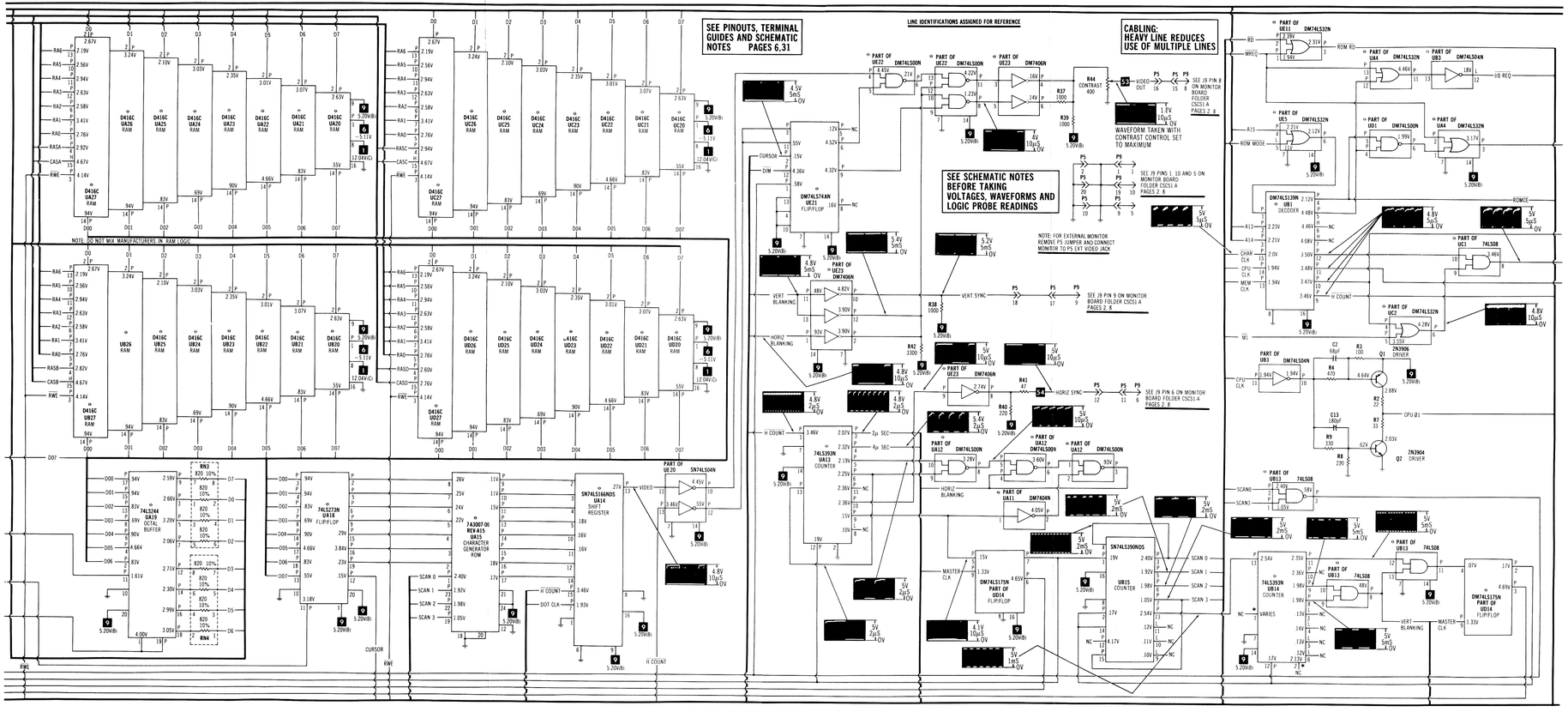


A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE

MAIN LOGIC BOARD

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MAIN LOGIC BOARD

OSBORNE MODEL OCC1,A

MAIN LOGIC, POWER SUPPLY



MODEL OCC1

MONITOR BOARD

See Folder CSCS1-A

DISK DRIVE BOARD & DOUBLE DENSITY BOARD

See Folder CSCS1-B

PRELIMINARY SERVICE CHECKS

ENCLOSED

SAFETY PRECAUTIONS

See page 12.

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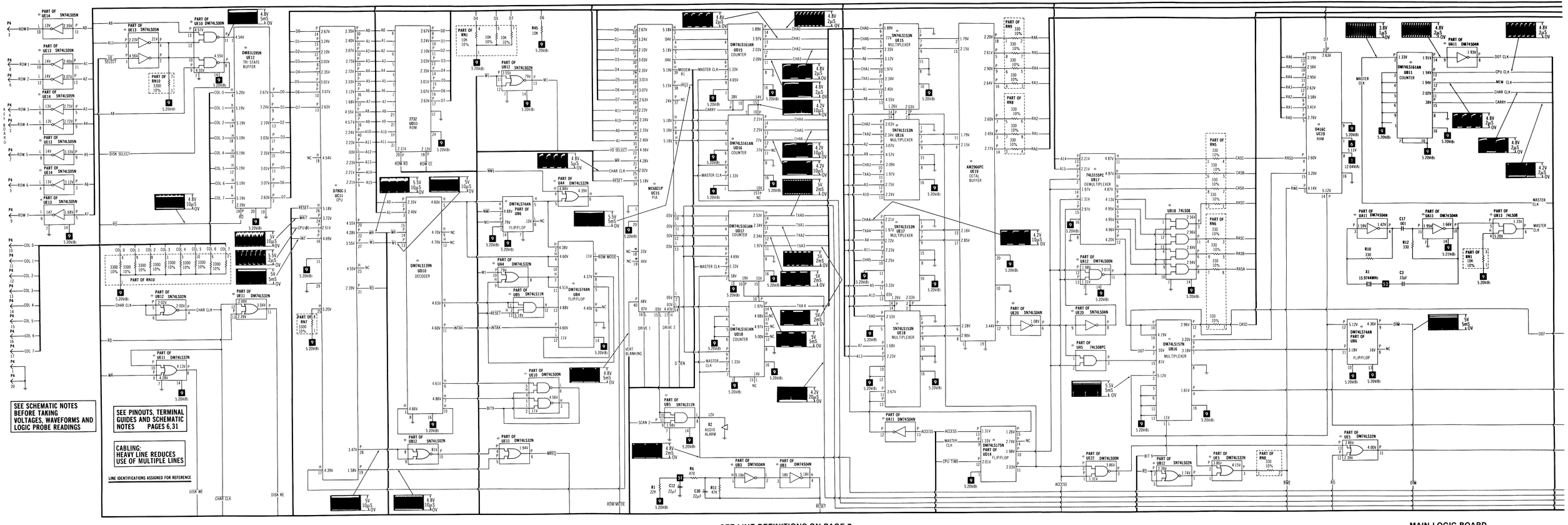
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed.

