

AND FINALLY.....

Well it's the end of another issue and soon the end of another year. I wonder what 2002 will bring us.

Please do keep sending in articles, comments and suggestions for the magazine.

Thank you to Gary for his article.

Below is an e-mail from Richard detailing the TREFF.

See you next issue.

This is just a quick e-mail to inform you all of the new that Texas Instruments phoned me today. I faxed them to see if they would help us out with the Treff by sending someone to do a demonstration of new DSP products.

They've agreed and a chappy phoned me today to give me the news and to take some details. I'm sure it will help encouraging visitors to the Treff.

The Treff is organized for...

Friday 11th October - Evening, just putting equipment into room.

Saturday 12th October - Day 1 (in the evening we'll be organizing a dinner)

Sunday 13th October - Day 2 (which will be followed by a meeting to discuss the proceedings and also the venue for 2003.

The Treff will be held again at The Beeches Hotel and Leisure club, West Bridgford, Nottingham.

TI*MES

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All items in this magazine are the views of the authors. Any item which is submitted may be edited to fit the magazine, however we do try to insure the author's message is transposed.

The EDITOR cannot be held responsible or financial loss from any article produced.

In line with the new policy, the TI*MES will now be mostly of a text nature, which gives you a more compressed format.

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The Editor Writes.

Welcome to my second attempt at being editor of TIMES.

First of all I would like to apologise to all the people who e-mailed me or sent me an article but did not get a reply. I did reply to all e-mails but have had major computer problems. It started one Sunday when my trusty Dell pentium Pro 200 would not work. It decided not to work on a weekend when I had loads of work to do. The problem was the power supply inside the computer was broken. Does anyone know if I can buy a replacement power unit or if its repairable, or if I can put a power supply from another computer in. Anyway I have other PCs but this was my main one with all the data which I needed. I store all my data on a 20GB hard drive on this PC. The PC Runs Windows 95 and drives two 20GB hard drives through a Promise hard disk controller board. As one of the 20GB drives had clients data on it I used software which encrypted the drive and made it virtually unreadable on any PC. Could I find the software which done this? No I could not and when I tried the drive in my other PCs it just could not be read. Even by playing with the BIOS settings. The software changes the block size of the drive and does other clever things with it. Eventually I got hold of a PC with a motherboard that could read it and copied the data I needed off. It was very difficult to work without this data. I then bought a Duron 800PC and an Athlon 1200. The Duron 800 will not load any operating system. It gives me an error writing to hard disk. When I put the hard disk in another PC it woks perfectly. Anyone any ideas on this one. The Athlon 1200 worked OK and I could carry on working. However after about 2 weeks I would load Word and then it would just close. The other MS Office products then done the same. I removed office and put it back on and it

worked OK. Does anyone know what caused this? Then Outlook Express would say that e-mail had been sent OK but it never actually sent it. I discovered this one when clients complained they were not getting things. I installed Outlook. Outlook installed OK but it kindly deleted all my outlook express e-mail. I then started from scratch on the PC and it now works fine.

After this saga I am considering a MAC!

Anyway onto the TI. At last I hear everyone say. Unfortunately I have had no time to do anything with my TI. I have received the TI which I bought from Ricahard but it is still in the box at the moment.

I am currently converting our small bedroom to an office as my office currently consists of bits of equipment and files dotted around the house. When this is done hopefully in January I will have a couple of TT's permanently set up.

I am looking forward to playing all my old fav games again. Some of the games from the 80's were really addictive. Such as Parsec, Alpiner and TI Invaders. The newer PC games although being more indepth, just do not have the same appeal. You normally have to learn several key movements just to play the thing. The newer joysticks I find really awkward. The old simple Atari/TI style joysticks I find easier to use. I think the best joystick I ever used was the original Atari ones that came with the Atari 2600 VCS. The Playstation contral pads are a good example, I find them really awkward.

In this issue we have an article from Gary Smith and an article on Hard Disk drives. We also have an article on a new hardware project and some world e-mails on 80 columns and disk drives.

Anyway enough rambling on from me, on with the mag.

About Time....

After the warning on page 7 issue 71 of TI*MES I thought it was time I did my bit to avoid tax and legal documents being entered into this magazine. I have seen loads of articles from some people and got around to thinking 'when was the last time I put the time aside?' I guess the answer to that must be almost a decade ago when I was editor.

Speaking of being editor I do take my hat off to Paul for doing this job because it is not always that easy and does take up some considerable time. Issue 71 was excellent so keep up the good work – it is appreciated.

