



# Owner's Manual

## EIDE ORB 2.2GB

- Installation Guide
- User's Guide
- Troubleshooting
- How to Get Help
- Warranty
- Registration



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## THINGS TO CONSIDER:

In the process of installing the ORB drive, it will be necessary for you to open up your computer and identify, as well as work with, various pieces of hardware inside it (such as those mentioned in the questions below). If you feel in any way unsure of performing this installation or if you cannot answer “yes” to most of the questions below, then we strongly recommend contacting a qualified computer technician to install or assist in the installation.

1. Have you opened your PC before?
2. Have you physically removed an internal Hard Disk Drive (HDD) before?
3. Do you have access to technical assistance to help with the installation?
4. Are you familiar with the difference between a 3 1/2 and a 5 1/4-inch bay?
5. Do you know what operating system is used on your PC?
6. Do you have a PC system user manual immediately available?
7. Have you read your PC Owner/User manual?
8. Are you familiar with your PC system motherboard?
9. Have you set up an EIDE/IDE port in the past?
10. Are you familiar with an HDD ribbon cable?
11. Have you connected an EIDE/IDE ribbon cable to the motherboard in the past?
12. Are you familiar with jumper settings on your HDD?
13. Have you changed an HDD from master to slave in the past?
14. Does your PC have an empty 3 1/2 or 5 1/4-inch bay with front access?
15. Do you know which drive bay you intend to use to install the ORB drive?
16. If you selected the 5 1/4-inch bay, do you have a kit to enable the installation of the 3 1/2-inch ORB drive into a 5 1/4-inch drive bay?

### Note:

The ORB IDE drive does not work with Macintosh or notebook computers except the G3. Contact your computer retailer if you do have a Macintosh or notebook computer so that you can exchange your drive for an ORB drive appropriate to your system.

# SECTION 1 INSTALLATION GUIDE

## WELCOME TO ORB!

ORB offers you everything that you want in a removable disk drive - high capacity and fast throughput speed at an affordable price that can be easily installed in your computer.

### 1.1 INTRODUCTION

This installation guide provides detailed instructions, and illustrations, as well as safety precautions that will help you to install your ORB disk drive. It is recommended that you use this guide along with your computer manual, for you will need to refer to the manual during the installation process.

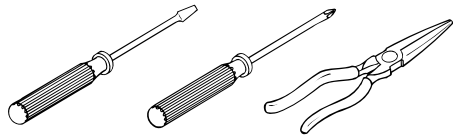
### 1.2 SYSTEM REQUIREMENTS

- ⊕ Pentium 100, or higher PC-compatible computer (recommended)
- ⊕ Empty 3 1/2 or 5 1/4-inch drive bay with front panel access
- ⊕ Embedded EIDE/IDE interface or add-on EIDE controller card
- ⊕ Windows 2000, Windows NT 4.0 with Service Pack 3 or higher, Windows 98, Windows 95, Windows 3.1x, OS/2 4.0 or later, or MS-DOS 5.0 or later
- ⊕ ORB Utilities (provided on the ORB disk)

### 1.3 HARDWARE/TOOLS FOR INSTALLATION

The following tools may be required for the installation of the ORB Drive:

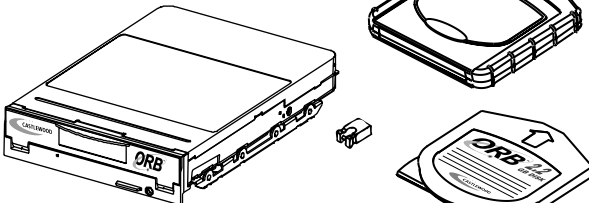
- Flat head screwdriver
- Phillips head screw driver
- Needle nose pliers



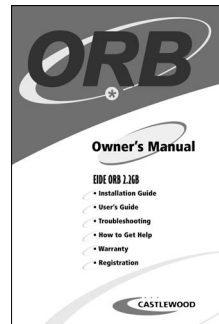
**CAUTION: Do not use magnetic tools.**

### 1.4 PACKAGE CONTENTS

The ORB Kit consists of:

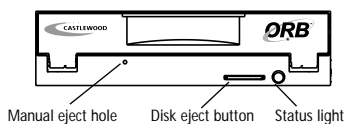


**ORB 2.2GB Disk Drive, ORB Disk with Disk Case, Owner's Manual/Quick Install Guide, Spare Jumper and a set of four screws.**

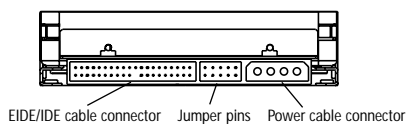


The ORB disk contains installation Readme Files, ORB Tools, and Third Party Software for specific applications. The mounting screws are provided with your drive to be used in the installation. This drive is designed to mount in a 3 1/2-inch drive bay. If a spare 3 1/2-inch drive bay is not available, you will need to purchase an adapter to mount into a 5 1/4-inch bay.

## Become familiar with your ORB drive:



**Figure 1**  
Front View of Drive



**Figure 2**  
Drive setup- Rear connector

## 1.5 INSTALLATION PRECAUTIONS

Be sure to read the following Installation Safety Instructions before proceeding on to the actual installation steps. Damage could occur to your drive and disk if these precautions are not followed. If for any reason you do not understand these instructions, please contact a qualified computer technician to install or assist in the installation.

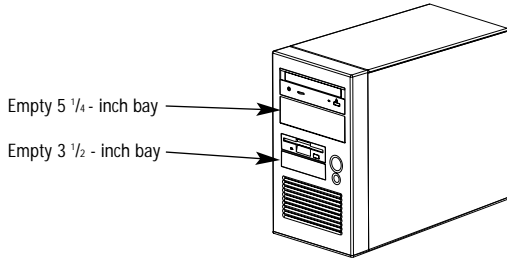
- ⊗ **Temperature Stabilization** - Before removing the drive from its protective plastic bag, ensure the drive has reached room temperature. This is accomplished by allowing the drive to sit in its protective plastic bag in the room environment for at least one hour.
- ⊗ **ESD** - This drive and its electronic components are sensitive to Electro Static Discharge (ESD). Once the drive has been removed from its ESD protective plastic bag, handle it only by its sides. Do not touch the Printed Circuit Board. To prevent ESD problems, touch the metal chassis of the computer before handling the computer's hard drive and periodically throughout the installation. If you are working in a cold and/or dry climate, use an electrostatic discharge wristband. Your clothing generates static electricity as well. Do not allow your clothes to come into direct contact with the parts of the circuit board or the hard drive.
- ⊗ **Shock** - Dropping, jarring, or moving the drive while it is spinning can cause catastrophic damage. Do not install this drive when it is not secured in place.
- ⊗ **Power** - Always power off your system before installing or removing the drive.

