OSMOS 5 80 COLUMN BOARD

INSTALLATION MANUAL

AND

APPLICATIONS GUIDE

Version 1.0

DATE: October, 1983

INTRODUCTION

Fitting the Osmosis board is relatively easy providing you follow the step by step instructions and give care and thought to the job. Many of these boards have been installed in Europe by end-users like yourself and this Manual has been compiled based on the questions they raised.

A table or bench large enough to accomodate the dismantled Osborne 1 is required in the first instance. Mistakes will be made if you try to install the board on the floor or where there is not enough room to work.

Collect all the tools required (they are itemized at the foot of the contents page) then turn to the section for installation appropiate to your model. Generally the Osborne 1 mkI is a brown case and the Osborne 1 mkII a blue case. If your model does not fit either circumstance then follow Osborne 1 mkI installation.

The 80 column board has been well proven in Europe, however we operate a hot-line telephone service (415) 864 - 6372 which you should use if you have any problems.

Do not foget to complete and return the registration form since software is constantly updated to take advantage of the boards excellent enhancements to the Osborne 1 computer. Your will be notified by letter of all the new software and new options as they become available. Updates cannot be given free of charge although Osmosis will always keep any charge for updates to a minimum.

This manual describes installation and application of the Osmosis 80 column board. The material presented is the proprietary information of Osmosis Computer Corporation and is intended for the personal use of the purchaser of the Osmosis 80 column board. Incorporation of this material in any product or use in any commercial venture is prohibited.

Contents

Tools required

Installation into Osborne 1 Mk I.

1 #0 Pozidriv Screwdriver.
1 #1 Pozidriv Screwdriver.
1 0.050 Allen Key.
1 Flat-head screwdriver.

Installation into Osborne 1 Mk II.

1 #1 Pozidriv Screwdriver with long shaft (4" or longer).
1 Flat-head screwdriver.

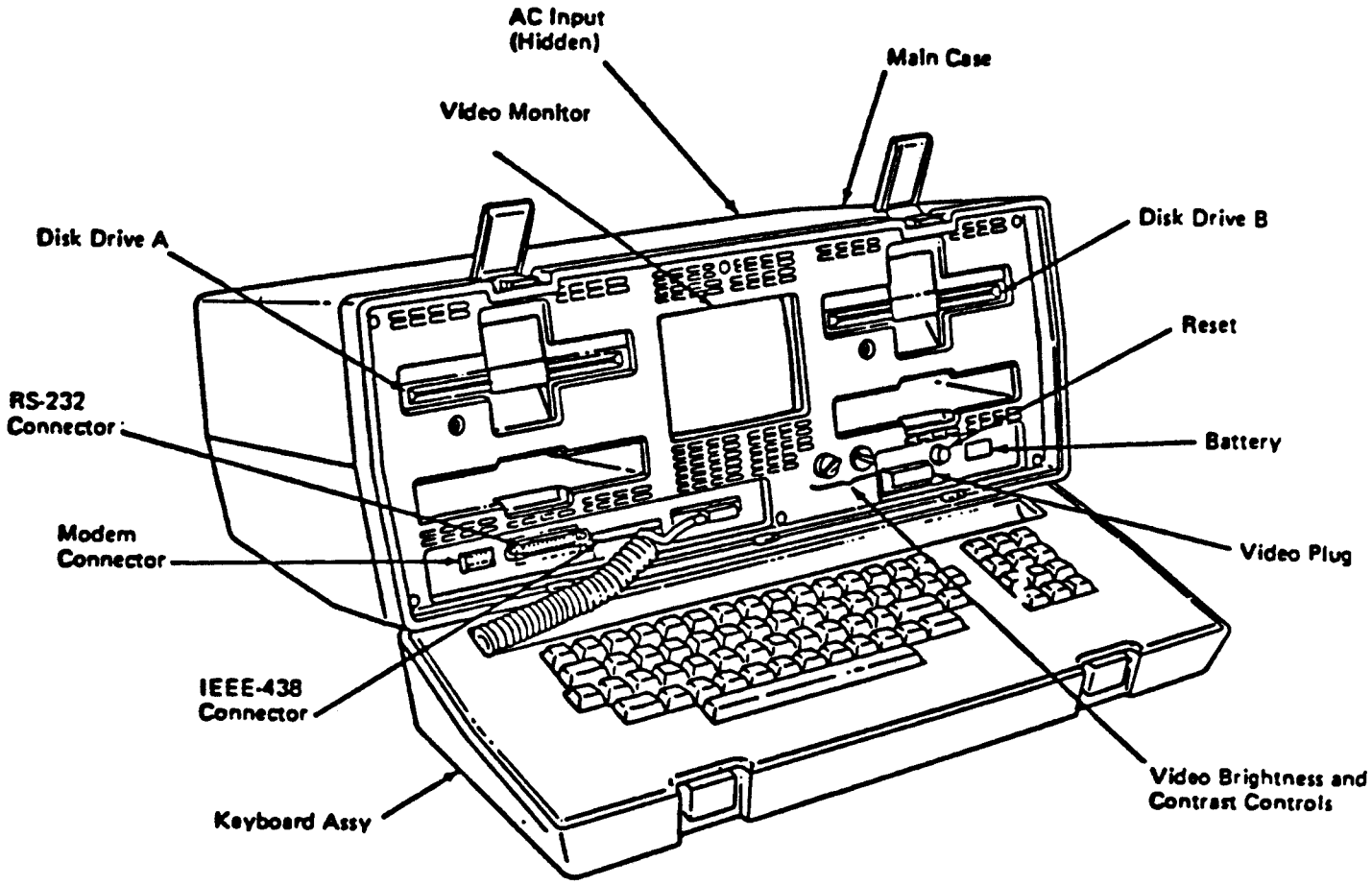


FIGURE 6-3. OCC-1A ASSEMBLED

DIS-ASSEMBLY AND ASSEMBLY OF OSBORNE 1 MK I

1. Disconnect from the power source.

2. Disconnect the keyboard connector (and any other connectors such as modem or external video) place keyboard to one side and ensure connector latches are pushed back in.

   NOTE: When removing screws seperate or mark them so you will know which to re-insert. The screws for the handle are different from the others you will remove.

3. Release and remove the 7 phillips head screws as shown in fig. 1.1.

4. Turn the contrast and brightness control knobs fully counter-clockwise, unscrew and remove using a 0.050" (0/20) Allen key.

