

Western Digital

Hard Drive *Installation Guide*





Western Digital EIDE Hard Drive

Installation Guide

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1

Before Getting Started

Thank you for purchasing a Western Digital hard drive. This installation manual provides instructional steps and corresponding illustrations to make the installation process of your new hard drive as quick and easy as possible. For all the latest news and product updates, visit our Web site at www.westerndigital.com.

Kit Contents

- Western Digital IDE hard drive
- IDE interface cable (40-pin, 80 conductor)
- Mounting screws and jumper shunt
- Quick Install poster
- Data Lifeguard™ Tools software diskette

Hard drives larger than 137 GB include the following items:

- Ultra ATA controller card
- Ultra ATA drivers diskette

Gather These Materials and Tools

- Computer system manual
- Operating system manual
- Operating system installation diskette or CD
- Small Phillips and flat-blade screwdrivers

Unpacking and Handling Procedures

Western Digital hard drives are precision instruments and should be handled with care during unpacking and installation. Hard drives can be damaged by rough handling, shock and vibration, or electrostatic discharge (ESD). Be aware of the following precautions when unpacking and installing your Western Digital hard drive.

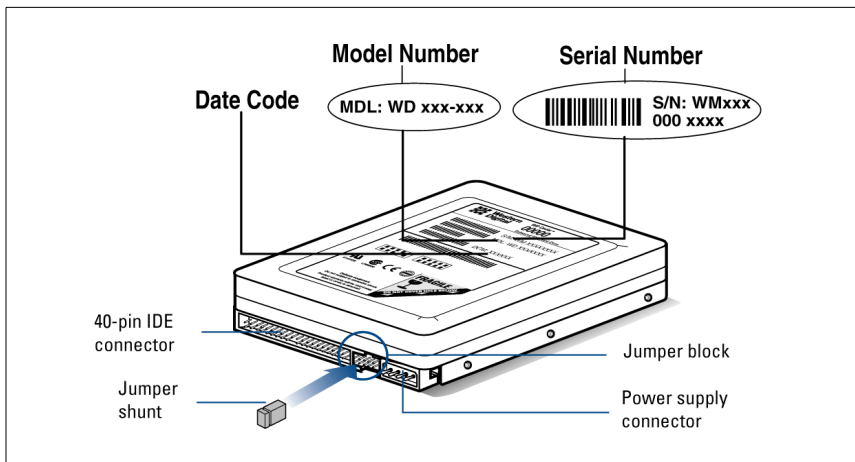
- Do not unpack your hard drive until you are ready to install it. Your hard drive is packaged in a static shielding bag. Use this bag to place your hard drive in after unpacking.
- Save the packing materials in case you need to return your hard drive. Your warranty will be void if your returned hard drive is shipped in anything other than the original packaging or Western Digital approved materials.
- To avoid ESD problems, ground yourself by touching the metal chassis of the computer before handling the hard drive. Articles of clothing generate static electricity. Do not allow clothing to come in direct contact with the hard drive or circuit board components.
- Handle the hard drive by the sides only. Avoid touching the circuit board components on the bottom of the hard drive.
- Do not drop, shake, or knock down the hard drive.
- Do not stack hard drives or stand your Western Digital hard drive on its edge.

Record Your Hard Drive Information

In the table that follows, write down the serial number, model number, and date code listed on your new Western Digital hard drive. The complete serial number, model number, and date code are on the large label at the top of the drive. Please see the illustrations below.

CAUTION: Do not remove, tear, or damage the tape seal or any labels from the drive; these actions will void the warranty.

Serial Number:	
Model Number:	Date Code:



Backup Your Data

Before performing any hardware installation, protect your data by backing up your existing hard drive before installing your new Western Digital hard drive. Most operating systems include a backup utility. Refer to your operating system or utilities documentation for procedures.

Open Your Computer

1. Power down the computer.
2. Unplug the power cord.
3. Remove the computer system outside cover (refer to your computer system manual for instructions).

IMPORTANT: If your Western Digital hard drive kit came with an Ultra ATA controller card, proceed to page 7. If not, continue with the instructions in the next section.

2

Install the Hard Drive without a Controller Card

Determine Appropriate Drive Configuration

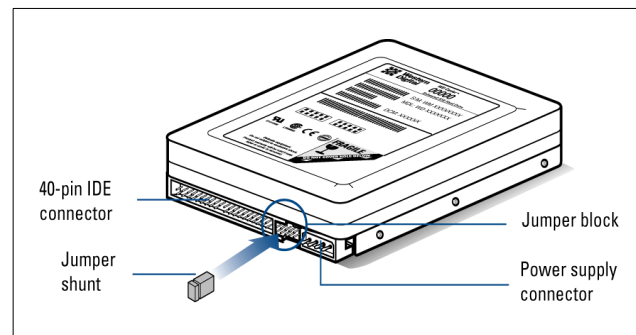
The default jumper setting for Western Digital hard drives is Cable Select (CSEL). However, not all computer systems and motherboards support this setting. You will first need to determine whether your system or motherboard supports Cable Select as follows:

1. If your system does not support Cable Select or if you are uncertain, we recommend using the Master/Slave configuration.
2. If there is an existing IDE device installed, check the jumper settings to see if it is configured for Cable Select. If it is, then your system supports Cable Select.
3. If the IDE device installed is not configured for Cable Select or if you do not have an IDE device installed in your computer, check your system documentation or contact your system/motherboard manufacturer to determine if Cable Select is supported.

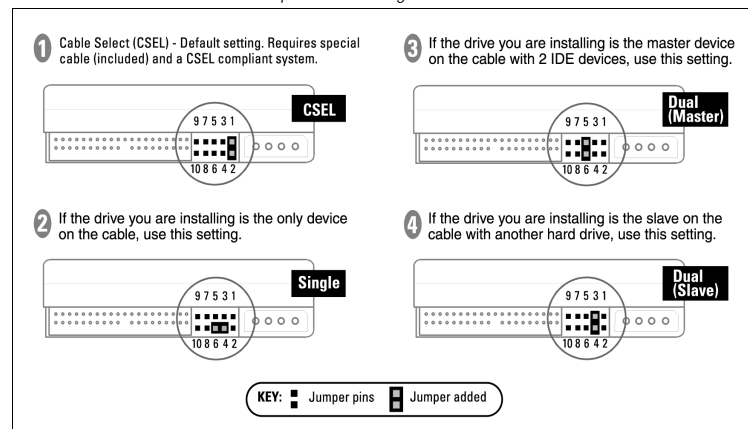
Set the Jumpers

Jumper settings are used to determine the order in which IDE devices (i.e. hard drives, CD-ROM drive, etc.), attached to a single cable, are detected by the system.

Western Digital IDE hard drives have a 10-pin jumper block located next to the 40-pin IDE connector on the hard drive. After you have determined the appropriate drive configuration, you must jumper the drive(s) accordingly. Identify the procedure that corresponds to your configuration.



10-pin Western Digital Hard Drive



Cable Select Configuration

Cable Select requires a special cable (included in your kit). If your system supports Cable Select, there is no need to reposition the jumper shunt on the drive. If you are installing your new Western Digital hard drive with an existing IDE drive on the cable, make sure that the other drive is also jumpered as Cable Select. If your system does not support Cable Select or if you are uncertain, use the Master/Slave configuration.

Standard Jumper Settings

If you determined that your system does not support Cable Select or if you are uncertain, use the following information to properly jumper your new Western Digital IDE hard drive.

NOTE: Not all hard drive manufacturers use the same jumper configurations. If you are installing your new Western Digital hard drive along with a non Western Digital hard drive, obtain jumper setting information from the original hard drive manufacturer.

Single Configuration

Single - *Installing the new drive as the only drive in the system:*

If installing your new Western Digital hard drive as the only IDE device on the cable, then move the jumper shunt on the drive to pins 4 and 6.