## 1.6 HARDWARE INSTALLATION

### Locate an unused drive bay

You should see one or more plastic or metal plates on the face of your computer near the floppy, CD-ROM or DVD drives. These are the unused drive bays. The ORB drive mounts in a 3 1/2-inch drive bay. If you only have a 5 1/4-inch drive bay,

an adapter will be required. Obtain an ORB 5 1/4-inch bay adapter from your ORB dealer.



**Figure 3**  
Tower with open 5 1/4 and 3 1/2-inch drive bays

## Mounting the Drive Into a 5 1/4-inch Adapter

**Note:** The remainder of this section provides instructions for mounting your ORB drive into a 5 1/4-inch bay adapter.

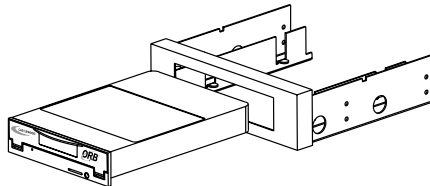
### 1. Slide the drive into the adapter.

If installing the ORB drive into a 5 1/4-inch bay with an adapter be sure to use the screws provided with your adapter.



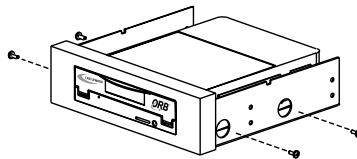
**CAUTION:** Be careful doing this to avoid damage to the drive.

**Figure 4**  
ORB drive insertion  
into 5 1/4-inch adapter



### 2. Line the holes of the drive up with the holes of the adapter and insert two screws into each side of the drive.

**Figure 5**  
Mounting ORB drive  
into 5 1/4-inch adapter



**CAUTION:** Mounting screw lengths have been chosen so that no more than 1/8-inch of the screw enters the frame-mounting hole of the drive. The torque applied to the mounting screws should be between 4 and 6 inch-pounds.

Now that you have located the empty drive bay and mounted your drive in an adapter if necessary, you are ready to install the drive in the computer.

1. Shut down your operating system and power off your computer. Unplug the AC power.
2. Remove the cover of your computer.

Refer to your computer manual for a description of how to remove the outer cover of the computer.

**CAUTION:** Make sure you keep track of all screws and fasteners during this process.

3. Prepare the bay for installation.

Make sure the bay is free from any extra screws or plates. Refer to your Computer user's manual for more details on this step.

## 1.7 CONFIGURATION OPTIONS

Your ORB drive is shipped as a slave drive. Please see your computer installation manual for details on the settings used by your system and what selections to use. There are a few common scenarios listed below. One of these might match your computer's system setup. Look into your computer and identify where the various connectors (there are three connectors on each cable) of the EIDE/IDE interface cable(s) are attached. Then refer to the scenario illustrations and descriptions for a match. If you do find a match, then make note of the possibilities for jumper settings and cable attachments that are offered. You will need this information to install your ORB drive.

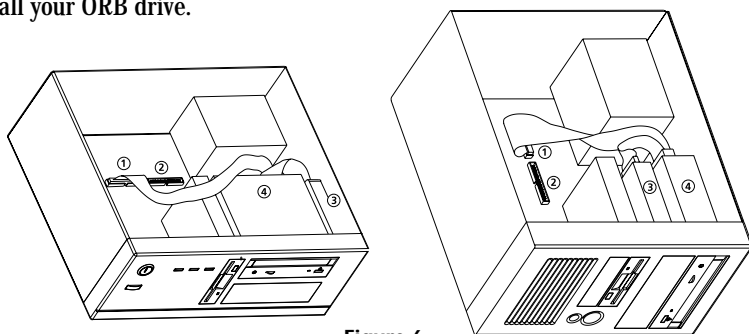


Figure 6

Desktop and Tower with Primary channel (1), Secondary channel (2), Hard Drive (3), CD-ROM/DVD Drive (4)

**CAUTION:** When installing your ORB Drive, you should never place it as a slave device to a CD-ROM, DVD or ATAPI master device; these configurations will limit or reduce the data rate potential of your ORB drive. It should only be installed as a

slave device to other hard drives or as a master device to achieve maximum throughput.

### Scenario I

	Primary Channel	Secondary Channel
Master Drive	(3)	Empty
Slave Drive	(4)	Empty

Here your existing hard drive is installed as the master on the primary channel and the CD-ROM or DVD is installed as the slave on the primary channel. There is an open secondary channel. If there is not a cable in this port, you will need to install one yourself. We recommend installing the ORB drive as the master on the secondary channel (labeled “(2)” on Figure 6).

### Scenario II

	Primary Channel	Secondary Channel
Master Drive	(3)	Empty
Slave Drive	Empty	Empty

In this scenario, your hard drive is installed as the master drive on the primary channel. Because the ORB drive is already configured as a slave, it is easy to set the ORB drive as the slave drive on the primary channel.

### Scenario III

	Primary Channel	Secondary Channel
Master Drive	(3)	(4)
Slave Drive	Empty	Empty

Here the hard drive is the master device on the primary channel and the CD-ROM/DVD is the master on the secondary channel. You can install the ORB drive as the slave on the primary channel. We recommend installing the ORB drive as the slave to the hard drive (labeled “(3)”) on the primary channel (labeled “(1)”).

### Scenario IV

	Primary Channel	Secondary Channel
Master Drive	(3)	(4)
Slave Drive	EIDE Device	Other Device

### ALSO

	Single IDE Port
Master Drive	(3)
Slave Drive	Other Device

In the first situation of this scenario, the hard drive is the master on the primary channel and other EIDE devices occupy all the other possible EIDE cable connections. For the second situation, there is only one IDE channel with the hard drive as the master and the CD-ROM or DVD drive as the slave. In either one of these situations, you can remove one of the EIDE devices from one of the EIDE cable connections and replace it with your ORB drive.

For the second situation you can add a secondary EIDE controller to your system and connect your ORB drive to it.

### Jumper Placement

Jumper pins are located at the rear of the drive as the group of 10 pins in 5 vertical sets of two. A jumper block is provided to configure the drive for the options master, slave and CSEL(cable select).

