OPERATOR'S GUIDE

MODELS 6239/624[illegible]

and 6357/6398/63[illegible]

DISK SUBSYSTEMS

OPERATOR'S GUIDE:
MODELS 6239/6240/6350 and 6357/6398/6399/6400 DISK SUBSYSTEMS

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FIRST EDITION

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PREFACE

This manual tells you about operating the disk drive that comes with the Model 6239/6240/6350 and 6357/6398/6399/6400 Disk Subsystem.

For information on programming the controller, refer to the Programmer's Reference Series: Models 6236/6237, 6239/6240/6350, and 6357/6398/6399/6400 Disk Subsystems, part number 014-701001.

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NOTE: *Throughout the manual, wherever a feature is common to all of the Model 6239/6240/6350 and Model 6357/6398/6399/6400 Disk Subsystems, they are referred to collectively as simply the Disk Subsystem. Similarly, the Models 6239 and 6357 Disk Drives are collectively called the disk drive. Wherever differences exist, the drives are identified individually by model number.*

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CHAPTER 1
ABOUT THE DISK DRIVE

A disk drive is a storage device which allows you to transfer and store data quickly. The 6239/6240/6350 and 6357/6398/6399/6400 Disk Subsystems store the data on nonremovable disks.

A disk is a platter coated with magnetic material over which movable read/write heads are suspended. The heads define concentric circles, called tracks, on each side, or recording surface, of the disk.

The disk drive has five disks attached in a stack to the shaft of a motor (the spindle motor) as shown in Figure 1-1. The spindle motor supplies a constant 2940-rpm rotation to the 6239 disks or 2775-rpm rotation to the 6357 disks.

