

The parallel connector and the printer adapter cable allow you to connect the computer to printers, plotters, and other standard PC-compatible parallel devices. The trapezoidal or "D" shape makes an improper connection impossible. Refer to Appendix C for the pinouts for the parallel/floppy connector.

You can use the MS-DOS **mode lptn** command to change the characteristics for IBM-compatible printers connected to the parallel port. For instructions on using this command, refer to the section MS-DOS Quick Reference, beginning on page 8-17.

Connecting a Printer to the Parallel Connector

Refer to the printer manual to select the cable recommended for an IBM AT or compatible computer being connected to the parallel port.

Before using a printer for the first time with a particular software program, you must make sure that the software is properly configured for your printer. Generally, software configuration consists of installing the appropriate printer driver software for your printer. A printer driver is a program that allows the computer to communicate with a particular make and model of printer. Most application programs include printer drivers for a variety of different printers. (Refer to the documentation for the software program and for the printer for configuration details.)

Before connecting the printer, make sure that the configuration switches on the printer are set properly. These switches determine how the printer operates.

After the switches are set correctly and the appropriate printer driver is installed, you are ready to connect the printer to the computer.

To connect a parallel printer to the computer, perform the following steps.

1. Put the computer into standby or turn it off. Turn off the printer and any other peripherals.

CAUTION

Before connecting or disconnecting a printer or any other external device, put the computer into standby or turn it off. Turn off the power to the external device. Failure to do so may damage your unit.

2. Attach the microminiature connector on the printer adapter cable to the parallel/floppy connector on the side of the computer.
3. Attach the parallel printer cable to the parallel connector on the printer adapter cable.
4. Attach the other end of the parallel printer cable to the parallel connector on the back of the printer.
5. Check your printer manual for instructions on loading the ribbon, paper, and other supplies into the printer.
6. Position your paper so that the print head is at the top of the page.
7. Make sure all power cords are plugged in.
8. Turn on the printer (and any other peripherals), and then turn on the computer or exit standby.

Telephone Jack (Optional)

A telephone jack is provided if the optional internal modem is installed in your GRiD Convertible computer. The modem transmits and receives data through the telephone system. The jack is used to connect the modem to the telephone system.

For more information about the telephone jack and the internal modem, refer to the section Optional Modem on page 3-4.

If you wish to use a standard telephone with the modem (for example, when manual dialing is required), you must purchase a T-connector; it can be found at Radio Shack and other electronic stores.

Contrast Control

The contrast control rotates to adjust the contrast of the computer screen. Rotate the control clockwise to lighten the screen, or counterclockwise to darken the screen.

Backlight Control

The screen backlight intensity is adjusted with the backlight control. Rotate the control clockwise to decrease the intensity, or counterclockwise to increase the intensity. If the backlight is off, it must be turned on before it can be adjusted.

NOTE: Increasing the backlight intensity increases power consumption. It is a good idea to decrease the backlight brightness to conserve power when using a battery pack.

Pen Tether Fastener

The pen tether fastener receives the optional pen tether so your pen can be attached to the GRiD Convertible computer; refer to page 2-3.

Screen Release Buttons

One screen release button is located on each side of the computer. These are pushed to raise the screen so the keyboard can be accessed. Refer to the section Opening the Display on page 2-10.

Pen Holder

The pen holder stores the pen when it is not in use. Refer to the section The Pen on page 2-2.

The Rear

The rear panel contains the battery pack and three connectors. These are shown in Figure 2-11.

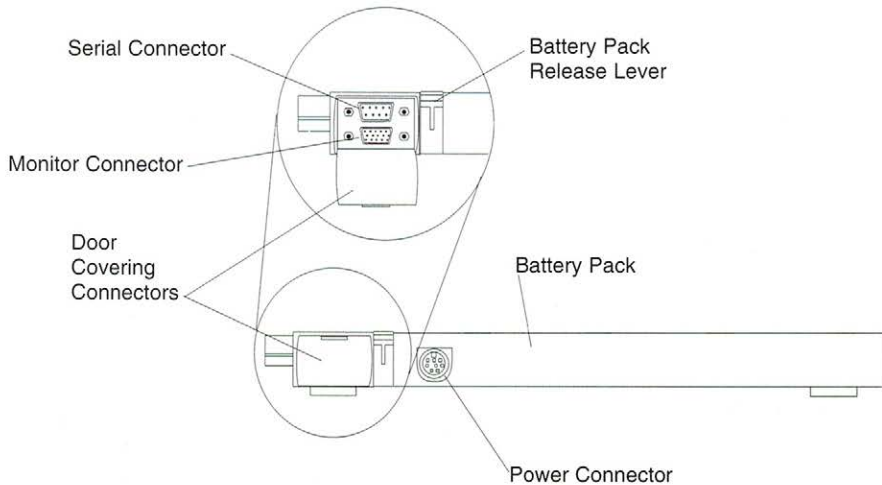


Figure 2-11. The Rear View

Battery Pack

The battery pack is used to provide power to the GRiD Convertible computer. Refer to Chapter 4 for information on using the battery pack.

Power Connector

The power connector for the computer is part of the battery pack. It accepts the plug from the power supply or the optional auto adapter and is used to supply external power to the computer. External power does not need to be connected when you power the GRiD Convertible computer from its battery pack. Refer to the section Using the Power Supply on page 4-4.

Battery Pack Release Lever

This lever is opened to remove and install the battery pack. Refer to the section The Battery Pack on page 4-6 for details on removing or installing the battery pack.

Monitor Connector

The monitor connector allows you to connect an external VGA monitor to the GRiD Convertible computer. The monitor connector is a 15-pin VGA monitor connector. Refer to Appendix C for the pinouts for the monitor connector.

NOTE: The monitor connector supports 800-pixel by 600-pixel Super VGA mode when you use only an external monitor; Super VGA is not supported in simultaneous mode.

Connecting an External Monitor to the Monitor Connector

To connect the monitor to the computer, perform the following steps.

1. Put the computer into standby or turn it off. Turn off the monitor and any attached devices.

CAUTION

Before connecting or disconnecting a monitor or any external device, put the computer into standby or turn it off. Turn off the power to the external device. Failure to do so may damage your unit.

2. Attach the cable from the monitor to the monitor connector on the back of the computer.
3. Plug the power cord from the monitor into a properly grounded outlet.
4. Turn on the monitor (and any other peripherals), and then turn on the computer or exit standby.
5. Press **FN-CRT** to send the video output to the external monitor. Refer to the description of the **FN-CRT** key on page 2-19.

Serial Connector

The serial connector is a 9-pin D-type RS-232C-compatible connector. The serial connector allows you to connect the GRiD Convertible computer to another computer so that you can transfer data between the two computers. You also can connect other serial devices such as an external modem, serial printer, or barcode reader. Refer to Appendix C for the pinouts for the serial connector.

NOTE: This computer has been FCC-certified under test conditions which include the use of SHIELDED serial cables. GRiD-supplied cables are shielded. To reduce the possibility of causing interference to radio, television, and other electronic devices, it is important that you use shielded cables when connecting external devices. Telephone cords do not require shielding.

You can use the MS-DOS **mode comn** command to change the serial port default settings. For instructions on using this command, refer to the the section MS-DOS Quick Reference, beginning on page 8-17.

The serial port initially is assigned device name COM1. You can use the **config serial** command to change the device name of the serial port; refer to page 9-23.

Connecting a Printer to the Serial Connector

You can connect a serial printer to the serial connector on the rear panel of the computer.

Read the section Connecting a Printer to the Parallel Connector on page 2-26. You must follow the same procedures before connecting a printer to the serial connector.

To connect a serial printer to the computer, perform the following steps.

1. Turn off the computer or put it in standby. Turn off the printer and any other peripherals.

CAUTION

Before connecting or disconnecting a printer or any other external device, put the computer into standby or turn it off. Turn off the power to the external device. Failure to do so may damage your unit.

2. Attach the serial cable to the serial connector on the back of the computer.
3. Attach the other end of the serial cable to the serial connector on the back of the printer.
4. Check your printer manual for instructions on loading the ribbon, paper, and other supplies into the printer.
5. Position your paper so that the print head is at the top of the page.
6. Make sure all power cords are plugged in.
7. Turn on the printer (and any other peripherals), and then turn on the computer or exit standby.

The Bottom

The bottom view of the GRiD Convertible computer is shown in Figure 2-12.

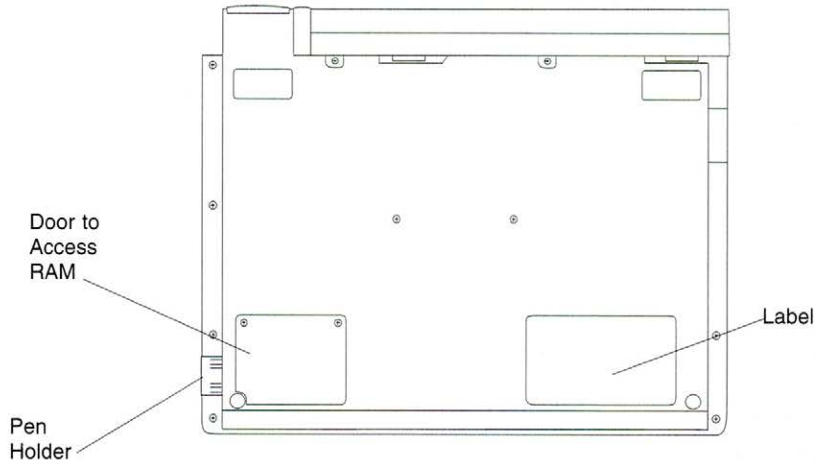


Figure 2-12. Bottom View of GRiD Convertible Computer

Label

The Label provides the tracking (or serial) number of the computer and gives various regulatory agency information.

Door to Access RAM Connector

The door can be removed to access a connector for additional RAM. Refer to Appendix B for instructions on installing additional RAM.

CAUTION

Do not attempt to remove this door for any purpose other than to install additional RAM. Removing this door with the computer on could damage your computer. Follow the instructions in Appendix B.

CHAPTER 3: INTERNAL FEATURES

This chapter describes the internal features available from GRiD Systems Corporation to enhance the performance of your GRiD Convertible computer. Internal features include the system memory, storage devices, the optional modems, and coprocessor.