5. The front black plastic moulding can now be removed.

6. Working from the back of the unit, the head screws either side of the handle can be removed. Do not remove the six phillips head screws around the power plate (fig 1.2). Should you find the internal frame cannot be slid clear of the plastic case (as step 8) because the internal cables have been clipped together, then remove the 6 phillips screws around the power plate.

7. Now release and remove the phillips head screws shown in fig 1.3.

8. The internal frame can now be slid out of the plastic case.

9. Turn the frame upside down so that the underside of the main Printed Circuit Board (PCB) is uppermost, release and remove the 4 phillips head screws that hold the PCB to the frame. The PCB can now be laid flat with the component side on top. Take care not to bend any component legs.

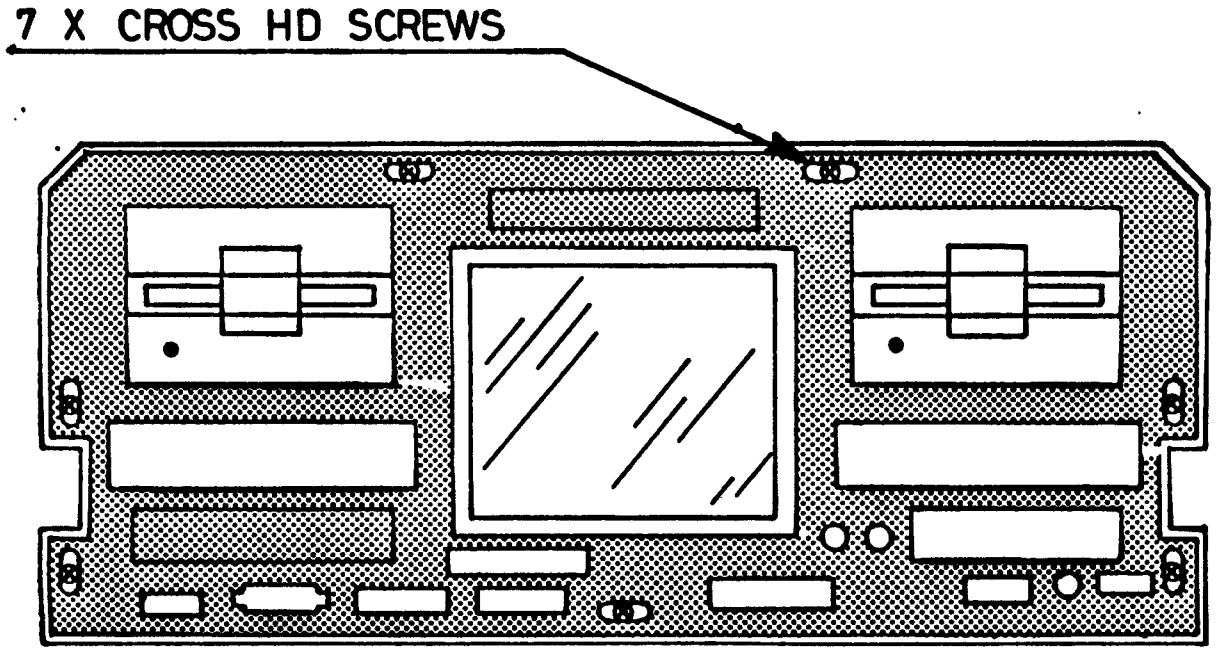
10. Turn to page 5 of this manual for installation instructions of the 80 column board.

    THE 80 COLUMN BOARD HAS NOW BEEN INSTALLED ON THE OSBORNE PCB.

11. Replace the Osborne PCB with the 4 screws, turn the frame the right side up and slide it into the plastic case. Replace the screws either side of the handle, making sure the correct screws are used as incorrect screws may damage the drive harness situated behind the handle assembly.

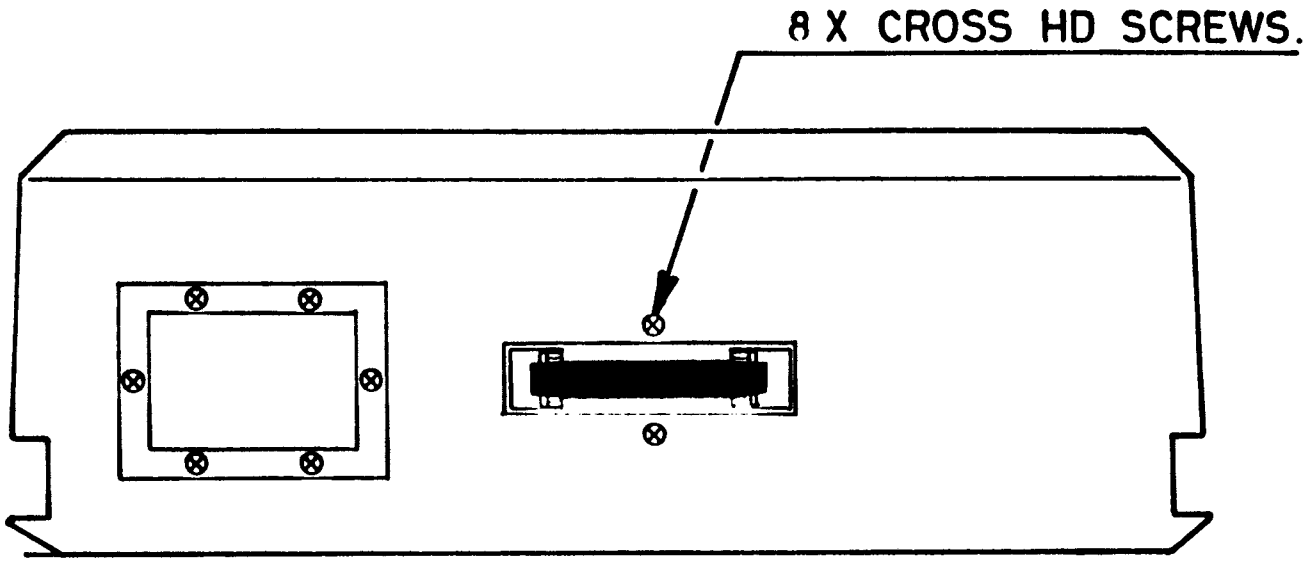
    If you removed the 6 screws from around the power plate, replace them at this time taking care to mount the power plate right side up.

