

ALBERT™ OWNER'S MANUAL



ALBERT™

OWNER'S MANUAL

THIS IS A PRELIMINARY VERSION OF THE
MANUAL, TO BE UPDATED AND ILLUSTRATED
FOR FINAL PRODUCTION.

August 1, 1983

ALBERT COMPUTERS, INC.
756 Lakefield Drive, Unit G
Westlake Village, CA 91361

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PREFACE

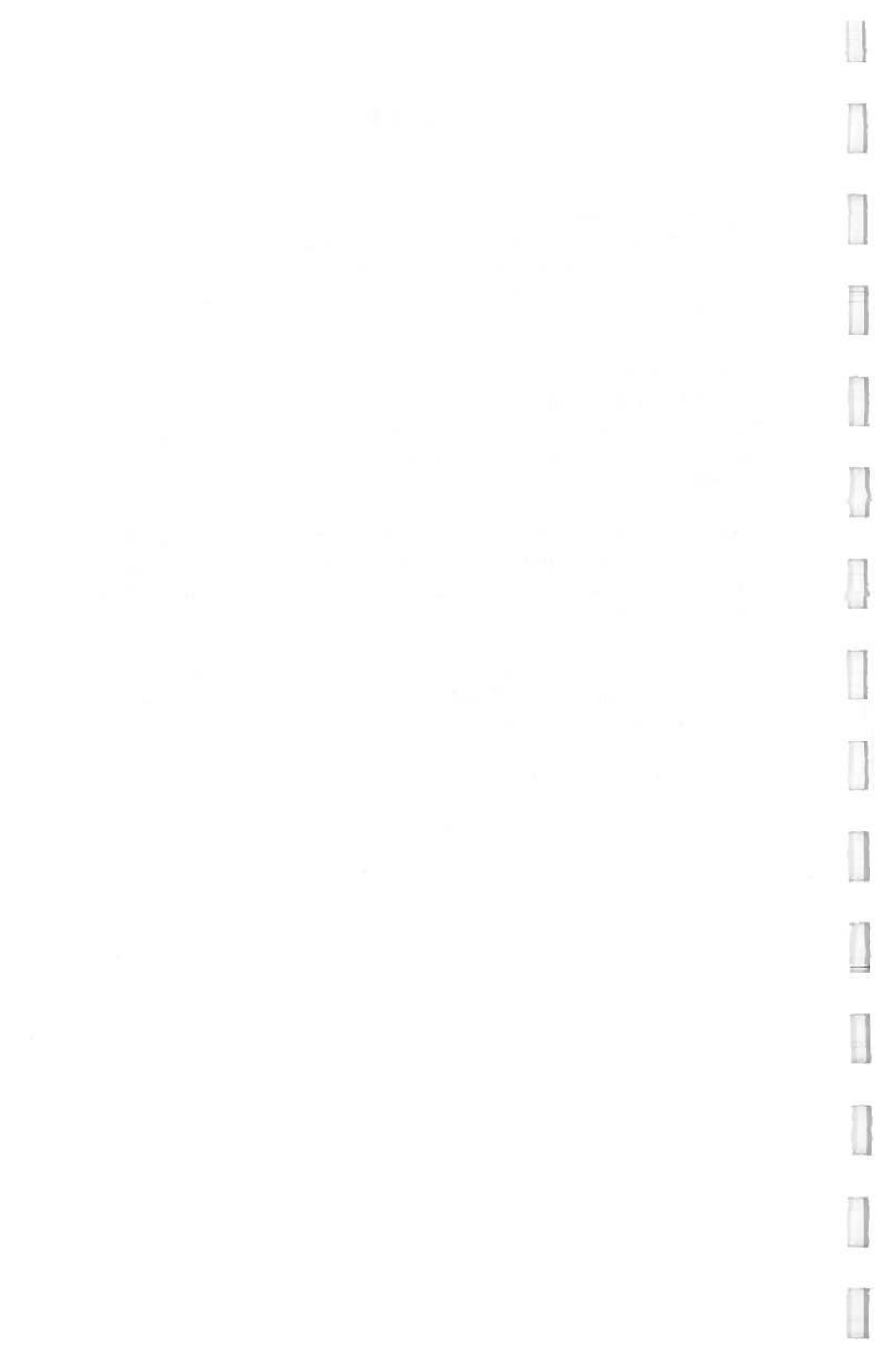
The Albert Computer, and this manual, are new products in the marketplace. The Owner's Manual is currently a preliminary version of the final product. Later editions of the manual will be corrected as necessary, as regards all technical content matters. It will also be revised for the sake of improvement; for example, with respect to how easy it is for you, the customer, to use.

The manual is "procedural", and is slanted toward "how to" accomplish hook up and initial operation of the system. The procedures described have been validated with respect to content and accuracy, but are subject to change as system configuration evolves, or procedures are modified.

Later versions of this manual will be expanded to include more technical information and illustrations for the reader. For now, it covers what you need to know with respect to set-up and initial operation of the system.

The manual was prepared by Pauline Cadena of Albert Computers, Inc. Technical documentation support was provided by PACER Systems, Inc., San Diego, Calif.

REVISION C: AUGUST 1, 1983



INTRODUCTION

Welcome to the community of Albert owners. If this is your first computer, you're probably feeling both enthusiasm and apprehension, as you would with any significant purchase.

Over the long haul we hope to increase your enthusiasm, which we believe is fully justified. In fact, you have just bought yourself an extremely capable system, at a very reasonable cost. By the same token, we hope to diminish your apprehension. Our system is not difficult to operate.

This manual, entitled "Albert Owner's Manual", is somewhat tutorial, to address both the novice and the more experienced user. Being an owner's manual, it concentrates on system hook-up and operation.

In developing the manual we have used an analytical, or "Top-down" approach. Each generic task, or operation, is presented in bold-face. On average this is all the more experienced operator needs to be told. Steps of the task, which describe how to accomplish the task, are presented in conventional type-set, and are required reading for the novice. The bold-face will be a numbered "task". The conventional type-set will be lettered "steps" of the task, taken in their proper order. The tutorial information will be helpful to the experienced user, the novice, or both. We have also included WARNINGS, CAUTIONS and NOTES, both to protect your system, and to ensure compliance with the warranty.

Illustrations, with reference "call-outs", will assist you in accomplishing critical aspects of the various tasks. These will prevent your causing any physical damage to the system, such as would be caused by forcing a plug into its receptacle upside down. They will also help you understand the operation of the various "peripheral" devices, such as the keyboard, the CRT and the graphics pad.

If you encounter a procedure or illustration in this manual which is not exactly like your own system, get in touch with your dealer for update information. The dealer will also be able to advise you when the next "edition" of this manual will be available.

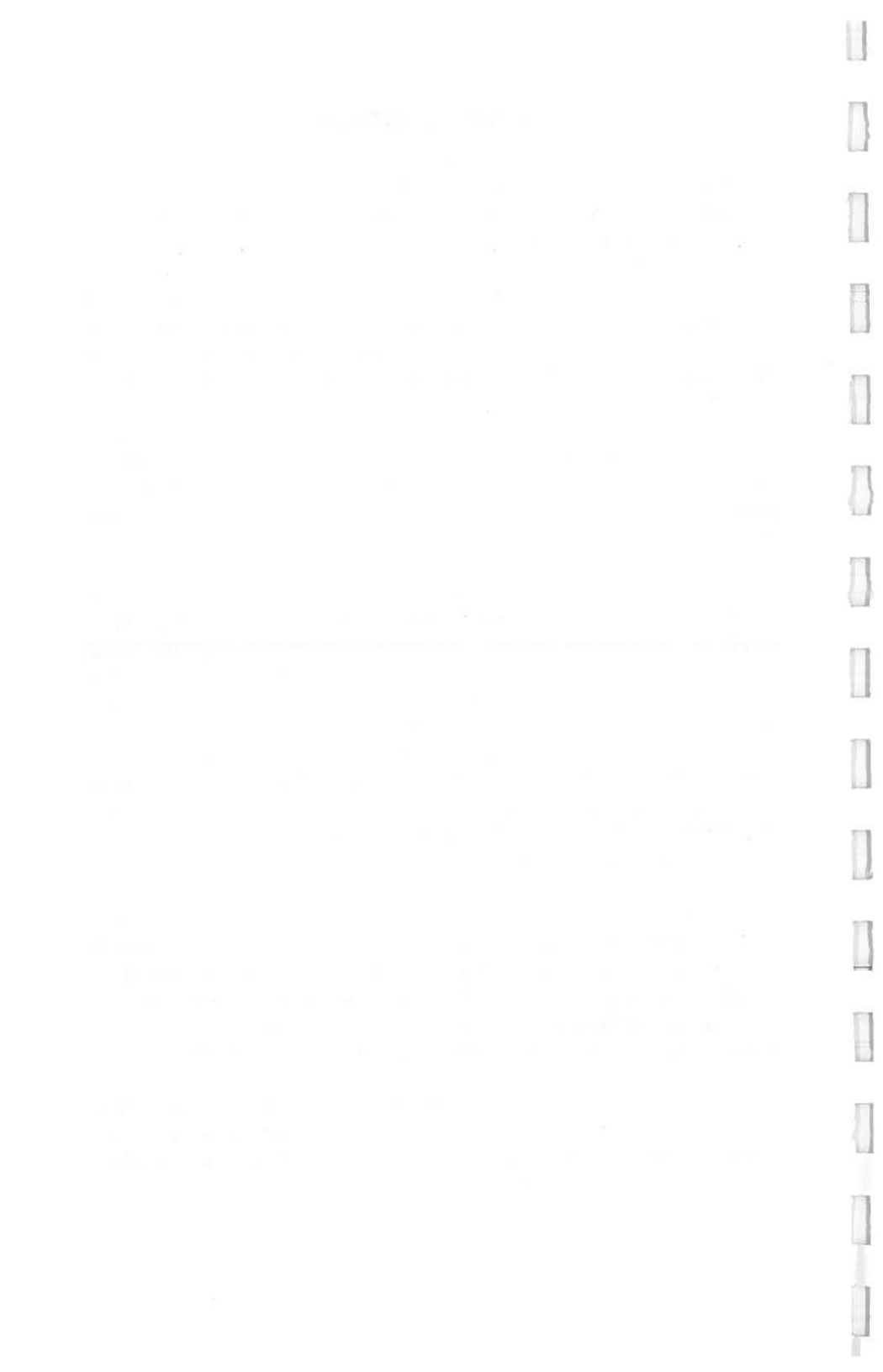


TABLE OF CONTENTS

SECTION ONE

- 1.0 ALBERT SYSTEM OVERVIEW
- 1.1 SYSTEM FEATURES

SECTION TWO

- 2.0 UNPACK THE SYSTEM
- 2.1 REMOVE THE COMPONENT BOXES
- 2.2 REMOVE INDIVIDUAL COMPONENTS FROM THEIR BOXES

SECTION THREE

- 3.0 FAMILIARIZE YOURSELF WITH THE SYSTEM
- 3.1 LOOK AT THE FRONT PANEL
- 3.2 LOOK AT THE BACK PANEL
- 3.3 LOOK INSIDE THE SYSTEM
- 3.4 LOOK AT THE KEYBOARD

SECTION FOUR

- 4.0 ASSEMBLE THE SYSTEM
- 4.1 VERIFY THAT POWER CONTROL ON COMPUTER FRONT PANEL IS OFF
- 4.2 CONNECT THE POWER ADAPTOR TO THE COMPUTER
- 4.3 CONNECT THE POWER ADAPTOR TO THE WALL OUTLET
- 4.4 TURN POWER ON FOR "CONTINUITY CHECK"
- 4.5 CONNECT VIDEO MONITOR TO THE COMPUTER
- 4.6 VERIFY CORRECT PATTERN ON VIDEO MONITOR, - OR -
- 4.7 CONNECT STANDARD T.V. TO USE AS A VIDEO MONITOR
- 4.8 CONNECT THE KEYBOARD TO THE COMPUTER
- 4.9 VERIFY CORRECT KEYBOARD OPERATION
- 4.10 CONNECT THE KOALA GRAPHICS PAD TO THE COMPUTER
- 4.11 INSTALL THE ALBERT (OR OTHER COMPATIBLE) DISK DRIVE ASSEMBLY

SECTION FIVE

- 5.0 START UP (BOOTING) THE SYSTEM
- 5.1 LOAD UTILITY DISK

- 5.2 FAMILIARIZE YOURSELF WITH UTILITY DISK MENU
- 5.3 SELECT PROGRAM TO MAKE BACKUP COPY OF UTILITY DISK
- 5.4 CONFIGURE COPY PROGRAM TO COPY ONLY ONE DISK
- 5.5 INSERT BLANK DISKETTE TO BEGIN COPY PROCESS
- 5.6 PRESS "RETURN" TO COPY DISK
- 5.7 REMOVE AND STORE MASTER DISK
- 5.8 INSERT BACKUP DISK INTO DRIVE 1
- 5.9 LOAD SOFTWARE FOR GRAPHICS PAD OPERATION
- 5.10 VERIFY OPERATION OF KOALA PAD
- 5.11 REFER TO S & H UTILITY DISK MANUAL TO USE OTHER UTILITY DISK OPTIONS
- 5.12 LOAD A DOS 3.3 DISK
- 5.13 LOAD A PASCAL DISK
- 5.14 ACTIVATE A CARD (PC BOARD) IN A SLOT

SECTION SIX

- 6.0 ALBERT SYSTEM CARE
- 6.1 COMPUTER CARE
- 6.2 DISK CARE

SECTION SEVEN

- 7.0 CABLE CONFIGURATIONS FOR INPUT/OUTPUT
- 7.1 RGB (VIDEO) CABLE CONFIGURATION
- 7.2 GAME I/O CONNECTOR
- 7.3 RS 422 CONNECTOR
- 7.4 RS 232 COMMUNICATION CABLE
- 7.5 PARALLEL PORT

SECTION EIGHT

- 8.0 GLOSSARY

SECTION NINE

- 9.0 INDEX



SECTION ONE

1.0 ALBERT SYSTEM OVERVIEW - helps become familiar with the Albert Computer. It requires familiarization with:

1.1 SYSTEM FEATURES

REPORT

ON THE

...

1.0 ALBERT SYSTEM OVERVIEW

This section will review the Albert system's important features. Your dealer has probably already explained these features to you. They are included here as a convenient reference.

1.1 SYSTEM FEATURES

Although your salesperson described what the Albert computer can do, its primary features are noted again here for quick reference. The best use of these features is obtained by appropriate "software". The experienced user can write his own software programs. Others will soon be available from your dealer.

- **Apple* Compatibility** — The Albert hardware and software are Apple-compatible. This means that a large number of software packages and applications possibilities are available now, without the need for extra programming or Hardware/Software "kits".
- **64K RAM** — The Random Access Memory capacity provides storage for a large number and variety of applications. RAM stores the instructions of programs currently being run.
- **Upper and Lower Case Character Set** — This feature provides flexibility when working at the terminal, with a CRT. It is essential for high quality word processing.
- **RS 232 Communications** — Both 300 and 1200 baud rates are provided as standard. Additional baud rates are selectable between 50 and 19,200. This provides a wide range of business communications.
- **Networking Capability** — Two levels: RS 422/423 networking allow data transfer from system to system and from system to peripherals.
- **Parallel Printer Port** — The built in port allows use of virtually any Centronics-compatible parallel printer on the market.

*Apple is a registered trademark of Apple Computer Inc.

- Data Security Lock — You can write a simple program to prevent others from seeing your data, for example, by making background and text the same color.
- Battery/Charger Backup — The battery backup circuitry is a standard feature allowing you to preserve your data. A charger is built in to automatically recharge the battery.
- Voice Processing — The computer can digitize and store human voice; for example, messages or commands. The stored information can be played back in its original form, or in a modified form, as seen in the following paragraph. In addition, other types of audio input can be stored and played back in the original or modified form.
- Digitized audio control and output — The computer can play back stored audio information, and can also generate (synthesize) audio signals which are structured to convey information. For example, synthetic voice can be generated to issue commands or to convey instructions.
- RGB Graphics — System capabilities support the generation of high resolution color graphics. In addition to composite color, the RGB graphics system provides separate control of each color. This allows for high resolution (140 x 192 pixel) color field, extraordinary sharpness and brilliance, and a palette of 256 hues.
- Graphics power pad (Koala Pad) — The graphics pad can be hand held, and provides for direct touch control of existing graphics operations, (as opposed to keyboard, or indirect control). Software included allows menu selection, by touch, of the various graphics options. These include changing displays, changing display colors and storage of all displayed graphics.
- Calendar Clock — With supporting hardware and software, the calendar clock can provide such features as timing and initiating home security measures; timed monitoring or control of measurable activities and automatic recording and storing of routine information.