While thinking of what to write about I cast my mind back for inspiration to the last time I used my TI. The problem with this is I only powered it up two years ago out of curiosity to see if it still worked – it did – as did my Geneve.

I started off in the TI world some 18 years ago and like Paul my TI came from Santa. Well actually my dad used to work with Trevor and asked his advice about what machine he should get me. I think the idea was that if I had a machine at home then I would stop going into Dixons and Currys programming up the display computers to scroll rude phrases.

I think this was also the time in my life where I thought it

was good fun to use step up transformers to charge my dads front metal gates up to 4000 volts or so and give the next visitor a good shock. Also if you ever walked down my street you may have come across the talking bush. Me and my friend from next door ran a cable from my house, across the garden and into a speaker in this bush. We then used a microphone and stereo to surprise people in the street by shouting at them through this hidden speaker and they would look around and see no one.

Anyway – I've lost my track – back to the TI. On Christmas day the big black box was opened and I took it out and powered it up and I can remember that there were no extras with it apart from the green TI-Basic book. The first program I tried was inch worm which at the time I thought was fantastic. I then moved onto the gambling game at the back but the name eludes me at the present time. I used to type this game in if we had visitors and after a year or so I could nearly write any of those programs in without the book.

The following Christmas I got a cassette recorder. What a magical piece of kit that was – no more typing in programs over and over again. I kept on going with this recorder and got the computer shop in town to build me a joystick interface. I had just started a paper round and was saving five pounds a week to put towards Extended Basic. Comet in Nottingham did stock them but never seemed to have them in when I went to get one. In the end I got one from Parco. Sprites – what are they – an invention better than the cassette recorder.

After a few years of paper round money I had enough cash for an expansion box so one Saturday my whole family took a day trip to Wales and picked up a box from Mike Goddard. It had a disk controller (with two disk drives), a PIO card

with no RS232 ability and 32K memory expansion. As soon as I got home I transferred all my software onto disk and it didn't even fill one disk.

It was only months after getting my box that I found the group and started getting loads of software off Stephen Shaw the disk librarian at the time. Also I remember there being an article in TI*MES showing some machine code to control the cassette motor – I had to try this out and my first project was to switch my bed side lamp with my TI. This worked fine for a week or so until my poor soldering skills shorted out 250 volts into the cassette port and the cables went flying across the room. The amazing thing is that only the motor control failed to work – everything else seemed fine. Needless to say – that was my last 250 volt project on the TI !!

After giving in on high voltage projects I thought I would try my hand at the Zeno board (are there any of those still available??). This was a clever board which fits into the 4A and uses the connections at the back of the cartridge port and also a few flying leads. The first section I built up was the Grom banks. It had 'editor assembler', 'disk manager 2' and 'extended basic' which left the port clear for an extra cartridge. However, there was also a port extender available which I think Trevor made. I wired this into my Zeno board so that I could select from six cartridges. The front of my TI lights up like a Christmas tree with all the status lights. Next I moved onto the real time clock with battery back up – this did have one or two problems but on the whole was very good. The other things this board can do are 32K and speech synth I think but I never got around to finishing it off. The main plus of this board is that I didn't fry and more of my TI !!

Some years later I met Richard Twynning through a friend I

went to school with. I must have spent hours around his house on his TI and Geneve. Some days his bedroom looked more like the bridge on the USS Enterprise rather than somewhere to sleep. The two main things I remember is that his TI spoke and his Geneve had some fantastic graphics. Eventually I managed to get hold of a speech synthesiser second hand and got a Geneve from Texaments in New York.

All my TI stuff got used heavily when I was at university for word processing, mathematics and graphics. Some times I used it to problem solve and it would be working for days trying to find the smallest solution to electrical problems. In fact one of the components I designed using this method was put into a chip back in 1993 and has just been used again for the company I currently work for.

The biggest problem for me has been starting work after university because the time I did have disappeared so I was doing less articles and spending less time on my TI to the point where it was two years ago I last used it.

Since university I have worked for Plessey Semiconductors in Swindon, then I moved to NEC in Reading where I worked on the DB2000 and DB4000 phones if you've seen them (if you have one which doesn't work – it's my fault!), then I have spent some time at Ericsson IC design center doing mobile, satellite and Bluetooth chips and finally I'm at Tropian which is an American third generation mobile company.