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CSCS1 OSBORNE MODEL OCC1,A



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CSCS1

OSBORNE
MODEL OCC1,A

WAVEFORM TAKEN WITH DISK DRIVE RUNNING WITHOUT A DISKETTE IN DISK DRIVE

LINE IDENTIFICATIONS ASSIGNED FOR REFERENCE

SEE PINOUTS, TERMINAL GUIDES AND SCHEMATIC NOTES PAGES 6,31

CABLING:
HEAVY LINE REDUCES USE OF MULTIPLE LINES

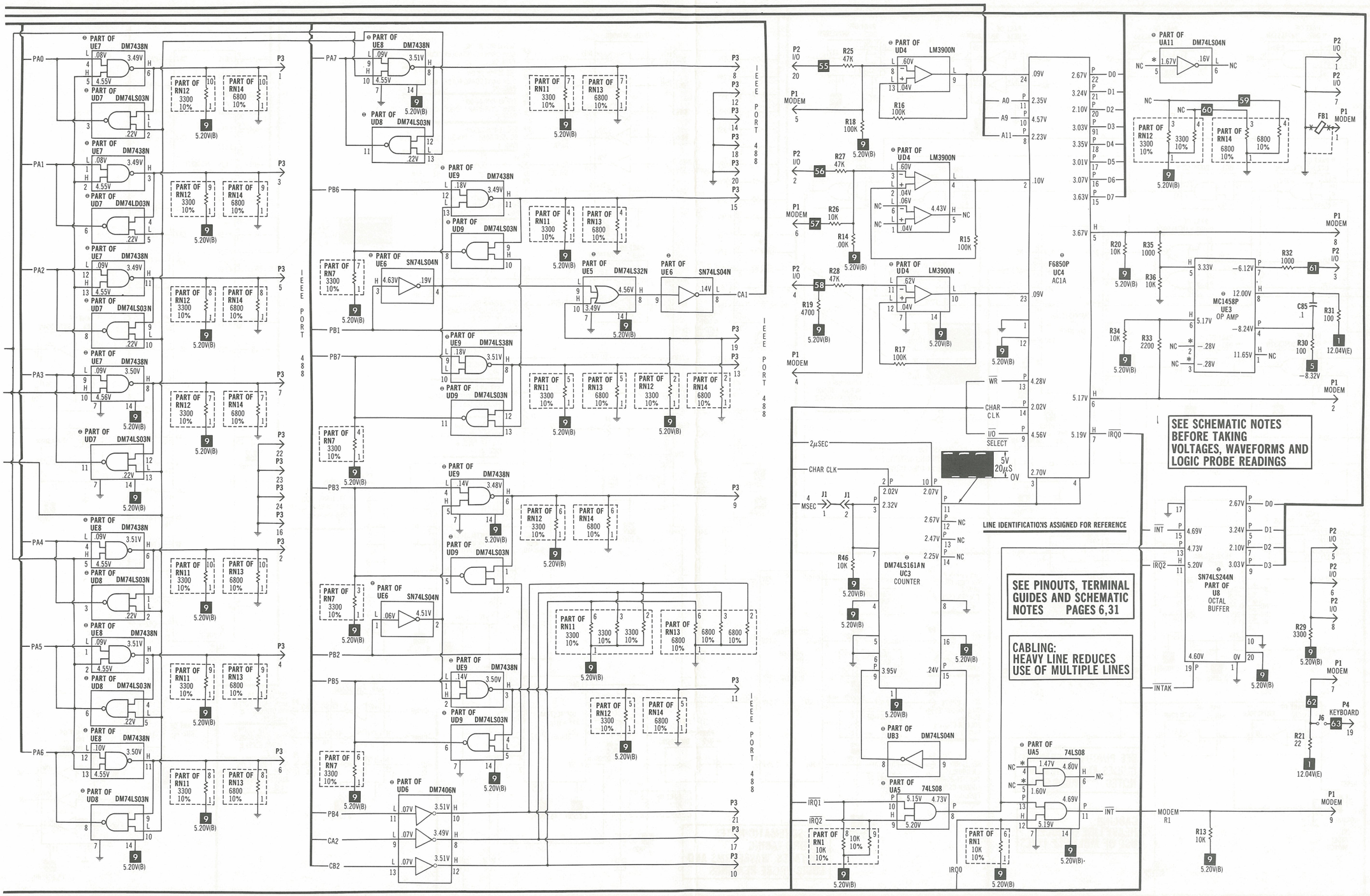
SEE SCHEMATIC NOTES BEFORE TAKING VOLTAGES, WAVEFORMS AND LOGIC PROBE READINGS

SEE LINE DEFINITIONS ON PAGE 7

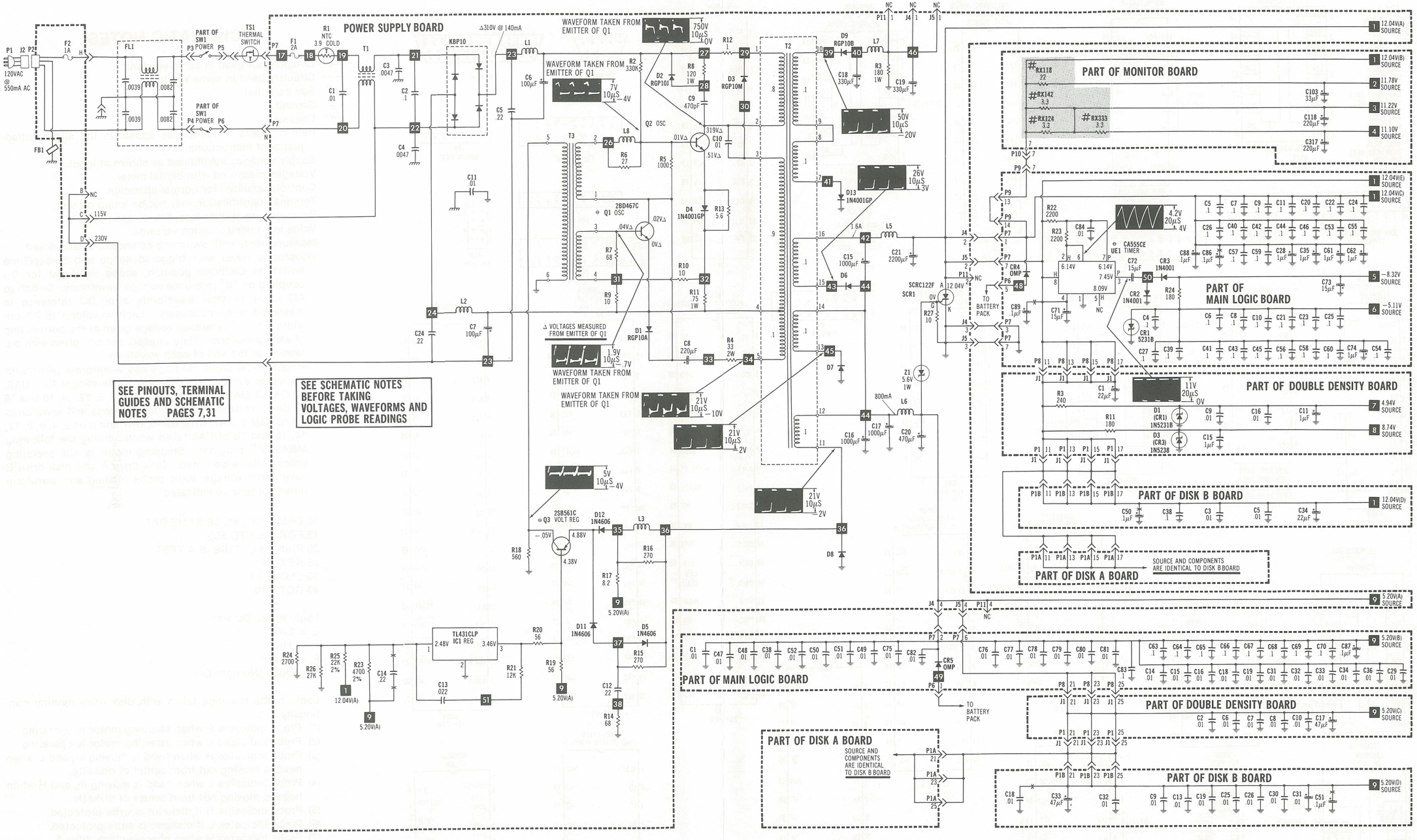
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MAIN LOGIC BOARD

MAIN LOGIC BOARD

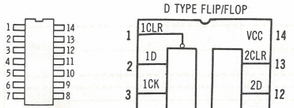


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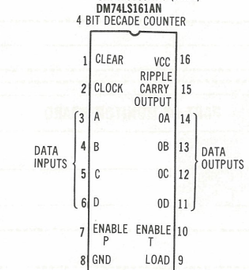
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IC PINOUTS, TERMINAL GUIDES & SCHEMATIC NOTES



DM74LS74AN
D TYPE FLIP/FLOP

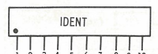
UA4, UA5, UA9 THRU UA12, UB3, UB5, UB12, UB13 UB18, UC1, UC2, UD1, UD2, UD6 THRU UD9, UE5, THRU UE11, UE13, UE14, UE20 UE22, UE23,
TOP VIEW



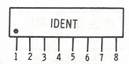
UA6, UB4, UB6 UE21
TOP VIEW

SN74LS166NDS (UA14)
DM74LS161AN
4 BIT DECADE COUNTER

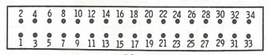
UA7, UA14, UB11 UC3, UD3, UD15 THRU UD18
TOP VIEW



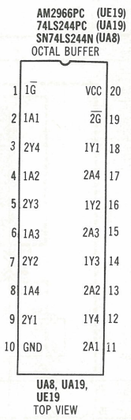
RN1, RN10 THRU RN14
FRONT VIEW



RN2 THRU RN9
FRONT VIEW

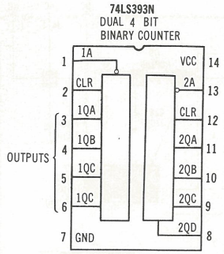


P8
PIN VIEW



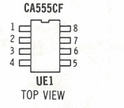
AM2966PC (UE19)
74LS244PC (UA19)
SN74LS244N (UA8)
OCTAL BUFFER

UA8, UA19, UE19
TOP VIEW



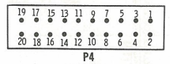
74LS393N
DUAL 4 BIT BINARY COUNTER

UA13, UB14
TOP VIEW

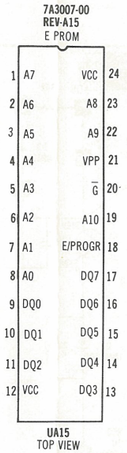


CA555CF

UE1
TOP VIEW



P4
PIN VIEW

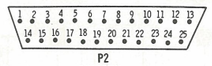


7A3007-00
REV-A15
E PROM

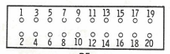
UA15
TOP VIEW



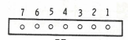
P1, P6
PIN VIEW



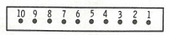
P2
PIN VIEW



P5
FRONT VIEW



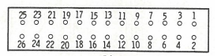
P7
WIRING VIEW



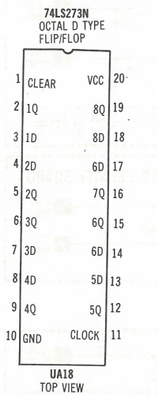
P9
PIN VIEW



J4, J5
PIN VIEW

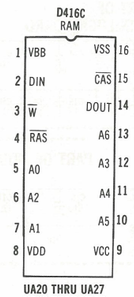


P3
WIRING VIEW



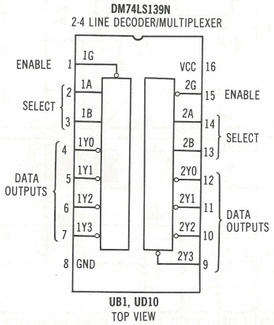
74LS273N
OCTAL D TYPE FLIP/FLOP

UA18
TOP VIEW



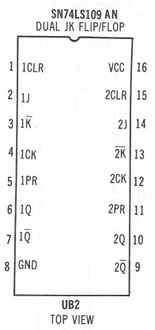
D416C
RAM

UA20 THRU UA27
UB20 THRU UB27
UC19 THRU UC27
UD20 THRU UD27
TOP VIEW



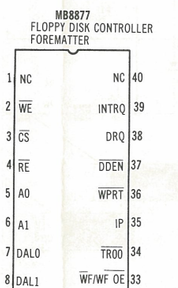
DM74LS139N
2-4 LINE DECODER/MULTIPLEXER

UB1, UD10
TOP VIEW



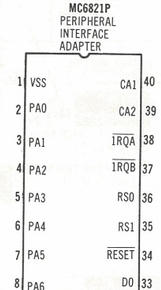
SN74LS109 AN
DUAL JK FLIP/FLOP

UB2
TOP VIEW



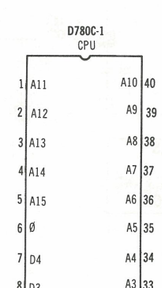
MB8877
FLOPPY DISK CONTROLLER FOREMATTER

UB7
TOP VIEW



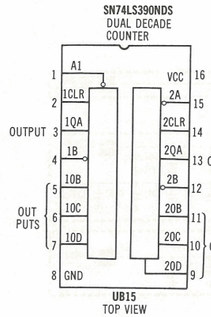
MC6821P
PERIPHERAL INTERFACE ADAPTER

UC7, UC15
TOP VIEW



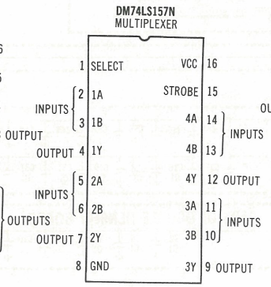
D780C-1
CPU

UC11
TOP VIEW



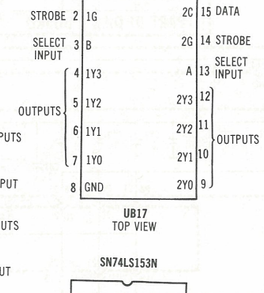
SN74LS390NDS
DUAL DECADE COUNTER

UB15
TOP VIEW



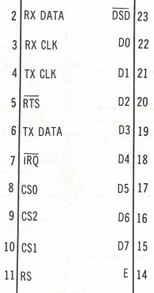
DM74LS157N
MULTIPLEXER

UB16
TOP VIEW



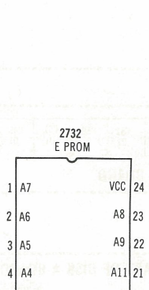
74LS155PC
DEMULTIPLEXER

UB17
TOP VIEW



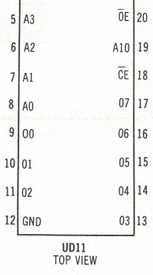
F6850P
ASYNCHRONOUS INTERFACE ADAPTER

UC4
TOP VIEW



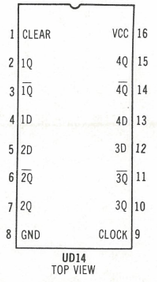
2732
E PROM

UD11
TOP VIEW



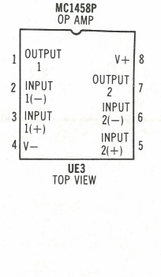
DM74LS175
QUAD D TYPE FLIP/FLOP

UD14
TOP VIEW



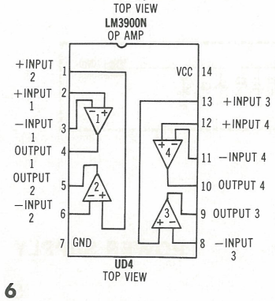
MC1458P
OP AMP

UE3
TOP VIEW



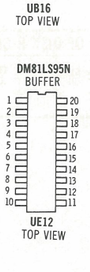
LM3900N
OP AMP

UD4
TOP VIEW



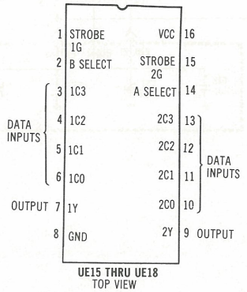
DM81LS95N
BUFFER

UE12
TOP VIEW



SN74LS153N

UE15 THRU UE18
TOP VIEW



SCHEMATIC NOTES

- Circuitry not used in some versions
- Circuitry used in some versions
- See parts list
- Ground
- Chassis