Table 3-1. Internal Features Available for the GRiD Convertible Computer

Feature	Description
System RAM: 2 MB System RAM	2 MB of user-installable memory, providing 4 MB of memory rather than the standard 2 MB.
6 MB System RAM	6 MB of user-installable memory, providing 8 MB of memory rather than the standard 2 MB.
Coprocessor: CX87SLC Numeric Coprocessor	Provides for faster operation for math-intensive applications (for example, spread sheets, vector graphics, etc.).
Modems: V.22bis/V.42bis 2400 bps/FAX	V.22bis, 2400 bits-per-second (bps) Hayes Smartmodem 2400 compatible; auto-dial; auto-answer; V.42 and Microcom Networking Protocol (MNP) Classes 2 through 4 error correction, as well as V.42bis and MNP Class 5 data compression support. Supports 9600 bps send/receive Group III Class I facsimile transmission.

V.32bis/V.42bis 14400 bps/FAX	V.32bis, 14400 bits-per-second (bps) Hayes compatible; auto-dial; auto-answer; V.42 and Microcom Networking Protocol (MNP) Classes 2 through 4 error correction, as well as V.42bis and MNP Class 5 data compression support. Supports 9600 bps send/receive Group III Class I facsimile transmission.
Mass Storage:	Internal hard disk drive, PCMCIA slot, and external floppy drive.

Table 3-2. GRiD Convertible Configurations

Model Number	Features
Model 2260	Internal hard disk drive
Model 2261	Internal hard disk drive; V.22bis/V.42bis 2400 bps/9600 bps FAX modem
Model 2262	Internal hard disk drive; V.32bis/V.42bis 14400 bps/9600 bps FAX modem

System Memory

The system memory inside of the GRiD Convertible computer consists of 2 MB of RAM. This is expandable to 4 or 8 MB of RAM. This system memory is the "working" memory. It is where you run programs and do your work when the computer is turned on. The system memory is erased when the computer is turned off. Data that needs to be saved must be written to a storage card, a hard disk, or some other permanent storage device before the computer is turned off.

The system memory is split into two different kinds of memory: conventional memory and extended memory. Conventional memory is the memory that is available to MS-DOS for running programs. Extended memory is additional memory that some programs can take advantage of.

The 2 MB of memory in your GRiD Convertible computer is split as follows:

- 640 kB of conventional memory
- 1408 kB of extended memory

You may obtain and install either 2 MB or 6 MB of additional RAM which is configured as extended memory. Refer to Appendix B for information on installing additional RAM.

Coprocessor

An CX87SLC numeric coprocessor is included in the GRiD Convertible computer. The numeric coprocessor is designed to speed numeric processing when working with graphs, worksheets, graphics, and other types of files.

Check your application documentation to see if a numeric coprocessor is supported.

Mass Storage

The GRiD Convertible computer is equipped with an internal hard disk. Use the the System Status menu of the **config** command to determine the size of the hard disk in your computer; refer to Figure 9-4.

The computer also includes a PCMCIA slot that holds PCMCIA Release 2.0 storage cards as well as PCMCIA input/output cards.

An external floppy drive is also supplied with each computer. The floppy drive can read from and write to 3.5-inch floppy diskettes.

Refer to Chapter 5 for more information about using these storage devices.

V.32bis/V.42bis 14400 bps/FAX	V.32bis, 14400 bits-per-second (bps) Hayes compatible; auto-dial; auto-answer; V.42 and Microcom Networking Protocol (MNP) Classes 2 through 4 error correction, as well as V.42bis and MNP Class 5 data compression support. Supports 9600 bps send/receive Group III Class I facsimile transmission.
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Refer to Chapter 5 for more information about using these storage devices.

Each of the storage devices on your computer is assigned a separate drive letter by which it can be accessed. You can determine your particular computer device configuration by using the **devices** command, described on page 9-30. This command shows you the drive letters assigned to each of the storage devices.

Optional Modem

Your GRiD Convertible computer can contain one of the following internal modems that are available as options. The internal modem transmits and receives data through the telephone system.

- A V.22bis, 2400 bits-per-second (bps)/9600 bps FAX modem that can both transmit and receive data at 300, 1200, or 2400 bps. It also provides V.42 and Microcom Networking Protocol (MNP) Classes 2 through 4 error correction and V.42bis and MNP Class 5 data compression.
- A V.32bis 14400 bits-per-second (bps)/9600 bps FAX modem that can both transmit and receive data at speeds up to 14400 bps. It also provides V.42 and Microcom Networking Protocol (MNP) Classes 2 through 4 error correction and V.42bis and MNP Class 5 data compression.

These types of modems ensure that data is exchanged quickly and error-free. The modems operate with the industry-standard set of AT commands. Refer to the *Internal Modem User's Guide*.

The facsimile capability allows sending and receiving fax documents at 9600, 7200, 4800, or 2400 bps. The modems are EIA-578 Class 1 compatible so they can be used with a variety of fax software packages.

Connecting the Telephone Line

If your GRiD Convertible computer contains an internal modem, there is a telephone jack on the left side of the computer, as shown in Figure 3-1. The modem connects to the telephone system through the telephone jack.

To connect the GRiD Convertible computer to the telephone system, unplug the cord from the back of a telephone, and plug it into the telephone jack on the computer, as shown in Figure 3-1.

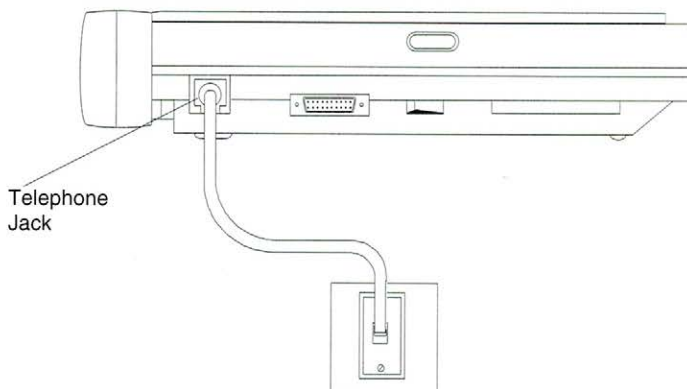


Figure 3-1. GRiD Convertible Computer Connected to Telephone System

NOTE: The GRiD Convertible computer modem will not function with PBX telephone systems that use digital telephone sets. Most of these types of telephone systems use modular connectors that are not compatible with the telephone jack on the computer. If you are unsure whether or not your computer will work with your PBX telephone system, contact your local GRiD representative.

Alternative Telephone Connections

There are some telephone systems that do not use the modular plug-in jack connector. Some use different types of connectors, and others are permanently wired. Read this section if you find that there is no modular connector available to plug into your computer's telephone jack and you are using your computer in the U.S. or Canada.

Some older telephone systems use four-prong connectors. These require an adapter available from electronics stores. (One such adapter is the Radio Shack Model 279-351.)

Some offices use large Amphenol connectors for phones that have several lines coming in. Many adapters are available to tap into these connectors. (Radio Shack Models 43-271 and 43-270 are two commonly available adapters.)

In situations where the telephones are permanently wired, the simplest solution is to use a special coupler that attaches to the handset of the telephone and provides a modular connector for plugging into your computer.

Using the Modem

Most application programs that use the modem automatically configure and control the modem. You do not need to do anything special to make the modem work, other than plugging it into a telephone line.

If your application requires you to change the operating configuration of the modem, refer to the *Internal Modem User's Guide* for more information. You can also use the GRiD Convertible Configurator program to change certain operating parameters. Refer to the **config modem** command on page 9-21.

To take advantage of its MNP, V.42 or V.42bis features, your modem must be communicating with another modem with comparable features. If the modem to which you are connecting does not have comparable features, your modem will still work, but without using its error control or compression features.

CHAPTER 4: POWERING YOUR COMPUTER

This chapter describes standby mode, the options that are available for powering the GRiD Convertible computer, and other power considerations. You can use the power supply, the internal battery pack, or the optional auto adapter to power the computer.

Important Safety Instructions

The GRiD Convertible computer is intended to be electrically grounded when connected through the power supply to an external source of power.

The power supply is equipped with a three-wire grounding-type plug, which has a third (grounding) pin. This plug fits only a grounding-type power outlet. This is a safety feature.

If you are unable to insert the plug into an ac outlet, contact a licensed electrician to replace the outlet with one that is properly grounded.

Do not defeat the purpose of the grounding-type plug.

WARNING

Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product, or permit them to handle any cables.

Standby Mode

Standby mode is a valuable power management feature of your GRiD Convertible computer. It helps you achieve a longer operating time when you are using a battery pack by shutting down almost all computer systems when you are not using the computer, while maintaining your application in memory exactly as you left it.

When the computer is in standby mode, the screen goes blank and the computer appears to be off, but your work is preserved in memory. The power/standby indicator flashes green to remind you that the computer is in standby mode. Computer battery usage is reduced by over 95 percent because the computer uses only enough power to maintain the system RAM, or main memory.

We recommend that you save the file you are working on before putting the computer into standby mode.

When to Enter Standby Mode

Put your computer into standby mode in the following situations:

- You are running on battery power and are not going to be using the computer for a while but do not want to turn it off.
- You need to change the battery and do not want to turn off the computer.

How to Enter Standby Mode

Your computer can enter into standby mode in three ways:

- When you press the standby button or key.

Press the standby button below the screen or the **FN-StdBy** key combination when you want to put the computer into standby.

- When you use an option of the **config** command.

The **config** command has two options for putting your computer into standby mode. For details, refer to the section Configurator, beginning on page 9-7.

- The **config autostandby** command is used to set a specific length of inactivity, after which your computer automatically goes into standby mode.
 - The **config standby** command puts your computer into standby mode immediately. The **config standby** command also enables and disables standby mode. You would not normally want to disable standby mode.
- When the battery is low.

Your computer automatically enters standby mode when the battery is almost exhausted.

Exiting Standby Mode

Press the standby button or the **spacebar** to return to operating mode.

If you go into standby mode to change the battery or to conserve battery power while you are away from the machine, pressing the standby button or the **spacebar** returns your work files to the same status as they were when you entered standby mode.

If your computer entered standby because of a low battery, you must supply external power or attach a charged battery pack before you can exit standby.

When you leave standby, the power/standby indicator is steady to indicate power is on.