I am writing this from a hotel room somewhere between Santa Cruz and San Francisco in Silicon valley and I've found the time to do it because my body doesn't know if it's coming or going. It's midnight Sunday 14th Pacific time and my laptop tells me it's 8am Monday 15th in the UK. I'm as

wide awake as you get even though I should be asleep. So if this article doesn't make sense in places then I've got a good excuse.

Does anyone remember the first Apple computer with a disk drive?? Well last week I met the man who was 15th to join Apple and was mainly responsible for Apples having disk drives. Can anyone tell me what the first home computer to have disk drives?? I guess Apple must have been close to the front of the queue. This clever chap is also part of the brains behind the company I am at.

I'm going to sign off now and get some sleep. Just a quick addition to say my email address is incorrect in TI*MES it is either Gary.Smith@Tropian.com or Gary.smith41@ntlworld.com.

ALL ABOUT HARD DRIVES

By Gary W. Cox

This article was originally written for an IBM compatible but I have modified the article to hopefully make it generic enough to apply to any computer.

Where did the term hard disk come from? Obviously it came from the way the disk was constructed as unlike floppy disks which can bend, hard drive platters are solid thus they can not bend. Another name for a hard drive is "fixed disk" or Winchester". The meaning of the term "fixed disk" is obvious as the disk is fixed in place and can not be removed (although removable hard drives exist but they are actually fixed in a case of which the case is removable from the housing). The term "Winchester" is also used to describe a hard drive. The term "Winchester" goes back to the 1960's where IBM developed a high speed hard disk which had 30 megabytes of fixed platter storage and 30 megabytes of removable platter storage thus calling the disk a 30-30 drive. However, instead of calling the drive a 30-30 drive it gained the nickname Winchester referencing the "Winchester 30-30 caliber rifle". Now days the term "hard disk" is usually the only term that is used but you may see references to older hard drives or controllers as Winchester drives or Winchester controllers.

The basic components of all hard drives are the same, each hard drive contains at least one disk platter, read/write heads, a head actuator or arm, a platter motor or spindle motor, a circuit board, connectors and a case. The platters are stored one on top of each other with spacing in between for the read/writer heads to magnetically store data on the media. All of the inner workings are sealed inside a metal housing which protects the platter and heads from dirt and dust. In fact, the tolerance between the platter and head is so close that even 1 particle of dust can cause a scratch on the platter surface thus damaging the drive as

1 particle of dust is larger than the gap between the head and platter. Therefore, a hard drive should NEVER be opened! Hard drives are manufactured in dust free "class 100 clean rooms" which are cleaner than operating rooms! CMI (Computer Memories Incorporated) had trouble with a contaminated clean room which caused some of the early hard drives manufactured by them to be contaminated thus causing a variety of problems including a total disk crash.

Each hard drive usually contains more than one platter with a head attached to an arm on each of the platters creating a surface for data (kinda like a record player).

A variety of types of hard drives exist with each type using a different method of coding the information on the disk. The different coding methods provide for the different sizes, reliability and speed of the hard drive. The different coding methods is more or less a reflection of the changes in technology over the years. The physical size of a hard drive is no indication of the amount of storage space as a very large (full height) drive might only be 10 megabytes where a hard drive smaller than the size of your hand might be able to store 300 megabytes! The encoding method as well as the way the drive is built determines the drives size in megabytes...

MFM type drives are among the oldest and most common found in older computers. MFM stands for Modified Frequency Modulation and originated out of FM Encoding or Frequency Modulation Encoding. FM Encoding is an outdated coding scheme that used half of disk up for just timing signals and thus was replaced with MFM coding.

Another type of drive coding is RLL which stand for Run Length Limited. RLL is more complicated than MFM but allows for the placement of more data on the disk for the given amount of space. RLL may often be referred to in technical specifications as RLL 2,7 referencing that the run length is limited to 7... Also used is RLL 3,9 (also called ARLL) which increases disk space even more. Drives for use as MFM and RLL come new from the factory completely blank as the encoding for MFM and RLL drives are created

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during the low level format. This low level format is done by the user by invoking a built in program in the ROM on the controller or by using a program to low level format it. The low level format creates the tracks that the drive uses to store data as well as the low level format locates any bad areas and locks them off. Thus the encoding method is determined by the controller that you use but with an MFM drive you should ONLY use an MFM controller and with an RLL drive only use an RLL controller as doing otherwise can cause intermittent problems and/or loss of data!