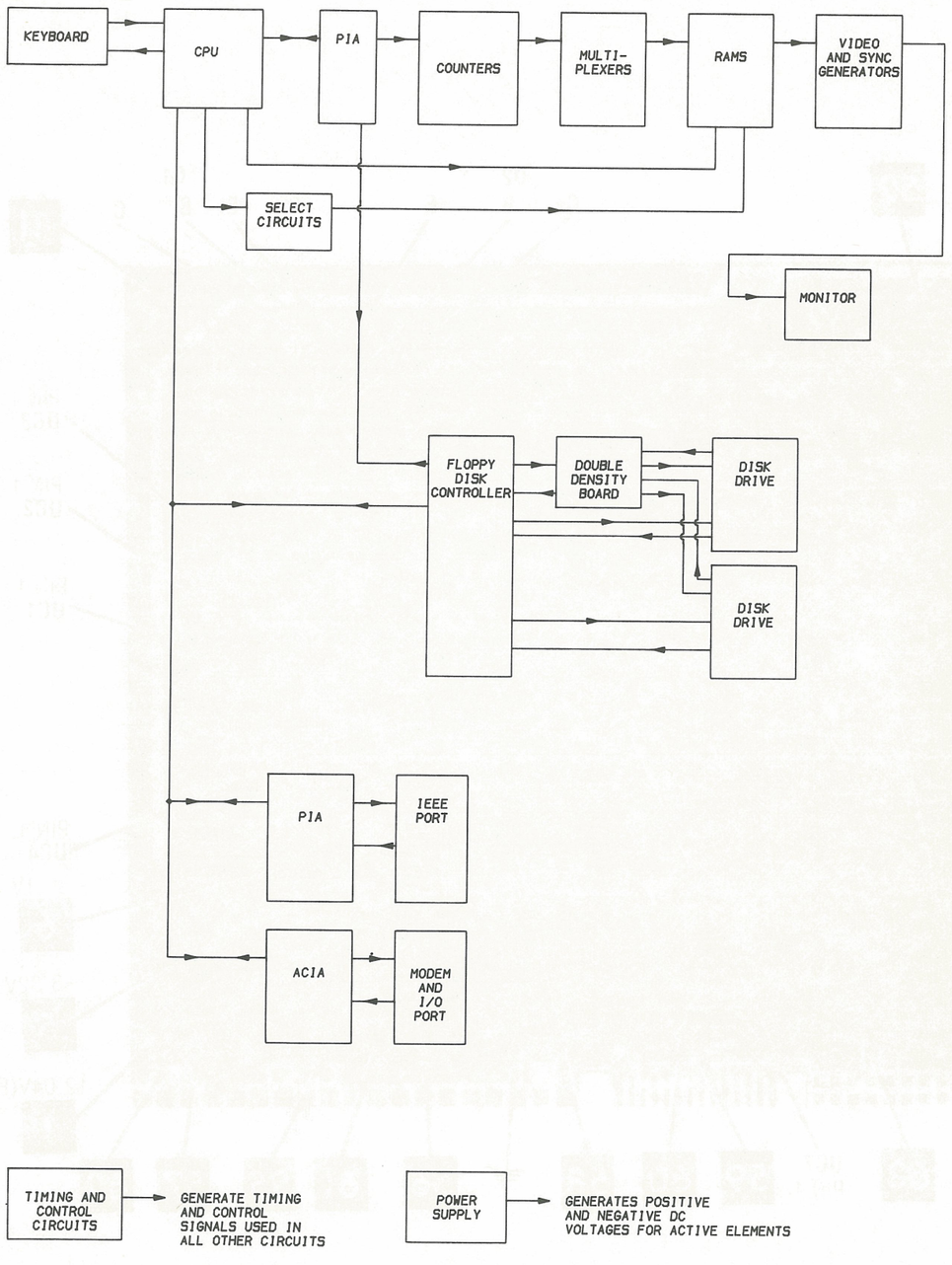
Item numbers in rectangles appear in the alignment/adjustment instructions.
Supply voltages maintained as shown at input.
Voltages measured with digital meter.
Controls adjusted for normal operation.
Terminal identification may not be found on unit.
Resistors are ½W or less, 5% unless noted.
Value in ( ) used in some versions.
Measurements with switching as shown, unless noted.
Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on "0" reference voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 7.5 cm width with DC reference voltage given at the bottom line of each waveform. Time in μsec. per cm, given with p-p reading at the end of each waveform.
Voltages, logic probe readings and waveforms taken with computer system in Power Up mode except IC's UA6, UA7, UA9, UA10, UB7 and pins 2, 4, 6, 8, 12, 14, 16 and 18 of UA8. Voltages, logic probe readings and waveforms for IC's UA6, UA7, UA9, UA10, UB7 and pins 2, 4, 6, 8, 12, 14, 16 and 18 of UA8 taken while running the following MBASIC™ program. Stepping motor is not operating unless otherwise noted. Disk drive A and disk drive B have same voltage, logic probe reading and waveform unless otherwise indicated.

```
10 OPEN "O", #1, "B:SAMS.DAT"
15 FOR X = 1 TO 300
20 PRINT #1, "THIS IS A TEST"
25 NEXT X
30 CLOSE #1
40 GOTO 10
```

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No light On)

Logic probe readings taken with disk drive running continually.
(1) Probe indicates P when stepping motor is operating.
(2) Probe indicated L when stepping motor is operating.
(3) Probe indicates H when head is moving in, and L when head is moving out from center of diskette.
(4) Probe indicates L when head is moving in, and H when head is moving out from center of diskette.
(5) Probe indicates H if diskette is write protected.
(6) Probe indicates L if diskette is write protected.
(7) Probe indicates H when checking disk drive A.
(8) Probe indicates L when checking disk drive A.
(9) Logic probe readings not taken for IC's U1, U5 and U6 on disk drive board.

MBASIC is a trademark of Microsoft Corporation.