12. Replace the screws in the side of the case. Then replace the front black plastic cover ensuring that all the connectors come through their holes before replacing the last seven screws.



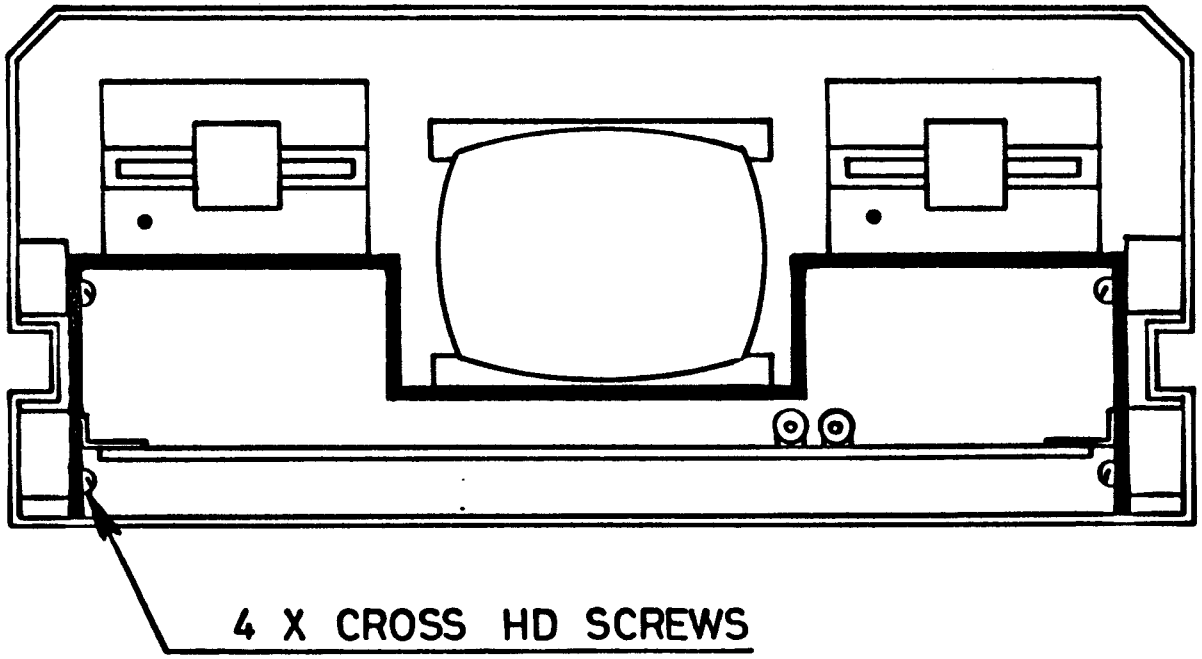
FRONT VIEW WITH KEYBOARD REMOVED.

FIG. 1·1



REAR VIEW OF OSBORNE.

FIG. 1-2



FRONT VIEW WITH BLACK PLASTIC COVER REMOVED.

FIG. 1-3

DIS-ASSEMBLY AND ASSEMBLY OF OSBORNE 1 MK II

1. Disconnect from the power source.

2. Disconnect the keyboard connector, (and any other connectors such as modem and external video) place keyboard to one side and ensure connector latches are pushed back in.

3. Release and remove the 6 phillips head screws as shown in fig. 2.1.

4. Pull off the contrast and brightness control knobs.

5. The front blue plastic moulding can now be removed.

6. Close the air cooling door if open and carefully turn the unit upside down and release the 5 screws shown in fig 2.2

7. Remove the plastic case bottom (now on top) and place it to one side.

8. Release and remove the 4 cross head screws that hold the main Printed Circuit Board (PCB) to the frame. Carefully lift out the plastic power plate and put it to one side. Lift out the handle plate and put it to one side.

9. Unplug any cables necessary to lay the PCB flat, taking a careful note of where they come from and where they plug-in.

10. The PCB can now be laid flat with the component side on top. Take care not to bend any component legs.

11. Turn to page 5 of this manual for installation instructions of the 80 column board.

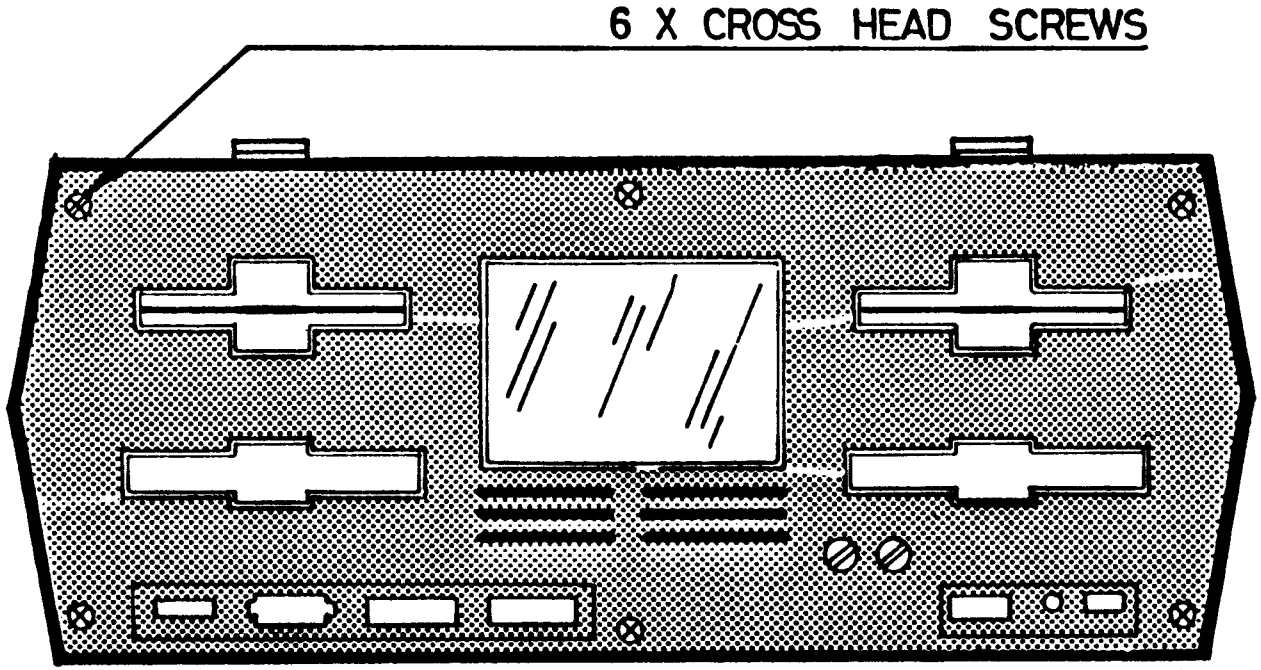
THE 80 COLUMN BOARD HAS NOW BEEN INSTALLED

12. Replace the power plate and cover remembering to plug-in any cables which were unpluged earlier. Replace the 4 screws which hold the Osborne PCB in place. The power plate and cover are positioned with the hinge nearest the work surface and clips into small inserts at the lower end.