Master/Slave Configuration

To set up the Master/Slave configuration, one device on the cable must be jumpered as Master (designated as the primary device) and the other jumpered as Slave (designated as the secondary device).

If multiple IDE ports are used, each port has its own Master/Slave configuration. The primary IDE port is ordered first, then the secondary, and so forth. Therefore, it is possible to have two Master drives and two Slave drives.

Master - *Installing the new drive as the primary drive:*

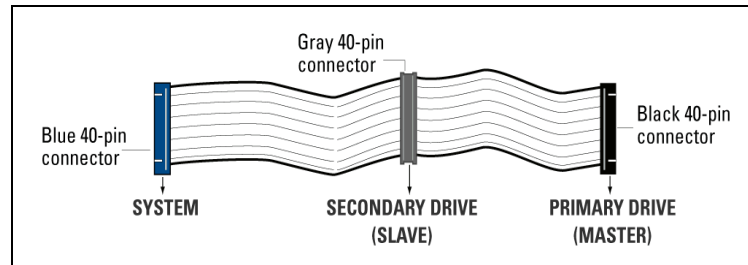
If installing your new Western Digital hard drive as the Master drive on the cable with two IDE devices, then move the jumper on the drive to pins 5 and 6. Next configure the jumper on the other IDE device as Slave.

Slave - *Installing the new drive as the secondary drive:*

If installing your new Western Digital hard drive as the secondary drive on the cable with two IDE devices, move the jumper shunt on the drive to pins 3 and 4. Next configure the jumper on the other IDE device as Master.

Install the Hard Drive

IMPORTANT: Your new Western Digital hard drive must be installed using the 40-pin, 80 conductor cable included in the kit.



1. Connect the IDE Interface Cable to the Hard Drive(s).

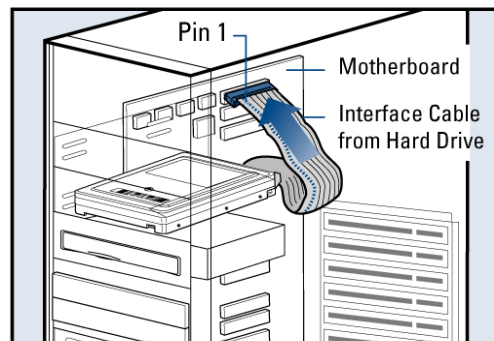
a) If installing the hard drive as the only drive on the cable:

Connect the black connector of the IDE interface cable to the drive.

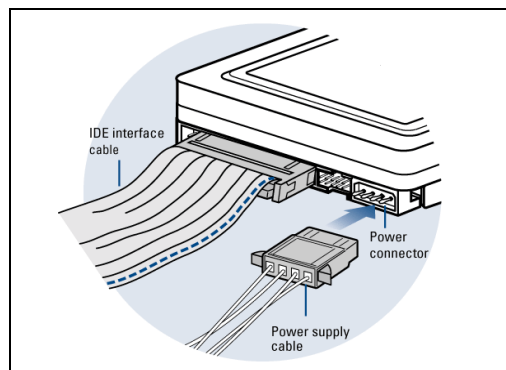
b) If installing two drives on the same IDE interface cable:

Configure the bootable drive as Master and the other drive as Slave; then connect the Master drive to the black connector of the IDE interface cable and the Slave drive to the gray connector.

2. Connect the IDE Interface Cable to the Motherboard: Attach the blue end of the IDE interface cable to the 40-pin connector on the motherboard. Match pin 1 on the IDE interface cable to the connector on the motherboard..



3. Connect the Power Supply Cable: Attach the computer system power supply cable to the 4-pin power connector on the back of your new Western Digital hard drive. The 4-pin connector is keyed to ensure proper insertion.



4. **Secure the Hard Drive:**

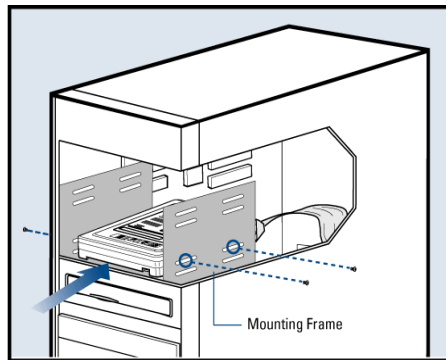
a) If securing the hard drive in a 3.5-inch drive bay,

Secure the Western Digital hard drive in an available drive bay (typically adjacent to the floppy disk drive) using the four mounting screws provided. Mounting brackets are not required.

NOTE: For proper grounding, be sure to use all four screws.

b) If securing the hard drive in a 5.25-inch drive bay,

You will first need to install 5.25-inch mounting hardware in order to properly mount the hard drive. If you do not have mounting brackets contact your system manufacturer or your local computer dealer or call Western Digital technical support.



Power On Your Computer

1. Replace the system cover, reconnect the power cord, and power on the system. At startup, the computer will display all the devices detected on the system.
2. If the drive you installed is not detected, restart the computer.
3. At startup, run the CMOS Setup program. Refer to your system manual for instructions.
4. Select Auto Config drive type.
5. Enable LBA or **Translation**. Most systems manufactured after 1995 support LBA.
6. This concludes the hard drive installation process.
7. To set up and copy files, proceed to "Data Lifeguard Install Software" page 14.

Register Your Product

Take advantage of Western Digital special offers and product updates by registering your new hard drive online at www.wdc.com/products/registration.

3

Install the Hard Drive with a Controller Card

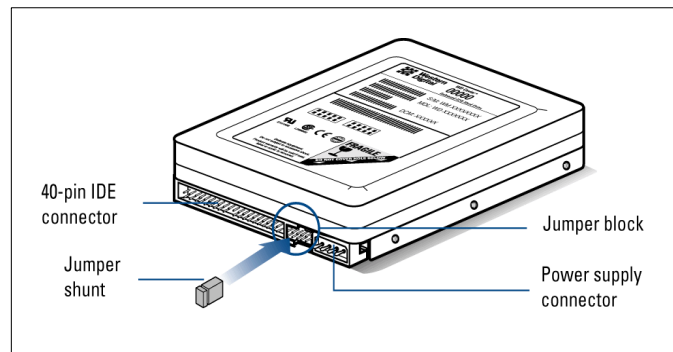
Set the Jumpers

IMPORTANT: This sections applies to the Western Digital hard drives that came with an Ultra ATA controller card. If your hard drive kit did not come with a controller card, you must follow the procedures on page 3.

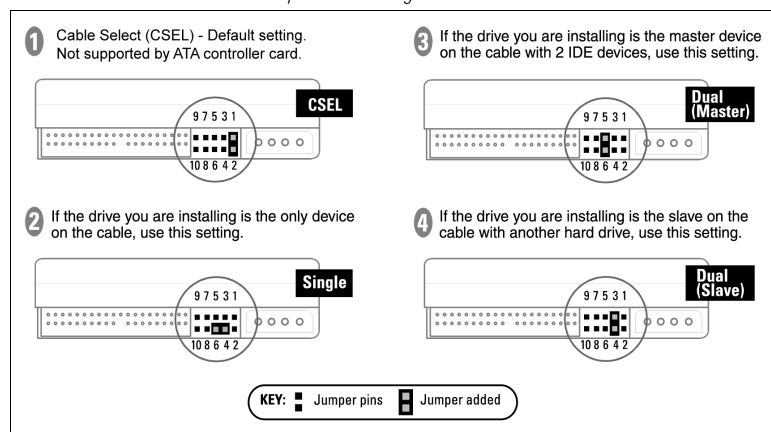
The default setting for your new Western Digital hard drive is Cable Select (CSEL), which requires a special cable (included in your kit). However, the Ultra ATA controller card does not support this setting. To use the Ultra ATA controller card with your new Western Digital hard drive, you must change the jumper setting. The appropriate jumper setting for your new hard drive will vary depending on your drive configuration. Identify your drive configuration and jumper your new Western Digital hard drive to the recommended setting.