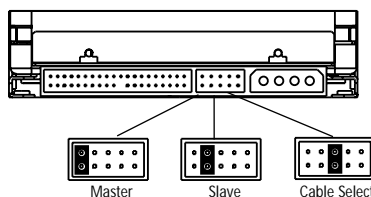


Figure 7  
Various jumper positions

If your installation requires the ORB be a master drive, you must remove the jumper from the slave position and put it in the master position. To do this, remove the jumper block by gently pulling it off the jumper pins and pushing it back on to a new pair of jumper pins (you may need the needle nose pliers for this operation). As shown in the illustration, the jumper plug should be inserted vertically, that is, onto one pin from the top row and the pin below it on the bottom row. CSEL (cable select) is only used in a very few special situations. Please see the manual that came with your computer for information on CSEL.



**CAUTION: Do not install jumpers in any other position. Only one jumper will be used.**

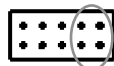


Figure 8

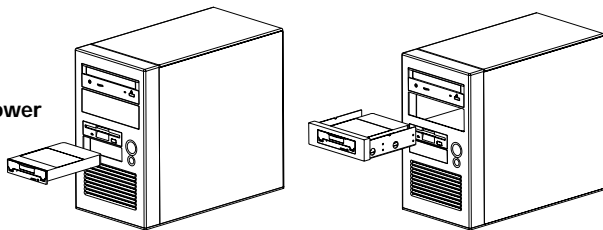
These jumper pins are never used

## 1.8 MOUNTING THE ORB DRIVE

### 1. Slide the drive into the open drive bay.

If you are installing the drive into a 5 1/4-inch drive bay and are using an adapter, then slide the drive adapter (with the drive already installed) into the 5 1/4-inch drive bay. Do not put the chassis mounting screws in yet.

**Figure 9**  
ORB drive insertion into tower  
(3 1/2 and 5 1/4-inch bays)



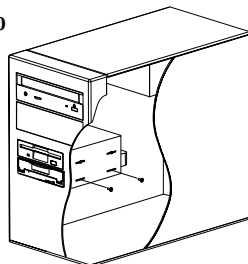
**CAUTION:** Do not mount the ORB drive upside down. The only valid mounting positions are: Circuit card (PCBA) facing down, to the left, or to the right.

**Note:**

From the inside of the computer, check to see if the EIDE/IDE cable you will be using reaches the rear of the ORB drive. If it does not reach, then refer back to section 1.7, Configuration Options, and rearrange the devices according to another scenario. It's best to connect the cables after the mounting screws are in place, but if you need to slide the drive back in the chassis to connect the power and data cables, do it now.

**2. Match the holes of the drive with the holes in the drive bay enclosure and insert the screws.**

Using the screws provided with the ORB drive, put two screws into each side of the drive. If there are no holes in the sides of the enclosure, you will have to mount the drive from the bottom.



**Figure 10**  
ORB drive mount

**CAUTION:** If installing the ORB drive into a 3 1/2-inch bay use only the screws provided with your drive for installation of your drive. If installing the ORB drive into a 5 1/4-inch bay with an adapter be sure to use the screws provided with your adapter. Mounting screw lengths must be chosen so that no more than 1/8 inch of the screw enters the frame-mounting hole of the drive. Do not overtighten the screws.

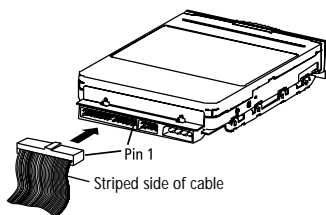
## 1.9 CABLE CONNECTION

**1. Connect the IDE interface cable to the drive.**

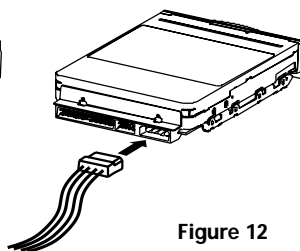
By now you should have determined where you are going to install the drive (i.e. Master/Slave/CSEL and Primary/Secondary). This process was detailed in Section 1.7, Configuration Options. There are variations in the way different computers are set up. For example, some computers contain interface cables

which designate that each connection be used for either a slave or a master device. Other cables have connectors that can be used for either. Consult your computer manual for further and more detailed information on how your system is set up. Locate the 40-pin IDE connector that fits your setup and that reaches the ORB drive inside your computer. If you installed an IDE interface cable, then use one of the connectors on this cable. Connect the cable to the rear of the ORB drive. If the connector is keyed it can only be installed with the keyed side pointing toward the top of the drive (facing up).

If the cable is not keyed, insert the cable so that the banded or striped color edge of the ribbon cable is closest to the Master/Slave jumpers (see illustration above). Seat the cable firmly, but do not use excessive force.



**Figure 11**  
IDE cable insertion



**Figure 12**  
Power cable insertion

## 2. Connect the power cable to the drive.

The power cable has a 4-pin connector on the end of it that is shaped so that it can only be installed one way. The slanted corners designate the top of the connector.

Insert an unused 4-pin power connector from inside the computer into the rear of the ORB drive. Make sure that the connector is inserted completely into the drive. If there are no unused power connectors in your computer you will need a Y-adaptor, which allows you to branch two power connectors off one of your computer's power cables.

## 1.10 FINAL INSTALLATION CHECKS

### 1. Check cable connections.

Check that the EIDE/IDE interface cable is installed correctly with all 40 of the pins on the rear of the drive inserted into the cable connector. Ensure also that the 4-pin power cable connector is completely inserted into the rear of the drive.

### 2. Confirm that the jumper block is installed in the correct position.

This position was determined in Section 1.7, Configuration Options.

### 3. Ensure that the cables connected to the other devices have not been loosened or disconnected.

Cables running to devices other than the ORB drive may have been loosened or disconnected during the installation process.

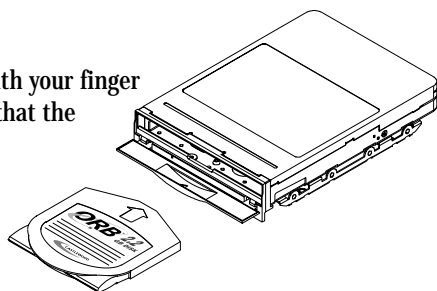
Replace the cover of the computer, reinsert the screws, connect any other devices you may have disconnected from the computer, and reconnect the AC cable.

## 1.11 SYSTEM SETUP

### 1. Orb disk insertion

Push a disk straight into the ORB drive with your finger using an “in and down” motion to ensure that the disk is seated.