13. Replace the handle plate taking care to place it the right side up ie. match it to the case molding. Take note at this point that the disk drive data cable is still clipped behind the video display.

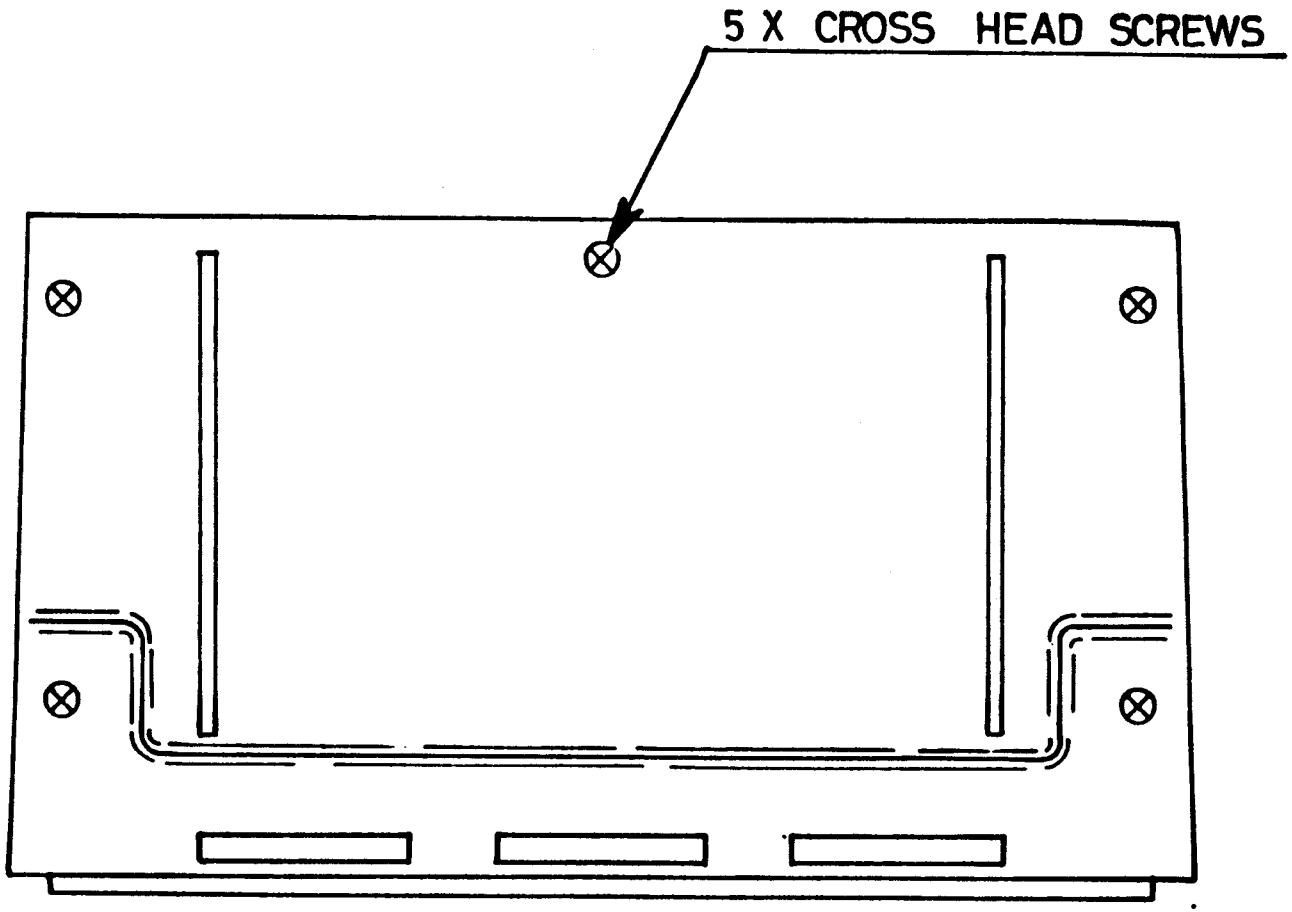
14. Replace the case bottom and screw it down. The fig. 2.2 points to a phillips screw, care must be taken when re-inserting this screw since the disk data cable may have slipped into the screws path. Do not force the screws entry, check first. Do not over-tighten the 5 screws.

15. Turn the unit the right side up and replace the front blue plastic cover. Do not force the cover on check first that all the connectors have come through the appropiate holes. The keyboard connector latches must be positioned forwards to come through the cover hole. Replace the 6 phillips screws that secure the cover.



FRONT VIEW WITH KEYBOARD REMOVED.

FIG 2·1



UNDERNEATH VIEW WITH KEYBOARD REMOVED.

FIG 2·2

INSTALLING THE OSMOSIS 80 COLUMN BOARD

NOTE: FOLLOW THIS SECTION ONCE THE OSBORNE IS DISASSEMBLED

A1. Locate the monitor ROM (fig 2.1). This ROM can be carefully removed by placing a flat-head screwdriver under either end and gently turning the screwdriver until the ROM lifts from it's socket at that end. Repeat this procedure at the other end of the ROM until it is removed altogether.

A2. Now take the ROM we supplied (for shipping purposes it is mounted in the blue 40 way header on the 80 column board and should be carefully removed in the same sequence as the monitor ROM from the Osborne main Printed Circuit Board).