Notes Regarding Standby Mode

- Standby mode has been tested with a variety of widely used MS-DOS applications. Some MS-DOS applications may not work properly; they may not be able to return from standby mode. Before using standby with a new

MS-DOS application, test to see if your application can return from standby mode to protect yourself against data loss. Save the file you are working on before entering standby mode.

- If you find that standby mode does not work properly with an application, disable the automatic standby feature using the **config autostandby** command; refer to the section Configurator, beginning on page 9-7.
- If you are communicating through a modem when you enter standby mode, you will lose your carrier because power to the modem is turned off in standby mode. However, the host may not recognize that you are no longer connected.
- Most communication software programs initialize the modem with configuration commands only when the program starts. If power to the modem is turned off (or the computer enters standby) while the communication program is running but after the initialization step has been completed, the modem will lose its configuration information, and the communication program will not operate properly. If the communication program instructs the modem to copy its configuration commands to modem User Profile 0 before the computer enters standby, the necessary configuration will be restored to the modem when the computer comes out of standby. To store the configuration into User Profile 0, add **&W0** to the end of the modem initialization string. Refer to the *Internal Modem User's Guide* for more information. (When the modem is powered on, it gets its initial configuration information from User Profile 0. If desired, User Profile 1 can also be used for the power up configuration.)
- You may need to disable the automatic standby feature if you are using a non-MS-DOS operating system.

Using the Power Supply

The power supply provides external power from a three-wire power outlet. The power outlet must supply power at 100-240 volts at 47-63 or 400 Hertz.

The power supply attaches to the computer as described below and as shown in Figure 4-1.

1. Plug one end of the power cable into the power connector on the battery mounted at the back of the computer; plug the other end into the power supply. Hold the locking connector on the power cable with the arrow facing up when you plug it in.
2. Plug the female end of the power cord into the power cord socket on the power supply.
3. Plug the male end of the power cord into an outlet that accepts a three-prong plug.

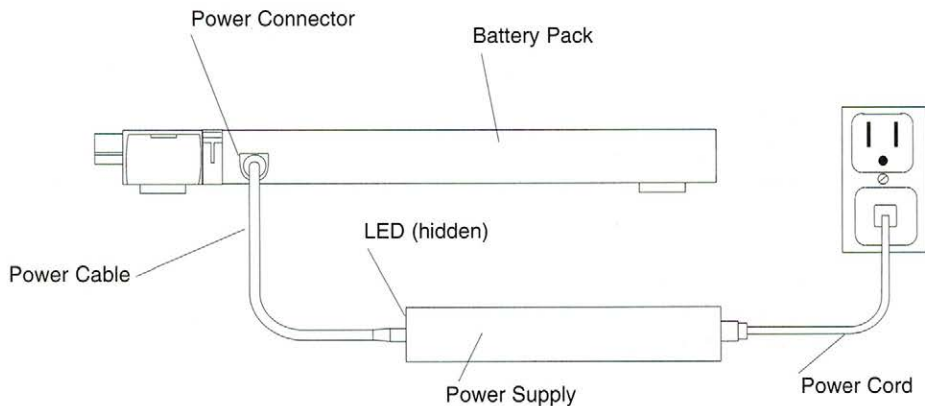


Figure 4-1. Powering Computer from the Power Supply

The power supply also functions as a battery charger.

When the power supply is plugged into the battery, it recharges the computer battery pack in approximately 1.5 hours. The computer may be on or off.

For more information, refer to the section Recharging the Battery Pack on page 4-9.

A green LED is located on one end of the power supply. Table 4-1 shows the status of the green LED on the power supply.

Table 4-1. Power Supply LED Status

Power Supply LED State	Meaning
Solid green	Battery is fully charged.
Flashing green	A battery is rapid charging.
Off	Power supply is not plugged into a wall outlet or not plugged into the battery.

Using the Battery Pack

The battery pack provides power to the GRiD Convertible computer from rechargeable batteries sealed inside the pack. The battery pack is attached to the rear of the computer. The battery pack is not charged initially when it is shipped with the computer.

Two sizes of battery packs are available. An optional battery pack can be ordered; this pack is slightly larger in size and provides approximately 60 percent longer battery life. Both packs attach to the computer in the same way.

Removing the Battery Pack

To remove the battery pack:

1. Turn off the computer or put it into standby.
2. With the rear panel of the GRiD Convertible computer facing you, pull the battery release latch towards you (Figure 4-2).
3. Slide the battery towards your right, as shown in Figure 4-2.

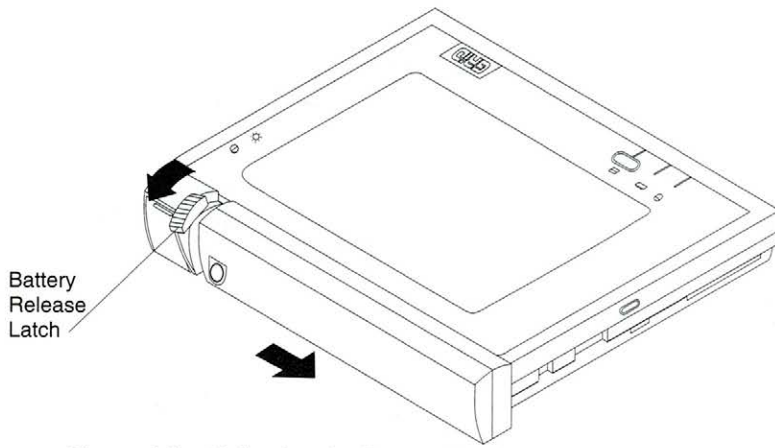


Figure 4-2. Releasing the Battery Latch

4. Lift the battery straight up, as shown in Figure 4-3.

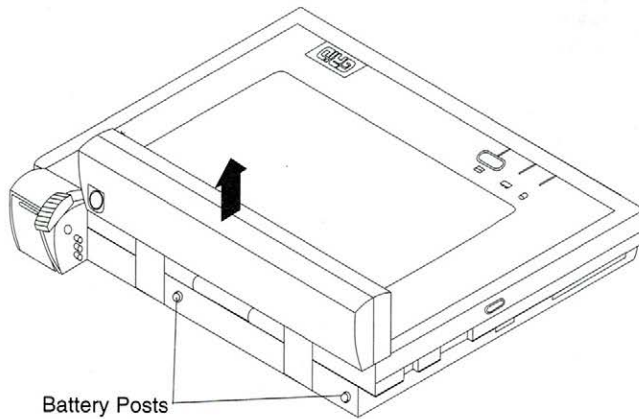


Figure 4-3. Removing the Battery Pack

Attaching the Battery Pack

Perform the following steps to attach the battery pack to the computer.

1. Open the battery release latch by sliding it away from the computer.
2. Put the battery hooks on the battery (Figure 4-4) onto the battery posts on the rear of the computer (Figure 4-3), and slide the battery down.
3. Slide the battery toward the battery release latch.
4. Close the battery release latch by sliding it toward the computer.

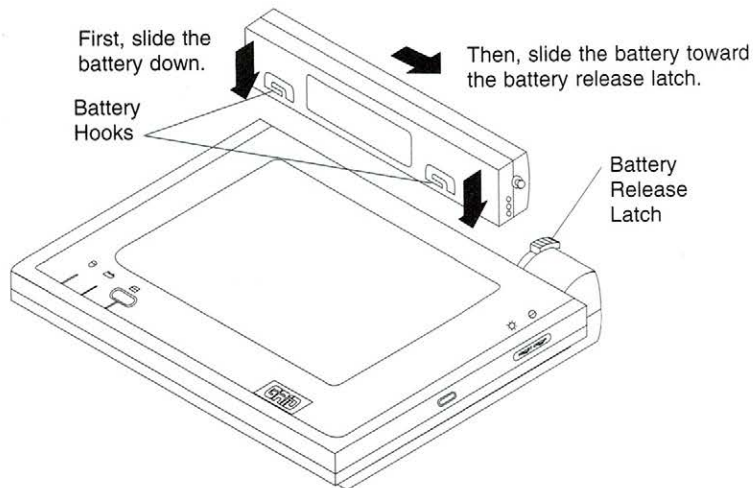


Figure 4-4. Attaching the Battery Pack

Low Battery Warnings

The computer beeps when the battery pack is low. The beeps increase in volume as the battery continues to discharge. These beeps start at the same time that the battery indicator flashes. The beeping feature is controlled by the **config lowbeep** command; refer to the section Configurator, beginning on page 9-7, for further information.

NOTE: The beeps will not sound if the speaker has been turned off.

When you hear the beeps or see the battery indicator flash, you should **immediately save the file** you are working on to avoid losing any data. Then, take one of the following actions:

- Connect the power supply to the GRiD Convertible computer to supply external power. This recharges the battery pack while you operate the computer.
- Press the standby button to put the computer into standby mode, then remove the battery pack and replace it with another charged battery pack. While you change battery packs, a small internal rechargeable battery, called the bridge battery, maintains standby power for at least five minutes.

If you do not take any action to supply more power to the GRiD Convertible computer when the battery indicator begins blinking, the battery pack will continue to drain. When it is almost exhausted, the computer automatically enters standby mode in an attempt to preserve your work in system RAM. When this happens, the screen goes blank, and the standby indicator flashes green and the battery low indicator flashes red. This feature is known as low-power standby. The system should stay in this mode approximately one hour.

To return to your work, connect the power supply or attach a charged battery pack, then press the standby button or the **spacebar** to exit standby mode.

Recharging the Battery Pack

The battery pack can be used and recharged many times. It automatically recharges whenever it is connected to the power supply.

When the battery pack becomes exhausted, you must recharge it.

You have two options for recharging the battery pack:

- Leave the battery pack attached to the computer and connect the power supply, as shown in Figure 4-1; the auto adapter can also charge the battery. The batteries recharge automatically, whether or not the computer is turned on.
- Remove the battery pack from the computer and connect the power supply or auto adapter directly to the battery pack. Plug one end into the power supply and plug the other end into the connector on the battery pack, as shown in Figure 4-5. Connect the power supply to the wall outlet using the power cord. You can use this method to recharge one battery pack externally while using another on the computer, if you have more than one battery pack.

It requires about 1.5 hours to recharge a fully discharged battery pack.