- Transportability — The Albert Computer system is transportable into a variety of "power source" environments. It operates on 110 volt AC sources (50 or 60 cycles per second), as well as 8 through 32 volt DC sources. This allows for operations internationally, in most countries of the world.





SECTION TWO

- 2.0 **UNPACK THE SYSTEM** — to unpack the system you must:
- 2.1 **REMOVE THE COMPONENT BOXES**
- 2.2 **REMOVE INDIVIDUAL COMPONENTS FROM THEIR BOXES**
- 2.3 **FILL OUT AND MAIL THE WARRANTY CARD**
- 2.4 **STORE PACKING MATERIALS FOR FUTURE USE**

Turn to the next page for details . . .

SECTION 10

The first part of the section is devoted to the study of the

properties of the function $f(x)$ defined by

$f(x) = \int_0^x (x-t)^n dt$ for $x \geq 0$ and n a non-negative integer.

It is shown that $f(x)$ is a polynomial of degree $n+1$ and that

$f(x) = \frac{x^{n+1}}{(n+1)!}$ for $x \geq 0$.

The second part of the section is devoted to the study of the

properties of the function $f(x)$ defined by

$f(x) = \int_0^x (x-t)^n e^{-t} dt$ for $x \geq 0$ and n a non-negative integer.

It is shown that $f(x)$ is a polynomial of degree $n+1$ and that

$f(x) = \frac{x^{n+1}}{(n+1)!} - \frac{x^n}{n!} + \frac{x^{n-1}}{(n-1)!} - \dots + (-1)^n \frac{x}{1!} + (-1)^{n+1} \frac{1}{(n+1)!}$ for $x \geq 0$.

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properties of the function $f(x)$ defined by

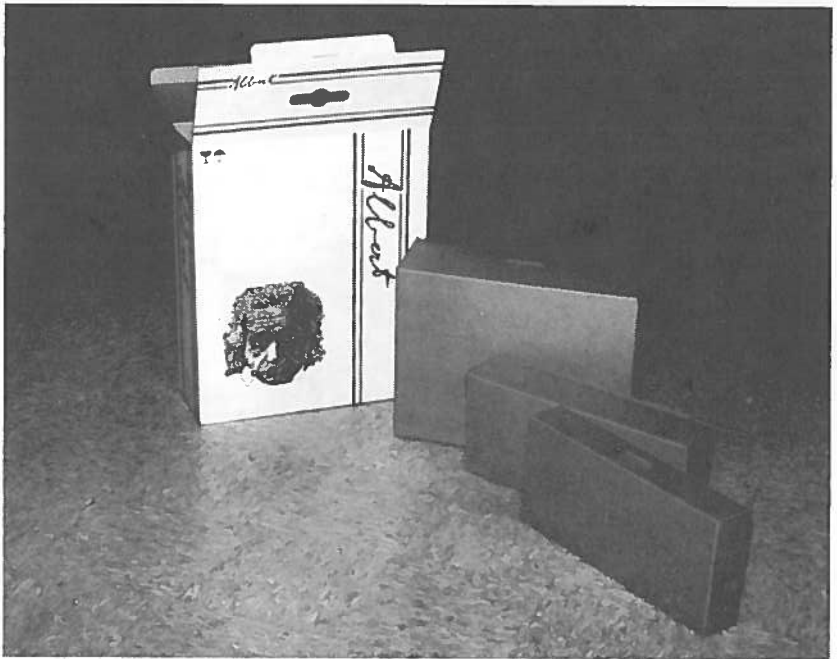
$f(x) = \int_0^x (x-t)^n e^{-t} dt$ for $x \geq 0$ and n a non-negative integer.

2.0 UNPACK THE SYSTEM

This section will describe how to unpack the system, and will remind you to check for any shipping damages before attempting to hook up and operate. The complete system comes packaged in one large box with a plastic carrying handle. Inside the large box you will find three smaller individual boxes containing the computer, the keyboard, and the accessories. Each box is lined with foam to protect and secure the enclosed item. The computer and keyboard are inside plastic bags which have been treated to prevent build-up of static electricity. Be sure to save all the packing material for transporting the system to a different location, or for shipping the computer for service or repair.

2.1 REMOVE THE COMPONENT BOXES

- a. Remove the three individual boxes from the larger one, and place them on a work table.

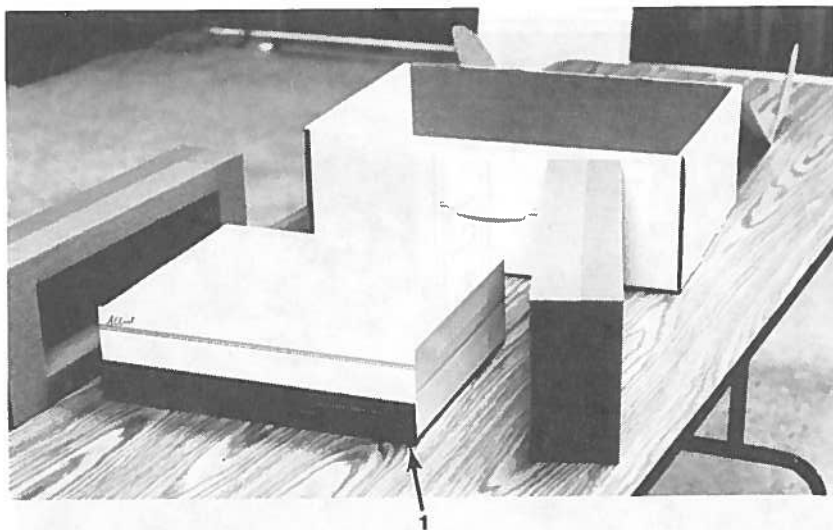


- b. Remove the packing list from the larger box, and place it on your work table.
- c. Locate the Warranty Card in the accessories box and place it on a work table.

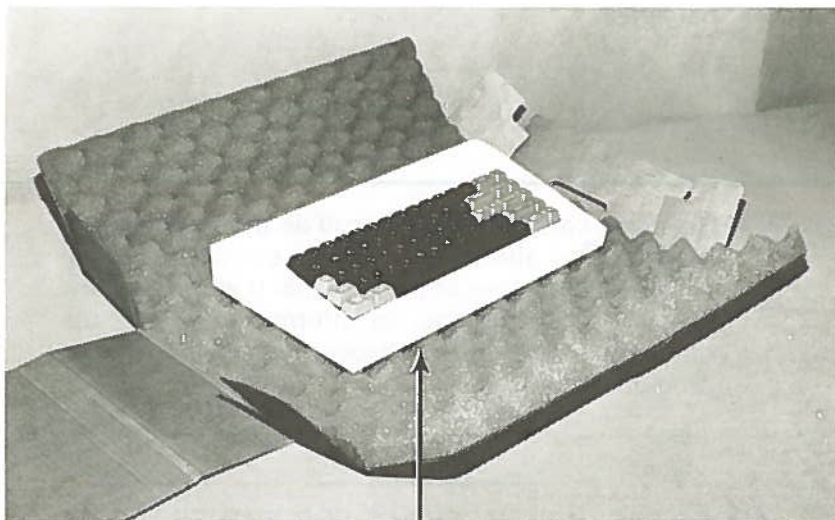
2.2 REMOVE INDIVIDUAL COMPONENTS FROM THEIR BOXES

NOTE: Keep top of the boxes facing up when you open them to prevent the items from spilling out. Also, remember to save the anti-static plastic bags for later use in transporting the equipment.

- a. Remove the computer (1) and inspect for shipping damage.

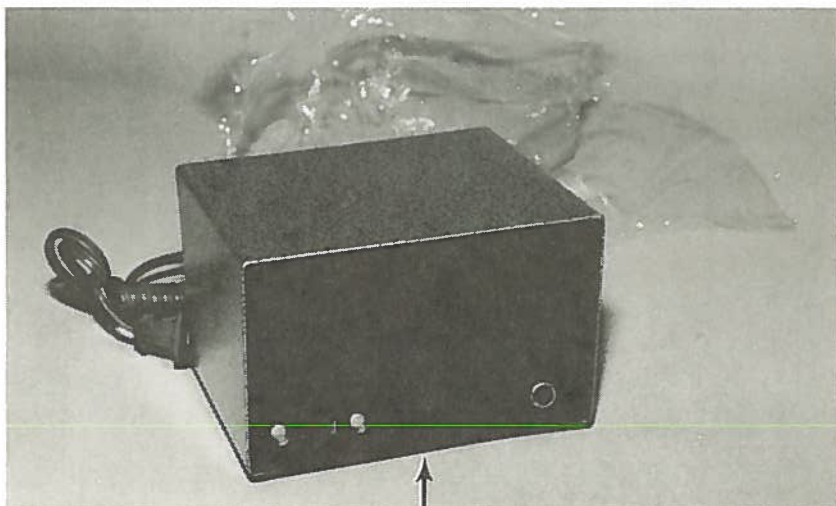


b. Remove the keyboard (2) and inspect for damage.



2

c. Remove the power adaptor (3) and inspect for damage.



3

- d. Check items (1-3) against packing list.
- e. Notify your dealer immediately if something is missing or damaged.

2.3 FILL OUT AND MAIL THE WARRANTY CARD

NOTE: This card will register you as the owner of the product and allow us to better serve you in the event that you have any questions. It will also allow Albert Computers, Inc. to inform you of any updates, new software packages, revisions, and new product offerings.

2.4 STORE PACKING MATERIALS FOR FUTURE USE

CAUTION: For future reference, NEVER use aluminum foil, black foam or black plastic for packing. These materials will conduct electricity and could possibly harm the computer if power is ON or the battery is connected.

SECTION THREE

3.0 FAMILIARIZE YOURSELF WITH THE SYSTEM

3.1 LOOK AT THE FRONT PANEL

3.2 LOOK AT THE BACK PANEL

3.3 LOOK INSIDE THE SYSTEM

Turn to the next page for details . . .

SECTION THREE

CHAPTER 1. THE HISTORY OF THE UNITED STATES

SECTION 1. THE EARLY YEARS

SECTION 2. THE REVOLUTION

SECTION 3. THE WESTERN FRONTIER

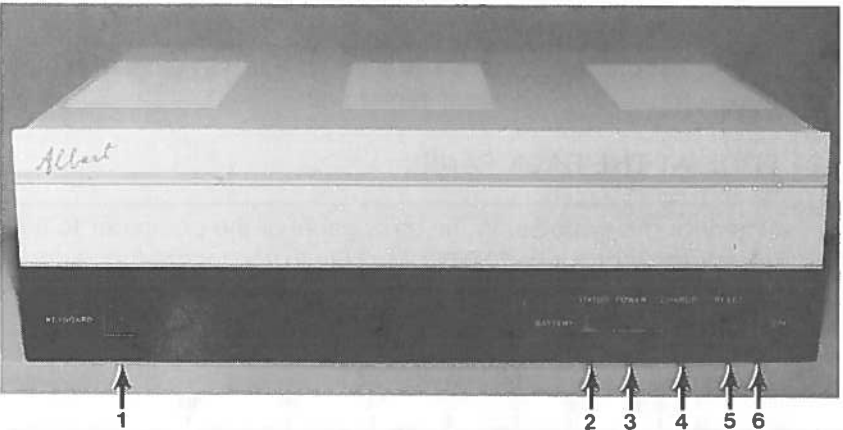
SECTION 4. THE CIVIL WAR

3.0 FAMILIARIZE YOURSELF WITH THE SYSTEM

This section of the manual will help to locate and identify important features and controls of the Albert System. It will give a very brief description of the item's function, about which you will learn more later.

3.1 LOOK AT THE FRONT PANEL

Below is a picture of the Albert's front panel. The photograph and the descriptions below help identify the following items, or features:



FEATURE

Keyboard Connector (1)

HOW IT'S USED

The keyboard's coiled cord plugs into this opening. The plug and receptacle are notched so they will only fit one way. (The keyboard connector is a simple serial input type.)

**Battery Status Indicator (2)
(red, amber, green)**

Red indicates the system is operating on battery. Amber indicates the battery is recharging. Green indicates that the battery is charged.

FEATURE

HOW IT'S USED

Power Control (3)

Power Control switches the system between OFF and ON.

Charge Control (4)

This push button control allows you to increase the rate of charge to the battery. The faster charge rate is recommended when using an external battery power source.

Reset Control (5)

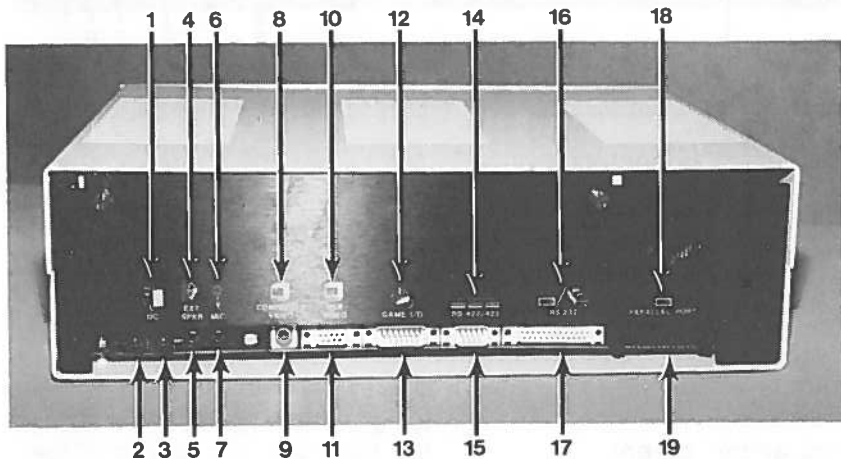
Pressing Reset restarts the resident program providing the system is already ON.


ON (green) (6) Indicator

To show power ON, this indicator remains lit.



3.2 LOOK AT THE BACK PANEL

Compare the symbols on the back panel of the computer to the matching symbols described below. It will help you locate the various connection points and receptacles below the symbols on the computer's back panel.




SYMBOL	REFERENCE	HOW IT'S USED
DC (1) 	The symbol locates two power inlets on the back panel.	Looking directly at the back panel, you will see the receptacle (2) on the left which connects an external DC power source; for example, standard AC wall current after it has been converted to DC. The receptacle (3) on the right attaches an external battery power source, which may be purchased from the dealer.


CAUTION: Before connecting either DC power source, check that the power switch on the front panel is OFF. (When ON, this switch is slightly depressed as compared to the other switches.) When using an external DC power source (receptacle (2) on left), connect the source FIRST to the receptacle (2), SECOND to the AC wall outlet.

EXT. SPKR. (4) 	The symbol locates the external speaker outlet (5).	An optional speaker may be added and its cable connects to this jack.
MIC (6) 	The symbol locates the microphone input jack (7).	You may connect a microphone for storing voice input. The microphone cable will connect to the jack.
COMPOSITE VIDEO (8)	The symbol identifies the NTSC video input plug (9).	All video picture data are transported from the computer to the video monitor. The composite video cable which sends mixed or serial signal data, connects to the RCA phono-style plug (9).


NOTE: If a standard T.V. is to be used as the video monitor, it may be necessary to incorporate an RF modulator. The standard T.V. screen will display only 40 characters horizontally, and is not adequate for word processing.

SYMBOL	REFERENCE	HOW IT'S USED
RGB (10) 	The symbol identifies the RGB (red, green, blue) video output receptacle (11).	The RGB video cable transmits a parallel video color signal to the monitor, and is connected to this receptacle (11).


CAUTION: The receptacle (11) is made so that the cable plug will only fit one way. Don't force it.

GAME I/O (12) 	The symbol points to the GAME Input/Output Receptacle (13).	This fifteen pin connector links hand controlled devices, and also analog sensors and detectors to the ALBERT. Hand controls using more or less than fifteen pins require a special cable.
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CAUTION: The receptacle (13) is made so that the cable plug will only fit one way. Don't force it.