BLOCK DIAGRAM

TERMINAL GUIDES

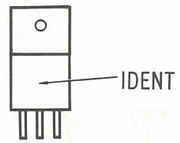
POWER SUPPLY BOARD



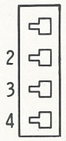
Q2, Q3
BOTTOM VIEW



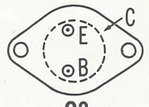
IC1
BOTTOM VIEW



SCR1
FRONT VIEW



J4, J5
WIRE VIEW

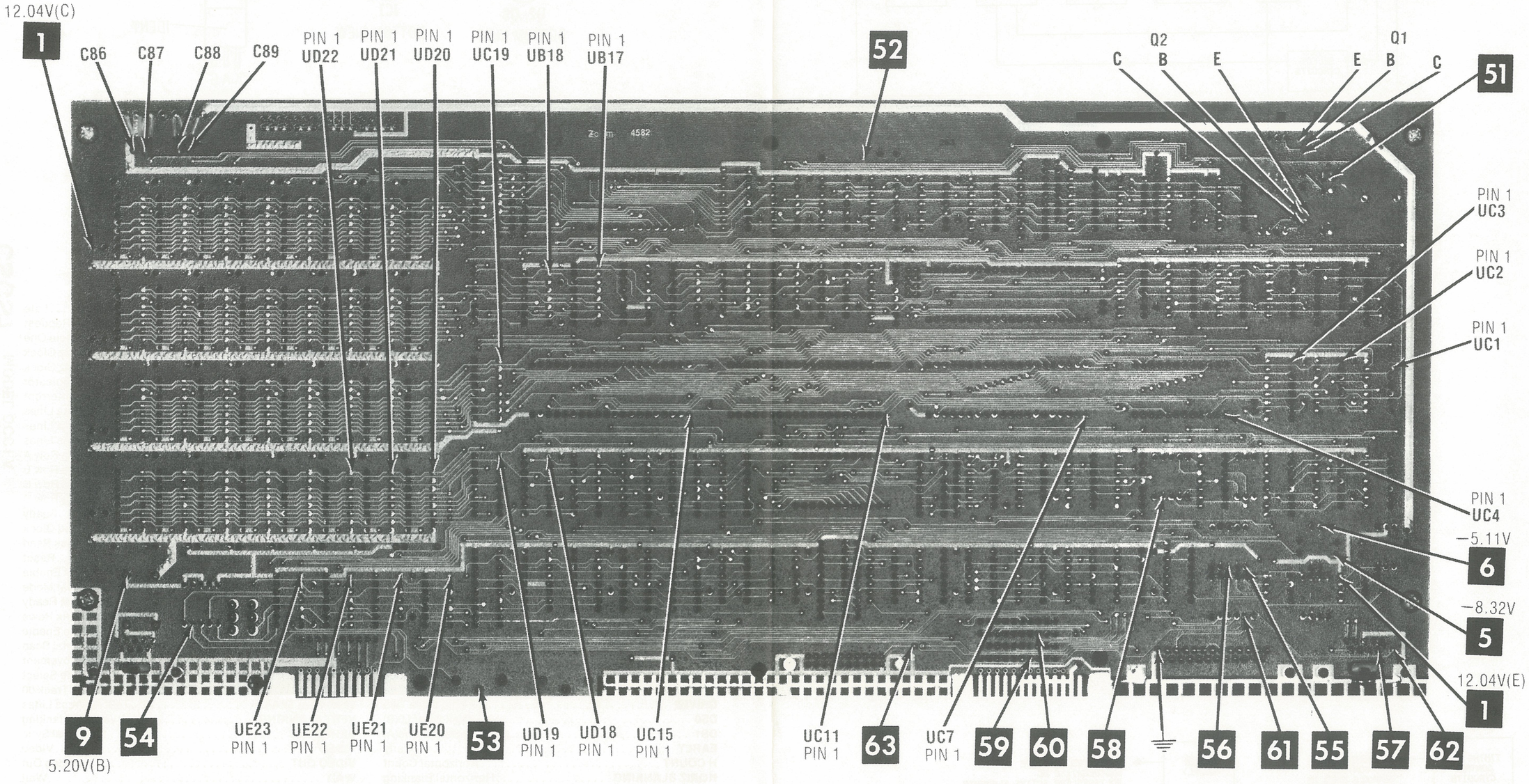


Q2
TOP VIEW

LINE DEFINITIONS

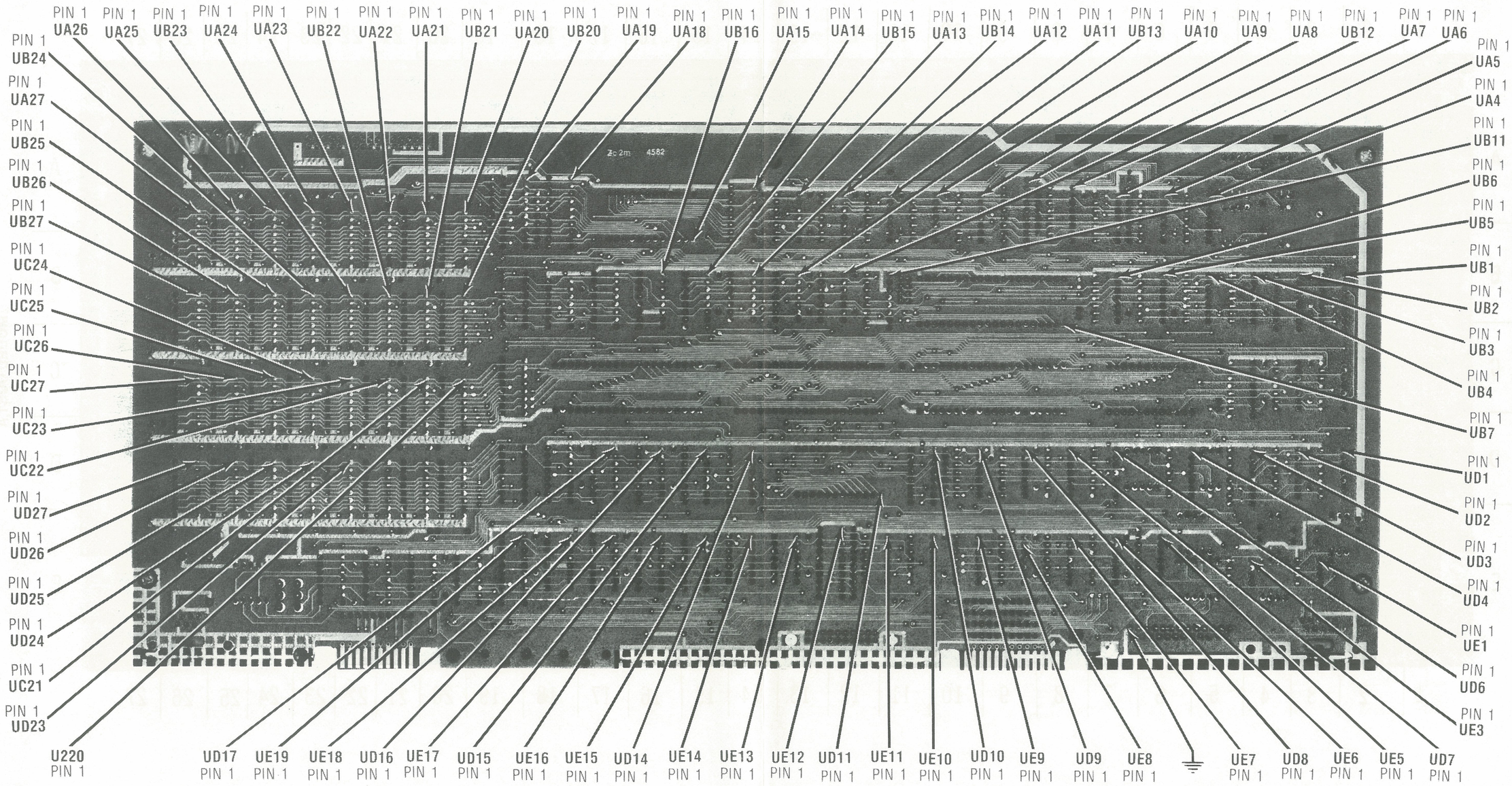
A0 Thru A15 . . . . . Basic Address Lines
ACCESS . . . . . Access
BIT9 . . . . . Bit Nine
CA1 & CA2 . . . . . Interrupt Status Control Register A
CARRY . . . . . Ripple Carry Out
CASA . . . . . Column Address Strobe Row A
CASB . . . . . Column Address Strobe Row B
CASC . . . . . Column Address Strobe Row C
CASD . . . . . Column Address Strobe Row D
CB2 . . . . . Interrupt Status Control Register B
CHA0 Thru CHA6 . . . . . Character Address Lines
CHAR CLK . . . . . 1MHz Character Clock
COL0 Thru COL7 . . . . . Keyboard Matrix Columns
CPU CLK . . . . . 4MHz Clock
CPU TIME . . . . . Central Processor Unit Clock
CPU Ø1 . . . . . Central Processor Unit Phase One
CURSOR . . . . . Cursor
D DEN . . . . . Double Density Disk
D0 Thru D7 . . . . . Basic Data Lines
D00 Thru D07 . . . . . RAM Data Out
DIM . . . . . Monitor Dim
DISK RE . . . . . Disk Read Enable
DISK SELECT . . . . . Disk Select
DISK WE . . . . . Disk Write Enable
DIR . . . . . Head Movement Direction
DOT CLK . . . . . 8MHz Clock
DRIVE1 . . . . . Disk Drive One
DRIVE2 . . . . . Disk Drive Two
DS0 . . . . . Disk Select 0(B)
DS1 . . . . . Disk Select One(A)
EARLY . . . . . Early
H COUNT . . . . . Horizontal Count
HORIZ BLANKING . . . . . Horizontal Blanking
HORIZ SYNC . . . . . Horizontal Sync
I/O REQ . . . . . Input/Output Request
I/O SELECT . . . . . Input/Output Select
INDEX . . . . . Index
INT . . . . . Interrupt
IN TAK . . . . . In Take
IRQ0 Thru IRQ2 . . . . . Interrupt Requests
LATE . . . . . Late
M REQ . . . . . Memory Request
M1 . . . . . Machine Cycle One
MASTER CLK . . . . . 16MHz Clock
MEM CLK . . . . . 2MHz Clock
MODEM RI . . . . . Modem Ring Indicator
NMI . . . . . Non Maskable Interrupt
PA0 Thru PA7 . . . . . Peripheral Data Lines
PB0 Thru PB7 . . . . . Peripheral Data Lines
RA0 Thru RA6 . . . . . RAM Address Lines
RAS A . . . . . Row Address Strobe Row A
RAS B . . . . . Row Address Strobe Row B
RAS C . . . . . Row Address Strobe Row C
RAS D . . . . . Row Address Strobe Row D
RD . . . . . Ready
RD CLK . . . . . Read Clock
RD DATA . . . . . Disk Read
RESET . . . . . Reset
ROM CE . . . . . ROM Enable
ROM MODE . . . . . ROM Mode
ROM RD . . . . . ROM Ready
ROW0 Thru ROW7 . . . . . Keyboard Matrix Rows
RWE . . . . . RAM Write Enable
SCAN0 Thru SCAN3 . . . . . Horizontal Scan
STEP . . . . . Head Movement
SIDE SELECT . . . . . Side Select
TRACK 00 . . . . . Track 00
TXA0 Thru TXA4 . . . . . Text Address Lines
VERT BLANKING . . . . . Vertical Blanking
VERT SYNC . . . . . Vertical Sync
VIDEO . . . . . Video
VIDEO OUT . . . . . Video Out
WAIT . . . . . Wait
WR . . . . . Write
WR DATA . . . . . Write Data
WR GATE . . . . . Write Gate
WR PROT . . . . . Write Protect
2μSEC . . . . . 500kHz Clock
4μSEC . . . . . 250kHz Clock

