MINDSET

Operation Guide

**Personal
Computer
System**

LIMITED WARRANTY

Mindset Corporation ("Mindset") warrants the product it manufactures for a period of 90 days from the date of purchase. During the warranty period, Mindset at its option will repair or replace components that prove to be defective at no charge provided the product is returned to an authorized Mindset dealer.

This warranty does not apply if, in the opinion of Mindset, the product has been damaged by accident, misuse, misapplication, or as a result of service or modification by other than an authorized Mindset dealer.

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FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

WARNING: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits and shielded interconnect cables may be attached to this computer. Operation with noncertified peripherals or with unshielded interconnect cables is likely to result in interference to radio and TV reception.

The information in this guide is subject to change; these changes will be incorporated in later editions of this guide.

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FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

INSTRUCTIONS TO USER

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the computer with respect to the receiver.

Move the computer away from the receiver.

Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

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Section 1

Introduction

Welcome to the Mindset™ Personal Computer System.

This Operation Guide is your key to getting the most from your Mindset Personal Computer. By following the simple instructions in the guide, you will quickly be able to use the advanced features and capabilities of the Mindset Personal Computer to run programs for business, communication, education, and entertainment purposes.

How to Use this Guide

Including this introduction, this Operation Guide consists of seven sections, an appendix, a glossary, and an index. If you are a new computer user, we suggest that you read all seven sections in the order presented.

Section 2, "Setting Up the Mindset Personal Computer System Unit", helps you identify the system components and shows you how to attach them to the System Unit. This section also shows you where to connect any options you may have purchased with the system.

Section 3, "The System Keyboard", describes the keyboard, including the standard keys, the special keys, and where to attach input devices.

Section 4, "System Configuration", explains how to arrange or "configure" your system, including how to set up the system for either a television or a monitor and how to set other operation parameters.

Section 5, "Using Cartridges", describes cartridges and how to use them.

Section 6, "Enhancing Your System", lists some of the popular applications that your Mindset Personal Computer can perform and describes options and accessories you can use with your system.

Section 7, "Solving Problems", introduces you to some troubleshooting techniques to help you diagnose any problems you may encounter. Section 7 also includes a list of the error messages which the system may display during operation.

The appendix lists the system specifications. The glossary includes useful computer terminology.

Other Mindset Guides and Manuals

Mindset offers a number of system options for expanding your Mindset Personal Computer. Each option comes with its own operation guide to show you how to use that option with your Mindset Personal Computer.

Mindset also offers the MS™-DOS operating system as an option for the Mindset Personal Computer. This option comes with an introductory guide and a reference manual to help you learn MS-DOS quickly.

Documentation Conventions

To demonstrate a procedure or a program, this guide occasionally instructs you to type something on the keyboard. To distinguish between what you type and what the system may reply, what *you* type appears in **bold** letters.

Names of keys which appear in examples are shown in uppercase and are boxed, for example:

RETURN

When the instructions tell you to type something, make sure that you type all the characters and spaces as they appear. In addition, press the RETURN key after every line. (Do not type the word RETURN.)

MS-DOS is a trademark of Microsoft Corporation.

For example, an instruction to type:

10 PRINT "Hello"; `RETURN`

means that you type 10, a space, the word PRINT, a space, and "Hello"; then press the RETURN key.

Section 2

Setting Up the Mindset Personal Computer System Unit

The modular design of the Mindset Personal Computer makes it easy to set up. This section shows you how to prepare the components of your system for operation.

Identifying the System Components

The heart of your Mindset Personal Computer is the System Unit. Included with the System Unit are a keyboard and a keyboard cable, an antenna switch box, and a cable for connecting the System Unit and the antenna switch box to a television.

Before you connect any of the components, check Figure 2-1 to ensure that you have received each of these items:

Note: If you purchased any options for your Mindset Personal Computer, install those options after you set up the System Unit. Section 5, "Using Cartridges", describes how to install cartridges; Section 6, "Enhancing Your System", explains how to install modules.

Because you may need to transport your system, save the packing materials that your system came in.
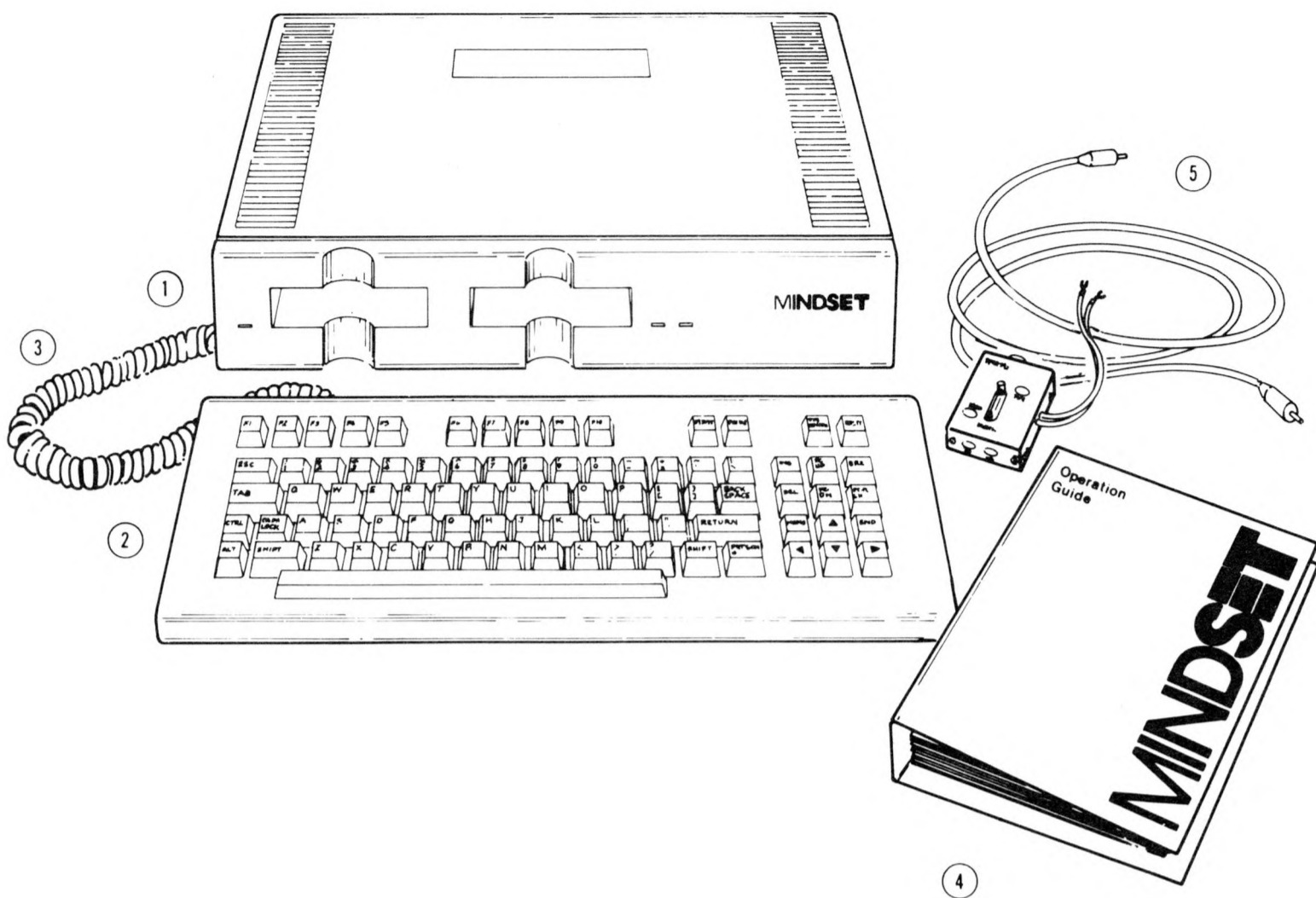
1. System Unit
2. Keyboard
3. Keyboard cable (coiled)
4. Operation Guide
5. Antenna switch box and cable

Figure 2-1: Components of the Mindset Personal Computer

Plugging In Your System

The compact size of your Mindset Personal Computer makes it easy to place anywhere in your home or office. However, keep these considerations in mind:

1. Place your system on a level surface with enough room around the system to provide adequate air circulation.

2. Locate your system near a power outlet.

Note:
- The power outlet should not be a switched outlet.

- When you turn the system off, it must remain plugged in to the outlet to maintain the correct time on its internal clock and to recharge the batteries in the cartridges.

3. The System Unit comes with an integral power cord attached to the rear of the unit. After you have located a place for your System Unit and keyboard, plug the power cord into the outlet.

Setting Up the System Keyboard

The System Keyboard is designed to be connected to the System Unit directly by a cable.

When you first set up your system, attach the keyboard to the System Unit. Attaching the keyboard cable enables the System Unit and the keyboard to communicate.

Attaching the System Keyboard

Locate the keyboard cable. Then find the keyboard cable connector at the left rear corner of the keyboard, and insert one end of the cable into this connector. Because the connectors on both ends of the cable are identical, it doesn't matter which end of the cable you attach first.
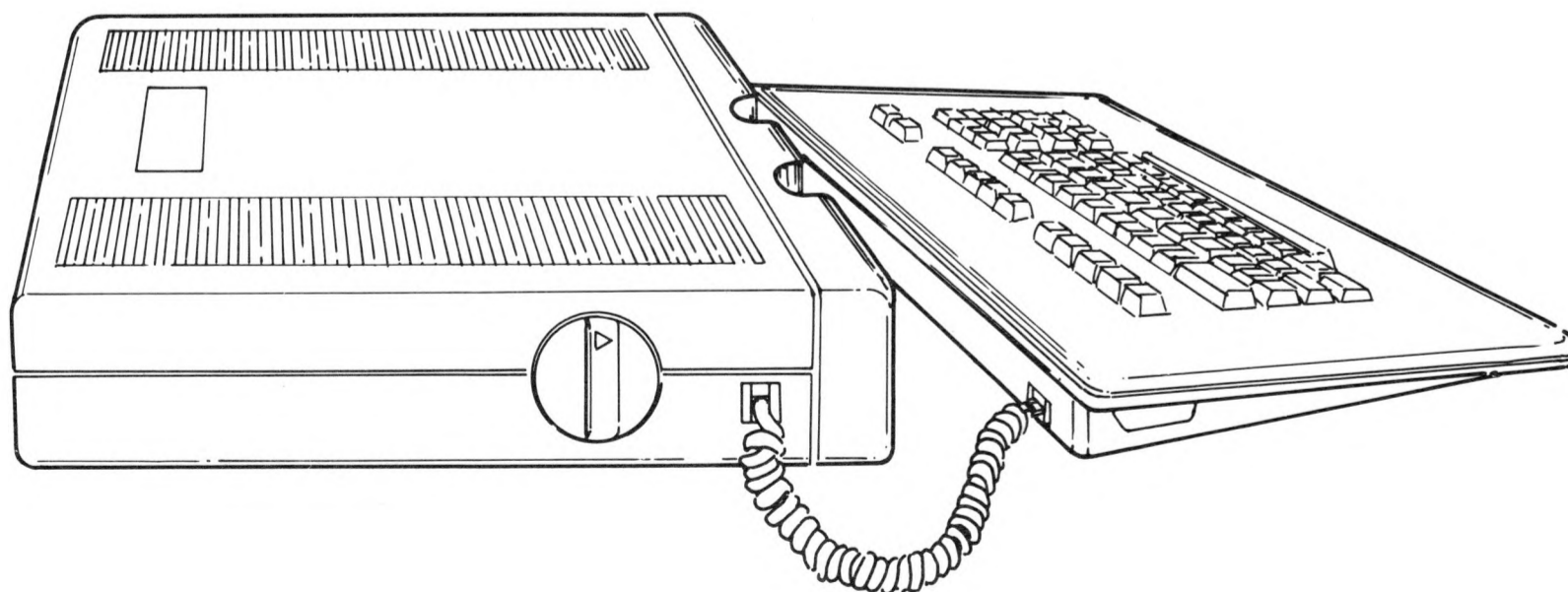
Figure 2-2: Keyboard cable attached to the keyboard and the System Unit

Insert the other end of the cable into the keyboard connector at the left side of the System Unit. Figure 2-2 shows the proper attachment of the keyboard cable to the two cable connectors.

Identifying the Front-Panel LEDS and Cartridge Ports

The front panel of the System Unit has three indicator lights (LEDs) and two cartridge ports (see Figure 2-3).
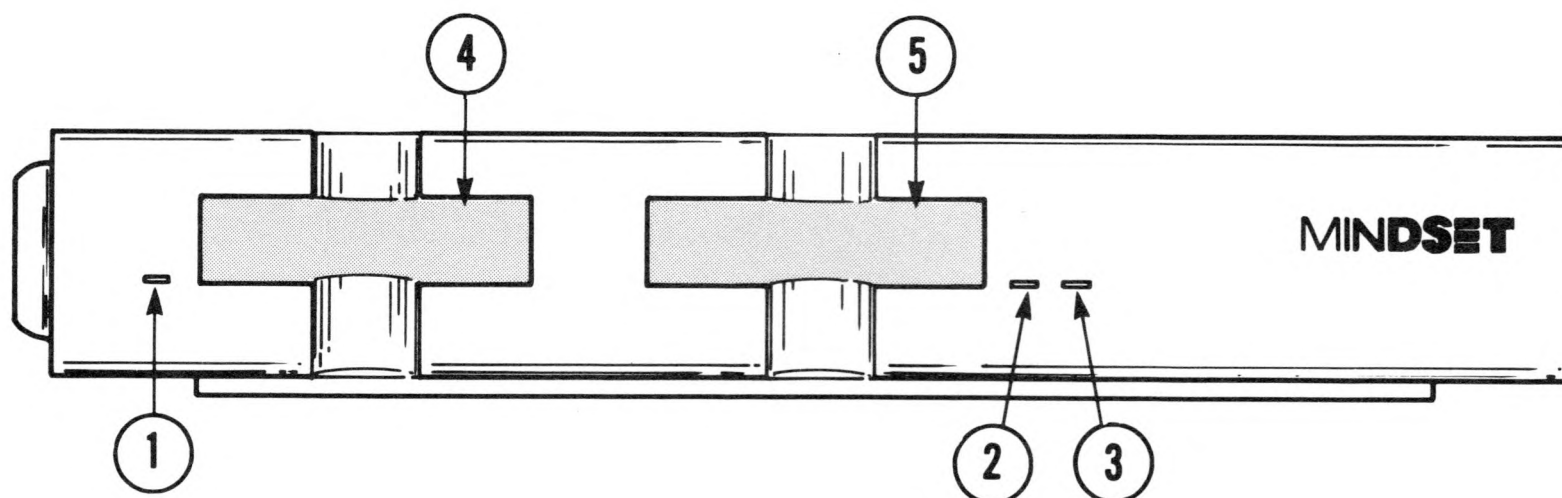
Figure 2-3: Front panel of the System Unit

The indicator LEDs have the following functions:

Left   This red LED (1 in Figure 2-3) lights when you turn on the system; it remains on as long as the system stays on.

Center   This yellow LED (2 in Figure 2-3) lights at different times depending on the application software used. It generally indicates that the system requires some attention from you. For example, a lit yellow LED light might mean that there is a message waiting for you.

Right   This green LED (3 in Figure 2-3) is also application dependent. It generally indicates that the system is performing a task or process. For example, the green light might be programmed to come on while your system is actively communicating with another system.

You insert the cartridges into the two cartridge ports. Cartridge port 1 (4 in Figure 2-3) is on the left and cartridge port 2 (5 in Figure 2-3) is on the right. See Section 5, "Using Cartridges", for a description of their use.

Identifying the Back-Panel Connectors

The back panel of the System Unit contains ports and connectors for input/output (I/O) options. With these I/O ports and connectors you can expand and enhance your system. They enable the system to accept information from you or another device (input) or to transmit information to another device (output).

The following list describes the I/O ports and connectors found on the back of the System Unit. Refer to Figure 2-4 for the location of these ports and connectors.

I/O Module Ports

Double-width I/O module port—Accepts a double-width module, such as the Modem Module 1200, or two single-width modules.

Single-width I/O module port—Accepts single-width modules such as the RS-232-C Module, the Printer Interface Module, or the Stereo Sound Module.

Connectors

AC cord—Provides power to the System Unit.

AUDIO LEFT—Connects to an amplifier for audio output.

COMP VIDEO connector—Connects to a composite video monitor for black-and-white or color video display.

TV/RF connector—Connects to a color TV for color video display and sound.

CHAN 3/4 switch—Enables you to select either channel 3 or 4 for video display on a TV.

RGB VIDEO connector—Connects to an RGB (red, green, blue) monitor for color video display.

EXT SYNC connector—For future enhancement options.

AUX IN connector—For future enhancement options.