Figure 13  
Disk insertion



### 2. Power on your system.

The ORB drive should be detected during system startup.



**CAUTION:** If you insert an ORB disk in your ORB drive and Windows asks you if you want to format the disk, be careful how you respond. Formatting a disk with data on it will destroy all the data.

If the drive is not detected, or your system hangs during the bootup process, you may have to use your system’s BIOS setup program. Some basic information about how to do this is located in Section 3, Troubleshooting.

You may also need to refer to your computer system’s manual for information about how the BIOS setup program works on your computer.

### 3. Your Operating System should be loaded.

If you are using Windows 98/95/NT proceed to Section 1.12, Software Installation.

If you are using DOS, Windows 3.1x, OS/2, or another operating system, you should visit our web site at [www.castlewood.com](http://www.castlewood.com) for further installation information.

## 1.12 SOFTWARE INSTALLATION

The Software Setup screen is used to install the ORB Tools and other software provided on your ORB Tools Software Disk when you are running Windows 98/95/NT.

### Software Setup

1. On the Windows desktop, double-click on My Computer.
2. Double-click on the drive icon for the drive that you just installed. E.g., If you previously had a C: drive, the D: drive is your ORB drive.
3. In the drive window that just opened, double-click on the ORB icon named orb-setup.exe. The Software Setup screen appears.

From this screen, you can install the ORB Tools or other Value Software packages.

You must install ORB Tolls to configure your ORB drive for proper system operation. Other "Value Added" software packages may be installed at your convenience.

### 1.13 ORB TOOLS AND BACKUP UTILITY SOFTWARE

ORB Tools is a suite of utilities included on the ORB disk supplied with your new ORB drive that expand its functionality.

To install ORB Tools click on the Install ORB Tools option. You will be prompted for information as the installation proceeds. Follow the instructions on the screen.

The ORB Tools installation is complete after Windows has restarted.

Once the computer has restarted you can right-click on the ORB drive's icon in My Computer or Explorer to use the ORB Tools. You can also access the ORB Tools from Start/Programs/Castlewood ORB Drive/ORB Tools.



Figure 14

**CAUTION:** If you make changes to the ORB drive's original configuration, e.g., change it from primary to secondary slave, etc.; you must uninstall then reinstall ORB Tools for ORB Tools to work properly in the new configuration.



Once launched you will see this ORB Tools screen.

You can select from the toolbar across the top of the window to choose the tools that you want to access.

Figure 15

The following icons represent functions of the ORB Tools and Backup Utilities



**Restore from Backup:**  
Restores backed up files from ORB Disks.



**Volume Copy Backup:**  
Performs file by file backup of system volumes.



**Image Copy Backup:**  
Full disk image backup.



### **ORB Disk Duplicator:**

Performs disk to disk duplication with ORB Disks.



### **One Click Backup:**

Simplified system backup with preset backup parameters.



### **Ejects:**

Easy access ORB disk ejection function.



### **Professional Backup:**

Backup for the professional that wants backup done their way on their schedule.



### **Rescue Disk:**

When all else fails, ORB Tools can save the day with a system boot disk and full restoration from backup files securely stored on your ORB disk.



### **Drive Status:**

You are never in doubt about your ORB drive configuration with ORB Tools Status function.



### **Spin Down:**

Set your preference for disk sleep and spin down time.



### **Tracker Catalog:**

ORB disk File Archive program Tracks all files on your ORB disk with ease.



**Make Non-Removable:** Allows the user to set the ORB drive as a fixed drive.



### **Scan devices:**

Performs a full system scan for ORB drives and identifies each drive's system interface.

## **Other Value Added Software Packages**

Click on the item that you want to install and follow the onscreen instructions. The Software installation screen is used to install ORB Tools and other software provided on your ORB Tools Software disk when you are running Windows 98/95/NT.

## SECTION 2 USER'S GUIDE

### 2.1 OPERATING YOUR ORB DRIVE

Now that you have successfully installed your ORB drive, you will soon be able to make use of the wide range of features and applications that it offers:

- ✳ **Important Record Storage** – If you need a place to keep special files (confidential information or any other valuable items like product plans and designs, personnel files, budgets, company directories, computerized checkbooks, and tax records), the ORB disk is a perfect solution.
- ✳ **Portable Information** – With your new ORB drive, you have the ability to store vast amounts of information on a disk the size of a 3 1/2-inch floppy. This means you can put an ORB disk in your pocket to take it wherever you go.
- ✳ **Multimedia** – The ORB's fast speed and high capacity make it the ideal storage device for CD-ROM, video, and digital images. You can record an entire movie onto ORB disks and play it back at your leisure.
- ✳ **Audio/Video Mastering & Playback** – The ORB drive software includes mode setting controls that allow professional A/V specialists direct control of the drive's read/write characteristics. Use of A/V modes will optimize the ORB drive for the unique requirements of Audio and Video specialists.
- ✳ **Instant Hard Disk Upgrade** – The ORB offers an easy way to add an extra 2.2 gigabytes of storage space to your system.
- ✳ **Organization** – If you have files from many different types of sources and you want to organize them the ORB allows you to group these files by storing different types of files on different disks.
- ✳ **Hard Drive Back Up** – The ORB presents a simple way to back up your hard drive. Just copy important files to the ORB disk, and you can access those files at any time.



## 2.2 USING ORB DISKS

### \*Disk Insertion Instructions

Push a disk straight into the ORB drive with your finger using an “in and down” motion to ensure that the disk is seated.

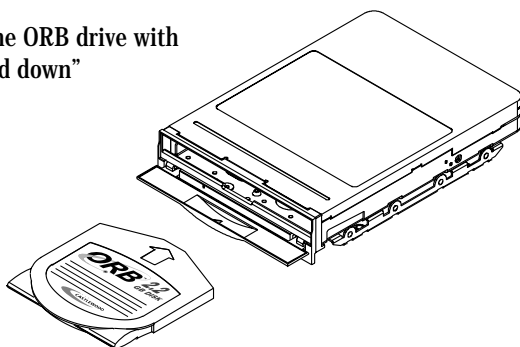


Figure 16  
Disk insertion

### \*Disk Ejection Instructions

Make sure that you eject the disk before powering off your computer system.



**CAUTION:** Do not try to remove disk by lifting up on the front edge of the disk while it is in drive.

**CAUTION:** Do not move or transport the drive with the disk installed. This can damage the heads and media. A disk must not be in the drive when the drive is moved or shipped.

