Memory Phase Two-Valid Memory Address
<b>PD</b>	.....	Partial Decode
<b>RD OFF</b>	.....	Read Offset
<b>READ CK</b>	.....	Read Clock
<b>READ DATA</b>	.....	Read Data
<b>RDM INC</b>	.....	Read Memory Increment
<b>RCK</b>	.....	Read Clock
<b>SCK</b>	.....	Servo Clock
<b>SCK1</b>	.....	Servo Clock One
<b>SEEK STROBE</b>	.....	Seek Strobe
<b>SL1</b>	.....	Start Load One
<b>SL2</b>	.....	Start Load Two
<b>START</b>	.....	Start
<b>SQC</b>	.....	Sync QC
<b>SYNC</b>	.....	Sync
<b>WRITE DATA</b>	.....	Write Data
<b>W02-VMA</b>	.....	Write Phase Two-Valid Memory Address
<b><math>\mu</math>P POWER</b>	.....	Microprocessor Power
<b>02</b>	.....	Phase Two
<b>02-VMA</b>	.....	Phase Two-Valid Memory Address

**LEGEND FOR 592  
BOARD SCHEMATIC**

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

Any Bar above any alphabetical or numerical combination indicates line active in a low (0) state.

**592 BOARD  
(CONTINUED)**

PWR RST .....	Power Reset
RCLK .....	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  $1/4$  W or less, 5% unless noted.

Value in ( ) used in some versions.

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