AUX OUT connector—For future enhancement options.
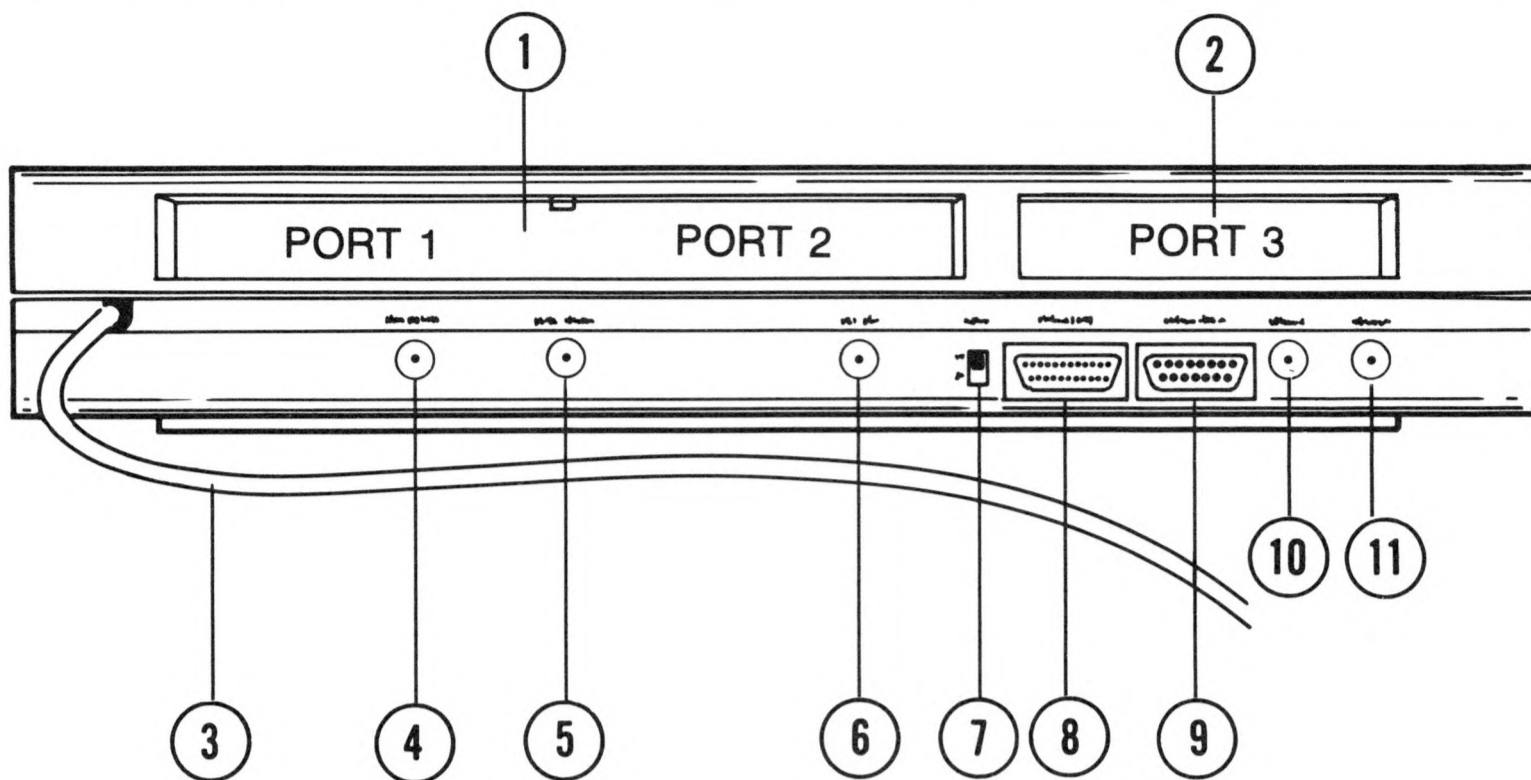
1. Double-width I/O module port
2. Single-width I/O module port
3. AC cord
4. AUDIO LEFT
5. COMP VIDEO connector
6. TV/RF connector
7. CHAN 3/4 switch
8. RGB VIDEO connector
9. EXT SYNC connector
10. AUX IN connector
11. AUX OUT connector

Figure 2-4: Back-panel connectors and I/O module ports

Attaching a Display Device to the System Unit

You can connect your Mindset System Unit to a television set, to an RGB monitor, or to a composite video monitor.

Before connecting your system to a TV set, you must first determine whether your antenna cable is the flat 300-ohm type or round 75-ohm coaxial-type cable.

Connecting the System Unit to a 300-Ohm TV Input

To connect the Mindset System Unit to a 300-ohm TV input, follow these procedures:

1. Attach one end of the TV cable to the TV/RF connector on the back panel of the System Unit (1 in Figure 2-5).

2. Attach the other end of the cable to the antenna switch box connector marked "COMPUTER" (2 in Figure 2-5).

Figure 2-5: Connecting the System Unit to a 300-ohm TV input

Figure 2-6: Connecting the System Unit to a 75-ohm TV input

3. Next, disconnect the VHF antenna from your TV set.

4. Connect your flat twin-lead 300-ohm antenna cable to the screw
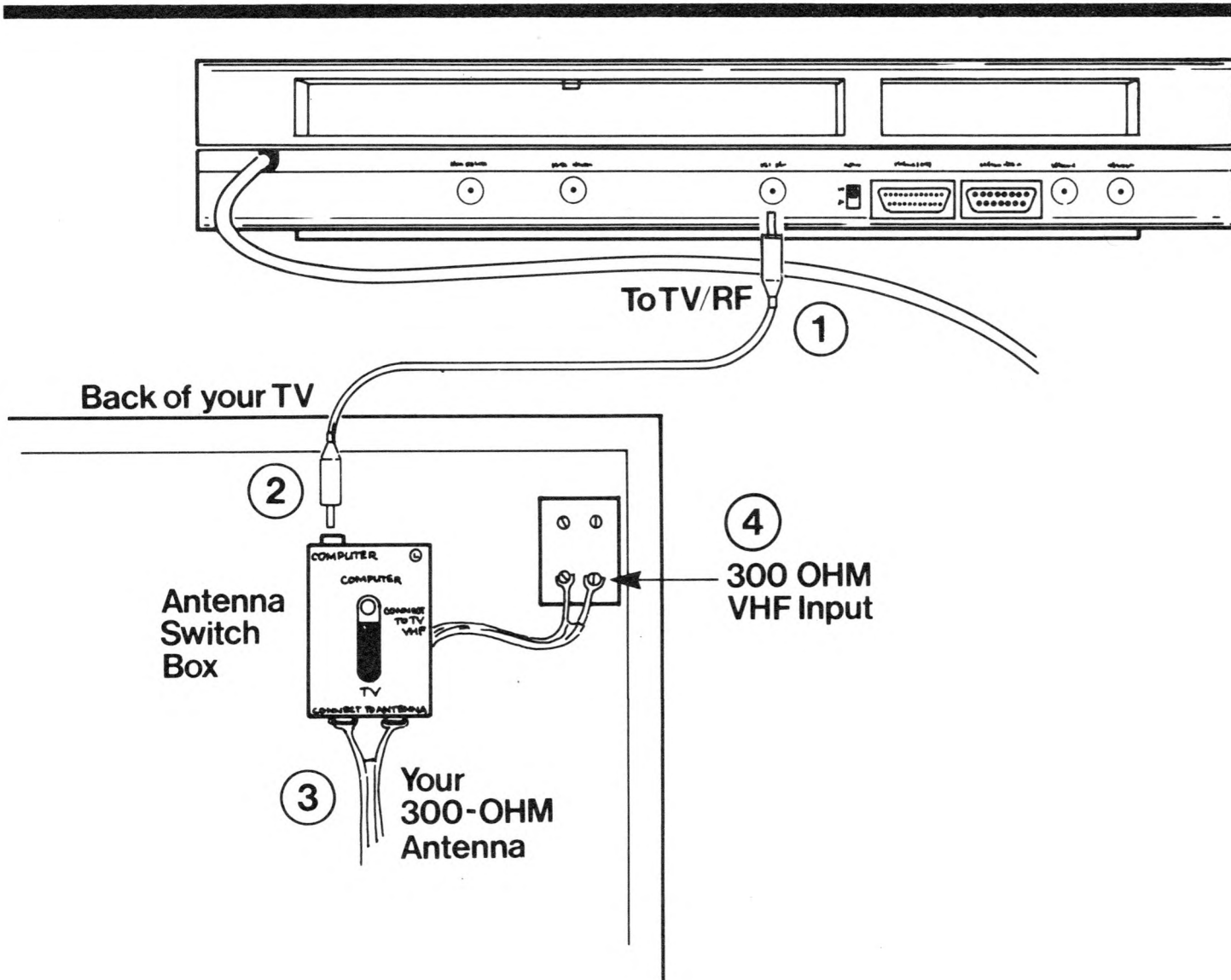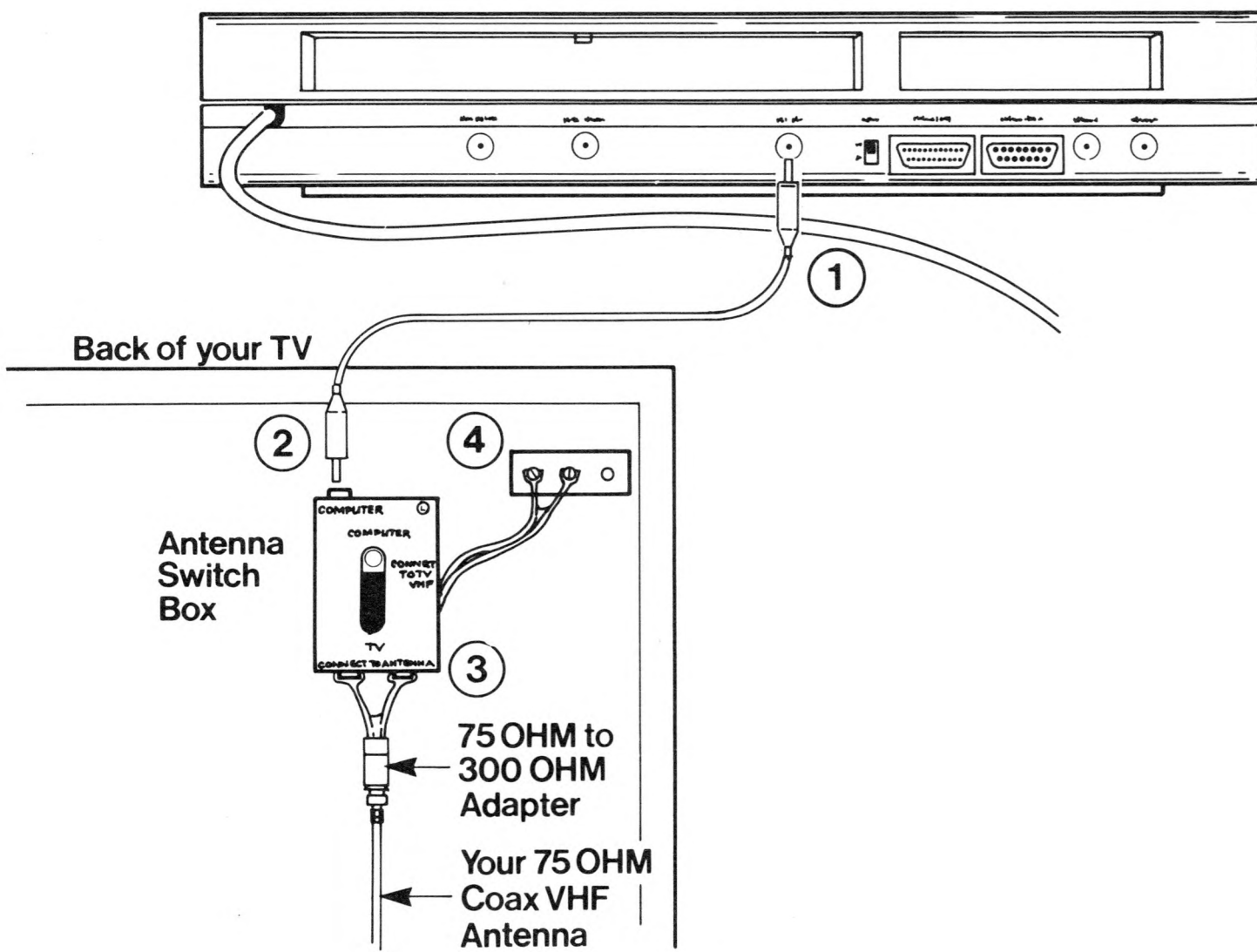   terminals on the switch box (3 in Figure 2-5).

5. Connect the output cable of the antenna switch box, marked "TV", to
   the VHF antenna terminals on your TV set (4 in Figure 2-5).

6. Set your TV VHF tuner to either channel 3 or 4. Select channel 4 unless
   there is a local channel 4 in your area. Otherwise, select channel 3.

7. Set the CHAN 3/4 switch on the back panel of the System Unit to the
   TV channel you selected (3 or 4).

Connecting the System Unit to a 75-Ohm TV Input

To connect the System Unit to a 75-ohm TV input, follow these
procedures:

1. Attach one end of the TV cable to the TV/RF connector on the back
   panel of the System Unit (see 1 in Figure 2-6).

2. Attach the other end of the cable to the antenna switch box connector
   marked "COMPUTER" (2 in Figure 2-6).

3. Next, disconnect the VHF antenna from your TV set.

4. To connect your 75-ohm coaxial cable to the switch box, you need a
   75-ohm coaxial to 300-ohm twin-lead adapter (3 in Figure 2-6). This
   adapter is available from your TV or electronics dealer. Screw the
   round coaxial 75-ohm antenna cable into the 75-ohm connector on
   the adapter.

5. Next, connect the flat twin-leads of the adapter to the screw terminals
   on the switch box.

6. Connect the output cable of the antenna switch box, marked "TV", to
   the VHF antenna terminals on your TV set (4 in Figure 2-6). If your
   TV does not have a 300-ohm twin-lead connector, you need to use a
   300-ohm to 75-ohm adapter to connect the switch box to your TV. This
   adapter is available from your TV dealer.

7. Set your TV VHF tuner to either channel 3 or 4. Select channel 4 unless
   there is a local channel 4 in your area. Otherwise, select channel 3.

8. Set the CHAN 3/4 switch on the back panel of the System Unit to the TV channel you selected (3 or 4).

Connecting the System Unit to an RGB Color Monitor

Your dealer can direct you to the correct video cable you need to purchase for your RGB monitor.

To connect the System Unit to an RGB monitor, follow these steps:

1. Insert one end of the video cable into the video input connector on your monitor.

2. Insert the other end of the video cable into the RGB VIDEO connector on the back panel of your System Unit (1 in Figure 2-7).

Figure 2-7: Connecting the video cable

Connecting the System Unit to a Composite Video Monitor

Your dealer can direct you to the correct video cable you need to purchase for your composite video monitor. If your composite video monitor is equipped with a built-in speaker, you may also need to connect a second cable to carry the audio signals. Your dealer can supply the proper cable.

To connect the System Unit to a composite video monitor, follow these steps:

1. Attach one end of the composite video cable into the video input connector on your monitor.

2. Attach the other end of the video cable into the COMP VIDEO
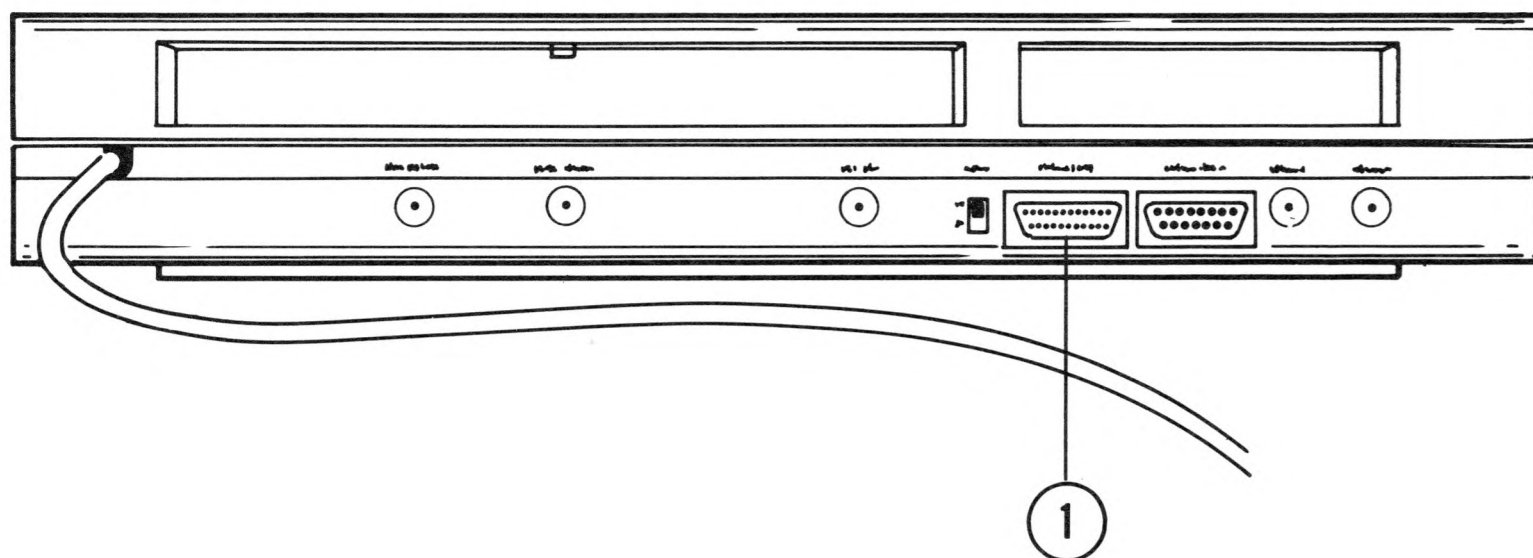   connector on the back panel of your System Unit (1 in Figure 2-8).

3. If you need to connect an audio cable to your monitor, attach one end
   of the cable to the audio input connector on your monitor. Then attach
   the other end of the cable to the AUDIO LEFT connector on the back
   panel of your System Unit (2 in Figure 2-8).
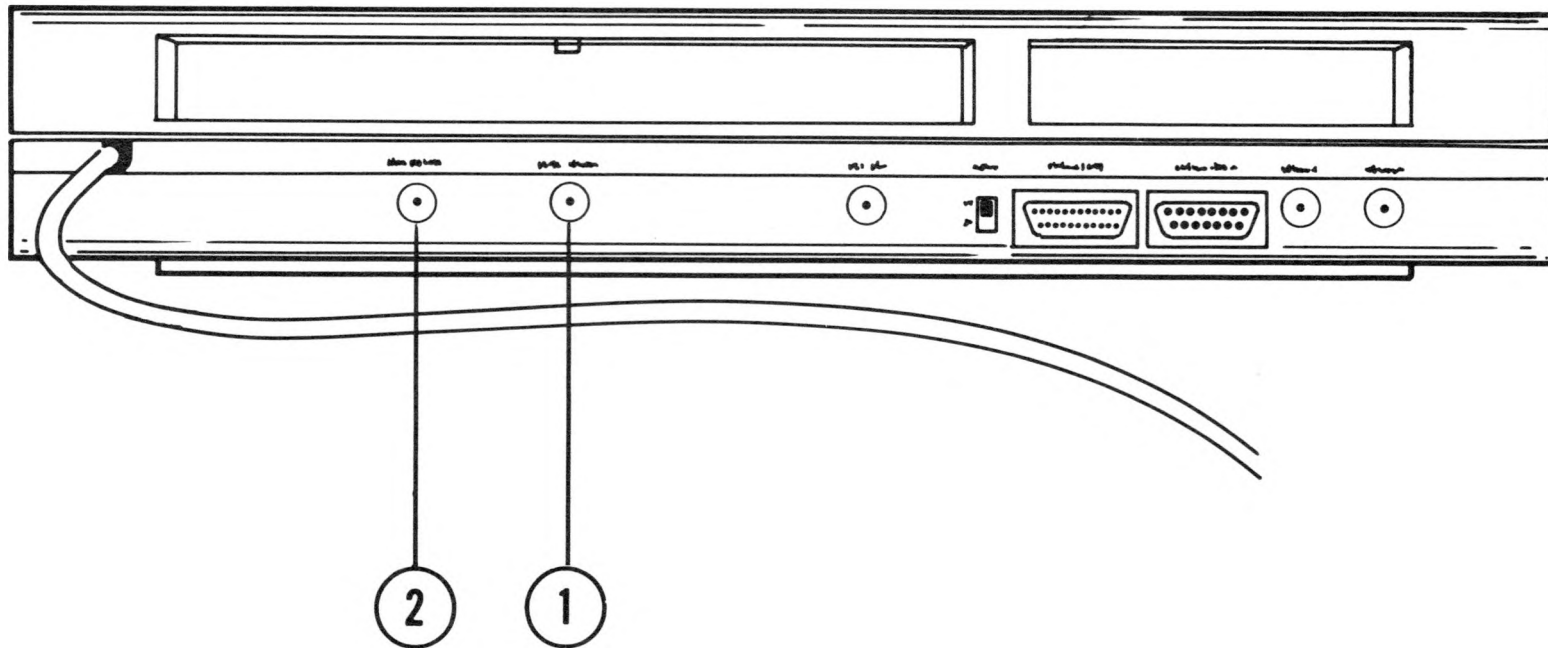
Figure 2-8: Connecting the composite video cable