#### From Operating System

1. From the Desktop, double click on My Computer.
2. Right click on ORB Drive Icon.
3. Select Eject.
4. Green LED will flash amber (Disk Spin down and Air Purge cycle).
5. ORB drive door will automatically open.
6. Disk will be ejected.
7. Remove ORB disk.
8. Door will automatically close.
9. Place ORB disk in protective ORB disk case.

#### From Drive

*Use the ORB Tools eject function during routine operation.*

1. Press the disk eject button.
2. Green LED will flash amber (Disk Spin down and Air Purge cycle).
3. ORB drive door will automatically open and disk is ejected.
4. Remove ORB disk.

5. Door will automatically close.
6. Place ORB disk in protective ORB disk case.



**CAUTION:** Do not leave an ORB disk in the ejected position with drive door open.

### \*Using the ORB Disk Case

Your ORB disk comes in a protective disk case. This case is provided to ensure that your ORB disk has the maximum protection from ambient conditions and normal physical use. Place the ORB disk into the ORB disk case when it is not in immediate use. This will maximize your disk life and minimize your risk of loss or damage.

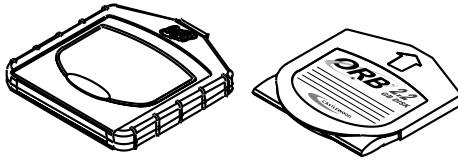


Figure 17  
Disk ORB Case and Disk



### Warning about “foreign media damage”

Do not attempt to insert any media other than ORB disks into the ORB drive. It is not compatible with any media other than an ORB disk. Inserting any media other than ORB disks will result in damage to your drive and will void any warranty for the product.

### \*Emergency Ejection Method

1. Shut down your computer system (turn power off).
2. Wait 30 seconds.
3. Insert a paper clip into emergency eject hole.



**CAUTION:** Do not insert a paper clip into the emergency eject hole while there is power to your PC and drive. This may result in damage to your drive and disk.

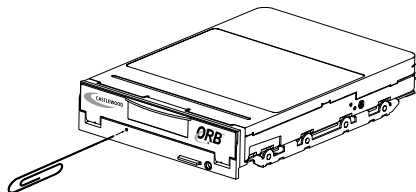


Figure 18  
Emergency eject

## 2.3 ACCESSING YOUR ORB DRIVE

### My Computer: Windows 98/95/NT

1. From the Desktop place the cursor over My Computer and Double Click.
2. Identify the ORB Removable Drive and Double Click.
3. To Access the ORB Tools and other utility functions Right Click the ORB Drive icon.

### Explorer: Windows 98/95/NT

1. From the Desktop click on the Start Button.
2. Select Programs.
3. Select Explorer.
4. Select My Computer.
5. Select the ORB Drive Icon from the drive hierarchy.
6. Click in the ORB Drive Icon or right click to access tools.

### File Manager: Windows 3.1

## 2.4 REASSIGNING DRIVE LETTERS

Under Windows 98/95/NT you may be able to change the drive letter assigned to your ORB drive.

You may want to change the drive letter for convenience, or because there was a change to existing drive letters when you installed your ORB drive. Changes to existing drive letters may cause problems with applications installed on the drives with changed letters.

Installation Help Note 001, Drive Letter Assignment, covers in detail how drive letters are assigned and the ways available to reassign drive letters. This Help Note is available at <http://www.castlewood.com>.

## 2.5 LARGE DRIVE SUPPORT

Windows 98 and Windows 95 OSR2 or later support the use of partitions greater than 2 GB (gigabytes) in capacity with FAT32. The maximum supported partition size is 2 TB (terabytes). Large drive partition support can help you dramatically reduce the amount of wasted space on your computer's hard disk.

One should be aware that this FAT32 configured partition can only be recognized and accessed by Windows 98 and Windows 95 OSR2 or later. DOS, Retail Windows 95 (original Windows 95), and Windows NT 4.0 or earlier cannot access a FAT32 partition.

## 2.6 PARTITIONING A DISK

Your ORB drive comes with a 2.2GB ORB disk. The ORB disk is a high quality and high capacity hard disk. It is pre-formatted with one 2.16 GB extended FAT16 partition on the disk. Depending on the operating systems and file systems you choose to use with your ORB disk, the partition(s) can be set to your preference. The ORB Drive and Disk partition behave like any Hard Disk Drive that you have on your computer. The following table shows the options that exist to you based on your Operating System and File System choices.

You should use ORB Tools to partition and format your ORB disks.

### Partition Options Table

Operating System	FAT16	FAT32	NTFS	HPFS	MAC
DOS	2.16GB	NVO	NVO	NVO	NVO
Windows 3.1	2.16GB	NVO	NVO	NVO	NVO
Windows 95	2.16GB	2.2GB*	NVO	NVO	NVO
Windows 98	2.16GB	2.2GB	NVO	NVO	NVO
NT 3.5	2.16GB	NVO	2.2GB††	NVO	NVO
NT 4.0	2.16GB	NVO	2.2GB††	NVO	NVO
NT 5.0**	2.16GB	2.2GB	2.2GB††	NVO	NVO
OS/2	2.16GB	NVO	NVO	2.2GB	NVO
UNIX	2.16GB	NVO	NVO	NVO	NVO
MAC	1GB†	NVO	NVO	NVO	2.2GB

Table 1

**Note:** 1 GB = 1 billion bytes = 1,000,000,000

Value = Maximum Partition size

NVO = Not Valid Option

\* Windows 95 OSR2 or later

\*\* Beta version

† MAC with PC exchange

†† In fixed drive mode

## Re-Partitioning the ORB Disk:

### **Windows NT**

Using either ORB Tools to partition ORB disks or NT Disk Administrator to manage your hard disk if you want to use NTFS.

You can use Disk Administrator to manage your hard disk, such as partitioning new disks or further partitioning disks that do not contain Windows NT system files.

### **Windows 95 and 98**

Use ORB Tools to partition ORB disks.

### **OS/2**

Use OS/2 provided tools to partition or format ORB disks.

### **Macintosh Systems**

Use MAC PC exchange or ORB Formatter to format and partition a disk.

## SECTION 3 TROUBLESHOOTING

If you encounter a problem while installing or using your ORB drive, check this section for help.

If the information presented in this document does not help you resolve the problem, visit the Help section on our web site: [www.castlewood.com](http://www.castlewood.com).

Additional information can be obtained by sending an email with the “subject” defined as “Help” to [orbinfo@castlewood.com](mailto:orbinfo@castlewood.com).



