

C1P / SUPERBOARD II

Expander Kit Manual

© Ohio Scientific Inc.

Aug 1980

Warranty Information

Name _____

Street _____

City _____ State _____ Zip _____

Phone (.) _____

Date of purchase _____

Model No. _____ Serial No. _____

(See nameplate on back)

Please complete the following additional information so that we may be better able to meet your requirements in the future.

Age _____

Peripherals purchased

Education

☐ Terminal

☐ High School

☐ Printer

☐ College ☐ Graduate

☐ Other _____

Occupation _____

Use of computer ☐ home ☐ business ☐ school

Where you learned of Ohio Scientific

☐ Friend

☐ Dealer

☐ Magazine

☐ Other

☐ Trade Show

Software Purchased ☐ Yes ☐ No

Plans to expand system ☐ Yes ☐ No

Type of software _____

Additional software desired but not available

Was dealer helpful? ☐ Yes ☐ No

Does he carry full line of accessories?

☐ Yes ☐ No

Please mail this completed form upon receipt of your computer to:

OHIO SCIENTIFIC

1333 SOUTH CHILlicoTHE ROAD
AURORA, OH 44202

Attn: Warranty Information

8/80

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Place
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AURORA, OH 44202

Attn: Warranty Information

LIMITED WARRANTY

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If there are any questions about this warranty, or if a complaint has not been answered by the dealer to your satisfaction, please contact:

OHIO SCIENTIFIC
1333 SOUTH CHILLICOTHE ROAD
AURORA, OH 44202

For your records:

Model Number M/F DISK DR./610 EXP. BD.

Serial Number 110935 / 251558

Date Purchased _____

Dealer _____



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CLP/SUPERBOARD II EXPANDER KIT

Expander kit parts list:

- (1) 610 memory/interface board
- (1) mini-floppy disk drive
- (1) 34 pin mini-floppy disk drive interface cable
- (1) 2-wire power connector harness for 610 board
- (1) 4-wire power connector harness for mini-floppy
- (1) 40 pin ribbon cable for 600-610 interconnect
- (2) 8T28 integrated circuits
- (1) PICO-DOS system diskette
- (1) PICO-DOS blank diskette
- (1) Challenger 1P Mini-Disk User's Manual
- (1) Model 610 schematic
- (1) Hardware mounting kit with:
 - (3) 6-32 x 2" screws
 - (4) 6-32 x 1 $\frac{1}{4}$ " screws
 - (4) 6-32 nuts
 - (8) nylon washers
 - (4) 3/4" tubular spacers
 - (4) 1/2" tubular spacers

The hardware mounting kit's screws and spacers are used in different combinations for Superboard II's and CLP's. Be sure to save unused parts in case you modify your system configuration at a later date.

In addition to the Expander kit's included parts, the following items are also required:

(1) additional 5 volt @ 3 Amp power supply for the 610 memory/ interface board

(1) 12 volt @ 1 Amp power supply for the mini-floppy disk drive

It should also be noted at this time that the mini-floppy drive also requires a 5 volt supply. Depending on the desired physical configuration of your final system, the required 5 volts may either be supplied by the Superboard II/ClP power supply or tapped (via a regulator from the 12 volt supply).

Refer to Appendix A for recommended system supply configuration.

A small fan (Rotron Sprite, etc.) should be installed in the ClP case if the 610 memory/interface board is to be added to that system.

SUPERBOARD II and ClP EXPANSION

() Step 1 - Superboard II or ClP Configuration

Make sure your Superboard II or ClP is operating properly and has a full 8K of RAM, Random Access Memory. This may be verified by a BASIC cold start and responding with a carriage return to MEMORY SIZE? and TERMINAL WIDTH? The system must respond with 7423 BYTES FREE.

() Step 2 - Tools

Make sure you have all the tools you need for the job! The minimum requirements are a screwdriver with a 1/4" blade, a soldering iron, solder and additional wire for power supply interconnection.

() Step 3 - Power Supply Connection Considerations

Referring to Appendix A, Illustration I, II and III, study the connections of the power connector harnesses.

Refer to Appendix A, Illustration II.

The wire from the "pointed" side of the 610 power connector harness connector shell is connected to the negative terminal of the 5 volt supply to be used with the 610 memory/interface board.

This negative terminal is referred to as "COMMON". This means that this is a common power supply reference for the entire system. (See Appendix A, Illustration I.)

The wire from the "flat" side of the 610 power connector harness connector shell is connected to the positive terminal of the 5 volt supply to be used with the 610 memory interface board.

The four-wire harness for the mini-floppy disk drive power connection is described in Appendix A, Illustration III. The upper most wire (shell key upper left, viewed from front) connects to the positive terminal of the 12-volt supply intended for use with the mini-floppy disk interface. The second wire down connects to the negative terminal of the 12-volt supply.

The third wire down and the bottom wire (same reference as above) is connected to a 5-volt supply. It is recommended that these wires be connected to the Superboard/600 board 5-volt supply as in Appendix A, Illustration I.

Step 4 through 25 are for Superboard II expansion only. If you are expanding a ClP, skip to Step 26.

SUPERBOARD II EXPANSION

() Step 4 - Power Supply Connection

Disconnect power supply from Superboard II and disconnect power supply from A.C. (i.e. unplug it!)

() Step 5 - Power Supply Connection (Cont'd)

Double check that all power supplies are disconnected from your A.C. house current!

() Step 6 - Power Supply Connection (Cont'd)

Verify that the Superboard II power harness is disconnected from the Superboard II. Verify that the 610 connector harness is disconnected from the 610 board. Verify that the mini-floppy connector harness is disconnected from the mini-floppy. Disconnect all Superboard II interfaces (TV, cassette).

() Step 7 - Power Supply Connection (Cont'd)

Connect the negative terminal of your Superboard II power supply to the negative terminal of the supply for your 610 board. This is the supply COMMON. Refer to Appendix A, Illustration I.

() Step 8 - Power Supply Connection (Cont'd)

Connect the +5 volt wire at the "flat" side of the 610 power harness connector shell to the positive terminal of the 5-volt supply for the 610 board.

() Step 9 - Power Supply Connection (Cont'd)

Connect the wire from "pointed" portion of the 610 board's connector shall to the COMMON line of your Superboard II and 610 board. Refer to Appendix A, Illustration 1.

() Step 10 - Power Supply Connection (Cont'd)

Double check and verify all connections made in Steps 7 through 9.

() Step 11 - Power Supply Connection (Cont'd)

Using a voltmeter (if you have one) check all supply voltages at the connector shells (refer to Appendix A, Illustrations I, II and III).

() Step 12 - Preparation of Superboard II

Prior to mounting the 610 memory/interface board, the Superboard II must have some of its rubber "feet" removed, 8T28 buffers installed and 40 pin ribbon cable attached.

Note: as mentioned in Step 1, the Superboard II must have a full 8K of RAM memory installed.

() Step 13 - Preparation of Superboard II (Cont'd)

Install the two 8T28 integrated circuits in the empty sockets immediately to the right of the 6502. The sockets are designated as U6 and U7. The orientation of the 8T28's should be such that pin one of each 8T28 is toward the Superboard II's keyboard. Refer to Appendix B, Illustration I and II.

() Step 14 - Preparation of Superboard II (Cont'd)

Plug one end of the 40 pin ribbon cable into the open 40 pin socket immediately above and to the right of the Superboard II keyboard. The socket is designated as J1 on the Superboard II.

The cable should "run" off the edge of the board, as opposed to "running" across the board. Refer to Appendix B, Illustration II.

() Step 15 - Preparation of Superboard II (Cont'd)

Remove the two rubber "feet" immediately behind the keyboard and the single rubber "foot" at the right hand rear corner of the Superboard. The rubber foot at the left hand rear corner (near the cassette and TV connector) need not be removed. Note: these three removed feet will be re-used but not the hardware.

() Step 16 - Preparation of 610 Memory/Interface Board

The only preparation required for the 610 board is the attachment of the mini-floppy disk drive's cable. This attaches to the 24 pin (two 12 pin Molex) connector at the rear of the 610 board. This connector is designated as J3.

The orientation of the interface cable is such that the cable "runs" away from the 610 board as opposed to running across. Refer to Appendix B, Illustration III.

() Step 17 - Superboard II and 610 Interconnection

The actual interconnection of the 610 memory/interface board to your Superboard II involves only two steps - securing the 610 to the Superboard II with the included hardware and connecting the 40 pin ribbon cable to the 610. Note: the 40 pin ribbon cable was attached to the Superboard II in Step 14.

() Step 18 - Superboard II and 610 Interconnection (Cont'd)

Insert the three 6-32 x 2" screws through the three rubber feet removed in Step 15. The three screw-feet assemblies should then be inserted through the Superboard II at the same locations where the feet were removed from the Superboard in Step 15. Allow Superboard II to rest on your work-space. Slide a 3/4" tubular spacer over each screw and allow it to rest on the Superboard II. Slide a 1/2" tubular spacer over each screw. Check the assembly thus far against Appendix B, Illustrations IV and V.

() Step 19 - Superboard II and 610 Interconnection (Cont'd)

Install 610 memory-interface board onto the screw-spacer assembly protruding from the Superboard II. The integrated circuits should be "up" and the mini-floppy disk interface cable extending from the rear of the assembly (over the Superboard's cassette and TV interface area). Install the remaining hardware as in Appendix B, Illustrations IV and V.

() Step 20 - Superboard II and 610 Interconnection (Cont'd)

Secure all screw-nut connections. Plug the 40 pin cable into the 40 pin socket on the 610 board designated J1. Refer to Appendix B, Illustration V.

() Step 21 - Superboard II and 610 Interconnection (Cont'd)

Recheck work in Step 13 through Step 20.

() Step 22 - Initial Powerup

Attach power connector shells on Superboard II and 610 memory interface board. DO NOT attach mini-floppy drive to power or connect mini-floppy interface cable to drive.

() Step 23 - Initial Powerup (Cont'd)

Reconnect TV monitor to Superboard II and power up and reset per your normal procedure. If your Superboard II does not "come up" - DISCONNECT THE POWER IMMEDIATELY! and recheck all work from Step 1 on.

() Step 24 - Initial Powerup (Cont'd)

Assuming all is well, your Superboard II should behave as it always has - except you now have at least 8K more memory!

() Step 25 - SKIP TO STEP 51 for instructions on mini-floppy connection.

CLP EXPANSION

() Step 26 - CLP Disassembly

Turn the CLP off, unplug all interface connections, and unplug computer from wall prior to any disassembly.

() Step 27 - CLP Disassembly - (Cont'd)

It is recommended that before you start disassembling (or reassembling) your CLP that you cover your work area with a non-abrasive material (a towel, foam rubber, etc.) to prevent your case from being scratched or marred.

() Step 28 - CLP Disassembly - (Cont'd)

Turn the CLP case "upside-down", such that the rubber feet are up. Remove the six screws (three front, three rear) that hold the two sections of the CLP case together. Refer to Appendix C, Illustration I.

() Step 29 - CLP Disassembly - (Cont'd)

After removing the bottom of the CLP case, remove the five screws securing the 600 board to the top of the CLP case. These five screws are clustered around the keyboard area of the 600. SAVE ALL HARDWARE; IT WILL BE USED TO REMOUNT THE BOARDS! Refer to Appendix C, Illustration II.

() Step 30 - CLP Disassembly - (Cont'd)

Disconnect the power supply connector shell and unplug the TV and cassette interconnection. Note the orientation for reinstallation. Carefully lift out the 600 board. Refer to Appendix C, Illustration II.

