

# Welcome to DiscWizard 2000!

DiscWizard is a Windows-based installation program that overcomes the limitations of system BIOS and operating systems and makes adding a new hard drive to your system easy. DiscWizard will analyze your computer system and create a Custom Installation Manual that provides step-by-step instructions to guide you through the disc drive installation. DiscWizard was developed for Seagate by ONTRACK Data International, Inc.

To use DiscWizard, follow these steps BEFORE attaching your new hard drive:

1. Boot your machine and start Windows.
2. Insert the DiscWizard installation CD into your CD-ROM drive and select the DiscWizard Install Software from CD option.
3. The install application will copy the necessary DiscWizard files to your hard drive. DiscWizard will then:
  - ask you how you wish to set up your new drive
  - create a Custom Installation Manual for jumpering and attaching your drive
  - prepare your new hard drive for use

DiscWizard requires Microsoft Windows 95 or 98. Disk Manager is included with DiscWizard to support other operating systems such as Windows NT and OS/2.

Disk Manager<sup>®</sup> is a DOS-based program, meaning it is not limited to Windows. Therefore, all end-users installing a new disc drive, including those with high-speed Pentium chips, will benefit from this program. In addition to solving BIOS limitations for older systems, Disk Manager facilitates extremely fast partitioning and formatting for both old and new systems and is the perfect solution for single drive installations.

To install your hard disc drive using Disk Manager, simply follow these basic steps:

4. Follow the instructions that DiscWizard provides you for setting your system Setup (CMOS), jumpering your drive(s), and physically installing your hard disc. Disk Manager assumes power, cables, jumpers, etc., are connected and installed properly.
5. Create a Disk Manager boot diskette from the DiscWizard CD-ROM or select "Create Disk Manager diskette" from the Maintenance menu in DiscWizard.
6. Insert your Disk Manager diskette into drive A: and reboot your computer.
7. When the installation is complete, remove the Disk Manager diskette from drive A: and boot from the hard disc.

See the Disk Manager Online Manual for more information.

Data Advisor is included with DiscWizard to quickly assess the health of your hard disc drives. Data Advisor is a diagnostic utility that will scan your system for viruses, memory errors, and a wide variety of disc corruptions that can lead to data loss. It uses a self-booting diskette, so it will run even if your whole system has crashed.

Data Advisor will . . .

- Quickly assess the health of your hard disc drive identifying potential problems that could lead to data loss
- Advise you of the various options for recovering lost data
- Help you avoid expensive and unnecessary downtime
- Identify potential problems when used as part of a regular preventive maintenance program

Data Advisor performs the following diagnostic tests.

- Evaluates your hard disc drive capacity, electronics and media integrity
- Analyzes file systems and structures
- Checks critical boot sectors, reads the Master Boot Record and cross-checks partition tables and CMOS.

To use Data Advisor, follow these steps:

8. Create a Data Advisor boot diskette from the DiscWizard CD-ROM or select "Create Data Advisor diskette" from the Maintenance menu in DiscWizard.
9. Shutdown Windows and boot directly from you Data Advisor diskette.
10. Select Data Advisor Diagnostic from the main menu.

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## BIOS LIMITATIONS

Included here are brief explanations of a number of drive capacity limitations that exist in the computer industry. The use of DiscWizard or Disk Manager and their Dynamic Drive Overlay offers a solution to each of these problems.

### 528 MB Limitation

Using the traditional IDE interface limits the system to a maximum drive capacity of 528 MB. This limitation is due to Int 13h (BIOS) and IDE field sizes for the CHS (Cylinder, Head, and Sector) entries.

Because the system must perform a translation between the CHS parameters that are recognized by the drive and those established in the Int 13h code, parameters are limited to the smaller field sizes that BIOS and the IDE register set allow. The chart below displays the BIOS, IDE and limiting field size.

	BIOS	IDE	Limit
Sectors per Track	63	255	63
Number of Heads	255	16	16
Number of Cylinders	1024	65536	1024
Maximum Capacity	8.4 GB	139.9 GB	528 MB

The maximum system drive capacity in a combined BIOS/IDE setup is determined by the limiting field size -- 528 MB. Currently, computers are being shipped with a BIOS that implements Extended Int 13h or "Logical Block Addressing" (LBA), both of which are solutions to the 528 MB limitation.

### 4096 Cylinder (2.1 GB) Limitation

Some computers have a BIOS that does not accommodate the "13<sup>th</sup> bit". The 13th bit is needed to provide support for a drive having 4096 or more cylinders. The chart below displays the corresponding cylinder values in decimal, hex, and binary values.

<u>DECIMAL</u>	<u>HEX</u>	<u>BINARY</u>	<u>SIZE</u>
1023 =	3FF =	10 bits =	528 MB
2047 =	7FF =	11 bits =	1.0 GB
4095 =	FFF =	12 bits =	2.1 GB
8191 =	1FFF =	13 bits =	4.2 GB
16383 =	3FFF =	14 bits =	8.4 GB

If you have added a new drive and your system locks up at boot time (right after turning power on) or during System Setup, there may be several causes. Verify that the data cable is properly attached to your drive, that pin 1 is correct, and that the cable is not installed off a row of pins. If your new drive is larger than 2.1GB and your System Setup (CMOS) is set to "AUTO", you may have a BIOS with a 4096 or greater cylinder limitation. Power off your system, remove your new drive, and follow the instructions that DiscWizard provides. When configuring System Setup (CMOS), DO NOT USE "AUTO". Rather, choose one of the following:

- USER DEFINABLE set to 1024 cyls 16 hds 63 sects
- Drive type 1.

Another option is to contact your computer manufacturer to get a BIOS upgrade that will support more than 4096 cylinders.

### 6322 Cylinder (3.27 GB) Limitation

Some computers have a BIOS that does not accommodate a cylinder value over 6322. If you are in CMOS Setup attempting to set the cylinder value higher than 6322 (for a 3.27 GB+ drive) and your computer hangs, your computer may have a BIOS with this limitation. To by-pass this limitation, you have two options:

- Set the cylinder value to 1024 or less and use Ontrack's DDO to provide support for the whole drive.

- Contact your computer manufacturer for a BIOS upgrade, if one is available.

### **Invalid BIOS information**

Some computers have a BIOS that may display invalid information in the CMOS setup. This issue may show up in one of two ways:

- The CMOS will display the drive parameters and capacity correctly. However, it is not translating the drive correctly.
- The CMOS will display invalid drive parameters. However, the BIOS is translating the drive correctly.

Ensure your drive is translated to its full capacity by checking the actual drive size when you create partitions on the drive.

### **8.4 Gigabyte limit**

If your drive is larger than 8.4 gigabytes, the capacity may exceed the limits of your system BIOS and operating system. Most system BIOS cannot support ATA drives this large. DOS and Windows operating systems limit the drive capacity to 8.4 Gigabytes per physical drive and 2 Gigabytes per partition. Because of these limitations, a 32-bit file allocation table (FAT32) is required to achieve full capacity of your drive beyond 8.4 Gigabytes. To achieve full capacity of your drive, you need a Windows operating system that supports FAT32 and BIOS support for drives greater than 8.4 Gigabytes, from one of the following:

- A third-party device driver, such as DDO
- An intelligent ATA Host Adapter
- A system BIOS upgrade.