Hard Drive Diagnostic Utility (WDDIAG) User Guide

About This Guide

Audience

This user guide provides hard drive diagnostic utility (WDDIAG) instructions for the following groups.

- Western Digital technical support departments
- Western Digital FAEs / FQEs (Field Application Engineers / Field Quality Engineers)
- Resellers, service companies, and Value Added Resellers (VARs) technical support departments
- Distributor and OEM technical support departments

About WDDIAG

Overview

WDDIAG is a diagnostic utility designed by Western Digital to test Western Digital hard drives for errors. If WDDIAG reports errors, you can use the program to attempt to restore the hard drive to a defect-free status. This user guide provides instructions for using the WDDIAG diagnostic utility software for versions 2.10 and later.

WDDIAG supports Western Digital EIDE hard drives installed on both primary and secondary IDE ports (either the motherboard or a controller card). WDDIAG must be run separately to test each Western Digital hard drive in the system.

WDDIAG offers the following options:

Select Drive	Selects hard drive to test and displays status for all hard drives
Test Drive	*Tests the selected hard drive*
View Test Results	*Displays results for last hard drive tested*
Print Test Results	*Prints results for last hard drive tested*
Log File Open/Close	*Stores results for all hard drives tested (WDDIAG.LOG)*
Repair Drive	*Attempts to restore the errors found during the Test Drive option to a defect-free status*
Write Zeros To Drive	*Erases all data on the drive by writing zeros to each sector*
Enter and Print RMA Information	*Enters and Prints RMA information when returning a hard drive to Western Digital*
Quit	*Exits WDDIAG*

When Should I Use WDDIAG?

If the hard drive reports errors, if you are unable to access files on the hard drive, or if another diagnostic utility such as SCANDISK, CHKDISK, or DEFRAG reports errors on the hard drive, run WDDIAG to test and return the hard drive to a defect-free status.

Often times, these programs report errors caused by the system BIOS, I/O controller, or the motherboard. WDDIAG only reports errors associated with the hard drive; it does not report errors associated with the system or controller on the hard drive.

WDDIAG cannot restore to a defect-free status the following older Western Digital hard drives: AC140, AC160, AC280, AC2120, AC2170, and AC2200. Use the Western Digital utility WDAT_IDE for these drives. You can download WDAT_IDE from our web site at www.wdc.com or the BBS.

WDDIAG does not resolve mechanical damage such as noisy drives or drives that do not spin up. Call Western Digital technical support if you have a hard drive that exhibits the above difficulties. See *Returning a Hard Drive* on page 8.

Before Using WDDIAG

Backing Up Your Data

WDDIAG does not overwrite data on the hard drive during the scan, and if used properly will not result in data loss. Always back up your data before running any diagnostic utility.

CAUTION: You will erase all data if the Write Zeros To Drive option is invoked.

Creating a Bootable Floppy Disk

Run WDDIAG from a bootable floppy disk. This protects the data on the hard drive in case you attempt to return the hard drive to a defect-free status with WDDIAG.

If you run WDDIAG from the hard drive rather than a floppy disk, and the host issues a Set Parameters command to the hard drive being tested, the drive setup may change and cause the system BIOS to access the drive incorrectly. This can result in data loss.

To create a bootable DOS disk:

For Windows 3.1x systems, you need a bootable DOS disk to run WDDIAG. You can create a bootable DOS disk if you have a bootable hard drive.

1. Insert a blank floppy disk into drive A.
2. Type format a: /s. Press **ENTER**.

To create a Windows 95 Startup disk:

For Windows 95 systems, you need a bootable DOS or Windows 95 Startup disk to use WDDIAG. If you don’t have either of these, you can create a Windows 95 Startup disk if you have a bootable hard drive.

1. Insert a blank floppy disk into drive A.
2. From Windows 95, click **My Computer**.
3. Click **Control Panel**.

4. Click **Add/Remove Programs**.
5. Select the Startup Disk tab.
6. Click **Create Disk**. Follow the prompts to create a Windows 95 Startup disk.