NOTE: Both Master/Slave and Cable Select configurations refer to having multiple devices attached to the same IDE interface cable. If you are connecting only one device to the IDE interface cable, then the device is considered to be a Single drive.

Western Digital IDE hard drives have a 10-pin jumper block located next to the 40-pin IDE connector on the hard drive.



10-pin Western Digital Hard Drive

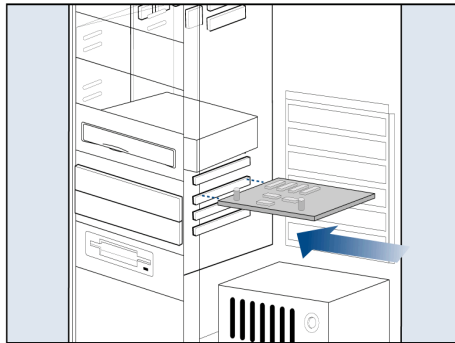


Install the Controller Card

IMPORTANT (Windows NT 4.x/2000/XP Users Only): Hard drives connected to the Ultra ATA controller card will not boot into the Windows operating system without driver support. If you wish to use your current bootable hard drive with an existing Windows operating system on the controller card, you must first install the drivers onto the old drive prior to installing your new Western Digital hard drive. Proceed to "Install Ultra ATA Drivers" on page 11.

The Western Digital Ultra ATA controller card fits into any available 32-bit PCI (must be PCI 2.1 or 2.2 compliant) expansion slot on your system motherboard.

1. Turn off the computer, unplug the power cord from the system, and remove the outside cover.
2. Remove the outside slot cover of an available 32-bit PCI slot on the motherboard.
3. Install the controller card into the open slot. Handle the controller by the sides only to avoid touching the circuit board components.

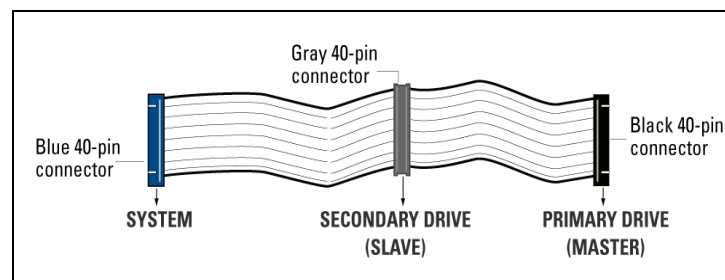


4. Secure the controller card bracket to the system case.

NOTE: If you wish to connect the hard drive activity LED to your new Western Digital hard drive, refer to your system manual for instructions.

Install the Hard Drive

IMPORTANT: Your new Western Digital hard drive must be installed using the 40-pin, 80 conductor cable included in the kit.



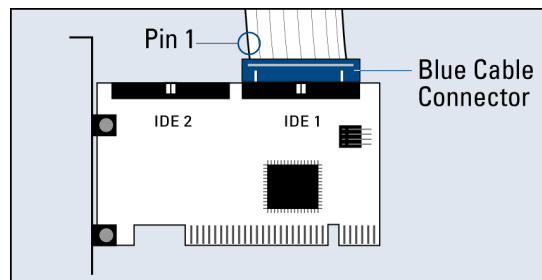
1. Connect the IDE Interface Cable to Hard Drive(s):

a) If installing the hard drive as the only device on the cable,

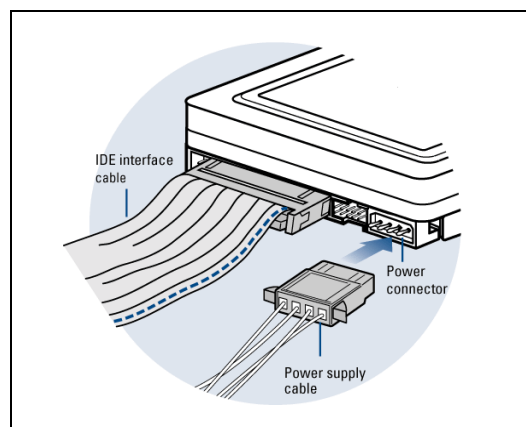
Connect the black connector of the IDE interface cable to the drive and connect the blue end of the IDE interface cable to the IDE connector (IDE 1) on the controller card. Proceed to step 3.

b) If installing two drives on the same IDE interface cable,

- Configure your new Western Digital hard drive as Master and the other drive as Slave.
- Connect the black connector to the new IDE interface cable to the Master drive.
- Connect the grey connector to the Slave drive.
- Connect the blue end of the new IDE interface cable to the IDE connector (IDE 1) on the controller card.



2. Connect the Power Supply Cable: Attach the computer system power supply cable to the 4-pin power connector on the back of your new Western Digital hard drive. The 4-pin connector is keyed to ensure proper insertion.



3. Secure the Hard Drive:

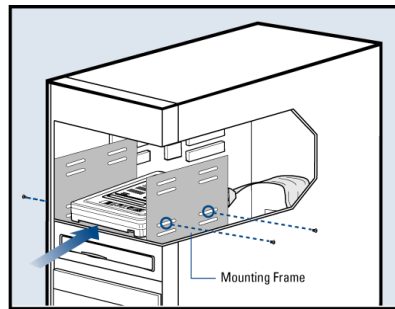
a) If securing the hard drive in a 3.5-inch drive bay,

Secure the Western Digital hard drive in an available drive bay (typically adjacent to the floppy disk drive) using the four mounting screws provided. Mounting brackets are not required.

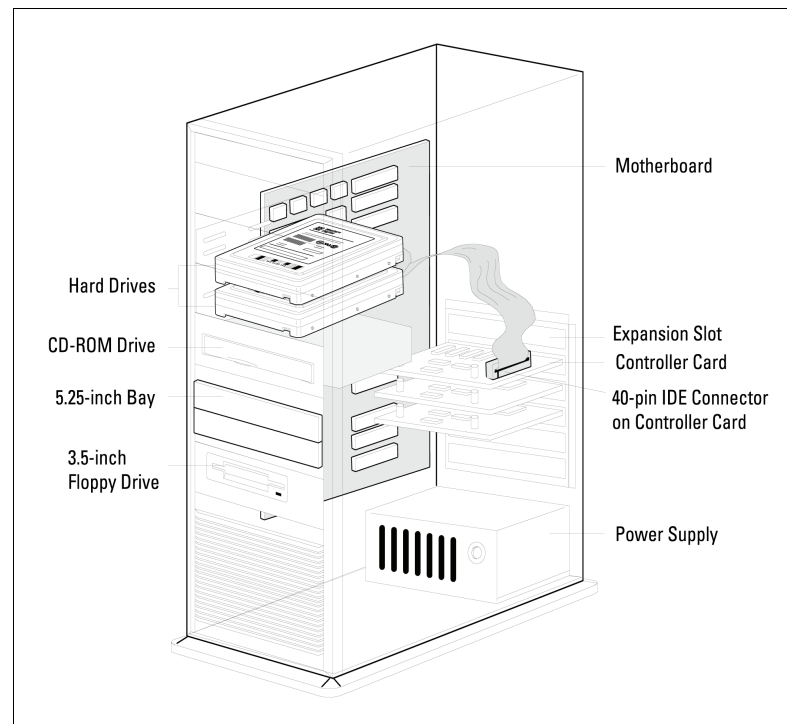
NOTE: For proper grounding, be sure to use ALL FOUR screws.

b) If securing the hard drive in a 5.25-inch drive bay,

You will first need to install 5.25-inch mounting hardware in order to properly mount the hard drive. If you do not have mounting brackets contact your system manufacturer or your local computer dealer or call Western Digital technical support.



