GRiD 2101 Disk Storage System Owner's Guide

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Limited Warranty and Limitation of Liability

You should carefully read the following terms and conditions. You will be deemed to have accepted these terms and conditions if you have not returned the product with your proof of purchase to your GRiD dealer, within 5 days of the date of payment.

The term "Products," as used herein, means hardware, hardware parts, and documentation sold by GRiD.

1. Warranty

GRiD warrants that the Products sold hereunder shall be free from defects in materials and workmanship for a period of 90 days after delivery. Defective Products will be repaired or replaced, at GRiD's option, by GRiD during the warranty period. You shall notify GRiD of the defective Product within the 90-day period, obtain a Product Repair Order and return the Product to GRiD along with proof of purchase data. If this Product is delivered by mail, you agree to insure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent. Contact an authorized GRiD Systems dealer or write to: GRiD Systems Corporation, Customer Service Center, 2535 Garcia Avenue, Mountain View, California 94043 for further information.

You are responsible for removing any data or programs or keeping backup copies prior to returning Products to GRiD. GRiD shall not be liable for loss of data contained in any returned equipment.

This warranty is not valid if the Products have been abused, misused, altered, neglected, or if repairs are attempted by unauthorized personnel.

Except as provided above, GRiD makes no warranties, expressed or implied, including any warranty of merchantability or fitness for a particular purpose.

2. Limitation of Liability

In no event will GRiD be liable for special, incidental, or consequential damages, however caused, GRiD's liability under or for breach of this agreement shall be limited to refund of the purchase price.

3. General

You shall not assign this Agreement nor any rights hereunder without the prior written consent of GRiD. GRiD reserves the right to withhold such consent for any reason whatsoever. Subject to the foregoing, this Agreement shall bind and inure to the benefit of the respective parties hereto and their heirs, personal representatives, successors, and assigns.

The Terms and Conditions of this Limited Warranty and Limitation of

Liability and of the Class A Software License Agreement represent the entire Agreement between GRiD and you relating to Product purchases and software licensing and may only be modified in writing, signed by both parties.

You acknowledge that you have read this agreement, understand it, and agree to be bound by its terms and conditions.

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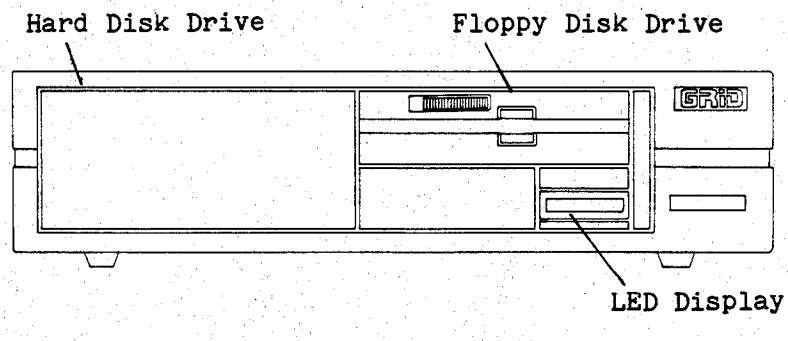
About This Book

This manual introduces you to the 2101 Disk Storage System. It shows how to set up and operate the disk unit, and how to care for it.

Chapter 1: Physical Description

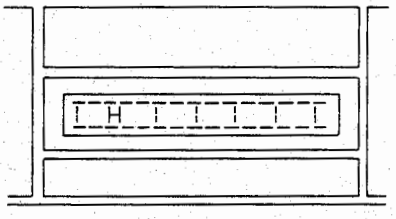
The 2101 Disk Storage System comprises two disk drives in one box: a hard disk drive on the left and a floppy diskette drive on the right. See Figure 1-1 below.

Figure 1-1. The Disk Storage System: Front View

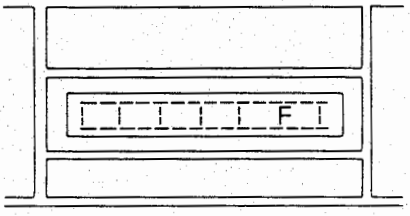


The Front View The front view of the disk system is shown in Figure 1-1 and is described in the paragraphs that follow.