() Step 31 - ClP Disassembly - (Cont'd)

Set aside the 600 board and lower part of the ClP case. The next several steps are concerned only with the ClP cases' top.

() Step 32 - ClP Power Supply Connection

In this section it is assumed that you have a 5-volt power supply of similar size (dimension) to the supply already in the ClP case.

() Step 33 - ClP Power Supply Connection - (Cont'd)

Remove the four 'dummy' screws and nuts next to the existing power supply. SAVE THIS HARDWARE FOR NEW POWER SUPPLY!

() Step 34 - ClP Power Supply Connection - (Cont'd)

Mount the new power supply next to the existing 5-volt supply using the hardware left over from Step 33.

() Step 35 - ClP Power Supply Connection - (Cont'd)

Wire the AC power from the existing power supply to the new 5-volt supply.

WARNING: BE SURE ClP CASE IS UNPLUGGED!

() Step 36 - ClP Power Supply Connection - (Cont'd)

Connect the COMMON together from both supplies by wiring the NEGATIVE (-) terminals together.

() Step 37 - ClP Power Supply Connection - (Cont'd)

Connect the wire from the "pointed" side of the 610 board's connector to the power supply COMMON.

Connect the wire from the "flat" side of the same connector shell to the POSITIVE (+) terminal of the new power supply.

() Step 38 - ClP Power Supply Connection - (Cont'd)

Double-check and verify all connections made in Steps 32 through Step 37.

() Step 39 - ClP Power Supply Connection - (Cont'd)

Using a voltmeter (if you have one) verify the voltages at the connector shells of the power supplies.

() Step 40 - Mounting 610 Board to 600 Board

Mounting the 610 memory board to the 600 board involves the simple physical attachment of the boards and wiring them together via the included 40 pin ribbon cable.

() Step 41 - Mounting 610 Board to 600 Board - (Cont'd)

Referring to Appendix B, Illustration I and II, install the two 8T28 integrated circuits.

Note: as mentioned in Step 1, the 600 board must have 8K of RAM installed.

() Step 42 - Mounting 610 Board to 600 Board - (Cont'd)

Install the 40 pin ribbon cable on the 610 memory/interface board at 40 pin socket designated J1. Refer to Appendix B, Illustration I, II and III.

() Step 43 - Mounting 610 Board to 600 Board - (Cont'd)

Mount the 610 board below the 600 board using the four 6-32 x 1 $\frac{1}{4}$ " screws, eight nylon washers, four 3/4" tubular spaces and four 6-32 nuts.

The orientation of the 600 and 610 boards should be such that the integrated circuits on each board are "up" and the "notched" corners of the boards overlay each other. Refer to Appendix C, Illustrations IV and V.

() Step 44 - Mounting 610 Board to 600 Board - (Cont'd)

Secure all screw-nut connections and attach 40 pin ribbon cable (from 610 board) to the 40 pin socket on the 600 board.

() Step 45 - 600/610 Case Installation

Using the hardware saved in Step 29, remount the 600/610 board set into the ClP case. The board set will mount identically to the 600 board only mount. Refer to Appendix C, Illustration II.

() Step 46 - 600/610 Case Installation - (Cont'd)

Attach the 34 pin mini-floppy disk drive interface cable to the 610 memory/interface board. This connects to the 24 (two 12 pin Molex) connector at the rear of the 610 board. Attach the video and cassette interface cable removed in Step 30. The orientation of the interface cable is such that it "runs" away from the 610 board, toward the rear of the ClP case. Refer to Appendix B. Illustration III.

DO NOT attach the cable to the mini-floppy disk drive at this time.

() Step 55 - Mini-Floppy Power Connection - (Cont'd)

The recommended method for supplying 5 volts to the mini-floppy is to "tap" it from the Superboard II/600 board's power supply. Refer to Appendix A, Illustration I.

() Step 56 - Mini-Floppy Power Connection - (Cont'd)

Wire the 5 volt COMMON line into the COMMON line of the rest of the system. Refer to Appendix A, Illustrations I and III.

() Step 57 - Mini-Floppy Power Connection - (Cont'd)

Wire the +5 volt line to the 5 volt power supply used for the Superboard II/600 board. Refer to Appendix A, Illustrations I and III.

Note: use of the 600 board supply will require partial disassembly of the ClP case. See Steps 26 through 39 for reference.

() Step 58 - Mini-Floppy Power Connection - (Cont'd)

Using a voltmeter (if you have one), check the supply voltages at the connector shell. Refer to Appendix A, Illustrations I, II and III.

() Step 59 - Mini-Floppy Interface Connection

Referring to Appendix D, Illustration I, attach 34 pin mini-floppy interface cable to the mini-floppy disk drive. Be careful to orient the cable as illustrated - "up" from the printed circuit board such that the black dot on the edge of the connector is toward the "outside" of the drive.

() Step 60 - Initial Mini-Floppy Powerup Procedure

With no power applied, connect the 4-wire harness to the underside of the mini-floppy's printed circuit board. The mating connector shell is at the rear of the board, on the corner opposite the interface connector.

() Step 61 - Initial Mini-Floppy Powerup Procedure - (Cont'd)

Apply power to the Superboard II (or ClP) and 610 memory/interface board. Reset the computer.

Apply power to the mini-floppy disk drive. If the motor doesn't turn and/or the LED on the front of the drive doesn't light, DISCONNECT THE POWER IMMEDIATELY! Double-check all the steps from Step 51 on.

() Step 62

If all is well, you are now ready to start using your computer and mini-floppy together.

Appendix A

APPENDIX A

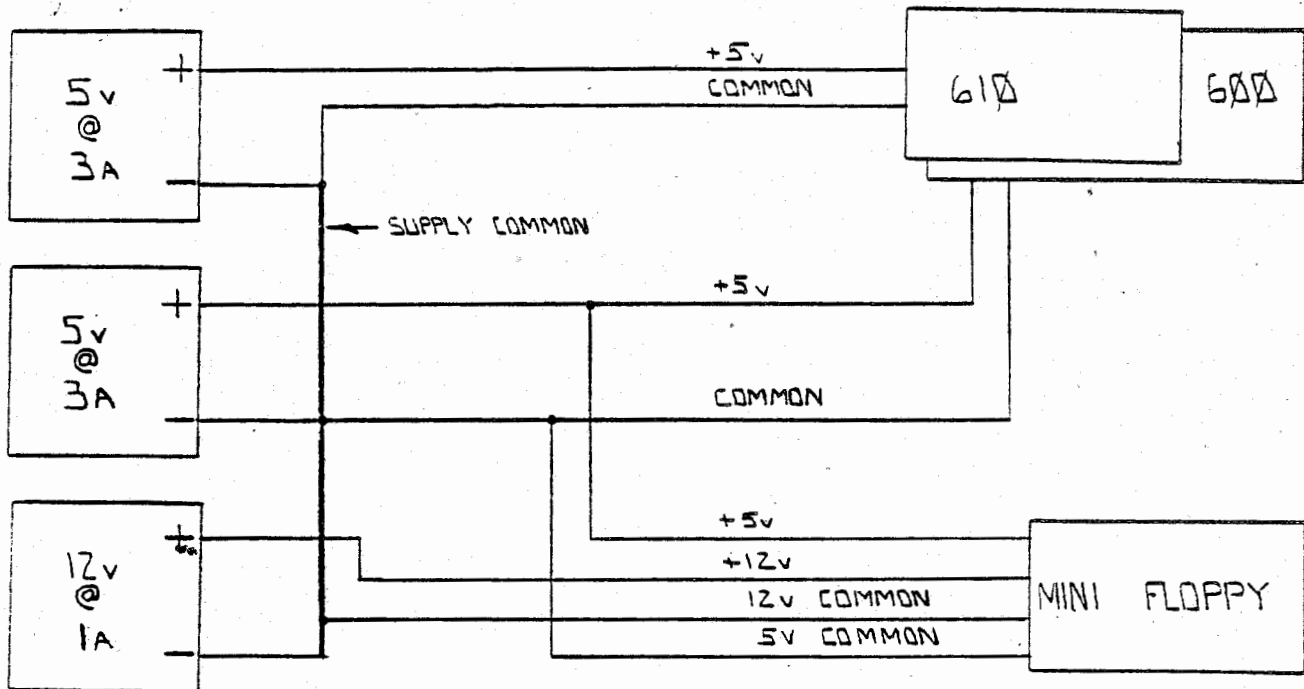


ILLUSTRATION I
SYSTEM POWER REQUIREMENTS

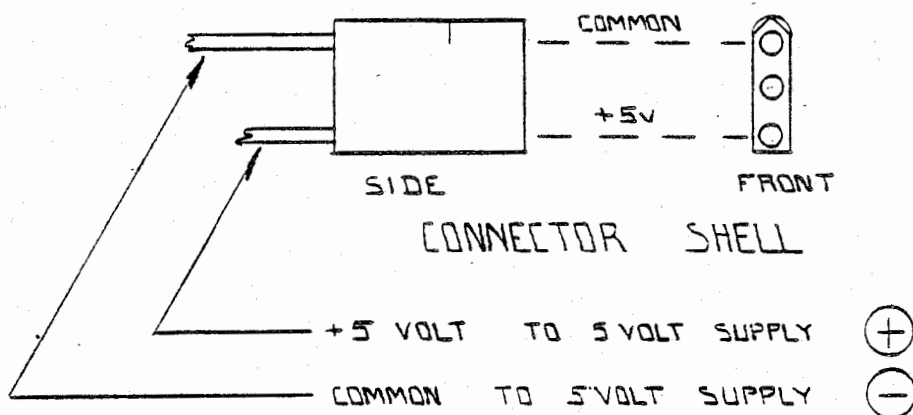


ILLUSTRATION II
610 POWER CONNECTOR HARNESS

APPENDIX A

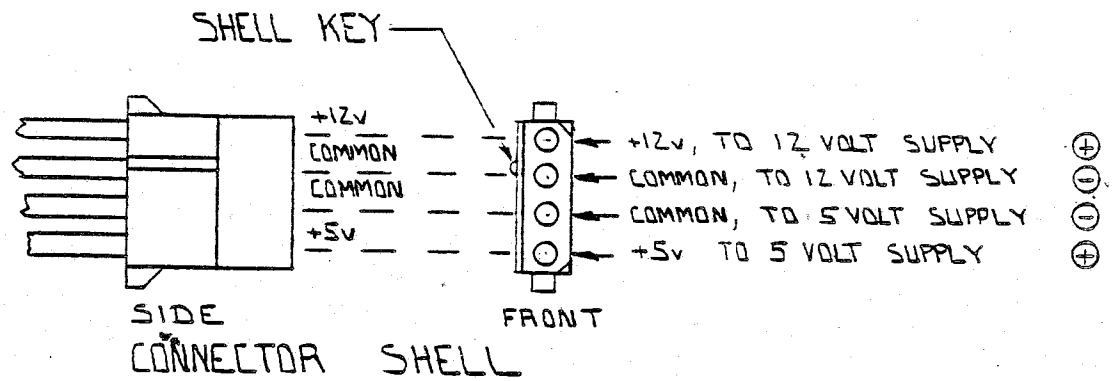
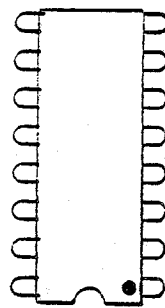


ILLUSTRATION III
MINI-FLOPPY POWER CONNECTOR HARNESS

Appendix B

APPENDIX B



PIN 1 IS AT END THAT IS
EITHER NOTCHED, DOTTED
OR BOTH.