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



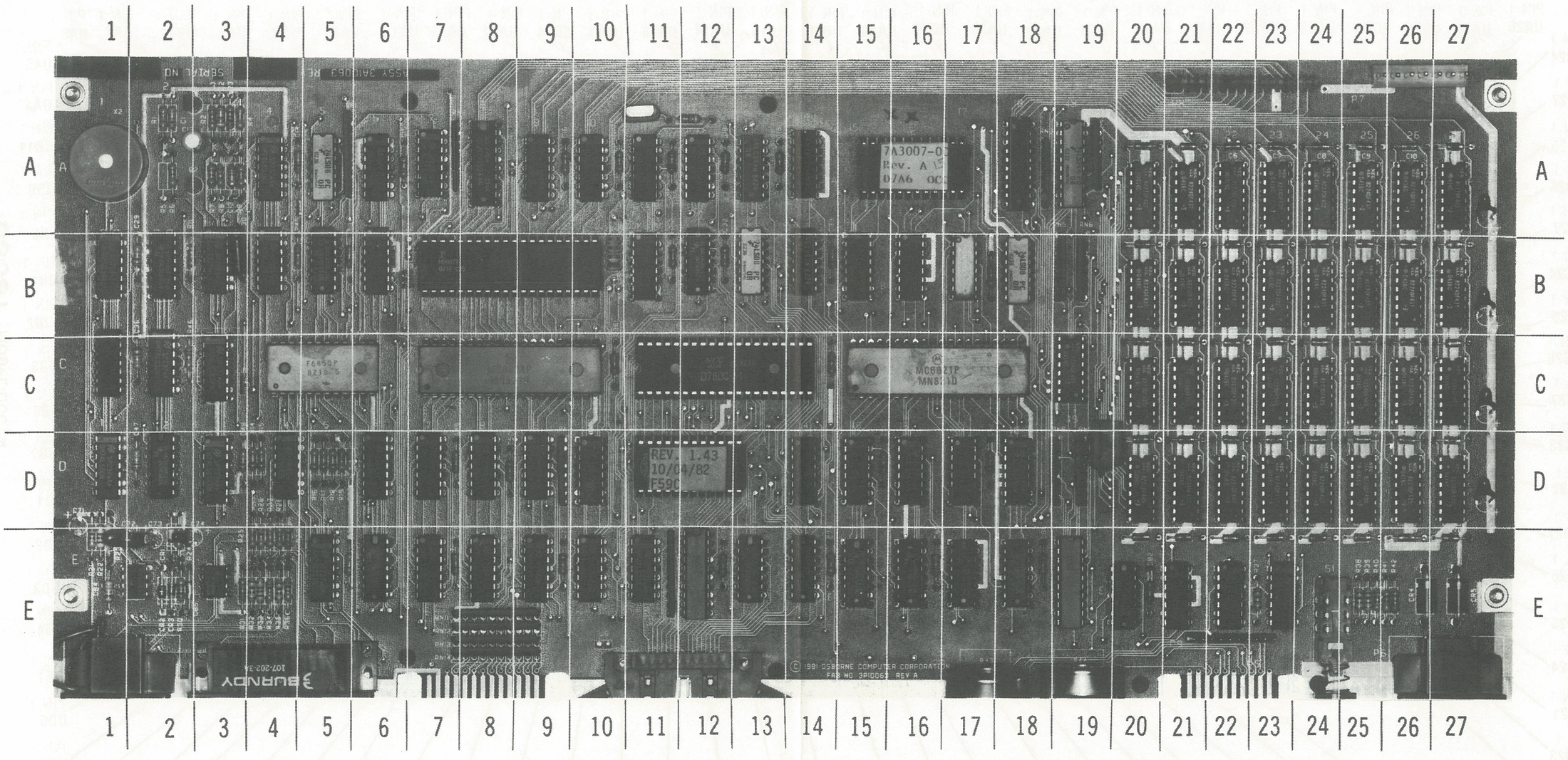
MAIN LOGIC BOARD

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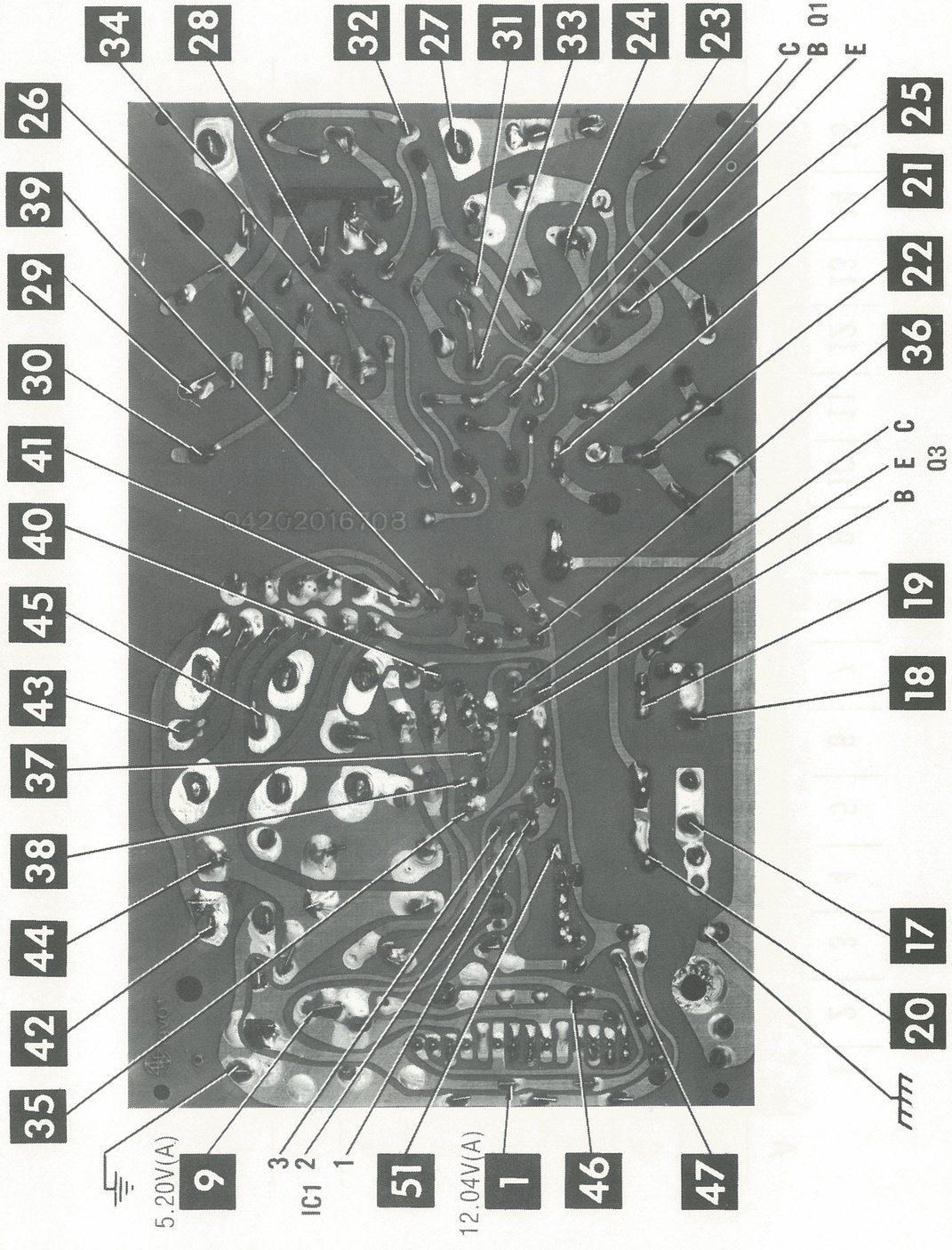
MAIN LOGIC BOARD

MAIN LOGIC BOARD



OSBORNE
MODEL OCC1,A

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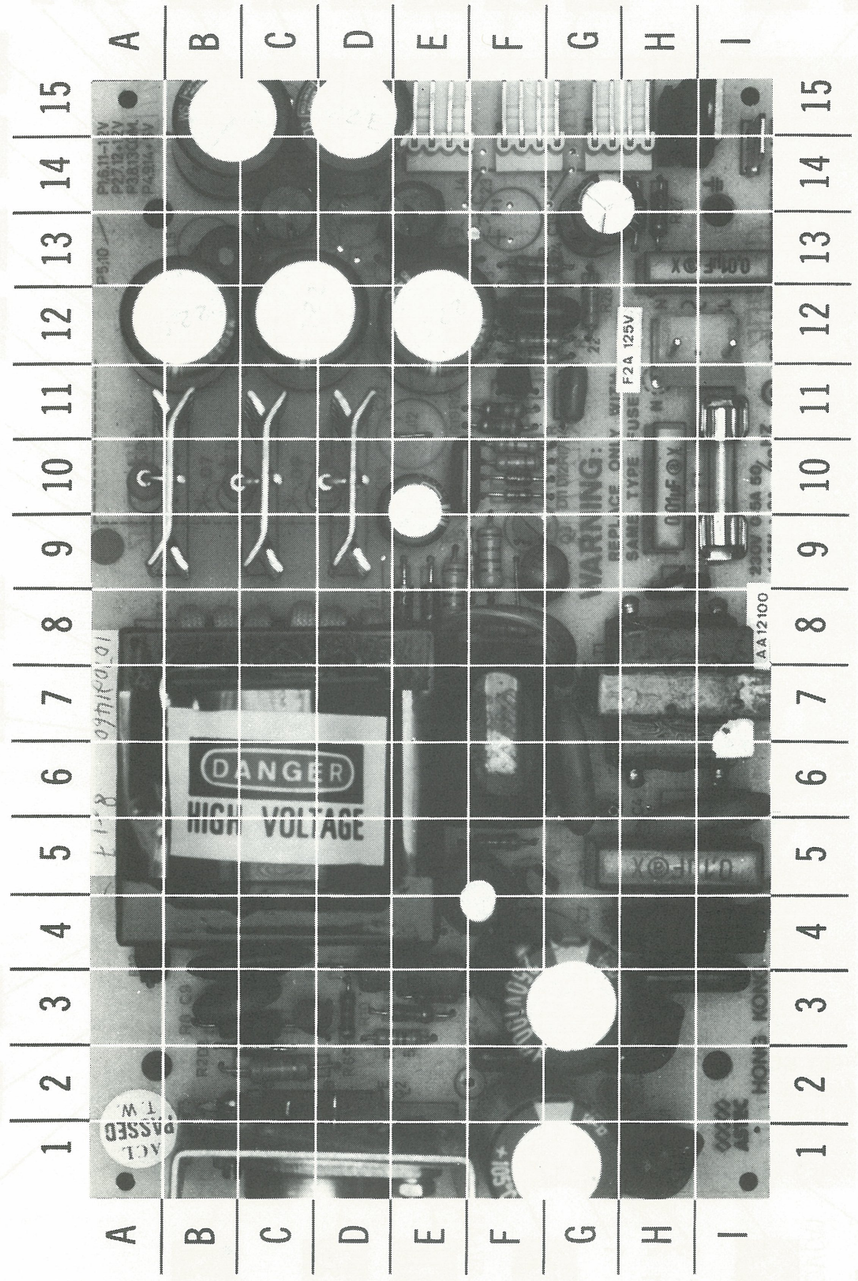
POWER SUPPLY BOARD A Howard W. Sams CIRCUITRACE® Photo

MAIN LOGIC BOARD GridTrace LOCATION GUIDE

C1	A-2	C75	E-5	R43	E-17	UC21	C-21
C2	A-3	C76	E-7	R44	E-19	UC22	C-22
C3	A-12	C77	E-9	R45	B-4	UC23	C-23
C4	A-20	C78	E-12	R46	C-2	UC24	C-24
C5	A-21	C79	E-14	RN1	A-5	UC25	C-25
C6	A-22	C80	E-16	RN2	A-7	UC26	C-26
C7	A-23	C81	E-18	RN3	A-18	UC27	C-27
C8	A-24	C82	E-20	RN4	A-19	UD1	D-1
C9	A-25	C83	A-4	RN5	B-19	UD2	D-2
C10	A-26	C84	E-1	RN6	B-19	UD3	D-3
C11	A-27	C85	E-2	RN7	D-9	UD4	D-4
C12	A-2	CR1	E-2	RN8	D-19	UD6	D-6
C13	A-3	CR2	E-2	RN9	D-19	UD7	D-7
C14	A-4	CR3	E-2	RN10	E-11	UD8	D-8
C15	A-6	CR4	E-26	RN11	E-8	UD9	D-9
C16	A-9	CR5	E-27	RN12	E-8	UD10	D-10
C17	A-11	FB1	E-1	RN13	E-8	UD11	D-12
C18	A-12	J1	C-3	RN14	E-8	UD14	D-14
C19	A-13	J3	B-6	S1	E-24	UD15	D-15
C20	B-20	J4	B-10	UA4	A-4	UD16	D-16
C21	B-21	J5	B-10	UA5	A-5	UD17	D-17
C22	B-22	P1	E-1	UA6	A-6	UD18	D-18
C23	B-23	P2	E-4	UA7	A-7	UD20	D-20
C24	B-24	P3	E-8	UA8	A-8	UD21	D-21
C25	B-25	P4	E-12	UA9	A-9	UD22	D-22
C26	B-26	P5	E-22	UA10	A-10	UD23	D-23
C27	B-27	P6	E-27	UA11	A-11	UD24	D-24
C28	A-27	P7	A-26	UA12	A-12	UD25	D-25
C29	B-2	P8	A-22	UA13	A-13	UD26	D-26
C30	B-3	P9	E-22	UA14	A-14	UD27	D-27
C31	B-5	Q1	A-2	UA15	A-16	UE1	E-1
C32	B-12	Q2	A-3	UA18	A-18	UE3	E-3
C33	B-14	R1	A-2	UA19	A-19	UE5	E-5
C34	B-17	R2	A-3	UA20	A-20	UE6	E-6
C35	B-27	R3	A-3	UA21	A-21	UE7	E-7
C36	C-2	R4	A-3	UA22	A-22	UE8	E-8
C38	C-10	R6	A-2	UA23	A-23	UE9	E-9
C39	C-20	R7	A-3	UA24	A-24	UE10	E-10
C40	C-21	R8	A-3	UA25	A-25	UE11	E-11
C41	C-22	R9	A-3	UA26	A-26	UE12	E-12
C42	C-23	R10	A-10	UA27	A-27	UE13	E-13
C43	C-24	R11	B-2	UB1	B-1	UE14	E-14
C44	C-25	R12	B-11	UB2	B-2	UE15	E-15
C45	C-26	R13	C-14	UB3	B-3	UE16	E-16
C46	C-27	R14	D-4	UB4	B-4	UE17	E-17
C47	D-2	R15	D-4	UB5	B-5	UE18	E-18
C48	D-3	R16	D-5	UB6	B-6	UE19	E-19
C49	D-7	R17	D-5	UB7	B-8	UE20	E-20
C50	D-8	R18	D-5	UB11	B-11	UE21	E-21
C51	D-15	R19	D-5	UB12	B-12	UE22	E-22
C52	D-17	R20	D-5	UB13	B-13	UE23	E-23
C53	D-20	R21	E-1	UB14	B-14	X1	A-11
C54	D-21	R22	E-1	UB15	B-15	X2	A-1
C55	D-22	R23	E-1	UB16	B-16		
C56	D-23	R24	E-2	UB17	B-17		
C57	D-24	R25	E-4	UB18	B-18		
C58	D-25	R26	E-4	UB20	B-20		
C59	D-26	R27	E-4	UB21	B-21		
C60	D-27	R28	E-4	UB22	B-22		
C61	C-27	R29	E-4	UB23	B-23		
C62	D-27	R30	E-2	UB24	B-24		
C63	E-20	R31	E-3	UB25	B-25		
C64	E-21	R32	E-4	UB26	B-26		
C65	E-22	R33	E-4	UB27	B-27		
C66	E-23	R34	E-4	UC1	C-1		
C67	E-24	R35	E-4	UC2	C-2		
C68	E-25	R36	E-4	UC3	C-3		
C69	E-26	R37	E-23	UC4	C-5		
C70	E-27	R38	E-25	UC7	C-8		
C71	D-1	R39	E-25	UC11	C-12		
C72	E-1	R40	E-25	UC15	C-16		
C73	E-2	R41	E-26	UC19	C-19		
C74	E-2	R42	E-26	UC20	C-20		

SAFETY PRECAUTIONS

1. Use an isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the computer system before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductor "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an isolation (times 10) probe on scope.
7. Do not remove or install boards, floppy disk drives, printers, or other peripherals with computer system AC power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. This computer system is equipped with a grounded three-pronged AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
10. Periodically examine the AC pwer cord for damaged or cracked insulation.
11. The computer system cabinet is equipped with vents to prevent heat build-up. Never block, cover, or obstruct these vents.
12. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
13. Never expose the computer system to water. If exposed to water turn the unit off. Do not place the computer system near possible water sources.
14. Never leave the computer system unattended or plugged into the AC outlet for long periods of time. Remove AC plug from AC outlet during lightning storms.
15. Do not allow anything to rest on AC power cord.
16. Unplug AC power cord from outlet before cleaning computer system.
17. Never use liquids or aerosols directly on the computer system. Spray on cloth and then apply to the computer system cabinet. Make sure the computer system is disconnected from the AC power line.