The Display
The 4-digit Light-Emitting Diode (LED) display located below and to the right of the floppy diskette drive opening shows you when either the hard disk or floppy diskette drive is being accessed. When the hard disk is being accessed, the letter "H" lights up:



When the floppy diskette drive is being accessed, the letter "F" is displayed:



The display is also used during the self-test sequence to let you know how the test is progressing. See Chapter 2 for a discussion of the self-test.

The Hard Disk Drive
The hard disk, in the left side of the disk storage system, is not externally visible. It is permanently sealed within its drive and cannot be removed from it. The disk (a rigid platter) spins continuously, though it only reads or writes data when explicitly instructed. When the hard disk drive is being accessed to read or write data, the letter "H" is illuminated on the LED display. The hard disk holds over ten million characters of data.

The Floppy Disk Drive
The 5 1/4-inch floppy diskette drive occupies the right portion of the disk system. The drive only spins the diskette when instructed to read or write data. When the floppy diskette is being accessed to read or write data, the letter "F" is illuminated on the LED display, and the drive emits clicking and other sounds.

Floppy Diskettes
Floppy diskettes, or "floppies," are flexible plastic disks that have been coated with a magnetic material (much like the coating on audio recording tape). The diskette spins inside a protective plastic jacket.

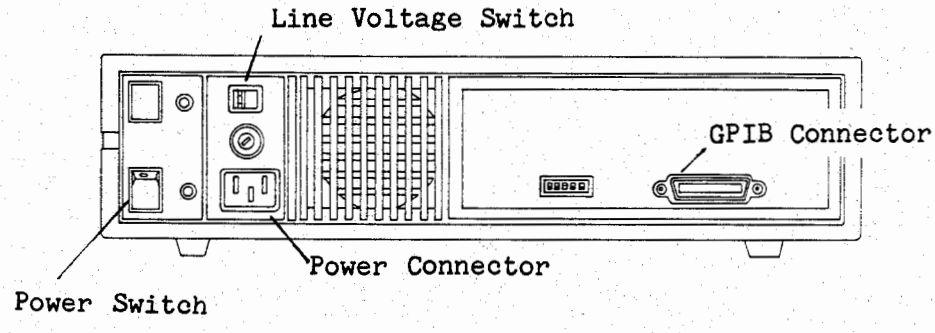
One 5 1/4-inch floppy diskette stores up to 360 thousand characters of data. Floppy diskettes can be removed from the drive when not being used. By changing diskettes you can store and retrieve information for many different applications.

CAUTION: The following Dysan Corporation 5 1/4-inch diskette is the only diskette recommended for use on the floppy disk drive of the 2101 Disk Storage System:

104/2D
Two Sided
Double Density
Soft Sectored
48 TPI

The Rear View Figure 1-2 shows the rear view of the disk storage system.

Figure 1-2. The Disk Storage System: Rear View



The Power Switch
When the Power switch is in the Off position, you can see a little red circle on its top. Pressing the upper portion of the switch will turn on the unit. Pressing the lower portion of the switch will turn off the unit.

CAUTION: Never turn off the disk storage system or the computer when the LED display shows that either the hard disk drive or floppy diskette drive is on. The In-Use display means that file access is taking place. Turning off either the disk storage system or computer could destroy files. Additionally, never turn the disk system on or off while there is a floppy diskette inserted in the disk system.

The Power Connector
The three-pronged power connector provides a ground plug. One end of the power cord supplied with the disk system also has three prongs and should be plugged into an outlet that accepts this type of plug. If the power outlet does not provide proper grounding, read and write errors may occur.

The Fuse
The fuse protects the disk system from out-of-range electrical input. The fuse that comes with the unit is a 1.5-ampere, slow-blow fuse mounted in a gray holder/cover for the 110 VAC Line Voltage setting. (A description of the Line Voltage switch is given in the section that follows.)