RS422/423 (14) 	The symbol identifies the plug (15) for networking.	This is used to allow (a) several ALBERT systems to access one peripheral such as a printer, or (b) to allow several ALBERT systems to network with each other. The cable from the networked devices will connect to this plug (15).
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CAUTION: The plug (15) is made so that the cable receptacle will only fit one way. Don't force it. Also, a gateway converter may be required to convert to your existing network.

SYMBOL	REFERENCE	HOW IT'S USED
RS 232 (16) 	The symbol identifies a plug (17), or port, for the RS232 printer or data communications modem.	A serial printer or modem may send data through this outlet to the computer. The cable for either device connects here (17).

CAUTION: The plug (17) is made so that the cable receptacle will only fit one way. Don't force it. In case your printer requires a NULL modem cable, ask an ALBERT dealer about hook-up procedures.

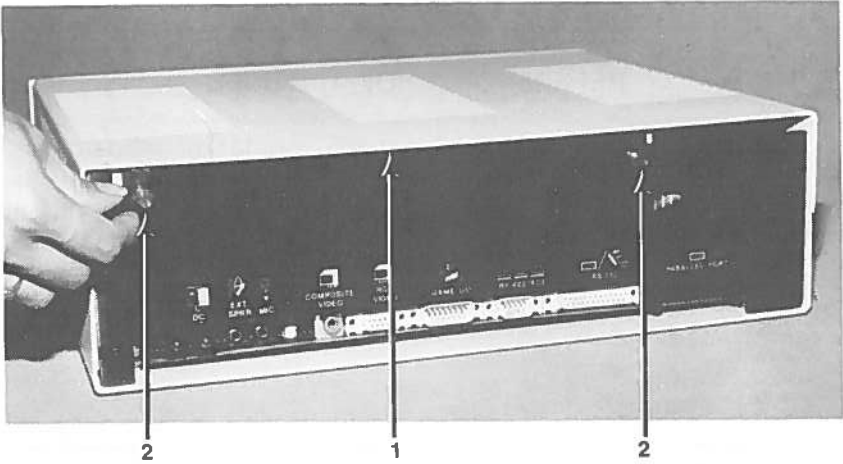
PARALLEL PORT (18) 	The symbol points to the outlet (19) or port, for a parallel printer.	This port permits directly connecting a parallel printer to the ALBERT. A parallel printer cable attaches to the receptacle (19).
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3.3 LOOK INSIDE THE SYSTEM

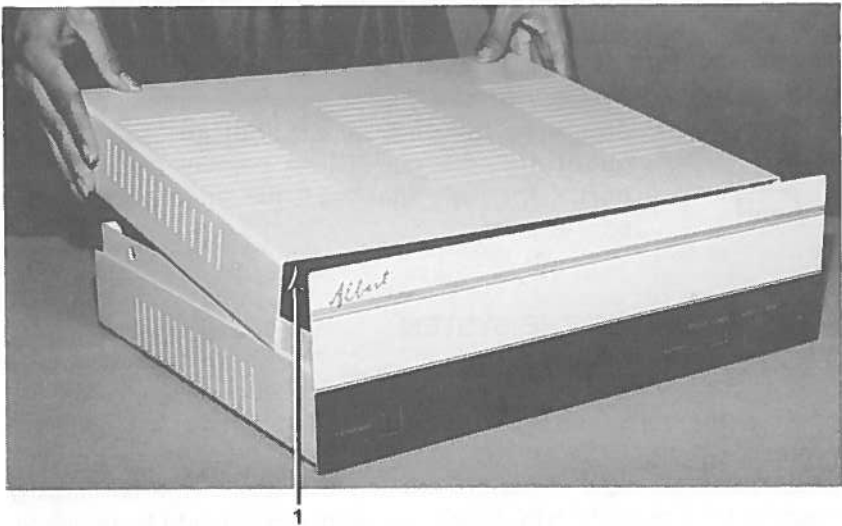
In order to look inside the system, you need to remove the top cover of the computer from the chassis. The point is to familiarize yourself with the large printed circuit (PC) board, or "Motherboard", which takes up most of the bottom of the chassis. It is particularly important to know which PC board elements you can add to, or adjust, and which are "built-in" and "non-adjustable". It is of interest to know that the motherboard contains 92 integrated circuits along with several other components.

3.3.1 REMOVE TOP COVER (1)

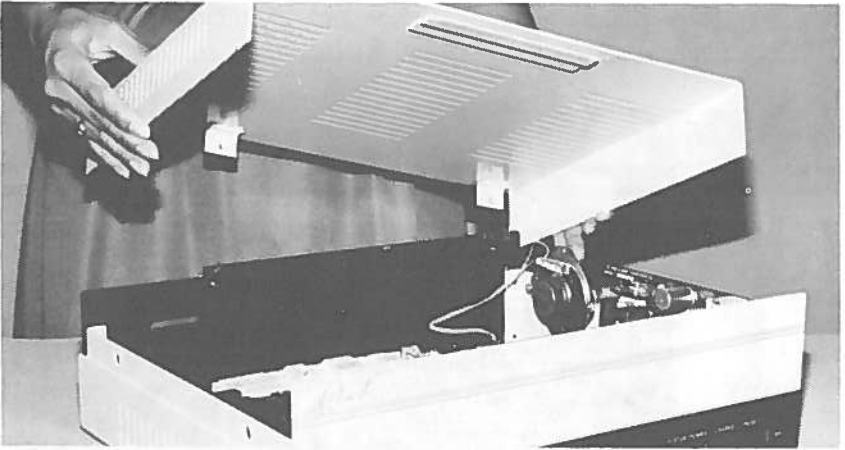
- a. Loosen two screws (2) on back panel of computer.



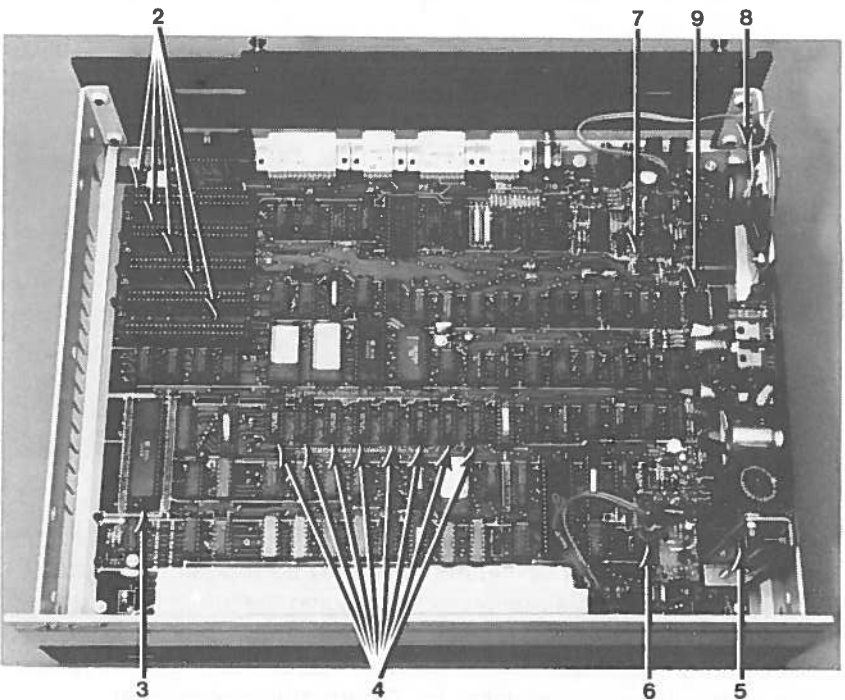
- b. Lift top cover (1) from the rear.



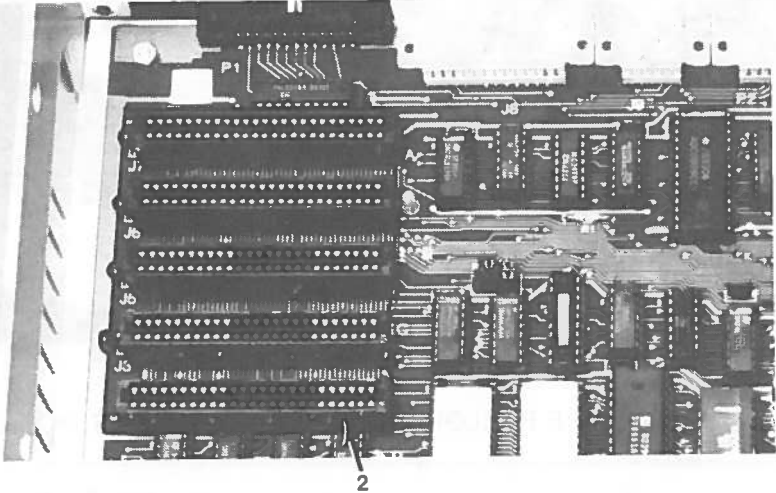
Slide cover back and lift from the chassis.



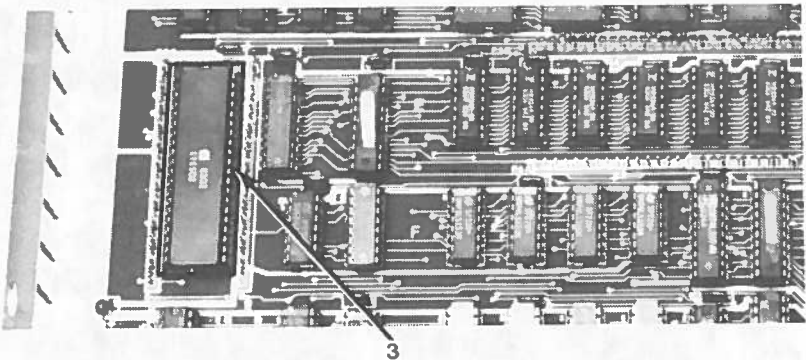
3.3.2 LOCATE THE FOLLOWING ELEMENTS ON THE MOTHERBOARD.



- a.* Expansion slots (2), labelled J7, J6, J5, J3, and J2. These are used for plugging in expansion boards or peripheral cards, which make it possible to connect additional equipment to your system.

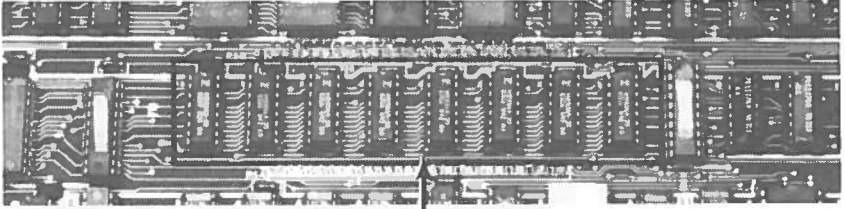


- b. 6502 Processor (3). This is the central processing unit of your computer.

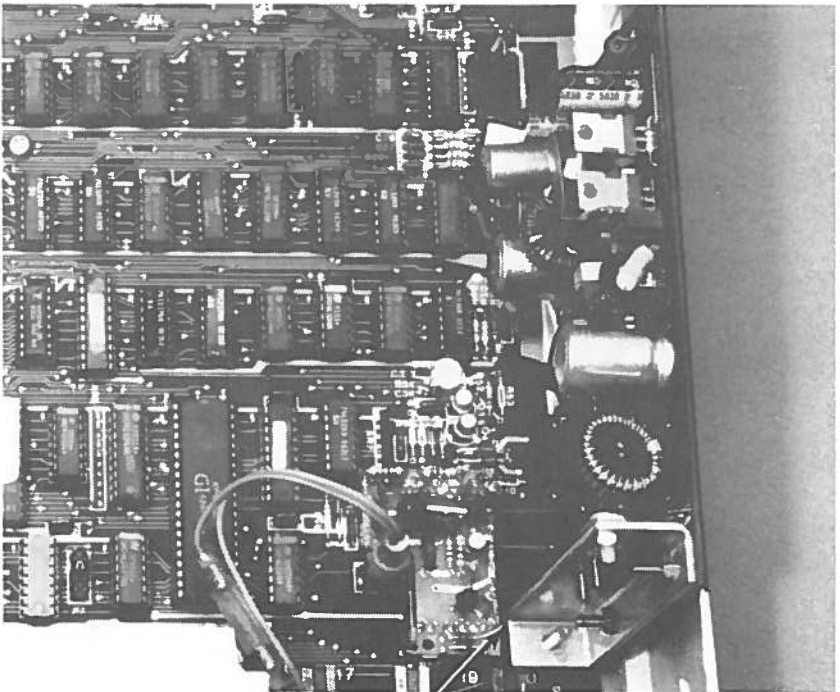


* There is a jumper, P4, on the motherboard which can toggle slots 3 and 4. The jumper is configured currently so that slot 4 is internal and 3 is accessible (is a connector). Changing the jumper will reverse the situation so that 3 becomes "internal" and 4 is the connector. Unless you are an experienced operator, do not change this jumper without consulting your dealer or the Albert reference manual.

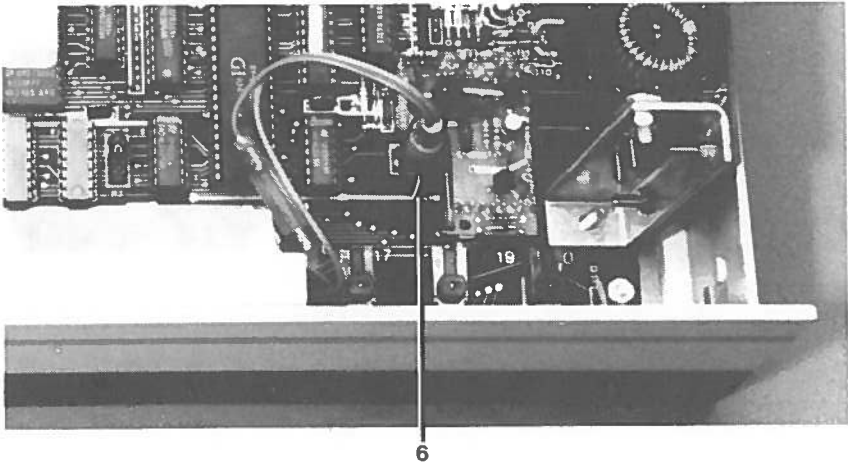
- c. RAM (4). This is short for Random Access Memory which is the main memory storage place of the data your computer is working on.



- d. Power Supply Module (5). This power supply module provides the basic energy for the computer's internal operations.



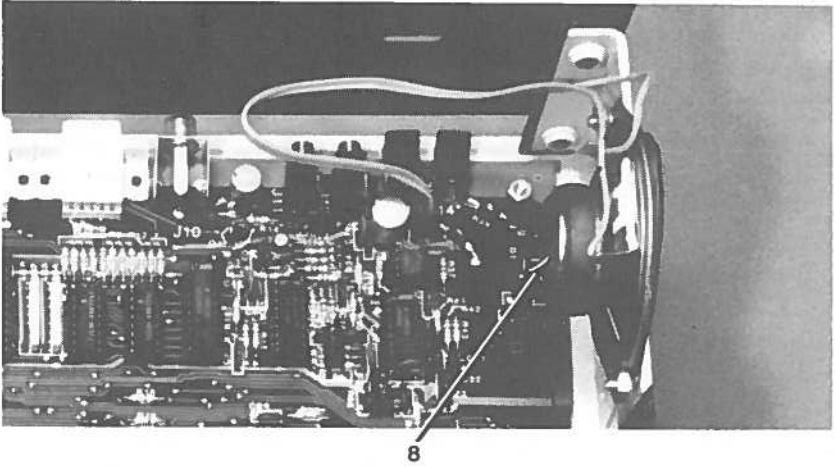
- e. Battery Connector (6). This connector is used for plugging in the internal battery "backup" power source.



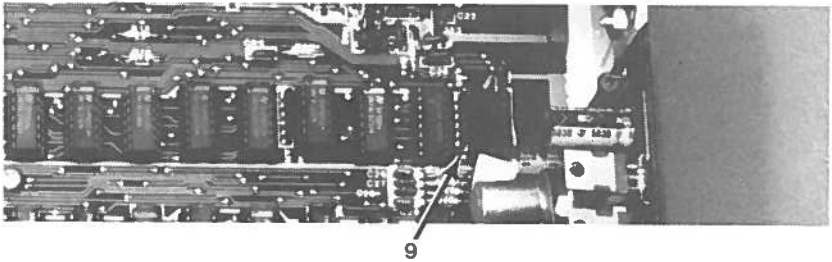
- f. Volume Control (7). The volume control is used to vary the loudness of your speaker.