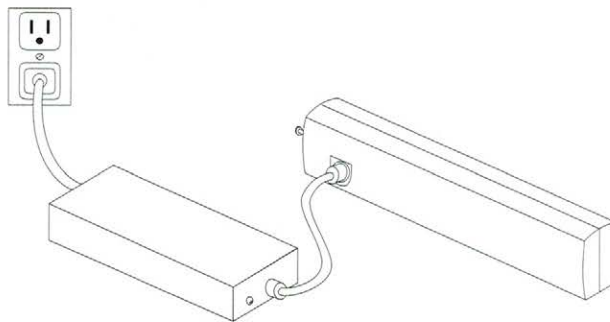


Figure 4-5. Charging Battery Pack Directly from the Power Supply

Optimizing Battery Life

To get the most computer operating time from your battery pack, follow these suggestions:

- Put the computer into standby mode when you are not going to be using it for a while and you do not want to turn it off. When it is in standby mode, the computer uses less than 5 percent of the power it normally requires.

To put the computer into standby mode, press the standby button or **FN-StdBy**. The computer also can be configured to automatically enter standby mode if there has been no activity for a few minutes. For more information on standby mode, refer to the section Standby Mode, on page 4-2. For information on enabling standby mode and the automatic standby feature, refer to the section Configurator, beginning on page 9-7.

- Decrease the brightness of or turn off the screen backlight when you don't need it (the contrast of the screen has no effect on battery life). Refer to Table A-4 for battery life calculations.
- If you have an optional internal modem, turn off the modem port when it is not being used. For more information, refer to the section Configurator, beginning on page 9-7.
- Spin down the hard disk when it is not in use. To spin down the hard disk, press **FN-Disk**. The disk will spin up automatically when it is accessed.
- Operate the computer at its slower speed if it does not matter how fast it operates. Operating at the slower speed can extend the battery life. For more information, refer to the section Configurator, beginning on page 9-7.

Using the Optional Auto Adapter

The optional auto adapter provides power to the GRiD Convertible computer from the cigarette-lighter socket of a car or from other 12-volt power sources that have cigarette-lighter sockets. You do not need the power supply when you are using the auto adapter.

To connect the auto adapter to the computer, follow these steps:

1. Plug the cigarette-lighter plug end of the auto adapter cable into the cigarette-lighter socket in the car.

2. Plug the computer power cable into the power connector on the battery pack. Plug the other end of the cable into the auto adapter as shown in Figure 4-6.

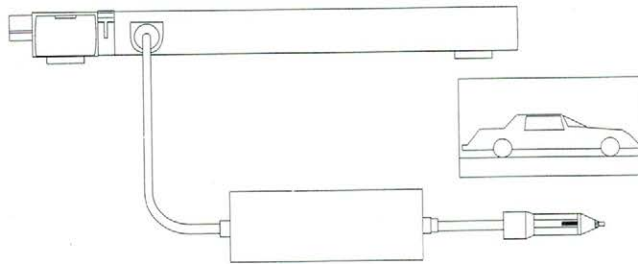


Figure 4-6. Powering Computer from Auto Adapter

CAUTION

In special applications, you may wish to cut off the cigarette-lighter plug and wire the adapter directly into the vehicle electrical system. If you do this, you must include a 5 ampere fuse on the positive line to protect your computer. If you fail to do this, your computer could be damaged.

Internal Bridge Battery

The internal bridge battery is a small rechargeable battery that is contained inside the GRiD Convertible computer. It is not user-accessible.

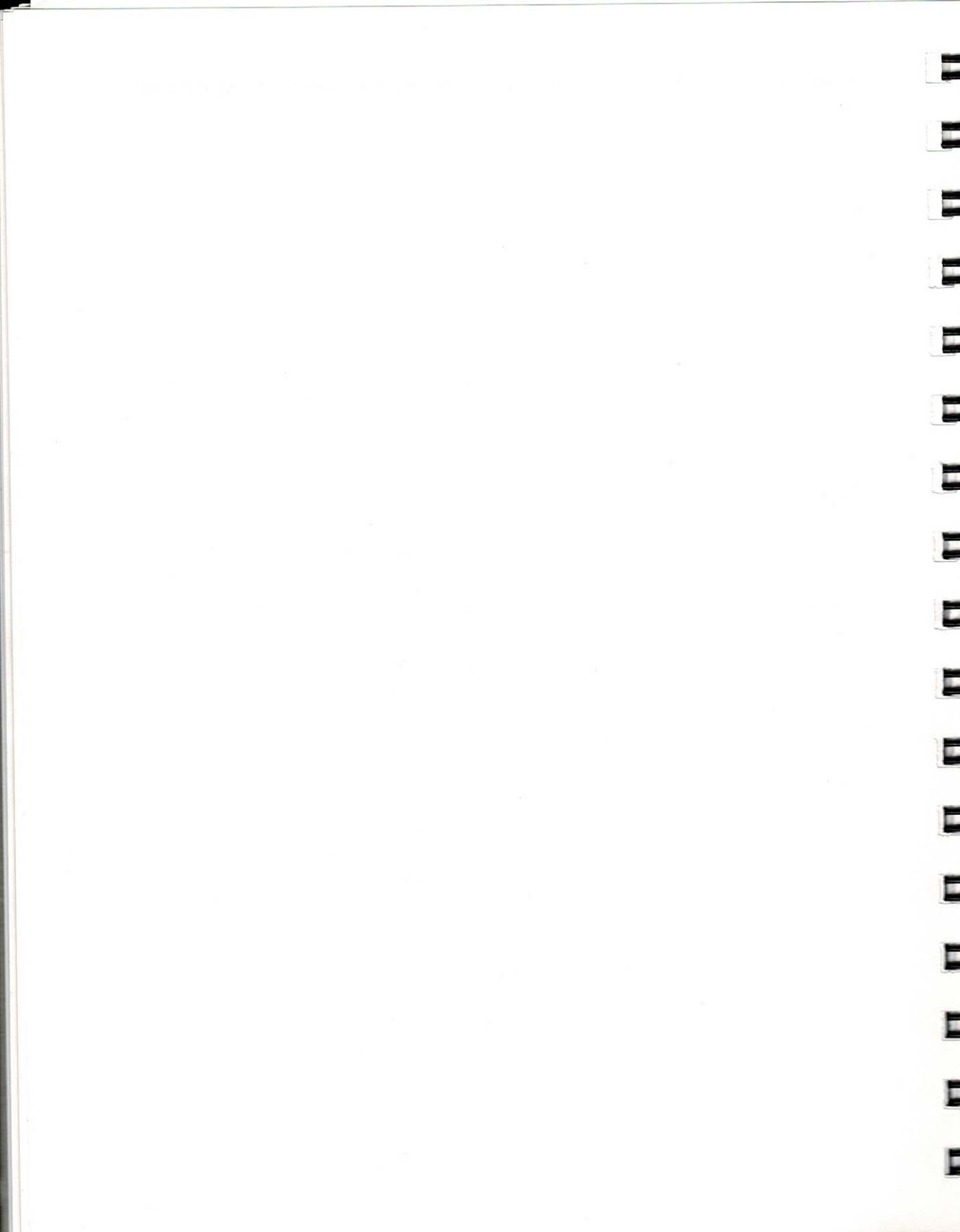
The bridge battery supplies enough power for the computer to operate in standby mode. It is designed so that you do not have to turn the computer off to change battery packs; you just have to push the standby button to put the computer into standby mode. Then you can remove the exhausted battery pack and insert a fresh one, while the bridge battery maintains the computer system RAM. To resume normal operation, press the standby button again.

NOTE: We recommend that you save the file you are working on before pressing the standby button to put the computer into standby mode. Standby does not automatically save your files onto a permanent storage device.

When fully charged, the bridge battery can supply approximately five minutes of standby mode power. However, the bridge battery may not be fully charged, so you should change battery packs without delay when in standby mode.

The bridge battery recharges automatically whenever the computer is turned on. The bridge battery recharges no matter how the computer is being powered (power supply, battery pack, or auto adapter). It takes approximately 40 hours for the bridge battery to recharge fully if it has been completely discharged. However, it is not likely that the bridge battery would ever become fully discharged, unless you left the computer in standby mode for several hours with no other power source connected.

If you do not have a power source connected to the computer (such as a battery or external power), do not leave the computer with the power switch in the on position. Doing so will cause the bridge battery to become fully discharged.



CHAPTER 5: USING STORAGE DEVICES

Several storage options are available for your GRiD Convertible computer. Your computer accepts PCMCIA Release 2.0 storage cards; it has an internal hard drive; and an external floppy drive can be connected. These storage options are described in this chapter.

Storage PC Cards

PCMCIA 2.0 storage cards store programs and data on the GRiD Convertible computer. They are similar to floppy diskettes, except that storage cards have no internal moving parts. Data is stored in electronic circuits inside the thin credit-card shaped cards.

In order to use storage PC Cards in your GRiD Convertible computer, you must have the *cmcdd.sys* device driver installed in your *config.sys* file. Refer to the information on page 8-4.

Description

The GRiD Convertible computer uses storage cards that are compatible with the 68-pin PCMCIA 2.0 standard. A storage PC Card is shown in Figure 5-1. The following sections describing Type I PC Cards used for storage apply to those cards available from GRiD Systems Corporation. The cards available from GRiD Systems have been tested and verified to work in the GRiD Convertible computer.

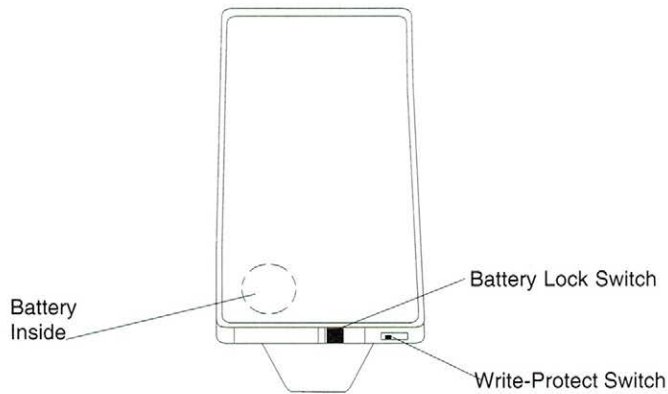


Figure 5-1. Sample Storage PC Card

CAUTION

Do not bend storage cards. Storage cards contain delicate electronic circuits that can be damaged by stress and shock.