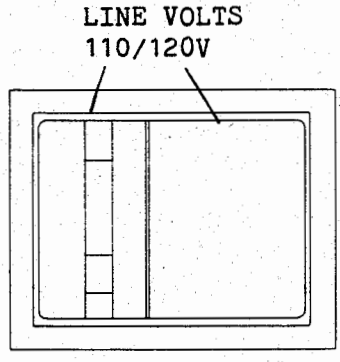
If you switch to the 220 VAC setting, be sure to exchange the 1.5-ampere fuse for a 750-milliampere, slow-blow type fuse, which is mounted in a black holder/cover. You can gain access to the fuse by turning the fuse cover counterclockwise.

WARNING: Turn off the power or unplug the disk system before removing or installing the fuse.

The Line Voltage Switch
The Line Voltage switch lets you switch between 110 volts AC and 220 volts AC. In Figure 1-3, the switch is set to its leftmost position for 110 volts.

CAUTION: Always make sure the Line Voltage switch is on its proper setting before plugging the power cord into an electrical outlet. An incorrect voltage setting could damage the disk system when power is applied. Also ensure that you have the appropriate fuse installed for the line voltage you've selected.

Figure 1-3. The Line Voltage Switch (shown set for 110 volts)

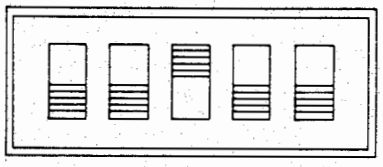


The Test/Reset Switch
The Test/Reset switch resets the internal circuitry of the disk storage system and also initiates a self-test sequence that checks out operation of the hard disk drive. The self-test sequence is described in Chapter 2. You should not need to use this Test/Reset function unless you suspect that the disk system has been malfunctioning.

CAUTION: Pressing the Test/Reset switch while the LED display indicates that the hard disk drive or floppy diskette drive is being accessed can result in loss of data.

The GPIB Connector
Use this connector to connect the disk system to the computer and to other peripherals. Chapter 2 describes the GPIB connector in detail and shows you how to connect the disk system to the computer.

The Address Switches
These switches set up an address that the computer uses to direct data to and from the disk system. The switches should be set with switch 3 On (up) and the others Off (down) as shown below:



Chapter 2: Set Up and Operation

This chapter shows you how to set up and test your disk system and how to use it.

Connecting the Disk System and the Computer To set up the disk system, you need the following items:

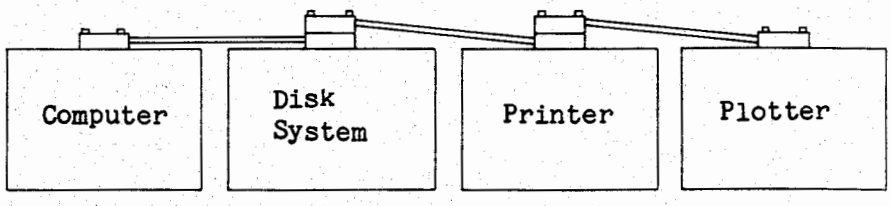
- A GRiD Portable Computer
- The 2101 Disk Storage System
- A power cord
- A GPIB cable

Select a sturdy, flat work area, free of any dirt or debris (old papers, pens, etc.).

CAUTION: Beware of setting the disk system on a carpeted or "plush" surface. This can impede ventilation and lead to damage from overheating.

The GPIB Cable
GPIB cables link most GRiD peripherals. GPIB conventions let you hook any device to any other device. For example, Figure 2-1 shows a disk system, then a printer, and finally a plotter connected to the computer. A device's position relative to the computer doesn't matter. You could just as easily put the plotter first, then the disk system, followed by the printer.

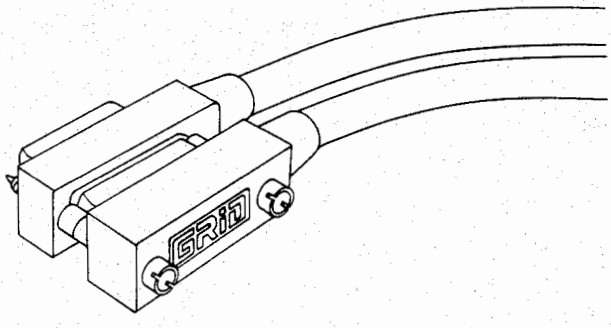
Figure 2-1. A Typical System Configuration Using GPIB Cables



When attaching the GPIB cables, follow the example shown in Figure 2-1. Attach only one connector to the computer and no more than two on any peripheral. See Figure 2-2 below.