A3. Fit the ROM we supplied (marked Osborne 1.44 GM) by positioning the small semi-circular cut-out in the ROM to the LEFT looking from the keyboard connector end of the Osborne PCB. If you are still in doubt look at the other larger components on the Osborne PCB which all fit in the same way. If the ROM pins will not fit into the socket, lay the ROM on a flat surface and gently bend the pins inwards on both sides until the pins line up with the socket.

A4. Locate the Z80 processor (fig. 2.1) which will be marked NEC since Osbornes use the NEC equivilant of the Zilog Z80 processor. Remove the 40 pin Z80 in the same way that the monitor ROM was removed i.e. with a flat head screwdriver.

A5. Fit the Z80 into the blue 40 way header on the Osmosis 80 column board. You MUST fit the Z80 in the correct way round. The small semi-circular cut-out in the Z80 chip must face toward the row of three SN74LS374 IC's on the Osmosis 80 column board which are next to the blue 40 way header.

A6. Unscrew the two nuts from the mounting pillars on the under-side of the Osmosis board. Remove the two nuts and the lock washers and put them in a safe place.

A7. Fit the Osmosis 80 column board onto the Osborne PCB by inserting the 40 pins (header pins) which extend from the under-side of the Osmosis board into the socket on the Osborne PCB from which you have just removed the Z80 chip. The Osmosis board fits over the front left of the Osborne PCB so that the keyboard connector, IEEE port and RS 232 ports are almost covered by the Osmosis board. The correct placement of the Osmosis board will be found when the two mounting pillars are centered though the two holes on the Osborne PCB. (fig 2.2)

A8. Make certain that all the pins from the Osmosis board fit into the socket on the Osborne board correctly.

A9. Fit the lock washers and nuts onto the mounting pillars and tighten securley. The Osmosis board and the Osborne board are now fastened together.

A10. Clip the right-angled board support to the left hand rear of the Osborne PCB and to the left hand rear of the Osmosis board. Fit and GLUE with a suitable adhedsive the second Osmosis board support to the Osborne board at the right hand side of the processor socket (fig 2.2) so that the Osmosis board is held by the second support between the two 12 and 10 way connectors at the right hand side of the Osmosis board (fig 2.2).

A11. Locate P9 on the Osborne PCB (fig 2.1) and dis-connect the Osborne 10 way connector. Connect the 10 pin connector which extends from the right hand side of the Osmosis board. The 10 pin connector should be connected such that the cable (10 wires) extents AWAY from the front (keyboard connector end) of the Osborne PCB.

A12. Fit the 10 way Osborne connector (the one just dis-connected from P9) onto the Osmosis board into the spare 10 way connector to the rear right of the Osmosis board. The connector should be connected such that the cable extends down-wards as does the other cable next to it.

A13. The single pink wire extending from the 14 way connector on the Osmosis board could be soldered to pin 9 of the SN74LS00 IC which is located behind P9 on the Osborne PCB. It is by no means essential that this be carried out since the 80 column board will work whether it is soldered or not. This connection ensures the correct operation of 1/2 intensity when using the 52 column display. Apart from this the system will function correctly if it is not connected.

********** W A R N I N G **********

Experience is required to solder directly onto an IC leg. Do not attempt the connection if you do not have the necessary experience. If you are not attempting the connection to pin 9 of SN74LS00, pull the pink wire away from the Osmosis board connector and dispose of it.

****

A14. A two wire (yellow and orange) harness extends from the left hand rear of the Osmosis board which must be connected to the Osborne power supply. Fig 2.4 shows the spare 4 pin socket on the Osborne power supply. Connect the Osmosis power harness into the unused socket in the same orientation as the original Osborne leads i.e. with the same colors in the same directional pattern. The connector should only join correctly in this way.

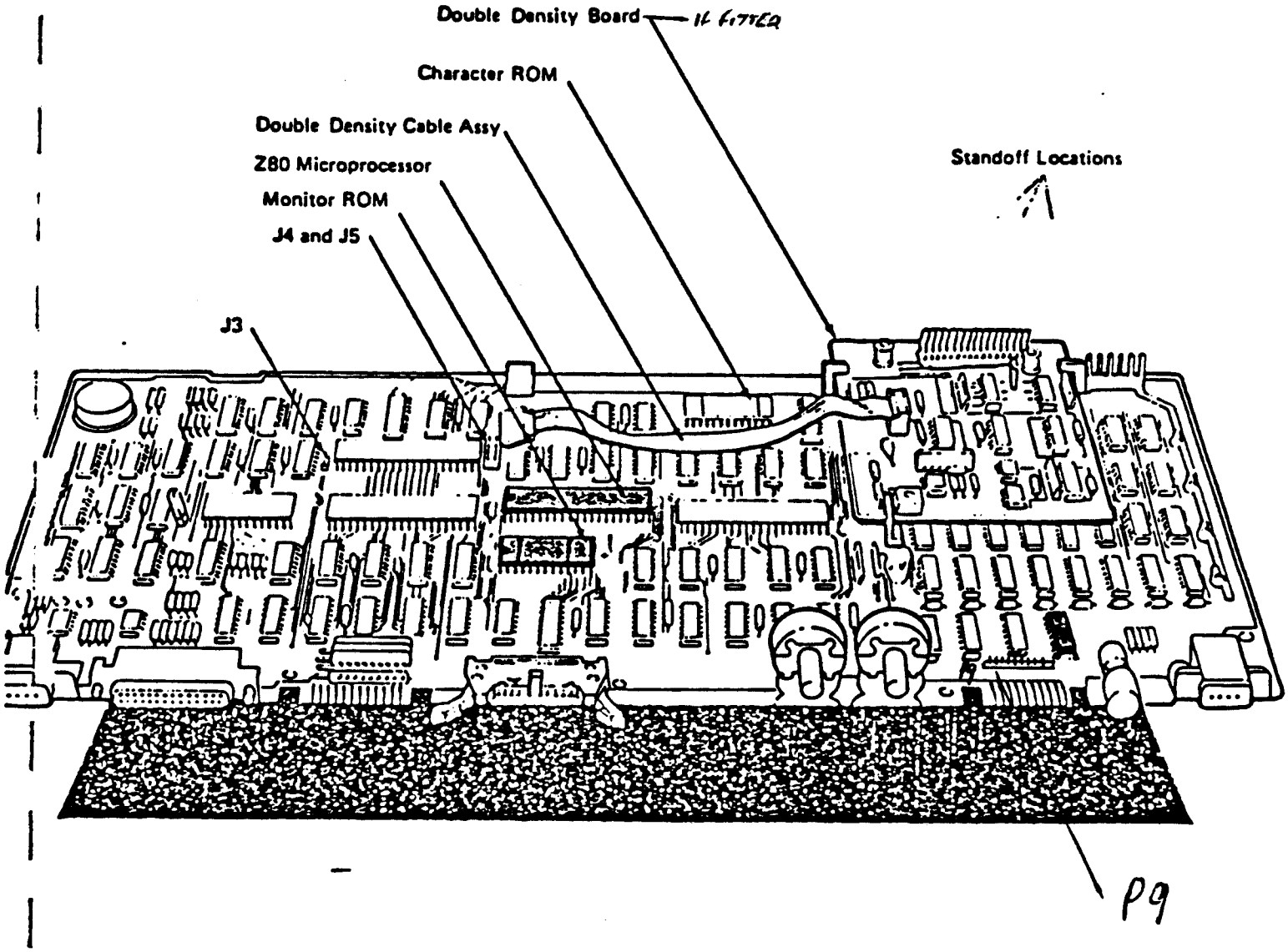
A15. A hole must be drilled into the blue or black front cover (bezel) of the Osborne 1 to accomodate the external video connector. The hole should be approx. 2.25 inches to the right of the keyboard connector (measured from the middle of the connector). The hole should be approx. 0.5 inches in diameter or large enough to accomodate easy insertion of your video lead (about the same size as the reset button hole).

