DISCOVER.DOC - DOCUMENTATION REVISION 2.7

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You must read and follow the important cautions and notes listed below regarding the installation and use of the **Discovery Cartridge**.

1) Always make sure that all disks inserted in drives are WRITE PROTECTED. Only enable writing just before you intend to write to a disk. A disk that is not write protected that is in a drive when the computer is powered up or down can be glitched. You may not discover the glitch until you try to access that file that was damaged. If the glitch is in the SYSTEM portion of the disk, all of the files on the disk may be lost. Please be sure your disks have the WRITE PROTECT enabled.

2) Please back up the files on the **Discovery Cartridge** Software Utilities disk. Only use the backup. Put the original away. It would be foolish to not have a backup of the software that makes this powerful disk backup system possible.

3) Never plug in or unplug any connection to the **Discovery Cartridge** while power is connected. Do not bump the **Discovery Cartridge** while it is plugged in and the power is on. This might cause a loss of connection with the computer, causing a malfunction or damage to the computer and **Discovery Cartridge**.

4) The **Discovery Cartridge** can be damaged by static electricity. While transporting the **Discovery Cartridge**, avoid static discharge to any connection on the **Discovery Cartridge**.

5) When plugging in or unplugging the drive connection cables to the **Discovery Cartridge**, never wiggle the connector up and down, as this may damage your **Discovery Cartridge**. Use a side to side wiggle motion to plug in or unplug the drive cables.

6) Never insert any objects into the openings on the **Discovery Cartridge**'s case. There may be openings in the front of the case, depending on which options you have ordered or installed. Labels to cover the openings on the front are provided.

7) Never use the **Discovery Cartridge** as the second CARTRIDGE. Always plug the **Discovery Cartridge** directly into the ST/MEGA computer's cartridge port directly as the first CARTRIDGE.

8) Never plug a second cartridge into the optional second cartridge jack on the **Discovery Cartridge** without first determining that there will not be an electrical conflict.

9) Never attempt to operate your computer system with disk drive cables attached to the **Discovery Cartridge** while the **Discovery Cartridge** is not plugged into the cartridge port on your computer. If you need to unplug the **Discovery Cartridge**, in order to plug in a different cartridge, then disconnect all other connections to the **Discovery Cartridge**, and connect these disk drive connections as they would normally be connected.

10) Always make sure that the **Discovery Cartridge** is firmly and completely plugged into the computer. On MEGA ST computers, the cable for the keyboard should be routed so that it does not push the **Discovery Cartridge** out.

Discovery Cartridge Installation and Removal

First Time Installation:

There are openings on the front of the **Discovery Cartridge** that are provided for a cartridge jack and switches which are optional. Two black labels are provided with your unit that can be used to cover these openings if you so desire, and do not intend to have this option. A third black label is provided which identifies the switch position meanings.

Installation and Removal:

Before plugging in or unplugging any connection to the **Discovery Cartridge**, you must:
> 1) Remove all disks from all floppy drives.
> 2) Disconnect all power from all devices in your computer system.

Before plugging in or unplugging any disk drive connection it is best to unplug the cartridge from the computer. The **Discovery Cartridge** may move around while you plug in or unplug a drive connector. Unplugging the **Discovery Cartridge** first, will avoid excess strain on the cartridge jack connector, and will avoid excess strain on the **Discovery Cartridge** case where it meets the computer.

The proper way to plug in or unplug a drive connector to the **Discovery Cartridge** is as follows:
> 1) Unplug the **Discovery Cartridge** from the computer.
> 2) Hold the **Discovery Cartridge** still by either
>> a) applying pressure to the top of the cartridge, or
>> b) hold the cartridge firmly in your hand
> 3) Wiggle the disk drive connector left to right, never up or down while either plugging in or unplugging the connector. Take your time. Avoid excessive force on the **Discovery Cartridge**'s connectors.

Drive Connections:

Looking at the rear of the cartridge, there are 2 or three female 14 pin connectors for Atari disk drive connections. Use the cable supplied with your **Discovery Cartridge** to connect the left most connection marked "COMPUTER", to the 14 pin floppy drive connector on the back of your Atari computer. If you have only one floppy drive, and that drive is internal to the computer, then this is the only connection to be made.