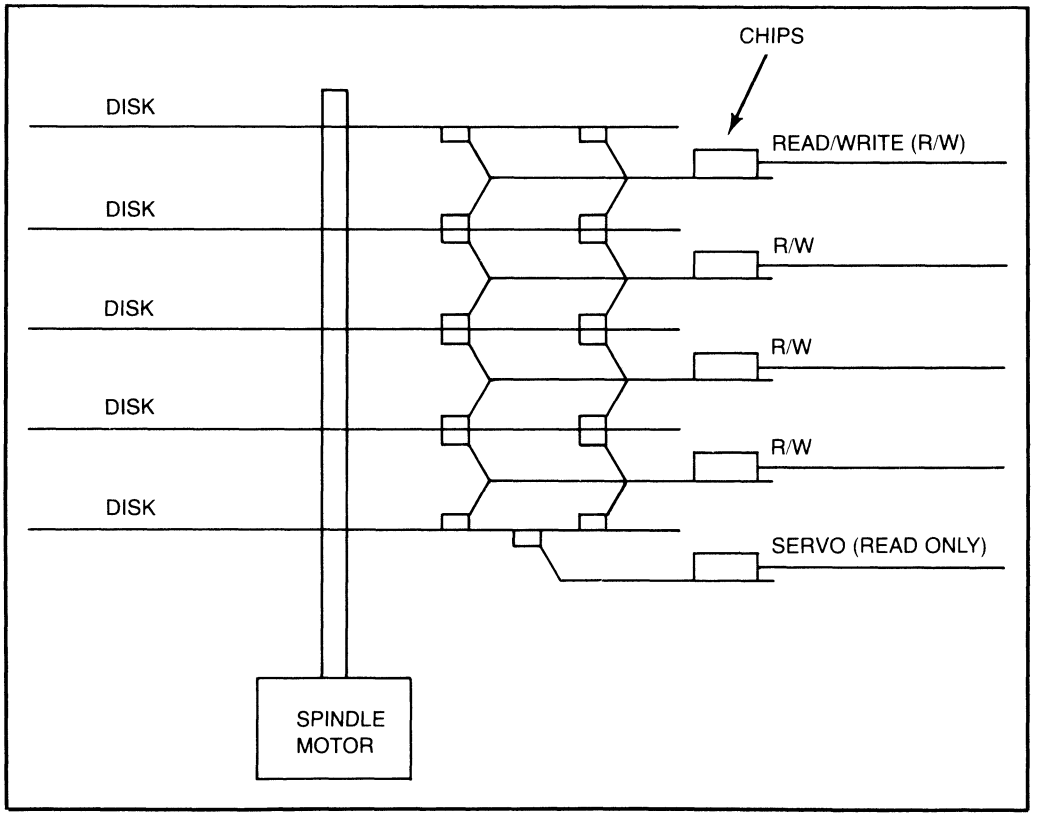

Figure 1-1. Disks on the Spindle Motor Shaft

All surfaces are used except the top of the top disk and the bottom of the bottom disk, making eight recording surfaces available for read/write operations on each drive. Each surface has two heads. Table 1-1 provides a comparative description of the recording surfaces of the various models covered by this manual.

Table 1-1. Recording Surfaces

Model Number*	Number of Drives	Number of Surfaces	Tracks per Surface
6239	1 592MB	8	981
6240	3 592MB	24	981
6350	9 592MB	52	981
6357	1 888MB	8	1530
6398	2 888MB	16	1530
6399	3 888MB	24	1530
6400	6 888MB	48	1530

* "-A" as a model number suffix denotes an add-on drive.

The smallest unit of data that you can address on a disk is a sector, which consists of 512 bytes of data. Each of the tracks on a drive's surface contains 75 sectors on a 592MB drive or 72 sectors on an 888MB drive.

Figure 1-2 will give you some idea of how disks are organized into tracks and sectors. Disks require initializing or formatting to ensure that the drive selects the appropriate sector(s) when transferring data. If your only concern is operating the disk drive, you will not have to worry about initializing disks. You can find information on initializing a disk in the *Programmer's Reference Series: Models 6236/6237, 6239/6240/6350, and 6357/6398/6399/6400 Disk Subsystems*, part number 014-701001.

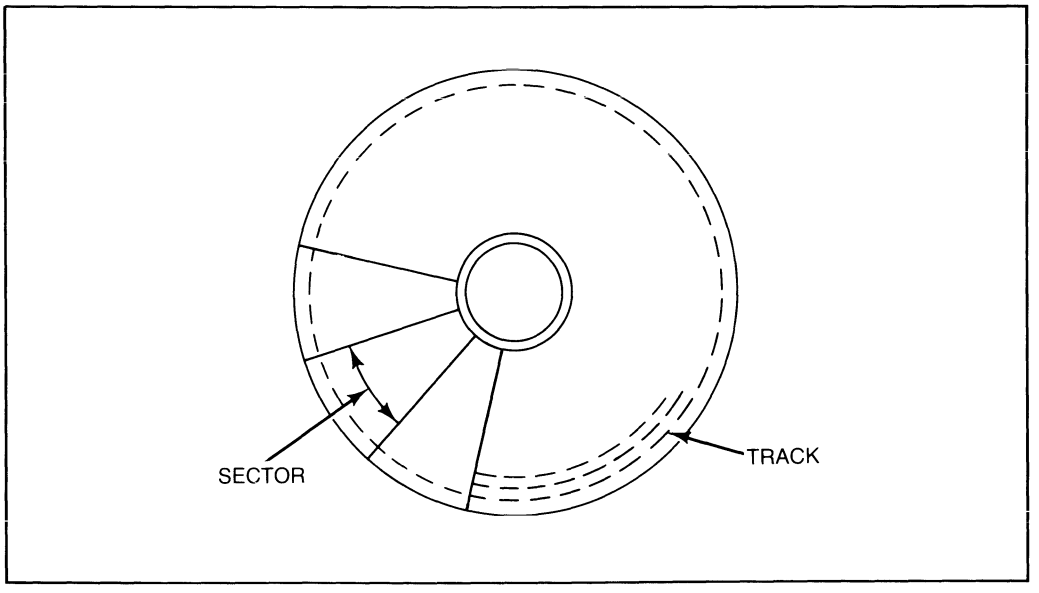

Figure 1-2. Disk Format

CHAPTER 2
OPERATING THE DISK DRIVE

This chapter describes the disk drive controls and indicators, and tells you how to use them to operate the drive.