Obtaining WDDIAG

You can obtain WDDIAG from the following sources:

- **EZ-Drive 9.03W Program Diskette**

  wddiag.exe and wddiag.txt are located on the EZ-Drive 9.03W program disk. Copy wddiag.exe to a bootable, blank floppy disk. See *To Create a Bootable DOS Disk* on page 2.

- **Western Digital Web Site at www.wdc.com**

  To download WDDIAG from our web site:

  1. Access the Western Digital home page at www.wdc.com.
  2. Click **Service and Support**.
  3. Click **Software Library**.
  4. Click **Drives**.
  5. Click **WD_DIAG.EXE**
  6. Save the file to a bootable, blank floppy disk. See *Extracting wddiag.exe and wddiag.txt* which follows.

Extracting wddiag.exe and wddiag.txt

When you download WDDIAG from our web site, you receive a file named wd_diag.exe. This is a self-extracting file that contains wddiag.exe (the WDDIAG program) and wddiag.txt (a text file that provides instructions for using WDDIAG). wddiag.exe and wddiag.txt extract to the current working directory.

To extract wddiag.exe and wddiag.txt:

1. At the DOS prompt, type **A**: and press **ENTER**.
2. Type **wd_diag** to extract wddiag.exe and wddiag.txt to the floppy disk.

Using WDDIAG to Test and Restore the Hard Drive to a Defect-Free Status

The initial scan is a non-destructive safe test. To test the hard drive, WDDIAG issues Read Verify commands to all sectors on the hard drive. After completing the test, WDDIAG displays one of the following status messages.

- **No errors detected for this drive**

  The hard drive is defect-free. If you receive this message and still encounter problems, the problem may be related to other components such as the BIOS, corrupt operating system files, or a virus. See *Alternate Troubleshooting Resources* on page 10.

- **Non-WD Drive Detected**

  The hard drive is not a Western Digital hard drive. WDDIAG cannot return a non-Western Digital hard drive to defect-free status. Contact your hard drive manufacturer.

- **Contact WD Tech Support**

  The hard drive is damaged and cannot be restored to a defect-free status, and it needs to be replaced. Write down the Final Code number and message. Call Western Digital Technical Support to verify warranty status. See page 7 for details.
  Distributors and OEMs: Follow your company's internal return procedures.
  Resellers: Return the hard drive to your distributor.

- **Restore the Hard Drive to a Defect-Free Status**

  The hard drive has errors. Use the Repair Drive option to attempt to restore the hard drive to a defect-free status. Data on the hard drive is only lost 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, WDDIAG scans the drive to verify the hard drive's defect-free status.

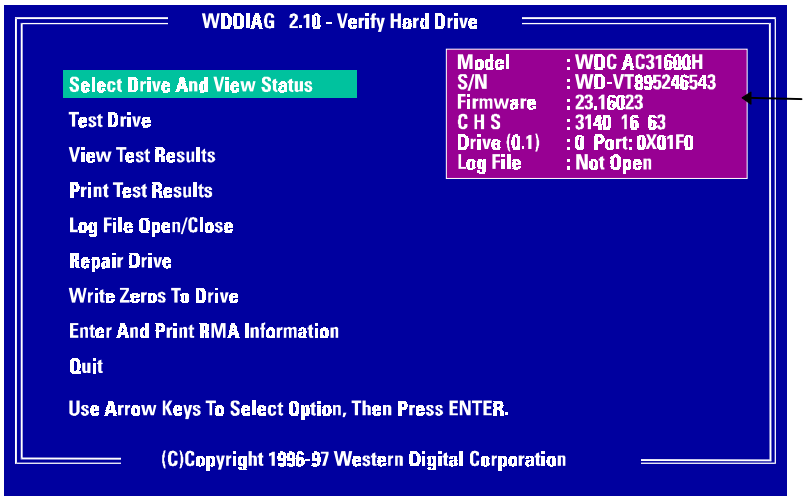
  WDDIAG cannot restore the following older Western Digital hard drives to a defect-free status: AC140, AC160, AC280, AC2120, AC2170, and AC2200. Use the Western Digital utility WDAT_IDE for these drives. You can download it from our web site at www.wdc.com or the BBS.