The write-protect switch prevents data from being written or erased on the storage card. Figure 5-2 shows the write-protect switch in the unprotected position; the storage card can be read or written to. The switch write-protects the card when it is pushed towards the outside edge of the card (opposite from the position shown in Figure 5-2).

The battery lock switch locks the battery carrier closed so that it cannot be accidentally opened.

The position of the battery inside the storage card is indicated by a dotted circle. The battery carrier is removed by prying it out using the thumbnail slot on the edge of the storage card. Instructions on changing the battery are provided in the section Changing a Storage PC Card Battery, beginning on page 5-6.

You can write data to a storage PC Card and read data from it—just like a floppy disk. The data in a storage PC Card is preserved by a small amount of electricity flowing from a battery inside the card. The battery lasts for at least six months inside the PC Card, after which it must be replaced. (The battery may last much longer, but this cannot be certain.)

A bridge battery in the storage PC Card provides power to the card for a few minutes; this allows you to change the battery in the card without losing data.

CAUTION

Not all storage PC Cards have a bridge battery backup; storage PC Cards supplied by GRiD Systems for the GRiD Convertible computer contain a bridge battery. If you are using storage PC Cards without a bridge battery, you must back up the data before changing the battery.

Using Storage PC Cards

This section describes how to insert and remove storage PC Cards from the GRiD Convertible computer, and how to use them.

Before using a storage card for the first time, you must apply the label to it, install the battery, and format it. If your GRiD Convertible computer was purchased for you by your company, this may have already been done. If not, refer to the section Preparing Storage Cards, on page 5-9, for instructions on preparing your storage PC Card for use.

Inserting a Storage PC Card

You do not need to turn off the computer when inserting a storage PC Card.

To insert a storage PC Card in the GRiD Convertible computer, follow these steps:

1. Set the write-protect switch in the proper position, as shown in Figure 5-2. Push the switch towards the outside edge of the card to write-protect the card; or push the switch towards the middle of the card if you want to read and write to the card.

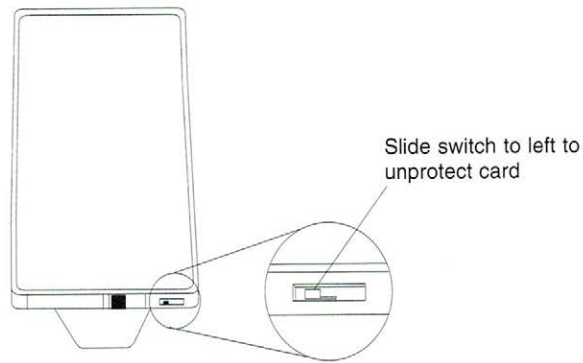


Figure 5-2. Set the Write-Protect Switch

2. Hold the storage PC Card with the connector towards the computer. The corner with the slight cut-out area is toward the back of the computer; the slot in the side of the PC Card is toward the front of the computer. Slide the storage card into the storage card slot, as shown in Figure 5-3. Disregard any instructions on the card label.

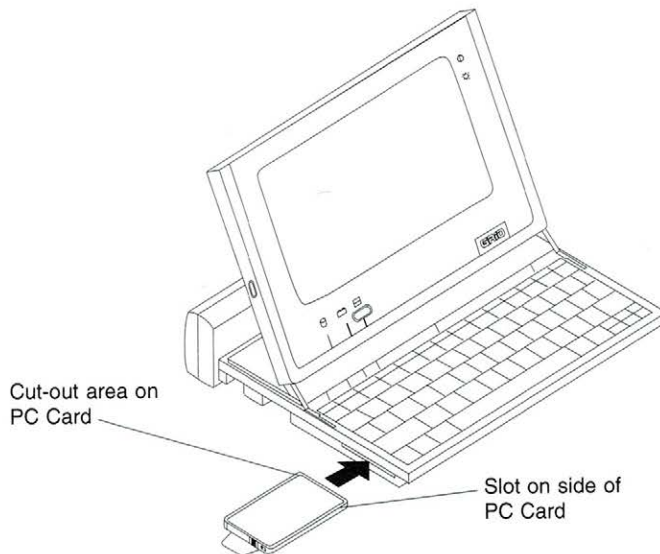


Figure 5-3. Insert the Storage PC Card

3. Push the card in firmly until it will not go in any further. It is OK to use firm pressure, but you should not need a great deal of force to seat the card properly in its connector. If it doesn't go in easily, you probably have the card turned upside down. The card will extend out of the side of the computer approximately three-fourths of an inch when installed properly.

Removing a Storage PC Card

You do not need to turn off the computer when removing a storage card.

To remove a storage PC Card from the GRiD Convertible computer, grasp the pull-tab, and pull the card straight out, as shown in Figure 5-4.

CAUTION

Never remove a storage PC card when the disk in-use light is on. The in-use light indicates that file access may be taking place. Removing the storage PC card at this time could destroy files.

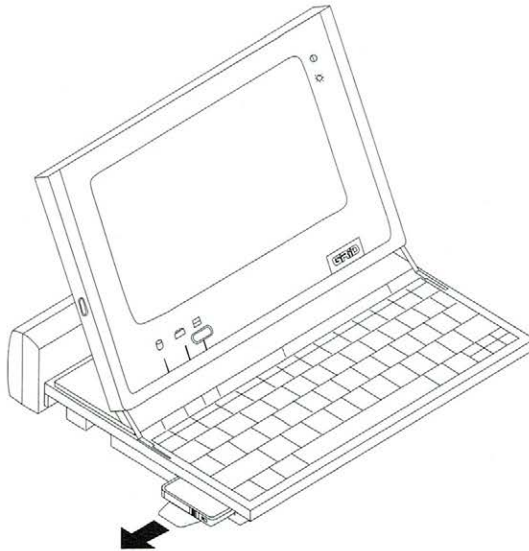


Figure 5-4. Pull Out the Storage PC Card

Changing a Storage PC Card Battery

The data in a storage PC Card is preserved by a small amount of electricity supplied by a battery inside the card. The battery lasts for at least six months inside the PC Card, after which it must be replaced. (The battery may last much longer, but this cannot be certain.)

You can check the power level of the battery in a storage PC Card by issuing the **cardbatt** command, as described on page 9-29.

You should change the battery in a storage PC Card soon after the low-battery indication, so that you do not accidentally lose any data stored on the card. After you receive a low-battery indication, the battery may continue to last as long as a month before it becomes completely exhausted. However, there is no certainty that it will last that long, so it is recommended that you change the battery as soon as possible.

CAUTION

If the battery becomes completely exhausted, the information stored on PC Card is lost and the card is not usable.

Storage PC Cards sold by GRiD Systems specifically for the GRiD Convertible computer have a bridge battery that maintains power to the PC Card while the battery is being changed. PC Cards supplied by other vendors may not have a bridge battery; they require that the data be backed up prior to changing the battery.

Before beginning the battery replacement procedure, you should have a replacement battery available. The following replacement batteries can be used in a GRiD Convertible PC Card:

Crompton Parkinson Ltd., BR2325	Eveready Battery Company Inc., BR2325
Matsushita Electric, BR2325	Panasonic, BR2325
Radio Shack, BR2325	Rayovac Corp., BR2325

The following procedure describes how to change the battery in a storage PC Card supplied by GRiD Systems.

For information on changing the battery in other storage PC Cards, refer to the instructions accompanying the PC Card.

WARNING

The battery may explode if it is mistreated. Do not recharge it, disassemble it, or dispose of it in fire. Dispose of the used battery promptly. Keep batteries away from children.

1. Hold the PC card so that the side showing the battery location is facing up.
2. Move the battery lock switch to the OPEN position (towards the outside edge of the card), as shown in Figure 5-5. The battery lock switch keeps the battery carrier locked so that it cannot be opened accidentally.

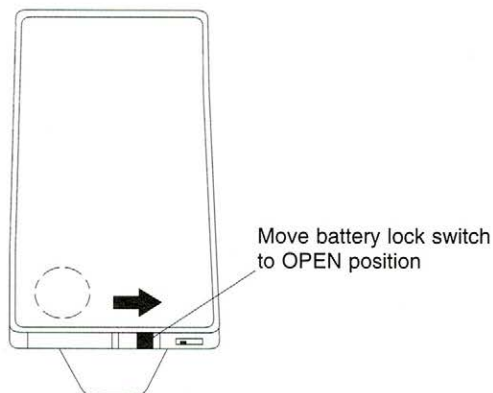


Figure 5-5. Unlocking Battery Carrier

3. Locate the battery carrier thumbnail slot in the edge of the card near the battery lock switch.
4. Place your thumbnail in the slot, grip the plastic border, and gently pull out the battery carrier while firmly holding the PC Card (see Figure 5-6). The carrier and battery may flip out of the card suddenly, so you may want to hold the card over a desk while removing the battery carrier.

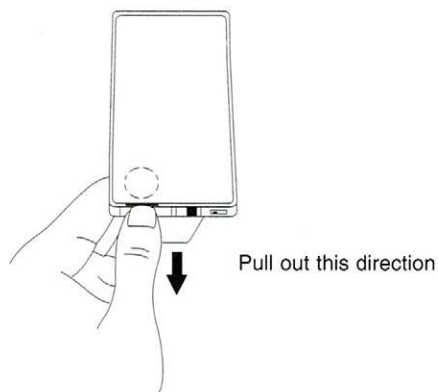


Figure 5-6. Pull Out Battery Carrier

5. Remove the old battery from the carrier and replace it with a new battery of the same type or its equivalent. The battery rests in the carrier with the positive side (marked with a +) facing up, as shown in Figure 5-7.



Figure 5-7. Insert Battery Carrier

6. Push the carrier with the new battery into the battery slot in the edge of the card until it snaps into place.

7. Move the battery lock switch to the locked position (towards the battery carrier). The battery lock switch keeps the battery carrier locked so that it cannot be opened accidentally.
8. Write the date you inserted the new battery on the storage PC Card label. If there is already a date written there, erase it before writing the new date.

Writing the date you replaced the battery helps you remember when it is time to replace the battery again. You should replace the battery every six months, or when the battery test indicates the battery is low, to prevent loss of data.

NOTE: The six-month life of the battery begins when the battery is installed in the storage PC Card.