If you have external drives, or more than one drive, then there are more connections. If you have an internal drive, which is always drive A, then plug your drive B into the center "DRIVE A/B" connector on the **Discovery Cartridge**. No drive plugs into the back of the second drive, drive B.

If you have no internal drive, then your drive A will plug into the **Discovery Cartridge**'s "DRIVE A/B" connector. If a second drive is present (drive B), it will plug into the back of drive A, as usual. No drive plugs into the back of the second drive.

For those with the drive 3/4 option, regardless of how many drives are internal or external, the third drive plugs into the **Discovery Cartridge**'s "Drive 3/4" connector. If a fourth drive is present, it plugs into the back of drive 3. The 3rd and 4th drive are not assigned a particular letter by HAPPY COMPUTERS. The user must designate which letters are assigned to the third and fourth drive. This is explained in the "DDRIVE.DOC" documentation file.

Access to the third and fourth drive is also explained in that document.

Cartridge Port Connection:

The **Discovery Cartridge** can be damaged by static electricity which may enter the cartridge through its cartridge port connector. Dirt on the gold plated fingers of this connector can cause erratic operation of the COMPUTER and **Discovery Cartridge**. Avoid allowing the **Discovery Cartridge**'s cartridge connector to come in contact with anything other than the cartridge jack receptacle in your ST / MEGA computer.

Introduction to the discovery cartridge

The **Discovery Cartridge**'s advantage over other disk copying or improvement software and HARDWARE is the HART chip. HART stands for "HAPPY ATARI ROTATING THING". This custom made integrated circuit was designed by HAPPY COMPUTERS specifically to allow the full range of floppy disk reading and writing that could be needed with your Atari ST/MEGA computer. The limitations of the floppy disk controller chip built into your computer disappear. With the correct drive connected, and the proper supporting software, your computer can read and write virtually any floppy disk format. Using the standard 3.5" floppy drives for the computer, the immediate benefits are the ability to backup disks that you cannot ordinarily backup, and read and write disks in the MACINTOSH format. The **Discovery Cartridge** also allows a variety of options that fulfils the wish list of most Atari computer users, so far as the disk system is concerned.

First delivery of advance orders, what took so long?

We regret that it took much longer than originally expected to begin shipping the first **Discovery Cartridge** units. In our original literature we said "WE CANNOT PROMISE ANY SPECIFIC DELIVERY SCHEDULE FOR ADVANCE ORDERS" and also "WE WILL WORK TO SHIP YOUR ORDER AS SOON AS POSSIBLE, WITHOUT COMPROMISING THE QUALITY AND FUNCTION".
This is the commitment we have met. Why did it take so long? We just underestimated the time required for some of the steps, and some problems cropped up that took a long time to resolve. If you ordered in advance, you received a generous discount on the product. You also received your unit before anyone else. It is possible that some units sold to dealers may be available around the same time as when you received your advanced order. These dealers ordered in advance, to have units in inventory.

Additional technical information, probably not avaliable

Except as contained in the documentation files on this disk, technical information regarding the **Discovery Cartridge** hardware and software is not released to the public or our customers. HAPPY COMPUTERS does not release source listings for any computer program on the DISCOVERY CARTRIDGE Software Utilities disk. HAPPY COMPUTERS does not release any additional technical information on the HART chip. HAPPY COMPUTERS does not release technical information that would allow other companies to write computer programs that would access the disk reading and writing functions of the HART chip. HAPPY COMPUTERS does not release detailed information concerning the particular copy protection method utilized by software companies.

Updates to our products

With our mailing list becoming so large, it has become too expensive to send notices each time we have an upgrade. A significant upgrade or update may warrant such a mailing. See OBTAINING INFORMATION below.

Obtaining information

For information on the availability, current price, delivery, new backup capability, or other features included on any upgrade, please DO NOT call our office directly. Please instead call our information machine at (408) 778-6092. We may have a BBS system in the future, but we do not have one now. You may also send us a 4 inch by 9.5 inch self addressed stamped envelope to request this information.