Testing the Hard Drive

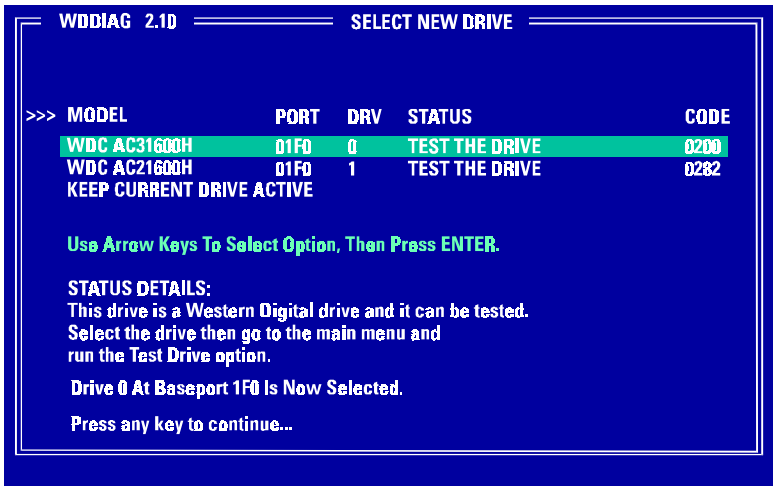
1. Insert the bootable disk containing WDDIAG.EXE into drive A.
2. Reboot the system.

   Note for Windows 95 users: To reboot a Windows 95 system, select Shut Down from the Start Menu. Then select Restart the computer. Do not run WDDIAG while Windows 95 is active.

3. From the A: prompt, type **wddiag**. The WDDIAG main menu displays.



4. From the **WDDIAG** main 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.

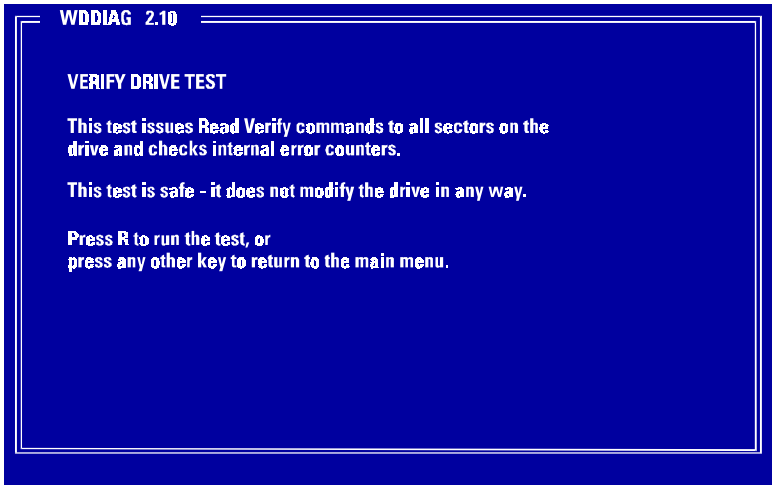


5. Use the **UP/DOWN ARROW** keys to highlight the desired drive and press **ENTER** to return to the main menu. The Hard Drive Recognition window displays information about the selected drive.

   If the Hard Drive Recognition window displays the correct information, continue with step 6.

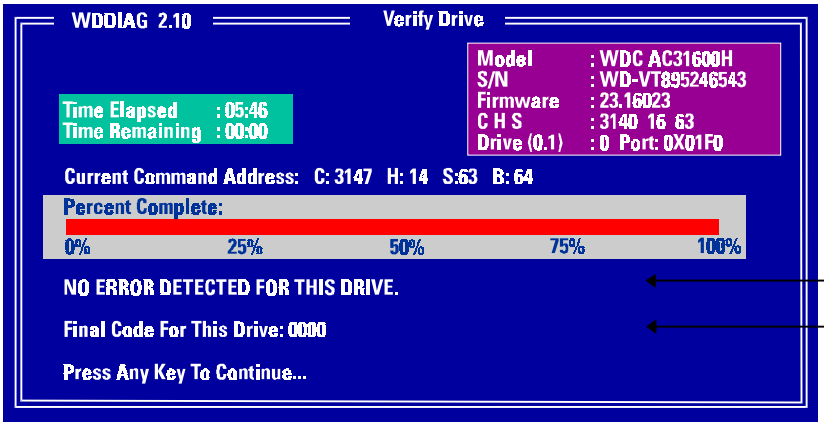
   If the Hard Drive Recognition window displays incorrect information, WDDIAG is not communicating with the hard drive. Check your BIOS setup, all cables connected to the hard drive, and the jumper settings on the hard drive. See *Alternate Troubleshooting Resources* on page 10.