Preparing Storage PC Cards

Before using a storage PC Card in the computer the first time, you need to do three things:

- Apply the label to the storage PC Card.
- Insert the battery.
- Format the card.

Refer to the next three subsections for instructions on how to do these things.

NOTE: If your GRiD Convertible computer was purchased for you by your company, a storage card may have been prepared already, loaded with software, and installed in your computer for you. In this case, you can skip the following subsections on preparing and formatting a storage card.

Applying the Storage PC Card Label

The storage PC Card is shipped with a GRiD label. Apply the label to the side of the storage PC Card that has a notch cut in the upper-left corner, as shown in Figure 5-8. Place the label so that the pull-tab extends over the edge of the card and be careful to center the label on the card from side to side.

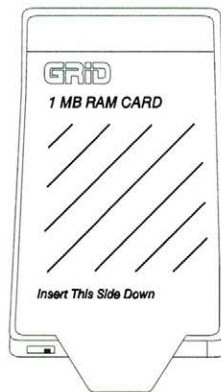


Figure 5-8. Applying Label to Storage PC Card

You can write on the label to record the contents of the storage PC Card. If you use pencil, the label is erasable.

Installing the Storage PC Card Battery

A storage PC card is shipped with a battery, but the battery is not installed because the battery begins to discharge as soon as it is installed.

To install the battery in a storage PC card, refer to the section Changing the Storage PC Card Battery on page 5-6. You will not have an old battery to remove in step 5, but otherwise you can follow those instructions.

Formatting a Storage PC Card

Before you can use a storage PC Card, you must prepare it to accept data. This is done by running the MS-DOS **memcard** command, described in the following paragraphs.

NOTE: Do not use the MS-DOS **format** or **fdisk** commands to format a storage PC Card. The card will not function properly unless **memcard** is used.

Memcard is a storage PC Card setup program that partitions, formats, erases, deletes partitions from, and displays information about storage PC Cards. To start the setup program, type **memcard** at the command prompt. When the program starts, the main menu appears, as follows:

```
PC Memory Card Setup Program Version 1.00
Copyright (C) Microsoft Corporation 1991
Current Memory Card Slot: 1 of 1 slots
```

```
MEMCARD Options
```

- 1 Create & Format Partition
- 2 Erase Entire Memory Card Slot
- 3 Delete Partition
- 4 Display Partition Information

```
Enter Choice [ 4 ]
```

```
Press ESC to exit MEMCARD.
```

To choose a menu option, type the option number, and then press **Enter**. To return to the previous menu, press any key. To quit **memcard**, return to the main menu, and then press **Esc**.

Each menu displays a "Current Memory Card Slot" message, followed by a number. Since you have only one PC Card slot, the number is always 1.

Viewing Partition Data

You can view information about the status, type, and size of the partitions on your PC Card by choosing Display Partition Information (option 4) from the **memcard** main menu. The Display Partition Information screen looks like this:

Display Partition Information

Current Memory Card Slot: 1

Device	Device Size
Type	(Bytes)
SRAM	1024K
Total Size of Card:	1024 K

Partition Letter	Start Address	End Address	Partition Type	Partition Status	Size (Bytes)
D	1024	1048575	DOS	FORMATTED	1023 K

Press any key to return to the main menu.

The information varies, depending on the number, size, and type of partitions on your PC Card.

Column	Description
Device Type	Indicates the type of device or memory chip in the slot. Possible types are read-only memory (ROM), one-time programmable ROM (OTPROM), ROM that is erasable with ultraviolet radiation (EPROM), ROM that is electrically erasable (EEPROM or FLASH), static random-access memory (SRAM), dynamic RAM (DRAM), and an input/output card (I/O).
Device Size	Shows the size, in bytes, of the entire RAM card.
Drive/Partition Letter	Shows the drive letter associated with each partition.
Start Address	Shows the starting address of each partition.
End Address	Shows the ending address of each partition.
Partition Type	Shows whether the space is an MS-DOS partition (DOS), a partition created by the card manufacturer (Unknown), or unpartitioned (Free) space.
Partition Status	Shows whether the partition is formatted or unformatted. If the partition is unknown, its status is also Unknown.
Size	Shows the size, in bytes, of each partition.

If there are more partitions than **memcard** can display on one screen, press a key to view the next screen of information.

Creating and Formatting an MS-DOS Partition

You can create and format only MS-DOS partitions on storage PC Cards.

You cannot change the size of an existing MS-DOS partition. If you want to change the size of an MS-DOS partition, you must delete the existing partition and create and format a new one. When you delete the existing partition, you lose any information stored there. For information about deleting a partition, see *Deleting a Partition* on page 5-15.

To create and format a partition that occupies the entire PC Card, perform the following steps:

1. From the main menu, choose Create & Format Partition (option 1).

The setup program displays the following message:

```
Do you want to use the entire card for DOS? [Y/N] [Y]
```

Press **Enter**.

2. If the card already has an MS-DOS partition, the setup program displays the following message:

```
This card has already been formatted with DOS.  
Creating a partition will destroy the data on the card.
```

```
Continue [Y/N] [N]
```

Type **y** to continue.

3. Specify the total number of files and subdirectories you want in the root directory. Valid numbers range between 16 and 512. The default number that the setup program displays varies, depending on the size of the PC Card you have.
4. Specify the volume label for the partition.

Or, press **Enter** to specify no volume label.

Once you press **Enter** (either after specifying a label or to specify no label), the formatting proceeds. It takes approximately one minute. No messages are issued telling you formatting is in progress.

To create and format a partition that occupies part of the PC Card, perform the following steps:

1. From the main menu, choose Create & Format Partition (option 1).

The setup program displays the following message:

```
Do you want to use the entire card for DOS? [Y/N] [Y]
```

Type **n**

2. Specify the size of the partition you want to create. The minimum size is 16 kB. The maximum size depends on the amount of free space available on the storage PC Card. The default number that the setup program specifies is the largest free block of space available.
3. Specify the volume label for the partition.

Or, press **Enter** to specify no volume label.

Once you press **Enter** (either after specifying a label or to specify no label), the formatting proceeds. It takes approximately one minute. No messages are issued telling you formatting is in progress.

Deleting a Partition

If you want to change the size of a partition, you must delete the partition and recreate it. When you delete a partition, all information about it is lost and cannot be recovered. Therefore, be sure to have backup copies of the information you want to save.

If there are logical drives that have drive letters greater (in alphabetical order) than the drive you delete, these letters will change. For example, if you have logical drives D, E, and F on your PC Card and delete drive D, drive E becomes drive D and drive F becomes drive E.

NOTE: If you only have one partition (drive D) on your PC Card, you cannot delete it.

To delete a partition:

1. Choose Delete Partition (option 3) from the **memcard** main menu. The Delete Partition screen appears.
2. Specify the partition you want to delete.

The setup program prompts you to verify that you want to delete the partition.

3. Type **y** to delete the partition.

Or, type **n** to return to the main menu.

Erasing a Storage PC Card

When you buy a storage PC Card, it may contain extraneous information that you will need to erase before you can use the card. Erasing a card destroys all the information stored on it. Because you cannot recover this information, make sure that you have copies of the information you want to save.

To erase a PC Card:

1. Choose Erase Entire Memory Card (option 2) from the **memcard** main menu. The Erase Entire Card screen appears, as follows:

```
Eraser Entire Card
```

```
Current Memory Card Slot: 1
```

Partition Letter	Start Address	End Address	Partition Type	Partition Status	Size (Bytes)
D	1024	1048575	DOS	FORMATTED	1023

Erasing a card destroys all partition and data on the card. Use this option only if the card does not contain information you want to save.

```
Continue? [Y/N] [N]
```

2. Type **y** to erase all information from the storage PC Card.

The setup program displays the following message:

```
This operation may take some time.
Please do not remove the card from the slot while this
message is displayed.
```

Accessing Storage PC Cards

In order for a storage PC Card to be recognized by your GRiD Convertible computer, you must have the *cmdd.sys* device driver in your *config.sys* file. Refer to the information on page 8-4.

To your computer's operating system (MS-DOS), storage PC Cards appear similar to floppy disks. To access a storage PC Card from MS-DOS, use its device letter. PC Card device letters follow those in use for the hard disk; therefore, if the hard disk has one partition, the PC Card will be device D. If the hard disk has two partitions, the PC Card will be device E, etc. You may also access partitions on a PC Card by using the appropriate letter to refer to the partition. For example, to get a directory of the files on the PC Card, enter the following command:

```
dir d:
```

Internal Hard Disk

The internal hard drive is located inside the computer on the right side; it is not user accessible.

Description

The internal hard disk provides data storage. You can determine the capacity of your hard disk by using the **config** command and viewing the System Status screen; refer to Figure 9-4. The MS-DOS **chkdsk** command also provides information on the capacity and available space on the hard disk drive; refer to the MS-DOS Quick Reference, beginning on page 8-17.

Your hard disk is pre-formatted for you at the factory and contains the MS-DOS 5.0 files, Windows for Pen Computing Version 3.1 files, and the utility programs described in Chapter 9. If you ever need to repartition or reformat your hard disk, refer to the commands **fdisk** and **format** in the section MS-DOS Quick Reference, beginning on page 8-17.

Taking Care of your Internal Hard Disk

CAUTION

Because the hard disk incorporates moving parts, the computer is not as rugged as those without a hard disk. Although it is built to withstand some shock, you should treat your computer with extra care. The hard disk could be damaged and you could lose data if you bump the computer sharply or drop it while the hard disk is running.

The hard disk has an "auto parking" mechanism that moves the disk heads to a part of the disk that does not contain data when you turn off the computer or put it into standby mode. This safety feature ensures that neither your data nor the disk is damaged as long as the disk is not spinning.

The GRiD Convertible computer normally starts up from the hard disk. You can change the default start-up device by using the **config boot** command, as described on page 9-15.

The green drive indicator below the screen lights when the hard drive is being accessed. Do not turn off the computer when the hard drive is being accessed, since this could cause loss of data.

The Floppy Drive

The floppy drive was shipped with your GRiD Convertible computer. It supports high-quality double-sided, high-density 135 Track-Per-Inch (TPI) 3.5-inch floppy diskettes or double-sided, double-density 135 TPI 3.5-inch floppy diskettes. High-density diskettes store 1.44 MB of data per diskette. Double-density diskettes store 720 kB of data.