THE CONTROL PANEL

The drive's control panel consists of switches, lights, and digital displays (see Figure 2-1). Other switches, described later, are located under the front dress panel.

The On/Off Switch

THE ON/OFF switch controls the drive's power. It is a rocker-type switch located on the left of the control panel. On models with more than one drive, an additional switch located on the front, top edge of each cabinet of three drives controls power for the entire cabinet. With these models, you leave the individual drives' ON/OFF switches in the ON-1 position and use the cabinet power switch to power-up or power-down all three of the drives at once.

You may need to cycle an ON/OFF switch if an error occurs. "Cycling" means turning the switch off and then on again. This sometimes causes the disk to correct the error.

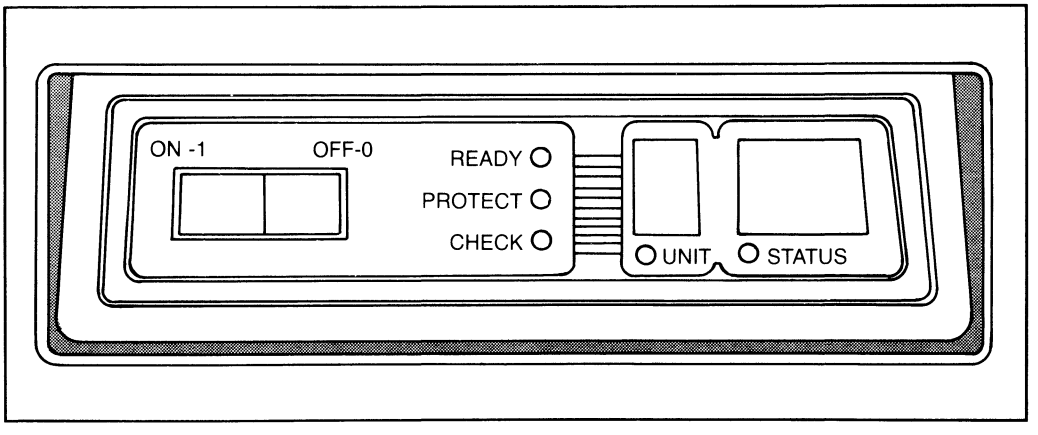

Figure 2-1. The Control Panel

Powering-Up the Disk Drive

Turn the power switch on.

As the disk drive powers-up, you need to keep an eye on the control panel for any indications of error conditions which may occur as the drive performs internal self-diagnostics. If a problem arises, the drive will indicate it in one of the the three areas on the control panel shown in Table 2-1.

Table 2-1. Problem Indicators and Responses

Indicator(s)	Function	Your Response
Lights	Each time it is powered-up, the drive first turns on all the lights except CHECK. It then turns off all the lights and turns on CHECK. This lets you see if a light is stuck on or burnt out. A malfunctioning light could cause an incorrect display on the panel.	Report any malfunctioning light to service personnel. You can still use the drive, provided no other problem exists.
Unit Display	If F appears in this display, the drive has detected a shut-down status and has shut itself down completely.	Try cycling the ON/OFF switch. If that does not help, report the error code appearing in the Status display to service personnel.
Status display	The drive runs nine tests on various parts of its system. As this occurs, the Status display counts down from 09 to 01. If all the tests are passed, the Status display goes blank. If any test fails, its error code appears in the Status display.	Report the error code to service personnel.

Powering-Down the Disk Drive

Turn the power switch off.

Before removing power, make sure that the disk drive is released from the operating system. The procedure for doing that depends on your particular system. If you do not release the drive, you may lose data.

Lights

The control panel has five lights which indicate internal conditions of the drive. This section tells you what each light indicates when it is on or off.

The READY Light

ON The drive has completed the power-up tests and is ready to receive commands from the controller.