PIN 1 TOP VIEW

ILLUSTRATION I
BT28 ORIENTATION

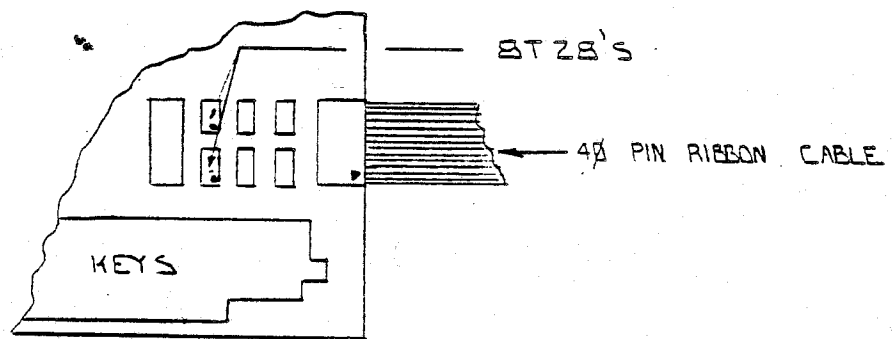


ILLUSTRATION II
BT28 AND 40 PIN RIBBON CABLE LOCATION

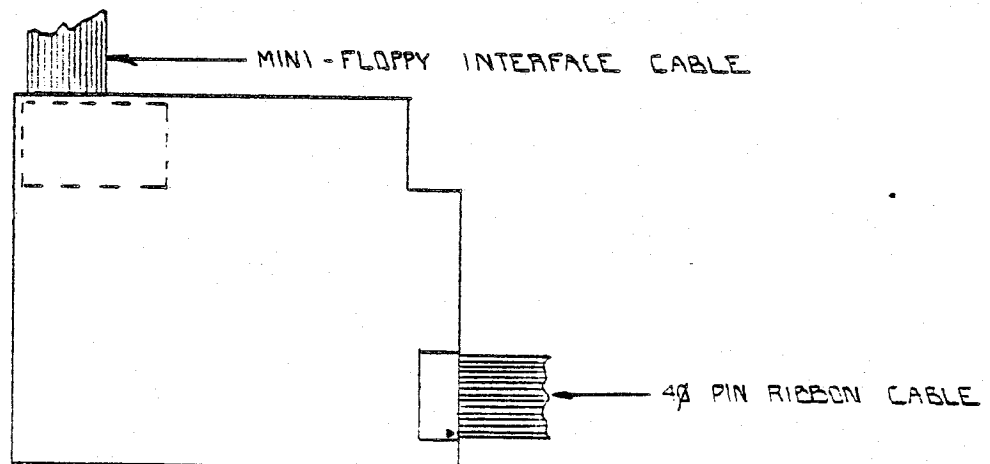


ILLUSTRATION III
MINI-FLOPPY INTERFACE CABLE ORIENTATION
640 MEMORY / INTERFACE
TOP VIEW

APPENDIX B

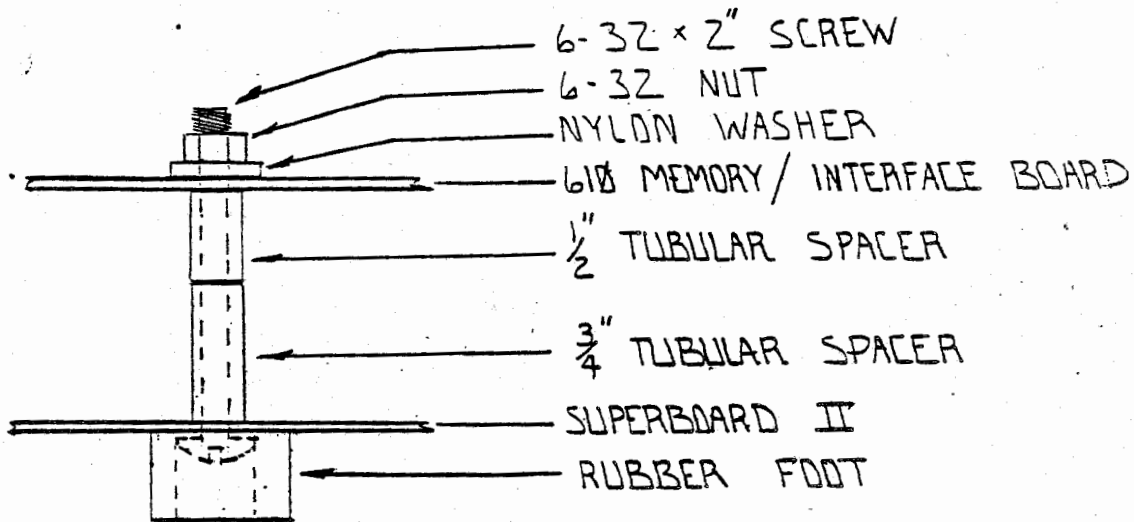


ILLUSTRATION IV
SUPERBOARD MOUNTING SCREW DETAIL

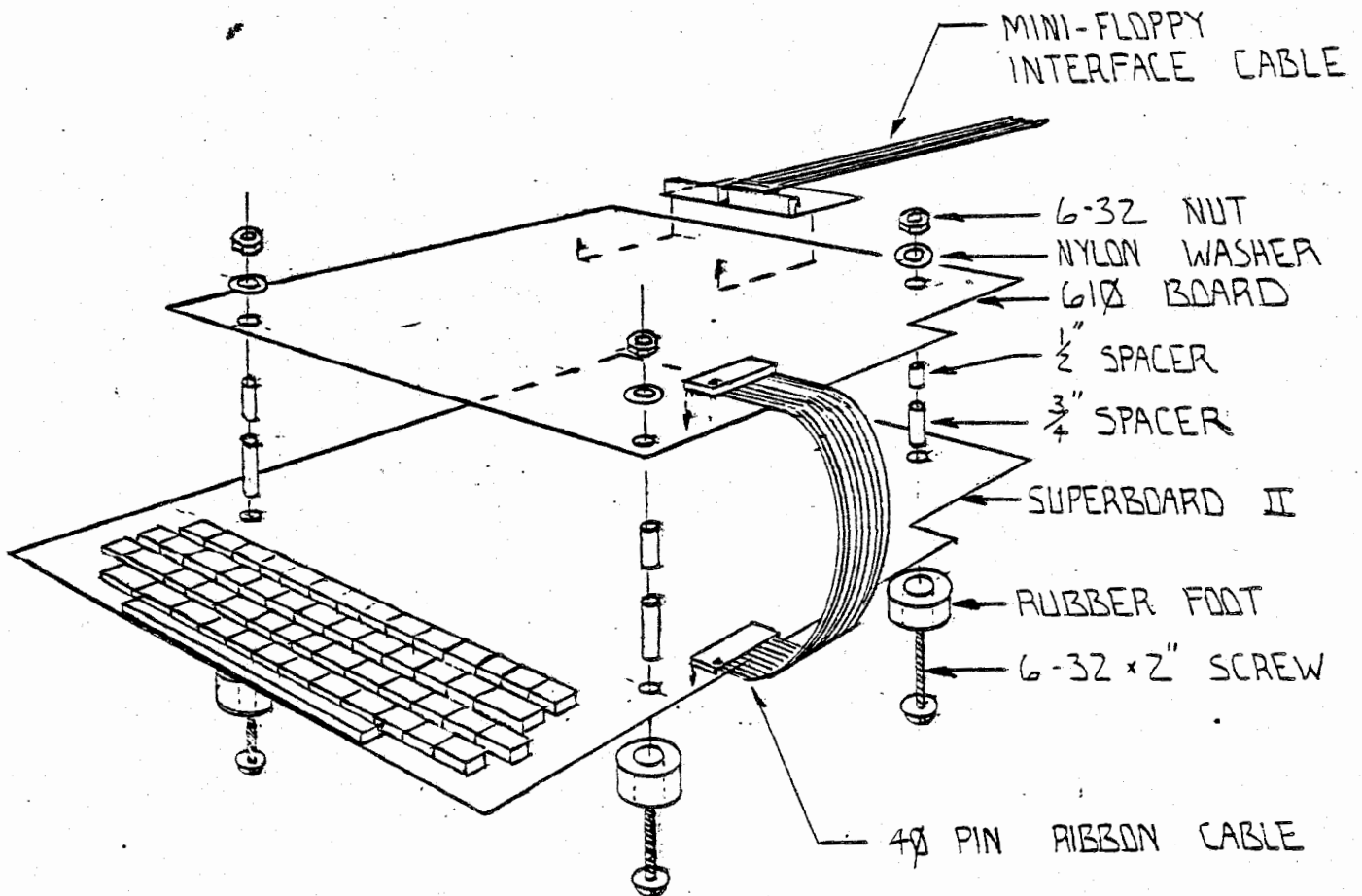


ILLUSTRATION V
SUPERBOARD II - 610 MOUNTING EXPLOSION

Appendix C

APPENDIX C