Connecting the External 3.5-inch Pocket Diskette Drive

The external 3.5-inch high-density diskette drive includes its own diskette drive cable. Plug the connector on the cable into the parallel/floppy connector (located on the left side of the computer). The floppy drive receives both its data and its power through the drive cable connected to the computer. Figure 5-9 shows how to properly connect the diskette drive to the computer.

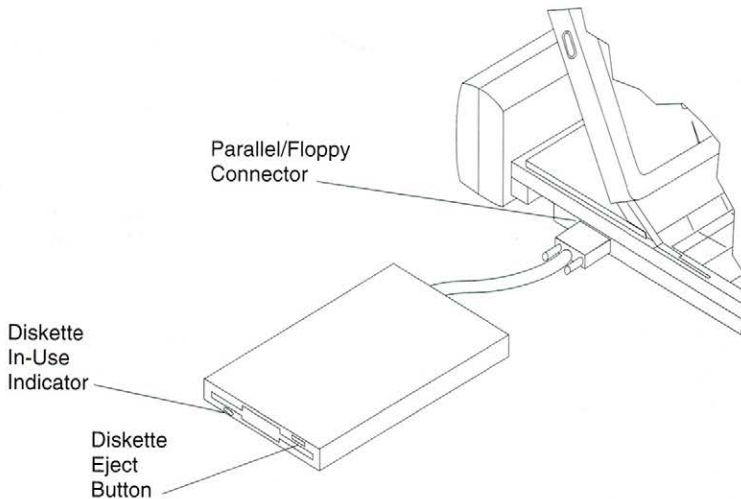


Figure 5-9. Connecting the 3.5-Inch Pocket Diskette Drive

The diskette drive works with any system power option; an ac power source is not necessary to use the diskette drive.

To connect the diskette drive to the computer, perform the following steps.

1. Turn off the computer or put it in standby. Turn off any other external devices.

CAUTION

Before connecting or disconnecting any external device, always turn off the computer and all external devices or put the computer into standby. Failure to do so may damage your equipment.

2. Attach the connector on the diskette drive cable to the parallel floppy connector on the left side of the computer. If it doesn't fit in easily the first time, turn the end of the cable over. (The connector is D-shaped, and so can be connected only one way.) Tighten the thumbscrews on each side of the connector to attach the cable securely to the computer. Do not overtighten the thumbscrews.
3. Turn on any attached external devices, and then turn on the computer or exit standby.

Taking Care of the Diskette Drive

Observe the following rules for taking care of the diskette drive:

- Use only high-quality double-sided, high-density 135 Track-Per-Inch (TPI) 3.5-inch floppy diskettes or double-sided, double-density 135 TPI 3.5-inch floppy diskettes. High-density diskettes store 1.44 MB of data per diskette. Double-density diskettes store 720 kB of data each.
- Never put a damaged or dirty diskette into a drive.
- Never put anything other than a diskette into a drive.

If you follow the rules listed above, you should never need to clean the floppy diskette drive. If you don't follow these rules, however, the diskette drive's read/write heads may become dirty.

The following symptoms may indicate dirty read/write heads:

- You receive error messages when you try to read from or write to a diskette inserted in the internal drive.
- You notice grooves on the surface of your floppy diskettes when you remove them from the drive. You can check for this condition by sliding the metal shutter to one side to expose the plastic diskette inside. Never touch the surface of the diskette.

If you believe the drive heads are dirty, clean them with a wet-process diskette drive cleaner, which can be purchased from most local computer stores. Do not use a dry-method cleaner.

Floppy Diskettes

Floppy diskettes are mylar plastic disks that have been coated with magnetic material (much like the coating on audio recording tape). The diskette spins inside a protective plastic case. The mylar disk is designed to remain within its protective case at all times. Never attempt to remove a diskette from its case.

CAUTION

Two kinds of 3.5-inch floppy diskettes are available: double-density diskettes and high-density diskettes. Double-density diskettes have a storage capacity of 720 kB. High-density diskettes have a storage capacity of 1.44 MB. The diskette drive can read, write, and format both kinds of diskettes. You must be careful, however, not to try to format a 720 kB diskette as a 1.44 MB diskette—use the special **/f:720** switch on the **format** command to format a 720 kB diskette in the diskette drive. Refer to the section MS-DOS Quick Reference, beginning on page 8-17, for information on the **format** command.

Floppy diskettes should be removed from the drive when they are not being used. By changing diskettes in the drive, you can store and retrieve information for many different applications.

All diskettes you use in your GRiD Convertible computer diskette drive must have the following characteristics:

- Double-sided
- High-density or double-density
- Soft-sectored
- 135 TPI (tracks per inch)

Figure 5-10 shows the front and back sides of a 3.5-inch high-density floppy diskette. (A double-density diskette is identical in appearance, except that it lacks the rectangular hole on the lower right corner of the front side.) An arrow on the front side shows the direction in which to insert the diskette into the drive. The write-protect tab is used to protect your floppy diskettes from being overwritten.

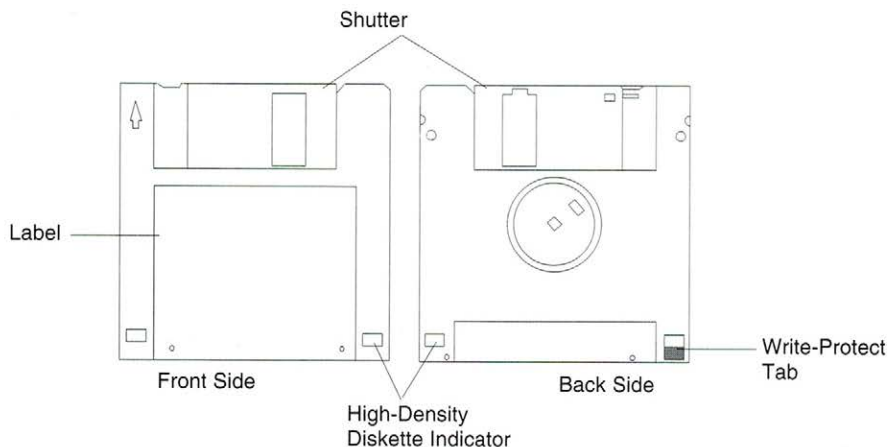


Figure 5-10. High-Density Floppy Diskette

Inserting and Removing Floppy Diskettes

To insert a floppy diskette in a drive, perform the following steps.

1. If you do not want to inadvertently write over the floppy disk, write protect the diskette by sliding the write-protect tab on the back side of the diskette until it uncovers the hole. Refer to the next section, Write Protecting Floppy Diskettes.
2. Hold the diskette so that the side with the larger label is up. An arrow on the diskette points in the direction you should insert the diskette. The shutter goes in first (see Figure 5-11).
3. Push the diskette gently into the drive until it clicks into place. Never jam a diskette into a drive. If you have trouble inserting the diskette, press the eject button on the drive and try again.

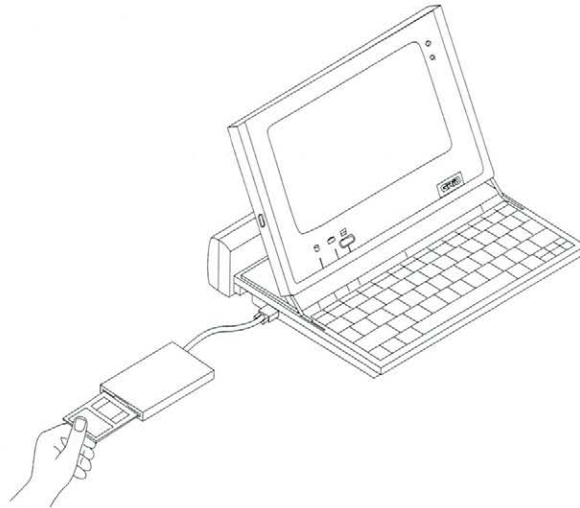


Figure 5-11. Inserting a Floppy Diskette into the Drive

To remove a diskette, push the diskette eject button (shown in Figure 5-9) until the diskette pops out of the drive.

CAUTION

Never eject a floppy diskette when the disk in-use light is on, unless prompted to do so. The in-use light indicates that file access may be taking place. Ejecting the floppy diskette at this time, when you are not prompted to do so, could destroy files.

Write Protecting Floppy Diskettes

Under most circumstances, you want the diskette drive to be able to read data from a diskette and write data to the diskette. Sometimes, however, it is important that the drive not be able to write to a diskette, for instance, when a diskette contains only application software that must not be erased or altered.

Most 3.5-inch floppy diskettes are equipped with a write-protect tab and write-protect hole that allow you to block any attempt to write data to that diskette (see Figure 5-10). To write protect the diskette, slide the write-protect tab toward

the edge of the diskette until the write-protect hole is uncovered. While the write-protect tab is in this position, you cannot create, alter, or erase files on the diskette. An electrical sensor prevents writing to the diskette.

If at some later time you want to remove write protection from the diskette, just slide the write-protect tab away from the edge of the diskette so that the write-protect hole is covered.

Formatting Floppy Diskettes

The diskette drive can read a floppy diskette only when data on that diskette is organized into a specific pattern of tracks and sectors. To create that pattern, you must format each new floppy diskette before you can use it.

CAUTION

Do not format your operating system diskette or any application program diskette. Formatting a diskette erases all data stored on it. Therefore, use extreme caution when formatting diskettes.

To format a diskette, run the MS-DOS **format** command as described in the section MS-DOS Quick Reference, beginning on page 8-17.

CAUTION

High-density and double-density diskettes require different formats. For example, a high-density format will not work on a double-density diskette. By default, the external diskette drive formats diskettes with the high-density format. To format a double-density diskette, you must use the **/f:720** switch on the **format** command; refer to the section MS-DOS Quick Reference, beginning on page 8-17, for details.