OFF If the CHECK light is also off, the drive has received a hard reset, either from its own power system or from the controller. The drive automatically begins the power-up sequence again.

The PROTECT Light

ON The controller cannot write to the disk, for one of these reasons:

- The drive's protect switch is on (only service personnel should touch this switch).
- The drive has set the protect condition because a read/write error has occurred.
- The power-up sequence, which turns the light on, is still in progress.

If the light comes on after the drive is powered-up, try cycling the power switch. If that does not help, report the error code to service personnel.

OFF The controller can write to the disk.

The CHECK Light

ON The dc power source has been interrupted, so that only ac power is being supplied. The drive may have detected an internal condition and removed the dc power supply.

Try cycling the power switch. If that does not help, report the error code to service personnel.

OFF If CHECK light is off and the power switch is on, then DC power is being properly supplied.

If the CHECK light is off and the power switch is also off, then ac power is not being properly supplied. You may find that the drive is not plugged in, or that the breaker on the back of the drive is turned off.

The STATUS Light

ON An error condition has interrupted normal drive operation. The controller may be able to correct the error itself; if so, the STATUS light will go off.

If the controller cannot correct the error, the light continues to glow. In that case, report the STATUS code to service personnel.

OFF The drive is operating with no error condition.

The UNIT Light

ON The number on the unit digital display is the current unit number.

OFF The 3-digit number on the digital display is the current cylinder number. The unit digital display shows the hundreds digit, and the status digital display shows the tens and ones digits. Service personnel use this number for diagnostics.

The Digital Displays

In conjunction with the panel lights just described, the two digital displays on the control panel indicate coded information about the drive.

The Unit Digital Display

This display is located directly above the UNIT light on the control panel. Depending on whether the UNIT light is on or off (as described in the section on the UNIT light), the display indicates either the unit number or the cylinder number.

Up to four disk drives can be attached to each controller. The unit number indicates which of the four drives a particular unit is. The number is generally set during installation. Resetting the diagnostic switches (described in the section on Unit Switches that follows) may change the number's meaning.

For faster access, disk drives usually store related sets of data (records) on the same track number of different disk surfaces. These form cylinders of information. The cylinder number indicates which of the disk drive's cylinders is in current use. On Model 6357/6398/6399/6400, the cylinder information display is in hexadecimal.

The Status Digital Display

This display is located directly above the STATUS light on the control panel. The display shows the code for any error that interrupts drive operation. The error code is a 2-digit hexadecimal number. The valid digits are 0 through 9, plus A, b, C, d, E, and F. Figure 2-2 shows the difference between 6 and b. These two symbols are easily confused.

When an error code appears, there is no need for you, as the operator, to try to figure out what it means. Just note the error code and report it to service personnel.

UNIT AND DIAGNOSTIC SWITCHES

If you remove the front dress panel (as shown in Figure 2-3), you will find some additional switches.