- g. Speaker (8). This is where your sounds and musical tones come from.



- h. Apple Game I/O (9). This is the receptacle for connecting Apple hand controls. It is discussed in more detail in the following section.



3.3.3 INSTALL TOP COVER (1)

- a. Place top cover (1) squarely on the chassis (2).
(Refer to Step 3.3.1)
- b. Do not install screws to secure top cover until you have assembled the system. See next section.

3.4 LOOK AT THE KEYBOARD - To be supplied.

At this point you should have a good overview of the Albert computer system, and the various components. Some of these components will be discussed in more detail later, as necessary. In addition your dealer is a very good information source. For now, turn to the next chapter which explains putting the system together.

SECTION FOUR

- 4.0 ASSEMBLE THE SYSTEM — to assemble the system it is necessary to:
 - 4.1 VERIFY THAT POWER CONTROL ON COMPUTER FRONT PANEL IS OFF
 - 4.2 CONNECT THE POWER ADAPTOR TO THE COMPUTER
 - 4.3 CONNECT THE POWER ADAPTOR TO THE WALL OUTLET
 - 4.4 TURN POWER ON FOR "CONTINUITY CHECK"
 - 4.5 CONNECT VIDEO MONITOR TO THE COMPUTER
 - 4.6 VERIFY CORRECT PATTERN ON VIDEO MONITOR, OR
 - 4.7 CONNECT STANDARD T.V. TO USE AS A VIDEO MONITOR
 - 4.8 CONNECT THE KEYBOARD TO THE COMPUTER
 - 4.9 VERIFY CORRECT KEYBOARD OPERATION
 - 4.10 CONNECT THE KOALA GRAPHICS PAD TO THE COMPUTER
 - 4.11 INSTALL THE ALBERT (OR OTHER COMPATIBLE) DISK DRIVE ASSEMBLY
 - 4.12 CONNECT THE INTERNAL BATTERY

Turn to the next page for details:

1. Introduction

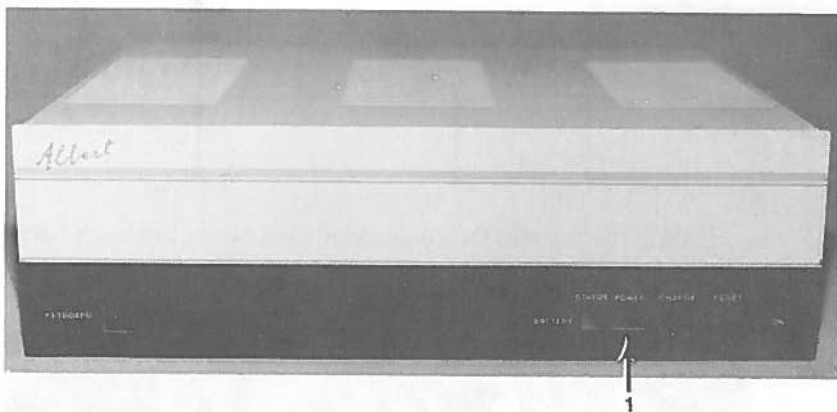
The first part of the document discusses the importance of maintaining accurate records in a business context. It highlights the various benefits of a well-organized system, such as improved efficiency and better decision-making. The second part of the document provides a detailed overview of the different types of records that should be maintained, including financial statements, contracts, and correspondence. It also discusses the legal requirements for record-keeping and the consequences of non-compliance. The third part of the document offers practical advice on how to implement a record-keeping system, including the selection of appropriate software and the training of staff. Finally, the document concludes with a summary of the key points and a call to action for businesses to take steps to improve their record-keeping practices.

4.0 ASSEMBLE THE SYSTEM

Before attempting to assemble the Albert computer system please read all the instructions in this chapter very carefully. Don't venture into unknown areas until you are sure how the system fits together and how it operates. The instructions are provided to prevent any possibility of damage or misuse of the component parts.

CAUTION: Don't try to start up (boot) the system until it is completely assembled, and your assembly steps have been double-checked. Start-up instructions are included in the next section.

4.1 VERIFY THAT POWER CONTROL (1) ON COMPUTER FRONT PANEL IS OFF.



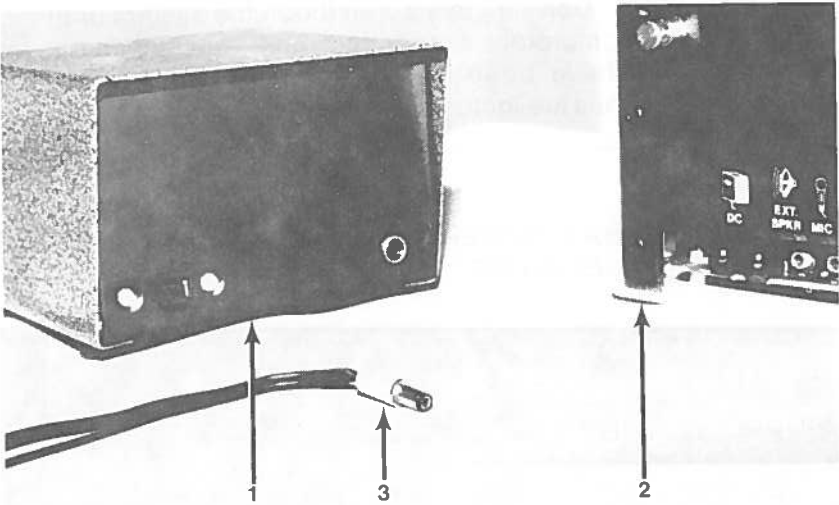
NOTE: Recall that the power control switch is slightly depressed in the ON position, and even with the others in the OFF Position.

- a. Press control (1) several times, to verify positions for ON and OFF (depressed and not depressed).

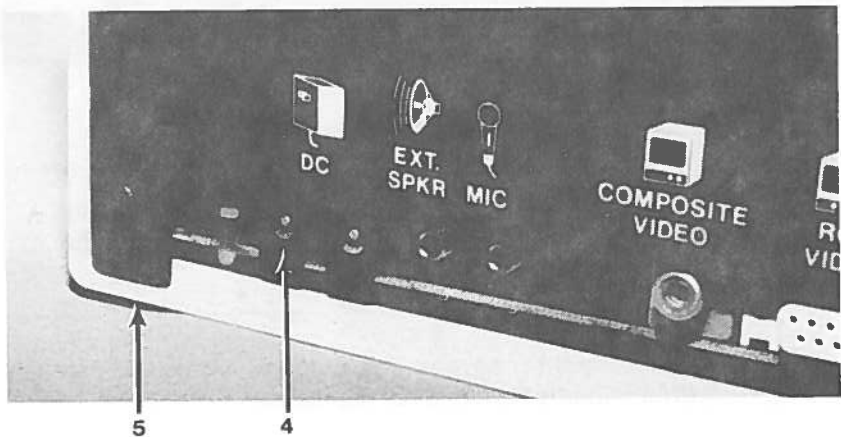
- b. Place power control (1) to OFF. Leave it OFF to perform the following steps.

4.2 CONNECT THE POWER ADAPTOR (1) TO THE COMPUTER (2).

- a. Locate the power adaptor (1) and DC end plug (3) on the adaptor.

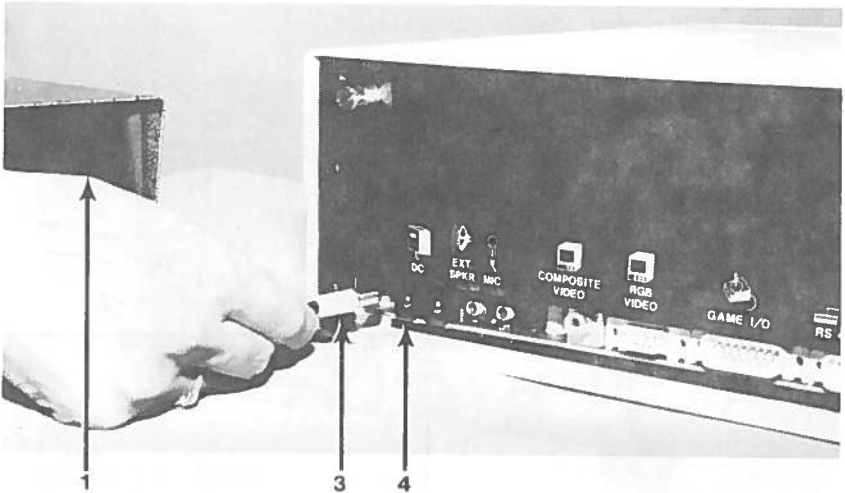


- b. Locate the correct DC receptacle jack (4) on the back panel (5) of the computer (2).

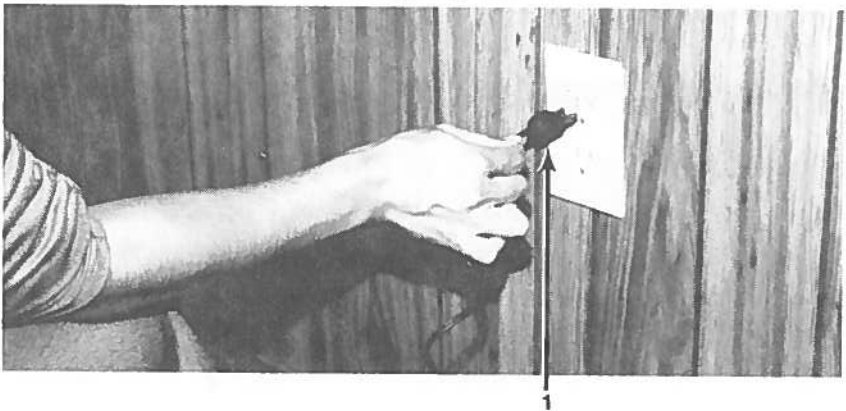


NOTE: Recall that when facing the back panel there are two DC receptacles. The correct receptacle for the power adaptor is the one to the left. The other is for an external battery supply.

- c. Connect the plug (3) on the power adaptor (1) to the left DC receptacle jack (4).



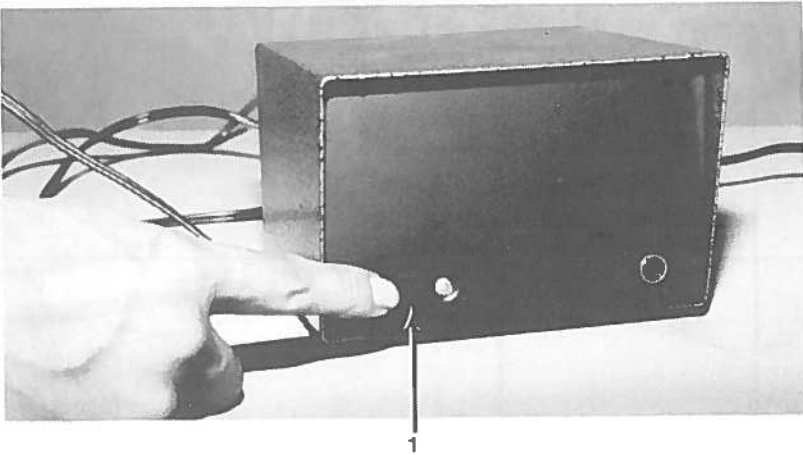
4.3 CONNECT THE POWER ADAPTOR (1) TO THE WALL OUTLET.



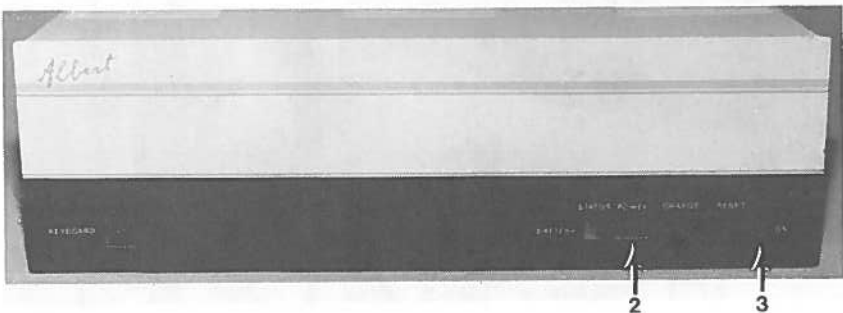
CAUTION: Do not connect to AC power with the Power Control switch ON. If you have been interrupted, or someone else has been around your system, go back and verify step 4.1.

4.4 TURN POWER ON FOR "CONTINUITY" CHECK.

- a. Turn power adaptor switch (1) ON.



- b. Press power control (2) on computer front panel to ON.
- c. Listen for audio tone and check that power ON indicator (3) is lit.



NOTE: The Audio tone is a fast-paced beeping. If you don't hear the beeping, or if the indicator light doesn't come on, there is a malfunction. Turn power off and retrace your previous steps, up to this point. If you don't find the problem, don't go any further. Consult your dealer.

- d. If check is good (beeping and light present), turn power control to OFF.

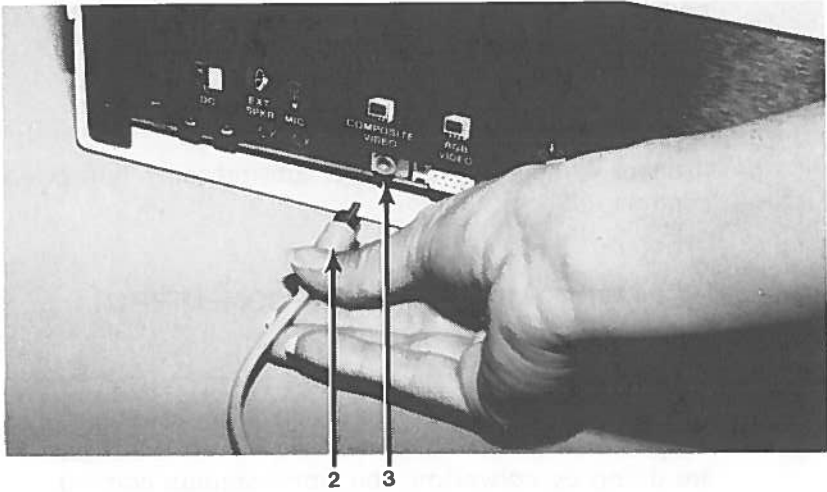
4.5 CONNECT VIDEO MONITOR TO THE COMPUTER(1).

NOTE: A monitor is used like a television to display images on a screen. It allows you to see what you are doing by converting the video signals coming from the computer into actual pictures or text on screen.

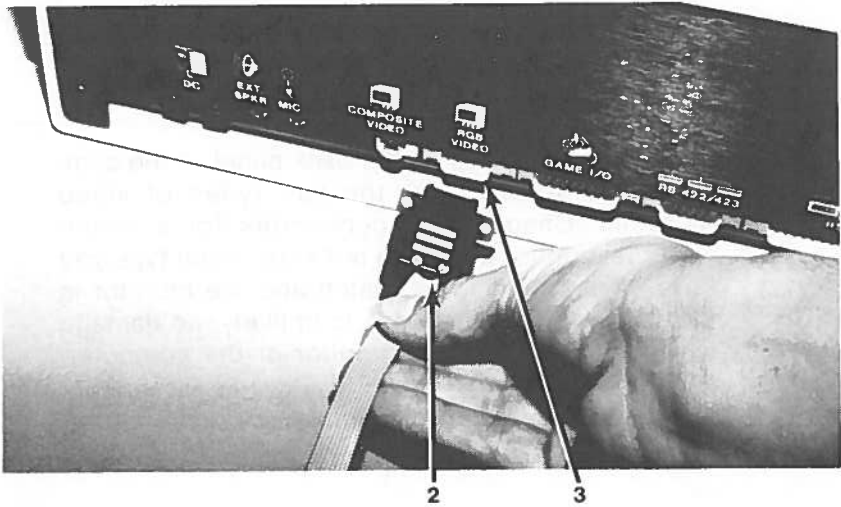
- a. Verify type of video monitor to be connected, either Composite video or RGB.
-

NOTE: The connectors on the back panel of the computer are different for the two types of video monitors. Check these connectors for a match with the monitor if you are not sure which type you have. If the connectors match and the monitor is of the "wrong" type, which is unlikely, no damage will occur to either the monitor or the computer. Upon "booting" the system, you would get random or scrambled signals on the monitor.