OSBORNE
MODEL OCC1,A

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POWER SUPPLY BOARD

LOGIC (Continued)

PIN NO.	IC UE19	IC UE20	IC UE21	IC UE22	IC UE23
1	L	H	P	P	P
2	P	L	P	P	P
3	P	L	P	P	P
4	P	H	H	P	P
5	P	P	P	P	P
6	P	P	P	P	P
7	P	L	L	L	L
8	P	P	P	P	P
9	P	P	P	P	P
10	L	P	H	P	P
11	P	P	P	P	P
12	P	P	P	P	P
13	P	P	H	P	P
14	P	H	H	H	H
15	P				
16	P				
17	P				
18	P				
19	L				
20	H				

NOTE: Logic probe readings taken with computer system in Power Up mode.

Logic Probe Display
L = Low
H = High
P = Pulse

POWER SUPPLY BOARD GridTrace LOCATION GUIDE

C1	H-10	C18	E-9	DB1	H-4	R1	H-9	R18	F-8
C2	H-5	C19	G-13	F1	I-10	R2	C-2	R19	F-11
C3	G-6	C20	D-14	IC1	F-11	R3	E-13	R20	F-11
C4	H-6	C21	A-14	J4	E-15	R4	D-3	R21	F-12
C5	H-3	C24	F-2	J5	F-15	R5	E-3	R22	F-12
C6	F-1	D1	E-5	L1	H-1	R6	D-3	R23	F-13
C7	F-3	D2	C-2	L2	H-3	R7	F-5	R24	F-13
C8	F-4	D3	A-5	L3	F-9	R8	B-3	R25	F-12
C9	B-3	D4	D-1	L5	B-13	R9	E-3	R26	G-12
C10	B-4	D5	F-9	L6	C-13	R10	E-3	R27	H-13
C11	H-13	D6	A-10	L7	E-14	R11	C-1	SCR1	I-15
C12	E-10	D7	B-10	L8	C-3	R12	A-4	T1	H-7
C13	G-11	D8	D-10	P5	H-12	R13	C-1	T2	B-6
C14	F-12	D9	E-8	P11	G-15	R14	F-10	T3	F-7
C15	A-12	D11	F-10	Q1	F-5	R15	E-9	Z1	H-13
C16	C-12	D12	F-10	Q2	C-1	R16	F-9		
C17	E-12	D13	E-8	Q3	F-9	R17	F-10		

GENERAL OPERATING INSTRUCTIONS

BOOT UP

To boot up on CP/M® (or any bootable program on diskette), put a diskette containing CP/M in disk drive A and press the RETURN key. If a HELP program comes up on the monitor screen, press the ESC key to get CP/M. The computer can be booted up from disk drive B by pressing the SHIFT and " (Quote) keys together (disk drive B will then become disk drive A). CP/M is loaded when the A> appears on the monitor screen.

RESET BUTTON

Pressing the RESET button on the computer will reset the computer and any program in memory will be lost.

MBASIC™

To load MBASIC from CP/M, put a diskette containing MBASIC in disk drive A, type MBASIC and press the RETURN key. To load a program from a diskette, type LOAD and the name of the program enclosed in quotes, then press the RETURN key. To save a program on a diskette type SAVE and the name of the program enclosed in quotes, then press the RETURN key. To list the programs on the diskette in the current disk drive, type FILES and press the RETURN key. Use FILES "A:*.*" for disk drive A or FILES "B:*.*" for disk drive B if that drive is not the current drive. To get back to CP/M from MBASIC, type SYSTEM and press the RETURN key.

CP/M

To list the programs on the diskette in the current disk drive, type DIR and press the RETURN key. Use DIR A: for disk drive A or DIR B: for disk drive B if that drive is not the current drive.

The type of data stored on a diskette is identified by the three letters after the program name (ASM = Assembly Language, BAS = Basic Program, COM = Command File, DAT = Data File, etc...)

To make disk drive B the current drive, type B: and press the RETURN key. To make disk drive A the current drive again, type A: and press the RETURN key. To load a program, type the name of the program and press the RETURN key.

FORMATTING A DISKETTE

A blank diskette must be formatted before it can be used to save data. Boot up on CP/M and use the Format section of the COPY program to format a new diskette.

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

Disconnect keyboard from computer. Remove brightness and contrast control knobs from cabinet front. Remove six screws holding cabinet front and remove cabinet front from computer.

Remove five screws from cabinet bottom and remove cabinet bottom from computer. Lift computer chassis from cabinet top.

MAIN LOGIC BOARD REMOVAL

Position computer chassis upside down with the CRT facing you. Remove four screws holding main PC board to chassis. Disconnect three connectors from main logic board and remove board from chassis.

POWER SUPPLY BOARD REMOVAL

Remove four screws holding power supply board to chassis. With the wires still attached, carefully lift the board from chassis.

SPINDLE MOTOR REMOVAL

Remove the spindle motor belt and remove two Phillips screws holding the motor to the bottom of the disk drive. Remove four Phillips screws holding the printed circuit board to the top of the disk drive. Lift the board up and remove the spindle motor.

CP/M is a registered trademark of Digital Research, Inc.

MBASIC is a trademark of Microsoft Corporation

TROUBLESHOOTING

POWER SUPPLY

NOTE: Use an isolation transformer when troubleshooting the power supply.

Check the AC Line Fuses (F1 and F2). If Fuse F2 is open, check for shorts at the AC Line Choke (FL1). If Fuse F1 is open, check for shorts at the Bridge Rectifier Diode Block (DB1), Oscillator Transistor (Q2) and the primary and secondary windings of Transformer T2. If the AC Line Fuses are good, apply AC power and check for 120VAC at the AC input of Diode Block DB1. If 120VAC is missing, check the AC Line Chokes (T1 and FL1), Thermal Switch TS1, Thermistor R1 and On-Off Switch (SW1).

If 120VAC is present, check for 310V between the positive output of Diode Block DB1 and the emitter of Oscillator Transistor (Q1). If 310V is missing, check the Diode Block DB1. If 310V is present, check for a waveform at the base of Transistor Q2. If the waveform is missing, check the voltages and components associated with Transistors Q1, Q2 and Voltage Regulator Transistor (Q3), and check the windings on Transformer T2.

Check the 5.20V and 12.04V Sources. If the 5.20V Source is missing, check Coil L6, Electrolytics C16, C17 and C20, Diodes D7 and D8 and check the windings at pins 11 to 12 and 13 to 14 on Transformer T2. If the 12.04V Source is missing, check Coil L5, Electrolytic C15, Diode D6 and the winding at pins 15 to 16 on Transformer T2. If both the 5.20V and 12.04V Sources are missing, check the voltages and components associated with the Overvoltage Protection SCR (SCR1).

Check for -5.11V Source at the anode of Zener Diode CR1. If -5.11V Source is missing, check Zener Diode CR1 and check for possible shorts to ground. If CR1 is good and there are no shorts, check for a waveform at pin 3 of Timer IC (UE1). If the waveform is missing, check the voltages and components associated with pins 1 thru 8 of IC UE1. If the waveform is good, check Electrolytics C72 and C73 and Diodes CR2 and CR3.

CRYSTAL OSCILLATOR AND DIVIDER

Check the frequency of the crystal oscillator at pin 10 of IC UA11 with a frequency counter. The frequency should be 15.9744MHz. If the frequency is not correct, check the components associated with pins 3, 4, 10 and 11 of IC UA11 and check IC UA11 and Crystal X1 by substitution. Check the operation of the divider by checking the waveforms at pins 2 and 11 thru 14 of Counter IC (UB11).

MICROPROCESSOR CHIP (CPU) OPERATION

Verify that CPU IC (UC11) is functioning by using a logic probe to check for pulses on the Data Lines (pins 7 thru 10 and 12 thru 15 of IC UC11) and the Address Lines (pins 1 thru 5 and pins 30 thru 40 of IC UC11). If IC UC11 is not functioning, check for 5.20V at pin 11 of IC UC11. If 5.20V is missing, refer to the "Power Supply" section of this Troubleshooting guide. If 5.20V is present, check the logic probe readings on pins 6, 16, 17, 24, 25 and 26 of IC UC11 for possible problems that may prevent IC UC11 from functioning.

Check pin 26 of IC UC11 with a logic probe while turning the computer On. Pin 26 should go High after a delay of about .1 second after turning the computer On to reset IC UC11. If there is no delay, check the logic probe readings on pins 1 thru 4 of IC UB3 and check the components associated with pins 1 and 4 of IC UB3.

KEYBOARD

Monitor screen has the proper display but none of the keys function. Check the logic probe readings on pins 2, 4, 6, 8, 12, 14, 16 and 18 of IC UE12. Pulses should appear on the pins when the keys connected to the pin are pressed. See the Keyboard Chart to determine which key is connected to each pin. If pulses appear when a key is pressed, check the logic probe readings on pins 1 thru 4 of IC UE13 and 11, 12 and 13 of IC UE10. If pulses do not appear on the pins of IC UE12 when a key is pressed, check the logic probe readings on the pin of IC UE13 or IC UE14 that the key is connected to, see the Keyboard Chart. If any of the logic probe readings are not correct, check the IC involved by substitution and check the contacts of the keys involved with an ohmmeter.

If a key is shorted it will cause the monitor screen display to flash On and Off when the computer is turned On and may eventually cause the computer to lock up. To find the shorted key, check for pulses on the pins shown in the Keyboard Chart. A shorted key will produce pulses on one pin of IC UE13 or IC UE14 and one pin of IC UE12.

AUDIO ALARM

The Audio Alarm does not function. Check the Audio Alarm (X2) and check the logic probe readings on pins 8, 9 and 10 of IC UB5. Pin 10 should go High to beep the Audio Alarm. If pin 10 does not go High, check PIA IC (UC15) by substitution. If pin 10 goes High and pin 9 of IC UB5 has pulses, check IC UB5 by substitution. The following program may be used to beep the Audio Alarm continuously while troubleshooting the circuit.

```
10 PRINT CHR$(7)
20 GOTO 10
```

If the Audio Alarm beeps continuously when the computer is first turned On, check the monitor ROM IC (UD11) by substitution.

