

GATEWAY 2000®
HARD DISK DRIVE

CAVIAR AC31000

▲ WESTERN DIGITAL 1GB



TECHNICAL REFERENCE
Part # HDDMAN005AAUS

Notices

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Gateway 2000®
Caviar 1 GB AC31000 Hard Disk Drive
Part #HDDMAN005AAUS 7/94



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FCC statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Accessories: This device has been tested and found to comply with the limits of a Class B digital device, the accessories associated with this equipment are following:

1. Shielded video cable
2. Shielded power cord.

These accessories are required to be used in order to ensure compliance with FCC rules. It is the responsibility of the user to provide and use these accessories.

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

Caution to the user: The Federal Communications Commission warns the users that changes or modifications of the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Specifications

<i>Average Seek:</i>	
Read	10 Milliseconds
Write	12 Milliseconds
<i>Track-to-track Seek</i>	4 Milliseconds
<i>Maximum Seek</i>	23 Milliseconds
<i>Index Pulse Period</i>	13.33 Milliseconds
<i>Average Latency</i>	6.67 Milliseconds
<i>Rotational Speed</i>	4495 Revolutions/min. (+- .1%)
<i>Controller Overhead</i>	0.3 Milliseconds average
<i>Data Transfer Rate</i>	
- Buffer to Host	5.26 Mbytes/second (sustained) 11.1 Mbytes/second (burst PIO) 13.3 Mbytes/second (burst DMA)
<i>Interleave</i>	1:1
<i>Buffer size</i>	128K
<i>Error Rate</i>	
-Unrecoverable	<1 in 10 ¹³ bits read
<i>Spindle Start Time²</i>	
-From Power-on to Drive Ready	10 seconds typical
<i>Spindle Stop Time</i>	5 seconds typical
<i>Start/Stop Cycles</i>	50,000 minimum
<i>Formatted capacity</i>	1083.8 Mbytes (1 Mbytes=1,000,000 bytes)

Warnings and precautions

Warning!

This procedure can be done by anyone with a reasonable level of mechanical skill. However, hard disk drives can be damaged fairly easily. Observe these precautions so as not to void your warranty:

- Do not drop or handle the drive carelessly
- Do not attempt to open the sealed hard drive compartment
- Keep all liquids and moisture from the hard drive
- Protect the drive from extreme temperatures
- Follow cabling instructions carefully
- Carefully follow the static control techniques.

Read through the following instructions carefully; if you are uncertain of your ability to successfully complete the steps, call Gateway 2000 technical support.

Important static electricity precautions

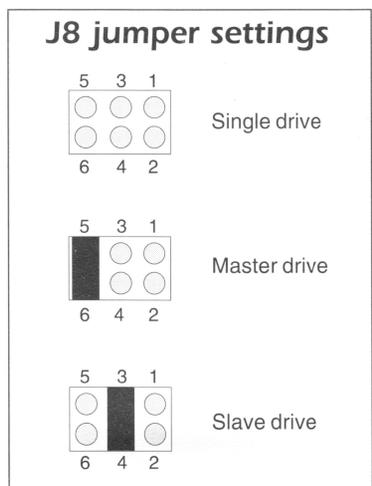
Hard disk drives and many of the computer's internal components are extremely sensitive to static electricity. To avoid damaging the hard drive and voiding your warranty, observe the following precautions:

1. Before handling the drive or touching anything inside the computer, discharge your body's static electric charge by touching a grounded (earthed) surface. Wear a grounding wrist strap if one is available.
2. Do not remove the hard drive from its antistatic container or bag until you are ready to install it.
3. Always handle a drive by its frame. Avoid touching the connectors or the printed circuit board.
4. Do not slide the drive over any surface.
5. Avoid anything that tends to produce static, such as many plastics, styrofoam, furs, and vinyl.
6. Limiting your movements during installation reduces static electricity.
7. Never connect or disconnect disk drive cables while your computer is turned on or plugged in.

Configuring the drive(s)

The Caviar AC31000 hard disk drive available from Gateway 2000 can be used alone or with another IDE drive. Before you actually install the new hard drive, you must configure it according to your system's new hard drive setup.

This section describes how to set up the AC31000 drive for several configurations. *To configure the Caviar AC31000 hard drive, set jumper block J8 (shown below) to match the drive setup for your computer.*



J8 location
(the six pins located next to the power connector)

To configure a drive for a single drive installation:

Make sure that no jumper is installed at J8.

To configure the drives for a dual drive installation:

1. Decide which drive is the primary (master) and which drive is the secondary (slave) drive.
2. Configure the *master drive* by installing a jumper on pins 5-6 of J8.
3. Configure the *slave drive* by installing a jumper on pins 3-4 of J8.

Note: If you have a system board with one IDE connector, then you must also have an IDE controller card installed in your system to add a third or fourth hard drive.

If your system board does not have an IDE connector, then you must have two IDE controller cards installed in your system to add a third or fourth hard drive.

To configure a third drive installation:

Configure it as a *single* drive; no jumper installed at J8.

To configure a fourth drive installation:

1. Change the configuration of the third drive from *single* to *master*. Install a jumper on pins 5-6 of J8.
2. Configure the fourth drive as the *slave* to the third drive. Install a jumper on pins 3-4 of J8.