- b.1 If you have a composite video monitor, connect lead (2) to the receptacle (3) labeled "COMPOSITE VIDEO" on the back panel.



- b.2 If you have an RGB video monitor, connect lead (2) to the receptacle (3) labelled "RGB VIDEO" on the back panel.

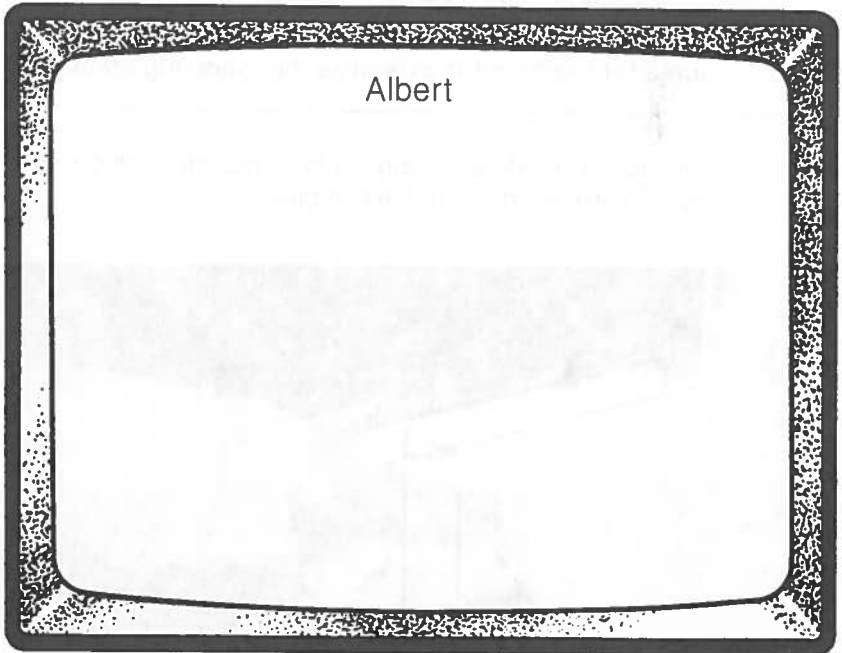


NOTE: The RGB video receptacle and connector are made to fit only one way. Don't force them.

4.6 VERIFY CORRECT PATTERN ON VIDEO MONITOR

- a. Turn Computer Power Control ON.
- b. Turn Video Monitor power ON.
- c. Verify "ALBERT" pattern on monitor.

NOTE: If all connections made up to this point are correct, you will observe the power indicator light and beeping on the computer. (See note for step 4.4c). In addition, the video screen will display the "ALBERT" pattern shown below:



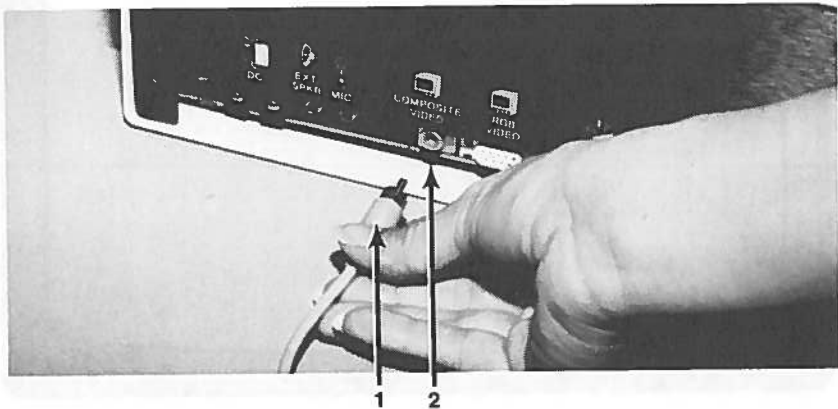
- d. Turn all power OFF and continue to next step.

NOTE: If you did not obtain the “ALBERT” pattern, the most likely reason is a mismatch between type of monitor (Composite or Analog RGB) and connection at the back panel of the computer. It is also possible that the cable pin configuration is incorrect (for RGB). Refer to section 7 for correct pin configuration.

4.7 CONNECT STANDARD T.V. AS A VIDEO MONITOR

NOTE: To connect your television set you will need a radio frequency (RF) modulator. The modulator can be purchased from your local dealer. If you own a video recorder, you may already have an RF modulator built-in with the RCA phono-type input. In either case, be sure to follow the installation procedures for the monitor as well as the following steps.

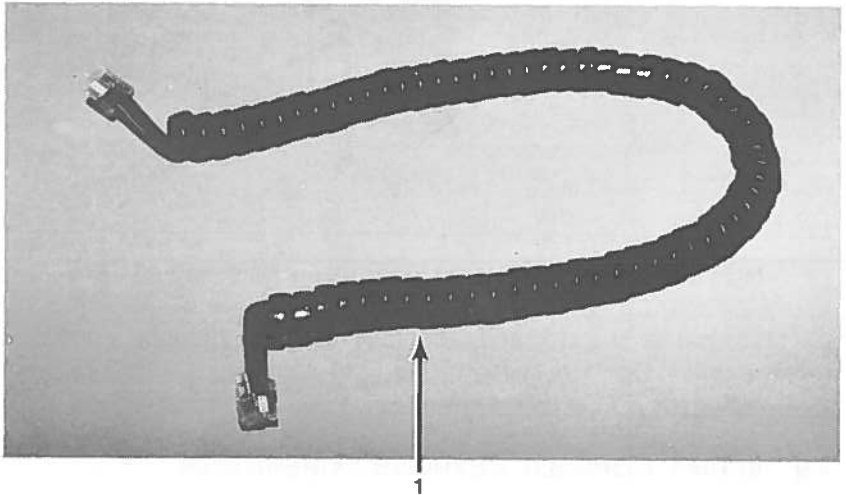
- a. Connect RF modulator plug (1) to Composite video receptacle (2) on back panel of the computer.



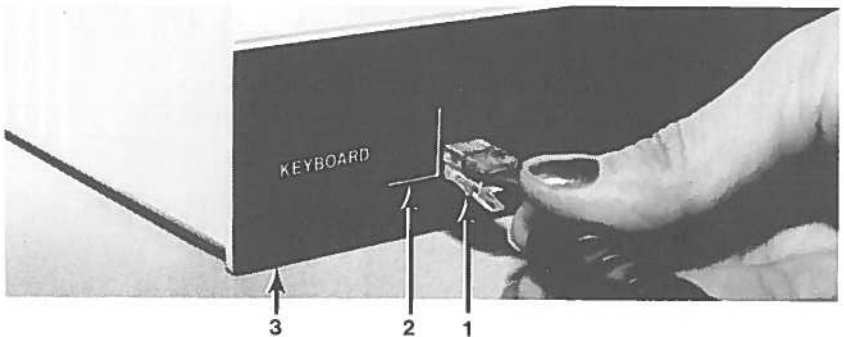
- b. Attach the antenna leads of the RF modulator to the antenna terminals of your T.V. set.
- c. Repeat step 4.6 to verify system operation.
- d. Turn all power OFF after verifying operation.

4.8 CONNECT THE KEYBOARD TO THE COMPUTER

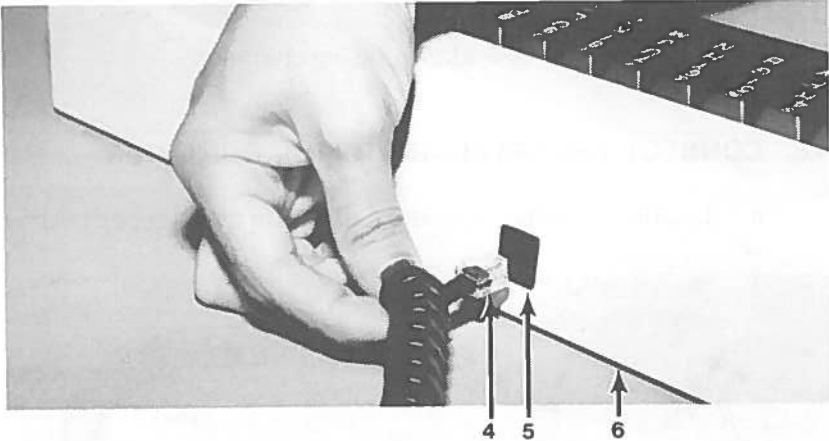
- a. Locate the coiled keyboard cable (1) in the accessories box.



- b. Connect one plug (1) on the keyboard cable into the receptacle (2) on the computer front panel (3).



- c. Connect second plug (4) on the keyboard cable into the receptacle (5) on the back of the keyboard (6).

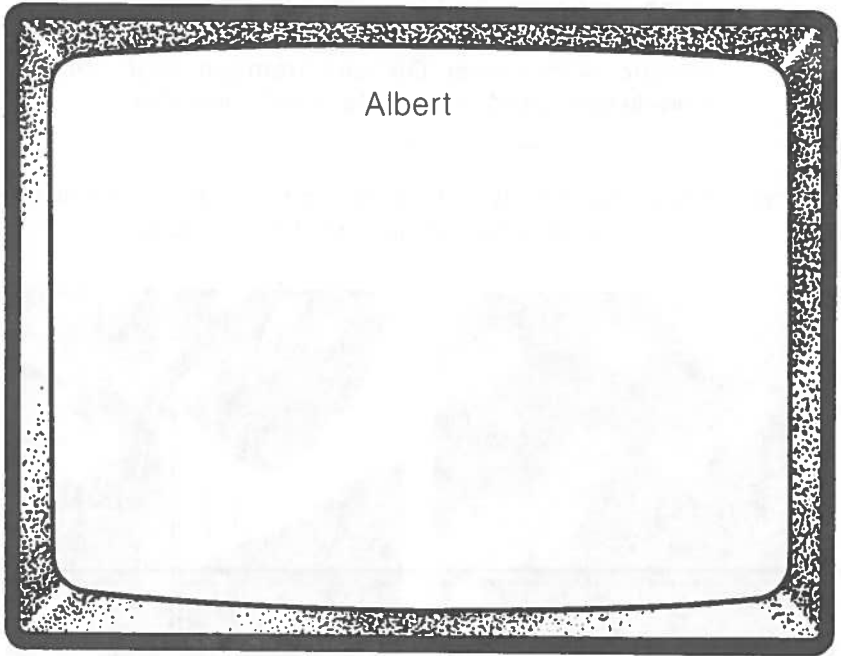


NOTE: The receptacle on the front panel is labeled "Keyboard," and is located on the far left side of the front panel. The plug and receptacle are made to fit only one way. Don't force them.

4.9 VERIFY CORRECT KEYBOARD OPERATION

- a. Turn computer power ON.
- b. Turn video monitor power ON. See vendor instructions.

- c. Verify video pattern (1) on video monitor screen.



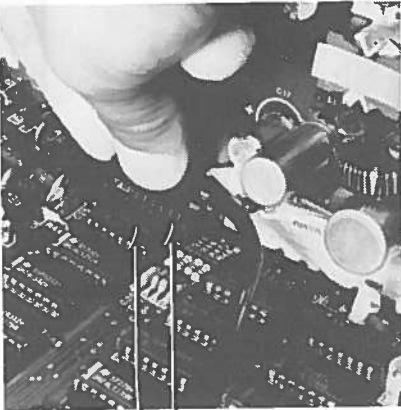
- d. Verify audio signal from computer. Review step 4.4c.
- e. Go to next step if video pattern and audio signal are correct. If video pattern is not correct, review the steps for connecting the video monitor (Step 4.5) and consult your dealer. If audio signal is not correct, consult your dealer. (You should get the fast-paced beeping.)

4.10 CONNECT THE KOALA GRAPHICS PAD TO THE COMPUTER

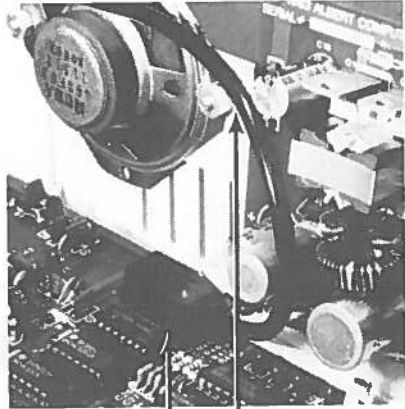
- a. Refer to step 3.3.1 to remove top cover.

CAUTION: Before removing the power supply module in the next step, double check the computer front panel to make sure power is OFF. Removing the module with power ON can damage both the module itself, and other parts of the computer.

- b. Attach the plug (4) to the Koala pad receptacle (2) with the cable (3) pointing toward the front of the computer.

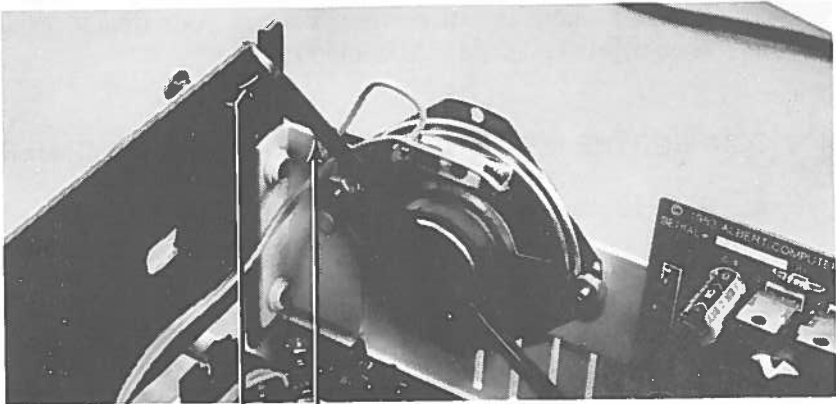


2 4



4 3

- c. Thread the Koala pad's cable (3) through the opening (5) on rear panel of the computer.



5 3

NOTE: Koala Pad operation cannot be verified until the disk drive assembly is installed, in the next step.

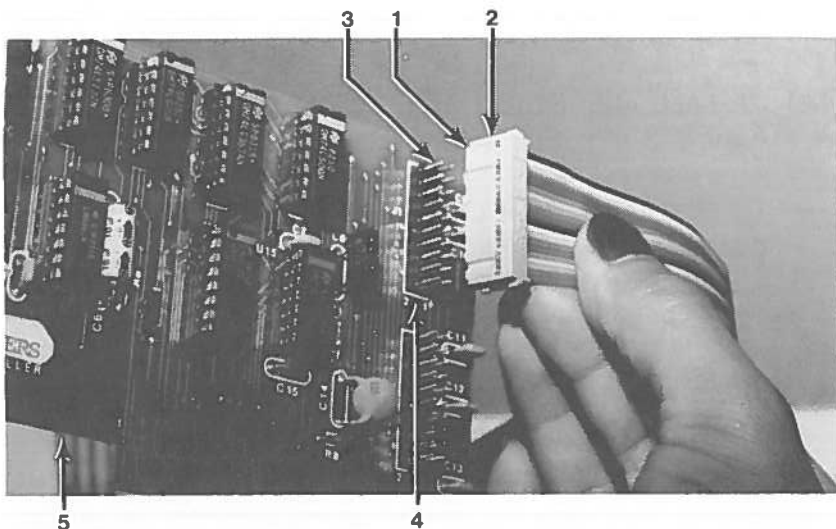
4.11 INSTALL ALBERT (OR OTHER COMPATIBLE) DISK DRIVE ASSEMBLY

CAUTION: In this step, if cable connections are not aligned correctly (with respect to Pin 1 reference), chips will be blown on the disk drive controller, and the controller module will have to be replaced.