Turning On the System Unit

After you have attached the keyboard and a monitor or TV to the System
Unit, turn on the monitor or TV. You are now ready to turn on your system.
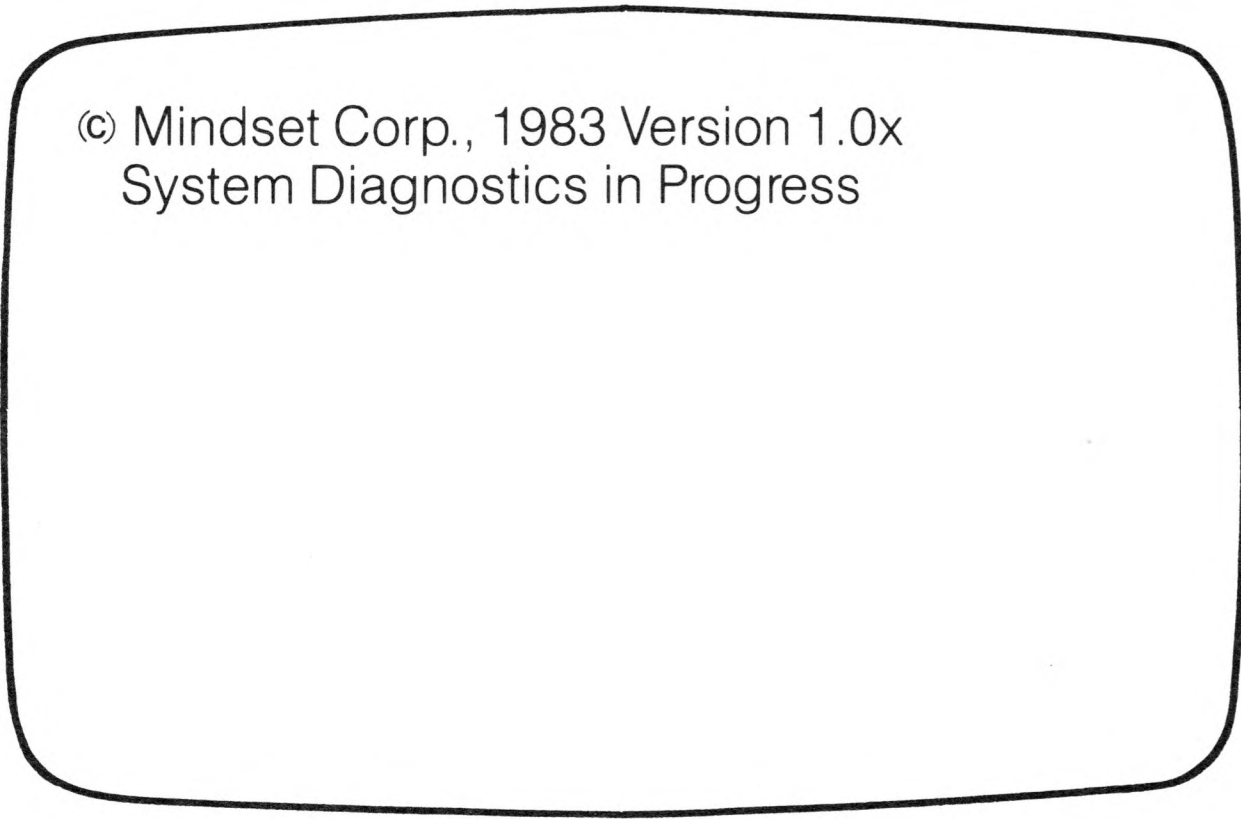
The ON/OFF power switch for the System Unit is a horizontal rocker
switch located at the right rear corner of the keyboard.

Press the switch to the ON position indicated by a red dot, to power up
the System Unit. The red indicator LED on the front of the System Unit
lights up.

Note: The yellow and green indicator LEDs do not light up at this time
(refer to Figure 2-3).

Attention: You must wait 5 seconds after turning off the power before you
power up the system again.

Next, the Mindset power-up screen appears (see Figure 2-9).

© Mindset Corp., 1983 Version 1.0x
System Diagnostics in Progress

Figure 2-9: The Mindset power-up screen

After several seconds, the three-dimensional Mindset logo appears. Then, after 10 to 15 seconds, the logo begins to rotate.

The power-up screen and the logo screen indicate that the System Unit has successfully completed a series of self-diagnostics and is ready for operation.

If the red indicator LED does not light up, the power-up or logo screens do not appear, or another message appears, refer to Section 7, "Solving Problems", for a summary of troubleshooting techniques.

The next section of this guide introduces you to the Mindset Keyboard. When you become acquainted with the keyboard, you can proceed to Section 4, "System Configuration", which explains how to set some operating characteristics before you begin using the Mindset Personal Computer.

Section 3

The System Keyboard

The System Keyboard is your primary means of communicating with the system. Its low-profile design enables you to rest your hands in a comfortable position.

Getting Acquainted with the Keyboard

The Mindset Personal Computer Keyboard looks much like the keyboard of a typewriter (see Figure 3-1).
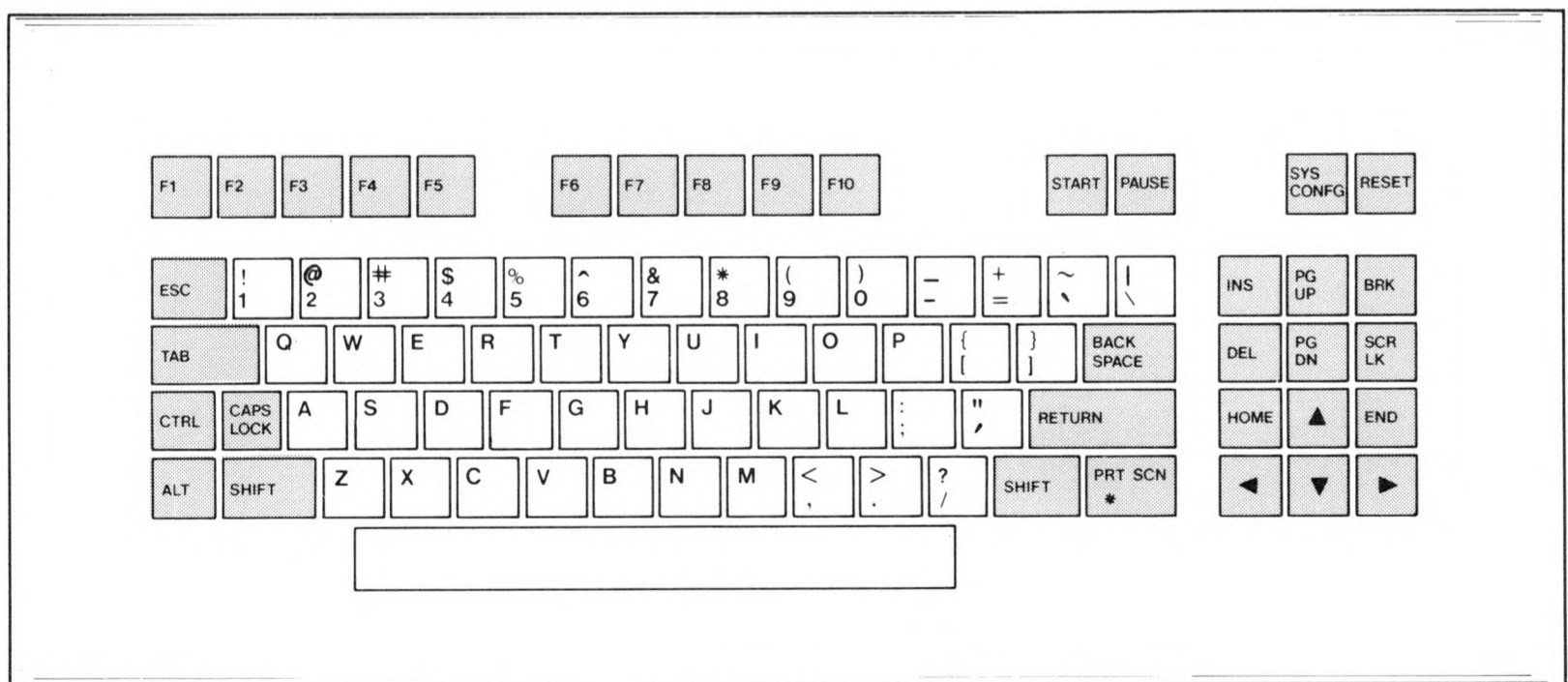
Figure 3-1: The Mindset Keyboard

Many of the keys have the same function as typewriter keys; other keys have special functions on the Mindset Personal Computer, some of which depend on the software you are using. This feature enables the keyboard to be "customized" for a particular application, making the program easier to operate.

Standard Keys

The following keys work like typewriter keys:

ALPHABETIC AND NUMERIC KEYS — These keys appear in the same positions and operate the same as they do on a standard typewriter keyboard.

| SPACE bar | — Produces a space character.

| RETURN | — Tells the system to enter into the system memory the line of information you just typed, and to position the cursor at the beginning of the next line. Some application programs refer to this key as ENTER or use the ⏎ symbol

| SHIFT | — Produces uppercase letters, special characters, and upper symbols.

| CAPS LOCK | — Affects alphabetic keys only. Pressing the CAPS LOCK key causes the keyboard to produce uppercase characters for all alphabetic keys. Pressing this key a second time causes the alphabetic keys to again produce lowercase characters. When pressed, this key stays depressed until you press it again.

| BACK SPACE | — This key enables you to move the cursor to the left one character at a time to erase one or more characters you just typed. Some application programs use the ← symbol to refer to this key.

| TAB | — Moves the cursor to the right several character positions. Some application programs use the symbol ⇥ to refer to this key.

Special Keys

The following keys are system keys and are unique to a personal computer keyboard.

SYS CONFG ALT	When pressed along with the ALT key, the SYS CONFG (system configuration) key causes the Mindset Personal Computer to display the configuration menu on the screen, from which you select the system operating parameters or characteristics.
RESET ALT	When pressed along with the ALT key, the RESET key tells the system to load a program from a cartridge or disk. Whenever you are instructed to press the RESET key, always press the ALT key at the same time.
PRT SCN *	The PRT SCN (print screen) key produces a *. When pressed with the SHIFT key, the PRT SCN key copies the text displayed on the screen to the system printer.

The following six keys are called cursor control keys. You use these keys to move the cursor around the screen. Their operation is application dependent. That is, the function of each key depends on the program you are using.

▲	Moves the cursor up one line.
▼	Moves the cursor down one line.
►	Moves the cursor right one character.
◄	Moves the cursor left one character.
HOME	Moves the arrow to the top left corner of the screen.
END	Moves the arrow to the bottom left of the screen.

The following keys are also application dependent:

CTRL	The CTRL (control) key performs a specific command or function when pressed with another key, depending on the program you are using. You use this key like the SHIFT key. You hold it down while you press another key.
ALT	The ALT (alternate shift) key performs a specific command or function, depending on the program you are using. Hold it down while you press another key such as SYS CONFG and RESET.

| ESC | The ESC (escape) key performs a specific command or function, depending on the program you are using. |

| START | Begins the operation of certain programs. |

| PAUSE | Temporarily halts the operation of certain programs. |

| INS | The INS (insert) key enables you to insert characters without overwriting existing text. |

| PG UP | The PG UP (page up) key displays the preceding page of text on the screen. |

| BRK | The BRK (break) key halts program operation. |

| DEL | The DEL (delete) key deletes a character. |

| PG DN | The PG DN (page down) key displays the next page of text on the screen. |

| SCR LK | The SCR LK (scroll lock) key performs functions defined by the program you are using. |

Like some electric typewriters, some of the keys on the keyboard have a repeat-action function. That is, if held down, the key generates that character continuously. The following keys have a repeat-action function:

Alphabetic and numeric keys

| BACK SPACE |

| PRT SCN * |

| SPACE bar |

| ▲ |

| ▼ |

| ◄ |

| ► |

Attaching Input Devices to the System Keyboard

The System Keyboard is your primary input device. In addition, you may want to use other input devices with your system depending on the software you are using.

The System Keyboard has connectors on each side to enable you to attach input devices such as a mouse or a joystick.

Attaching other input devices is easy. Simply insert the cable from the device into either of the connectors on the right or left side of the keyboard (see Figure 3-2).
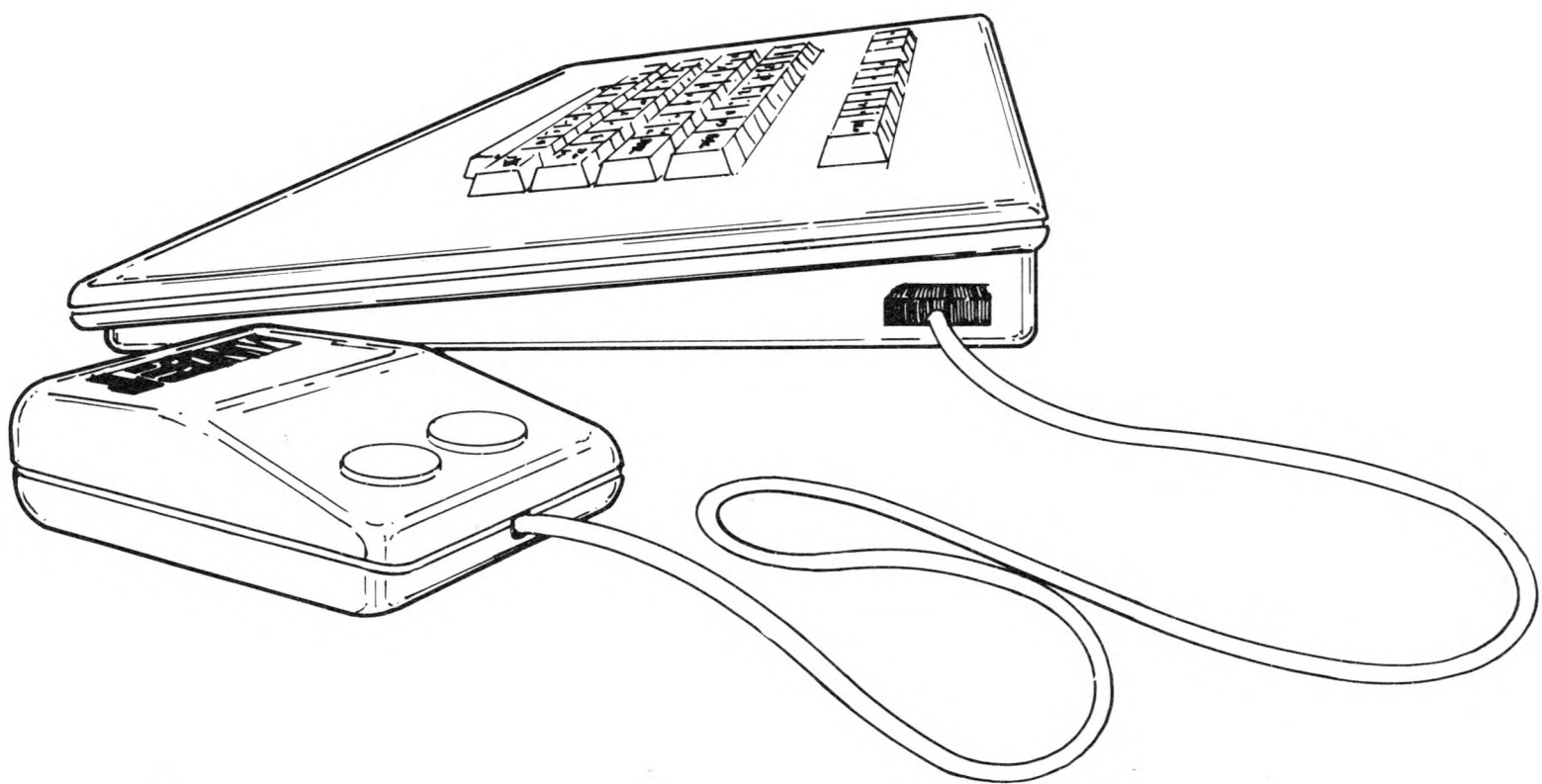
Figure 3-2: Right-hand input device connector with a mouse attached

Section 4

System Configuration

You use system configuration to set several different system parameters and to "tailor" aspects of the system's operation to your needs. For example, you can choose the following parameters:

- Monitor or television operation.

- The ON or OFF status of the audio prompt or "beeper".

- The order ("load priority") in which the system tries to access a program from the cartridges or a diskette.

- The screen orientation for operation with a television or monitor.

- The time and date for the system clock.

Once you set the configuration parameters, the selections you make are retained for as long as the system remains plugged in or until you modify them. Turning off the Mindset Personal Computer won't change these selections.