The GPIB Connector
The GPIB connector has a "D" shape. Position the broader part of the connector on top. Tighten the screws to ensure uncompromised data transmission. To tighten, use your fingers; do not use tools. Tools may overtighten and cause damage. Avoid applying heavy pressure to the connector itself.

Figure 2-2. Two Connected GPIB Cables



To Connect the Disk Storage System to the Computer

1. Make sure that the computer, the disk storage system, and other peripherals are turned off.

2. Connect a GPIB cable to the connector on the back of the disk system. See GPIB instructions above.

3. Connect the other end of the cable onto the back of the computer. If you have already connected another device to the computer, connect the disk system to another device's GPIB connector.

4. Connect the power cord to the back of the disk system and an appropriate power source. Ensure that the Line Voltage switch on the back of the disk system is set to the correct position.

5. Make sure everything is plugged in, turn the disk system on, and then the computer.

Self-Testing the Disk Storage System After you have connected the disk storage system to the computer and turned on the computer and disk system, you can run a self-test to verify that the disk system is operating properly. To initiate the test, simply press the Test/Reset switch on the back of the disk system. This initiates the following sequence.

First, all four positions on the LED display of the disk system are fully lit as solid squares. Then a sequence of five individual tests are conducted. As each test is being performed, the LEDs display the test that is in progress; for example, TST1, TST2, and so on. Tests 1 and 4 require about 30 seconds each and tests 2, 3, and 5 require only a few seconds each. After all the tests have been successfully completed, the LEDs display "PASS." The GPIB address of the disk system (usually 04) is then displayed in the form "A=04." Finally, the LEDs display "H" (for hard disk drive) and "F" (for floppy diskette drive) to complete the self-test.

If any part of any test fails, the LEDs display an error number, for example "E03", and the self-testing sequence stops at that point. If this should occur, contact the GRiD Resource Center.

Operating the Floppy Disk Drive Operation of the floppy diskette drive consists of following a simple procedure for inserting and removing diskettes from the drive.

To insert a floppy diskette into the floppy diskette drive, rotate the latch mechanism at the front of the floppy drive opening to the horizontal position, then slide the diskette into the opening. See Figure 2-3. Be sure the diskette label enters last and faces upward. The square notch should be on the left side of the diskette. Sometimes a write-protect tab will cover this notch. (Write protecting a diskette is discussed later in this section.)

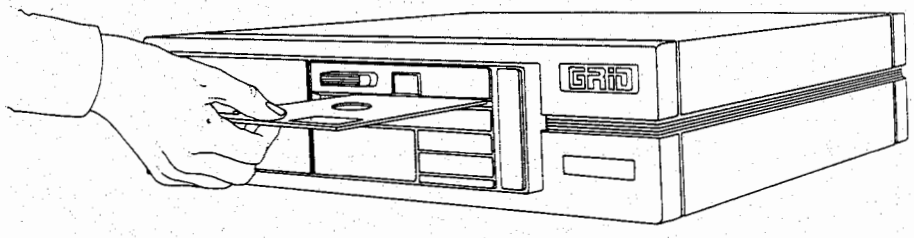
Push the diskette in until you hear a "click" indicating that it is all the way in. Then rotate the latch mechanism clockwise to the vertical position until it "clicks."

CAUTION: Always make sure that the disk storage system is turned on before you insert a floppy diskette. If you turn the power on or

off while a floppy is in the disk system, data on the diskette may be destroyed.

To remove a diskette from the disk system, simply rotate the latch counterclockwise to the horizontal position. The diskette will automatically be ejected from the drive.