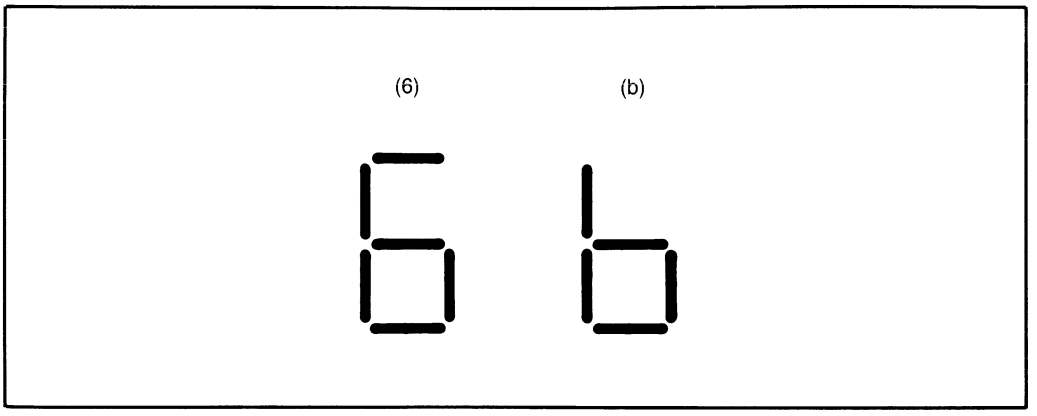

Figure 2-2. Status Code Digits

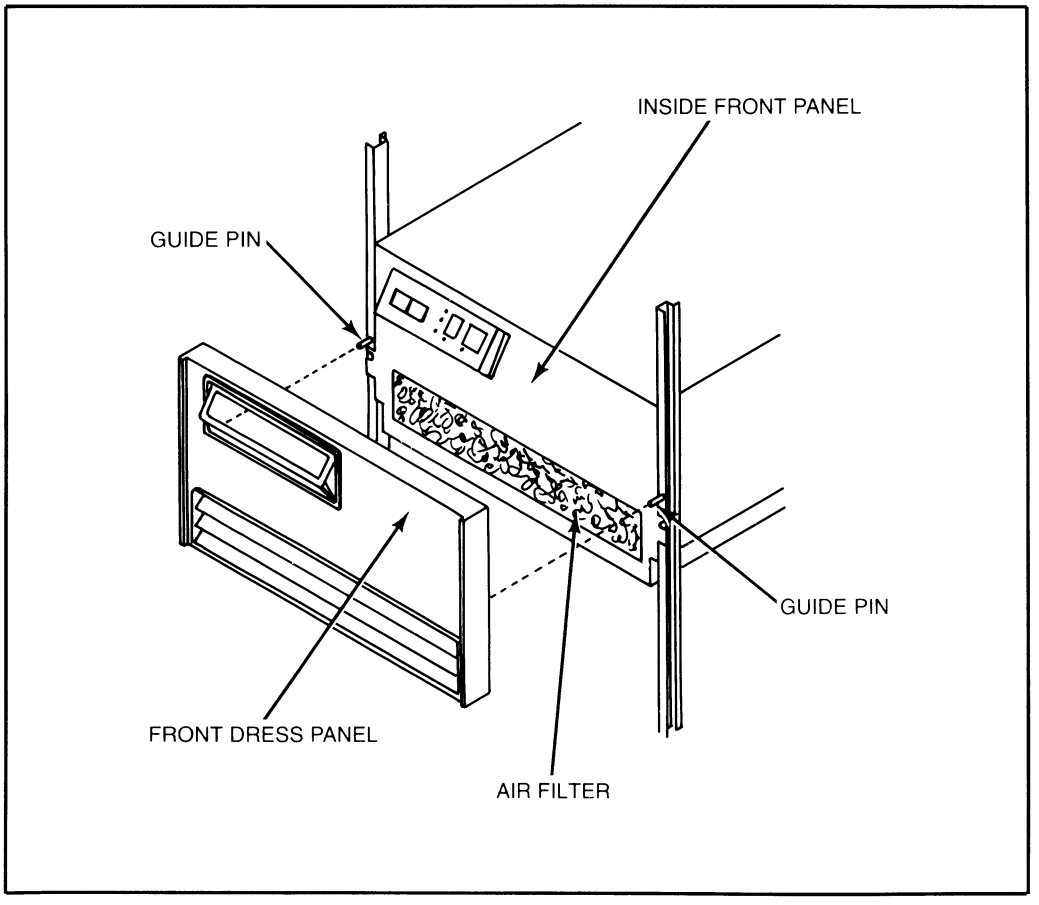

Figure 2-3. Removing the Front Dress Panel

To remove the front dress panel, grasp it firmly at each end and pull the panel out. When you want to replace the panel, align the panel holes with the guide pins (see Figure 2-3), then push the panel in until it clicks in place.

Figure 2-4 shows the switches you will see on the lower side of the indicator box. The two rightmost switches (1 and 2) are unit switches. The two leftmost switches (3 and 4) are diagnostic switches.