Viewing the Configuration Screen

Pressing the SYS CONFG key along with the ALT key causes the system to display the configuration screen (see Figure 4-1). This screen contains a menu from which you select different parameters.

```
                    Mindset System Configuration
     Press "Home" to restart configuration.
     Press "Return" to select next item.
     Press "Alt-Reset" to exit configuration.

     Press "Space" to change items below.
     ┌──┬─────────┐                      ┌──────────┬─────┐
     │TV│ Monitor │                      │ Beeper   │ OFF │
     └──┴─────────┘                      └──────────┴─────┘
     ┌──────────────────────────────────────────────────┐
     │              Program Load Priority:                │
     │  ┌────┐         ┌────┐         ┌────┐              │
     │  │ 1. │ Cart 1  │ 2. │ Cart 2  │ 3. │ Disk         │
     │  └────┘         └────┘         └────┘              │
     └──────────────────────────────────────────────────┘
     Press cursor keys to change items below.
              ┌───────────────────────────┐
              │    Adjust Screen Position  │
              └───────────────────────────┘
              ┌───────────────────────────────────┐
              │ Time:    Fri 05/13/83   09:34:32 am │
              └───────────────────────────────────┘
     RAM = 032k bytes                          Power Fail
```
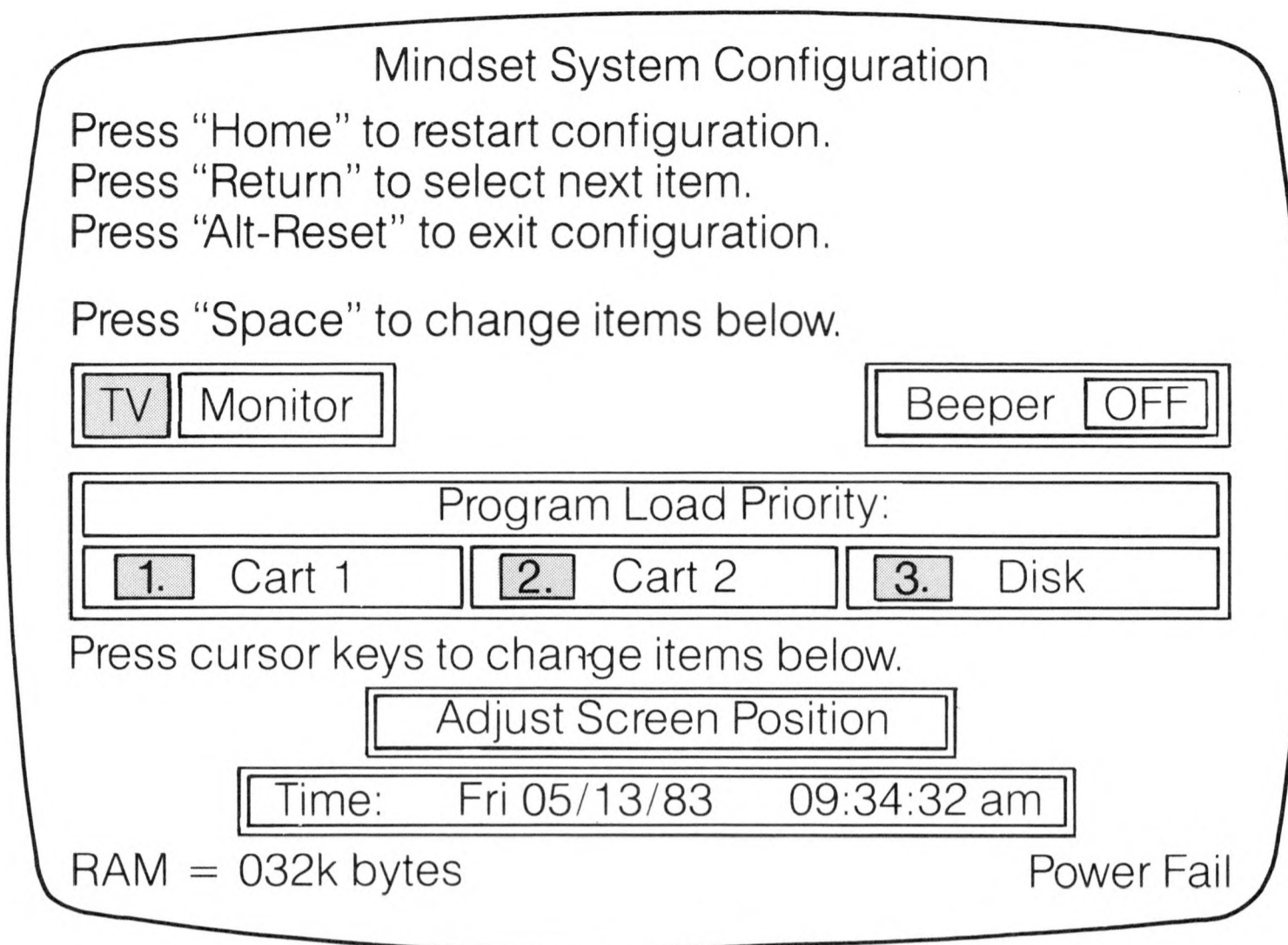
Figure 4-1: Configuration screen

The selections that appear highlighted when you first install and turn on the system are "default" selections. That is, the system uses these selections as the current configuration parameters unless you change them.

When you unplug the system and then plug it in again or if you experience a power "cut-off", the system reverts to these default selections. If you see a Power Fail message at the bottom of the configuration menu, the system is using default selections.

To change a default selection, use the RETURN key to move the arrow next to or beneath a selection, and then either use the SPACE bar or a cursor key as instructed below. Note that when you make the last choice on the menu, pressing the RETURN key again moves the arrow back to the beginning of the menu. This feature enables you to change any previous selection. After you select a parameter, the selection appears highlighted.

Use the ALT-RESET keys to exit from the configuration menu. The system then attempts to load a program from a cartridge or diskette. If there is no cartridge or diskette in the system, the Mindset logo screen appears.

The HOME key moves the arrow back to the first selection on the menu. You can press this key at any time.

Selecting Television or Monitor Display Mode

Your system sends different color information to an RGB monitor than to a TV or composite video monitor. You need to "tell" your system what type of display device you are using.

When the configuration screen first appears, the arrow is at the first line, the "TV/Monitor/Beeper" line. This line enables you to select the video display option and the ON/OFF mode of the speaker. If this is the first time you are configuring your system, "TV" (the default for this item) appears highlighted.

If you connected your System Unit to a TV or a composite video monitor, then "TV" is the correct selection. If you connected your system to an RGB monitor, press the SPACE bar. "Monitor" appears highlighted. Pressing the SPACE bar toggles between "TV" and "Monitor" selections. When you have the correct selection highlighted, press the RETURN key to advance to the "Beeper" selection.

Turning the Beeper On or Off

The Mindset Personal Computer has extensive sound generation capabilities. The output can be played through the speaker in your television or monitor (if it is equipped with a speaker), or through an amplifier connected to the AUDIO LEFT connector on the back of the System Unit.

In addition, the Mindset Personal Computer has a built-in "beeper" available for application programs that issue audio prompts or warnings to users. If your system is not connected to an external speaker (through a TV, a monitor with a speaker, or the AUDIO LEFT output), the audio prompts issued by application programs can be generated through the beeper.

To turn the beeper on, press the SPACE bar until "ON" appears next to the word "Beeper". If your system is connected to an external speaker

and you do not need the beeper, press the SPACE bar until the word "OFF" appears.

Now press the RETURN key to move the arrow to the next parameter on the configuration screen, the Program Load Priority.

Setting the Program Load Priority

The system can use programs from any of three sources: a cartridge in port 1 or port 2, or a diskette in a disk drive (part of the Mindset Expansion Unit). The second line of the configuration menu enables you to select the "load priority" for programs. The load priority defines the order in which the system will access a program from cartridge ports and disk drives.

The default load priority is:

1. Use a program from cartridge port 1 if possible.

2. Use a program from cartridge port 2 if there is no cartridge in port 1.

3. Use a program from the diskette in the left-hand drive if there are no cartridges installed in the cartridge ports.

If you load programs primarily from cartridge port 2, then you should specify cartridge port 2 as the first device in the program load priority. If you then place a diskette-based program in the disk drive and press RESET, the system checks the highest-priority device (cartridge port 2) first before it tries to load the program from the disk drive.

To practice changing the priorities, make sure that the arrow is positioned under the number just before the words "Cart 1". Use the RETURN key if necessary to reposition the arrow.

Next, press the SPACE bar until the chosen priority (1, 2, or 3) shows above the arrow.

Press RETURN to position the arrow under the number just before the words "Cart 2". Press the SPACE bar until the chosen priority (1, 2, or 3) shows above the arrow.

The priority for cartridge 2 may be either of the two priorities not selected for cartridge 1. The diskette is automatically assigned whatever priority wasn't selected for cartridges 1 and 2.

In most cases, the default setting will work best. You may want to start off using the default setting so that the load priority is cartridge 1 first, cartridge 2 second, and diskette third. It's easy to change later if you need to.

Adjusting the Screen

Sometimes the display on a TV or monitor screen is not properly aligned, resulting in the display being skewed to the right or left, or high or low.

You can use the cursor keys (▲, ▼, ▶, ◀) to center the display within the surrounding border on a TV or monitor screen for maximum visibility.

To center the screen, press RETURN, which positions the arrow to the left of the words "Adjust Screen Position". Then use the cursor keys to move the screen up, down, left, or right.

When the screen position is satisfactory, press the RETURN key to move to the Date and Time field. (If you do not wish to reset the date and time, press the RESET key to exit from the configuration screen.)

Setting the Date and Time

Your system has its own internal clock which, once set in the configuration menu, keeps track of the date and time. Some application programs take advantage of this convenient feature.

Use the RETURN key to position the arrow below the item to be set on the date and time line (called the "Time" line on the screen). Then use the cursor keys to change the values of the items. Notice that the time clock stops when you position the arrow below any item on the Time line. This feature enables you to set a new date and time precisely.

The first item on the Time line is the day of the week. To set the day of the week, press the ▲ or ▼ key. A three-letter abbreviation for each of the seven days appears as you press these keys.

Next, press the RETURN key to move to the date. The month, day, and
year appear as 01/01/01. Press the ▲ or ▼ cursor key until you see the
current month. Press RETURN again to move to the day of the month and
use the cursor keys to change this number. Repeat this procedure for the
year value.

Press RETURN again to move the cursor to the time values. The values
for hour, minutes, and seconds started as 01:01:01. Use the RETURN
and ▲ and ▼ keys to set these values.

Last, press RETURN to position the cursor under am or pm. Use the ▲
or ▼ cursor key to change these values.

Press the RESET or RETURN key to complete setting the date and time.

Until you move the arrow away from the Time line, the date and time
remain fixed. Therefore, as soon as you set the time, press the RETURN
or RESET key.

Note that the Mindset Personal Computer does not check that the date
set falls on the day of the week selected or that there is such a date in the
month selected (for example, February 30th).

The Power Fail Message

The words "Power Fail" in the lower right corner of the configuration
screen tell you that the system has lost AC power since it was last used.
This message means that the date and time settings are probably
inaccurate and that the system has returned to the default values for the
other configuration settings. Therefore, you need to reset the configura-
tion settings to the desired values and to update the date and time.

Quantity of RAM Addressed

The configuration screen also indicates how much system RAM
(Random-Access Memory) is being addressed. The number in the lower
left corner of the screen shows how many thousand bytes of RAM are
being addressed at any time. It is an easy way to verify that your system
is addressing all available RAM.

Using Cartridges

Enhancing Your System

Solving Problems

Specifications

Section 5

Using Cartridges

Cartridges are an integral part of your system. They are a convenient way to add software to the system and can also be used to store your own programs and data.

Types of Cartridges

There are several types of cartridges. The following types of cartridges are available for your system:

ROM Cartridges

ROM stands for Read-Only Memory. These cartridges contain pre-programmed software. ROM-based programs extend your system's memory and save it for more flexible operation. The GW BASIC language cartridge is a ROM cartridge. You can't erase information from ROM cartridges.

NVRAM Cartridges

NVRAM cartridges contain Non-Volatile Random-Access Memory. The RAM in your System Unit is volatile and loses its information when you turn off the power. An NVRAM cartridge enables you to retain information when you turn off the power because the cartridge contains a small battery. An NVRAM cartridge provides less storage room than a diskette, but it is more convenient to use for some applications. You can change or erase information in NVRAM cartridges.

ROM/NVRAM Cartridges

These cartridges combine application software in ROM with NVRAM so that you can store data. For example, a telecommunications cartridge might have application software in ROM as well as NVRAM where you could store frequently dialed telephone numbers or access codes.

Inserting and Removing Cartridges

Before you can insert a cartridge into a cartridge port in the System Unit, you need to remove the port protector from the port. Installed before shipment, these port protectors shield the cartridge ports from dust and foreign objects. Retain these protectors to protect the cartridge ports from foreign objects and to give your system a more complete look when you aren't using cartridges.

Your System Unit is equipped with a unique latching device that securely locks both cartridges in place and ensures a good connection. This latch is located on the left side of the System Unit.

To remove a cartridge or a port protector, turn the cartridge latch counterclockwise to the unlocked position (see Figure 5-1) and pull the cartridge or port protector out. You should not attempt to remove a cartridge or port protector without unlocking the cartridge latch.
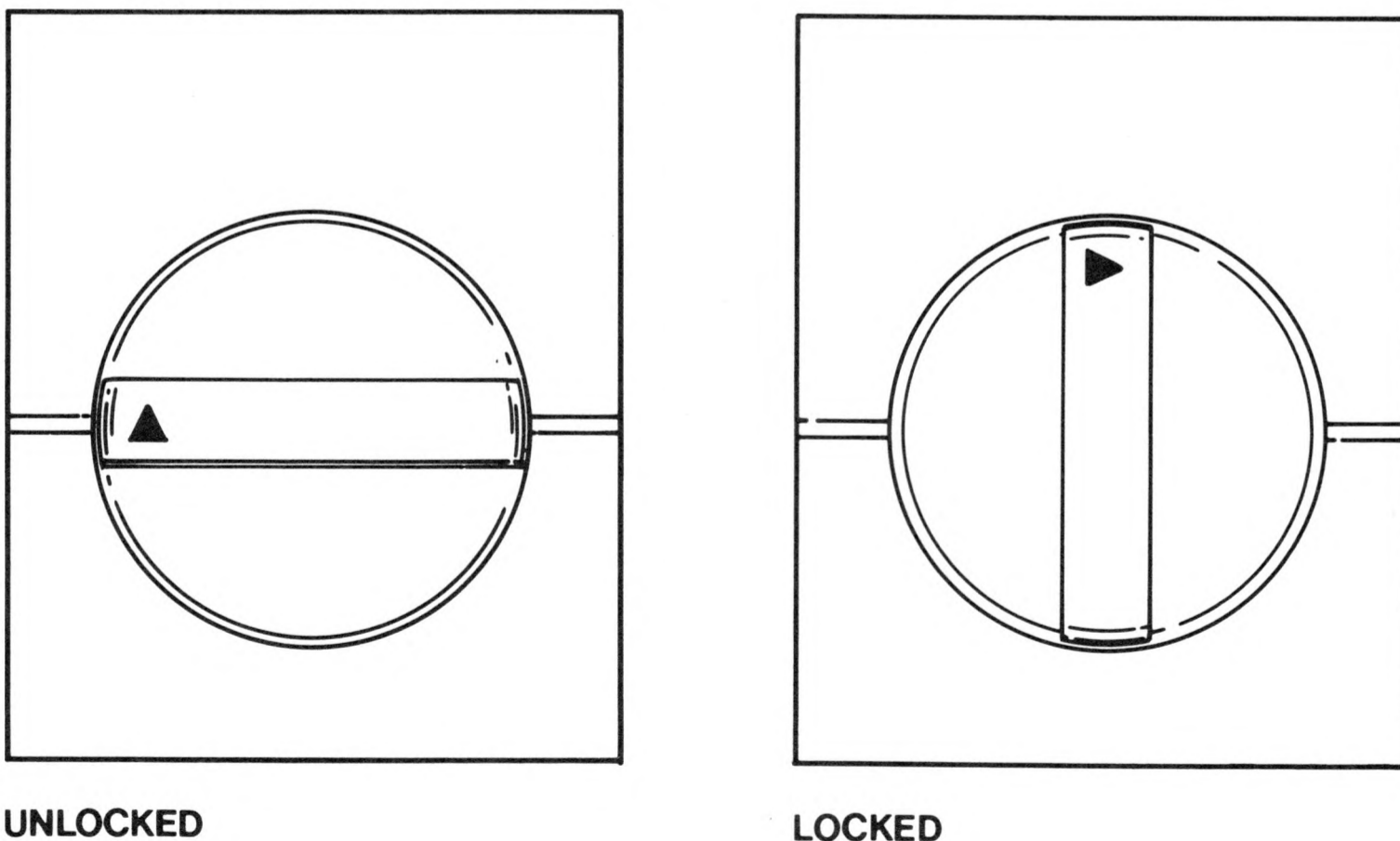
UNLOCKED   **LOCKED**

Figure 5-1: Cartridge latch in unlocked and locked position

To insert a cartridge, follow these three steps:

1. Hold the cartridge with the label facing up and your thumb in the round thumb depression.

2. Slide the cartridge into the port until the cartridge is flush with the front panel of the System Unit (see Figure 5-2).
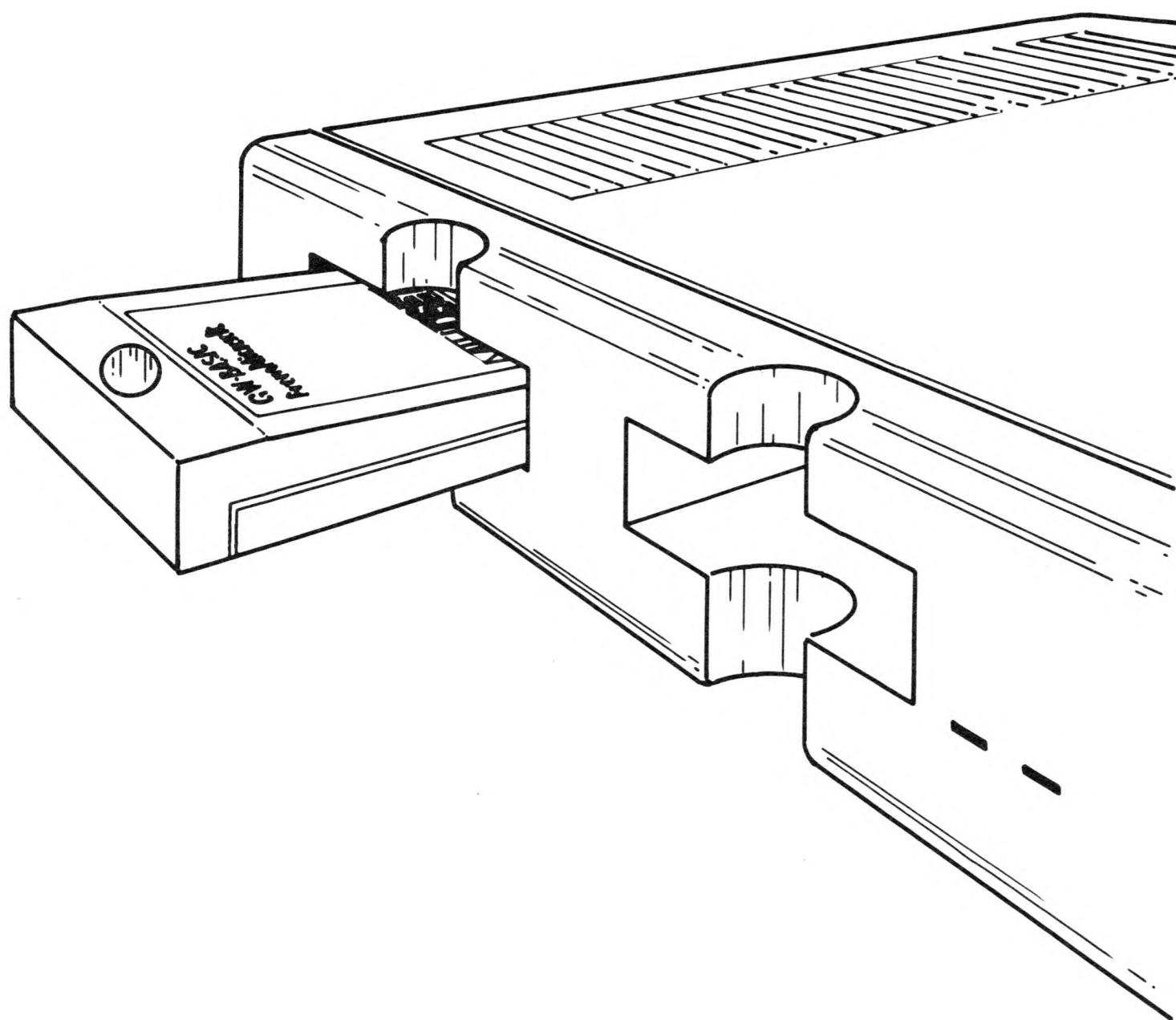
Figure 5-2: Inserting a cartridge

Note: Do not try to force the cartridge into the cartridge port if the cartridge latch is in the locked position. You may damage the cartridge or internal mechanisms of the cartridge port.