4. **Reconnect the power cord and power on the computer:** Make sure that the controller card is properly seated before powering on the computer.



Install the Ultra ATA Drivers

Driver installation instructions will vary depending on your operating system, whether the operating system is already installed or is a new install. Locate the appropriate procedure for your own operating system setup and carefully follow the directions.

IMPORTANT: If you wish to move the boot drive with an existing Windows OS to the controller card, load the Ultra ATA drivers on this drive while it is still connected to the existing hard drive controller on the system motherboard. Do not connect any hard drives to the controller card before completing this step.

I. Using data from an existing drive with Windows NT 4.x/2000/XP already installed

1. After installing the Ultra ATA controller card and rebooting your system, a **New Hardware Found** dialog box will appear. Choose **Add New Hardware Wizard** from the list, then press **Enter**.
2. Choose the **SCSI Controller** from the hardware list that appears in the menu.
3. In the **Install Drivers** dialog box, select **Have Disk**.
4. When prompted, insert the Ultra ATA drivers diskette into the floppy disk drive.
5. When the dialog box appears, select **Win2000 Ultra TX2 IDE Controller** from the list and click **Enter**.
6. Follow the onscreen directions, then Windows will restart or shutdown for the driver installation to take effect.

II. Using data from an existing drive with Windows 98/Me already installed

1. After installing the Ultra ATA controller card and connecting your Western Digital hard drive, power up the system and boot into Windows.
2. The **Add New Hardware Wizard** will appear, indicating that a **PCI Mass Storage Controller** has been found.
3. Click **Next**, and when prompted, choose **Search for a better driver than the one your device is using now**.
4. Click **Next** and select **Specify a location**.
5. Insert the the Ultra ATA drivers diskette into the floppy disk drive.
6. Click **Next**. A message informing you that "Windows has found Win9x-ME Ultra TX2 IDE Controller" should appear.
7. Click **Next**, then **Finish**, then **Yes** when asked to restart computer to finish drivers installation.

III. New Install - Windows NT 4.x/2000/XP

1. Choose from the following media types to install Windows.
 - a) *Floppy Install*: Boot the computer with the Windows installation diskettes.
 - b) *Floppy-less Install*: Boot from the diskette and type **WINNT**. After files have been copied, the system will reboot. On the reboot, press **F6** after the message "Setup is inspecting your computer's hardware configuration..." appears.
 - c) *CD-ROM Install*: Boot from the CD-ROM disk and press **F6** after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. Press **S** to specify an additional device at the "Windows 2000 Setup" window.
3. Select **Promise Ultra TX2 Controller** from the list and click **Enter**.
4. When prompted, insert the Ultra ATA drivers diskette into the floppy disk drive.
5. Follow the onscreen directions to install driver files and to continue Windows installation.
6. If your new Western Digital hard drive is the only drive installed in your system, replace your system cover and this concludes the hard drive installation process. Otherwise, proceed to "Set Up and Copy Files" on page 13.

IV. New Install - Windows 98/Me

1. After installing the Ultra ATA controller card, boot to the Data Lifeguard Tools diskette and follow the onscreen directions to configure the hard drive.
2. Install Windows 98/Me.
3. After installation, go the **Start** menu, select **Settings**, and click on **Control Panel**.
4. In the **Control Panel** window, double-click on the **System** icon, and select the **Device Manager** tab.
5. In the hierarchical display under "Other Devices" is a listing for **PCI Mass Storage Controller**. Select it and click on the Properties button.
6. Select the Drivers tab in the Properties window, choose **Update Driver** and then click **Next**.
7. Select **Search for a better driver than the one your device is using new (Recommended)**, and click **Next**.
8. When prompted, insert the the Ultra ATA drivers diskette into the floppy disk drive.
9. Click **Next**. A message informing you that Windows has found **Win9x-ME Ultra TX2 IDE Controller** should appear.
10. Click **Next**, then **Finish**, then **Yes** when asked to restart computer to finish drivers installation.
11. If your new Western Digital hard drive is the only drive installed in your system, replace your system cover and this concludes the hard drive installation process. Otherwise proceed to "Set Up and Copy Files" on page 13.

Set Up and Copy Files

NOTE: This section applies only if you have an existing hard drive connected to your computer.

1. Power down the system and disconnect the power cord.
2. Disconnect the old drive and old IDE interface cable from the motherboard.
3. Verify that the old drive is jumpered as Slave.
4. Locate the new IDE interface cable that is connected to the new drive and connect its gray end to the old drive. Both drives are now connected to the controller card.
5. Insert the Data Lifeguard Tools diskette into the floppy drive.
6. Reconnect the power cord and power on the computer. The system will boot to the diskette.
7. At the introduction screen, select **Install Drive** and follow the instructions as prompted.
8. Accept the license agreement and select **Drive to Drive Copy**, then **Entire Drive**.
9. Choose your old hard drive as the **Source** and your new Western Digital drive on the Ultra ATA controller card bus as the **Destination**.
10. Select **Automatically Resize Partitions** and click **Finish**.
11. Replace your system cover and restart the system when prompted. This concludes the hard drive installation process.

IMPORTANT: If you wish to remove your old drive at this time, you must change the jumper setting on your new Western Digital hard drive to Single. Refer to "Set the Jumpers" on page 7 for instructions to jumper your hard drive. If you prefer to keep your old hard drive and use it as additional storage, make sure that your new Western Digital hard drive and operating system are working properly. Once you are certain and satisfied with the operation of the new drive, back up your old drive and delete its contents.

Register Your Product

Take advantage of Western Digital special offers and product updates by registering your new hard drive online at www.wdc.com/products/registration.

4

Data Lifeguard Install Software

The Data Lifeguard Install software included on the Data Lifeguard Tools diskette that ships with your Western Digital hard drive serves to:

- Copy the contents of an existing hard drive onto your new hard drive.
- Copy system files needed to boot your new hard drive.
- Partition and format your new hard drive.
- Overcome the 137 GB, 32 GB, and 8.4 GB system BIOS limitations.

Operating System Compatibility

WARNING: Using an operating system not listed below could result in data loss.

Your new Western Digital hard drives supports the following operating systems:

- Windows XP, Windows 2000, and Windows NT 4.0
- Windows Me and Windows 98 (all versions)
- Macintosh OS 8.6 or later (for drives smaller than 137 GB)

Data Lifeguard Install software can be used with the following operating systems:

- Windows XP, Windows 2000, and Windows NT 4.0
- Windows Me and Windows 98 (all versions)

Before partitioning and formatting your hard drive, you must tell the system what type of hardware you are using. This is referred to as "configuring the system BIOS." Your computer system provides an initial setup utility (CMOS Setup) for that purpose.

Each system BIOS is different. The information supplied here is not meant to be followed step-by-step but is provided as a guideline. Refer to your system manual for details.

If you have an older system, it may be necessary for you to upgrade your system BIOS, install an ATA controller card, or use the included Data Lifeguard Tools software to access the full capacity of your hard drive (see "Operating System and System BIOS Limitations" on page 24).

IMPORTANT: The most current version of Data Lifeguard Tools can be used to partition and format with most ATA controller cards. However, in some cases you may need to use FDISK to complete drive setup. To download the last version of Data Lifeguard Tools, go to *support.wdc.com*.

Consider the following capacity points and dates:

System BIOS Dates	BIOS Support Issues
Prior to August 1994	May not support hard drives larger than 528 MB
Prior to February 1996	May not support hard drives larger than 2.1 GB
Prior to January 1998	May not support hard drives larger than 8.4 GB
Prior to June 1999	May not support hard drives larger than 32 GB

To configure your system BIOS:

1. Enter your CMOS setup program (sometimes called the Setup program). Systems vary, but pressing one of these keys should gain access to your CMOS setup: **F1**, **F2**, or **Delete**. Refer to your system manual for instructions.