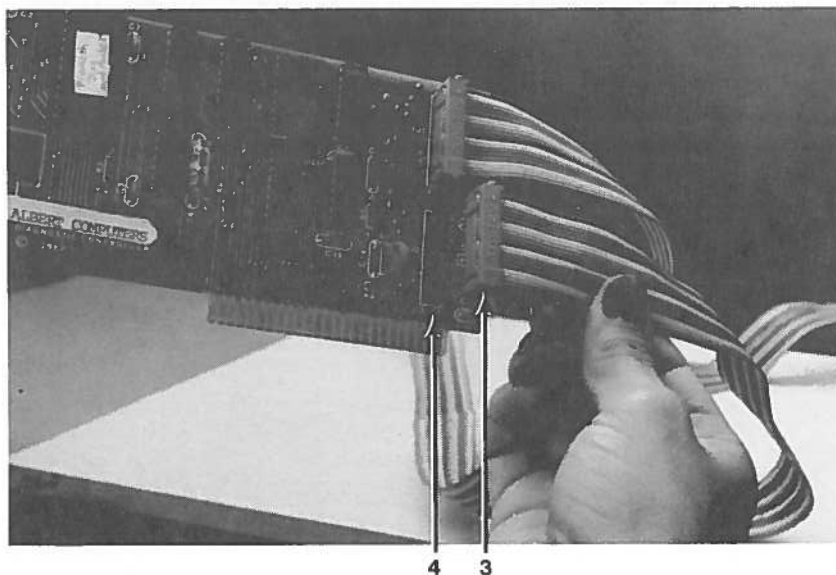
a. Designate and label Drive No. 1 and Drive No. 2. (This is arbitrary; it's your choice).

NOTE: This step assumes you are using the Albert Disk Drive assembly. On the disk drive controller module, the upper header connector is designated for drive 1, the lower for drive 2. If you have some other disk drive unit, refer to the vendor instructions for the unit.

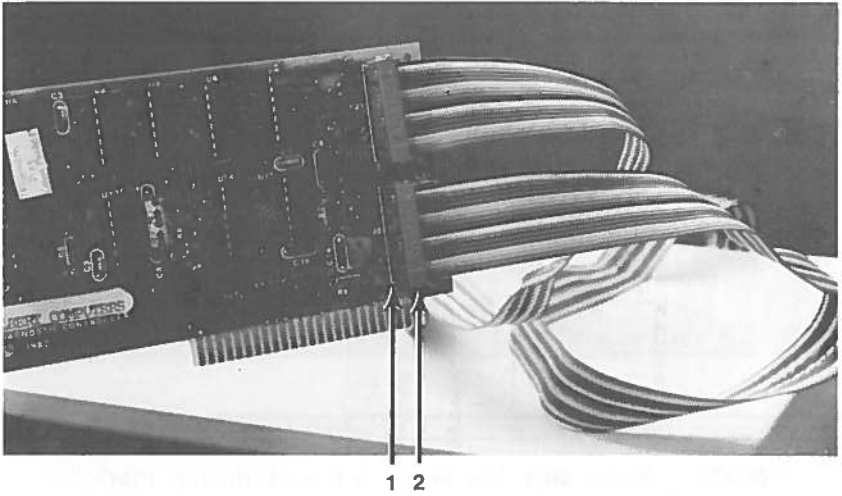
- b. (For Disk Drive 1) Align Pin 1 receptacle (1) of the cable connector (2) with Pin 1 (3) on the upper header connector (4) of the controller module (5).



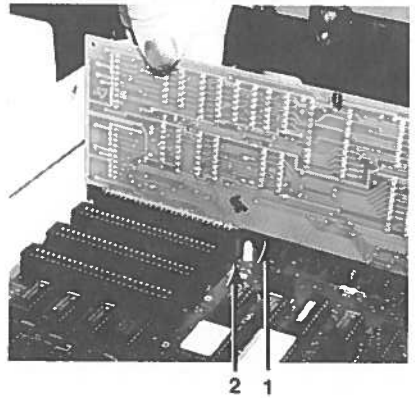
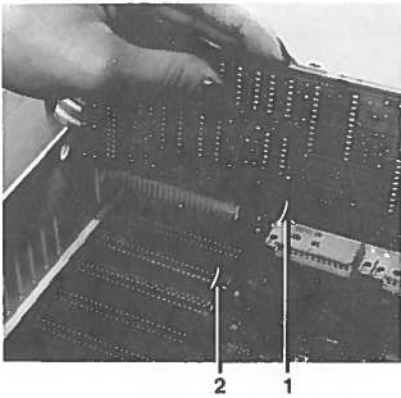
- c. Install cable connector (3) on header connector (4). Maintain Pin 1 alignment.



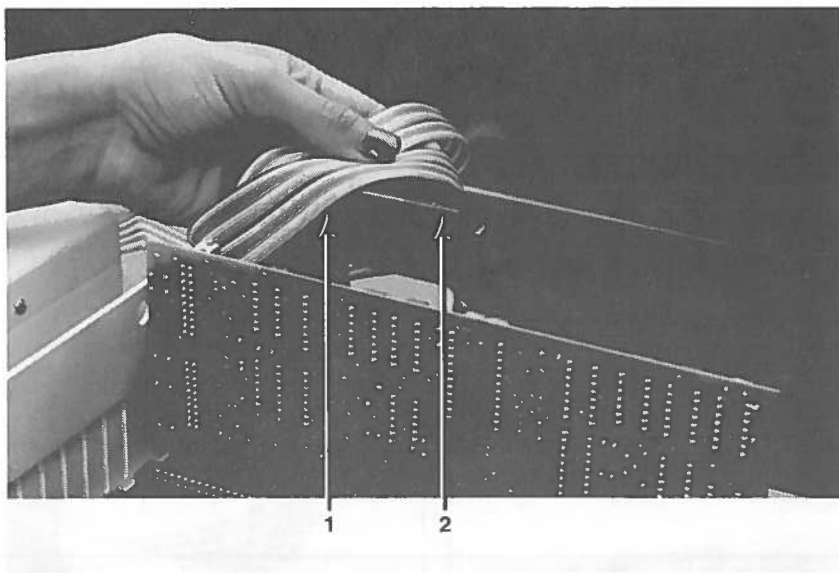
- d. (For Disk Drive 2) Align Pin 1 receptacle of cable connector with Pin 1 on the lower header connector of the controller module.
- e. Install cable connector (2) on header connector (1). Maintain Pin 1 alignment.



- f. Align pins and receptacles and install controller module (1) into slot 6 (2) of the computer motherboard.



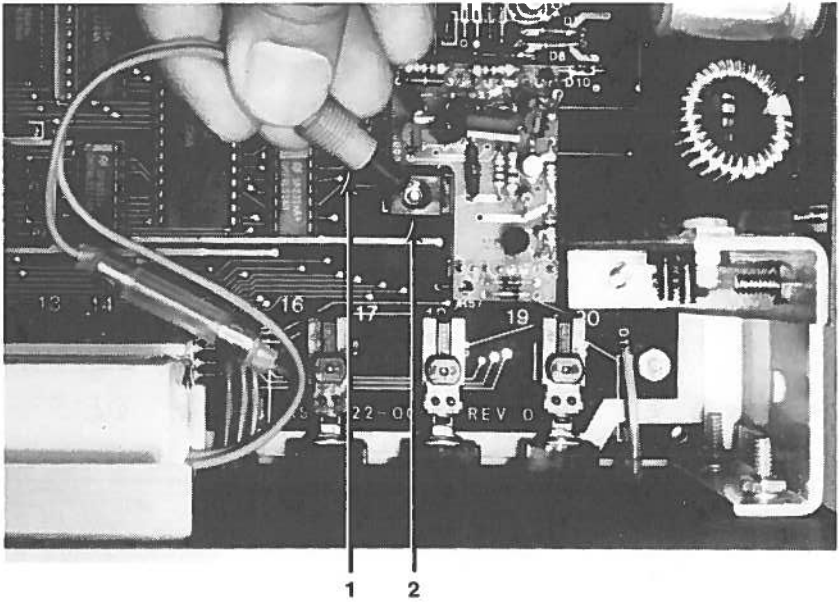
- g. Thread ribbon-type connector cables (1) through slot (2) at rear of chassis.

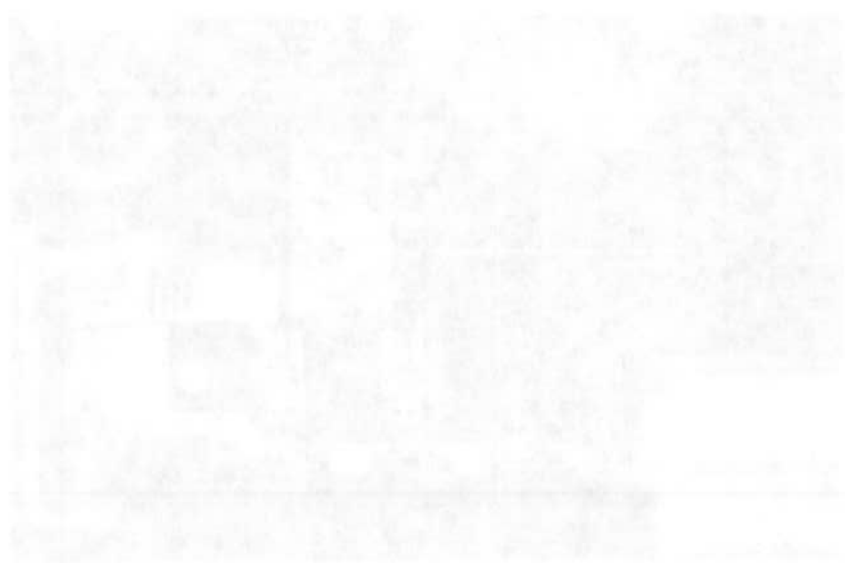


NOTE: Make sure the pins on the controller module are correctly aligned with the receptacles of slot 6. The components on the controller module will face the back panel of the computer when the module is correctly installed.

4.12 CONNECTING THE INTERNAL BATTERY

- a. Connect phono-type jack (1) on battery cable into receptacle (2) on motherboard.





SECTION FIVE

- 5.0 START UP (BOOTING) THE SYSTEM — to boot the system it is necessary to:
 - 5.1 LOAD UTILITY DISK
 - 5.2 FAMILIARIZE YOURSELF WITH UTILITY DISK MENU
 - 5.3 SELECT PROGRAM TO MAKE BACK-UP COPY OF UTILITY DISK
 - 5.4 CONFIGURE COPY PROGRAM TO COPY ONLY ON DISK
 - 5.5 INSERT BLANK DISKETTE TO BEGIN COPY PROCESS
 - 5.6 PRESS "RETURN" TO COPY DISK
 - 5.7 REMOVE AND STORE MASTER DISK
 - 5.8 INSERT BACK-UP DISK INTO DRIVE 1
 - 5.9 LOAD SOFTWARE FOR GRAPHICS PAD OPERATION
 - 5.10 VERIFY OPERATION OF KOALA PAD
 - 5.11 REFER TO S & H UTILITY DISK MANUAL TO USE OTHER UTILITY DISK OPTION
 - 5.12 LOAD A DOS 3.3 DISK
 - 5.13 LOAD A PASCAL DISK
 - 5.14 ACTIVATE A CARD (PC BOARD) IN A SLOT

THEORY

1. The first part of the theory is the concept of the "state" of a system.

2. The second part is the concept of the "transition" between states.

3. The third part is the concept of the "probability" of a transition.

4. The fourth part is the concept of the "rate" of a transition.

5. The fifth part is the concept of the "equilibrium" of a system.

6. The sixth part is the concept of the "stability" of a system.

7. The seventh part is the concept of the "resonance" of a system.

8. The eighth part is the concept of the "dispersion" of a system.

9. The ninth part is the concept of the "absorption" of a system.

10. The tenth part is the concept of the "emission" of a system.

11. The eleventh part is the concept of the "scattering" of a system.

12. The twelfth part is the concept of the "diffraction" of a system.

13. The thirteenth part is the concept of the "interference" of a system.

14. The fourteenth part is the concept of the "polarization" of a system.

15. The fifteenth part is the concept of the "birefringence" of a system.

5.0 START UP (BOOT) THE SYSTEM

In this section you will learn how to start-up, or boot, the system. The term, "booting" or "booting up" refers to the procedures for getting the system ready to operate. The first step is loading the computer's "operating system", which is contained on the utility disk; thus, booting the system allows you to operate the system in whatever "mode" you specify.

Booting the utility disk provides a range of options for system operation. These include exercising the system capabilities listed on the utility disk menu, booting other disks, or exiting (the menu) without booting. The following paragraphs provide background information about these options for the more experienced user. The procedures required for exercising the various options are contained in the numbered subsections of this section (starting at 5.1). They include making a back-up copy of the utility disk, initiating operating of the graphics pad, readying the system for booting other disks, and operating the system without booting other disks.

The Albert does not have the APPLE MONITOR or APPLESOFT in ROM. Instead, it has 16K of lockable RAM with addressing similar to a language card. Because of this the S & H UTILITY DISK is, with a few "special case" exceptions, the only disk which is bootable from power up. (Disks which do not have a Basic "Hello" program and do not call monitor routines MAY also boot.)

Upon booting the UTILITY DISK, both the MONITOR and APPLESOFT BASIC are loaded into this upper (lockable) RAM. After exiting the UTILITY DISK menu, you will be in APPLESOFT BASIC or INTEGER BASIC. In order to boot another disk, it is necessary to type INT (for APPLESOFT BASIC) or FP (if you have exited to INTEGER BASIC).

After typing INT (or FP) a menu will appear allowing you to 1) Boot a DOS 3.3 disk. 2) Boot PASCAL. or 3) Exit without booting. For example, typing the number "1" will lock the upper 16K of RAM which holds the MONITOR and APPLESOFT, making it appear as ROM. At this point the DOS 3.3 disk can be booted.

Typing "2" will keep the upper 12K of RAM unlocked, making it appear as a language card. At this point the PASCAL disk can be booted.

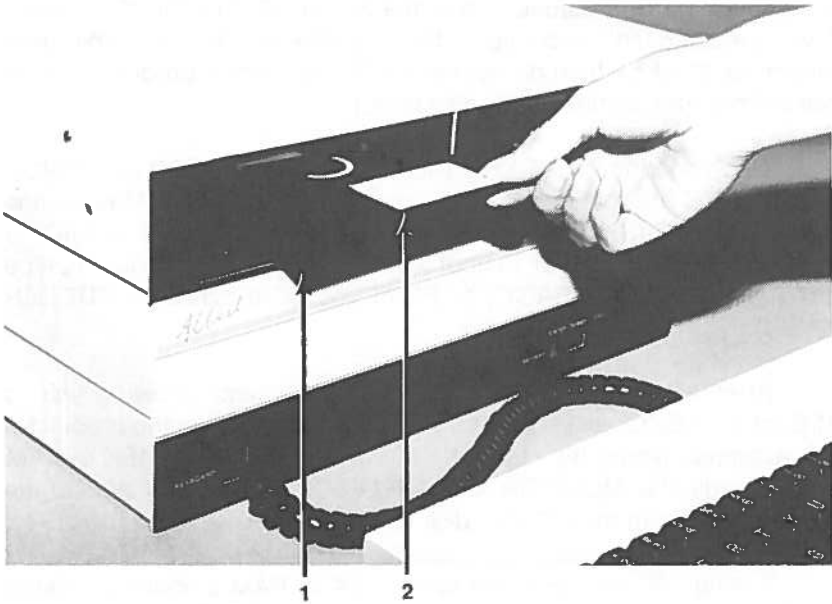
Typing "3" (or anything else) will exit without booting.

After typing INT once and choosing option 1 or 3, the PR# command can be used to boot other disks and lowercase characters can be entered from the keyboard. See Step 5.9e. The INT command also sets up an interrupt vector so that when an NMI is given from the keyboard (ctrl-shift-I) all HIRES colors are set to a pure white. This will make text clearer when printed on a HIRES page as with the 70-column option of MAGIC WINDOW II.