3. Turn the cartridge latch clockwise to the locked position (see Figure 5-1).

To remove a cartridge, first turn the system off. Turn the cartridge latch to the unlocked position and pull the cartridge out. Never attempt to remove a cartridge without unlocking the cartridge latch.

Note that you can insert cartridges when the system power is on. However, the system should be turned off before removing cartridges.

Using the Dual-Cartridge Capability

The System Unit contains ports for two cartridges. You may wish to use two cartridges at once for some applications. For example, you can insert the GW BASIC cartridge in the left port (port 1) and an NVRAM cartridge in the right port (port 2). Then, when you finish entering and editing your BASIC program, you can store it on the cartridge in port 2.

Section 6

Enhancing Your System

There are a number of ways you can expand and enhance your system's capabilities. The modular design of the Mindset Personal Computer makes this easy to do. In addition, this design gives you the capability to adapt your system for specific tasks.

Enhancement Options

Figure 6-1 shows an example of a system that has been enhanced with several options.

The following is a list describing some of the enhancements available for the Mindset Personal Computer:

Expansion Unit—Increases system memory, provides additional module ports, and includes one or two disk drives for additional data storage.

RS-232-C Interface Module—Provides the communications capability to connect the Mindset Personal Computer to printers, plotters, and other serial-interface devices.

Printer Interface Module—Enables the Mindset Personal Computer to support an industry-standard parallel-interface printer for hard-copy output.

Modem Modules—Combined with telecommunications software, enable you to access other computer systems and information utilities.

Stereo Sound Module—Adds a second audio channel which, together with the built-in audio channel, enables the Mindset Personal Computer to produce stereo sound.

Non-Volatile RAM (NVRAM) Cartridges—Provide a convenient, interchangeable data-storage medium.

These and other options come with documentation which you can conveniently place under the OPTIONS tab of this guide.
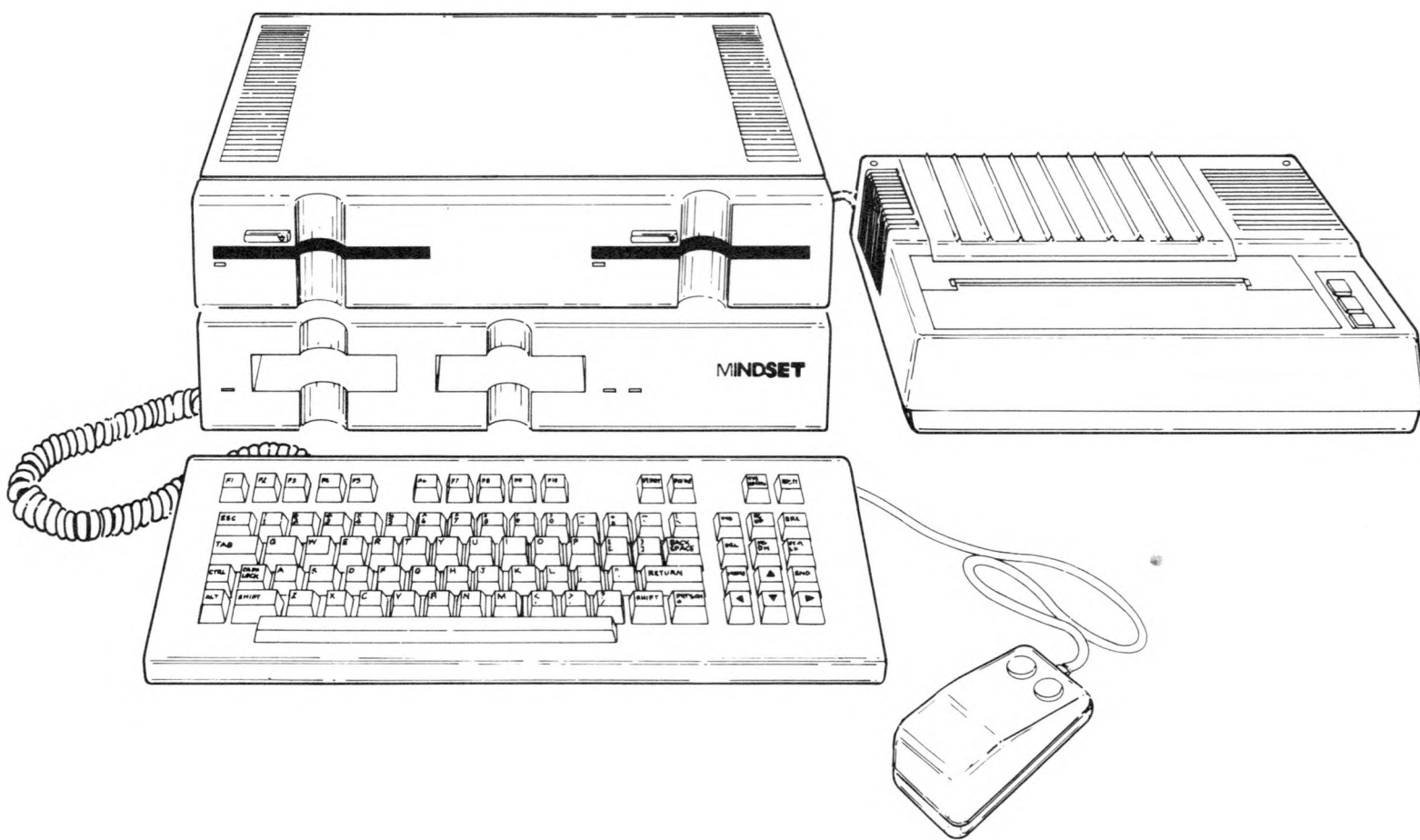
Figure 6-1: An enhanced Mindset Personal Computer System

Using Modules

The easiest way to expand your system is by using System Modules. System Modules are single- or double-width plastic enclosures that contain the interface circuitry necessary to connect your system to other devices (see Figure 6-2). Modules can be easily inserted into the back of your System Unit or the optional Expansion Unit.
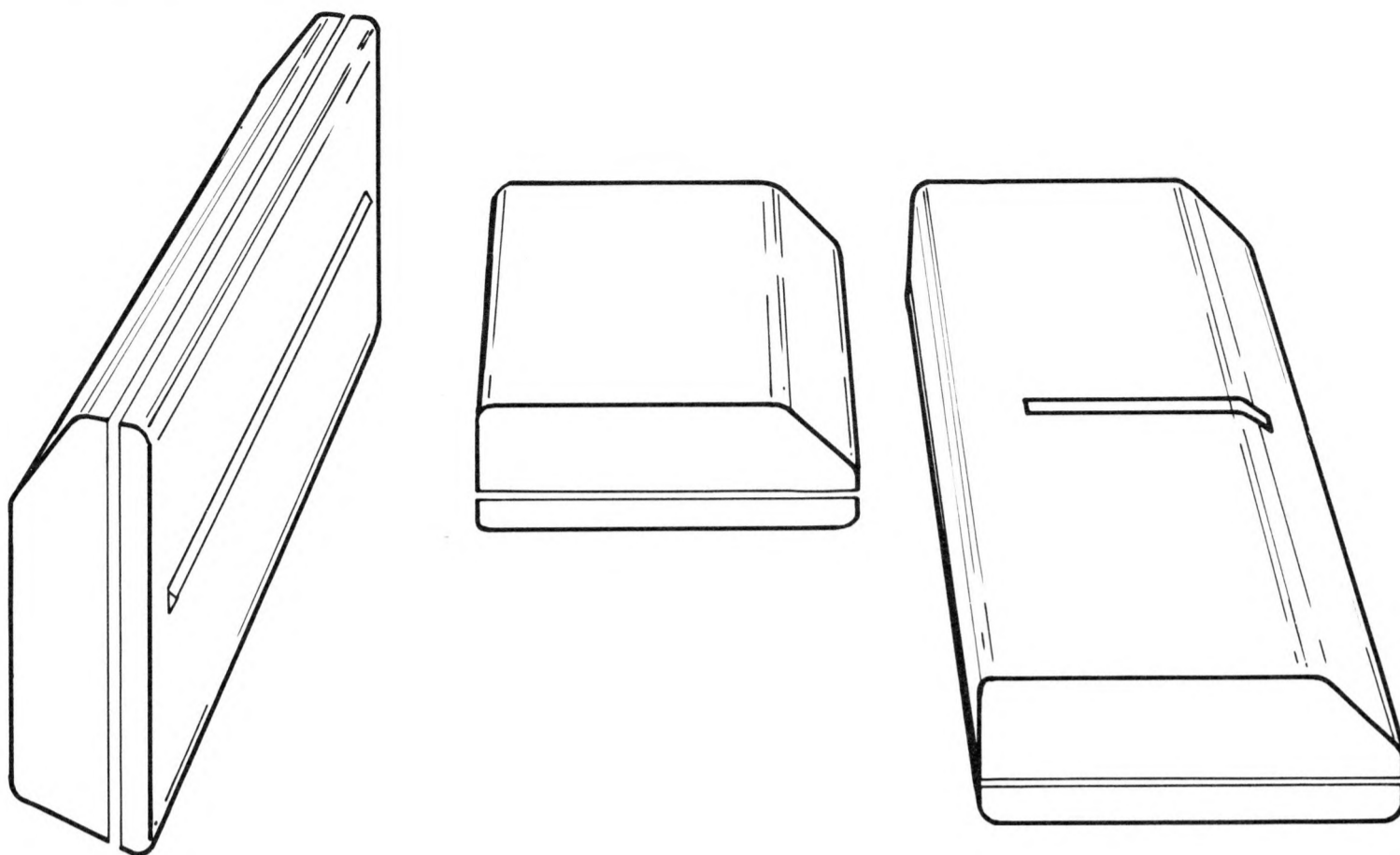
Figure 6-2: Single-width and double-width System Modules

A connector along the narrow edge of the module joins with the circuitry inside your system when you plug the module in. An I/O connector on the rear edge of the module receives a cable from an external device (peripheral).

Installing and Removing System Modules

Inserting modules is very easy. To install a module, follow these five steps:

1. If the System Unit is on, turn it off.

2. Using a screwdriver or knife edge, remove the plastic module port protector (see Figure 6-3). You can insert a single- width module into ports 1, 2, or 3 (1, 2, and 3 in Figure 6-3) or one double-width module into ports 1 and 2.

   Note: Don't discard the port protector. Keep it in a safe place with your other system accessories. Replace the port protector if you remove the module for any reason. The port protector shields the module port from dust and small objects.

3. Insert the module into the module port, the narrow edge first (1 in Figure 6-4), so that the module label faces down (2 in Figure 6-4).
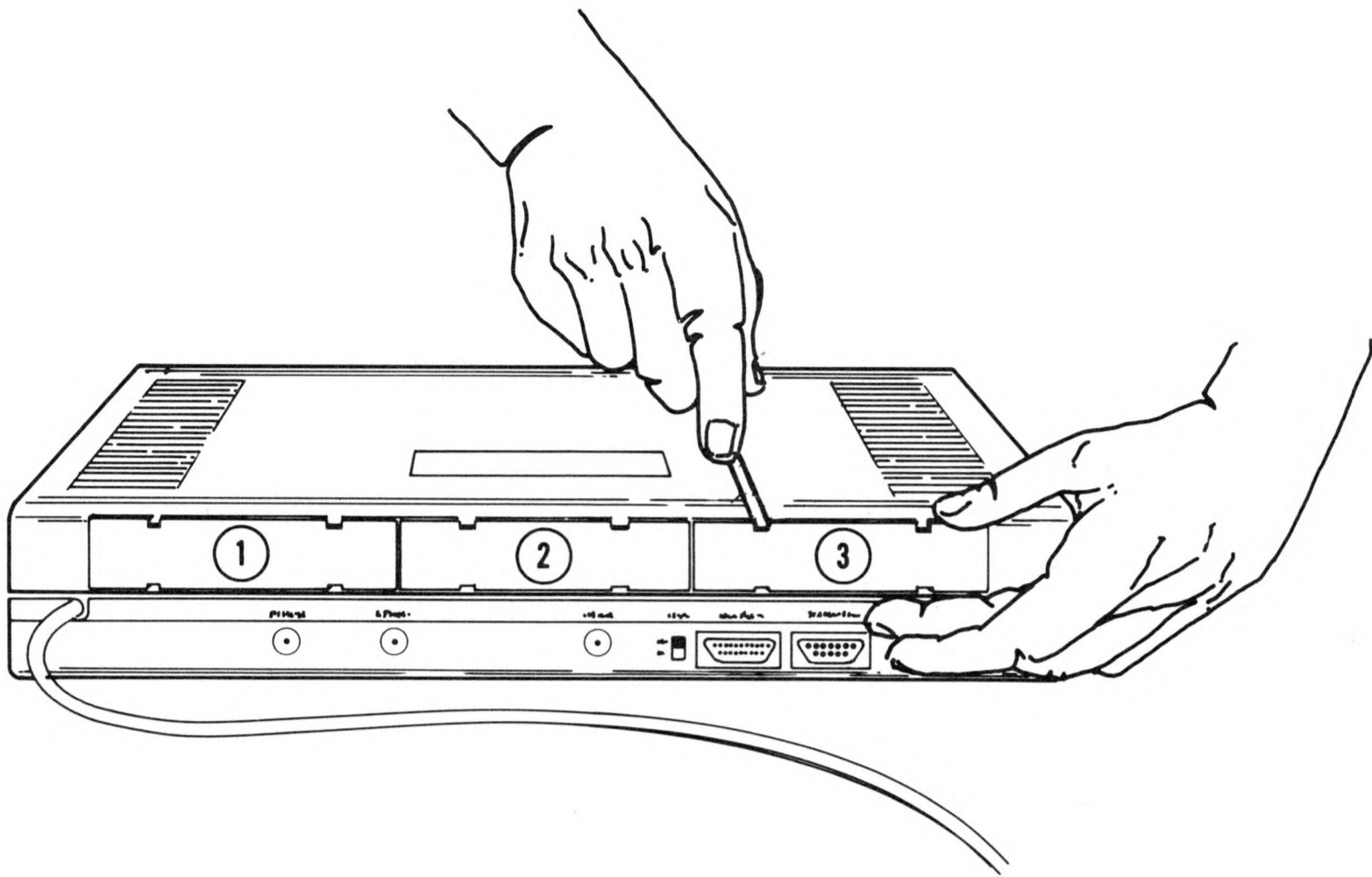
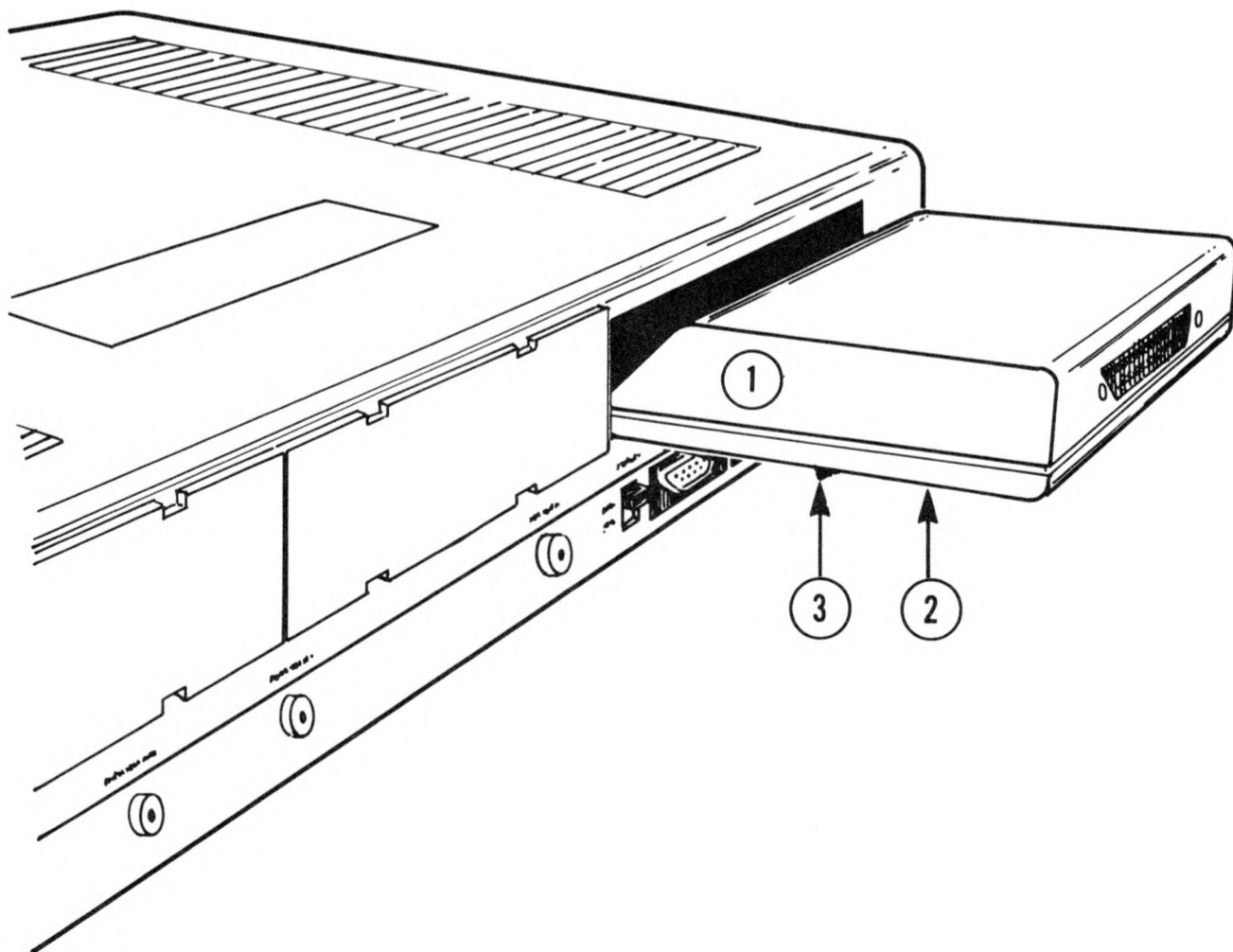*Figure 6-3: Removing the module port protector*

Figure 6-4: Inserting a System Module

Gently push the module until the plastic lip (3 in Figure 6-4) on the bottom of the module snaps into place.