NOTE: During your system boot, a message is typically displayed after the memory count indicating how to enter Setup. If your system does not respond (locks up) on initial boot, see "Alternate Jumper Settings" on page 26.

2. Find any IDE **Autodetection** option that may be present in your BIOS. If given a choice, select the **LBA** option and enable it. In some cases, LBA will be an option under **IDE Translation Mode**. In other systems, **Autodetection** is preselected.
3. Enable options such as **LBA** or **Translation Mode** available in most current system BIOSs. If you do not have either option, you must use Data Lifeguard Install to install your new hard drive, upgrade the system BIOS, or install an ATA controller card with onboard BIOS that supports the full drive capacity.

NOTE: If your system BIOS does not have an auto config drive type or does not show full capacity, disable LBA, select **User Defined**, and enter **1023 cylinders, 16 heads, and 63 sectors** for the drive parameters. Selecting **User Defined** ensures that the Data Lifeguard Install software will install on your system.

If your system BIOS does not have auto config or **User Defined**, select **Type 9**. Selecting **Type 9** ensures that Data Lifeguard Install will install on your system.

Installing the Hard Drive with Windows NT 4.x/2000/XP

The Data Lifeguard Install software is not needed to install your new Western Digital hard drive under the following operating systems: Windows XP, Windows 2000, and Windows NT 4.0. However, it may be used to determine whether the BIOS of your computer system will support the full capacity of your new hard drive. Please boot from the Data Lifeguard Tools diskette and follow the recommendations for BIOS support and, if necessary, proceed with the installation after upgrading your BIOS.

Install a Single Hard Drive:

1. Boot to Windows XP, 2000, or NT 4.0
2. Follow the directions in the installation prompt.

Install an Additional Hard Drive in Windows:

Windows XP

1. Click the **Start** button and point to **Control Panel > Performance and Maintenance > Administrative Tools**.
2. Double-click on the **Computer Management** icon and select **Disk Management** on the left side.
3. Right-click on your new hard drive and proceed with partitioning and formatting.

Windows 2000

1. Click the **Start** button and point to **Settings > Control Panel > Administrative Tools**.
2. Double-click on the **Computer Management** icon and select **Disk Management** on the left side.
3. Right-click on your new hard drive to proceed with partitioning and formatting.

Windows NT

1. Click the **Start** button and point to **Programs > Administrative Tools > Computer Management**.
2. Select **Disk Management** on the left side.
3. Right-click on your new hard drive to proceed with partitioning and formatting.

Disabling Floppy Boot Protection

1. After the installation, reboot or power on your system with the Data Lifeguard Tools diskette in your floppy disk drive.
2. Select **Install Drive** from the main menu and click **Next**.
3. At the main menu of Install, select **Advanced Options** and click **Next**.
4. Select **EZ-BIOS Setup** from the Advanced Options menu and highlight the appropriate hard drive.
5. Click on **EZ-BIOS** settings at the bottom of the screen.
6. Click the button next to **Floppy Boot Protection** to disable.
7. Select **Apply settings** and click **Done**.
8. Exit Data Lifeguard Install and remove the diskette from the floppy disk drive.
9. Reboot your system.

Using Data Lifeguard Install Software

Follow the steps outlined below to set up your hard drive.

1. Insert the Data Lifeguard Tools diskette into your floppy disk drive.
2. Reboot or power on the system.
3. The Data Lifeguard Tools main menu displays. Click **Install Drive** to continue.
4. Data Lifeguard will attempt to detect hard drive(s) and available disk space.
5. When an unformatted drive is detected, click **Yes** to continue.

NOTE: If the Data Lifeguard Tools Diagnostic utility reports no Western Digital drives present, the hard drive may not be properly detected. Check the previous steps regarding proper cable connection and jumper settings.

6. The Data Lifeguard Options screen displays. The following three choices are available:
 - A. *Partition and Format*
 - B. *Drive to Drive Copy*
 - C. *Advanced Options*

A. Partition and Format

IMPORTANT: Data Lifeguard Install copies system files needed to boot the hard drive. It does not install the operating system. If the operating system is not installed, you need to complete the operating system installation after configuring the Data Lifeguard Install software.

1. Select **Partition and Format** from the main menu and click **Next**.
2. Click on the hard drive you wish to configure and click **Next**.
3. If you wish to copy from an existing hard drive to your new drive, select **No** and click **Next**. If **Yes**, select the source drive and click **Next**.
4. The Partition Definition menu will appear and you will be given two options to configure the partitions on your drive.
 - Select **Standard Partition** to create the minimum number of partitions allowed by the operating system. Western Digital recommends this option.
 - Select **Advanced Users** to customize the number of desired partitions and its sizes. You can also select the file type of either **NTFS** or **FAT32**.
5. Click **Finish** to partition and format the drive.

B. Drive to Drive Copy

1. Select the **Drive to Drive Copy** from the main menu and click **Next** to proceed.
2. Select from two methods of copy on the destination drive with either **Entire Drive** or **Selective Partition**. Click **Next**.
3. Select the source drive (the drive that you want to copy from).
4. Select the destination drive (the drive that you want to copy to).
5. Click **Next** to continue with drive to drive copy.

C. Advanced Options

1. Select **Advanced Options** from the main menu and click **Next** to proceed.
2. The menu will appear and you will be given three options.
 - Select **EZ-BIOS Setup** to configure EZ-BIOS settings for a drive. Simply highlight the drive and click on either **Uninstall EZ-BIOS** or **EZ-BIOS Settings**.
 - Select **Backup/Restore Track Zero** to restore the boot track 0 if damaged. Track 0 contains the partition table and boot code. A backup is automatically made when Data Lifeguard is used to set up your drive.
 - Select **Remove 63 Sector Offset** to remove Disk Manager data offset by 63 sectors. If the Disk Manager boot codes exists, it is removed also.
3. Click **Done** after selection to return to the main menu.

IMPORTANT: Backup/Restore Track Zero and Remove 63 Sector Offset options are for advanced users only. Consult with Western Digital Technical Support for more information.

5

Data Lifeguard Tools

Western Digital provides a set of hard drive utilities called Data Lifeguard Tools to assist with hard drive installation, drive management, and repair.

Data Lifeguard Tools	Function
Data Lifeguard Diagnostics	Identifies and repairs most drive errors
Data Lifeguard BIOS Check	Provides information for technical support
Data Lifeguard Ultra ATA Management	Manages Ultra ATA 100 functions (including ATA 66 and 33)

This section contains information on these programs:

- Data Lifeguard Diagnostics
- Data Lifeguard BIOS Check (available for download at support.wdc.com)
- Data Lifeguard Ultra ATA Management

Data Lifeguard Diagnostics

Data Lifeguard Diagnostics is included on the Data Lifeguard Tools diskette. This utility was designed especially for Western Digital hard drives to diagnose and fix most common hard drive problems.

When to use Data Lifeguard Diagnostics

- If the hard drive reports errors.
- If you are unable to access files on the hard drive.
- If another diagnostic utility such as SCANDISK, CHKDISK, or DEFRAG reports errors on the hard drive.

Using Data Lifeguard Diagnostics

Data Lifeguard Diagnostics does not overwrite data on the hard drive during the scan. If used properly, it will not result in data loss. Always back up your data before running any diagnostic utility.

1. Insert the Data Lifeguard Tools diskette into the floppy disk drive.
2. Reboot or power on the system.

CAUTION: Data Lifeguard is for use in DOS only. Do not use within any other operating system or DOS shell.

3. The Data Lifeguard Tools Welcome screen displays. Click **Data Lifeguard Utilities** to continue.
4. After the Data Lifeguard Tools main menu appears, select **Diagnostics** to proceed and view the license agreement.

- From the Diagnostics menu, choose **Select Drive and View Status** to display a list of all drives installed and the current status of each drive. Test each drive separately.