6. From the **WDDIAG** main menu, select **Test Drive** to issue Read Verify commands to all sectors on the hard drive. The Verify Drive Test window displays.



7. Press **R** to test the drive.

   The Test Drive option takes several minutes to complete (possibly as long as 15 minutes). When the test is complete, the Verify Drive window displays.



WDDIAG reports the status of the hard drive. If the status message "No Errors Detected For This Drive", "Non WD Drive Detected", or "Contact WD Tech Support" displays, press any key to return to the main menu. See the list of status messages on pages 3 and 4 for more information.

If the Repair Drive status message displays, follow the instructions in *Using WDDIAG to Restore the Hard Drive to a Defect-Free Status* on page 3.

Repairing the Hard Drive

If you receive the message "Repair the Drive" after using the Test Drive option and have already backed up the hard drive, follow the prompts to attempt to restore the hard drive to a defect-free status. Otherwise, back up the hard drive and use the Repair Drive option on the main menu to attempt to return the hard drive to defect-free status.

You can lose data if WDDIAG relocates tracks, but not if it relocates sectors. A warning message displays before WDDIAG relocates tracks. **Relocate tracks only after you have backed up the data on the hard drive**. After completing the Repair Drive option, WDDIAG scans the drive to verify the hard drive's defect-free status.

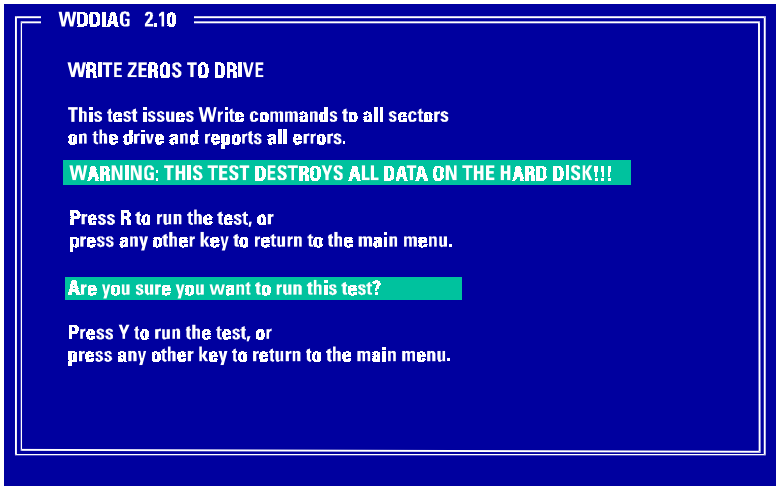
Writing Zeros to the Hard Drive

If you tested the hard drive, checked all hardware in the system, and verified that the BIOS is correctly set up, and are still experiencing problems, you might want to reinstall the software on your system. Before reinstalling the software, you can use the Write Zeros To Drive option to erase the entire hard drive, including the MBR (master boot record), all partition tables, and all data.

CAUTION: This procedure overwrites existing data on your hard drive. If you choose this option, be sure to back up user data before proceeding.

To write zeros to the hard drive:

1. From the **WDDIAG** main menu, select **Write Zeros To Drive**. A message displays warning you that this option destroys all data on the hard drive.
2. Press **R** to write zeros to the hard drive. A second warning message displays. Press **Y** to erase the all drive information.



3. If WDDIAG reports any errors, follow the procedures in *Returning a Hard Drive* on page 8.

Exiting WDDIAG

1. To close WDDIAG, select **Quit** from the main menu. A message displays prompting you to reset the system to reinitialize the BIOS and hard drive(s).
2. Remove the floppy disk from the drive and reboot the system.