LOGIC (Continued)

PIN NO.	IC UD15	IC UD16	IC UD17	IC UD18	IC UD20	IC UD21	IC UD22	IC UD23	IC UD24	IC UD25	IC UD26	IC UD27	IC UE1	IC UE3
1	H	H	H	H	P	P	P	P	P	P	P	P	L	H
2	P	P	P	P	P	P	P	P	P	P	P	P	H	*
3	H	H	L	L	P	P	P	P	P	P	P	P	P	*
4	L	H	L	H	P	P	P	P	P	P	P	P	H	P
5	H	H	L	H	P	P	P	P	P	P	P	P	H	H
6	L	H	L	H	P	P	P	P	P	P	P	P	H	H
7	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	L	L	L	L	H	H	H	H	H	H	H	H	H	H
9	P	P	P	P	H	H	H	H	H	H	H	H		
10	P	P	P	P	P	P	P	P	P	P	P	P		
11	P	P	P	H	P	P	P	P	P	P	P	P		
12	P	P	P	H	P	P	P	P	P	P	P	P		
13	P	P	P	H	P	P	P	P	P	P	P	P		
14	P	P	P	P	P	P	P	P	P	P	P	P		
15	P	P	P	L	P	P	P	P	P	P	P	P		
16	H	H	H	H	L	L	L	L	L	L	L	L		

PIN NO.	IC UE5	IC UE6	IC UE7	IC UE8	IC UE9	IC UE10	IC UE11	IC UE12	IC UE13	IC UE14	IC UE15	IC UE16	IC UE17	IC UE18
1	P	L	L	L	L	H	P	P	P		L	L	L	L
2	P	H	H	H	H	L	P	H	P	L	P	P	P	P
3	P	H	H	H	H	H	P	P	P	P	P	P	P	P
4	P	L	L	L	L	H	P	H	P	L	P	P	P	P
5	L	H	H	H	H	H	P	P	P	P	P	P	P	H
6	P	L	H	H	H	L	P	H	L	L	P	P	P	P
7	L	L	L	L	L	L	P	P	L	L	P	P	P	L
8	H	L	H	H	H	L	P	H	L	L	P	P	L	L
9	L	H	L	L	L	P	P	P	P	P	P	P	P	P
10	H	H	H	H	L	P	P	L	P	L	P	P	P	H
11	P	L	H	H	H	P	P	P	L	P	P	P	H	P
12	P	H	L	L	L	P	P	H	L	L	P	P	P	H
13	P	L	H	H	L	P	P	P	P	*	P	P	L	P
14	H	H	H	H	L	H	P	H	H	H	P	P	P	P
15								P			L	L	L	L
16								H			H	H	H	H
17								P						
18								H						
19								P						
20								H						

NOTE: Logic probe readings taken with computer system in Power Up mode.

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No light On)

LOGIC (Continued)

PIN NO.	IC UC11	PIN NO.	IC UC11	PIN NO.	IC UC15	PIN NO.	IC UC15	PIN NO.	IC UC19	IC UC20	IC UC21	IC UC22	IC UC23	IC UC24
1	P	21	P	1	L	21	P	1	L	P	P	P	P	P
2	L	22	P	2	L	22	P	2	P	P	P	P	P	P
3	P	23	H	3	H	23	P	3	P	P	P	P	P	P
4	P	24	P	4	L	24	P	4	P	P	P	P	P	P
5	P	25	H	5	H	25	P	5	P	P	P	P	P	P
6	P	26	H	6	L	26	P	6	P	P	P	P	P	P
7	P	27	P	7	H	27	P	7	P	P	P	P	P	P
8	P	28	P	8	H	28	P	8	H	H	H	H	H	H
9	P	29	L	9	H	29	P	9	H	H	H	H	H	H
10	P	30	P	10	L	30	P	10	P	P	P	P	P	P
11	H	31	P	11	L	31	P	11	P	P	P	P	P	P
12	P	32	P	12	L	32	P	12	P	P	P	P	P	P
13	P	33	P	13	L	33	P	13	P	P	P	P	P	P
14	P	34	P	14	L	34	H	14	P	P	P	P	P	P
15	P	35	P	15	L	35	P	15	P	H	H	H	H	H
16	P	36	P	16	L	36	P	16	L	L	L	L	L	L
17	H	37	P	17	H	37	P							
18	H	38	P	18	*	38	P							
19	P	39	P	19	*	39	H							
20	P	40	P	20	H	40	P							

PIN NO.	IC UC25	IC UC26	IC UC27	IC UD1	IC UD2	IC UD3	IC UD4	IC UD6	IC UD7	IC UD8	IC UD9	IC UD10	IC UD11	IC UD14
1	P	P	P	P	P	H	L	*	H	H	H	H	P	H
2	P	P	P	P	P	P	L	L	L	L	L	P	P	P
3	P	P	P	P	P	P	L	*	L	L	L	P	P	P
4	P	P	P	P	L	L	L	L	H	H	H	H	P	P
5	P	P	P	P	*	P	H	*	L	L	L	H	P	P
6	P	P	P	P	*	L	L	L	L	L	L	H	P	P
7	P	P	P	L	L	P	L	L	L	L	L	H	P	P
8	H	H	H	P	P	L	L	H	L	L	L	L	P	L
9	H	H	H	P	P	P	L	L	H	H	H	H	P	P
10	P	P	P	P	P	H	L	H	L	L	H	H	P	P
11	P	P	P	P	P	P	L	L	L	L	L	P	P	P
12	P	P	P	P	P	P	L	H	H	H	H	H	L	P
13	P	P	P	P	L	P	L	L	L	L	H	P	P	P
14	P	P	P	H	H	P	L	H	H	H	H	P	P	P
15	H	H	H			L						P	P	P
16	L	L	L			H						H	P	H
17													P	
18													P	
19													P	
20													P	
21													P	
22													P	
23													P	
24													H	

NOTE: Logic probe readings taken with computer system in Power Up mode.

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No light On)

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	TYPE No.	MFGR. PART No.
	MAIN LOGIC BOARD	
CR1	5231B	
CR2,3	1N4001	
CR4,5	OMP	
Q1	2N3906	
Q2	2N3904	
UA4	DM74LS32N LS32	
UA5	74LS08 LS08	
UA6	DM74LS74AN LS74	
UA7	DM74LS161AN LS161	
UA8	SN74LS244N LS244	
UA9,10	DM7406N 7406	
UA11	DM74LS04N S04	
UA12	DM74LS00N LS00	
UA13	74LS393N LS393	
UA14	SN74LS166NDS 74166	
UA15	7A3007-00 Rev-A15 2716	
UA18	74LS273N LS273	
UA19	74LS244 LS244	
UA20 thru UA27	D416C 4116	
UB1	DM74LS139N LS139	
UB2	SN74LS109AN LS109	
UB3	DM74LS04N S04	
UB4	DM74LS74AN LS74	
UB5	SN74LS11N LS11	
UB6	DM74LS74AN LS74	
UB7	MB8877 1793	
UB11	DM74LS161AN LS161	
UB12	DM74LS02N LS02	
UB13	74LS08 LS08	
UB14	74LS393N LS393	
UB15	SN74LS390NDS LS390	
UB16	DM74LS157N LS157	
UB17	74LS155PC LS155	
UB18	74LS08 LS08	
UB20 thru UB27	D416C 4116	
UC1	74LS08 LS08	
UC2	DM74LS32N LS32	
UC3	DM74LS161AN LS161	
UC4	F6850P 6850	
UC7	MC6821P 6821	
UC11	D780C-1 Z80-A	
UC15	MC6821P 6821	
UC19 thru UC27	D416C 4116	
UD1	DM74LS00N LS00	
UD2	SN74LS02N LS02	
UD3	DM74LS161AN LS161	
UD4	LM3900N LM3900	
UD6	DM7406N 7406	
UD7 thru UD9	DM74LS03N LS03	
UD10	DM74LS139N LS139	
UD11	2732	
UD14	DM74LS175N LS175	
UD15 thru UD18	DM74LS161AN LS161	
UD20 thru UD27	D416C 4116	
UE1	CA555CE 555	

SEMICONDUCTORS (Select replacement for best results) (cont)

ITEM No.	TYPE No.	MFGR. PART No.
UE3	MC1458P LM1458	
UE5	DM74LS32N LS32	
UE6	SN74LS04N LS04	
UE7 thru UE9	DM7438N 7438	
UE10	DM74LS00N LS00	
UE11	DM74LS32N LS32	
UE12	DM81LS95N 81LS95	
UE13,14	SN74LS05N LS05	
UE15 thru UE18	SN74LS153N LS153	
UE19	AM2966PC LS244	
UE20	SN74LS04N LS04	
UE21	DM74LS74AN LS74	
UE22	DM74LS00N LS00	
UE23	DM7406N 7406	
	POWER SUPPLY BOARD	
D1	RGP10A	
D2	RGP10J	
D3	RGP10M	
D4	1N4001GP	
D5	1N4606	
D6 thru D8		
D9	RGP10B	
D11,12	1N4606	
D13	1N4001GP	
DB1	KBP10	
IC1	TL431CLP	
Q1	2SD467C 2SD467	
Q2		
Q3	2SB561C 2SB561	
SCR1	SCRC122F	
Z1		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
	MAIN LOGIC BOARD	
C12	22 16V 20%	
C28	1 25V	
C30	22 16V 20%	
C35	1 25V	
C61	1 25V	
C62	1 25V	
C71	15 16V	
C72	15 16V	
C73	15 16V	
C74	1 25V	
C86	.1 35V	
C87	.1 35V	
C88	.1 35V	
C89	.1 35V	
	POWER SUPPLY BOARD	
C6	100 250V 20%	
C7	100 250V 20%	
C8	220 10V	
C15	1000 25V	
C16	1000 25V	
C17	1000 25V	
C18	330 16V 20%	
C19	330 16V 20%	
C20	470 25V	
C21	2200 16V 20%	

LOGIC (Continued)

PIN NO.	IC UB7	PIN NO.	IC UB7	PIN NO.	IC UB11	IC UB12	IC UB13	IC UB14	IC UB15	IC UB16	IC UB17	IC UB18	IC UB20	IC UB21
1	*	21	H	1	H	P	P	*	P	L	P	P	P	P
2	P	22	H	2	P	P	P	*	P	P	P	P	P	P
3	P	23	H(2)	3	H	P	P	L	P	P	P	P	P	P
4	P	24	P	4	H	P	H	L	P	P	P	H	P	P
5	P	25	P	5	H	P	P	L	P	H	H	P	P	P
6	P	26	P	6	H	P	P	L	P	H	H	P	P	P
7	P	27	P	7	H	L	L	L	P	P	H	L	P	P
8	P	28	H(2)	8	L	P	P	P	L	L	L	P	H	H
9	P	29	L	9	H	P	P	P	L	P	H	H	H	H
10	P	30	P	10	H	P	P	P	L	P	H	P	P	P
11	P	31	P	11	P	P	P	P	L	H	H	P	P	P
12	P	32	H	12	P	P	P	P	H	P	P	H	P	P
13	P	33	P	13	P	P	P	P	P	H	P	P	P	P
14	P	34	H	14	P	H	H	H	P	P	P	H	P	P
15	L(1)	35	P	15	P				P	P	P		H	H
16	H(3)	36	H(6)	16	H				H	H	H		L	L
17	P	37	L	17										
18	P	38	P	18										
19	H	39	L	19										
20	L	40	H	20										

PIN NO.	IC UB22	IC UB23	IC UB24	IC UB25	IC UB26	IC UB27	IC UC1	IC UC2	IC UC3	IC UC4	PIN NO.	IC UC7	PIN NO.	IC UC7
1	P	P	P	P	P	P	P	P	H	L	1	L	21	P
2	P	P	P	P	P	P	P	P	P	L	2	L	22	P
3	P	P	P	P	P	P	P	P	P	P	3	L	23	P
4	P	P	P	P	P	P	*	P	H	P	4	L	24	P
5	P	P	P	P	P	P	*	P	L	H	5	L	25	P
6	P	P	P	P	P	P	H	P	L	H	6	L	26	P
7	P	P	P	P	P	P	L	L	P	H	7	L	27	P
8	H	H	H	H	H	H	P	P	L	P	8	L	28	P
9	H	H	H	H	H	H	P	P	P	P	9	L	29	P
10	P	P	P	P	P	P	P	P	P	P	10	L	30	P
11	P	P	P	P	P	P	P	P	P	P	11	H	31	P
12	P	P	P	P	P	P	P	P	P	H	12	L	32	P
13	P	P	P	P	P	P	P	P	P	P	13	L	33	P
14	P	P	P	P	P	P	H	H	P	P	14	L	34	H
15	H	H	H	H	H	H			P	P	15	L	35	P
16	L	L	L	L	L	L			H	P	16	L	36	P
17										P	17	L	37	*
18										P	18	*	38	H
19										P	19	L	39	L
20										P	20	H	40	L
21										P				
22										P				
23										L				
24										L				

NOTE: Logic probe readings taken with computer system in Power Up mode except IC UB7. Logic probe readings for IC UB7 taken while running the following MBASIC™ program. Stepping motor is not operating unless otherwise noted. Disk drive A and disk drive B have same logic probe reading unless otherwise indicated.

```
10 OPEN "O", #1, "B:SAMS.DAT"
15 FOR X = 1 TO 300
20 PRINT #1, "THIS IS A TEST"
25 NEXT X
30 CLOSE #1
40 GOTO 10
```

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No light On)

Logic probe readings taken with disk drive running continually.
(1) Probe indicates P when stepping motor is operating.
(2) Probe indicates L when stepping motor is operating.
(3) Probe indicates H when head is moving in, and L when head is moving out from center of diskette.
(6) Probe indicates L if diskette is write protected.