Another type of encoding used on hard drives is ESDI which stands for Enhanced Small Device Interface which was created to allow for larger data capacity and speed in hard drives as MFM and RLL drives are limited to under around 140mb due to their design. ESDI is really more of a standard of control rather than an encoding method

as ESDI was designed as an "intelligent" controller that could potentially handle not only hard drives but floppy drives, tape backups etc... However, I have never seen ESDI used for anything other than hard drives.

Another type of encoding used on hard drives is SCSI which stands for Small Computer Systems Interface. SCSI is also really more of a standard of control rather than an encoding method as SCSI is an "intelligent" control method used not only to control hard drives but other devices such as tape drives, floppy drives, CD ROM'S printers etc... Up to 7 devices can be attached to a SCSI controller as long as each device has an individual ID number. SCSI drives usually come in large capacities and are often low level formatted at the factory or come with low level formatting software.

Now days the most common type hard drive is IDE which stands for Imbedded Drive Electronics. On IDE drives the controller is actually built onto the drive itself thus only a sort of simple interface card is used to interface the drive into the computers databus. IDE drives are low level formatted at the factory and should NEVER be low level formatted by the user. Attempting to low level format an IDE drive will probably destroy it! IDE drives only need to be partitioned and high level formatted.

Some of the terms that you might run across with hard drives are as follows:

INTERLEAVE - Since the drive continuously spins at 3600 RPM and the drive head reads the data off the platter at that speed it is possible that your computer or controller card can not accept data from the hard drive as fast as the hard disk is reading it. Since the platter can not be slowed down the sectors on the hard disk are spread out differently so that the head will physically pass over a specified number of sectors before it reads more data where that sector is what the drive perceives as actually being the next sector but in actuality it could be physically several sectors down the platter. In skipping several sectors this method gives the computer time to catch up before more data is thrown at it. So a 1 to 3 interleave would be sequential sectors setup every 3 physical sectors. A 1 to 1 interleave would be the best case where each sector is actually setup the same as what is physically there. Only those hard drives which can be low level formatted can an interleave be setup thus IDE drives can not have an interleave set as they are factory set at 1 to 1. If an interleave is set wrong it will only slow down your drive as if the next sector comes around too soon and the computer is not ready for it, it will skip that sector and wait until that sector comes around again which takes time.

TRACK - A track is concentric circles that hold data on a hard disk platter with a track being composed of not physical tracks but magnetically allocated areas on the hard disk.

SECTOR - A section of one track is called a sector usually containing 512k bytes of data per sector.

ZONE BIT RECORDING - Since the tracks toward the outside of the disk are longer than toward the center of the disk due to the disk circular design a lot of space toward the outside is wasted thus a recording method called Zone Bit Recording (ZBR) was created in which tracks toward the outside of the platter have more sectors per track than the inside of the platter but each sector still contains only 512k bytes of data.

CYLINDER - A cylinder is basically the combination of identical track numbers on each platter of the disk of which each platter of a disk is stacked on top of each other thus just imagine a cylinder as

being a rod vertically though each track on the platters. The usefulness of a cylinder is that it is one of the components used to find an address on the hard disk with the other components being the head number and sector number.

CLUSTER - A cluster is basically the number of sectors that the operating system uses each time space on the hard disk is needed.

TRACK 0 - Track 0 on a hard drive is very important as when the drive is first powered up it goes to track 0 to recalibrate the position of the heads as that is the only position where the drive can physically tell where the head is located. Also at track 0 the file allocation table (FAT) resides. The FAT table contains information about the location of files and bad tracks.

In closing, the encoding on the hard drive determines the drives size in megabytes as well as it's speed and efficiency... The cylinders, heads and sectors make up the scheme in locating addresses for data on that drive. A combination of all of the above and more is what is actually involved in the workings of a hard drive.

I hope that this gives you some insight into the interworkings of a hard drive... I plan to get into more detail at an upcoming meeting where we will actually disassemble a hard drive and talk a close look at how it actually works!

Subject: Announcing: IDE interface card
Date: Mon, 27 Aug 2001 11:02:30 -0700
From: Thierry Nospikel <nospikel@hotmail.com>

Hi guys,

I finally decided it was time to "go public" with my IDE interface card for the TI-99/4A. It is now openly accessible from my website.

It can support two drives with a maximum size of 128 gigabytes (!) each. Zip drives and CD-ROMs should also work, but you'll have to write the appropriate software yourself.