Contacting Western Digital Technical Support

In some cases, you may need to contact Western Digital Technical Support at (714) 932-4900 or (800) 832-4778 in the U.S. or (31) 20.446.7651 in Europe. Alternately, you may contact your place of purchase or its warranty service provider who can support your needs. Be prepared to give your hard drive serial number and CCC code number to the technician.

Returning a Hard Drive

If the hard drive is under warranty and you determine that the hard drive is unrepairable, obtain an RMA (Return Material Authorization) number and instructions for product return from Western Digital Technical Support. See *RMA Information* below for specific details regarding your hard drive returns.

Return the hard drive to Western Digital with a printed copy of the RMA information generated in WDDIAG and the file or printed copy of WDDIAG.LOG. To complete the RMA information, from the **WDDIAG** main menu, select **Enter and Print RMA Information**.

Western Digital maintains a serial number tracking system as a quick and efficient method of identifying your hard drive. Any hard drive discovered to be stolen will not have the warranty honored and will not be returned to the user. Credit or replacement will not be issued.

Product received with the following conditions will be returned to you unrepaired and at your expense:

- Product warranty has expired or is void (See *Determining Warranty Status* below)
- Product that has been tampered with
- Product damaged during shipment due to improper packaging
- Product without an RMA number on the outside of the box

Determining Warranty Status

All Western Digital EIDE hard drives have a three-year warranty, starting from the purchase date. See *Western Digital Limited Warranty Statement* on page 13 for details.

Warranty will be void and product returned to you unrepaired, and at your expense, in the following instances:

- Product damaged during shipment due to improper packaging
- Obvious product abuse or defacement
- Damaged or missing hard drive labels or safety seals
- Stolen drive

RMA Information

An RMA (Return Material Authorization) must be obtained from Western Digital Technical Support before returning a Western Digital hard drive. Follow the guidelines in this section after receiving the proper hard drive return authorization.
Distributors and OEMs: Obtain an RMA number from your Western Digital account manager.
Resellers: Obtain an RMA number from your distributor.

1. Only RMA authorized products and quantities will be accepted by Western Digital. If your RMA packing list is in error, please contact Western Digital Technical Support or Account Management prior to shipping.
2. Ship your hard drive to the address located on the lower right-hand corner of the RMA form. Keep a record of your RMA number for possible inquiries.
3. Your RMA number must be placed on the outside of the package. Packages received without an RMA number will be returned unrepaired. If you have multiple RMA numbers, send them in separate packages. Only one RMA number per box is allowed.

4. For your protection, please use a traceable carrier such as Fed Ex, UPS, etc.. If shipping via a packaging store, make sure that the RMA number is visible on the outside of the package along with your name and return address.

International Customers: As a convenience to you, the pre-mailer provided may be used as a Proforma Invoice for Customs purposes. Please complete the form (when applicable) and enclose with your shipment.

Western Digital Packaging Requirements For Return Products

Follow the guidelines in this section after receiving the proper hard drive return authorization.
Distributors and OEMs: Use Western Digital approved packaging only.
Resellers: Use Western Digital approved packaging only. Return the hard drive to your distributor.

Hard Drive Repackaging Guidelines

Remove and keep all add-on items such as cables, software, adapters, brackets, installation guides, or rails prior to shipment. Western Digital is not responsible for these items and cannot return them. Only items specified on the RMA will be returned.

- **In-warranty returns:** Ship the original proof of purchase along with the defective hard drive.
- **Out-of-warranty returns:** Include full payment (check or money order) inside the box along with the defective hard drive.

Follow these guidelines to prevent hard drive damage during shipping:

1. Use the original Western Digital packaging when available as it has been specifically engineered to protect hard drives during transit.
2. Place the hard drive in the original static shielding bag prior to shipment. If the original bag is not available, please use an equivalent static shielding bag.
3. If you do not have the original Western Digital packaging, use an outer carton that is made of corrugated paper. Do not use chipboard because it is not strong enough to withstand the rigors of transit. Please inspect the corrugated carton to be sure it is defect-free and structurally sound.
4. To protect the hard drive from shock, use a cushioning material. Foam is the best cushioning material and should be used on all sides of the hard drive inside the corrugated carton. A list of household items that may be substituted if foam is not available are:
   - bubble wrap - wrap completely around the hard drive
   - cellulose wadding - wrap completely around the hard drive
   - old clean towels - firmly packed inside the carton so that the hard drive cannot move
   - old clean pillows - wrap completely around the hard drive
5. **Single hard drives in one carton:** Firmly cushion the hard drive on all sides to ensure that it cannot move inside the corrugated carton. This will help protect the hard drive should it be dropped during shipping.
   Dual hard drives in one carton: When shipping more than one drive in a single corrugated carton, make sure that all hard drives are cushioned individually, and do not touch each other. If using foam, surround the hard drives with a minimum of two inches of foam. Do not use peanuts or flowables as they will not support the hard drives from all sides during shipping.
6. Seal the corrugated carton firmly using adhesive backed tape. Make sure all corrugated carton edges are sealed to prevent tearing.

Alternate Troubleshooting Resources

The information provided in this section will help you eliminate non-hard drive issues. The following list of troubleshooting tasks should be completed before using WDDIAG.

- Verify that the system boots correctly.

  If the system does not respond during boot:

  1. Verify that the start-up boot sequence in the BIOS is set to A: first then C:
  2. If the system does not load the operating system, run Sys C: to generate a new command.com file and hidden DOS files.
  3. If the drive has multiple partitions created with Fdisk, make sure the bootable partition is marked active.
  4. If the drive was formatted with the Format command, make sure the primary drive was formatted with the /S option.
  5. If you think the MBR (master boot record) could be corrupt, attempt to repair the MBR by using Fdisk / MBR. If EZ-Drive is installed on the hard drive, use EZ / MBR to repair the MBR.

     If the system boot is slow, check the jumper settings for each hard drive. Incorrect jumper settings can cause a system to boot slowly. See the Western Digital Installation Guide for standard jumper settings.

     If the system does not respond (locks up) on initial boot and it has a 2.5 GB or larger hard drive, the system BIOS may not support drives larger than 2.1 GB. See the Western Digital Installation Guide for further instructions on how to resolve this issue.
- Scan the hard drive for viruses.
- Run SCANDISK, CHKDISK, or DEFRAG.
- Verify that the Primary and Secondary controller are ENABLED in the system BIOS.
- Check the BIOS version, it could be the source of the problem. Contact the motherboard or EIDE controller card manufacturer to obtain an upgrade.
- Check that the connections at both ends of the IDE interface cable are secure and correctly oriented. If the hard drive does not spin up, try attaching a different IDE interface cable.
- Check that the EIDE controller card, if installed, is properly seated and connected.
- Verify that the system power cables are secure.
- Check that the jumper selections on the hard drive(s) are correct. Incorrect jumper settings can cause the system to boot slowly.

For additional troubleshooting procedures, refer to the Western Digital web site at www.wdc.com, Service and Support area.

Additional WDDIAG Information

Log Files

WDDIAG generates several log files and one comma file.

File	Default	Command Line	Description
WDDIAG.LOG	Enabled	-K, -L	This file stores the test results for all drives tested during the last run of WDDIAG. You can disable WDDIAG.LOG with the -L command line or if you run the test from a write-protected floppy disk. WDDIAG disables WDDIAG.LOG if you run the program from the hard drive rather than a floppy disk and the host issues a Set Parameters command to the hard drive being tested. This protects the data on the hard drive. When the host issues a Set Parameters command to the hard drive, the drive setup may change and cause the system BIOS to access the drive incorrectly.
HISTORY.LOG	Enabled	-H, -L	This file stores all of the previous WDDIAG.LOG files. Each time you test a drive, WDDIAG copies the test data stored in WDDIAG.LOG to HISTORY.LOG. If you are running multiple WDDIAG sessions, delete HISTORY.LOG periodically to conserve disk space.
WDDIAG.CS1	Enabled	-C, -L	This file stores a history of test results. Each time you run a test, WDDIAG adds a new record to this file. You can use WDDIAG.CS1 to import test results to a spreadsheet or database. If you disable WDDIAG.LOG, WDDIAG.CS1 is disabled. Each record in WDDIAG.CS1 has the following fields: **Field** **Description** A16 Serial number A14 Drive Model N Model ID Byte (is 99 for non-WD drives and also if -B option is not selected) A16 Firmware string A12 DCM string (will be 'UNKNOWN' if unknown) A14 Build date (format MM-DD-YYYY) (01-01-1980 if unknown) N Final error code (see list later in this document) N Test complete (0 = incomplete, 1 = complete) N Host retries (0 = OFF, 1 = ON) A10 Date (format MM/DD/YY) A10 Time (format HH:MM:SS)
WDDIAG.PRE	Enabled	-L	This file is used to generate the RMA Report.