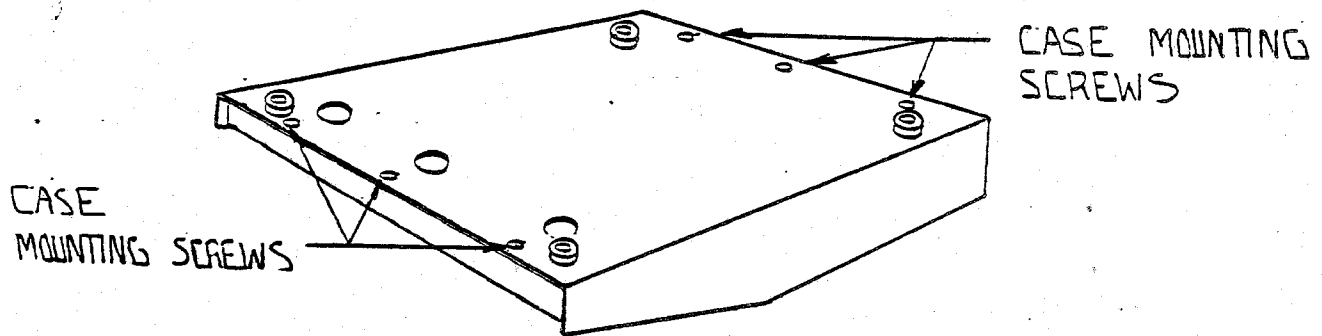


ILLUSTRATION I
CIP CASE, SCREW POSITIONS

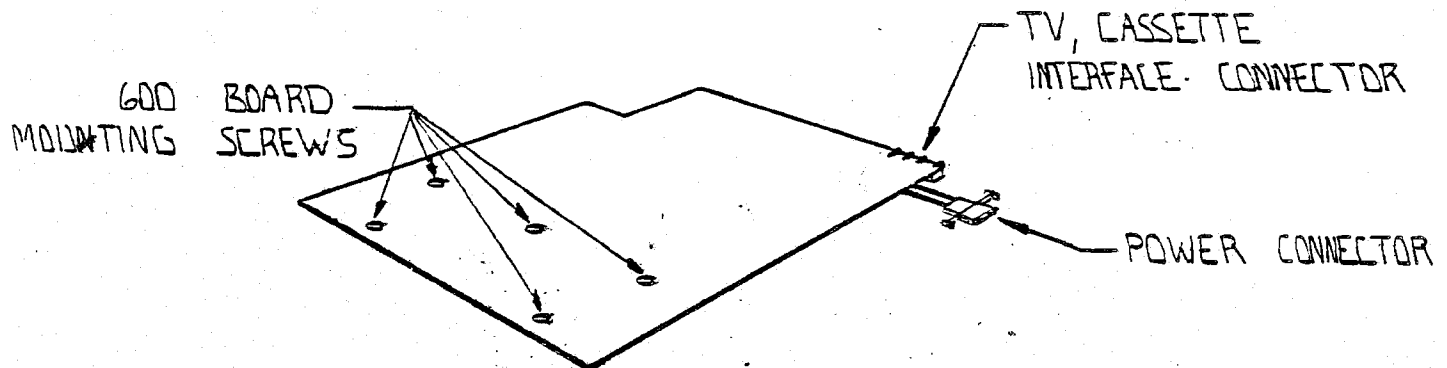


ILLUSTRATION II
600 BOARD BOTTOM VIEW
600 BOARD MOUNTING AND CONNECTOR LOCATIONS

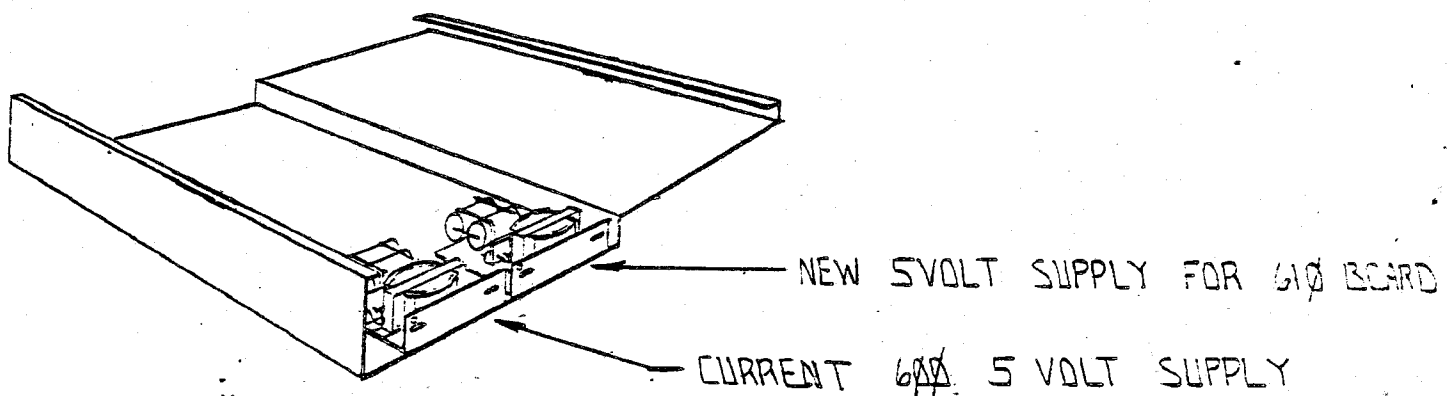


ILLUSTRATION III
CIP COVER, SIDE VIEW
SECOND POWER SUPPLY MOUNTING

APPENDIX C

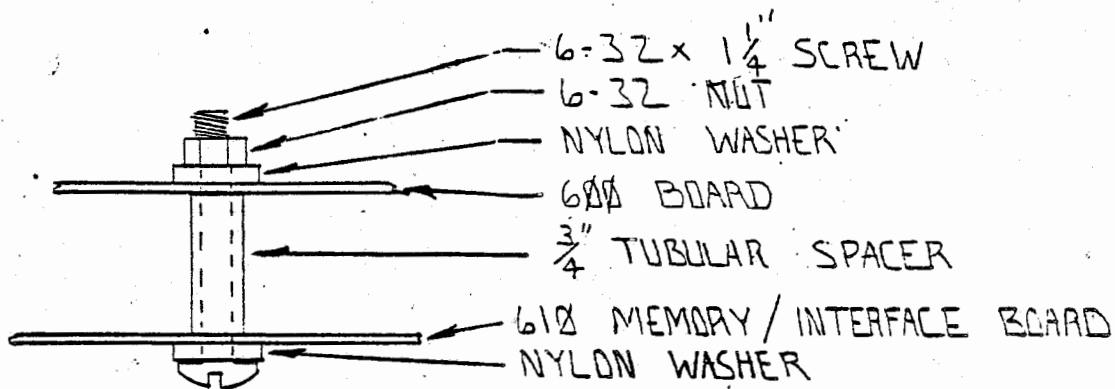


ILLUSTRATION IV
610/600 MOUNTING SCREW DETAIL

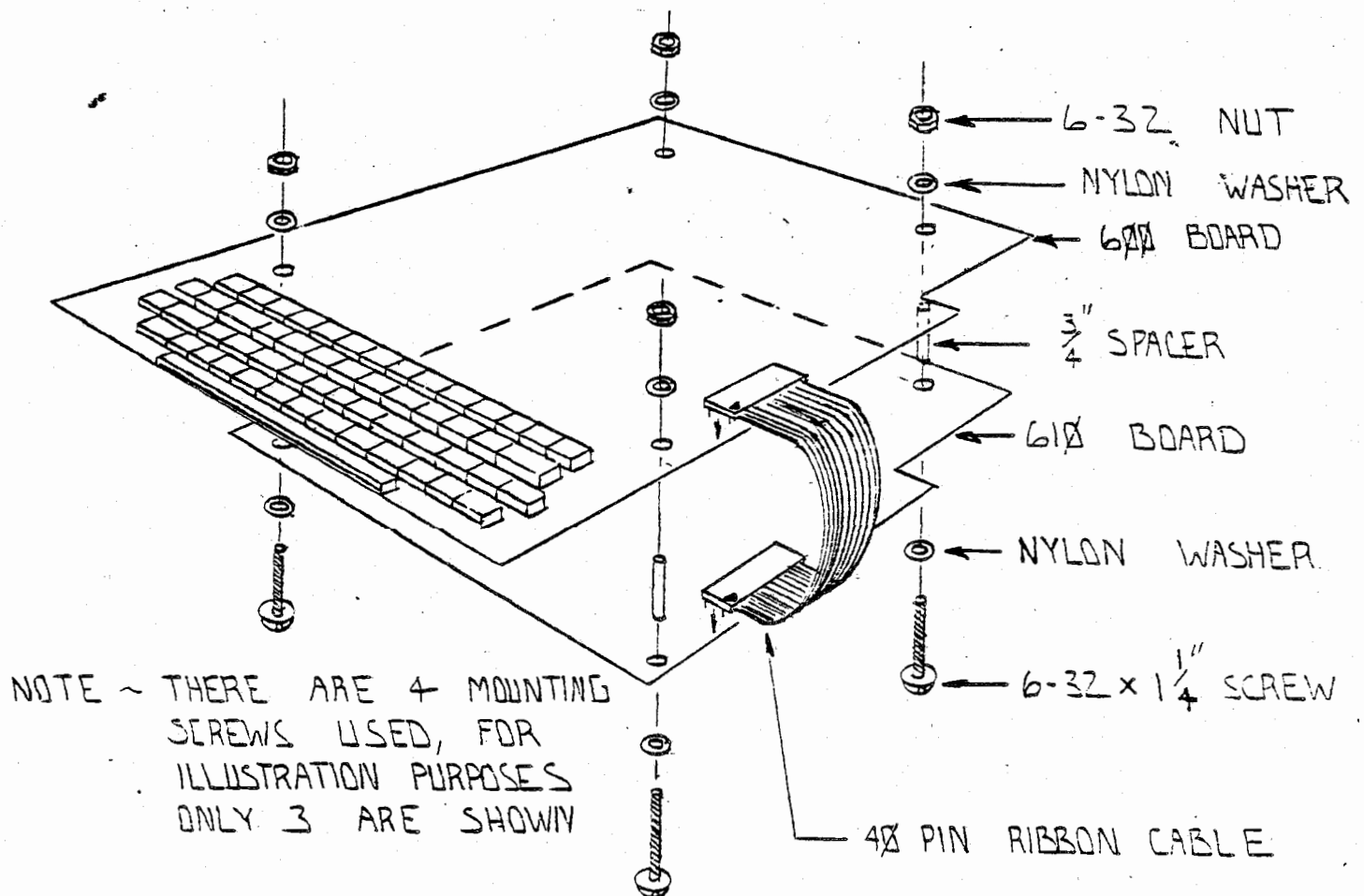


ILLUSTRATION V
610/600 MOUNTING EXPLOSION

Appendix D

APPENDIX D