NOTE: Code 0202 indicates the drive has not yet been tested. All drives display this code when first selected for testing.

CAUTION: Do not select the **Write Zeros to Drive** option unless instructed to do so by qualified technical support personnel. This option will erase all data on the drive.

- Use the **Up/Down** arrow keys to highlight the desired drive and press **Enter** to return to the main menu. The Hard Drive Recognition window displays information about the selected drive.
 - If the Hard Drive Recognition window displays the correct drive information, continue with step 7.
 - If the Hard Drive Recognition window displays incorrect information, then Data Lifeguard Diagnostics is not communicating with the hard drive. Check your BIOS setup, all cables connected to the hard drive, and the jumper settings on the hard drive.
- There are two test options on the Data Lifeguard Diagnostics main menu—**Quick Test** and **Extended Test**.
 - Quick Test* accesses Data Lifeguard information stored on the drive during offline scans and verifies a defect-free status or recommends the Extended Test. The Quick Test test takes approximately 90 seconds.
 - Extended Test* begins checking the drive for defects at your request and presents the results in approximately 10 to 40 minutes.
- Press **R** to test the drive. When the test is complete, the Verify Drive window displays.

Data Lifeguard Diagnostics reports the status of the hard drive with status messages and descriptions as follows:

Status Message	Description
No Errors Detected For This Drive	The hard drive is defect free. The problem is related to the BIOS, corrupt operating system files, or a virus.
Non-WD Drive Detected	Data Lifeguard Diagnostics cannot return a non-Western Digital hard drive to defect-free status. Contact your hard drive manufacturer. or The latest release of WD Data Lifeguard Tools are not installed. Download latest version from our product support Web site at support.wdc.com .
Contact WD Tech Support	The hard drive is damaged and cannot be restored to a defect-free status, and it should be replaced. Write down the Final Code number and message. Call Western Digital Technical Support.
Restore the Hard Drive to a Defect-Free Status	The hard drive has errors. Use the Repair Drive option to attempt to repair the hard drive. Data on the hard drive is lost only when tracks are relocated, not when sectors are relocated. A warning message displays whenever this occurs. Relocate tracks only after you have backed up the data on the hard drive. After completing the Repair Drive option, Data Lifeguard Diagnostics scans the drive to verify the hard drive's defect-free status.

- Follow the instructions that relate to your status message. Click **Enter** to return to Data Lifeguard Diagnostics main menu.
- To close, select **Quit** from the main menu. A message displays prompting you to reset the system to reinitialize the BIOS and hard drive(s). This is best accomplished by powering off the system for 5 seconds.
 - Remove the diskette from the floppy disk drive and power on the system.

Data Lifeguard BIOS Check

Data Lifeguard BIOS Check is available for download at support.wdc.com. The utility software:

- Determines system BIOS support for large capacity hard drives.
- Identifies all IDE devices in the system.
- Reports capacity, serial number, model number, etc.

Using Data Lifeguard BIOS Check

- Double-click on the executable file to run Data Lifeguard BIOS Check program.
- The introduction screen displays and will begin detecting all hard drives connected to your system.
- After BIOS Check has finished testing, carefully follow the on-screen directions.

NOTE: BIOS Check may not support some controller cards.

Data Lifeguard Ultra ATA Management

This utility software is designed to enable or disable the Ultra ATA capability on Western Digital hard drives that support this feature as well as allows you to select other Ultra ATA configurations that best suit your system.

Requirements for Ultra ATA/100

- The host system chipset and BIOS or add-in controller card must support Ultra ATA/100.
- The hard drive must support Ultra ATA/100.
- A 40-pin, 80 conductor IDE cable must be attached to the host system and the hard drive.
- The operating system must be enabled for DMA transfers.

If you are unsure about your system's capabilities, contact your system motherboard or controller card manufacturer.

For more information about using Data Lifeguard Ultra ATA Management, visit our product support Web site at support.wdc.com or contact Western Digital Technical Support.

Using Data Lifeguard Ultra ATA Management

- Insert the Data Lifeguard Tools diskette into the floppy disk drive.

2. Reboot or power on the system. Do not run Data Lifeguard Ultra ATA Management while the Windows operating system is active.
3. The Data Lifeguard Tools Welcome screen displays. Click **Data Lifeguard Utilities** to continue.
4. After the Data Lifeguard main menu displays, click **Ultra ATA Management** and carefully follow the on-screen directions.

6

Install the Hard Drive in a Macintosh System

You can install two IDE/ATA hard drives on the same cable with the Master/Slave jumper configuration in the following Macintosh systems:

- Power Mac G4 and higher
- Power Mac G3 (blue and white colored, limited to certain configurations)
- Power Mac G3 All-in-One

A Power Mac with a U-shaped mounting bracket installed in the rear drive bay is capable of supporting dual IDE/ATA drives, allowing two drives to be installed in that bay. For more information on Master/Slave support on Power Macs G3/G4, refer to AppleCare Knowledgebase Article 24342 at www.apple.com.

If your system does not support the Master/Slave configuration, you will be limited to installing one IDE/ATA device per channel (for a maximum of two IDE/ATA devices).

The following is a summary of the steps necessary to install a hard drive less than 137 GB as a secondary hard drive in a Power Mac.

IMPORTANT: For alternative setup instructions and hard drive compatibility, refer to your original Apple Setup Guide or go to www.apple.com/support for more documentation.

1. Since Cable Select is the default jumper setting of your Western Digital hard drive, you must change the configuration to Slave (see page 7 for a diagram of the jumper block. The drive that came with the Macintosh is already designated as Master (Master ID=0, Slave ID=1).

NOTE: Cable Select mode is not supported by Macintosh's built-in IDE/ATA controller.

2. Install the hard drive in your Macintosh system with the Apple-supplied interface cable.
3. Use the Apple Disk Utility to format and partition the drive. The utility is located on the Macintosh operating system CD.

7

Troubleshooting

This section contains information on the following topics:

- Operating System and System BIOS Limitations
- Hard Drive Formatting Issues
- Alternate Jumper Settings
- Frequently Asked Questions
- Non Western Digital Support Information

Operating System and BIOS Limitations

Computer operating systems and system BIOSs have separate limitations that are related to specific hard drive capacities. The capacity points that can affect how your operating system and system BIOS support your hard drive are 137.4 GB, 32 GB, and 8.4 GB. The following are brief descriptions of each limitation.

137.4 GB Barrier

The current standard for the IDE/ATA interface uses a 28-bit addressing which cannot recognize more than 137.4 GB of storage. To overcome this capacity barrier, hard drives higher than this capacity have adopted a 48-bit addressing system which can be supported in newer computer systems with updated controller chips, BIOS codes, and operating system drivers (refer to your system documentation for more details). Most systems, however, require the use of a 48-bit LBA supported controller card to fully recognize higher capacity hard drives and maximize transfer rates.

Current Windows operating systems (98, NT, Me, 2000, XP) do not support hard drives larger than 137 GB. Western Digital has included a controller card and drivers to address this operating system limitation. During installation, hard drives larger than 137 GB must be attached to the controller card and the drivers for your operating system must be loaded properly to avoid the risk of data loss.

Certain operating system utilities such as ScanDisk and Defrag, may not function properly on the drive partitions exceeding 137 GB. Creating multiple partitions less than 137 GB will allow proper functionality.

32 GB Barrier

Some BIOSs released before June 1999 stall with drives larger than 32 GB. If you are installing a hard drive larger than 32 GB and your system stalls before floppy or hard drive boot can take place, you may have a system BIOS that is incompatible with this larger hard drive. Follow these instructions only if your system stalls when adding a drive larger than 32 GB.

Recommended Solution: Contact your system or motherboard manufacturer for a BIOS upgrade.