Command Line Options

WDDIAG supports the following command line options:

Command Line Options	Description
-C	Disables comma file WDDIAG.CS1. See “Log Files.”
-H	Disables HISTORY.LOG. See “Log Files.”
-K	Keeps the WDDIAG.LOG open even after the host issues a Set Parameters command. Only use this option if the log file is stored on a drive other than the test drive. See “Log Files.”
-L	Disables all files. This option takes priority over the -K option. See “Log Files.”
-S	Bypasses system reboot after the host issues a Set Parameters command. Use this option only if the drive being tested is not one of the system drives. When you close WDDIAG and exit to DOS, a message displays explaining that you must reset the system. When the host issues a Set Parameters command to the hard drive, the drive setup may change and cause the system BIOS to access the drive incorrectly. You need to reset the drive to be sure the BIOS re-initializes the drive. Specify this option only if you are sure that the drive being tested by WDDIAG is not one of the system drives accessed by the BIOS.

Sample Command Line:

```
WDDIAG -H
```

This command line disables HISTORY.LOG.

Western Digital Limited Warranty Statement

Obtaining Service

Western Digital Corporation ("WDC") values your business and always attempts to provide you the very best of service. If this Product ever requires maintenance, either contact the distributor from whom you originally purchased the Product or telephone WDC's Technical Support Department. No Product may be returned directly to WDC without first contacting our Technical Support Department at (714) 932-4900 or at (800) 275-4932. If it is determined that the Product may be defective, you will be given a Return Material Authorization ("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 prepaid and insured to the address on the RMA and are to be packaged securely to prevent damage. In order to conclusively establish the period of warranty, an original purchase receipt must accompany the returned Product. WDC shall have no liability for lost data, regardless of the cause, recovery of lost data, or data contained in any Product placed in its possession.

Limited Warranty

WDC warrants that the Product, in the course of its normal use, will be free from defects in material and workmanship for a period of three (3) years and will conform to WDC's specification therefor. This limited warranty shall commence on the purchase date appearing on your purchase receipt.

WDC shall have no liability for any Product returned if WDC determines that the product was stolen from WDC or that the asserted defect a) is not present, b) cannot reasonably be rectified because of damage occurring before WDC receives the Product, or c) is attributable to misuse, improper installation, alteration (including removing or obliterating labels), accident or mishandling while in your possession. Subject to the limitations specified above, your sole and exclusive warranty shall be, during the period of warranty specified above and at WDC's option, the repair or replacement of the Product. The foregoing warranty of WDC shall extend to repaired or replaced Products for the balance of the applicable period of the original warranty or thirty (30) days from the date of shipment of a repaired or replaced Product, whichever is longer.

THE FOREGOING LIMITED WARRANTY IS WDC'S SOLE WARRANTY AND IS APPLICABLE ONLY TO PRODUCTS SOLD AS NEW. THE REMEDIES PROVIDED HEREIN ARE IN LIEU OF a) ANY AND ALL OTHER REMEDIES AND WARRANTIES, WHETHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND b) ANY AND ALL OBLIGATIONS AND LIABILITIES OF WDC FOR DAMAGES INCLUDING, BUT NOT LIMITED TO ACCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, OR ANY FINANCIAL LOSS, LOST PROFITS OR EXPENSES, OR LOST DATA ARISING OUT OF OR IN CONNECTION WITH THE PURCHASE, USE OR PERFORMANCE OF THE PRODUCT, EVEN IF WDC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

In the United States, some states do not allow exclusion or limitations 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.

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