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LOGIC

PIN NO.	IC UA4	IC UA5	IC UA6	IC UA7	IC UA8	IC UA9	IC UA10	IC UA11	IC UA12	IC UA13	IC UA14	IC UA15	IC UA18	IC UA19
1	P	P	H	H	L	P	H(3)	P	P	P	L	P	H	P
2	P	P	P	P	P	P	L(4)	P	P	L	P	P	P	P
3	P	P	P	L	P	L	L(1)	P	P	P	P	P	P	P
4	H	*	H	L	H(6)	*	H(1)	P	P	P	P	P	P	P
5	H	*	P	H	P	P	P	*	P	P	P	P	P	P
6	H	H	P	P	H	P	P	L	P	P	L	P	P	P
7	L	L	L	H	P	L	L	L	L	L	P	P	P	P
8	H	P	P	L	P	H	P	P	P	L	L	P	P	P
9	H	H	P	P	P	L	P	P	P	P	H	P	P	P
10	P	P	P	P	L	L(7)	P	P	P	P	P	P	L	L
11	P	P	P	P	H	H	P	P	P	P	P	P	P	P
12	P	H	L	P	P	P	H(1)	P	P	P	P	L	P	P
13	P	P	H	P	P	P	P	P	P	P	P	P	P	P
14	H	H	H	P	H	H	H	H	H	H	P	P	P	P
15				P	P						P	P	P	P
16				H	H(6)						H	P	P	P
17					L							P	P	P
18					P							L	P	P
19					P							P	P	P
20					H							L	H	H
21												H		
22												P		
23												P		
24												H		

PIN NO.	IC UA20	IC UA21	IC UA22	IC UA23	IC UA24	IC UA25	IC UA26	IC UA27	IC UB1	IC UB2	IC UB3	IC UB4	IC UB5	IC UB6
1	P	P	P	P	P	P	P	P	P	P	H	P	H	H
2	P	P	P	P	P	P	P	P	P	P	L	H	H	H
3	P	P	P	P	P	P	P	P	P	H	L	H	*	P
4	P	P	P	P	P	P	P	P	P	P	H	H	*	H
5	P	P	P	P	P	P	P	P	P	H	P	L	*	H
6	P	P	P	P	P	P	P	P	H	L	P	H	H	L
7	P	P	P	P	P	P	P	P	H	P	L	L	L	L
8	H	H	H	H	H	H	H	H	L	L	P	H	L	P
9	H	H	H	H	H	H	H	H	P	H	P	L	P	P
10	P	P	P	P	P	P	P	P	P	L	P	H	L	H
11	P	P	P	P	P	P	P	P	P	*	P	H	L	P
12	P	P	P	P	P	P	P	P	P	*	L	L	H	P
13	P	P	P	P	P	P	P	P	P	*	P	H	H	H
14	P	P	P	P	P	P	P	P	P	*	H	H	H	H
15	H	H	H	H	H	H	H	H	P	*				
16	L	L	L	L	L	L	L	L	H	H				

NOTE: Logic probe readings for IC's UA4, UA5, UA11 thru UA15, UA18 thru UA27, UB1 thru UB6 and pins 1, 3, 5, 7, 9, 10, 11, 13, 15, 17, 19 and 20 of UA8 taken with computer system in Power Up mode. Logic probe readings for IC's UA6, UA7, UA9, UA10 and pins 2, 4, 6, 8, 12, 14, 16 and 18 of UA8 taken while running the following MBASIC™ program. Stepping motor is not operating unless otherwise noted. Disk drive A and disk drive B have same logic probe reading unless otherwise indicated.

```
10 OPEN "O", #1, "B:SAMS.DAT"
15 FOR X = 1 TO 300
20 PRINT #1, "THIS IS A TEST"
25 NEXT X
30 CLOSE #1
40 GOTO 10
```

Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No light On)

Logic probe readings taken with disk drive running continually.
(1) Probe indicates P when stepping motor is operating.
(3) Probe indicates H when head is moving in, and L when head is moving out from center of diskette.
(4) Probe indicates L when head is moving in, and H when head is moving out from center of diskette.
(6) Probe indicates L if diskette is write protected.
(7) Probe indicates H when checking disk drive A.

MBASIC is a trademark of Microsoft Corporation.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
	MAIN LOGIC BOARD	
C1	.01 25V	
C2	68 50V 5%	
C3	33 50V 5%	
C4	.1 50V	
C5	.1 50V	
C6	.1 50V	
C7	.1 50V	
C8	.1 50V	
C9	.1 50V	
C10	.1 50V	
C11	.1 50V	
C13	180 50V 10%	
C14	.01 25V	
C15	.01 25V	
C16	.01 25V	
C17	.001 50V	
C18	.01 25V	
C19	.01 25V	
C20	.1 50V	
C21	.1 50V	
C22	.1 50V	
C23	.1 50V	
C24	.1 50V	
C25	.1 50V	
C26	.1 50V	
C27	.1 50V	
C29	.01 25V	
C31	.01 25V	
C32	.01 25V	
C33	.01 25V	
C34	.01 25V	
C36	.01 25V	
C38	.01 25V	
C39	.1 50V	
C40	.1 50V	
C41	.1 50V	
C42	.1 50V	
C43	.1 50V	
C44	.1 50V	
C45	.1 50V	
C46	.1 50V	
C47	.01 25V	
C48	.01 25V	
C49	.01 25V	

ITEM No.	RATING	MFGR. PART No.
C50	.01 25V	
C51	.01 25V	
C52	.01 25V	
C53	.1 50V	
C54	.1 50V	
C55	.1 50V	
C56	.1 50V	
C57	.1 50V	
C58	.1 50V	
C59	.1 50V	
C60	.1 50V	
C63	.1 50V	
C64	.1 50V	
C65	.1 50V	
C66	.1 50V	
C67	.1 50V	
C68	.1 50V	
C69	.1 50V	
C70	.1 50V	
C75	.01 25V	
C76	.01 25V	
C77	.01 25V	
C78	.01 25V	
C79	.01 25V	
C80	.01 25V	
C81	.01 25V	
C82	.01 25V	
C83	.1 50V	
C84	.01 25V	
C85	.1 50V	
	POWER SUPPLY BOARD	
C1	.01 250VAC	
C2	.1 250VAC	
C3	.0047 400VAC	
C4	.0047 400VAC	
C5	.22 250V	
C9	470 3KV	
C10	.01 1KV	
C11	.01 250VAC	
C12	.22 100V 10%	
C13	.022 50V 10%	
C14	.22 100V 10%	
C24	.22 250V 10%	

CONTROLS (All wattages ½ watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
	MAIN LOGIC BOARD			
R43	Brightness	100K	JM6333/R1378242(1)	
R44	Contrast	400	JM6334/R1378242(1)	

(1) Number on unit.

RESISTORS (Power and Special)

ITEM No.	RATING	MFGR. PART No.
	MAIN LOGIC BOARD	
RN1	Resistor Network (1)	
RN2	Resistor Network (2)	
RN3	Resistor Network (3)	
RN4	Resistor Network (3)	
RN5	Resistor Network (4)	
RN6	Resistor Network (4)	
RN7	Resistor Network (5)	
RN8	Resistor Network (4)	
RN9	Resistor Network (4)	
RN10	Resistor Network (6)	
RN11	Resistor Network (6)	
RN12	Resistor Network (6)	
RN13	Resistor Network (7)	
RN14	Resistor Network (7)	
	POWER SUPPLY BOARD	
R1	NTC 3.9 Cold	
R23	4700 2% 1/4W Carbon Film	
R24	2700 2% 1/4W Carbon Film	
R25	22K 2% 1/4W Carbon Film	

(1) Contains nine, 10K 10%.
(2) Contains seven, 150 1/4W 5%.
(3) Contains four, 820 10%.
(4) Contains four, 330 10%.
(5) Contains seven, 3300 10%.
(6) Contains nine, 3300 10%.
(7) Contains nine, 6800 10%.

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
	POWER SUPPLY BOARD	
FL1	AC Line Choke	
L1	RF Choke	
L2	RF Choke	
L3	RF Choke	
L5	RF Choke	
L6	RF Choke	
L7	RF Choke	
L8	RF Choke	
T1	AC Line Choke	

COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	REPLACEMENT DATA		
		MFGR. PART No.	OTHER IDENTIFICATION	REMARKS
	POWER SUPPLY BOARD			
T2	Switching Power Transformer			
T3	Switching Driver Transformer			

FUSE DEVICES

ITEM NO.	DESCRIPTION	MFGR. PART NO.		NOTES
		DEVICE	HOLDER	
	POWER SUPPLY BOARD			
F1	2A @ 125V Fast Acting			
F2	1A @ 250V Slow Blow			

PARTS LIST AND DESCRIPTION (Continued)
When ordering parts, state Model, Part Number, and Description

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	MAIN LOGIC BOARD		
FB1	Ferrite Bead		
S1	Switch		Normal/Reset
X1	Crystal		15.9744MHz
X2	Alarm		Audio
	P.C. Board		Main Logic Board, Serial No. 38400 Rev.K
	POWER SUPPLY BOARD		
FB1	Ferrite Bead		
P1	Line Cord		AC
SW1	Switch		Power
TS1	Thermal Switch		Power
	P.C. Board		Power Supply, Model AA12100, Serial No. 107021460

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

OSBORNE
MODEL OCC1,A

KEYBOARD CHART

IC PINS	KEYS CONNECTED TO PIN
ROW	
UE13	
6	CAPS LOCK
8	9, 0, ↑, ←, P, O, ?, SPACE BAR
10	1, 2, 3, 4, 5, 6, 7, 8
12	Q, W, E, R, T, Y, U, I
UE14	
4	-, =, /, →, L, ;, ↓
6	A, S, D, F, G, H, J, K
8	Z, X, C, V, B, N, M, ,
10	ESC, TAB, CTRL, SHIFT, [, ", RETURN
COLUMN	
UE12	
2	8, 9, =, [, I, K, ?
4	ESC, 1, ↑, Q, →, A, Z
6	7, U, O, ", J, L, M
8	2, TAB, W, ←, S, ↓, X
12	6, Y, P, /, H, RETURN, N
14	3, 0, -, E, CTRL, D, C
16	5, T, G, ;, SHIFT, B, .
18	4, R, CAPS LOCK, F, V, /, SPACE BAR