Interim Solution: Follow the steps below using the Western Digital Data Lifeguard Tools diskette included in your hard drive kit. With this solution, you will not be able to warm boot your system (<CTRL><ALT>) or **Restart** from the Windows menu. You must always choose **Shut Down** from the menu and power down the system when prompted.

1. Jumper your hard drive appropriately.

2. Use the Data Lifeguard Install software to access the full capacity of the hard drive with these jumper settings. To run Data Lifeguard Install:
 - Insert the Data Lifeguard Tools diskette into your floppy disk drive.
 - Boot your system and use the Data Lifeguard Install software (see page 17 for detailed instructions). This will install EZ-BIOS on your system and allow your system to access the full capacity of your hard drive.

8.4 GB Barrier

There is an 8.4 GB hard drive limitation on some traditional system BIOSs. To access the full capacity of 8.4 GB and larger hard drives, your system BIOS must support extended BIOS functions, and your operating system must recognize extended BIOS functions. It is difficult to determine if your system BIOS supports 8.4 GB or larger hard drives. We recommend using the latest Data Lifeguard Install software to ensure support of the full capacity of your hard drive. Visit our product support Web site at support.wdc.com for the latest version. Other options are to upgrade your system BIOS or purchase a controller card. Contact your system or motherboard manufacturer for a BIOS Flash or more information.

The following operating systems recognize extended BIOS functions.

- Windows 98 and Windows 98 Second Edition
- Windows Me
- Windows NT with Service Pack 4 or later
- Windows 2000
- Windows XP

The following operating systems do not recognize extended BIOS functions. See the table that follows for limitations and exceptions.

- DOS 6.xx and earlier
- Windows 3.1x
- Windows NT
- Novell NetWare
- OS/2 Warp

Operating System	Limitations and Exceptions
DOS 6.xx and earlier Windows 3.1x	8.4 GB maximum capacity limit. Hard drive capacities larger than 8.4 GB are recognized as 8025MB.
Windows 95	Does not support drives larger than 32 GB.
Windows NT	Windows NT 4.0 with Service Pack 4 or later recognizes hard drives larger than 8.4 GB.

Hard Drive Formatting Issues with Windows 95/98/Me

For 32 GB drives and higher, several limitations with the Windows operating system programs have been identified and confirmed by Microsoft.

Windows Me

Windows Millennium may exhibit the following problem:

- FORMAT displays the size of partitions or logical drives larger than 64 GB incorrectly - Q263045*

Windows 98 (All Versions)

Windows 98 may exhibit the following problems:

- FDISK does not recognize the full size of hard drives larger than 64 GB - Q263044*
- FORMAT displays the size of partitions or logical drives larger than 64 GB incorrectly - Q263045*
- SCANDISK reports errors on hard drives larger than 32 GB - Q243450*

Windows 95 (All Versions)

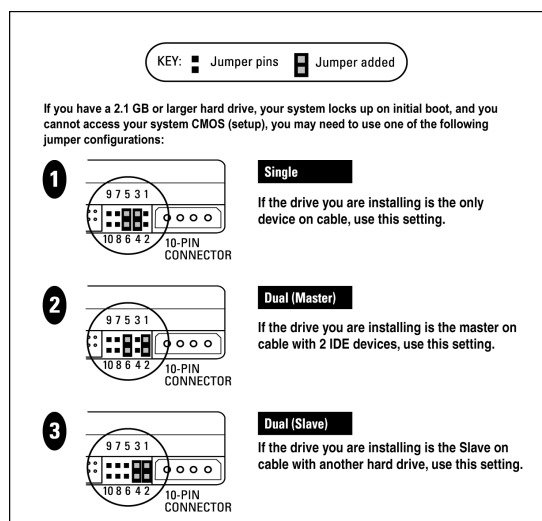
Windows 95 does not support hard drive capacities greater than 32 GB. Users should upgrade to Windows 2000, Windows Millennium, Windows 98, or Windows NT 4.0 Service Pack 4 (or higher).

*Microsoft Knowledge Base Article ID Number. To download the Microsoft fix for each problem, go to support.microsoft.com and enter the specific article ID number.

Alternate Jumper Settings

Alternate jumper settings are provided on WD Caviar drives to overcome the system BIOS limitations. These jumper settings cause the drive to report a smaller capacity to work around the BIOS issues. If you use these jumper settings, you **MUST** install Data Lifeguard EZ-BIOS software to access the drive's full capacity.

NOTE: Cable Select cannot be used when alternative jumpers are selected.



Frequently Asked Questions

This section contains answers to common hard drive installation questions by our customers. To search the Western Digital technical support knowledgebase for our complete list of frequently asked questions, visit our product support Web site at support.wdc.com.

The cables are properly connected and the jumper settings are correct, but the system BIOS cannot recognize the hard drive.

Always check first to make sure that you have the latest BIOS update installed for your system motherboard. If you have an older computer system, the BIOS may "hang" or "freeze" while auto detecting the drive. You may need to use the alternate jumper settings (see "Alternate Jumper Settings" on page 26).

If you have determined that this is a BIOS limitation issue, follow the instructions below.

1. Enter the system BIOS.

NOTE: Typically a message is displayed on the screen after the memory count of the boot process, telling you how to enter Setup (System BIOS). Each system's BIOS is configured differently, but the primary keystrokes used to enter the System BIOS are F1, F2, or Delete. For specific information on how to enter your system BIOS and make the necessary changes referenced above, refer to your motherboard or system manual or the manufacturer directly.

2. Select User or User defined drive type and enter 1023 cylinders, 16 heads, and 63 sectors for the drive parameters.
3. Next, you will have one of two Mode options, LBA Mode or IDE Translation Mode. Select the option appropriate to your computer BIOS which disables Translation. This can be done by disabling LBA or choosing Normal or Standard CHS mode.
4. Your BIOS may have more settings other than Cylinders, Heads, and Sectors; if so, simply enter 0 for them.
5. Once the above is completed, the drive size should show the capacity as being 502 MB or 528 MB. This is normal. The above settings simple tricks your BIOS into thinking the hard drive is smaller than it really is, allowing the computer to boot with the hard drive connected. The full capacity of the hard drive will be available once the Data Lifeguard Tools diskette is used to install, partition, and format the hard drive.

My hard drive is making clicking noises. What is wrong?

There are several potential problems that can cause clicking sounds. First, the drive itself could be failing or has failed. Other reasons could include a faulty data cable, data corruption, incorrect BIOS settings, or in some cases, a virus infection. Follow these suggestions to diagnose the problem.

1. Power the system down and disconnect the IDE ribbon cable to the drive making the noise. Leave the power cable attached.
2. When you attach the drive to the power supply with the 40-pin data cable detached, does the clicking continue?

Yes- The drive has failed and needs to be replaced. Other symptoms generally associated with clicking include:

- The Auto-Detect feature in the BIOS does not detect a drive.
- FDISK does not report a drive present even if the drive's parameters are entered manually. In these cases, refer to our product support Web site at support.wdc.com to obtain a RMA (Returned Material Authorization).

No - A faulty cable is a likely cause. Replace the cable to see if this resolves the issue. If this makes no difference, the drive has most likely experienced some form of data corruption, possibly a virus. In this case the Auto-Detect will generally still detect the drive and FDISK will also report a drive present. Run the Data Lifeguard Diagnostic Tool from a clean (virus free) write-protected floppy and test the drive. If the drive does not fail, then the Write Zeros option may be needed to remove all software from the drive. Unfortunately, all data on the drive will be lost.

I installed a large drive into an older computer, but it does not see the full capacity. What happened?