Unit Switches

The unit switches set the unit number of the drive (up to 4 drives can be attached to a single controller). Different switch combinations can assign the numbers 0, 1, 2, or 3. These combinations are shown in Table 2-2. Note that Switch 2 is on the left and Switch 1 is on the right.

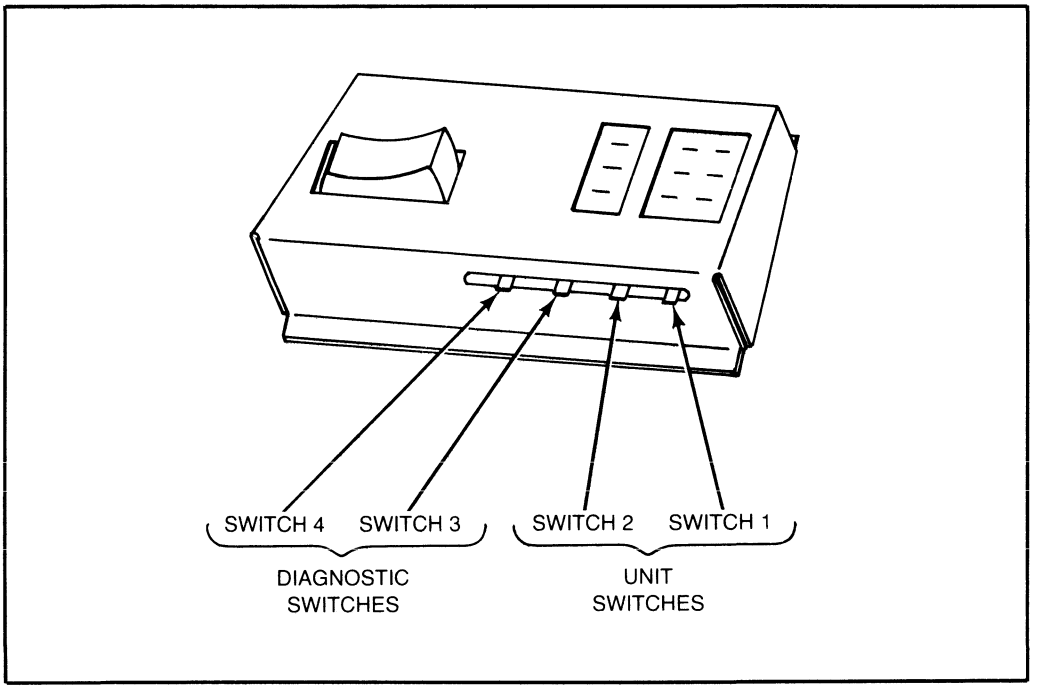

Figure 2-4. Unit and Diagnostic Switches

Table 2-2. UNIT Switch Combinations

Switch 1	Switch 2	Unit Number Assigned
OFF	OFF	0
OFF	ON	1
ON	OFF	2
ON	ON	3

The unit number is usually set when the device is first installed.

> **CAUTION:** *The unit number should be set before the drive becomes ready for use. If you need to change the switch settings after the drive is ready, make sure the system is not using the drive when you make the changes.*

Diagnostic Switches

The two leftmost switches (3 and 4 in Figure 2-4) are for diagnostics. Normally, only service personnel should change these switches. Do not change them while the drive is running. Refer to the Maintenance Service Guide for your drive for details about the diagnostics associated with these switches.

CLEANING THE AIR FILTER

The air filter should be cleaned regularly. It is made of a porous material that washes easily and dries quickly.

First remove the front dress panel (see Figure 2-3). The filter is attached to the unit by an adhesive strip located on the chassis panel. Pull the filter off. Run it under water, and shake it dry. Then put the dry filter back, lining it up with the top of the adhesive strip on the unit. Finally, replace the front dress panel.

> **CAUTION:** *Never run the drive if the air filter is not in place.*

Occasionally, the filter will need to be replaced. Its Data General part number is 0002011044.

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