**CAUTION: Electrical power should be turned off before connecting or disconnecting any cables; otherwise, computer equipment could be damaged.**

### BIOS Setup

Most new systems perform an AUTO DETECTION for detection of hard disk drives. This will automatically detect the drive’s configuration and setup your system.

In the event that your system does not:

1. perform an AutoDetection function,
  2. set the drive to LBA mode, or
  3. does not recognize the full capacity of the drive,
- the system setup BIOS program must be run and the BIOS changed to allow the system to identify the drive.

Here are a couple of things that you should check. Make sure that:

1. AUTO Detection is enabled for the ORB drive.
2. If the ORB drive is connected to the Secondary channel, that the secondary channel is enabled (turned on).

If AUTO detection did not properly identify the ORB drive, you will have to make a manual or user drive entry. Make sure that you only enter/change information for the ORB drive. See your System’s User Manual for information about how to enter and use the BIOS Setup Program.

Following is the data needed for entering the USER defined type using the BIOS Setup program.

User Definable Type:

Cylinders: 4273   Heads: 16   Sectors: 63   LBA: Enabled

If a mode entry is required, use PIO4 or DMA 2. DO NOT use UDMA.

## LED Indicator Definitions

**Green:** Power is present and drive has passed self-test.

**Amber:** Data is being written or read on the ORB disk.

**Red:** Error has occurred while checking the drive.

### Upon Power On:

1. **Steady Green** – Drive ready to accept disk.
2. **Flashing Amber and then steady Green** – Disk is in and drive ready for use.
3. **Flashing amber, motor spins up and then spins down, disk ejects and LED turns steady Green** – Disk failed to spin up.
4. **Flashing Red** – Drive Failure:
  - One flash - ROM failure
  - Two flashes - RAM failure
  - Three flashes - DRAM failure
  - Four flashes - Internal Bus Failure
  - Five flashes - Interface failure
  - Six flashes - Wrong boot signature

### During Operation:

1. **Steady Green Command** – Drive ready to accept an ORB disk  
– ORB disk is loaded.
2. **Flashing Amber** – Disk loading or unloading  
– Disk in use.
3. **Flashing Red (fast)** – Drive failed to eject disk.

---

Green LED does not illuminate or light.

- Make sure computer is receiving power
- Make sure power connector to drive is securely inserted in drive.

---

Red LED remains in the "on" state.

- Drive is defective - return to place of purchase.

---

The ORB Drive does not "come ready". (Green LED on the ORB drive does not come ready when disc is inserted.)

- A) Make sure the computer is powered up.
- B) Make sure the power cable connection to the ORB IDE drive is secure.
- C) Make sure the disk is inserted and seated properly.

---

The ORB drive is not assigned a drive letter, or the ORB Tools software cannot find the ORB drive.

- A) Make sure pin 1 is properly connected on all IDE interface connections. The stripe on the interface cable should align with pin 1 on each connection. If the cable does not have a keyed connector, make sure the connector is not shifted by a pair of pins.
- B) Make sure the ORB IDE drive is configured correctly. Refer to the configuration information in section 1.7 of the installation instructions.
- C) If there is another drive on the same IDE channel, make sure it is also properly configured. Refer to the documentation that accompanied the other IDE drive for configuration information (often this information is on the hard disk case). If you cannot locate the documentation, contact the manufacturer of the drive.
- D) Make sure BIOS LBA support for the ORB IDE drive is enabled in computer's CMOS setup.
- E) Make sure the software drivers for the ORB IDE drive are correctly installed on the computer system. The necessary drivers are included with the ORB Tools software package. Carefully follow the installation instructions given for the computer's operating system (Section 1.12 Software Installation).
- F) Some IDE hard drives do not work properly unless they are in a certain position on the IDE cable. You may need to reverse the position of the master drive and the ORB IDE (slave) drive on the cable for the master drive to work properly.
- G) If the computer still does not recognize the ORB IDE drive, it may be that the existing IDE master drive does not allow access to a slave drive on the same cable. Try installing the ORB IDE drive on the other IDE channel.

---

**Note:**

This may require turning off auto-detection for the ORB IDE drive. Refer to the Owner's Manual for the computer if you need instructions on disabling auto-detection. If you are unable to setup BIOS support for the ORB drive in the CMOS setup and the ORB IDE drive does not appear on the system, the computer may have an incompatible BIOS that does not correctly understand removable IDE drives. You may be able to solve the problem by obtaining an updated BIOS from the computer manufacturer. If an updated BIOS is not available, it may be possible to install the ORB IDE drive successfully using an add-on IDE controller card.

---

Computer does not recognize a slave drive connected to the same IDE connection when an ORB is the master drive.

- Make sure pin 1 (recognized by the red or colored edge of the IDE Ribbon cable) is properly connected on the IDE interface connections. The stripe on the interface cable should align with pin 1 on each connection. If the cable does not have a keyed connector, make sure the connector has not been installed off center or shifted by a pair of pins.
  - Some IDE hard drives do not work properly unless they are in a certain position on the IDE cable. You may need to reverse the position of the slave drive and the ORB IDE (master) drive on the cable for the slave drive to work properly.
  - If the computer still does not recognize the slave drive, configure the jumper settings on the ORB IDE drive for the Cable Select option. Refer to the configuration information in section 1.7 of the installation instructions.
- 

Computer fails to boot correctly or hangs while booting after the ORB IDE drive is installed.

- Make sure BIOS LBA support for the ORB IDE drive is enabled in the computer's CMOS setup. Note that this may require turning off auto-detection for the ORB IDE drive. Refer to the computer Owner's Manual if you need instructions on disabling auto-detection.
  - If you are unable to enable BIOS LBA support for the ORB drive in the CMOS setup and the computer hangs during boot-up, the computer may have an incompatible BIOS that does not correctly understand removable IDE drives. You may be able to solve the problem by obtaining an updated BIOS from the computer manufacturer. If an updated BIOS is not available, it may be possible to install the ORB IDE drive successfully using an add-on IDE card.
- 

Computer will not boot under Windows NT unless a disk is present in the ORB IDE drive.

This happens if Windows NT has set the ORB IDE drive as the location for the system page file.

- To eliminate the problem under NT version 4.0:
  1. Open the control panel and double click

on the "System" icon.

2. Click the "Performance" tab and change the location of the system page file.

---

**Note:** You may not be able to use the default hard drive as the location for the system page file if it does not have sufficient space available. (This may be why Windows NT set the ORB drive as the system page file location.)