A16. Mark the exact position and lay the cover (bezel) in such a way so that the area you are drilling is supported. Use a small drill bit to drill the first hole, then gradually increase the drill bit size until

the correct size hole is achieved.

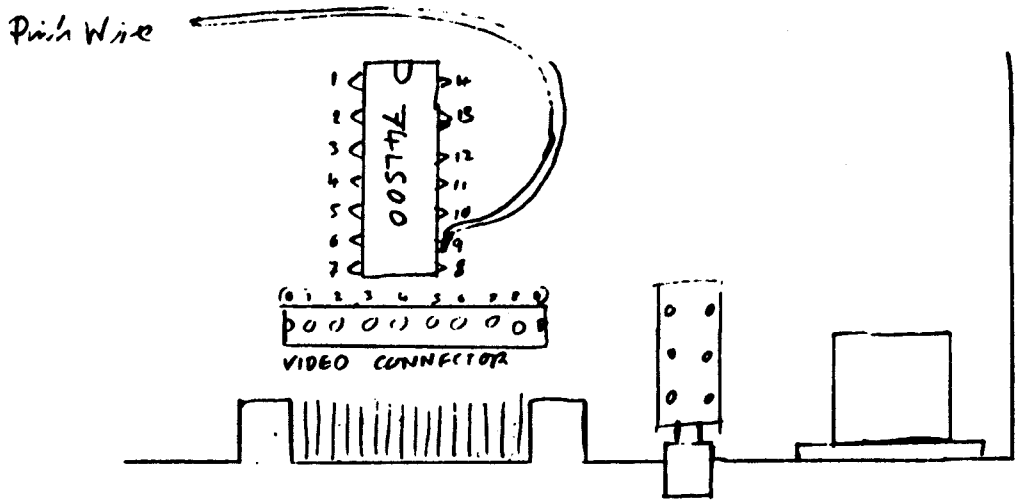
A17. The Osmosis 80 column card is now fully installed and re-assembly of the Osborne can take place. Return to the relevant section for re-assembly.

2-1


Double Density Board
Character ROM
Double Density Cable Assy
Z80 Microprocessor
Monitor ROM
J4 and J5
J3
Standoff Locations

P9

Fitting Detail.
(Preliminary.)