4. Next, attach the device cable for whatever peripheral device you want to connect to your system.

5. Turn on the system.

To remove a module, follow this procedure:

1. Turn off the System Unit.

2. Disconnect the device cable from the module.

3. Remove the module by gently lifting the module and pulling it out of the port.

4. Replace the module port protector.

Section 7

Solving Problems

With proper care and handling, your Mindset Personal Computer should give you trouble-free operation. However, when problems do occur you can use the procedures below to identify many of the sources of the problems yourself. This section also includes system error messages that may appear on your video screen.

Diagnosing Your Problems

The following section lists some of the problems that may occur during operation of the System Unit. Try all the suggestions listed before you contact your dealer for assistance.

The Red LED Doesn't Light on Power-Up

1. Check that you plugged the power cord on the System Unit into a working wall outlet.

   Note: Do not plug the System Unit into a switched outlet. A switched outlet could be inadvertently turned off.

2. Ensure that you connected the keyboard cable to both the keyboard and the System Unit.

3. Look at the ON/OFF rocker switch at the back of the keyboard. The switch should be in the ON position (the red dot should be pushed in).

No Picture on the Display

1. Check the display power cord.

2. Check that the System Unit power cord is plugged in and that the keyboard cable has been properly connected.

3. Ensure that the ON/OFF switch is ON.

4. Check for proper connection of the video cable (see the procedures for attaching a TV or monitor to the System Unit in Section 2, "Setting Up the Mindset Personal Computer System Unit").

5. If you connected a TV, check the antenna switch box for the proper TV and antenna cable connections. Also check that the TV is turned on and is tuned to the correct channel.

6. Make sure you moved the switch on the antenna switch box to the "COMPUTER" position.

No Response to Keyboard Input

1. Check that the red LED on the front of the System Unit is lit.

2. Check your monitor or TV for the proper connections to your System Unit (see Section 2, "Setting Up the Mindset Personal Computer System Unit").

ON/OFF Switch Has No Effect

1. Unplug the system from the AC outlet and wait 5 to 10 seconds before plugging the system back in.

2. Turn the system on.

Interference on a Television from a Nearby TV Station

Set the CHAN 3/4 switch on the back of the System Unit to the other channel (3 or 4), and be sure to change the television station selector to the new channel (3 or 4).

The Mindset Logo Screen Appears After You Install a ROM Cartridge

1. Make sure the cartridge is flush with the front of the System Unit.

2. If you can't insert the cartridge all the way into the cartridge port, make sure the cartridge latch is unlocked, and try inserting the cartridge again.

3. Make sure you turn the cartridge lock to the locked (clockwise) position after inserting a cartridge.

4. Press the RESET key.

Inoperable Peripheral

1. Check that you plugged the power cord on the System Unit into a working wall socket.

2. Make sure that you plugged the peripheral into a working socket and that the peripheral has been properly connected to the module. Consult the operation guide for the peripheral to determine if you connected it properly.

System Error Messages

An error message indicates that your system has encountered a problem while performing a test or function. If one of the following error messages appears on your video screen your system may still be operable. Press any key to continue. If your system does not operate, contact your dealer for assistance.

> System RAM Test Failed
>
> System ROM Test Failed
>
> Bad Cartridge in Slot "x"
>
> Display RAM Test Failed
>
> Expansion RAM Test Failed
>
> System Timer Test Failed
>
> DMA Controller Test Failed
>
> Printer Module Test Failed
>
> RS-232-C Module Test Failed

System Error Messages, *cont.*

Real Time Clock Test Failed

Modem Module Test Failed

Graphics Coprocessor Test Failed

Display Processor Test Failed

Appendix

Specifications

Physical Characteristics

Width	16.0 inches
Depth	12.2 inches
Height	2.8 inches
Weight	Approximately 6.0 pounds

The System Unit can support up to 25 pounds.

Power Requirements

Voltage	110 VAC
Power requirements	50 watts

Functional Characteristics

CPU	Intel 80l86, 16 bit microprocessor
System RAM	64K bytes (32K processor RAM, 32K graphics RAM)
System ROM	32K bytes

Keyboard

Width	16.0 inches
Depth	7.0 inches
Angle of inclination	9 degrees
Weight	Approximately 3.0 pounds

Glossary

Glossary

Application dependent—Determined by the software program being used. The functions of several keys on the Mindset Personal Computer are application dependent.

BASIC—An acronym for Beginner's All-purpose Symbolic Instruction Code. BASIC is the programming language most frequently used with personal computers.

Baud—The speed in bits per second that information is transported across communication channels. You can usually divide the baud rate by 10 to calculate the equivalent number of characters per second.

Bit—An abbreviation for binary digit. A bit is a unit of information that equals one (1) or zero (0).

Byte—A basic unit of information that a computer processes. A byte represents approximately 1 character and consists of 8 bits.

Cartridge—A plastic enclosure containing memory circuits which store programs or data.

Command—An instruction used to tell a computer to start, stop, or continue an operation.

Composite video monitor—A television monitor that takes a composite video signal as input. A composite video signal combines the video information and synchronization signals so that they can be carried along a single coaxial cable. A composite video monitor can be either black-and-white or color.

Cursor—A position indicator such as a blinking square that appears on the TV or monitor to indicate where the information you type next will appear.

Data—A general term for information that can be processed by a computer.

Default—The choice of options a computer makes when not instructed otherwise.

Disk drive—A device which moves across the surface of a diskette to read and record information.

Diskette—A magnetic recording medium that stores information for fast retrieval. The Mindset Personal Computer uses 5¼-inch diskettes.

Disk operating system (DOS)—A disk-based program that controls hardware and software operations in a computer.

File—A collection of information stored under a specific name.

Function keys—The reprogrammable keys on a keyboard. By pressing one or more of these keys, you can issue more than one command so that your computer can perform specific functions, depending on the applications software program used. The function keys on the Mindset Keyboard are labeled F1 through F10.

Hardware—The electric, electronic, and mechanical equipment that is part of a computer, including external devices such as printers and monitors.

Input—The information that the computer receives for processing.

I/O—An abbreviation for input/output. I/O refers to interface devices that transmit information to and from a computer.

Joystick—An input device consisting of a lever that can be tilted in different directions to tell the computer to move an object displayed on a TV or monitor.

LED—An abbreviation for light-emitting diode. An LED is an indicator light that informs you of how a device is operating.

Load—The entering of information to the computer memory from an external storage device such as a diskette or a cartridge.

Load priority—The order in which the computer checks different storage devices to find a program which it can use.

Macro—A group or string of frequently used instructions or commands that can be accessed by a single command.

Memory—A device into which you can copy and store information, and from which you can retrieve the information at a later time.

Modem—A device that converts computer signals into tones and converts tones back into signals. This device enables computers to communicate with each other over telephone lines.

Mouse—A small, hand-held input device that you move around on your desk to control the position of the cursor or other objects displayed on a TV or monitor.

NVRAM—An acronym for Non-Volatile Random-Access Memory. The Mindset NVRAM cartridge contains this type of memory. It is termed non-volatile because the information stored on the cartridge is retained in memory by a battery within the cartridge.

Output—The information that a computer sends to external devices connected to it (for example, a monitor, printer, plotter, or telephone). Output also refers to the results of programs.

Parallel communication—The transmission and reception of data in groups of bits, each group representing a character.

Parameter—A specific value or characteristic that determines how a component performs.

Peripheral—An external input or output device that can be connected to a computer.

Program—A set of instructions telling a computer how to solve a problem or perform a task.

RAM—An acronym for Random-Access Memory. Information in RAM is not permanent. That is, RAM can not only be "read", but it also can be "written" into and erased. (Compare with ROM and NVRAM.)

RGB monitor—A color monitor that takes separate red, green, and blue (hence RGB) signals to create color images on the screen.

ROM—An acronym for Read-Only Memory. Information in ROM is permanent and can be "read" but not altered or erased. Mindset ROM cartridges contain this type of memory. (Compare with RAM and NVRAM.)

RS-232-C—An Electronic Industries Association (EIA) standard interface for transmitting encoded information. (See serial communication.)

Sector—A portion of a track on a diskette.

Serial communication—The transmission and reception of characters one bit at a time.

Software—The programs that are used with a computer.

Syntax—The rules governing the statement structure of the programming language instructions presented to a computer.

Track—A single circle in the pattern of concentric circles on a diskette that is written on or "read" by a disk drive.

Utilities—A group of "housekeeping" programs provided with an operating system as standard software. These programs perform duties such as program checking, file editing, and word processing.

Write-protect—A means of preventing information from being written onto a storage medium. A diskette can be write-protected by the placement of foil tape over the write-protect notch in the protective cover.

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MINDSET

PURCHASER REGISTRATION

Name_____

Occupation_____Phone_____

Address_____

City_____State_____Zip_____

Date of purchase_____Serial number_____

Store name and city_____

Is your computer owned by:
☐ Self   ☐ Company   ☐ Other_____

I learned about this product through:

☐ Dealer   ☐ Advertisement
☐ Another User   ☐ Other_____

I use my Mindset Personal Computer for:

☐ Office   ☐ Home and Office   ☐ Other_____
☐ Home   ☐ School   _____

I also own the following Mindset options:

☐ Expansion Unit
☐ RS-232-C Module
☐ Printer Interface Module
☐ Modem Module 1200
☐ Modem Module 300
☐ Stereo Sound Module
☐ NVRAM Cartridge

Clip, fold, seal with tape, and mail this form to us. Your cooperation is greatly appreciated.

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MINDSET CORPORATION
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Sunnyvale, California 94088

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USER COMMENT CARD

Your comments and suggestions help us to provide you with the best products possible. Please note your ideas in the space provided below. Then clip, fold, seal with tape, and mail this form to us. Your cooperation is greatly appreciated.

Comments:

Name_____Date_____

Occupation_____

Organization_____Phone_____

Address_____

City_____State_____Zip_____

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Sunnyvale, California 94088

Expansion Unit

MINDSET

Expansion Unit
Operation Guide

Personal
Computer
System

LIMITED WARRANTY

Mindset Corporation ("Mindset") warrants the product it manufactures for a period of 90 days from the date of purchase. During the warranty period, Mindset at its option will repair or replace components that prove to be defective at no charge provided the product is returned to an authorized Mindset dealer.

This warranty does not apply if, in the opinion of Mindset, the product has been damaged by accident, misuse, misapplication, or as a result of service or modification by other than an authorized Mindset dealer.

NO OTHER WARRANTIES ARE EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FIT- NESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE. IN NO EVENT SHALL MINDSET BE LIABLE FOR LOST PROFITS, LOSS OF GOODWILL, OR ANY OTHER SPECIAL OR CONSEQUENTIAL DAMAGES.

This warranty gives you specific legal rights. You may also have other rights, or certain limitations herein may not apply to you under applicable state law.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

WARNING: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits and shielded interconnect cables may be attached to this computer. Operation with noncertified peripherals or with unshielded interconnect cables is likely to result in interference to radio and TV reception.

The information in this guide is subject to change; these changes will be incorporated in later editions of this guide.

MINDSET is a trademark of Mindset Corporation.

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Section 1

Introduction

Your Mindset™ Expansion Unit increases the memory and information storage capacity of your Mindset Personal Computer. The Expansion Unit can extend your system's RAM from 32K bytes up to 256K bytes.

The Expansion Unit contains one or two disk drives to provide additional capabilities for easy manipulation and storage of information. The disk drives are double-sided, double-density drives that can store up to 360K bytes of information per diskette. The Expansion Unit also provides three input/output (I/O) ports which can be used to connect optional I/O modules and external I/O devices (peripherals) to further enhance your system.

This guide introduces you to the many features of the Mindset Expansion Unit and shows you how to get the most out of your system.

For convenience, place this guide under the EXPANSION UNIT tab of your Mindset Personal Computer System Operation Guide.

Looking at the Expansion Unit

The Mindset Expansion Unit attaches to the top of the Mindset System Unit through a connector (1 in Figure 1-1) located on the bottom of the Expansion Unit.

The Expansion Unit comes with one or two disk drives depending on your needs (2 in Figure 1-1). A disk drive functions similarly to a record turntable. When you insert a diskette into one of the disk drives and then close the latch above the disk drive (3 in Figure 1-1), the disk drive brings

two magnetic heads into contact with the diskette. A more detailed explanation of diskettes and disk drives is included in Section 3, "Disk Drive Operation".
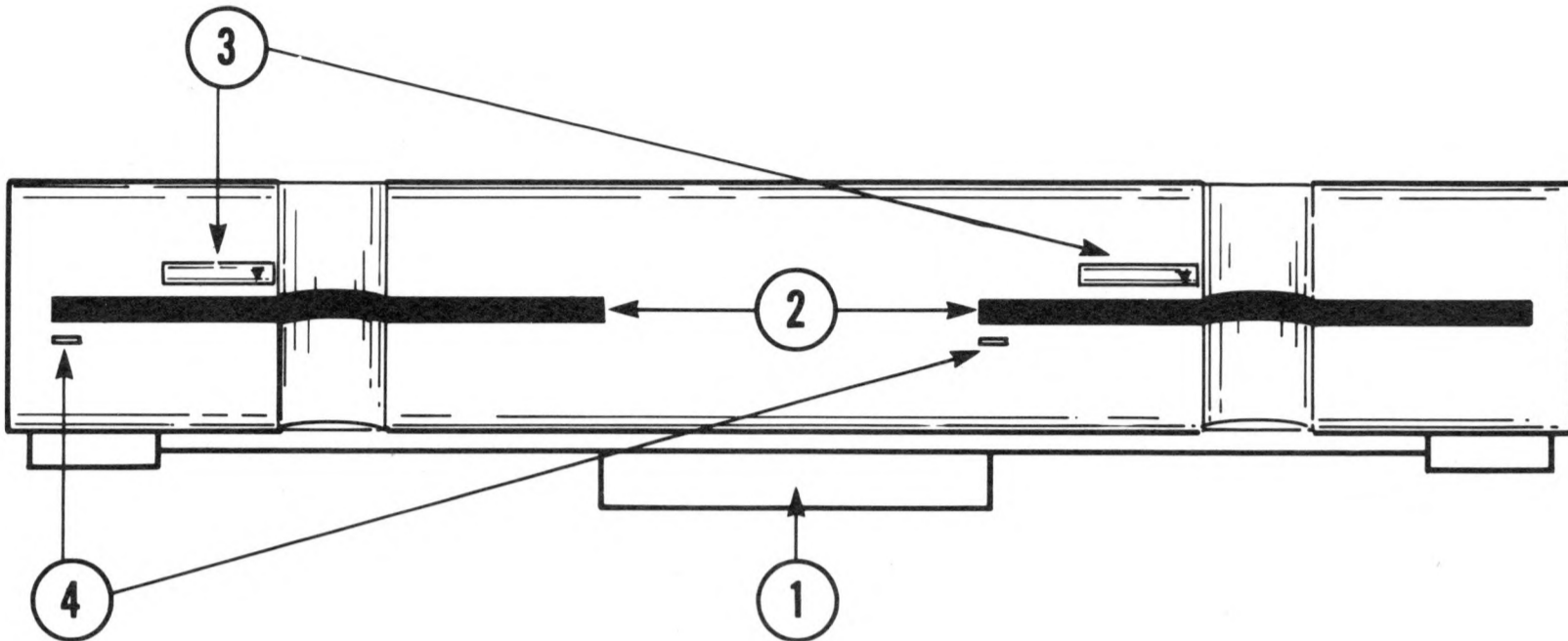
Figure 1-1: The Mindset Expansion Unit

Activity LEDs located below each disk slot (4 in Figure 1-1) indicate when a disk drive is in use.

The I/O module ports at the rear of the Expansion Unit are plug-in locations for optional system modules. These modules enable you to connect your system to other devices such as printers, plotters, and communication lines.

The I/O module ports on the left (1 and 2 in Figure 1-2) are port numbers 4 and 5. They accept one single-width, one double-width, or two single-width I/O modules.
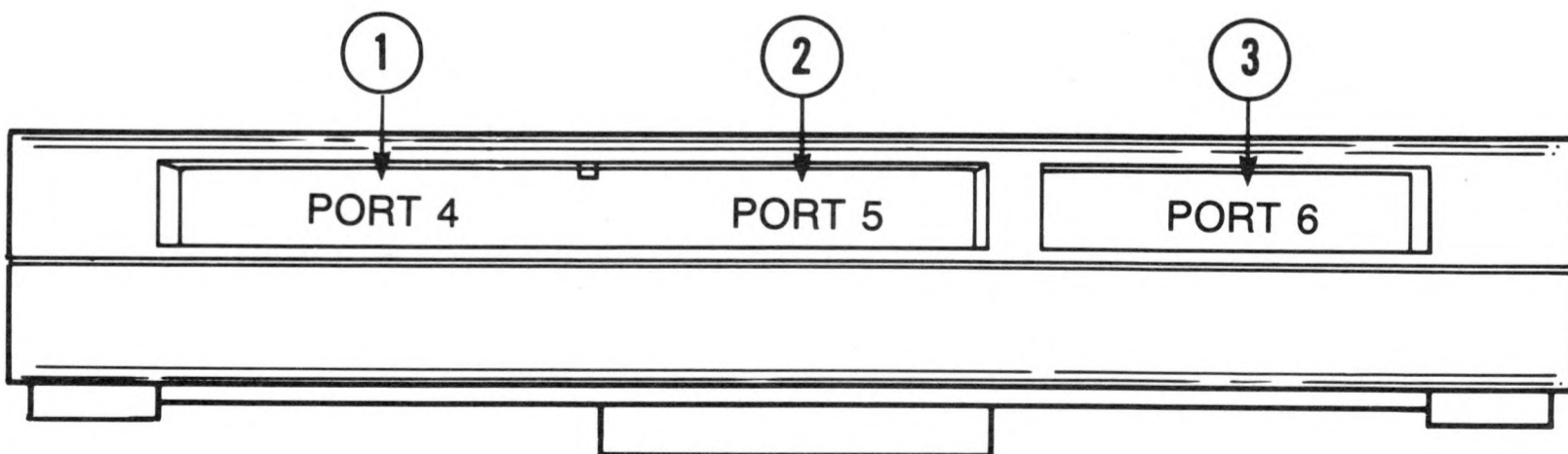
Figure 1-2: Rear of Mindset Expansion Unit showing the module ports

The port on the right (3 in Figure 1-2) is port number 6. It accepts one single-width module.