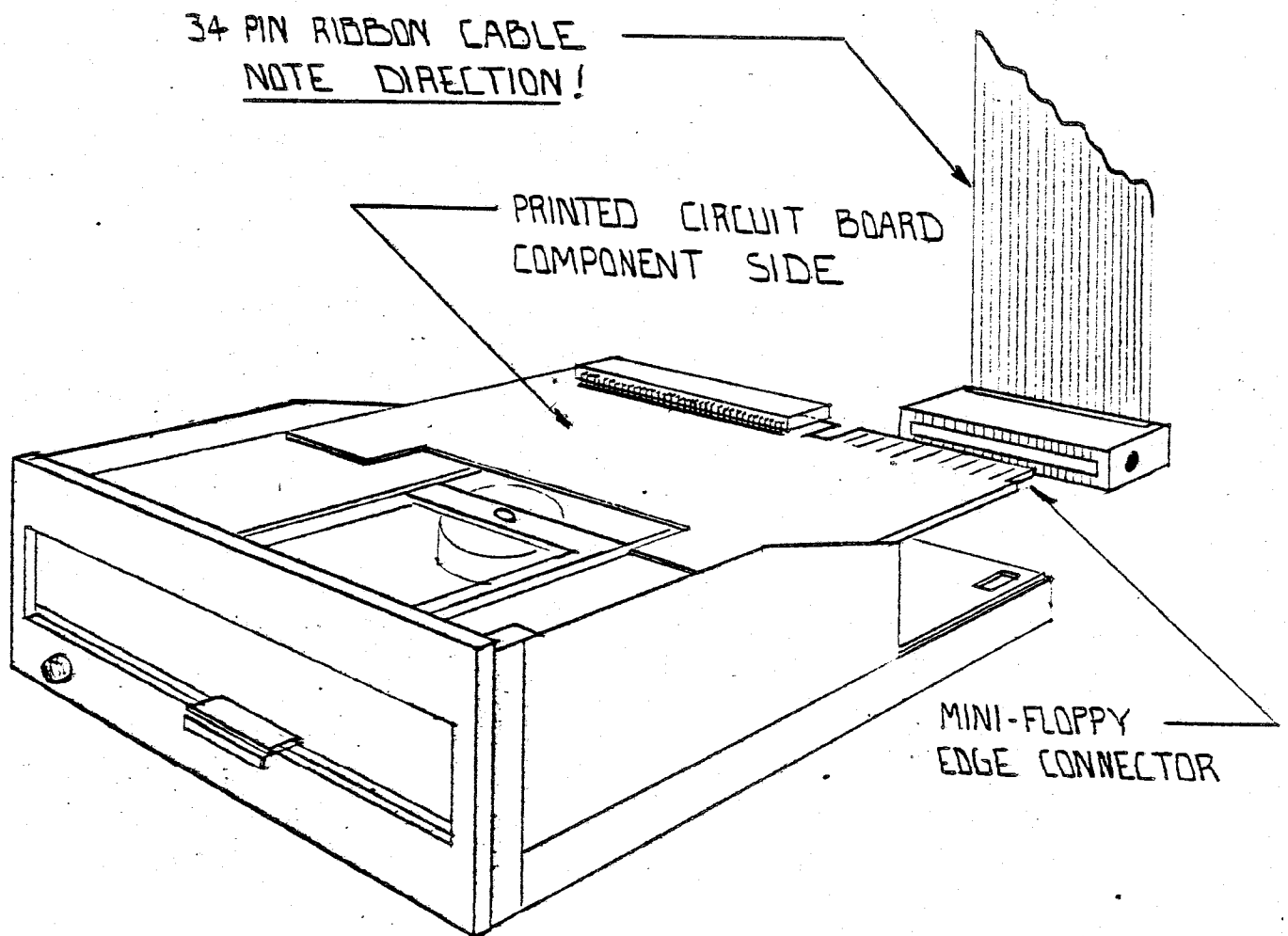
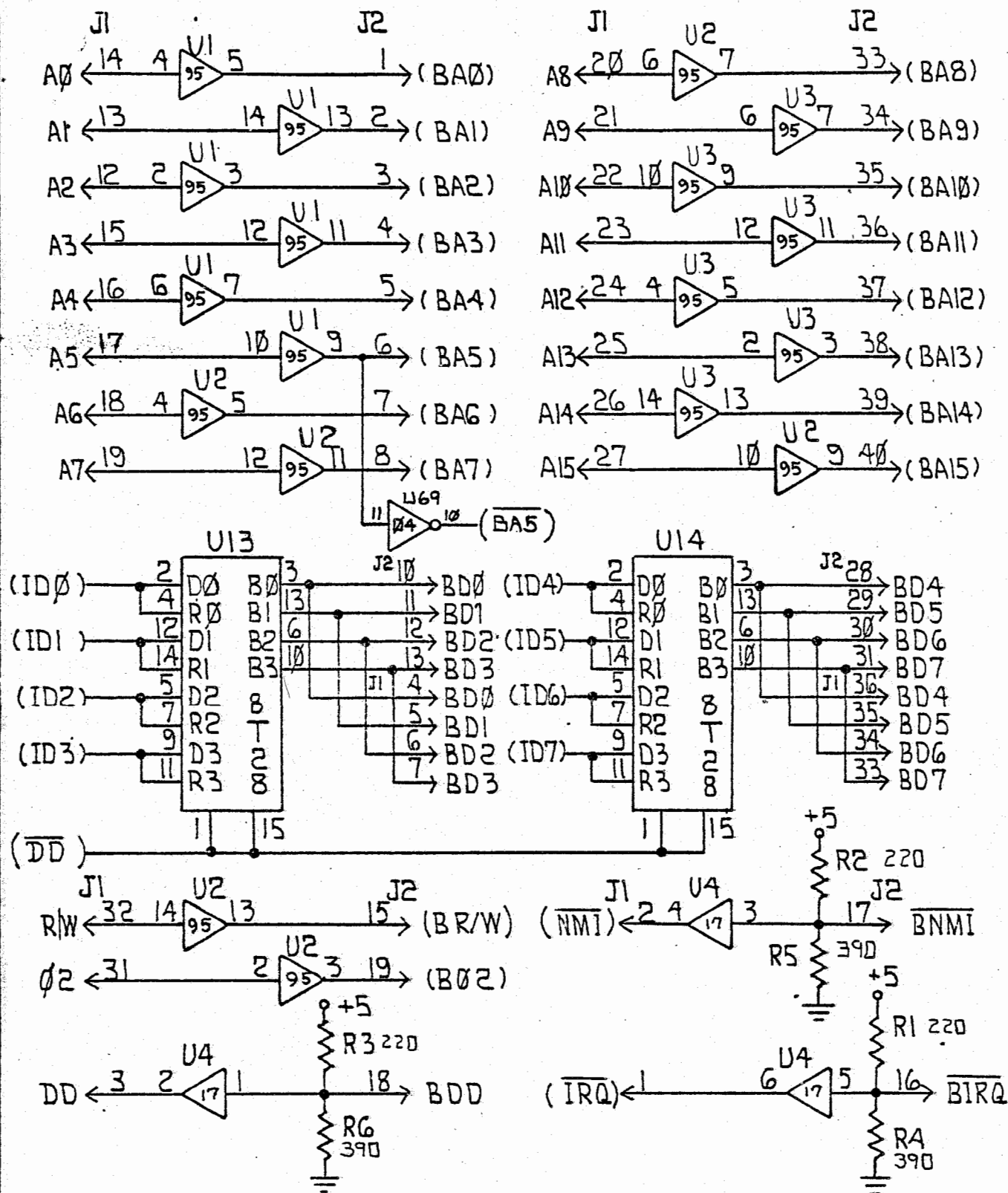


ILLUSTRATION I
MINI-FLOPPY INTERFACE RIBBON CABLE CONNECTION

MODEL 610 SCHEMATIC

B	20 SEP 78
REV	DATE



OHIO SCIENTIFIC

product name/number

610

date

20 SEP 1978

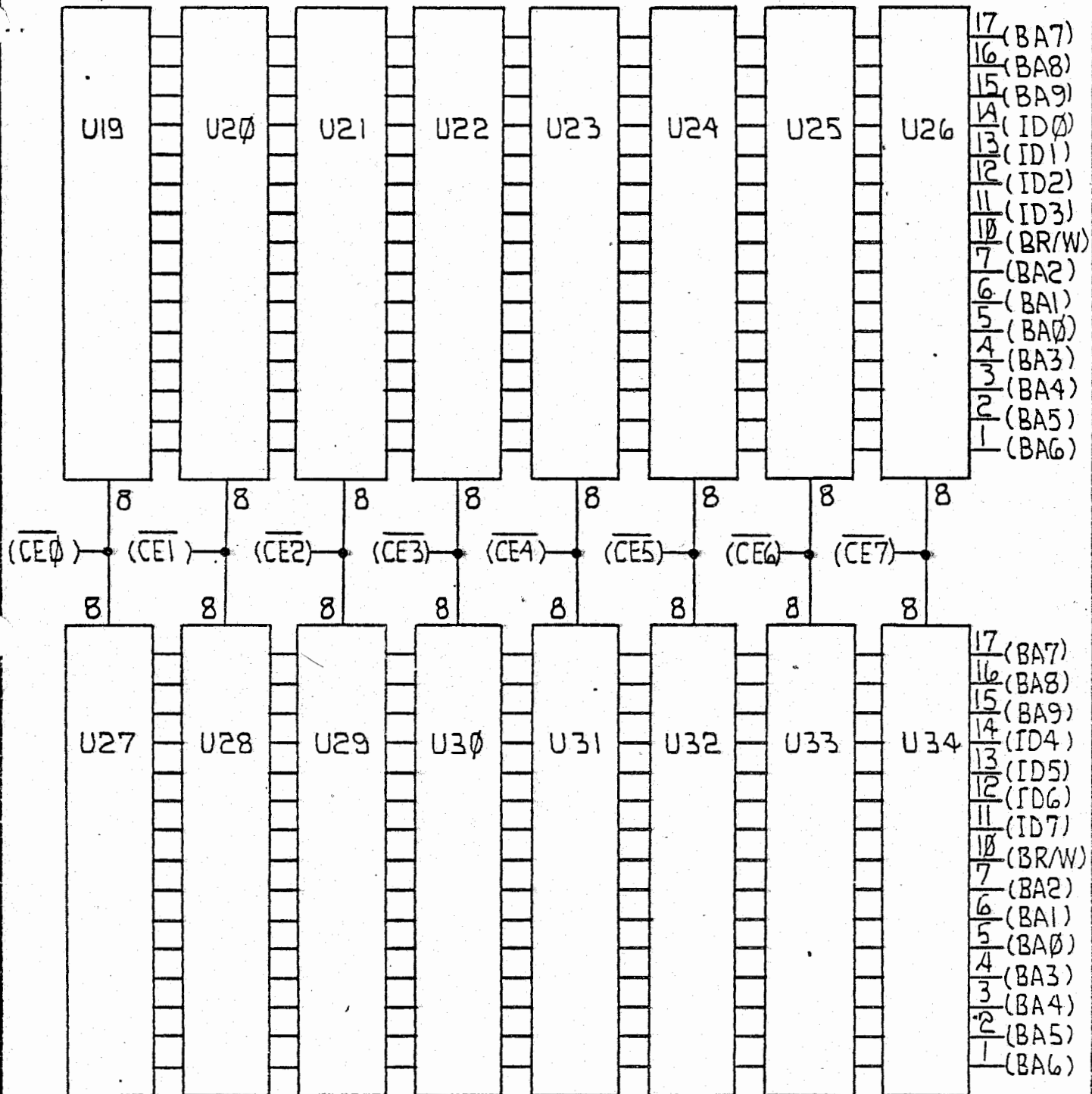
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2114 RAM TYP.

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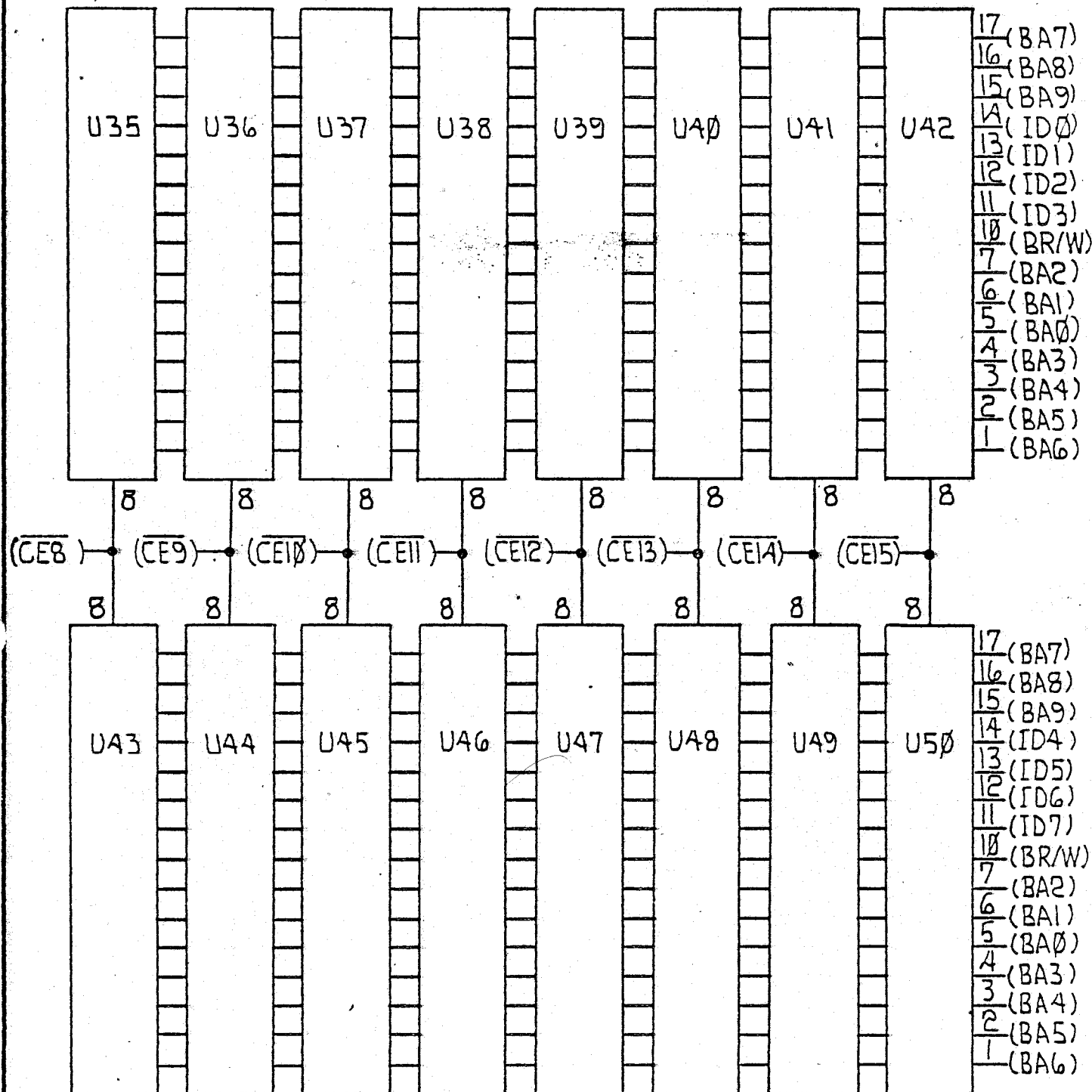
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2114 RAM TYP.