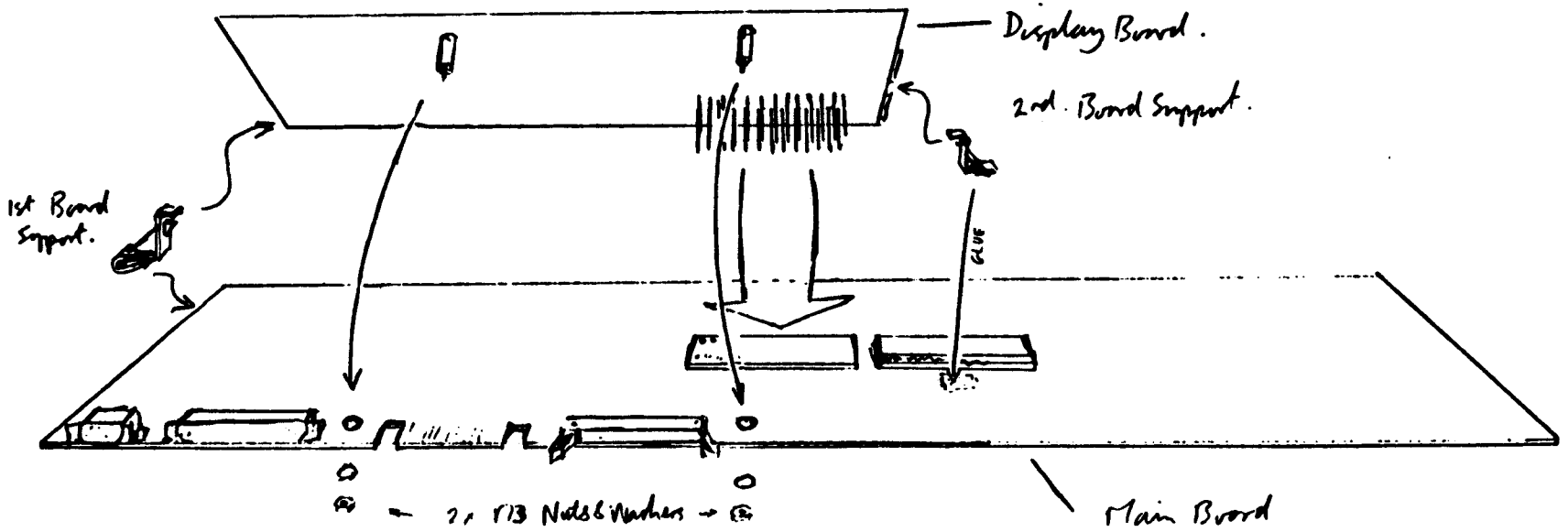
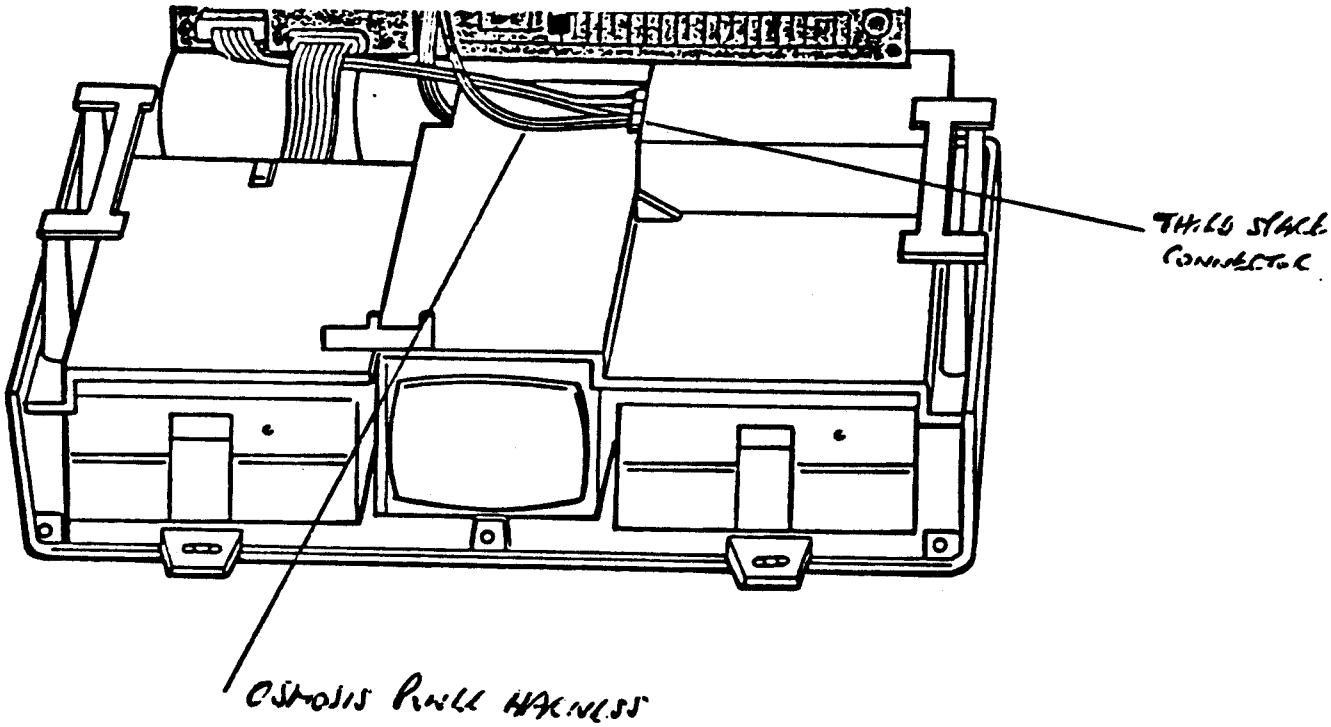


FIG 2.4 OSMOSIS POWER SUPPLY.



80 COLUMN APPLICATIONS

B1. Power up your Osborne.

B2. Place any normal Osborne diskette (containing a CP/M system) in drive A and press return to boot the system. If necessary press the appropiate key(s) to arrive at the CP/M prompt.

B3. Press escape (ESC), 8 and return. The screen should now be showing a full 80 columns.

B4. Enter any keys to take the cursor to the right of the screen and see if the cursor shows a correct line feed and carrage return. If not press the return key and enter escape (ESC), F and return. Check to see if the auto carrage return and line feed are now working.

B5. Try pressing escape (ESC), 5 and return to take you back to 52 columns.

B6. Look at the Escape Sequences in the appendix section of this manual and try some out with keyboard commands.

B7. If you know how to program in BASIC, invoke Basic and write a simple program to use the additional features of the 80 column board. The board will react to a command such as:

```
10 PRINT CHR$(27)+"8"
```

B8. Wordstar, Basic, Cbasic, Supercalc and CP/M do not require re-installing to use 80 columns. However Dbase II does and this is the patch necessary:

NOTE:
(ret) = Press the return key
; = comment

(a) Place your Osborne diskette marked CP/M Utility in drive A and a COPY of your Dbase II program in drive B.

(b) Boot the system to arrive at the CP/M prompt. Enter DDT B:DBASE.COM(ret)

The screen will show:

```
DDT Vers. 2.2
Next PC
4700 0100
-
```

(c) Enter S130 (ret)

The screen will show:

0130 05

Enter 01 (ret)

The screen will show:
0131 1A

Enter . (ret) ;Enter period (ret)

(d) Enter S154 (ret)

The screen will show:
0154 80

Enter 50 (ret)

The screen will show:
0155 18

Enter . (ret) ;Enter period (ret)

(e) Enter S395A (ret)

The screen will show:
395A 3A

Enter C9 (ret)

The screen will show:
395B 5A

Enter . (ret) ;Enter period (ret)

(f) Enter control C ;Enter CTRL C

(g) Enter SAVE 70 B:DBASE.COM (ret)