The design of the I/O module ports enables you to insert one double-width and one single-width module, or three single-width modules, into the Expansion Unit. These ports double the I/O capabilities of your system.

How to Use this Guide

Including this introduction, this Operation Guide consists of five sections and an appendix.

Section 2, "Setting Up the Expansion Unit", provides detailed instructions for connecting the Expansion Unit to the System Unit.

Section 3, "Disk Drive Operation", explains how the Expansion Unit disk drives work, tells you how to select diskettes for the Expansion Unit, shows you how to handle your diskettes properly, and discusses the importance of backing up diskettes.

Section 4, "Disk Operating Systems", describes a disk operating system (DOS) in more detail and explains when you should use one.

Section 5, "Solving Problems", provides information to help you diagnose problems which may occur during operation. This section also discusses error messages which may appear on your TV screen or monitor.

The appendix includes Expansion Unit and storage media specifications.

If you are already familiar with disk drives and disk operating systems, you may want to skim Sections 3 and 4.

Other Mindset Guides

Your Mindset Personal Computer comes with an operation guide to acquaint you with your system and its operation. For your reference, the guide also includes a glossary of useful computer terminology.

In addition to the Expansion Unit, Mindset offers a number of other options for expanding your system. Each option comes with its own operation guide to show you how to use that option with your Mindset Personal Computer.

Mindset also offers the MS™-DOS operating system as an option for the Mindset Personal Computer. This option comes with both an introductory guide and a reference manual to help you learn MS-DOS quickly.

MS-DOS is a trademark of Microsoft Corporation.

Section 2

Setting Up the Expansion Unit

Connecting the Expansion Unit to the System Unit is a simple operation. There aren't any cables to connect; your Expansion Unit fits right on top of your System Unit.

Attaching the Expansion Unit to the System Unit
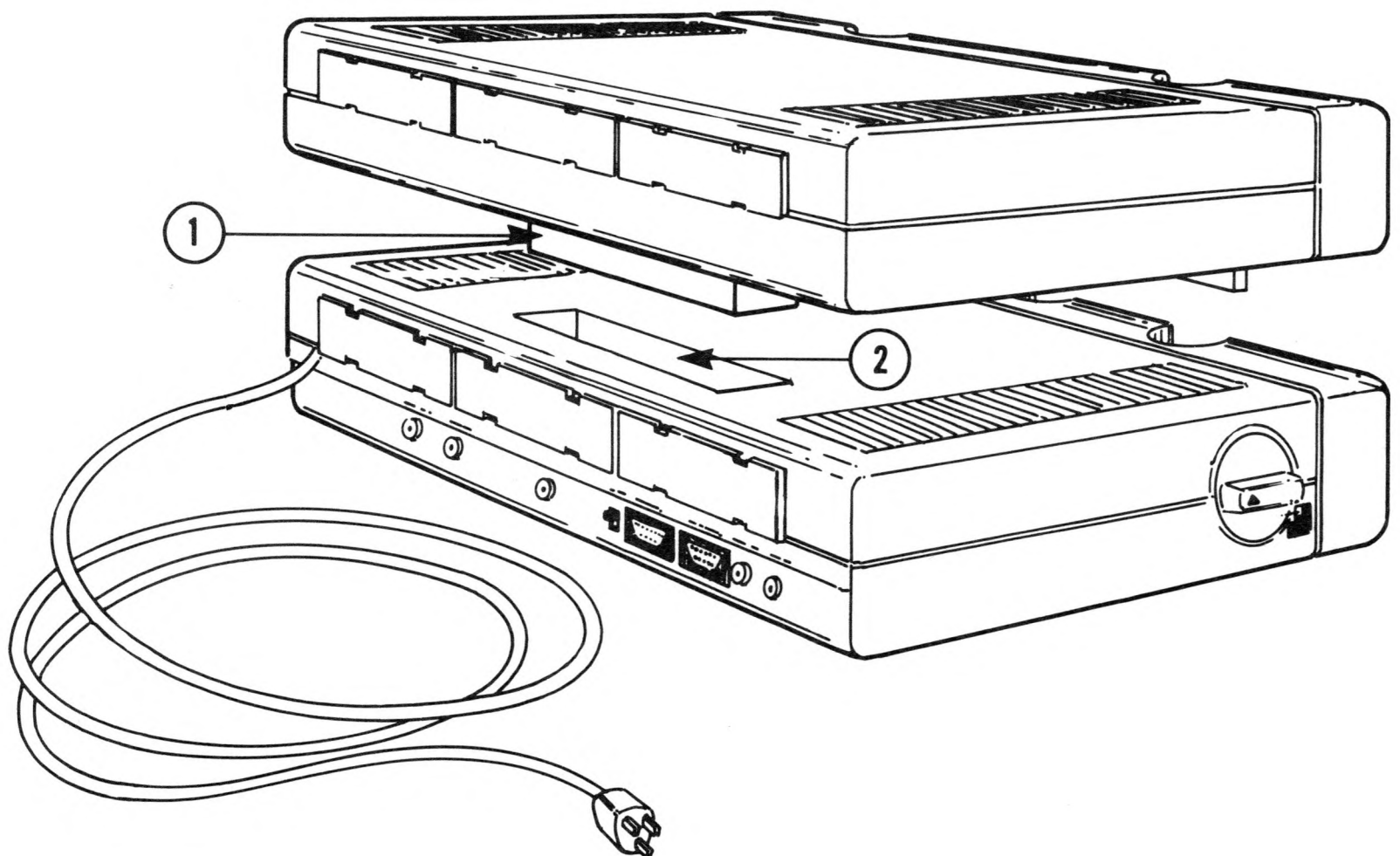
Figure 2-1: Attaching the Expansion Unit to the System Unit

Your Expansion Unit has a connector on the bottom of the cabinet. The System Unit has an access hatch on the top of its cabinet. To connect the two units, perform the following four steps:

1. If the System Unit is on, turn it off. Make sure you first save any information that you entered into memory and want to keep.

2. Using a screwdriver or knife edge, pry out the plastic protector that covers the access hatch on top of the System Unit.

3. Set the Expansion Unit on top of the System Unit so that the connector of the Expansion Unit (1 in Figure 2-1) fits into the access hatch of the System Unit (2 in Figure 2-1). The feet on the front of the Expansion Unit fit into the first row of louvers on the top of the System Unit.

4. Turn on the System Unit.

Figure 2-2 shows you how your expanded system looks after you join the two units.
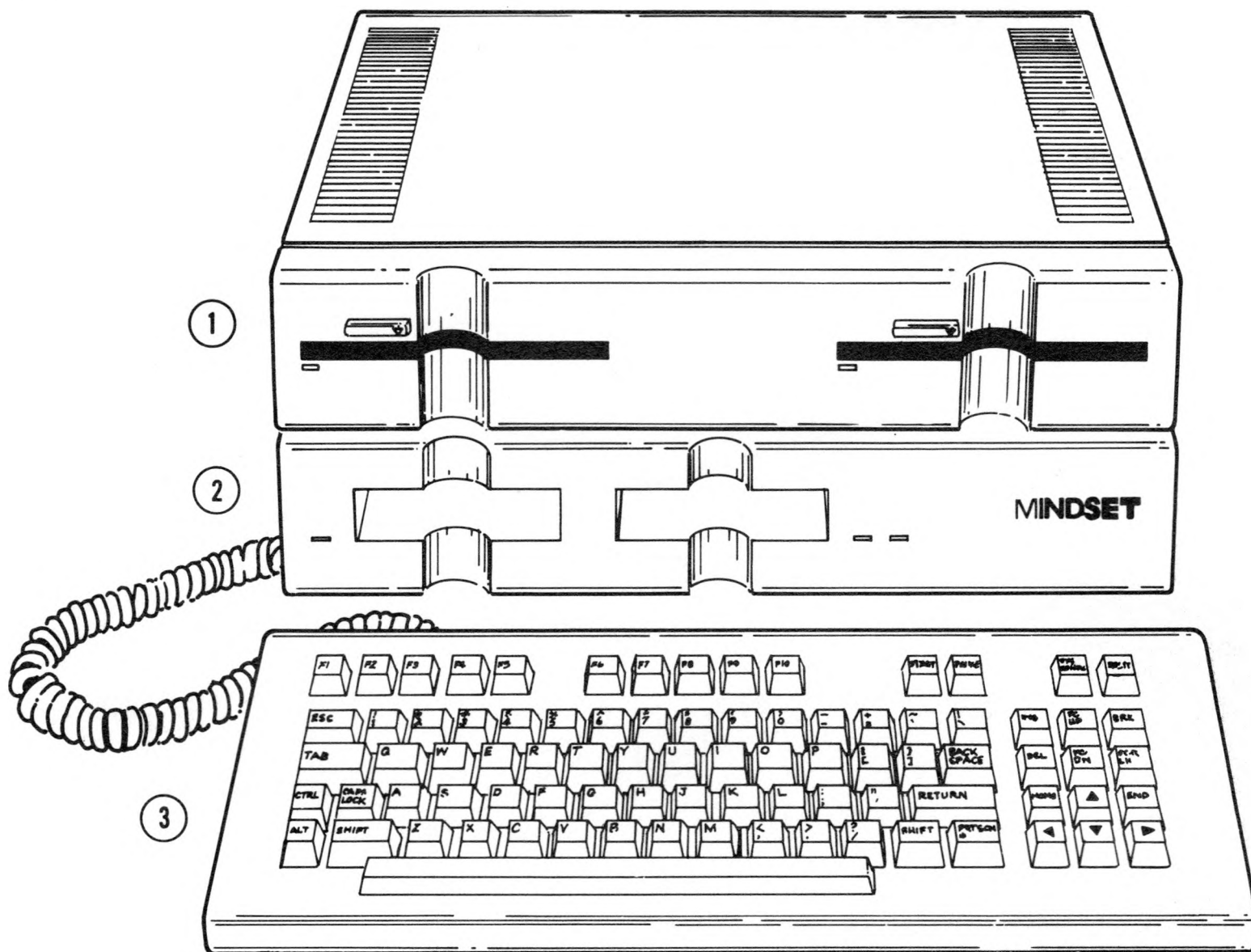
1. Expansion Unit

2. System Unit

3. Keyboard

Figure 2-2: An expanded Mindset system

Removing the Head Protectors from the Disk Drives

Diskette-sized cardboard pieces are inserted in the disk drive slots to protect the magnetic heads of the disk drives during shipment.

Remove these cardboard head protectors before inserting diskettes. To remove the head protectors, turn the latch above each disk drive slot to the horizontal (open) position and pull out the cardboard protectors. Save the protectors in case you need to ship or carry your system.

Section 3

Disk Drive Operation

You can use your Mindset Expansion Unit to store information on magnetic diskettes. Unlike information contained in the memory of the system, information stored on a diskette is not lost when you turn off the system power.

Learning How Your System Uses Diskettes

A diskette is a 5-1/4-inch diameter magnetic recording disk enclosed in a protective cover. The disk drive places information on a diskette in a pattern of concentric circles divided into sections called sectors (see Figure 3-1). Each concentric circle is called a track.

The magnetic heads of the disk drive "read" the tracks as the diskette spins in the drive. One magnetic head reads and records information on the top side of the diskette and the other head reads and records on the bottom side. The information on the diskette is then transferred to the Mindset Personal Computer memory.

You learned in Section 1, "Introduction", that this operation is similar to a record spinning on a record player. The difference is that the recording on a record cannot be changed; the information on a diskette can. That is, your computer not only reads what is on a diskette, but it also "writes" information from memory onto the diskette. For example, you can tell your computer to put business correspondence, mailing lists, or computer programs on a diskette. In addition, you can write over information that you put on the diskette earlier.
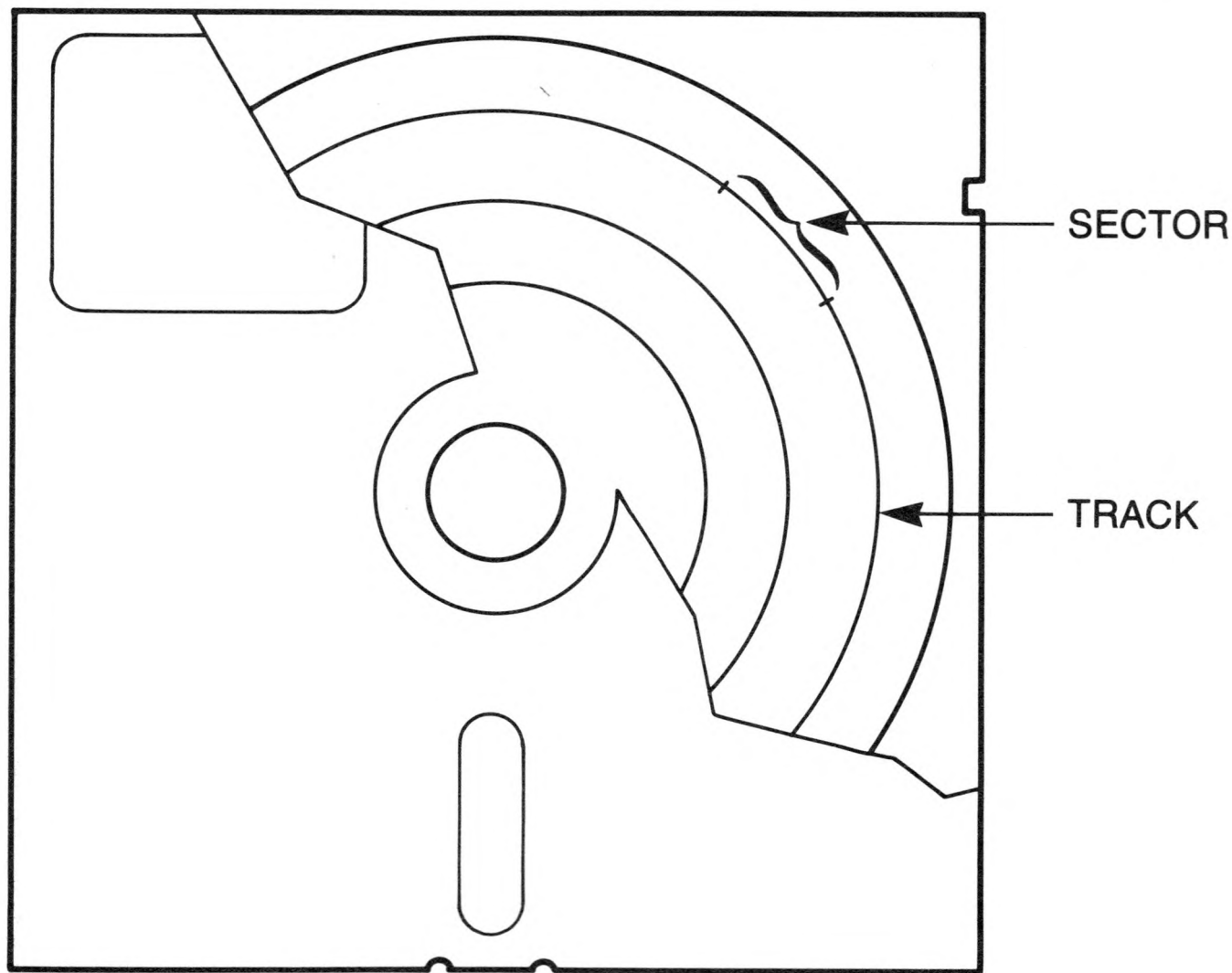
Figure 3-1: Sectors and tracks on a diskette

Selecting the Proper Diskettes

The Mindset Expansion Unit accepts soft-sectored, double-sided, double-density diskettes.

Understanding the Types of Diskettes

Soft-sectored and hard-sectored diskettes use different techniques to indicate the locations of the sectors. A soft-sectored diskette uses a single index hole to identify the beginning of the first sector; the disk drive system then defines the size and number of sectors. On a hard-sectored diskette, many holes surrounding the large central hole identify the beginning of each sector. The holes on a hard-sectored diskette, therefore, determine the size and number of sectors on the diskette.

Double-density diskettes have approximately twice the capacity of single-density diskettes. One double-sided, double-density diskette can hold approximately 100 pages of text.

Single-sided diskettes contain data on one side of the diskette. Double-sided diskettes contain data on both sides of the diskette. Because the

Expansion Unit disk drives have two read/write heads, you don't have to
flip over the diskette for the disk drive to read the other side.

Looking at a Diskette

A diskette is contained in a protective cover (1 in Figure 3-2).
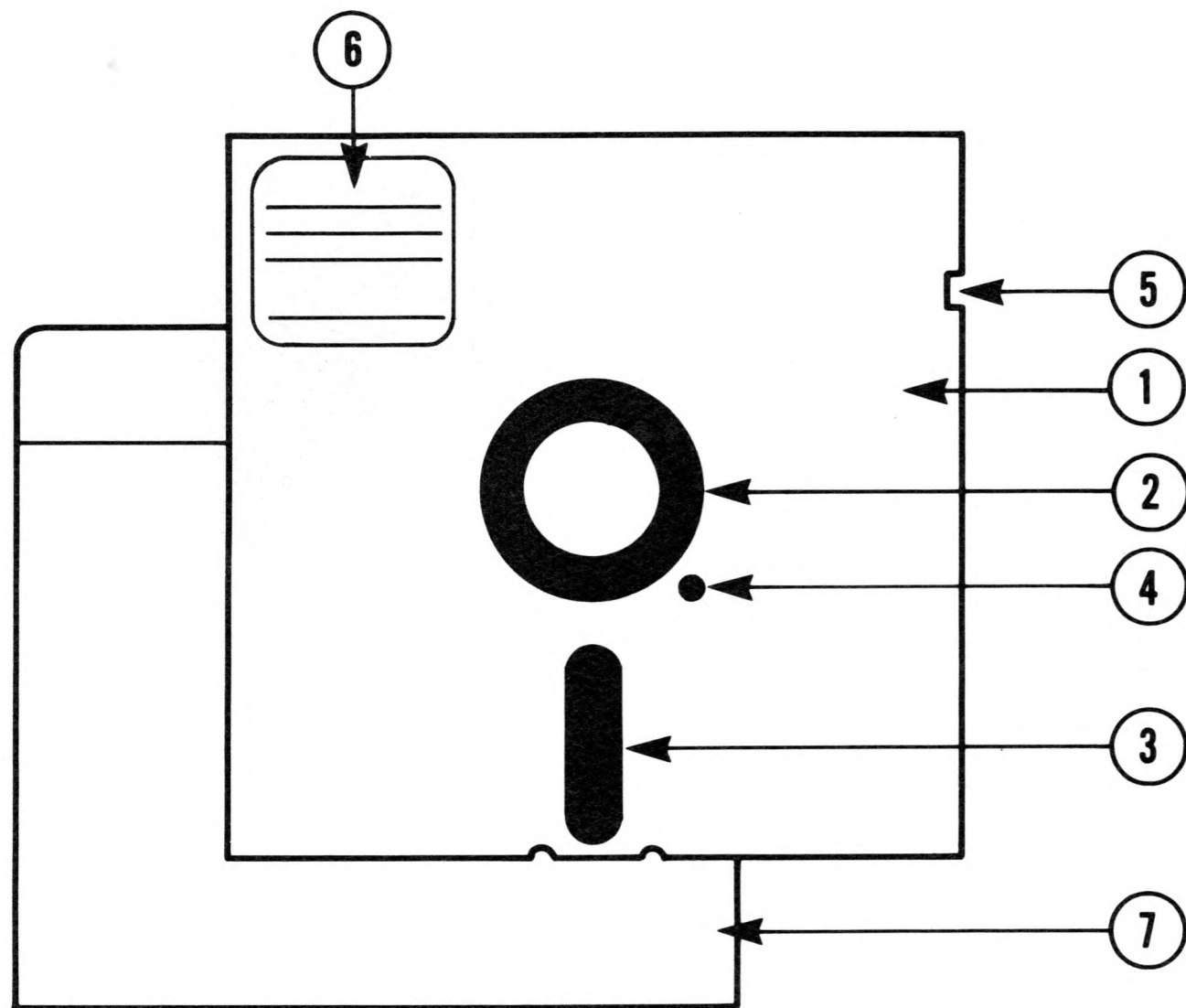
Figure 3-2: A diskette

There are several exposed areas that you can see on this cover. One
area is the surface around the large hole in the center of the diskette (2 in
Figure 3-2). This hole is called the spindle hole because the spindle of
the disk drive fits into it to spin the disk in the drive.

