



HANDLING VINTAGE MEDIA

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This is an ongoing report how to handle old software media, as tapes and floppy disks. Most chapters will be dedicated to the media concerning a certain model or brand of computer (e.g. Atari ST), but there will be also more general considerations. This report is meant to be as practical as possible, allowing the reader to obtain real results by following the detailed instructions.

INDEX

1. Handling ATARI ST diskettes on a Windows PC. (Francis Massen, 27-Jun-2013)
2. Handling MOTOROLA EXORset30 disks (Francis Massen, 11-Dec-2021)

1. Handling ATARI ST diskettes on a Windows PC

1. 0. Introduction

Atari ST machines (as 520ST, 1440STFM...) use 3.5" hard-shell diskettes in two different formats:

Atari 520ST with its external SDF354 floppy disk drive uses SSDD (Single Sided Double Density) diskettes, usually having 80 tracks, 9 sectors per track and 1 side, which gives a capacity close to 368 kB as there are 512 bytes per sector.

Later Atari's as the ST1440 use DSDD (Dual Sided Double Density) diskettes with 80 tracks, 9 sectors per track and 2 sides. This gives a 720 kB capacity. One often finds the notation Atari400 for the first and Atari800 for the second.

DSDD drives can read/write both type of diskettes (there really are no diskettes with only one physically magnetic active side!), but SDDD drives with one single head clearly are unable to read dual sided diskettes. As a consequences, the physically undistinguishable diskettes should be labeled with 400 or 800 (for example) to clearly indicate their capacity.

1.1. Imaging Atari diskettes on a Windows PC (no real ATARI computer needed).

The usual procedure **to handle Atari diskettes on a PC** is by making an image out of a floppy, and by writing such an image to a (new) disk. These floppy images come in two not compatible flavors known by their extensions **.ST** and **.MSA**. Atari emulators running on a PC usually can read at least one of these formats. As a general rule, all microcomputer emulators load/save floppy or tape image files, as these PC might even have no floppy (and almost certainly no tape) drives anymore.

Making the images must be done on a Windows PC having a physical inbuilt floppy drive, which normally is a HD 1.44MB type (an external USB floppy drive will not do!). A vintage laptop from the early 2000 running Win2000 is very handy. At the Computarium old MAXDATA laptops are used with success!

Three free software packages are needed:

1. a general floppy controller driver called **fdrawcmd.sys**
([link: http://simonowen.com/fdrawcmd/](http://simonowen.com/fdrawcmd/))

The link holds a zipped installation file. If this driver can not be installed properly, success will be doubtful!

2. The program Floppy Image (**floimg**)
([link: http://atari.8bitchip.info/floimgd.php](http://atari.8bitchip.info/floimgd.php))

This is the program to make an image file from an Atari diskette or to write an existing image file on an Atari compatible diskette. The floppy disk image contains the information of the tracks/sectors/sides of the physical diskette! This means that a DSDD image can not be written onto a SDDD formatted diskette!

Making a copy of an Atari diskette on the PC is a two step procedure:

- make an image from the original diskette
- write the image to a new diskette (usually formatting the diskette on the fly)

This program also should allow to selectively extract files from an image, but I was unable to use this feature.

3. The **MSA Converter** program
([link: http://msaconverter.free.fr/index.html](http://msaconverter.free.fr/index.html))

This program can convert .ST images into .MSA, but it can also create blank floppy images in arbitrary format, and copy files from an existing image into a blank image.

So this is the program to use to extract only some files from a diskette and put them onto another (which may be of a different capacity).; see next chapter.

Conclusion:

To make an image of an Atari diskette use floimg

To write an image onto a new diskette use floimg. Formatting is an option.

To make a copy of a diskette, create the image and then write it to a new diskette.