Taking Care of Floppy Diskettes

To prevent loss of data on your floppy diskettes, treat them with care. Here are a few tips for handling floppy diskettes:

- Do not touch the surface of the diskette by opening the shutter. This shutter protects the recording surface while the diskette is not being used. An invisible scratch on the surface of the diskette, or even a fingerprint, can cause errors.
- Keep diskettes away from magnetic office items such as paper clip dispensers, magnetic paper holders, telephones, etc.
- Do not set diskettes on top of a television, color monitor, speaker, or CRT.
- Do not carry a diskette and a calculator together in your pocket.
- Do not expose diskettes to microwaves or infrared rays.
- Do not expose diskettes to temperatures below 10° C (50° F) or above 60° C (140° F).
- Keep diskettes away from wall adapters.
- For optimum long-term storage, keep diskettes at a temperature between 15° to 20° C (59° to 68° F).
- Never use a damaged diskette.
- Do not remove a diskette from the drive while the in-use light is on. Removing the diskette during file access may destroy data.
- Do not leave a program or data diskette in the drive while traveling. Doing so may seriously damage the diskette.
- Keep your diskettes away from smoke.
- Label and date all diskettes. This is especially important when making backup copies.

Backing Up Files on Floppy Diskettes

It is very important that you make backup copies of all floppy diskettes that contain important data. Then, if you ever lose or damage a working diskette, you can make another copy from the backup diskette.

You can make backup copies using the **xcopy** or **diskcopy** commands as described in the section MS-DOS Quick Reference, beginning on page 8-17.

CHAPTER 6: TROUBLESHOOTING

This chapter describes problems that might arise as you use your GRiD Convertible computer and provides tips on how to resolve them. It also describes how to use the diagnostic tests provided on the diskette labeled GRiD 2260 Utilities and Diagnostics Diskette.

Troubleshooting Table

Table 6-1 lists common problems you might encounter when setting up or using your computer. To use the table, look for your problem under the heading Symptom, identify the Cause, then follow the suggested Remedy.

Table 6-1. Troubleshooting Chart

Symptom	Cause	Remedy
No response when computer is turned on	No external power	Check that the power supply is plugged into a live power outlet and that the power cable is plugged into the computer.
	Battery not installed or charged	Check to be sure the battery is installed properly (page 4-8). If necessary, charge the battery (page 4-9).
	Power switch was on and battery is discharged	Turn off the power switch for about 15 minutes. Connect the power supply to the battery. Turn on the computer.

Symptom	Cause	Remedy
Beep and blank screen when computer is turned on (battery low indicator may or may not be lit)	Screen contrast or brightness is set wrong	Reset the contrast control or the backlight brightness (page 2-28).
	Batteries need recharging	Recharge batteries by plugging the power supply into the computer (page 4-4) or the battery pack directly (page 4-9).
Screen is blank	Screen is set to external display	Press FN-CRT keys to redirect the screen output (page 2-19).
Screen is all black	Screen contrast or brightness is set wrong	Reset the contrast control or the backlight brightness (page 2-28).
	Computer is hot	Move the computer to a cool area and let it cool.
Pen does not work	Pen is in sleep mode	Touch the pen to the screen to wake it up.
	Pen batteries are dead	Change the batteries in the pen (page 2-4).
Storage PC Card does not fit into slot	It is upside down	Turn the card over and be sure the connector edge goes in first.
Storage PC Card is unreadable	Battery exhausted	When the PC Card battery becomes exhausted, all data on the card is erased. Insert a new PC Card battery (page 5-6), and reformat the PC Card (page 5-11).
	PC Card is not formatted	Format the storage PC Card using the memcard command (page 5-11).
Serial device does not function or file transfer does not work	Serial device not found	Make sure your software knows to which port the serial device is assigned. Use the Configurator to check to which port your serial device is assigned, and the config serial command to change the port (page 9-23).

Symptom	Cause	Remedy
Internal modem does not function	Telephone line bad	Check the telephone line by making a call on that line, or use a different phone line.
	Modem not assigned	Use the config modem command to assign modem to a COM port (page 9-21).
	Modem not found	Make sure your communication software knows to which port the modem is assigned. Use the Configurator to check to which port your modem is assigned, and the config modem command to change the port (page 9-21).
	Modem bad	Contact the GRiD Resource Center (the number follows this table).
	PBX telephone line	The modem will not function through a digital PBX telephone line; switch to an analog telephone line.
MS-DOS application could not return from standby mode	Application not compatible with standby mode	Not all MS-DOS applications can successfully return from standby mode. Turn off the automatic standby feature while using such an application (page 9-14).
Incorrect date or time	Clock set wrong	Use MS-DOS date and time commands to reset the clock (refer to the MS-DOS Quick Reference, beginning on page 8-17).
	Power management not installed	Be sure the statement <code>device=C:\dos\power.exe adv</code> is in the <i>config.sys</i> file. Be sure power management mode is set to advance in Windows.

Symptom	Cause	Remedy
Top row number keys are in shift mode*	Shift key was held when going into standby	Press left Shift and right Shift keys to cancel shift state.
Control keys are echoed to screen even though you are typing single keys*	Ctrl key was held when going into standby	Press the Ctrl key to cancel control state.
No keys are echoed or application acts as if Alt keys are entered*	Alt key was held when going into standby	Press left Alt and right Alt keys to cancel the Alt state.

*These symptoms are possible only if *power.exe* is in the *config.sys* file or Windows is running in power management mode.

If you encounter problems with specific software, try erasing your working copy of the problem software and replacing it with a different copy of the same version. Do not erase your master copy of any software.

If the software still does not function properly, and if you have ordered a GRiD Customer Support Service (CSS) contract with your computer, call the GRiD Resource Center at 1-800-654-GRID (4743) for help with diagnosing the problem. Make sure you know the tracking number of your computer; it is located on the bottom of the computer. If you are outside the U.S., contact your local GRiD Systems representative or distributor for assistance.

If you decide your problem is not a set-up or software problem, then it may be a hardware problem. Refer to the section Diagnostics on page 6-6, or call the GRiD Resource Center for help in problem diagnosis.

Diagnostics

A diskette labeled GRiD Model 2260 Utilities and Diagnostics Diskette was shipped with your computer. This diskette contains diagnostics you can run if you suspect a problem with your computer.

NOTE: Make a backup of the Utilities and Diagnostics Diskette before running the diagnostic program.

To run the diagnostic tests, perform the following steps:

1. Connect the external floppy diskette drive to the computer as described on page 5-19.
2. Insert the GRiD Model 2260 Utilities and Diagnostics Diskette into the floppy diskette drive. Be sure the write-protect switch is off.

NOTE: Be sure to boot from the floppy prior to running the diagnostic tests. Booting from the floppy sets up certain conditions that need to exist for the tests to run properly.

3. Boot the computer from the floppy drive by pressing the **E** key after the beep during the boot procedure. Then press **Enter** twice to accept the date and time.
4. Enter the following command and press **Enter**:

```
2260diag
```

The test starts by checking several options and lists information on the screen.

NOTE: The diagnostic tests are set up to run from the floppy diskette. Do not copy them to the hard disk or a storage card.

5. The menu shown in Figure 6-1 is displayed.

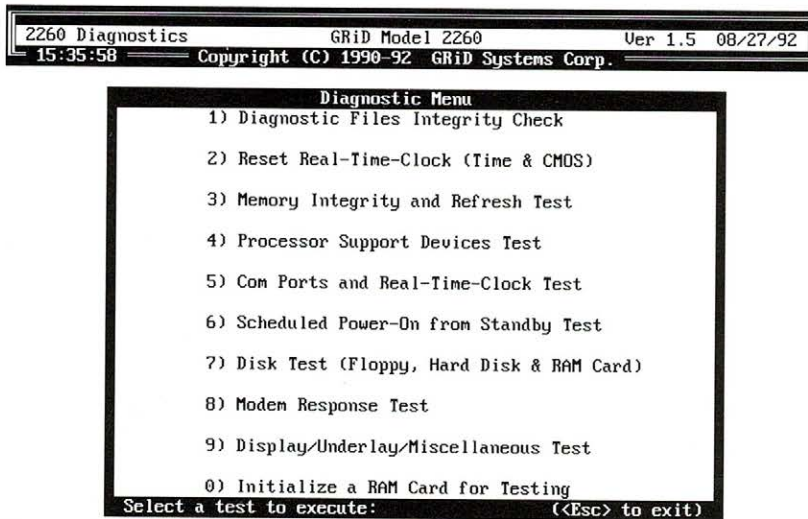


Figure 6-1. Diagnostic Test Menu

The purpose of each of these tests is:

Diagnostic Files Integrity Check	This test automatically verifies that the diagnostic files on the floppy diskette have not been corrupted.
Reset Real-Time-Clock (Time & CMOS)	This test asks you to set the date and time. It also reinitializes the factory default settings and reboots the computer.
Memory Test	This test automatically performs data and address integrity checks on the RAM. It also checks the BIOS ROM.
Processor Support Devices Test	This test automatically checks registers, processor speeds, interrupts, and the soft keyboard.
Com Ports and Real-Time Clock Test	This test automatically checks the function of the serial ports and the printer port. It also tests the real-time clock and associated interrupts.
Scheduled Power-On from Standby Test	This test automatically checks the entering into and exiting from standby.

Disk Test (Floppy, Hard Disk, & RAM Card)	This test automatically checks the reliability of the floppy diskette drive and the internal hard drive. This test does not modify the hard disk contents. It also tests the RAM card if it has been initialized for testing.
Modem Response Test	This test automatically checks the function of the optional internal modem. It performs a serial controller response check and a modem response check.
Display/Overlay/Miscellaneous Test	This test checks the display, LEDs, standby function, speaker, pen, and real-time clock. This test requires operator interaction to verify whether the various items being tested function properly; respond to the prompts on the screen.
Initialize a RAM Card for Testing	This function initializes a RAM card so it can be tested during the Disk Test. This function destroys all existing data on the RAM card.

6. Enter the number corresponding to the test you wish to run. A message is displayed that describes the test and asks if you wish to continue. Press **Y** to run the test.

You should generally perform the tests in the order listed. In Test 2, Reset Real-Time-Clock, your system reboots as part of this test. When you are prompted, press **F1** to continue. Immediately after pressing **F1**, press **E** to boot from the floppy. After your system reboots, enter the command **2260diag** at the prompt to display the Diagnostic Menu.

7. Perform the remainder of the tests. You may perform one or any number of the tests, depending on what areas of the computer you wish to test.

While the tests are being performed, various messages display on the screen. These tell you what is being checked. Files are also written to the floppy diskette.

The only test that does not run automatically is Test 9, Display/Overlay/Miscellaneous Test. This test requires that you respond to a series of prompts in which you test the LEDs, standby button, etc.