APPENDIX -E-

ESCAPE SEQUENCES

		ASCII	HEX	DEC	Effect:
	*	-	2CH	44	SETS CHARS TO INVERSE
	*	,	2DH	45	SETS CHARS TO NORMAL
		(	28H	40	SETS FULL INTENSITY
		)	29H	41	SETS HALF INTENSITY
	*	*	2AH	42	SETS 3/4 INTENSITY
	*	+	2BH	43	SETS 1/4 INTENSITY
	*	.	2EH	46	NORMAL CHARACTER SET
	*	/	2FH	47	ALTERNATE CHARACTER SET
	*	0	30H	48	SELECT DEFAULT 24 LINE SCREEN WITH UP/DOWN 48 LINE SCROLL
	*	1	31H	49	reserved
	*	2	32H	50	~~reserved~~ NO SCROLL
	*	3	33H	51	reserved SCROLL 8 LINES ONLY
	*	4	34H	52	reserved
$	*	5	35H	53	DISPLAY 52 CHARACTERS
	*	8	38H	56	DISPLAY 80 CHARACTERS
	*	C	43H	67	reserved
		E	45H	69	INSERT A LINE
	*	F	46H	70	ENABLE 80 COLUMN AUTO-CRLF
		G	47H	71	END GARPHICS
$	*	H	48H	72	DISABLE 80 COLUMN AUTO-CRLF
	*	I	61H	97	INVERT SCREEN
	*	N	62H	98	NORMAL SCREEN
		R	52H	8-	DELETES A LINE
		S	53H	8-	INSERT A CHARACTER
		T	54H	8-	DELETES TO END OF LINE
$	*	U	55H	8-	reserved
	*	V	56H	8-	reserved
	*	W	57H	8-	DELETES CHAR AT CURSOR
	*	X	58H	8-	reserved
	*	Y	59H	8-	SETS 60 HZ OPERATION
	*	Z	5AH	8-	SETS 50 HZ OPERATION
	*	?	--H	--	reserved
		g	67H	103	START GRAPHICS
		l	6CH	108	START UNDERLINE
		m	6DH	109	STOP UNDERLINE

Commands which are unique to the OS/5 80-column OSBORNE 1 are annotated with an * symbol. Use of these commands on standard systems may cause spurious data to be displayed on the screen; the program should not be otherwise affected.

OSMOSIS

430 Pacific Avenue, San Francisco, CA 94133 (415) 864-6372

ADDENDUM

1. Some external video monitors may not be able to syncronize with the signal from the 80 columm board correctly. If this is the case enter:

   ESC C CTRLC: (ret)

   Notes

   (a) This sequence must be entered when you are operating under 80 columm mode

   (b) (RET) = Press the return key

   (c) ESC = Escape

   (d) CTRL = Control

2. 80 Columm applications B8

   Supercalc, because it manipulates the video RAM directly, bypasses the 80 Columm board. The program must therefore be "patched". Details of the patch will be available within the next few weeks.

December 2 1983

OSMOS 5 MANUAL ADDENDUM

1. Some external video monitors may not be able to syncronize with the signal from the 80 column board. If this is the case enter:

Esc C Ctrl C: (return) Note: This command should be entered after Esc 8

2. 80 COLUMN APPLICATIONS B8

Supercalc was re-designed specifically for the Osborne Double Density computer. The re-design incorporated direct manipulation of the Osborne video ram, which bypasses our 80 column board. Versions 1.00 and 1.05 will work in 80 column mode if the INSTALLS.COM program is run.

Supercalc 1.12 and 2 require a "patch" which Sorcim will only allow us to distribute if we copy the patch directly to the ORIGINAL diskette issued. Please ensure that you have adequate copies before you send the diskette to us. Two patches have been prepared for Supercalc 1.12 and Supercalc 2 and if you desire both you should send both original diskettes. Please note that we are not allowed to implement the patches on anything other than the original diskette.

3. TECHNICAL MANUAL

We have prepared a technical manual for the 80 column board which contains program listings to assist the user to implement the many features of the board; theory of operation; documentation on the CP/M interface; cursor addressing; together with full supporting documentation. We are able to provide this manual for $8 which includes packaging and shipping for a limited period of 3 months only, from mid July the price will be $15. A check is the only payment we will accept, which should be made payable to Osmosis Computer Corporation.

4. GRAPHICS PROGRAMS

Since the commercially available graphics programs are not designed to take advantage of the extended column width and will only work in 52 column mode, we are designing an 80 column graphics program which will enable easy creation of horizontal and vertical bar charts, pie charts and xy plots. The program will operate on both the 80 column screen and virtually every dot matrix and daisy wheel printer. Numerical data can be entered from the keyboard or produced by DBase, Supercalc, Mbasic and Wordstar files. The program will be available in 45 days and will be priced at $45.00 which includes full supporting documentation, packaging and shipping. Further information is available, or your order can be placed now with a check for $45.00, payable to Osmosis Computer Corporation.

April 20, 1984 OSMOSIS COMPUTER CORPORATION

LIMITED PRODUCT WARRANTY
OSMOSIS COMPUTER CORPORATION

Osmosis Computer (rporation (Warrantor), uses the utmost care in the manufacture of it's roducts and this product is warranted to be free from defects in material nd workmanship, subject to the following limitations, qualifications and (nditions:

1. IDENTITY OF PAR] COVERED BY WARRANTY:
This warranty xtends only to the first purchaser and not to any subsequent trans eree.

2. THIS WARRANTY CC ERS THE FOLLOWING PRODUCTS
Osmos 1 - Double Density board. Osmos 2, 3 and 3.5 - Double Sided board.
Osmos 5 - 80 Col mn board. Osmos 6 - IBM PC Upgrade board.

3. THIS WARRANTY AI O EXTENDS TO THE FOLLOWING PRODUCTS NOT MANUFACTURED BY OSMOSIS COMPU ER CORPORATION:
Control Data Cor oration disk drives CDC 9409 Tab 1501 and CDC 9409 Tab 1800

4. STATEMENT OF EXT NT OF WARRANTY:
In the event of a defect, malfunction or failure to conform to this warranty, the W rrantor, at it's election, will replace or repair such merchandise, in luding cost of labour and parts, but the consumer pays all transportat on costs for return to the warrantor. Defects, malfunctions, f ilure or damage to the product caused by improper, unreasonable or negligent abuse are specifically excluded from this warranty. In t e event any repair or modification is done to the product in th warranty period other than by Osmosis Computer Corporation or t's agent, the product will be specifically excluded from the warra ty. The Warrantor, in it's sole operation, will determine if thi exclusion shall be applicable.

5. TERM OF WARRANTY
This warranty s ull extent for a period of ninety days (90 days) from the date of orig nal purchase by the first purchaser, but will expire thereto on trans er to another person.

6. PROCEDURE TO OBT N PERFORMANCE OF WARRANTY:
Contact Osmosis mputer Corporation at (415) 355-4848. Obtain a Return Merchandise Aut orization number (RMA). Send the product, well packaged, to Os sis Computer Corporation, Suite 214, 80 Eureka SQ., Pacifica, CA 9 044 showing the RMA number on the outside of the box, shipping and del very charges pre-paid.

7. ADDITIONAL WARRA TIES:
There are no war anties expressed or implied other than those expressed specifically in his document.

OSMOSIS COMPUTER COR ORATION MARCH 1984