---

**General Failure Error when accessing the ORB IDE drive.**

- Make sure the ORB disk is correctly formatted. Use the ORB Tools format utility to reformat the disk.

---

**Windows 3.1x locks up or issues an alert message about 32-bit accesses.**

- Make sure the Windows option for Use 32-bit disk and/or file access is turned off. This option is available in the virtual memory options under 386 Enhanced in the Windows Control Panel. When the option is off, the option check box will be blank.

---

For any other problems, symptoms not covered in this manual, the latest ORB Tools and supported PC chip sets, check Castlewood's web site help pages, at <http://www.castlewood.com>

# SECTION 4 SPECIFICATIONS

## Performance

Average Seek Time	10ms read/write 12 ms
Data Burst Transfer Rate	12.2 MB/sec maximum
Burst Transfer Rate	16.6 MB/sec
Rotation Speed	5400 rpm
Head	MR (Magneto-Resistive)
CPU	25 MIPS DSP
Start/Stop Times	6 sec spin-up, 10 sec read, 15 sec write/6 sec stop
Long Format Time	9 Minutes
Short Format Time	Less than one second

## Reliability and Warranty

Reliability:	Labyrinth Sealed Door with Auto Closure and Patented enclosure environmental controls
MTBF	300,000 hours
Service Life	5 Years
Bit Error Rate	1 in 10 <sup>12</sup>
Disk (estimated shelf life)	20 Years
Drive and Disk Warranty	1 Year Limited

## General Information

Interface	40 Pin IDE Ribbon
Disk Storage capacity	2.2 GB
Operating System Compatibility	Windows 98, 95, 3.1x, NT4.0+, MS-DOS 5.0+, OS/2 4.0, Mac G3 OS8+
Power	5V (±5%), 1.5 amp (peak) start-up .75 amp continuous read/write .75 amp max seek, .2 amp standby mode
Power Management	Via software, with idle and standby mode
Dimensions	6" d. x 1" ht. x 4" w.
Weight	15 oz. (426 gm)
Write Protection	Via Software
Acoustical Noise	Less than 42 dB

## Operating Conditions

<b>Temperature</b>	
Operating	10°C to 50°C
Storage	-40°C to +60°C
Shipping	-40°C to +60°C
<b>Relative Humidity (non-condensing)</b>	
Operating	10% to 80%
Non-Operating	10% to 90%
<b>Vibration</b>	
Operational	.03 inches p-p @ 5-10Hz, .5g p-p @ 10-300Hz, .2g p-p @ 300-500Hz
Non-Operational	.04 inches p-p @ 5-10 Hz, 4g p-p @ 10-500Hz
<b>Shock @ 11ms duration 1/2 Sine wave</b>	
Operational	3g
Non-Operational	80g
<b>Altitude</b>	
Operating	10,000 ft

All specifications are subject to change. Actual performance is dependent on your system configuration.

# SECTION 5      CUSTOMER SUPPORT

## Additional ORB Help Sources

<b>Customer Support</b>	<b>Phone</b>
US and Canada	1 866 874 7878
Germany (D)	008000 ORB INFO (008000 672 4636)
Great Britain (UK)	008000 ORB INFO (008000 672 4636)
France (F)	008000 ORB INFO (008000 672 4636)
Italy(I)	008000 ORB INFO (008000 672 4636)
Spain (E)	008000 ORB INFO (008000 672 4636)
Switzerland (CH)	008000 ORB INFO (008000 672 4636)
Other European countries	+49 (0)7000 ORB INFO (+49 (0)7000 672 4636)
Countries outside North America and Europe	See web site
Castlewood Systems, Inc., corporate	1 408 956 2500
Email	help@castlewood.com
Web site	www.castlewood.com

## SECTION 6 WARRANTY

**Warranty.** Castlewood Systems, Inc. (“Castlewood”) warrants the ORB Drives (the “Drives”) solely to the purchaser (“Purchaser”) against defects in workmanship and materials for a period of one (1) year from the date of purchase. Castlewood warrants the ORB disks (the “Disks”) solely to the Purchaser against defects in workmanship and materials for a period of one (1) year from the date of purchase (each a “Warranty Period”). The Drives and the Disks shall be collectively and individually referred to as “Product”. All warranty claims must be requested of Castlewood prior to the expiration of the applicable Warranty Period. Purchaser may not transfer this warranty. Purchaser’s sole remedy, and Castlewood’s sole liability for a covered warranty defect shall be for Castlewood, at its sole discretion, to either repair or replace the defective Product at no charge, or to refund the purchase price for the affected Product. These warranties are void if the applicable Product has been altered in any way or damaged by accident, misuse, or abuse, including, but not limited to, the use of unauthorized third party software or repairs, power surges, excessive heat or humidity. Castlewood warranty obligations shall not be enlarged or diminished by Castlewood’s provision of technical advice to Purchaser.

**Exclusions.** THE PRECEDING WARRANTY DOES NOT APPLY TO (I) ANY SOFTWARE COMPONENTS OF THE PRODUCT; (II) ANY THIRD PARTY SOFTWARE DISTRIBUTED ON OR WITH THE PRODUCT; (III) ANY EXPENDABLE COMPONENTS INCLUDING, BUT NOT LIMITED TO, FUSES, BULBS, AND CLEANING ACCESSORIES; AND (IV) ANY PRODUCTS NOT MANUFACTURED BY OR FOR CASTLEWOOD (THE “EXCLUDED ITEMS”). THE EXCLUDED ITEMS ARE LICENSED TO PURCHASER ON AN AS IS BASIS.

**Disclaimer of Warranties.** EXCEPT FOR THE EXPRESS WARRANTIES CONTAINED HEREIN, CASTLEWOOD DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION. THE REMEDIES SET FORTH HEREIN SHALL BE THE SOLE AND EXCLUSIVE REMEDIES OF PURCHASER WITH RESPECT TO ANY DEFECTIVE PRODUCT. SOME JURISDICTIONS DO NOT PERMIT THE PRECEDING EXCLUSION OF IMPLIED WARRANTIES FOR CERTAIN CONSUMERS SO SOME OF THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO PURCHASER.