Technical phone help

Whenever possible, HAPPY COMPUTERS will provide any help we can over the telephone to assist you in correcting problems you may have in using our products. We ask that you do not call for technical help regarding a problem backing up a specific disk. Instead, follow the advice of that section in this document. If everyone called us each time they had a question about a new disk, we would be so busy answering the phone, that we would not have time to do anything else!
The staff at HAPPY COMPUTERS is small. If you call in for technical help, and you could have obtained the answer by reading our documentation, we may just tell you to do that! Please make sure your question is not answered in our documentation before calling. Our time is best utilized in helping people with problems and questions that are not addressed by our documentation.
HAPPY COMPUTERS cannot offer free customization of our product to meet your specific needs. We can perform this service for proper compensation. If there is a missing feature which you feel many of our customers would benefit from, and you feel strongly about HAPPY COMPUTERS dedicating manpower to add this feature, go ahead and send us a letter expressing your desires. This will cast your vote for this feature. A phone call does not constitute a vote cast, it's probably just a passing desire.

What to do if you can't back it up

After exhausting all of the normal methods, give our information machine a call, if you have a USA touch tone phone. You can also call our information machine if you have a tone / pulse switchable phone and must dial using the pulse setting. Switch your phone to tone once the connection is established to select the message you want. The number is (408) 778-6092. It works 24 hours a day. You can call when the phone rates are cheapest. If we have found a way to back up a new program with our existing software, it will be announced on the information machine. There may be long periods of time between when the messages on the information machine are updated.
HAPPY COMPUTERS products and methods have proven to be the backup champs. We rely on our customers to inform us of any programs they are having difficulty with. When you write us, please tell us the name of the program and the publisher, and include a self addressed stamped envelope for our response. You may be instructed to send us the original disk for our examination. When you send us a disk or disks, they must be originals. You must include return shipping and insurance fees if you want your disks back. USA addresses: $5.00, outside USA: $15.00. We cannot accept or help you backup any copy protected disk except the original disk from the software manufacturer.
If you have a problem backing up a disk, and this problem is unique to your system, HAPPY COMPUTERS can make a backup for you. We will give you the specifics on how to obtain this service when you write us. This is the case when HAPPY COMPUTERS has already seen the disk, and feels that persons with our system and current software should already be able to back it up. The problem may be solved yourself by using a different drive as the source drive. For those with 1 drive, this is not possible.

Problem reading disks on different drives

If disks that are formatted and written on one drive, cannot be read on another drive, this usually implies that there is something wrong either with the drive that wrote the disk, or the drive that can't read the disk. If more than one pair of drives is available, try and isolate the problem to a particular drive. For example, if you have 5 drives, and disks written on one of the 5 can't read in on the 4 other drives, this usually means that the drive that did the writing is defective. By the same token, if only one drive in 5 has trouble reading the disk, that one drive is defective. You may also find that a particular disk or batch of disks causes trouble, whereas other disks do not. Don't let frustration get the best of you; use different disks!

Repair of defective disk drives is beyond the scope of this documentation.

Documentation files:

- DISCOVER.DOC: This file.
- DBACKUP.DOC: Information for the DMFMBKUP.TOS backup program.
- DCLOCK.DOC: Information regarding the battery backed up clock option. Includes information regarding the DCLOCK.PRG program.
- DTEST.DOC: Information for the DTEST.TOS diagnostic program.
- DDRIVE.DOC: Information regarding the 3rd and 4th drive option. Includes information regarding the DDRIVE.PRG program.
- DMACXROM.DOC: Information regarding the DMMXFER.TOS Macintosh transfer program, information on the ROM/EPROM sockets option, information on the 2nd cartridge port option, and information on the address space utilized by the **Discovery Cartridge**.
- D128CROM.DOC: Information regarding modifications to use more cartridges as a second cartridge with the **Discovery Cartridge**, such as the SPECTRE 128. Information regarding a modification for using a contiguous 128K address space for ROMS or EPROMS, and documentation for the R128FILE.TOS program is also provided.
- D27NEW.DOC: Information regarding the changes between revision 2.6 and 2.7.
- DOPTIONS.DOC: Information which documents what is included in the various factory installed options.