For those of you who saw the preliminary version, you will notice that I modified the de-multiplexer and added a pulse generator: this way the IDE controller does not have to hold data steady until the TI-99/4A finally decides to read the second byte.

Let me state here that I am not marketing this card. I'm just making the schematics and the software available at no cost on my website. It's up to you to build the card, which is not too complicated, even if you don't have a lot of experience in electronics. It's also fairly cheap, the most costly part being the drive itself (but then again, IDE drives are quite affordable these days).

Hardware

This IDE card is fairly simple since, with the IDE standard, the controller is part of the drive. So the PEbox-to-IDE interface is quite straightforward: just a few TTL chips.

In addition, the card comprises a SRAM memory chip that

holds the DSRs and the buffers for opened files. Whatever memory is left, is available for the user in the area >6000-7FFF via the RAMBO protocol popularized by the Horizon Ramdisk.

Finally, there is a real-time clock that lets you automatically time-stamp the files. The clock chip I selected is a bit hard to find, but last time I checked they had it at BG-micro. Its main advantage is that it has 4K of battery-backed memory, which I use to hold a bootstrap program that loads the DSRs from the hard-disk when the system is powered up.

An (overly) detailed description of the hardware, together with instructions for building it, schematics and pictures, can be found at <http://www.nospikel.com/ti99/ide.htm>

Software

The current DSRs are called IDEAL (for IDE Access Layer) and turn your hard drive into a huge collection of "virtual floppies" fully compatible with the TI format. These floppies can be accessed by name, or by "inserting" them into one of eight "virtual drives".

The current version (IDEAL 1.0) also features a number of optional improvements on the TI format:

- Subdirectories are implemented by a simple mechanism of "empty" files pointing at another floppy.
- Any file, or even a whole floppy, can be encrypted using the Blowfish algorithm. You can also access the encryption engine directly.
- Files and floppies can be time-stamped with the date&time of creation and the date&time of last modification. You can also access the real-time clock directly and retrieve the time and date either as numbers or as pre-formatted text strings.
- The standard catalog (opening "DSKx.") works as usual, but it is possible to expand it so as to access more data (such as the time

stamps) or even to write to the catalog (to rename files, etc).

- IDEAL 1.0 contains built-in a program to manage your virtual floppy collection, and another that lets you recover accidentally deleted floppies.
- Similarly, there is a built-in configuration program that lets you select options and set the desired parameters (e.g. size of your drives, name of the autostart program, etc).
- Opcode >08 (scratch record), >0A (load assembly), >0B (load Basic), >0C (load cartridge) are supported.
- The LD DSR can be used to launch a program, whether assembly, Basic or GPL. It is also possible to load such a program at power-up time.
- The file data buffers can be in CPU memory instead of VDP for faster access.
- All these features can be accessed from TI-Basic, as well as from assembly.
- IDEAL 1.0 can be freely downloaded from my site, and is described in (excrutiating) details at <http://www.nouspikel.com/ti99/ideal.htm>

And that's about it. Let me know if you built the card. Critics, comments, suggestions and bug reports are always welcome.

Hope you enjoy it,

Thierry

The editor adds.

This sounds like a good idea for a project. If anyone undertakes this let us have the details in the form of an article.

WORLD EMAILS

Subject: 80 columns on TI99/4A?
Date: Wed, 22 Aug 2001 03:53:39 +0000 (UTC)
From: ab616@chebucto.ns.ca (Tony Cianfaglione)
Organization: Chebucto Community Net

Is there a way (via software) to get an 80 column screen on a TI99/4A?

I'd like to use it online but my local freenet uses vt100 and 80 columns.

Thanks...

Subject: Re: 80 columns on TI99/4A?
Date: Wed, 22 Aug 2001 14:33:42 +0200
From: Michael Zapf <Michael.Zapf@sit.fraunhofer.de>
Reply-To: Michael.Zapf@web.de
Organization: Fraunhofer-SIT

The problem is that the built-in display processor has only 256 pixel columns. IIRC, for 40 chars/line display, only 6 pixel columns of each character definition was used. For 80 chars/line this will bring you 3 pixel columns. Impossible to provide a readable display.

The absolute maximum was 64 chars/line in the TI Forth programming kit, using 4 columns/char.

The Geneve 9640 and all TI consoles with an advanced VDP can display 512 columns, providing a text mode with 80 chars/line.