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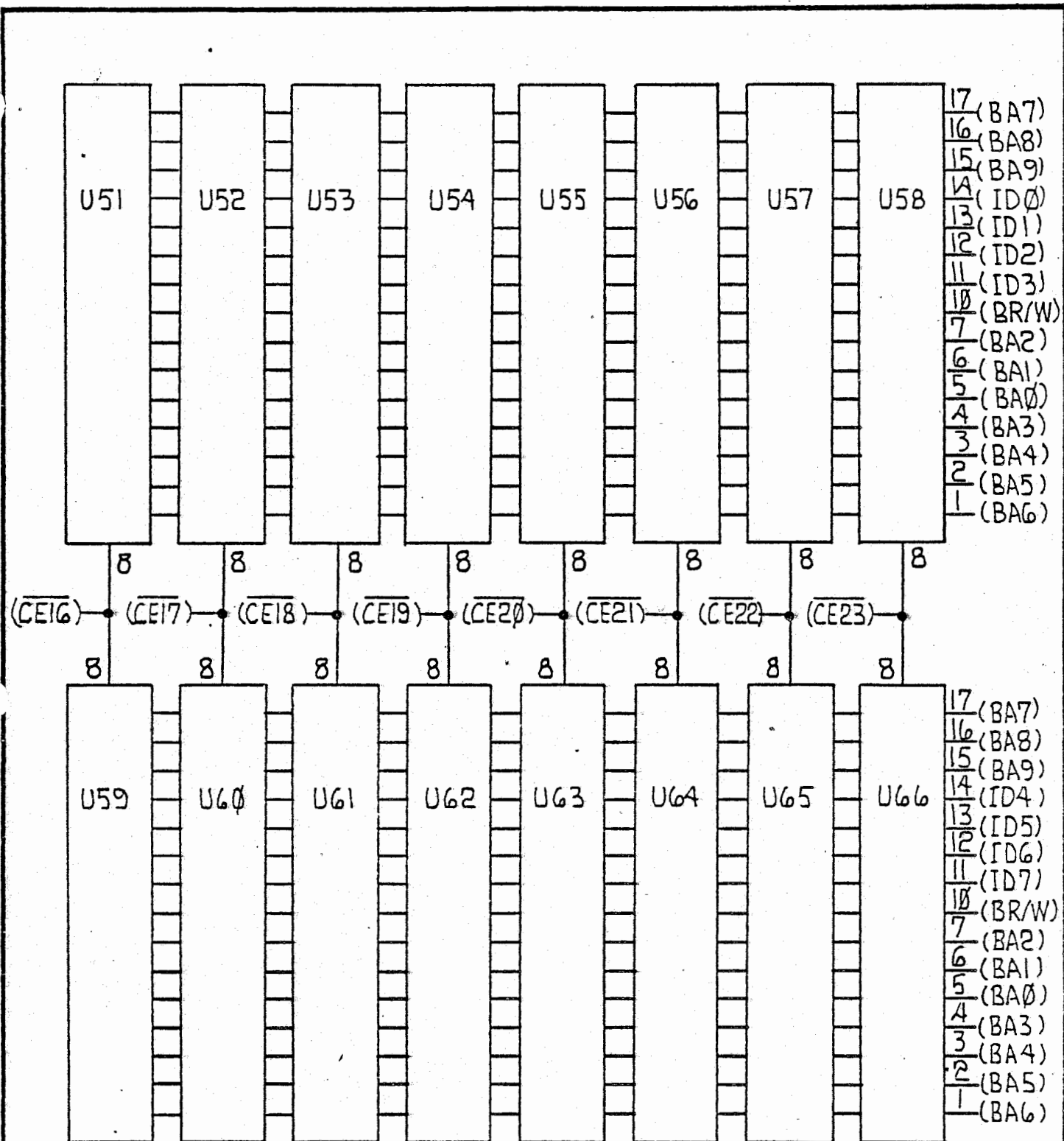
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2114 RAM TYP.

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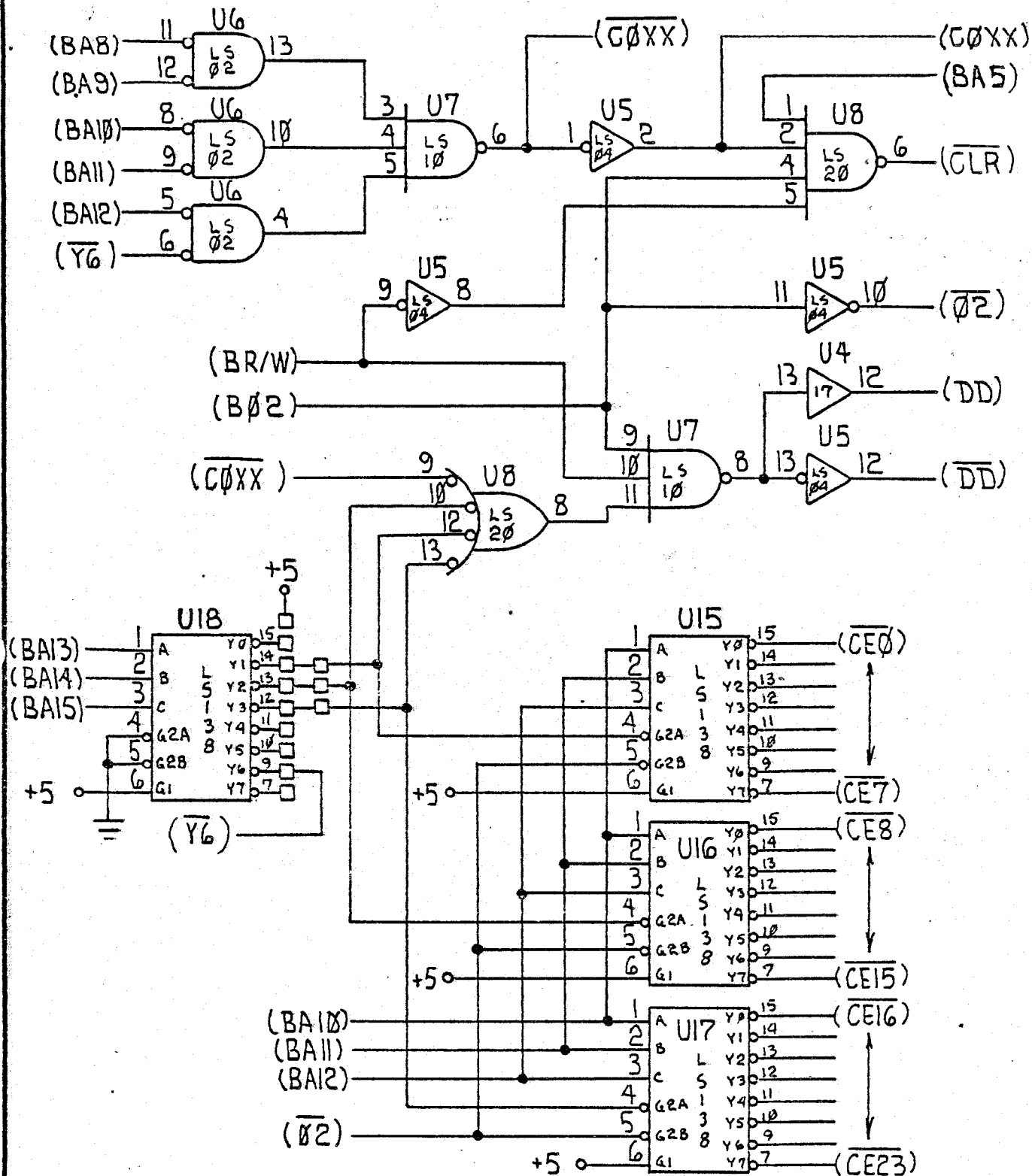
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date