1.2. Copying (extracting) files from one diskette to another

As an example let us assume that a DSDD diskette holds 3 files that we want to transfer to an SSDD diskette. Here are the steps to do:

1. create an image of the DSDD diskette using **floimg**.
2. open **msa converter**
3. create a blank SSDD image using msa converter
4. open the existing DSDD image (which was created with floimg)
5. copy (by drag and drop, for instance) the three files to be extracted
6. save the blank image (eventually under a new name)
7. exit msa converter
8. using **floimg** write the new image to a physical diskette (of the DSDD = 720kB type) with formatting configured at 80/9/1 (these parameters will be introduced by hand into the relevant boxes)

1.3. Comments.

There exist other programs to create and write the images:

ST Recover ([link:https://strecover.codeplex.com/](https://strecover.codeplex.com/)),

MAKEDISK v.1.5 ([link: http://emulatari.free.fr/zip/makedisk_v15.zip](http://emulatari.free.fr/zip/makedisk_v15.zip)),

Windows Floppy Disk Copy ([link: http://emulatari.free.fr/zip/wfdcopy-1.03.zip](http://emulatari.free.fr/zip/wfdcopy-1.03.zip))

The French site Emulation ATARI ST (<http://emulatari.free.fr/>) has a lot of other useful software items.

I found the combination **floimg & msa** the easiest to use. The feature to create blank floppy images is very important and is most easily done using **msa** (but the DOS based Makedisk also can do this).

Computarium, 27 June 2013

Francis Massen

2. Handling Motorola EXORset30 disks (on EXORset30 or MSDOS Copy Station)

2.0. The original Exorset30

The Exorset30 of the Computarium has two BASF 6106 5.25" drives, which are single-sided (SS), and are written in single density (SD). The floppy disk controller may handle double-sided (DS) diskettes, at least the FORMAT command of XDOS (any version) asks for SS or DS when starting.

The SS SD disks may be read and written by [IMAGEDISK](#) 1.18 (IMD118) on the 486DX2 copy station, which has a floppy disk controller (FDC) capable of SD operation (check using the TESTFDC program of Imagedisk).

The original BASF drives are on a non-twisted 34 pin flat cable and configured as DS0 and DS1 (this is the standard Shugart notation). They are "*non-standard*" in the sense that they deliver on pin 6 of the cable an inverted READY signal which is expected by the FDC. A "*standard*" IBM compatible FDC uses this line as DS3 (drive select for a 4th drive, DS4 in IBM manner).

When replacing the BASF drives by standard drives, like the [TANDON 100-2A](#) big drives (which are used in the IBM XT), a modification must be made on their electronic board: the last drive on the cable (DS0) must have its W8 connector cut and the left side of its contact tied to GND (here TP6); the second drive (DS1) must only have the W8 cut.

The DIP switch close to the flat edge connector will be set like this:

For the DS0 (last drive on un-split cable, :0):

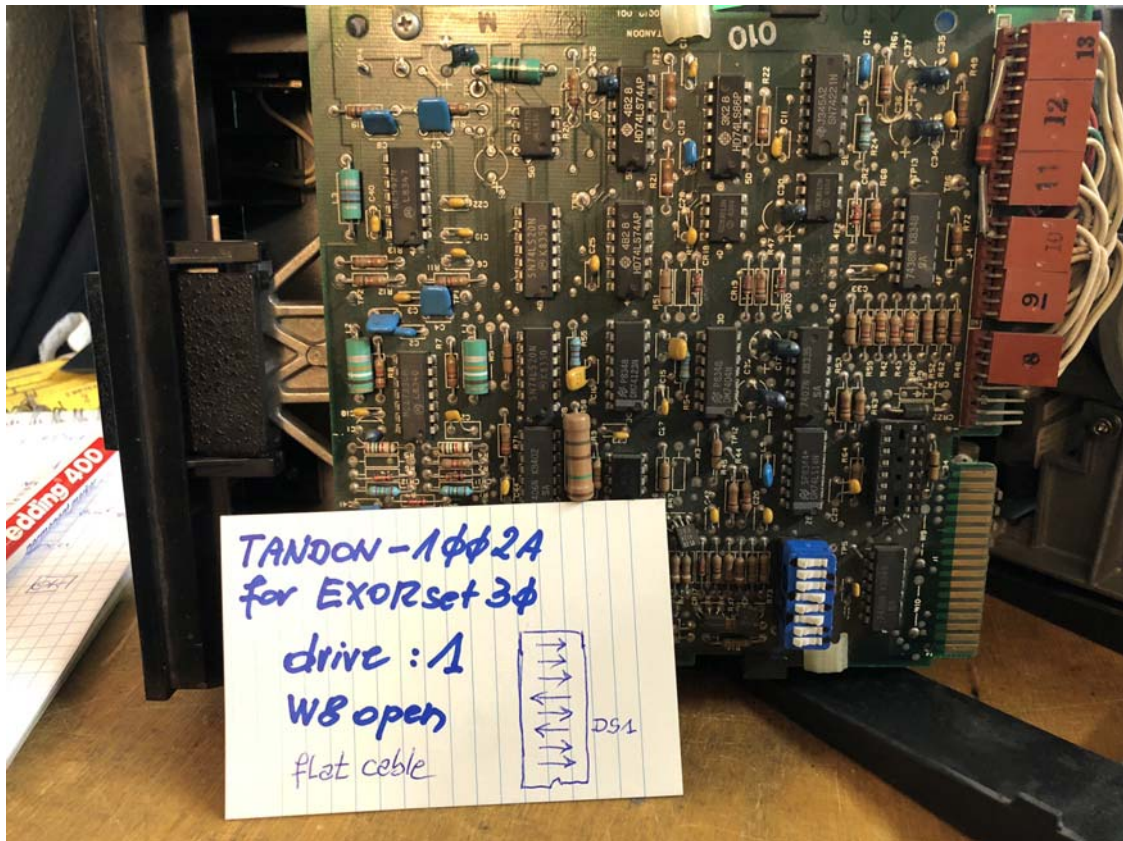
HS	DS0	DS1	DS2	MX				
OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF

OFF means contact is open, ON contact is closed.

For the DS1 (second last drive on un-split cable, :1):

HS	DS0	DS1	DS2	MX				
OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF

(see next figure)



DIP switch settings for the second to last drive

2.1. Using Imagedisk (IMD118)

On the Copy Station running MSDOS 6.22 disable HIMEM.SYS and SMARTDRV.EXE (else DIVIDE overflow error)

Always use the ERASE function of IMD before writing an image!
 Many old 5.25" disks are suspect! GRADUATE brand disks are often labeled SS
 Never use HC (1.2MB) disks!

Format of the disk:

SS SD 40 tracks 16 sectors/track 128 bytes/sector Interleave=2

The gaps G1 and G2 are calculated correctly by IMD.

Example 1: Create a XDOS 4.0 system disk from 5.IMD (of the [J.B. Edmond](#) collection).

Make settings as given above, write image to disk.

Example 2: On the EXORset, make a new bootable copy

Use as new a diskette erased by IMD or the BULKERAS.EXE of COPYIIPC

First: FORMAT the disk, which is in drive :1 =FORMAT :1
 Use the single-side option

Second: =DOSGEN; T (the ;T option makes a test of the medium, not
 mandatory)
 =DIR :1;S shows all the system files (.SY and .CM)

The .SY and .CM files are protected. To delete any of them, it must be unprotected.

Example: delete the LIST.CM file on drive .1
 =NAME LIST.CM:1;X
 =DEL LIST.CM:1

A bootable copy also can be made using the BACKUP command. If this command is not on the disk to be copied, insert another disk holding BACKUP.CM, and call the program. Before answering any questions, replace the disk by the one to be backed up, and continue.

Conclusion: before using DOSGEN or BACKUP, first FORMAT the disk.

2.2. Making a set of XDOS 4.13 disks

There are 4 disks labeled SET82xxxxx in the Computarium's collection, but the first one having the XDOS 4.13 commands and DOSGEN is not readable!

Disks 2, 3 and 4 may be read and written back by IMD without any problems.

How to create the missing Disk 1 ?

- format a new disk as SS in the EXORset
- make a backup of an existing XDOS 4.13 disk which has the XDOS 4.13 system files (XDOS.SY, XDOSER.SY, XDOSOV0 to XDOSOV6).
- copy DOSGEN.CM from a XDOS 4.0 disk
- copy all missing command files from other bootable XDOS 4.13 disks:
LIST DIR MERGE FREE NAME LOAD E DEL CHAIN BACKUP COPY FORMAT
(E is the CRT Editor, may be left out if place is unavailable, ROLLOUT is missing on any of the Computarium's XDIS 4.13 disks)

The (wrong) DOSGEN may be used to make a correct copy, but this copy gives an error (.EQ) when calling a first command (like DIR) after booting with it. When using the disk in drive :1 after booting with another XDOS 4.13 system, all command execute correctly.

Conclusion: do not use the incorrect DOSGEN command, prefer BACKUP or IMD to make a bootable copy.

The set of 4 disks for XDOS 4.13 have been uploaded to [VETUSWARE](#).

Computarium, 11 December 2021
Francis Massen