Michael

--

* Michael Zapf

- * Fraunhofer-Gesellschaft, Darmstadt (Germany)
- * Institut für sichere Telekooperation - FhI-SIT
- * (Institute for secure telecooperation)

Subject: Re: 80 columns on TI99/4A?
Date: Thu, 23 Aug 2001 01:59:41 -0300
From: Tony Cianfaglione <ab616@chebucto.ns.ca>
Organization: ISINet, Nova Scotia
To: Michael.Zapf@web.de

Is there a way to tell if a TI has an advanced VDP? Would later models have the advanced chip or was that a special order item?

Subject: Re: 80 columns on TI99/4A?
Date: Thu, 23 Aug 2001 09:00:30 +0200
From: Michael Zapf <Michael.Zapf@sit.fraunhofer.de>
Reply-To: Michael.Zapf@web.de
Organization: Fraunhofer-SIT

Yes, you can tell - TI never built in this advanced chip by themselves. It was an add-on box which required you to pull out the original VDP and was manufactured by some private people.

Michael

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- * Michael Zapf
- * Fraunhofer-Gesellschaft, Darmstadt (Germany)
- * Institut für sichere Telekooperation - FhI-SIT
- * (Institute for secure telecooperation)

Subject: Re: 80 columns on TI99/4A?
Date: 22 Aug 2001 07:39:40 -0700
From: ben_yates_iii@yahoo.com (Ben Yates)
Organization: <http://groups.google.com/>

Yes, besides hardware, there are two terminal programs I know of

that display 80-column on-screen without scrolling or windowing - ZT4 and Term80, both by Jeff Brown. Term80 is pretty much a full-featured Ansi/VT100 terminal program, is capable of 9600 baud or better with a mod described in the documentation, supports color, and 80 columns using bit-map mode and tiny, teeny-weeny characters. Make sure you have a decent monitor. ZT4 is a stripped down version with no frills allowing faster speeds without any modifications, no uploads/downloads, not much more than a terminal program. I think it supports VT only, no color. I use it, very fast.

These are the only two I know of that give 80 columns on the screen AT ONCE with no "windowing". TELCO, a very nice program, allows 80 columns using a 40 column window (or 80 columns given appropriate hardware), but is limited to 2400 or 4800 before you start to lose characters. Where can you get them? I'd try ftp.whitech.com, but I'm not sure they are there.

Subject: Re: 80 columns on TI99/4A?
Date: Thu, 23 Aug 2001 02:04:11 -0300
From: Tony Cianfaglione <ab616@chebucto.ns.ca>
Organization: ISINet, Nova Scotia

Thanks, I'll look around for them if they're not at the ftp site you mention.

Is there a way to use my PC to transfer them to disk that can be used by the TI? I found an old expansion box with a disk drive but I haven't used it yet.

WORLD EMAILS on Disk Drives

Date: Thu, 08 Mar 2001 12:17:46 -0000
From: olmatt@aepnet.com
Subject: HD 3.5 Floppys

David,

I am able to use HD 3.5 disks on my TI and My Geneve. I believe that the theories stated in most of these messages don't take into account that floppys are simple mechanical devices and will perform according to the method of formatting. As I understand it, HD floppies sometimes have to have the hole opposite the write protect window covered so that the size detect light can't shine through. If you remember some time back at a 99 meeting you told the members of the availability of some Sony 3.5 drives that were available. That's the 3.5 drives I use in my computers and the hole can remain open. I believe the problem lies in how the drives are configured not the disks themselves.

Cheers, Ol' Matt

Date: Thu, 8 Mar 2001 07:28:46 EST
From: rmcarmany@aol.com
Subject: Re: HD 3.5 Floppys

The 1.44meg drives have two detect LEDs. One is for 1.44megs and the other is for 720K disks. If you are using a 1.44meg drive, you have to cover the holes or you will get an error message. On the other hand, 720K drives ignore the high density hole since they don't have a corresponding LED. You can use either 720K or 1.44meg disk with them with no trouble.

Bob Carmany

Date: Thu, 8 Mar 2001 11:04:52 -0800 (PST)
From: Dan Olson <dano@agora.rdrop.com>
Subject: Re: HD 3.5 Floppys

What you're describing is just using a HD disk formatted to low density. The reason the holes need to be covered is because a high density drive will try to operate in HD mode when it sees the hole, just as it should, but because you want to format the media other than how it was intended, you need to trick the drive into thinking the disk is low density. Of course if you use a low density drive, it is designed to only operate with low density media and has no idea what is actually inserted in the drive. This is a totally different issue than formatting a high density disk as high density on the TI.

Dan