20 SEP 1978

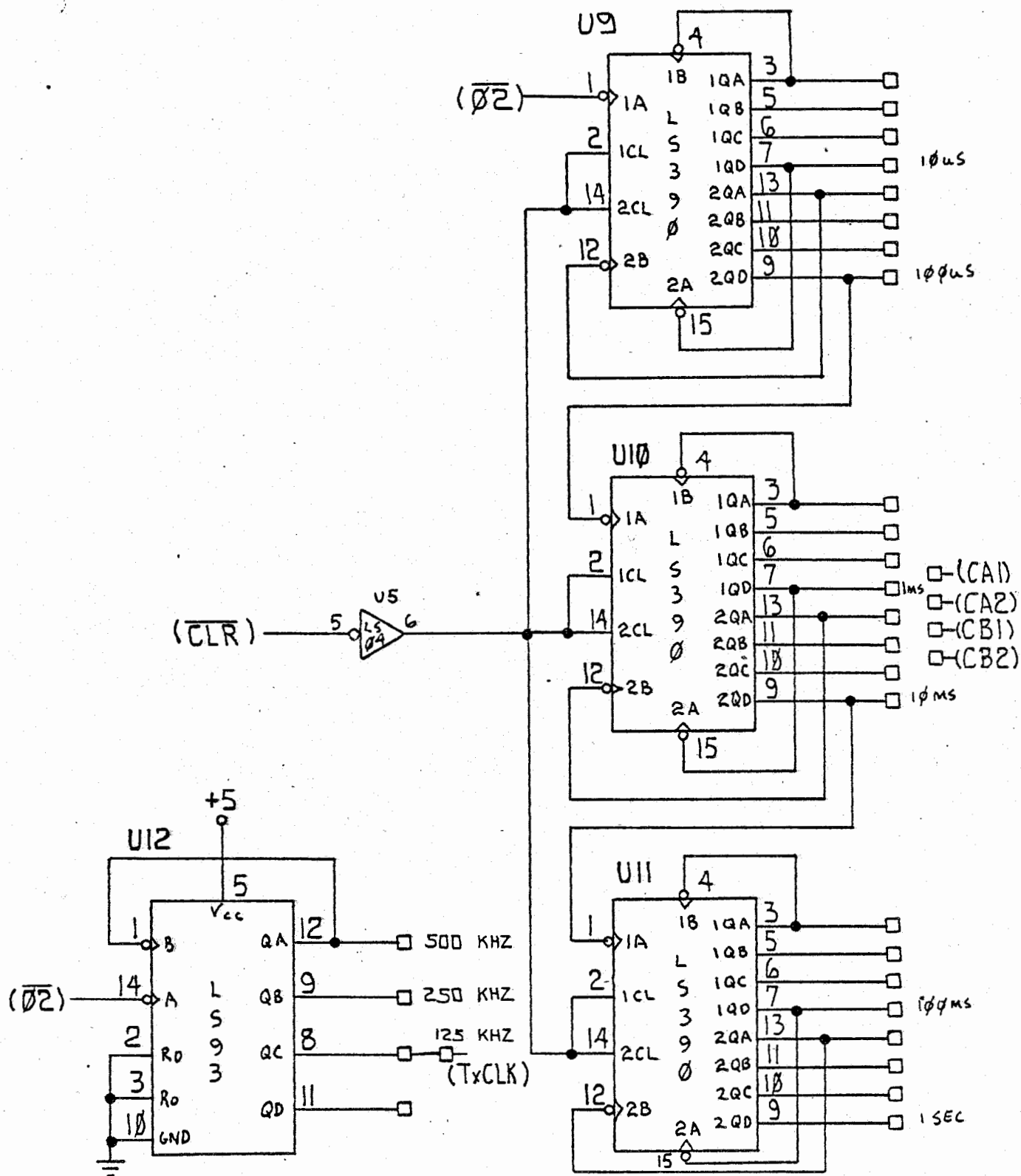
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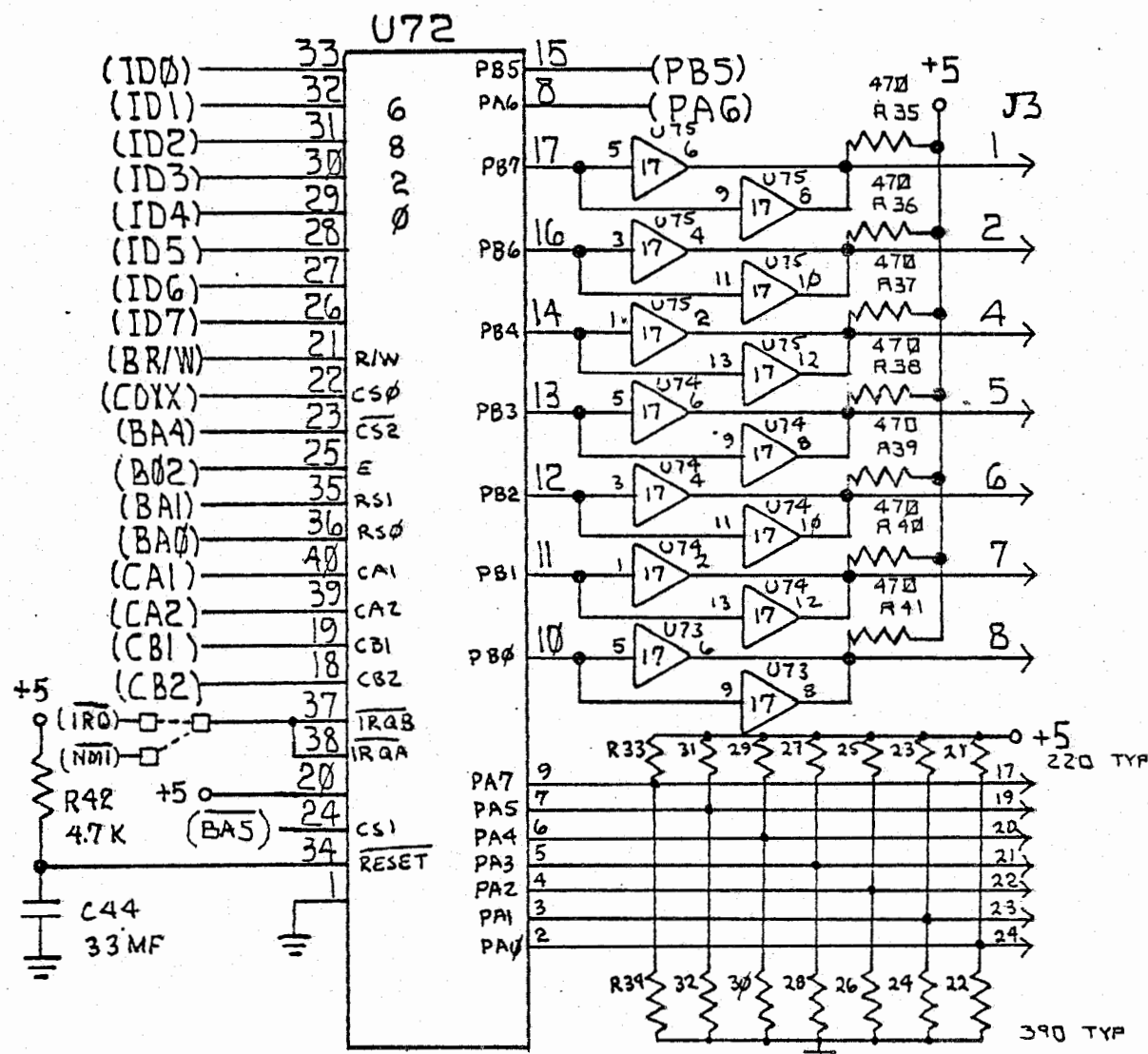
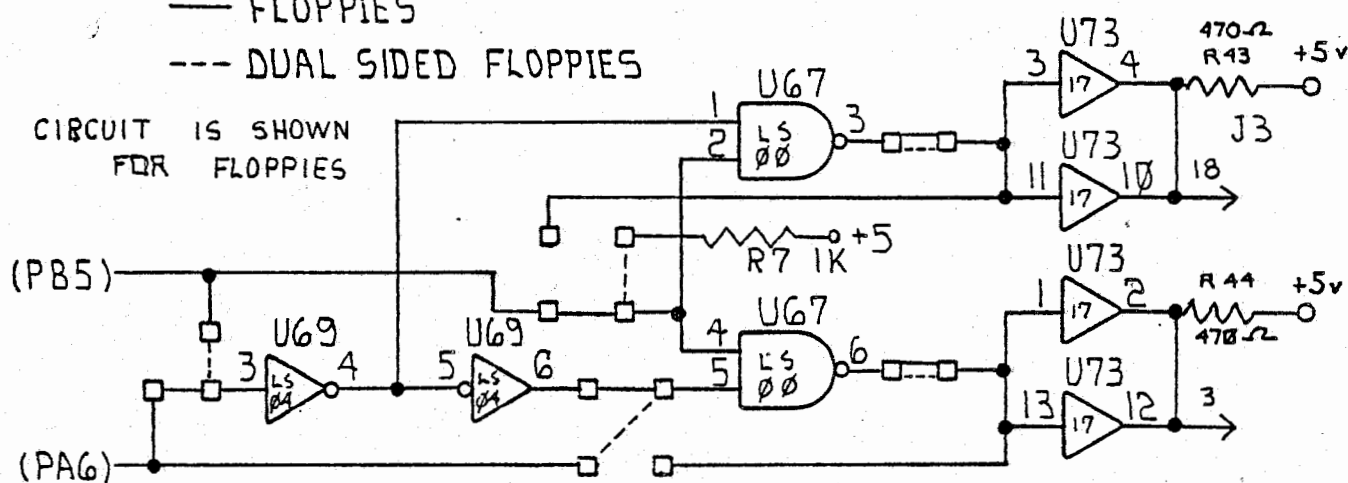
status

sheet 5 of



— FLOPPIES
 --- DUAL SIDED FLOPPIES

CIRCUIT IS SHOWN
 FOR FLOPPIES



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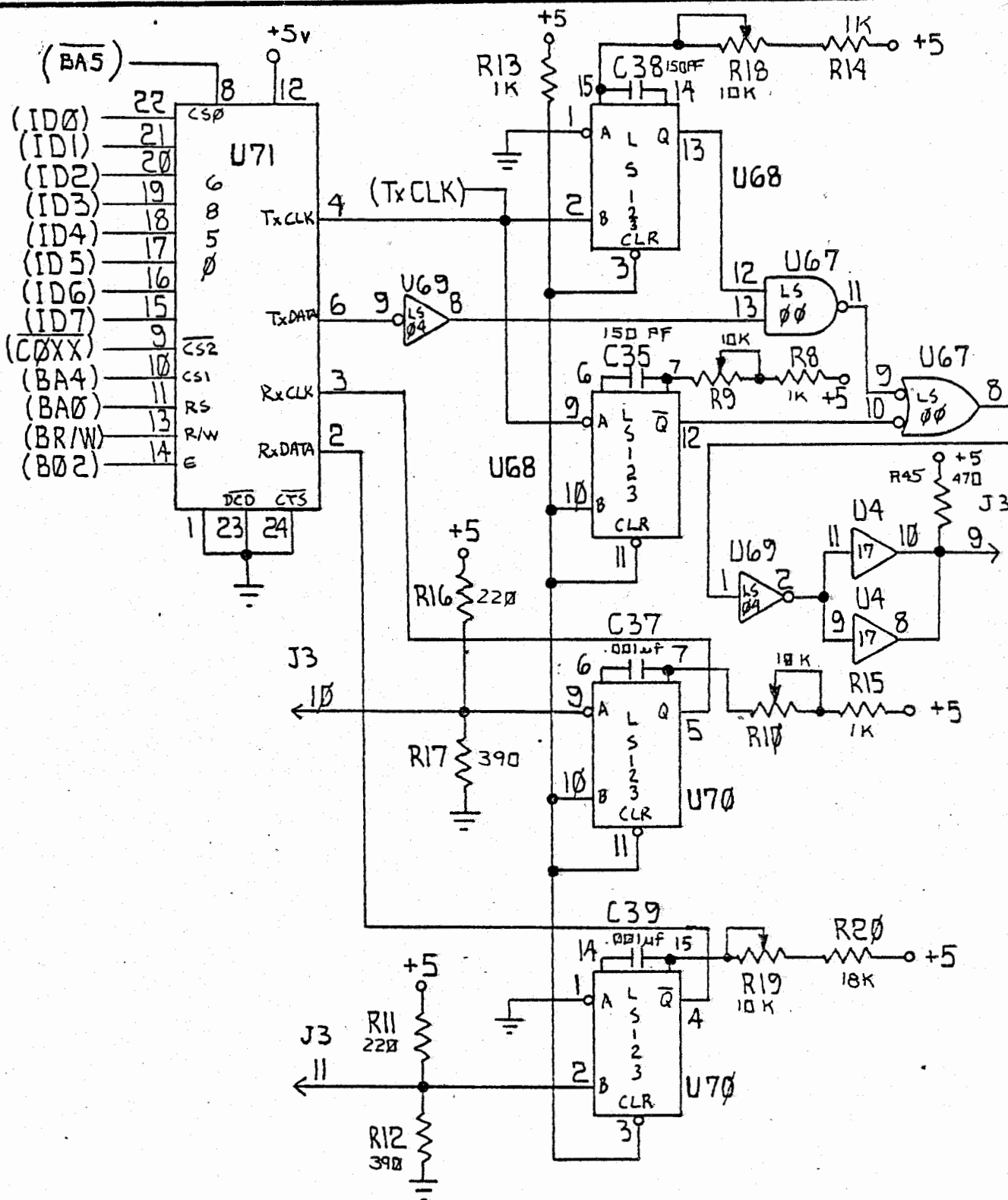
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B

page

status

sheet 7 of



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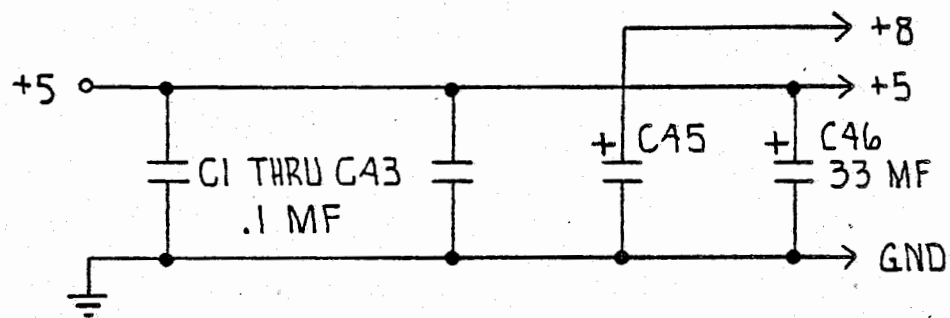
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sheet 8 of