If the system only recognizes 528 MB, 2.1 GB, 8.4 GB, 32 GB, or 64 GB of the hard drive or something significantly less than the actual capacity of the hard drive, your system BIOS may not support the hard drive capacity. Here are some possible solutions:

1. Check with the system or motherboard manufacturer to see if they have a BIOS upgrade available for your system.
2. Purchase an ATA controller card (included with Western Digital hard drives larger than 137 GB). The controller card has two benefits. It will have its own BIOS to support the drive and enable the higher transfer rates the drive is capable of attaining. Western Digital's Online Store at store.wdc.com has a complete selection of ATA controller cards that allow you to access the full capacity of the hard drive and use the higher transfer rates.
3. A third option is to use our Data Lifeguard Tools diskette to set up the drive. The tools will install an overlay on the drive to support its full capacity. An overlay is a program that installs on the boot sector of your hard drive and enables full access of your hard drive's capacity.

When installing a drive larger than 64 GB in Windows 9X, FDISK/FORMAT shows either the wrong or incomplete capacity. Why?

Microsoft Windows 95/98/98SE has a limitation that incorrectly displays the capacity for drives larger than 64 GB. This limitation is not the result of data loss. The partitioning utility FDISK and the formatting utility FORMAT will incorrectly show the capacity of the drive as minus 64 GB. For example, if the drive is 80 GB, the capacity is shown as 16 GB. Microsoft has acknowledged this issue and has released a fix for FDISK.

Also, depending on the particular utility used, the capacity of the hard drive can be reported in either decimal gigabytes, where 1 GB = 1,000,000,000 bytes or in binary gigabytes where 1 GB = 1,073,741,824 bytes. FDISK reports a drive's capacity in binary gigabytes. For example, a WD 200 GB hard drive's capacity will be reported as approximately 186 binary gigabytes.

NOTE: If Data Lifeguard Tools is used to partition and format the drive, no fixes are required. Make sure you are using Data Lifeguard Tools version 10.0 or above.

Western Digital Service and Support

If you need additional information or help during installation or normal use of this product, visit our product support Web site at support.wdc.com and send an email to Western Digital Technical Support. You may also call using the phone numbers listed below. When calling for support, have your Western Digital hard drive serial number and system hardware and software versions available.

	USA/Canada/Outside USA (Central Time)	Europe (Central European Time)
Telephone Numbers	800.ASK.4WDC	+31.20.446.7651
Monday - Thursday	9:00 am - 7:00 pm	8:00 am - 5:00 pm
Friday	9:00 am - 6:00 pm	8:00 am - 3:00 pm
Saturday	8:00 am - 11:45 am 1:00 pm - 5:00 pm	

8

Appendix

Regulatory Compliance

This appendix contains information on the following topics:

- Agency Approvals
- Radio Frequency Interference Statement
- Warranty Information

Agency Approvals

Western Digital hard drives meet the standards of the following regulatory agencies:

Federal Communication Commission

Verified to comply with FCC Rules for Radiated and Conducted Emission, Part 15, Subpart B, for Class B Equipment.

Underwriters Laboratories

UL-Standard 1950, Standard for Safety of Information Technology Equipment including Electrical Business Equipment (File E101559).

Canadian Standards Association

CSA-Standard C22.2, No. 950-M89, Standard for Safety of Information Technology Equipment including Electrical Business Equipment (File LR68850).

TUV Essen Laboratories

IEC-950 (EN60950) Standard for Safety of Information Technology Equipment including Electrical Business Equipment.

CE Compliance For Europe

Verified to comply with EN55022:1998 for RF Emissions and EN55024:1998 for generic Immunity as applicable

Radio Frequency Interference Statement

FCC Notice

This Western Digital product has been verified to comply with the limits for a Class B computing device pursuant to subpart B Part 15 of FCC rules. This does not guarantee that interference will not occur in individual installations. Western Digital is not responsible for any television, radio, or other interference caused by unauthorized modifications to this product.

If interference problems do occur, consult the system equipment owner's manual for suggestions. These suggestions may include relocation of the computer system away from the television or radio, or placing the computer AC power connection on a different circuit or outlet.

CSA Notice

Le prent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

This digital apparatus does not exceed the Class B limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Warranty Information

Obtaining Service

Western Digital (WD) values your business and always strives to provide you the very best of service. No limited warranty is provided by WD unless your WD Product (Product) was purchased from an authorized distributor or authorized reseller. Distributors may sell Products to resellers who then sell Products to end users. See below for warranty information or obtaining service. No warranty service is provided unless the Product is returned to an authorized return center in the region (Americas, Europe-Middle East-Africa, or Asia Pacific) where the Product was first shipped by WD. If your Product was purchased as a component integrated within a system by a system manufacturer, no limited warranty is provided by WD. Contact the place of purchase or the system manufacturer directly for warranty service.

Return Material Authorization

No Product may be returned directly to WD without first contacting WD for a Return Material Authorization (RMA) number. If it is determined that the Product may be defective, you will be given an RMA number and instructions for Product return. An unauthorized return, i.e. one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped pre-paid and insured to the address on the RMA in an approved shipping container. Your original box and packaging materials should be kept for storing or shipping your Product. For information on approved shipping containers, visit our product support Web site at *support.wdc.com*.

Limited Warranty

WD's limited warranty provides that, subject to the following limitations, each Product will be free from defects in material and workmanship and will conform to WD's specification for the particular Product.

Duration of Warranty

The warranty period commences from the date of manufacture appearing on the Product label of the original Product purchase. To verify this period for your Product, visit product support Web site at *support.wdc.com*. In the United States, some states do not allow limitations on how long implied warranties last, so the above limitation may not apply to you.

Other Warranty Limitations

For further important information on limitations on WD's warranty, see below and visit our product support Web site at support.wdc.com and click on **Warranty Policy**.

Disclaimer of Warranties

There are no warranties which extend beyond the face of the WD limited warranty. WD disclaims all other warranties, express or implied, regarding the Products, including any implied warranties of merchantability, fitness for a particular purpose or noninfringement. In the United States, some laws do not allow the exclusion of the implied warranties.

Your Use of the Product

WD will have no liability for any Product returned if WD determines that:

- The product was stolen from WD.
- The asserted defect:
 - A. is not present,
 - B. cannot reasonably be fixed because of damage occurring when the Product is in the possession of someone other than WD, or
 - C. is attributable to misuse, improper installation, alteration (including removing or obliterating labels), accident or mishandling while in the possession of someone other than WD.
- The Product was not sold to you as new.

Limitation of Remedies

Your exclusive remedy for any defective Product is limited to the repair or replacement of the defective Product.

WD may elect which remedy or combination of remedies to provide in its sole discretion. WD shall have a reasonable time after determining that a defective Product exists to repair or replace a defective Product. WD's replacement Product under its limited warranty will be manufactured from new and serviceable used parts. WD's warranty applies to repaired or replaced Products for the balance of the applicable period of the original warranty or ninety days from the date of shipment of a repaired or replaced Product, whichever is longer.

Limitation of Damages

WD's entire liability for any defective Product shall in no event exceed the purchase price for the defective Product. This limitation applies even if WD cannot or does not repair or replace any defective Product and your exclusive remedy fails of its essential purpose.

No Consequential or Other Damages

WD has no liability for general, consequential, incidental or special damages. These include loss of recorded data, the cost of recovery of lost data, lost profits and the cost of the installation or removal of any Products, the installation of replacement Products, and any inspection, testing, or redesign caused by any defect or by the repair or replacement of Products arising from a defect in any Product.

In the United States, some states do not allow exclusion or limitation of incidental or consequential damages, so the limitations above may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Online Warranty Inquiry

For further warranty information and inquiries, visit our product support Web site at [*support.wdc.com*](http://support.wdc.com) and click on **Warranty Policy**. The new online Warranty Inquiry System will provide warranty status based on the serial number of the Product.

Extended Warranty

Certain WD products may be eligible for purchase of additional or extended warranty options. For further details, visit our product support Web site at [*support.wdc.com*](http://support.wdc.com) and click on **Warranty Policy**.

Free Manuals Download Website

<http://myh66.com>

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<http://www.somanuals.com>

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