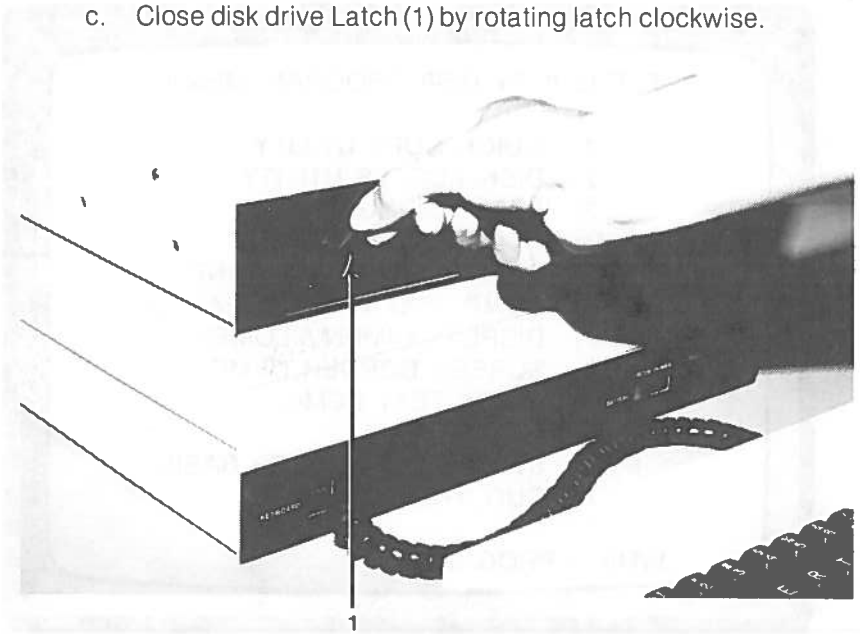
The UTILITY DISK must be rebooted each time the ALBERT is powered up. The INT command needs to be typed only once per power-up.

5.1 LOAD UTILITY DISK

- a. Turn video monitor power ON. (Refer to step 4.6).
- b. Insert diskette (1) with Label (2) facing up and Write-Enable Notch facing left. Insert diskette into Drive 1.



- c. Close disk drive Latch (1) by rotating latch clockwise.



- d. Turn Power Adaptor ON. Refer to step 4.2. Check that indicator is lit.
- e. Turn computer Power ON. Refer to step 4.4.
- f. Check that the "Utility Disk Program Menu" (6) appears on the Video Monitor.

THE UTILITY DISK PROGRAM MENU

- 1) QUICK COPY UTILITY
 - 2) DISK ACCESS UTILITY
 - 3) SUPER MENU UTILITY
 - 4) ADDRESS COMMAND
 - 5) FREE SECTOR COMMAND
 - 6) DUMP TEXT FILE COMMAND
 - 7) DISPLAY HIMEN & LOMEN
 - 8) SCREEN BORDER DEMO
 - 9) QUICK TEXT DEMO
-
- S) SWITCH TO INTEGER BASIC
 - A) QUIT THISK MENU

WHICH PROGRAM:

5.2 FAMILIARIZE YOURSELF WITH UTILITY DISK MENU

- a. "1) Quick Copy Utility" refers to a program which allows you to make a second, or back-up copy, of a disk.
- b. "2) Disk Access Utility (DAU) refers to a program which reports disk status. The DAU continuously displays disk status at the top of the screen.
- c. "3) Super Menu Utility" refers to a utility program which automatically displays an alphabetical listing of all the directory files.

- d. "4) Address Command" displays the starting address and length (in hexadecimal) of the program currently loaded into memory.
- e. "5) Free Sector Command" tells how many unused sectors remain on disk.
- f. "6) Dump Text File Command" causes the contents of a text file to be sent (or "dumped") to an output medium such as the video monitor screen, or a line printer (when preceded by the entry "PR#1").
- g. "7) Display HIMEM & LOMEM" refers to low and high boundaries of available user memory space. The display is available for either Applesoft or Integer Basic.
- h. "8) Screen Border Demo" refers to a programming aid which allows the user to border his/her screen with keyboard characters. The purpose is to provide a more interesting display.
- i. "9) Quick Text Demo" shows a routine which reads sequential text files at high-speed. The routine operates upon text files created in various text file management programs as well as in Applesoft.
- j. "S) Switch to Integer Basic" allows the user to switch between (toggle) memory space allocations, accessing either Applesoft or Integer Basic. The screen reads as noted if Applesoft is in effect, indicating that you may switch to Integer Basic. When Integer Basic is in effect, the screen entry will read, "Switch to Applesoft Basic."

NOTE: 1. Applesoft's prompt symbol is a close-angled square bracket ("]").

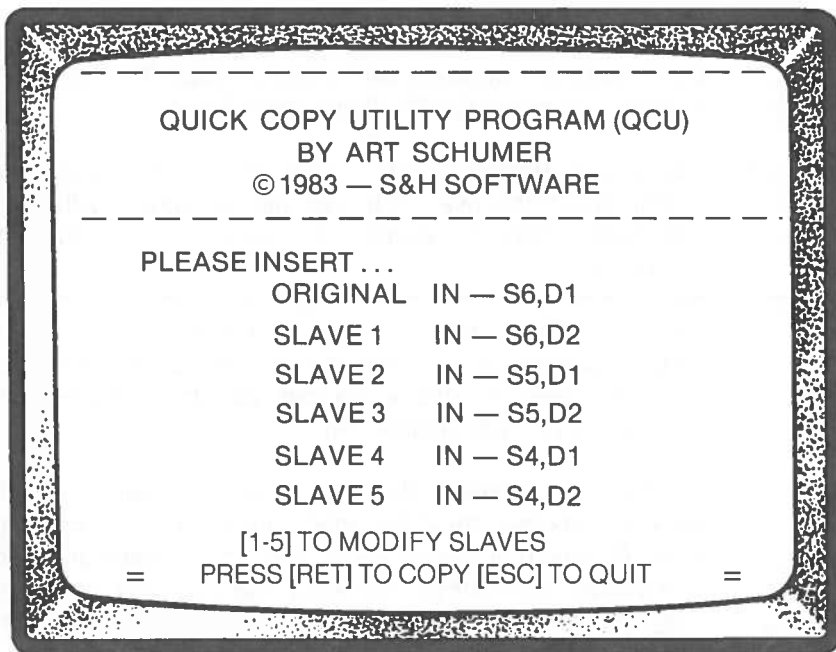
2. Integer's prompt symbol is a greater-than sign (">").

- k. "Q) Quit This Menu" terminates the utility menu and exits to Basic.

5.3 SELECT PROGRAM TO MAKE BACKUP COPY OF UTILITY DISK

- a. Observe that "Which Program:" appears at the bottom of utility disk menu display.
- b. To select "Quick Copy Utility", press "1" then "RETURN" to load the copy program into memory.

You will see the following display.



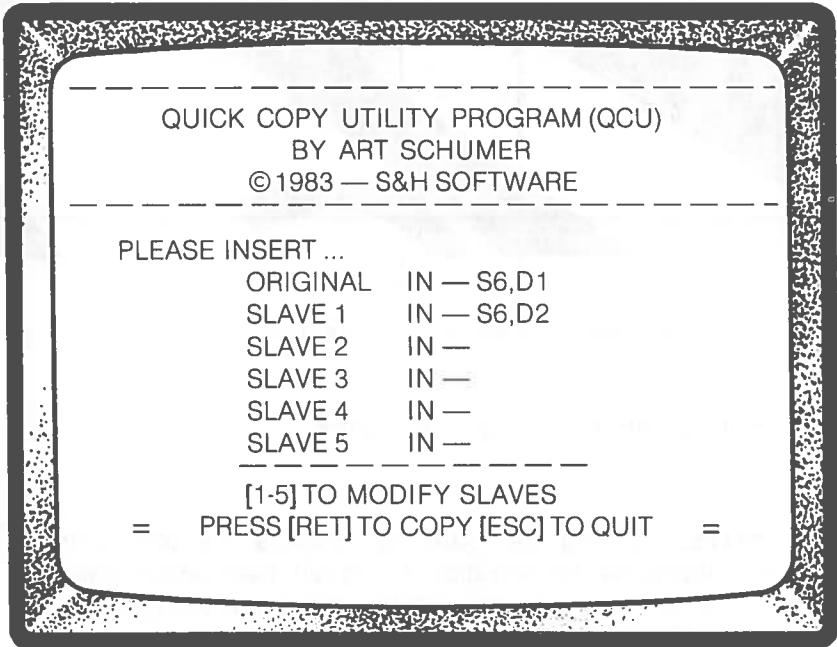
You will also hear an iterative beeping which will continue until you actually begin the copy process.

5.4 CONFIGURE COPY PROGRAM TO COPY ONLY ONE DISK

- a. Observe that the first menu item (2) on the "Quick Copy Utility Program" reads "Original In — S6, D1". (This reference means Slot #6, and Drive #1.) Observe also that the second item (3) reads "Slave 1 In S6, D2."

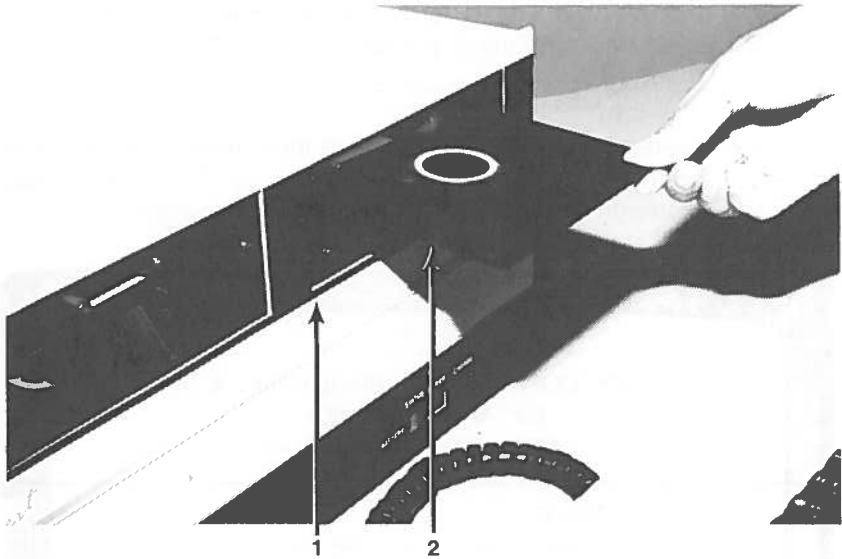
NOTE: The menu is telling you the Disk Drive Controller Card is connected in slot 6 (rather than possibly another slot) on the motherboard. To make one or more copies of a disk (or in this case, the utility disk) you will need to insert the "original" disk in Drive 1 and the blank ("slave") in Drive 2.

- b. Delete unused "slave" values (2 through 5) by first entering the number of the slot used, followed by "0". Delete values 2 through 5. The display will appear as shown below.



5.5 INSERT BLANK DISKETTE TO BEGIN COPY PROCESS

- a. Insert blank (slave) diskette into Drive 2 (1) with Write-Enable notch (2) facing left.



- b. Rotate latch clockwise to secure diskette.

5.6 PRESS "RETURN" TO COPY DISK

NOTE: During the copying process the indicator lights on the two disk drives will flash alternately, a scratching sound will be heard, and the beeping will stop.

5.7 REMOVE AND STORE MASTER DISK

NOTE: When the copying process is completed, the beeping will resume and the drive indicator lights will stop flashing.

- a. Rotate latch counterclockwise and remove original disk from Drive 1. Refer to section 6.2 for safely storing the disk.

5.8 INSERT BACK-UP DISK INTO DRIVE 1

- a. Remove back-up disk from Drive 2.
 - b. Label disk
-

CAUTION: Write title or other identifier on disk label before placing the label on the disk. This prevents pressure damage to the disk, and is particularly important if you are using a ball point pen or other hard tipped instrument.

- c. Insert labelled disk into Drive 1.

5.9 LOAD SOFTWARE FOR GRAPHICS PAD OPERATION

NOTE: This step is written for a "cold" start booting process. If you are already using Applesoft Basic ("J") go directly to c.

- a. Boot Utility Disk (Refer to Section 5.0).
- b. Using the keyboard, enter "Q", then "RETURN", to obtain Applesoft Basic. This step exits the program running the

current menu, returns control to you, and waits for input as indicated by the Applesoft prompt (">").

- c. Remove the Utility Disk from Drive 1.
- d. Insert "The Micro Illustrator" disk in Drive 1.
- e. Designate disk drive controller slot by typing (in this case) PR#6 followed by "RETURN". (The formula is PR#n, where n is the disk drive controller slot number).
- f. Verify that the display for "The Micro Illustrator" appears on the video monitor screen.
- g. Refer to the Koala Pad Manual to continue operation.

5.10 VERIFY OPERATION OF KOALA PAD

- a. Press thumb control (1) on pad.
- b. Verify that "Koala Micro Illustrator Menu" appears on video monitor screen. (At this point you know that the Koala Pad is operational.)
- c. Refer to "Koala Ware" owner's manual to continue operation.

5.11 REFER TO S & H UTILITY DISK MANUAL TO USE OTHER UTILITY DISK OPTIONS.

This section has explained basic operation of the system for the more common applications. Increasingly sophisticated use of the system will involve a "learning curve" on the part of the user, and constant reference to available documentation, such as the S & H Utility Disk Manual and various other hardware/software manuals.

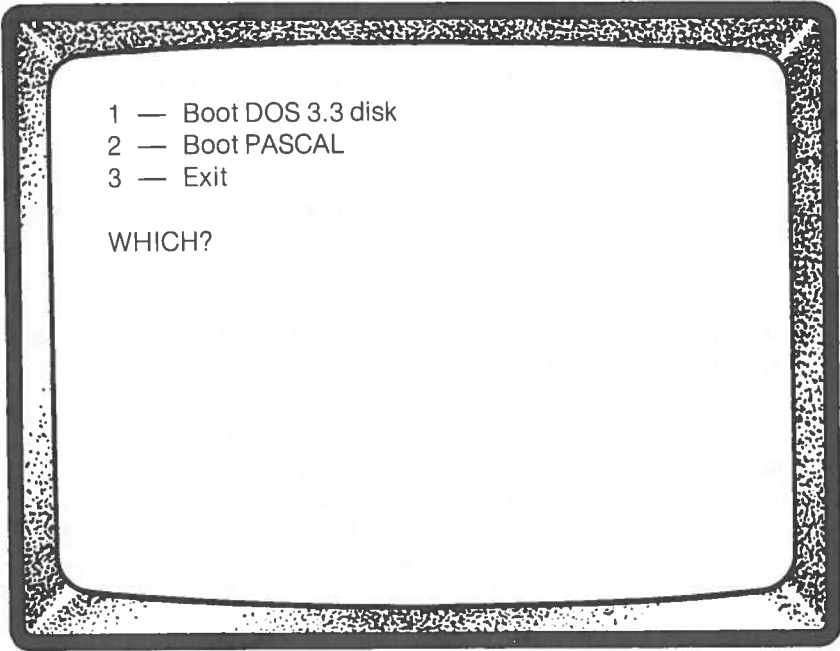
5.12 LOAD A DOS 3.3 DISK

NOTE: This procedure assumes that a utility disk is already loaded. If necessary, review steps 5.1 and 5.2j.

- a. Enter "Q" and press "return" to exit Utility Disk Menu.
- b. Enter "INT" and press "RETURN" if you exited the Utility Disk Menu in APPLESOFT BASIC. Enter "FP" and press "RETURN" if you exited in INTEGER BASIC.

NOTE: Recall that a feature of the Utility Disk allows toggling between APPLESOFT BASIC (J) and INTEGER BASIC (>). If necessary, review step 5.2.

- c. Check that selection menu (1) appears on monitor.



- d. Remove UTILITY DISK from Drive 1 (see step 5.7).
- e. Select "1" to lock RAM and load DOS 3.3 disk, by entering "1".
- f. Insert DOS 3.3 Disk into Drive 1 (see step 5.1b & c).
- g. Press "RETURN" to boot DOS 3.3 disk.
- h. Refer to the owner's manual for the software being used.