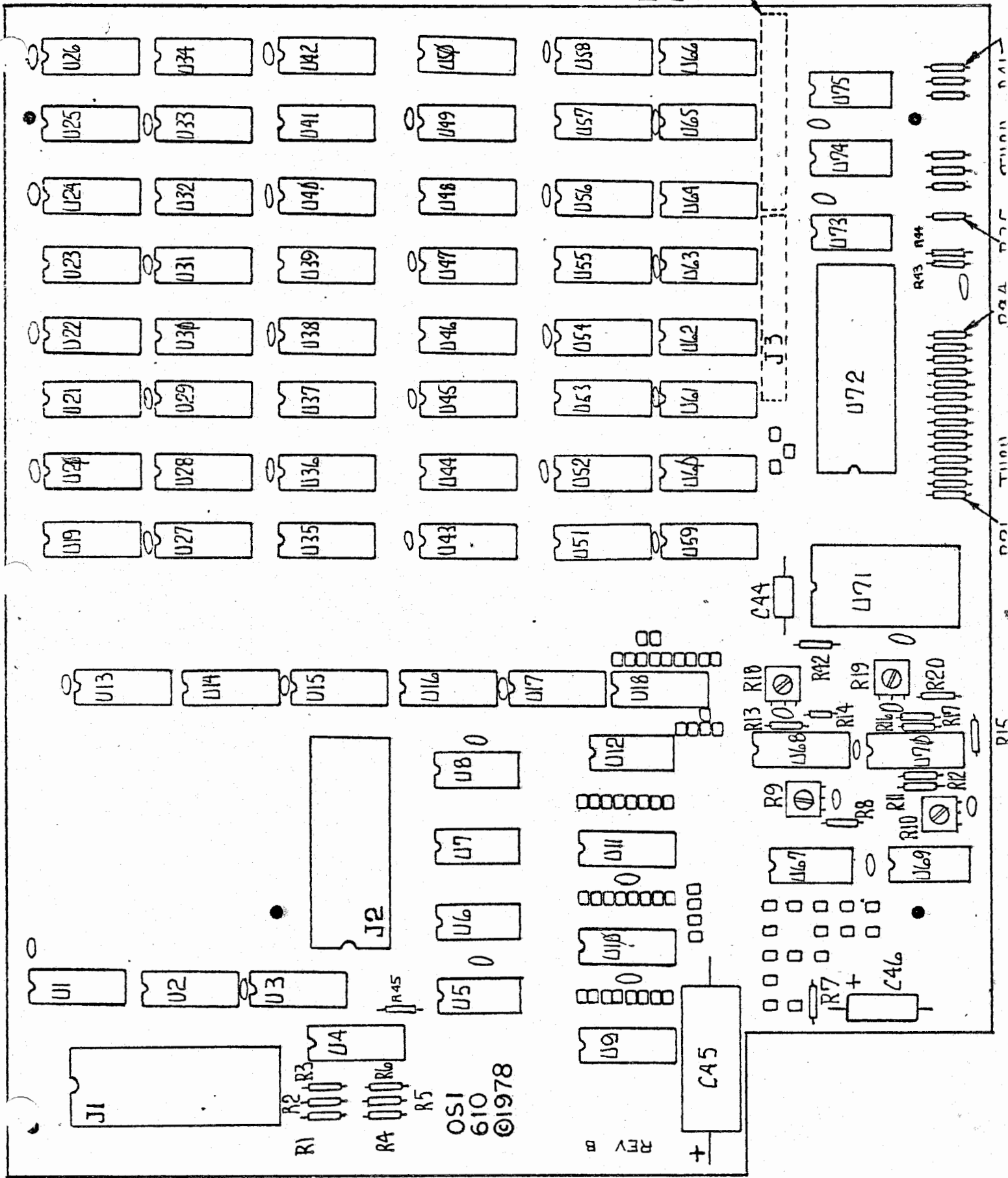


UNUSED GATES	
U6 LS02	
U5 LS04 U69	
U7 LS10	

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CHALLENGER 1P
MINI DISK
USERS' MANUAL

Nov. 1978

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Introduction

This manual supplements the Challenger 1P Manual for Challenger 1P disk systems.

The Challenger 1P disk system is available in two fundamental hardware/software configurations.

- 1) 12K RAM system with Pico-DOS (P-DOS). This system utilizes the internal BASIC-in-ROM with 8K of program work space in RAM and 4K of disk operating system. P-DOS allows eight BASIC programs up to 8K bytes long to be LOAded and SAVEd on disk using BASIC-in-ROM's LOAD and SAVE command. This configuration can be upgraded to 2 by adding memory and software.
- 2) 20K RAM or larger system with OS-65D V3.0. This system uses Microsoft 9 digit BASIC with random and sequential access named files, various device I/O capabilities and assembler capabilities. Standard 65D applications diskettes require 20K RAM memory.

With either system, start by following the Challenger 1P Manual through video hook up and ROM BASIC programming (Possibly disregarding the sections on cassette I/O).

Once the machine is operating as a ROM only computer, read the following section on care and handling of mini-floppies and then the P-DOS instructions or 65D V3.0 instructions as appropriate for your system.

Floppy Disk Care

The floppy diskettes and disk drives are delicate pieces of hardware, and should be treated as such. The following rules are strongly recommended to maintain their good condition.

A. Handling Floppy Diskettes

1. Do not touch the surface of the diskette or allow any dirt or dust to come into contact with the surfaces.
2. Be very careful in labeling diskettes, so as not to damage them.
3. Do not bend or fold the diskette.
4. Store the diskette only at temperatures from 10° to 125° F. (-18° to 51° C.) and only use a diskette in a drive if both are at the same temperature.
5. Do not allow magnets to come near the diskette.
6. Always place the diskette in its jacket and store it upright in its box when not in use.
7. If you must lay a diskette on a table, place it with the label side down, to avoid damaging the recording side.
8. When inserting a diskette in a drive, insert it carefully with both hands and an even pressure, until you hear a click. Make sure that it has not come back out slightly before you close the drive.
9. Do not try to clean the surface of the diskette.
10. Turn on the power to your computer before you insert the diskette, and turn power off only after you remove the diskette. Never turn the power on or off while the diskette is in the drive.
11. Insert the diskette in the disk drive with the label side up.
12. Use only 100% certified single index hole diskettes, such as the ones which OSI offers.

B. Handling Disk Drives

1. The disk drive should only be turned on or off when the computer has been turned on.
2. Diskettes should be inserted in the drive after the drive has been turned on, and removed before it is turned off.
3. Do not obstruct the air flow to the disk drive in the rear.

4. Disk drives and diskettes will not operate in very high or very low humidity environments. Air conditioning is generally not required unless the unit is operated in a basement, or other area where condensed moisture is likely to occur. Rugs and carpeting in the vicinity of the computer should be treated for anti-static.
5. The disk drive, being a mechanical rotational device, is susceptible to line voltage and line frequency variations. The unit must be operated at 60 .0Hz for write operations to work.
6. The floppy disk system is mechanical, and thus subject to wear on pulleys, belts, bearings, etc. It is a good practice to remove diskettes from disk drives when disk operations are not anticipated during the next hour or so. Also, turn off disk drives when not in use for prolonged periods of time.

Getting Your Computer Running With I-P Pico DOS

A version of OS-65D V3.0 is available as a "Pico-DOS" for use with mini-floppies on the OSI I-P Personal Computer with only 12K RAM. This system extends the 6 digit BASIC-in-ROM LOAD and SAVE commands to permit files to be saved on a diskette as well as on the usual cassette.

In order to use the Pico DOS, insert a Pico DOS diskette into the A mini-floppy drive and type a D in response to the D/C/W/M? message. The Pico DOS will boot up with the following message:

MINI-65D3 V1.0

MEMORY SIZE? 8955

TERMINAL WIDTH?

Note that the memory size has automatically been specified. This is because the Pico DOS occupies memory above this point.

Continue with the initialization by entering terminal width as usual.

The new commands available under the Pico DOS are:

LOAD n

SAVE n

where n is a program, number 1 through 8 on diskette.

To SAVE a program, simply enter it into the machine and type SAVE n where n is 1 through 8. For example, to SAVE a game in the fifth space on the disk, type SAVE 5. To recall this program at a later date, type LOAD 5, then RUN.

GETTING YOUR COMPUTER "UP AND RUNNING" WITH 65D V3.0

Introduction

These instructions will help you get your computer running in the computer language "BASIC". This language is stored on an OS-65D V3.0 diskette, and can be quickly brought up when the computer is turned on.

Several of these instructions for bringing up BASIC contain words or letters which are bound by brackets "<" and ">", such as <BREAK> and <C>. The brackets indicate that a keyboard key labeled with the word or letter must be pressed. Do not type in a word contained between the brackets letter-by-letter. See Figure 3.

BEFORE YOU POWER-UP ...

1. Check that all power supply connections are correct.
2. Make certain that your video monitor or television is connected to the computer properly.

GETTING INTO BASIC

These instructions should be followed very closely. If, at any time, the computer or television/monitor does not respond as indicated, turn off the power to both and review all hook-up procedures, wiring, etc.

1. Turn on the computer.
2. Turn on the television or monitor. After a short warm-up you will observe the screen filled with random characters.
3. Press <BREAK>. The prompt C/W/M? or D/C/W/M? will appear in the lower left corner of the screen.
4. Turn on the floppy disk unit.
5. Place an OS-65D V3.0 diskette in the disk drive and close the door.

6. Press <D>.
7. After several clicks, the screen will display a message something like "OS-65D V3.0" followed by other information and finally "FUNCTION?".
8. Type UNLOCK,<return>.
9. The BASIC prompt "OK" should appear enabling the user to program the machine in BASIC.

PROGRAM EXAMPLE WITH EITHER SYSTEM

The following program example demonstrates some of the more fundamental concepts of BASIC. This program may be entered once the computer replies "OK". Enter the program exactly as it appears, including all punctuation, etc.

```
10 PRINT "HELLO! I'M YOUR NEW COMPUTER!" <RETURN>
20 PRINT <RETURN>
30 END <RETURN>
```

Now, check the program to be sure you have entered it correctly. Type in the word LIST and <RETURN>. This instructs the computer to print out the program as stored within the computer's memory.

```
LIST <RETURN>
```

To have the computer execute ("RUN") the program, type in:

```
RUN <RETURN>
```

The computer should then print:

```
HELLO! I'M YOUR NEW COMPUTER!
```

The BASIC language makes it easy to modify ("EDIT") a program. Errors within a line may be corrected by retyping the line. Additional statements may be incorporated into a program by sequencing the new line numbers within the existing program. The following additions to the example program demonstrate these editing concepts.

```
5 FOR X=0 TO 30 <RETURN>
25 NEXT X <RETURN>
```

To examine the program as amended, type LIST <RETURN>.

To execute the new program, type RUN <RETURN>.

Refer to one of the many BASIC programming texts now available for an in-depth study of BASIC.

Using Applications Diskettes

At this point, you have set up your computer system and should be able to run and utilize commercially available diskettes for the Challenger 1P. Several programs on diskette are provided with the unit and a large library of applications software is available from Ohio Scientific and your local Ohio Scientific dealer.

Your Ohio Scientific computer can provide you with years of enjoyment and benefit by utilizing commercially available applications software alone. However, you may wish to learn how to program yourself and may even wish to explore and expand its hardware capabilities. The following sections of this manual are concerned with expanding your horizons in both programming and the hardware capabilities of the computer.

The next section specifically deals with an introduction to the programming language, BASIC. This section should be used in conjunction with the accompanying Ohio Scientific BASIC Reference Manual and possibly a text book on the programming language, BASIC.

The 65D V3.0 User's Manual provides an in-depth discussion on the use of DOS (Disk Operating System) in conjunction with the BASIC and Machine Code Sections in this manual.