**RMA Procedure.** If Purchaser discovers a defect in a Product during the applicable Warranty Period, then Purchaser should contact Castlewood for a Return Materials Authorization (RMA) number before shipping the Product, freight and insurance prepaid, to Castlewood’s designated repair facility. Purchaser should have the part number, serial number, date of purchase, and the suspected problem ready when contacting Castlewood to obtain an RMA. Before shipping any Product to Castlewood, Purchaser shall remove any removable storage media, and all programs, data files and other data from any applicable storage media. Castlewood accepts no responsibility or obligation to return any such materials that are shipped to Castlewood. If a Product returned under warranty is found not to be defective, then Castlewood shall dispose of the Product per Purchaser’s instructions after receiving full payment from Purchaser for Castlewood’s inspection of the Product at Castlewood’s then current rates for such services.

**Limitation of Liability.** IN NO EVENT SHALL CASTLEWOOD BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES THAT PURCHASER MAY SUFFER DIRECTLY OR INDIRECTLY FROM THE PURCHASE USE OF THE PRODUCT, INCLUDING, WITHOUT LIMITATION, FOR THE LOSS OF USE OR LOSS OF DATA, FILES OR PROGRAMS STORED ON THE PRODUCT. CASTLEWOOD’S MAXIMUM LIABILITY FOR ANY CLAIM BY PURCHASER ARISING OUT OF PURCHASER’S PURCHASE AND USE OF THE PRODUCT SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE APPLICABLE PRODUCT. Some states do not allow the exclusion of incidental, punitive or consequential damages, so the above limitation may not apply to Purchaser.

# SECTION 7 SOFTWARE LICENSE AGREEMENT

## CASTLEWOOD END USER LICENSE AGREEMENT

NOTICE TO END USER: CAREFULLY READ THE FOLLOWING LEGAL AGREEMENT (THE "AGREEMENT"). USE OF THE SOFTWARE PROVIDED WITH THIS AGREEMENT CONSTITUTES YOUR ACCEPTANCE OF THESE TERMS. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, PROMPTLY RETURN THE SOFTWARE AND THE ACCOMPANYING ITEMS (INCLUDING WRITTEN MATERIALS AND CONTAINERS) TO THE LOCATION WHERE YOU OBTAINED THEM FOR A FULL REFUND.

**License Grant.** Castlewood Systems, Inc. ("Castlewood") grants to You (either as an individual or entity) a personal, and non-exclusive right to use the copy of the object code version of the software embedded in, or bundled with, the ORB Disks and ORB Drives provided with this license (the "Software") [solely as installed in the Product]. The ORB Drives and the ORB Disks shall be collectively and individually referred to as the "Product". The term of this Agreement will be for the duration of Castlewood's copyright in the Software. You agree that You may not copy any written materials accompanying the Products and/or the Software. You may make one (1) copy of the Software, in object code form, solely for back-up or archival purposes. You may not rent or lease your rights in the Software in any form. Notwithstanding the previous sentence, You may assign Your rights under this Agreement only to a third party who previously agrees in writing to be bound by this Agreement and provided that You transfer all copies of the Products, Software, and related documentation to the third party or destroy any copies not transferred. Except as set forth above, You may not assign Your rights under this Agreement.

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Castlewood, at its sole discretion, to either repair or replace the defective Product at no charge, or to refund the purchase price for the affected Product. These warranties are void if the applicable Product has been altered in any way or damaged by accident, misuse, or abuse, including, but not limited to, the use of unauthorized third party software or repairs, power surges, excessive heat or humidity. Castlewood warranty obligations shall not be enlarged or diminished by Castlewood's provision of technical advice to Purchaser.

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**Severability.** In the event of invalidity of any provision of this Agreement, the parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement.

**Export.** You agree that You will not export or re-export the Products or the Software without the appropriate United States or foreign government licenses.

**Taxes.** You agree to be responsible for the payment of any taxes, other than Castlewood's income taxes, resulting from this Agreement.

**Governing Law.** This Agreement will be governed by the laws of the State of California as they are applied to agreements between California residents entered into and to be performed entirely within California. The United Nations Convention on Contracts for the International Sale of Goods is specifically disclaimed.

**Entire Agreement.** This is the entire agreement between You and Castlewood which supercedes any prior agreement, whether written or oral, relating to the subject matter of this Agreement.

# SECTION 8      STANDARDS AND REGULATIONS

The Castlewood ORB2II00 satisfies the following standards and regulations:

- 1) UL/CSA: – Recognized Safety Component mark for Canada and the United States..
- 2) CE Mark (EN 60950), TUV Rheinland Bauart: Safety and Evaluation to International Standard for European Directives.
- 3) CB Report: Based on IEC 950, Safety of Information Technology Equipment. Certifies our product is recognized by more than 30 countries.
- 4) EMC Test Mark (EMC directive 89/336/EEC): Certifies our product complies with EMC directive.

## FCC Warnings

This equipment generates and uses radio frequency energy, and may cause interference to radio and television reception if not installed and used in strict accordance with the instructions in this manual.

It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, try to correct the interference by one or more of the following measures:

- 1) Move the equipment away from the receiver.
- 2) Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- 3) Combination of both options 1 and 2 above.

You may find the FCC booklet *How to Identify and Resolve Radio TV Interference Problems* helpful. This booklet is available from the United States Government printing office, Washington, D.C., 20402, stock number 004-000-00345-4. Castlewood is not responsible for any radio or television interference caused by unauthorized modifications to the drive.

## Disclaimer

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# NOTICES

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## Patents:

The ORB 2.2 GB Drive and ORB Disk are protected by numerous patents which have been applied for with the U.S. Patent Office.

## Technical Data Restrictions (DOD)

In the case of sale to or use of units by the Department of Defense, use, duplication, or disclosure of any software, firmware, or related documentation is subject to restrictions stated in paragraph (c) (1) (ii) of the "Rights in Technical Data and Computer Software" clause at DFAR 252 227-7013. For civilian agencies, use, reproduction, or disclosure of the software and related documentation is subject to restrictions set forth in FAR 52.227-19. Unpublished rights are reserved under the copyright laws of the United States.



**Castlewood Systems Corporate**

Phone: 1-408-956-2500

Fax: 1-408-956-1124

[www.castlewood.com](http://www.castlewood.com)

**Customer Support USA & Canada**

Phone: 1-866-874-7878

**Germany (D), Great Britain (UK),  
France (F), Italy (I), Spain (E),  
Switzerland (CH):**

008000 ORB INFO (008000 672 4636)

**Other European countries:**

+49 (0)7000 ORB INFO (+49 (0)7000 672 4636)

**Countries outside N. America & Europe:**

See web site

Email: [help@castlewood.com](mailto:help@castlewood.com)