Another area is the head-slot (3 in Figure 3-2). The head-slot area
provides access for the magnetic head of the disk drive as the diskette
spins inside the cover.

The sector hole (4 in Figure 3-1) is at the right of the spindle hole. The
sector hole identifies the beginning of a sector.

Other important areas of the diskette are the write-protect notch and the
label. When covered with foil tape, the write-protect notch (5 in Figure
3-2) prevents the writing of data onto the diskette. Your computer can still
read what's on the diskette but it can't write anything on it. Covering the
write-protect notch ensures that your computer doesn't replace valuable

information on your diskette with new information. You may want to cover the write-protect notch on diskettes that you don't expect to change.

The label in the upper left corner of the diskette (6 in Figure 3-2) is a manufacturer's label. To help you identify what is on your diskette, affix a temporary label next to the manufacturer's label, and write on the label a description of the diskette contents. This way, you always know what is on each diskette. To avoid deforming the diskette's surface, be sure to use a felt-tipped pen when writing on the label. Do not press hard.

Diskettes are stored in static-resistant envelopes (7 in Figure 3-2). The envelopes protect the exposed areas of the diskette.

Caring for Your Diskettes

To avoid frustration and extra work, follow these guidelines in caring for your diskettes:

1. Always use a felt-tipped pen when writing on a label affixed to the protective cover.

2. Do not touch the head-slot area, spindle hole, or sector hole. These areas are sensitive to dust, scratches, and fingerprints.

3. Keep your diskettes away from metallic objects such as paper clips and magnetic devices such as magnets, tape recorders, and head-phones. These objects may cause distortion or erasure of your stored data.

4. When not using them, store your diskettes in an upright position in their envelopes. Position the label at the top so that you can easily identify each diskette. Diskettes usually come packaged in stand-up boxes. These boxes make excellent storage containers for your diskettes and their envelopes.

5. Do not store your diskettes in locations subject to extreme temperatures.

Inserting and Removing Diskettes

To insert a diskette into a disk drive slot, follow these five steps:

1. Carefully remove the diskette from the protective envelope.

2. Turn the lever on the front of the disk drive 90 degrees counterclockwise so that it is in the horizontal (open) position. This step enables you to insert the diskette in the slot.

3. Position the diskette so that the label side is up and toward you. Face the head-slot notch toward the Expansion Unit.

4. Insert the diskette into the slot until it stops.

5. Turn the lever on the front of the disk drive clockwise 90 degrees to close the drive.

To remove a diskette, turn the lever on the front of the disk drive counterclockwise 90 degrees and pull the diskette out of the drive. Return your diskette to its protective envelope for storage.

Note: Do not remove a diskette when the red activity LED is lit.

Backing Up Information Stored on Diskettes

Earlier in this section, you learned that you can save important information on your diskette by covering the write-protect notch with foil tape. Another way to protect information is to "back up" your diskette.

When you back up your diskette, you make another copy of it. This second diskette contains everything the original diskette contains. Backing up, therefore, ensures that you always have another copy of your important programs or data.

You can use either a one-drive or a two-drive Expansion Unit to back up your diskettes. However, you do need a DOS to perform this procedure. Refer to the operation guide that comes with your DOS for the correct procedures on backing up diskettes.

Section 4

Disk Operating Systems

A disk operating system (DOS) is a set of programs that controls and directs the operation of a disk storage device and coordinates other operations of your system. A DOS ensures that commands are routed to the proper devices. In addition, a DOS contains a set of special programs called utilities which make it easier for you to operate your system.

When Should You Use a DOS?

Your system can perform many functions without a DOS. For example, it can run cartridge programs without the use of a DOS.

However, if you want your computer to read or write information on diskettes, you need a DOS. Most application software on diskettes requires that you use a DOS to run it.

Where Do You Get a DOS?

A DOS usually comes on a diskette so that you can load it into your system memory. Mindset offers MS-DOS by Microsoft, which you obtain through your dealer. MS-DOS provides access to a wide range of diskette-based software.

Section 5

Solving Problems

With proper care and handling, your Expansion Unit should give you trouble-free operation. However, when problems do occur, you can use the procedures below to identify many of the sources of problems yourself.

Diagnosing Your Problems

The following section lists some of the problems that may occur during operation of the Expansion Unit. Try all the suggestions listed before you contact your dealer for assistance.

The System Does Not Operate

1. If nothing appears on the screen when you turn the System Unit on, unplug the System Unit from the AC outlet and wait 5 to 10 seconds before plugging the system in again.

2. Check that you turned on the System Unit.

3. Check that you properly seated the Expansion Unit on top of the System Unit (see Section 2, "Setting Up the Expansion Unit").

4. Make sure that the cable from the System Unit is plugged into a working power outlet.

   Note: Do not plug the System Unit into a switched outlet. A switched outlet could be inadvertently turned off.

5. Ensure that you properly connected your TV or monitor to your System Unit (see the Mindset Personal Computer System Operation Guide for directions on how to connect your System Unit to a TV or a monitor).

The Disk Drives Do Not Operate

1. Make sure that you correctly inserted the diskettes into the disk drive slots and returned the lever on the front of the disk drive to the closed position (see Section 3, "Disk Drive Operation", for information about inserting and removing diskettes).

2. Check that you properly joined the Expansion Unit to the System Unit.

The System Can't Read or Write to a Diskette

1. Check that your diskette is in the correct disk drive.

2. Make sure that the lever on the front of the disk drive is in the closed position.

3. Check that the diskette you are using is not write-protected. If the diskette is write-protected, copy the information on that diskette to another diskette and use the second diskette.

Expansion Unit Error Messages

The following error messages may appear on your video screen. If an error message appears, your system may still be operable. Press any key to continue. If your system does not operate, contact your dealer for assistance.

> System RAM Test Failed
>
> System ROM Test Failed
>
> Bad Cartridge in Slot
>
> Display RAM Test Failed
>
> Expansion RAM Test Failed
>
> System Timer Test Failed
>
> DMA Controller Test Failed
>
> Printer Module Test Failed
>
> RS-232-C Module Test Failed
>
> Real Time Clock Test Failed
>
> Modem Module Test Failed
>
> Graphics Coprocessor Test Failed
>
> Display Processor Test Failed

Appendix

Specifications

Physical Characteristics

Width	16.0 inches
Depth	12.2 inches
Height	2.5 inches
Weight	Approximately 7.5 pounds with one drive
	Approximately 11.0 pounds with two drives

The Expansion Unit supports up to 25 pounds.

Disk drives	Include one or two double-sided, double-density drives

Functional Characteristics

Expansion RAM	Extends system RAM from 32K bytes up to 256K bytes

Media Specifications

The Expansion Unit accepts double-density, double-sided, 5-1/4-inch soft-sectored diskettes.

Options

MINDSET

Printer Interface Module
Operation Guide

Personal
Computer
System

LIMITED WARRANTY

Mindset Corporation ("Mindset") warrants the product it manufactures for a period of 90 days from the date of purchase. During the warranty period, Mindset at its option will repair or replace components that prove to be defective at no charge provided the product is returned to an authorized Mindset dealer.

This warranty does not apply if, in the opinion of Mindset, the product has been damaged by accident, misuse, misapplication, or as a result of service or modification by other than an authorized Mindset dealer.

NO OTHER WARRANTIES ARE EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ANY IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE. IN NO EVENT SHALL MINDSET BE LIABLE FOR LOST PROFITS, LOSS OF GOODWILL, OR ANY OTHER SPECIAL OR CONSEQUENTIAL DAMAGES.

This warranty gives you specific legal rights. You may also have other rights, or certain limitations herein may not apply to you under applicable state law.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTER-FERENCE STATEMENT

INSTRUCTIONS TO USER

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.

Relocate the computer with respect to the receiver.

Move the computer away from the receiver.

Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

Section 1

Introduction

The Mindset™ Printer Interface Module enables you to link your Mindset Personal Computer to any industry-standard parallel-interface printer.

This Operation Guide shows you how to install and use the single-width Mindset Printer Interface Module. For convenience, place this guide under the OPTIONS tab of your Mindset Personal Computer System Operation Guide.

What Is a Parallel Interface?

A printer interface consists of circuitry that transfers information from a computer to a printer. After the printer receives coded information from your computer, it expresses the information as characters on paper. You then have a "hard copy" of information contained in your computer.

A printer interface is classified as either parallel or serial depending on how the printer receives coded information from your computer. A parallel interface transfers all the bits of a character simultaneously. Parallel communication requires multiple wires and can be faster than serial communication.

A serial interface transfers each character bit by bit (a character is usually 9 or 10 bits long in the serial format). A serial interface for a printer converts the serial data into the parallel format before the printer prints a character. Another Mindset module, the RS-232-C Module, is designed for serial communication.

How to Use this Guide

Including this introduction, this Operation Guide consists of four sections and an appendix.

Section 2, "Installation", refers you to the proper procedures for inserting and removing the Printer Interface Module. This section also shows you how to connect your system to a parallel-interface printer.

Section 3, "Controlling Printer Operation", gives you information on how to control parallel printer operation from your Mindset Keyboard.

Section 4, "Solving Problems", describes troubleshooting techniques for problems that may occur during operation.

The appendix includes physical and interface specifications, and a parallel input/output (I/O) connector diagram.

Other Mindset Guides

Your Mindset Personal Computer comes with an operation guide to acquaint you with your system and its operation. For your reference, the guide includes a glossary of useful computer terminology.

In addition to the Printer Interface Module, Mindset offers a number of options for expanding your system. Each option comes with its own operation guide to show you how to use that option with your Mindset Personal Computer.

Section 2

Installation

This section directs you to the procedures for inserting and removing the Printer Interface Module. It also provides instructions for attaching a parallel printer cable.

Inserting and Removing the Printer Interface Module

Modules are easy to insert and remove. Refer to Section 7, "Enhancing Your System", in the Mindset Personal Computer System Operation Guide for these simple installation instructions.

Attaching the Parallel Printer Cable

To attach a parallel printer cable, simply insert the D-shaped end of the printer cable into the D-shaped connector on the side of the Printer Interface Module facing you (see Figure 2-1).

Then turn on the System Unit.

Note: Your dealer can supply you with the proper cable for your parallel printer.
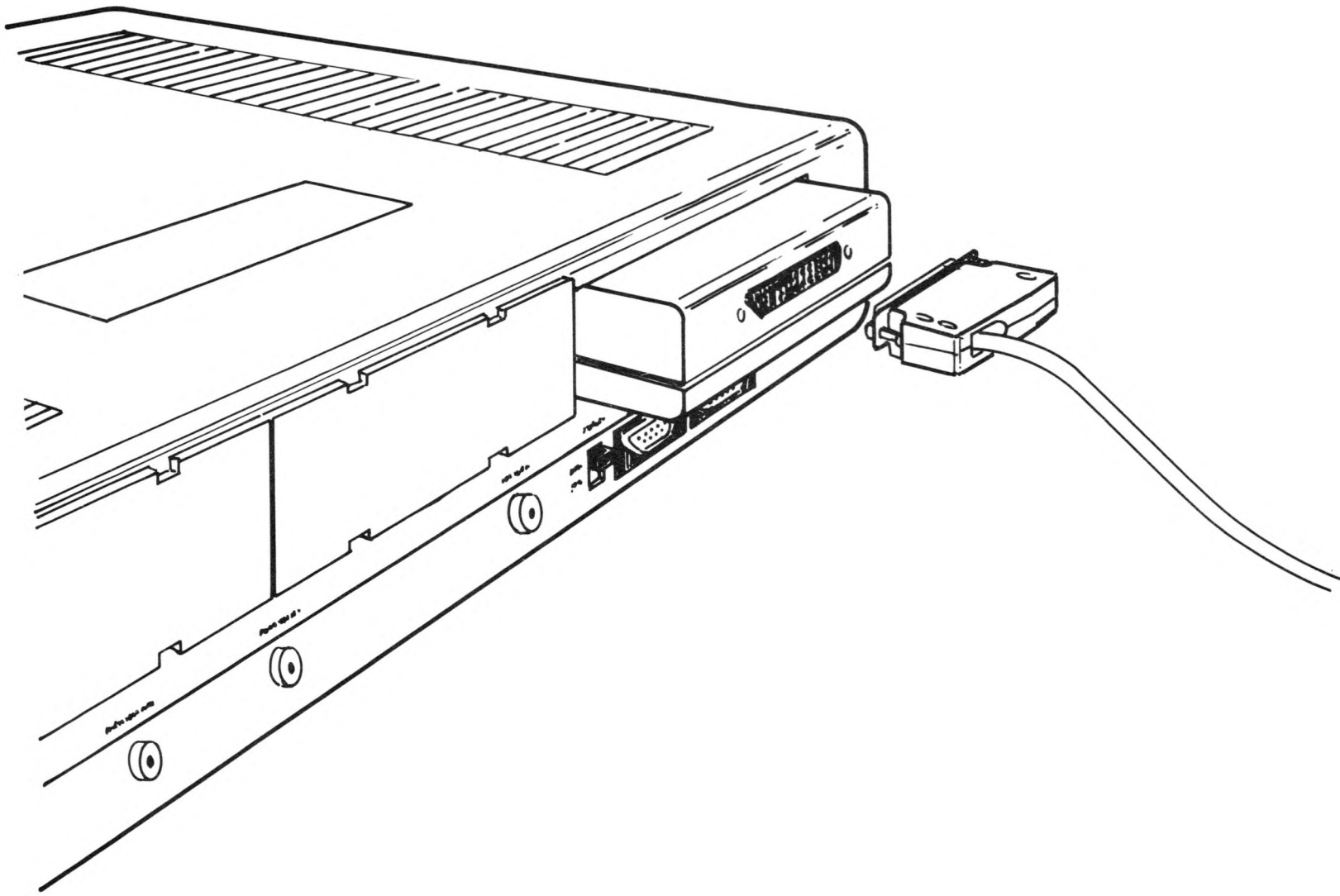
Figure 2-1: Connecting the printer cable to the module

Section 3

Controlling Printer Operation

Your printer receives coded information from your computer. It then prints this information according to specified formats set within the printer. Your printer can also receive instructions from your computer to change these formats.

After you attach the printer to the Printer Interface Module, you can print the text displayed on the screen by pressing the SHIFT and PRT SCN keys simultaneously. To stop printing, press the BREAK key.

To modify the format of printed information, you can type special codes on your Mindset Keyboard. These codes are the ASCII (American Standard Code for Information Interchange) control characters and ANSI (American National Standards Institute) escape sequences. Depending on the capabilities of your printer, you can use these codes to control the width of printed characters, tabulation, character set choices, and other functions.

The operation guide included with your printer explains these codes to you. It also provides you with a list of ASCII codes and ANSI escape sequences that you can use to control printer operation.

Communicating With More Than One Device

You can link your Mindset Personal Computer to more than one external device at a time. For example, you may want to insert I/O modules which enable you to attach both a serial and a parallel printer.

When you insert the Mindset Printer Interface Module to connect a parallel printer, place it in a module port with a lower number than the port you use for the RS-232-C Module. (See the operation guide included with the RS-232-C Module for a description of the module.)

Note: The PRT SCN key normally sends the screen information to the Printer Interface Module in the lowest-numbered port. However, if you have an Expansion Unit and MS™-DOS as part of your system, you can use the MS-DOS MODE command to reassign the output to the port for the RS-232-C Module. Then you can use the PRT SCN key to print the contents of the screen on a serial printer.

Section 4

Solving Problems

The following troubleshooting techniques should aid you if power is on but the printer doesn't begin printing. The operation guide included with your printer should also help you diagnose printer malfunctions. If you still need assistance, contact your dealer.

1. Check that you snapped the Printer Interface Module all the way into the module port.

2. Make sure that you connected the printer cable to the Printer Interface Module.

3. Check that you plugged the printer into a working power outlet.

   Note: Do not plug the printer into a switched outlet. A switched outlet could be inadvertently turned off.

4. If you are using a disk operating system (DOS), check that you entered the correct command to transfer data from your computer to your printer. Refer to the manual supplied with your DOS for a description of the commands used to transmit information to external devices.

Appendix

Specifications

Physical Characteristics

Width	4.1 inches
Length	3.1 inches
Height	1.1 inches
Weight	Approximately 4.0 ounces

Interface Specifications

Data transfer rate	1000 characters per second (maximum)
Synchronization	Externally supplied STROBE pulse
Handshaking	ACKNLG or BUSY signals
Logic level	TTL-compatible input data and interface control signals

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Connector Diagram

The following diagram identifies the pin assignments on the parallel I/O connector.

Pin	Signal
1	DATA STROBE
2	DATA 1
3	DATA 2
4	DATA 3
5	DATA 4
6	DATA 5
7	DATA 6
8	DATA 7
9	DATA 8
10	ACKNLG
11	BUSY
12	PAPER ERROR
13	SELECT
14	AUTOFEED
15	ERROR
16	INIT
17	SELECTION
18-25	GROUND