Figure 2-3. Inserting a Diskette into the Floppy Drive



Formatting Floppy Diskettes
The disk storage system expects floppy diskettes to have their data organized in a particular format. To ensure that a new diskette can be read and written by the disk system, you must format each diskette before the floppy diskette drive can use it. To format a floppy diskette for GRiD-OS, run the Initialize Media program as described in the Getting Started manual. To format a diskette for MS-DOS, run the FORMAT command as described in the MS-DOS Reference manual.

Write-Protecting Floppy Diskettes
If you have data stored on a floppy diskette that you want to protect from being inadvertently written over, you can put a write-protect tab over the write-protect notch on the edge of the diskette. See Figure 2-3 for the location of the write-protect notch. Typically, a sheet of self adhesive tabs for covering this notch are included in the box in which diskettes are packaged.

Taking Care of Floppy Diskettes
To prevent destroying data on your floppy diskettes, treat them with care -- as though they were fine phonograph recordings. Always keep the following tips in mind:

- Do not touch the surface of the diskettes through the openings in their jackets. An invisible scratch on the surface of the diskette, or even a fingerprint, can cause errors.

- Always return a floppy diskette to its protective envelope after removing it from the drive. You should store diskettes in protective casings -- such as floppy diskette boxes or albums -- and it is best to store them vertically.

- Keep them away from magnetic fields, such as those generated by magnetic office items (paper clip dispensers, magnetic paper holders, etc.) or electronic instruments (TVs, speakers, and even CRTs).

- Do not expose diskettes to direct sunlight or extremes of temperature. For optimum long-term storage, keep diskettes at a temparature between 60° and 70°F (15° to 20°C). The maximum permissable temperature range at which diskettes should be stored is from 50° to 125°F (10° to 52°C).

- Do not bend, fold, staple, or otherwise mistreat a floppy diskette. Never write on a diskette label with any implement other than a felt tip pen and then, only with a gentle pressure.

Device Precedence The computer chooses the device (Bubble Memory, Hard Disk, or Floppy Disk) from which it loads the operating system software according to which device has precedence. (The operating system is a group of programs that give the computer its basic capabilities, such as running application programs and communicating with peripherals.)

The order of precedence is as follows. The computer looks first to the bubble memory for the operating system software. If the software does not exist on the bubble, the computer turns to the hard disk. Finally, if the hard disk doesn't hold the needed program or hasn't reached operating speed, the computer checks the floppy diskette.

It is possible to override this automatic precedence. This becomes necessary only in the case of certain maintenance activities. The rest of this section shows you how to load the operating system from either the hard disk or the floppy diskette and how to return precedence to the bubble.

▶ To Start From the Hard Disk

1. Turn off the computer.

2. Turn on the disk storage system and give it approximately 30 seconds to come up to speed.

3. Turn on the computer.

4. Immediately (within approximately 2 seconds) press the H key

(for hard disk) on the computer keyboard. The hard disk will activate and the letter H will be displayed on the LEDs. You can now release the H key. The computer will load the operating system from the hard disk.

NOTE: If the hard disk does not have the required operating system software, the message "Cannot boot: Storage medium error" will be displayed.

▶ To Start From a Floppy Diskette

1. Turn off the computer.
2. Turn on the disk storage system.
3. Insert a system diskette (one containing a copy of the operating system) into the floppy drive.
4. Turn on the computer while holding down the F key (for floppy disk) on the computer keyboard. The floppy disk will activate and the letter F will light up. Now release the F key. The computer will load the operating system from the floppy disk. If you inserted a diskette that does not have the operating system software, the message "Cannnot boot: Storage medium error" will be displayed.

Returning Control to the Bubble
If you have the bubble memory formatted for GRiD-OS, you can return control to the bubble by simply selecting Bubble Memory as the device on the File form. If you have the bubble memory formatted for MS-DOS, type **E:** to return control to the bubble.

Additionally, if you turn the computer off and then on, control will automatically be returned to the bubble.

Backing Up Files on Floppy Diskette We cannot overemphasize the importance of making copies of important files. This process of backing up files protects your work from accidentally writing one file over another, power failures, media failures, etc. Make backups of files daily, if not more often.

For a discussion on backing up your GRiD-OS files by duplicating them to floppy diskettes, refer to the Duplicate Files section of the GRiD Management Tools Reference manual. For a discussion on backing up your MS-DOS files, refer to the MS-DOS Reference manual.