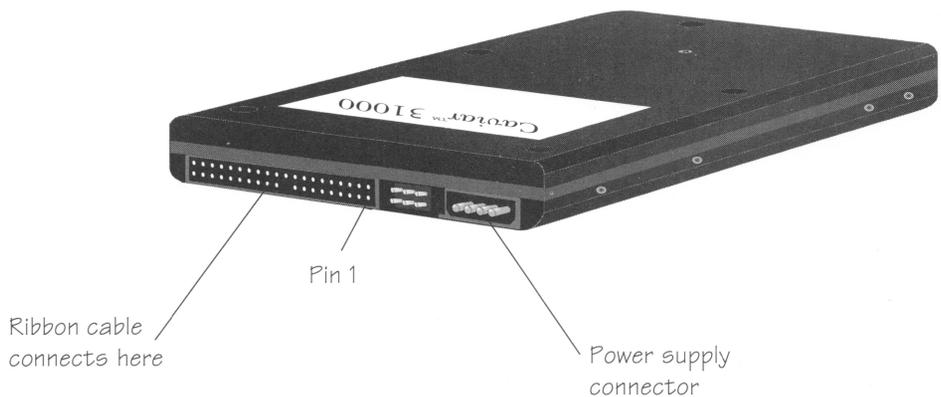
Installing the drive

After you have set J8 for the hard drive configuration, you are ready to install the drive and plug everything in.

1. Use the instructions Chapter 4 of the System Guide shipped with your system to open the system unit; or, if you received an Installation Guide with the hard drive, use the instructions in that manual.
2. Depending on your system unit case, you may need to remove mounting bracket from, or attach rails to, the new hard disk drive before it will fit into the drive bay. If you need to attach rails, you may need to experiment to find the best holes to use so the drive aligns with the opening in the drive bay.
3. Insert the drive into a vacant drive bay. If your system does not use the rails, attach the disk drive to the system unit chassis with the supplied mounting screws. Tighten the screws evenly, and do not overtighten. Make sure that the screws don't contact the drive's circuit board.

If your system uses rails, the fit is quite snug. Apply even pressure to slide the drive into the bay. Then fasten the tabs to the front of the chassis with the supplied screws.

4. Note that two cables connect to the hard disk — the *ribbon or data cable*, which connects the hard disk to the system board or host adapter card, and the *power supply cable*.
5. It is important to orient the ribbon cable correctly. Look at the cable. You'll notice dots or a colored stripe along one edge. The side of the cable with the stripe goes to the pin 1 side of the connector on the drive and is near the power supply connector.
6. Connect the ribbon cable to the system board or to the host adapter card. The colored stripe on the cable goes to pin 1. If your system has two IDE connectors on the system board, *be sure* to plug the first two hard drives (drives C: and D:) onto the *primary connector* and the second two drives onto the *secondary connector*.
7. The power supply cable is keyed and can only be inserted correctly. Connect it to the hard disk. Power supply cables are interchangeable; you can use any of them.



Setting the drive type

After the hard disk is physically installed, you'll need to use the Setup program to specify the hard drive type for *each drive* you are installing in your system. In fact, you will probably receive an error message about hard drive configuration when you boot up. (This is to be expected since you just changed the hard disk setup!) See your *Gateway 2000 Computer System Technical Reference* manual for instructions on accessing the Setup program.

1. From the Setup program, scroll through the list and choose AUTO CONFIGURE to specify the drive type for each drive in your system. The system automatically determines the correct drive type. The system may appear to hang for a minute while it detects the drive type, so be prepared to wait a few moments. If you wish, you can manually enter the drive's parameters (cylinders, heads, sectors, and so forth). To do this, choose USER DEF, and then tab over and type in each number.

IDE hard disk drive parameters.

Drive	Cyl.	Heads	Sectors	LZ	Write Precomp
Caviar AC31000	2100	16	63	0	None

2. Follow the instructions on screen to save the changes and exit the Setup program.

Preparing the drive for use

Caution: FDISK destroys all existing files in partitions you modify. If you are using FDISK to alter partitions on a disk that already contains files, be sure to back up any files you want to keep before you begin.

After your system recognizes the drive, it is ready to be partitioned. Partitions divide up the hard disk into separate areas that can be used with the same or different operating systems. *Even if you plan to run just one operating system (MS-DOS, for example), you must still create a partition.*

The easiest way to partition and high-level format the new drive is to do it during MS-DOS installation. The MS-DOS Setup program automatically uses FDISK and the FORMAT command to partition and format.

Refer to your *MS-DOS User's Guide* for the section on how to use the MS-DOS Setup program. You will also need the MS-DOS diskettes. Start with Disk 1/Setup and then follow the instructions as they appear on the screen.

Finishing the installation

At this point you have set the jumpers on your new hard drive, physically installed it, connected the cables, defined the drive type in CMOS, and installed MS-DOS, (where SETUP created partitions and formatted the drive). Now you can complete the installation.

1. Power down and unplug all power cables.
2. Check all the inside cable connections and then carefully reassemble the system unit.
3. Plug in all power cables and power up the system.
4. Install your backup utility software.
5. If you are moving your data from your old hard drive to the new one, be sure to restore all files and applications from your backup copy onto the new drive.

Note: If your applications don't run after restoring from tape backup, install them from the original program diskettes.

Solving hard disk problems

If a hard disk fails to operate after you install it, go back and check your work against the instructions in this manual. Here are some potential problem areas:

- ❑ You entered the incorrect drive type number in the system Setup program. Remember that the drive type corresponds to a list of parameters for your drive; it does not represent the storage capacity.
- ❑ You haven't made a partition with FDISK yet. Make sure to create at least one partition, and that the primary DOS partition is activated.
- ❑ Drive formatting was not done properly. Remember to use the **/s option** to install MS-DOS system files on the C: drive. If you have more than one partition, remember to separately format **each** logical drive you create.
- ❑ You forgot to connect the drive to the power supply.
- ❑ The hard disk interface cable is connected incorrectly. Make sure that the striped side of the ribbon cable connects to pin one at each connector.
- ❑ Jumpers on the system board or drive are set incorrectly.
- ❑ The hard disk cable is defective. Install a new cable.