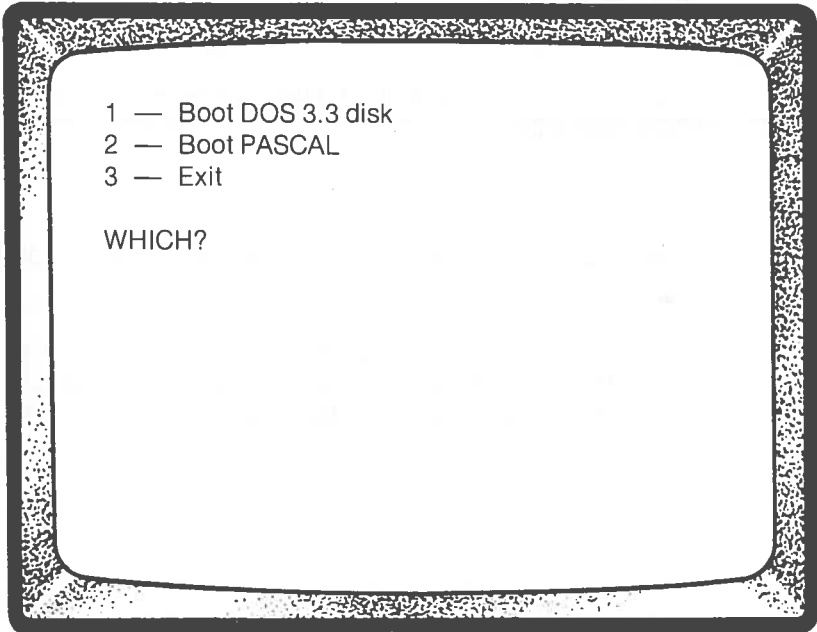
5.13 LOAD A PASCAL DISK

NOTE: This procedure assumes that a utility disk is already loaded. If necessary, review steps 5.1 and 5.2j.

- a. Enter "Q" and press "RETURN" to exit UTILITY DISK MENU.
- b. Enter "INT" and press "RETURN" if you exited the UTILITY DISK menu in APPLESOFT BASIC. Enter "FP" and press "RETURN" if you exited in INTEGER BASIC.

NOTE: Recall that a feature of the Utility Disk allows toggling between APPLESOFT BASIC (J) and INTEGER BASIC (>). If necessary, review step 5.2.

- c. Check that selection menu (1) appears on Monitor.



- d. Select "2" for loading PASCAL by entering "2".
- e. Remove UTILITY DISK from Drive 1 (see step 5.7).
- f. Insert PASCAL DISK into Drive 1 (see step 5.1b & c).

- g. Press "RETURN" to boot PASCAL.
- h. Refer to PASCAL documentation to continue operation.

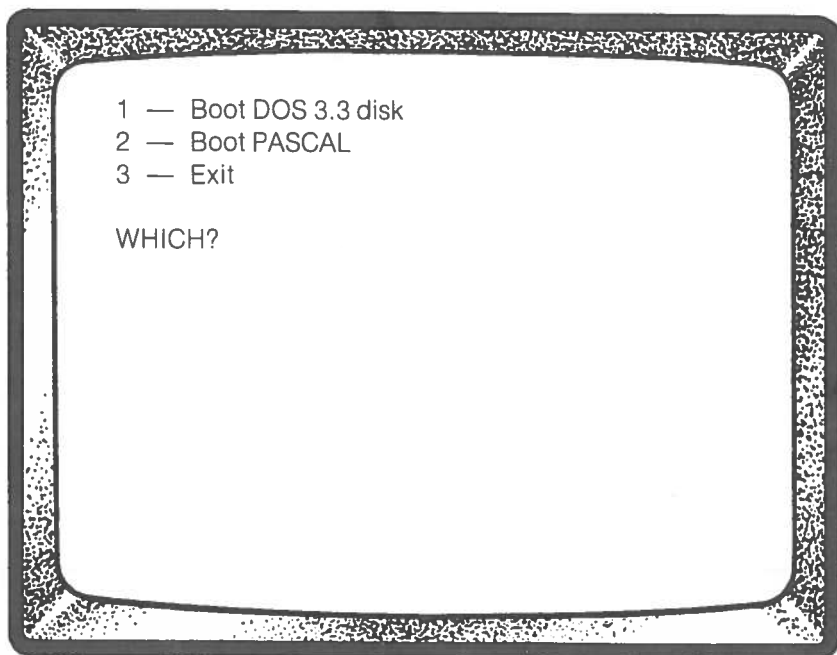
5.14 ACTIVATE A CARD (PC BOARD) IN A SLOT

- a. Turn Computer Power Off .

CAUTION: Never attempt to activate a card in a slot with power ON. This can blow chips on the card, damage the computer, or both. Make sure that none of the LEDs in the computer is emitting light before plugging in the card. This is a double check that power is OFF.

- b. Plug card into desired slot. Maintain alignment of pins and slot receptacles.
- c. Turn Computer power ON .
- d. Enter "Q" and press "RETURN" to exit UTILITY DISK menu.
- e. Enter "INT" and press "RETURN" if you exited the UTILITY DISK MENU in APPLESOFT BASIC. Enter "FP" and press "RETURN" if you exited in INTEGER BASIC.

- f. Check that selection menu appears on monitor.



- g. Remove UTILITY DISK from Drive 1 (see step 5.7).
- h. Select "3", to lock RAM and activate a card in a particular slot, by entering "3".
- i. Enter PR#n, where n is slot location (by number) of the card. Then hit "RETURN".
- j. Continue operation of system.

NOTE: Entering PR#n, then "RETURN", activates the card in the slot. Continued operation of the system depends upon the type of card activated, which, in turn, depends upon the type of hardware being used.



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SECTION SIX

6.0 ALBERT SYSTEM CARE

6.1 COMPUTER CARE

6.2 DISK CARE

Turn to the next page for details . . .

SECTION 101

1. The first part of the section is devoted to the definition of the term "person" as used in this section. It is defined as any individual, partnership, corporation, or other entity, whether or not organized under the laws of the United States, and whether or not having a separate legal existence.

2. The second part of the section is devoted to the definition of the term "partner" as used in this section. It is defined as any person who is a partner in a partnership, whether or not such person is a partner in the partnership for the purposes of this section.

3. The third part of the section is devoted to the definition of the term "partner in a partnership" as used in this section. It is defined as any person who is a partner in a partnership, whether or not such person is a partner in the partnership for the purposes of this section.

4. The fourth part of the section is devoted to the definition of the term "partner in a partnership" as used in this section. It is defined as any person who is a partner in a partnership, whether or not such person is a partner in the partnership for the purposes of this section.

5. The fifth part of the section is devoted to the definition of the term "partner in a partnership" as used in this section. It is defined as any person who is a partner in a partnership, whether or not such person is a partner in the partnership for the purposes of this section.

6. The sixth part of the section is devoted to the definition of the term "partner in a partnership" as used in this section. It is defined as any person who is a partner in a partnership, whether or not such person is a partner in the partnership for the purposes of this section.

7. The seventh part of the section is devoted to the definition of the term "partner in a partnership" as used in this section. It is defined as any person who is a partner in a partnership, whether or not such person is a partner in the partnership for the purposes of this section.

6.0 ALBERT SYSTEM CARE

This section provides basic information about how to prevent damage to various components of the system. Some of it is common sense and/or information you are already aware of. Some of it is not so obvious. The point is to extend the life of your system and to keep its downtime to a minimum.

6.1 COMPUTER CARE

- a. Protect the outside and inside components of the computer from dust and dirt.
- b. Do not expose the computer and other system parts to moisture from weather or liquids.
- c. Arrange your set-up of the computer and attached devices in a place away from intense heat sources such as direct sunlight, vents, and fireplace.
- d. Allow air to circulate freely around the system and through the case's air-vent slots.
- e. Insert the plugs for all system parts into a common grounded three-wire circuit. Find an empty wall outlet that is free of other appliances.

6.2 DISK CARE

The flexible disk is an information storage device. Also called a "floppy disk", its proper care and handling will prevent the disk's damage or loss of its information. Some disks have data already stored on them while others are entirely blank. Steps for inserting and removing disks from the drive will become habits you do not need to think about. Such steps protect the quality of your floppies, their programs and files of data.

6.2.1 HANDLE THE DISK BY ITS JACKET OR ENVELOPE.

- a. Do not touch any exposed part of the disk itself. You could "scramble" the information pattern.
- b. Write on disk labels before placing the label on the disk. Use of a soft felt tipped pen for changing titles of a label already in place will tend to protect the disk also, but pre-written labels are best.
- c. Do not erase on the disk label. Eraser dust is abrasive and will mar the recording surface. It is better to replace the label.

6.2.2 KEEP DISKS UPRIGHT IN THEIR ENVELOPES, AWAY FROM TEMPERATURE EXTREMES OR MOISTURE.

6.2.3 KEEP DISK AWAY FROM DIRECT SUNLIGHT, MAGNETS, OR ELECTRICAL DEVICES.

- a. Do NOT store disks near television sets, large motors, or other electrical equipment.
- b. Do NOT lay small tools such as screwdrivers or pliers near disks, as these metal devices have a magnetizing effect.

NOTE: Placing a disk on the computer or disk drive for a while will not cause harm to stored data.

6.2.4 NEVER REMOVE DISK WHILE DISK DRIVE IS OPERATING.

- a. Remove disks from drives after drive lights and whirring sounds have stopped to prevent loss of stored information.
- b. Unlatch disk drives only after drives have stopped.

6.2.5 NEVER INSERT OR REMOVE DISK AGAINST RESISTANCE.

- a. Check with your dealer if you have trouble inserting or removing the disk.

It is a good practice to make back-up copies of disks. Back-up copies insure that your data will be saved, should damage occur to an original disk. Refer to Step 5.3, for copy instructions.

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SECTION 7

7.0 CABLE CONFIGURATIONS FOR INPUT/OUTPUT

7.1 RGB VIDEO CABLE

7.2 GAME I/O CABLE

7.3 RS 422/423 CABLE

7.4 RS 232 CABLE

7.5 PARALLEL PORT CABLE

7.1 RGB CABLE CONFIGURATION

ALBERT

PIN	DESCRIPTION
5	GROUND
6	N/C
7	COMPOSITE SYNC.
1	BLUE
2	GREEN
3	RED
4	N/C

TAXAN RGB ANALOG MONITOR

PIN	DESCRIPTION
1	N/C
2	RED
3	GREEN
4	BLUE
5	GROUND
6	GROUND
7	COMPOSITE SYNC.

7.2 THE GAME I/O CONNECTOR

PIN	SIGNAL	PIN	SIGNAL
1	+ 5v	9	N/C
2	PB0	10	GC1
3	PB1	11	GC3
4	<u>PB2</u>	12	AN3
5	C040 Strobe	13	AN2
6	GC0	14	AN1
7	GC2	15	AN0
8	Gnd	16	N/C

7.2.1 GAME I/O CONNECTOR SIGNAL DESCRIPTIONS

PIN	SIGNAL	DESCRIPTION
1	+5v	+ 5 volt power supply. Total current drain on this pin must be less than 100mA.
2-4	PB0-PB2	Single-bit (Pushbutton) inputs. These are standard 74LS series TTL inputs.
5	C040 Strobe	A general-purpose strobe. This line, normally high, goes low during 0 of a read or write cycle to any address from \$C040 through \$C04F. This is a standard 74LS TTL output.
6,7 10, 11	GC0-GC3	Game controller inputs. These should each be connected through a 150K Ohm variable resistor to +5v.
8	Gnd	System electrical ground.
12-15	AN0-AN3	Annunciator outputs. These are standard 74LS series TTL outputs and must be buffered if used to drive other than TTL inputs.
9, 16	N/C	No internal connection.

7.3 RS 422 CONNECTOR

PIN

1	$\overline{\text{RTS}}$	output signal
6	RTS	output signal (request to send)
7	$\overline{\text{DTR}}$	output signal
2	DTR	output signal (data terminal ready)
3	$\overline{\text{CTS}}$	input signal (clear to send)
8	CTS	input signal
4	$\overline{\text{DATA OUT / DATA IN}}$ (bidirectional)	
5	DATA OUT / DATA IN	

7.4 RS232 COMMUNICATION CABLE

The following list describes the functions of the active pins on the Albert RS232 25-PIN connector. The other pins may be left unconnected.

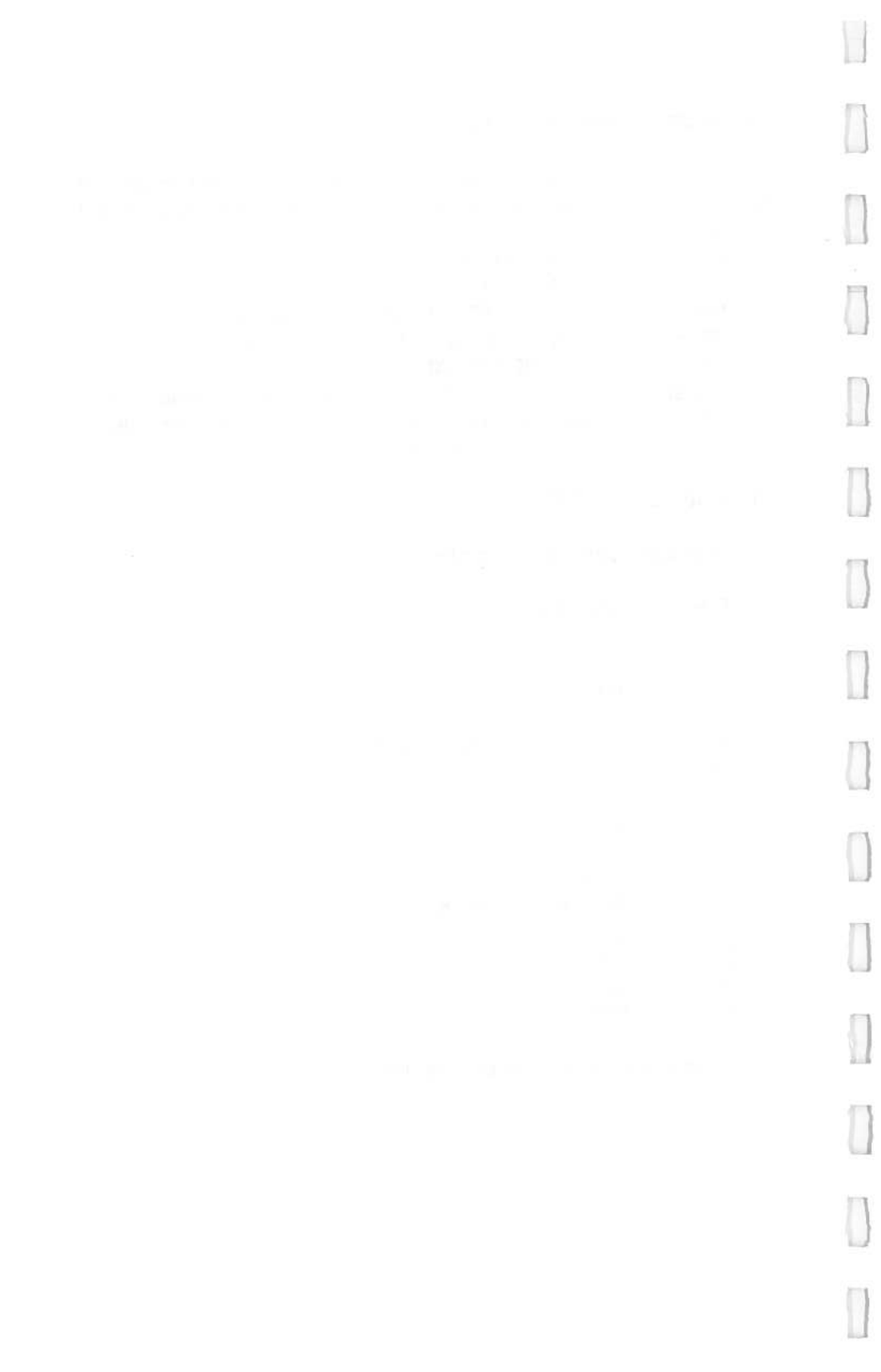
PIN 2	- DATA OUTPUT
PIN 3	- DATA INPUT
PIN 4	- "RTS" OUTPUT SIGNAL (ie. request to send)
PIN 5	: "CTS" INPUT SIGNAL (ie. clear to send)
PIN 7	- GROUND SIGNAL
PIN 20	- "DTR" OUTPUT SIGNAL (ie. data terminal ready)
PIN 24	- "RxC" or "TxC" input/output signal (ie. bidirectional receive/transmit clock)

7.5 PARALLEL PORT

Standard Centronics printer

PIN	SIGNAL	
3	D0	
5	D1	
7	D2	
9	D3	8 bit parallel data
11	D4	
13	D5	
15	D6	
17	D7	
1	Strobe	
19	Acknowledge (ACK)	
21	Busy	
23	N/C	
25	N/C	
26	N/C	

All other pins are grounded together



8.0 GLOSSARY OF TERMS
TO BE SUPPLIED



9.0 INDEX
TO BE SUPPLIED



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