Chapter 3: Maintenance

This chapter describes how to care for your 2101 Disk Storage System. Although the disk storage system is basically durable, you should treat it as you would any precision instrument -- with care.

Warnings Observe the following warnings. Not following these warnings could lead to possible physical injury.

- Do not operate the disk storage system in a dirty or dusty environment.
- Do not get the disk storage system wet. Electrical equipment should not be operated in a moist environment.
- Do not operate your disk storage system in any potentially flammable atmosphere.
- Do not attempt to open the disk storage system case as it contains no user-serviceable parts. Such action voids your warranty and can damage the disk storage system.
- Arrange any power cords or other cords so they can't be pulled out or tripped over when the disk storage system is in use.
- Make sure you properly ground any power-plug adapter.
- To protect the disk storage system against risk of fire, replace the fuse only with one of the same rating and type. In the U.S.A, use a 1.5-ampere fuse for 110-volt operation. Outside the U.S.A., use a 750-milliampere, slow-blow fuse for 220-volt

operation. For instructions on fuse replacement, see the Fuse section in Chapter 1.

- Always turn off the disk storage system before unplugging it.
- Always turn off and unplug the disk storage system before installing or removing it.
- To operate the unit in the U.S.A., the power requirements are 90-140 Volts Alternating Current (VAC), 47-66 Hertz (Hz), 1.5 Ampere (A), 75 Watts (W). Outside the U.S.A., 160-280 VAC, 47-66 Hz, .750 A, 75 W.

Cautions Observe the following cautions. Not following these cautions could damage your unit.

- Operate the disk storage system only when the surrounding temperature is from 50° to 104°F (10° to 40°C).
- Operate the disk storage system only when the relative humidity level is from 5% to 95% noncondensing.
- Do not operate the disk storage system when the altitude exceeds 10,000 ft (3,000 meters).
- Store the disk storage system where the surrounding temperature is from -40°F to 149°F (-40°C to 65°C).
- Do not store the disk storage system in an altitude which exceeds 12,000 feet (3,600 meters).
- Do not store or set up the disk storage system in direct sunlight.
- Do not subject the disk storage system to unnecessary shock or vibration.

Cleaning Your 2101 Disk Storage System Before cleaning your disk storage system, turn it off and disconnect the power cord from the outlet.

To clean the case, use a slightly damp, soft cloth and, if necessary, a mild, nonabrasive detergent.

CAUTION: Never use any cleaning agent such as dust wax, spray cleaner, or any abrasive substance.

Wipe the case clean and then dry it.

If necessary, dust the rear panel of your disk storage system with a dry cloth. If you like, you can remove the fan filter on the back

of the unit to clean it. It should come out by gently pulling it down and away from the unit with your hand.

WARNING: To prevent shock hazard, never apply any liquid to the rear panel.

Storing Your 2101 Disk Storage Always store your disk storage system between the temperatures -40° and 149°F (-40° to 65°C). Keep it in a clean environment, free from dust and dirt.

Traveling with Your 2101 Disk Storage System When traveling with your disk storage system, carry it with you instead of checking it as luggage. Many transportation carriers cannot cover the replacement cost of your disk storage system should they lose or damage it.

It should be relatively safe to x-ray the disk storage system in airport security checks, but you must make the final decision. You can have it hand-checked, if you wish.

When traveling abroad

- Be sure to bring a 750-milliampere, slow-blow fuse (and its holder) and a European power cord for the different voltage (220-250 volts). These items are available when you purchase GRiD System's European Conversion Kit.

- Before turning on your disk storage system, make sure you change to the 750-milliampere fuse, set the line voltage switch to 220 volts, and replace your power cord with a European power cord. If you are using an adapter, make sure it is properly grounded for nongrounded outlets.

Protecting the Floppy Diskette Drive During Transportation A cardboard piece protects the floppy diskette drive in the 2101 Disk Storage System when it is shipped to you. Save this protective cardboard piece. Place it in the floppy drive when transporting the 2101 Disk Storage System.