DISK-O-TAPE

A DISK TO TAPE TRANSFER UTILITY
FOR THE APPLE][AND APPLE][PLUS

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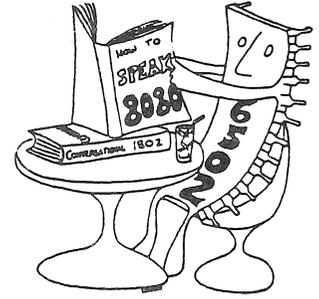
DISK-O-TAPE is a utility program for the APPLE II computer. It enables you
to transfer an entire disk worth of data to cassette tape and back again.
Some of DISK-O-TAPE's features:

* Sector-by-sector copy of an entire DOS 3.2 disk to magnetic tape
* Comprehensive error detection for 'walk-away' confidence
* True read-after-write verification pass for reliability
* Each tape contains it's own bootstrap for loading onto disk
* User-assigned naming of tapes
* Copy time is a function of the amount of data on the disk
* Copies all but disk tracks 0-2, which contain DOS
* Pays for itself in media savings alone
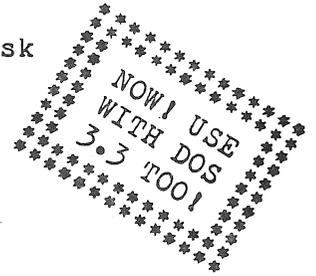
Use DISK-O-TAPE with confidence for:

* Disk backup
* Offline storage of infrequently used disks
* A secure means of mailing a disk to a friend on a durable cassette
* Freeing up disk workspace
* Archival storage of data disks
* A cost-effective means of commercial disk software distribution
  (Reasonably priced licensing arrangements available)

This copyrighted program replicates part of itself onto tape each time it is
used. It is intended for personal use only. Each tape is traceable by serial
number to the original serialized copy of DISK-O-TAPE used to make it.
Commercial use for the distribution of disk software on cassette is
expressly forbidden. Contact the author for liscensing arrangements if you
desire to use DISK-O-TAPE for such a commercial application. Thank you for
not copying this software illegally for the use of others.

SYSTEM REQUIREMENTS

APPLE II or APPLE II PLUS WITH AT LEAST 32K RAM
APPLE II DISK II LOCATED IN SLOT 6, DRIVE 1
DOS 3.2 AND INITIALIZED DISKETTES
CASSETTE RECORDER AND CASSETTE TAPES (15 MIN./SIDE)

COPYING A DISK-O-TAPE CASSETTE TO DISK

Your introduction to DISK-O-TAPE will be loading DISK-O-TAPE onto your own
diskette. Begin by booting DOS. Now insert an initialized diskette into your
disk drive. Be sure the disk is blank or at least that it contains no files
that you wish to keep. Type CALL -155 [RETURN] to enter the system monitor.
The APPLE should 'beep' and a '*' will appear. Set the volume and tone
controls on your tape recorder to appropriate levels. Rewind the DISK-O-TAPE
cassette. Type 200.240R , press the 'play' button on your recorder, and
press [RETURN] on the APPLE.

After a few moments, the APPLE will 'beep'. A few moments later, it will
'beep' again and the following message will gradually appear:

COPY TAPE -> DISK

DISK NAME: *** DISK-O-TAPE (C) 1980 ***

TK/SC
-- --
COPY COMPLETED

In place of the '--'s above, you will soon see track and sector information
displayed in HEX as the DISK-O-TAPE data is transferred to the disk. The
message 'COPY COMPLETED' will only appear at the end of a successful
transfer. Your original DISK-O-TAPE tape will also run the 'HELLO' program,
cataloging the disk's new contents. Stop your tape recorder, rewind your
DISK-O-TAPE master tape and save it as a backup copy. You will now see three
programs in the catalog, HELLO, TESTAPE and DISK-O-TAPE. You have just used
DISK-O-TAPE's tape-to-disk copy ability for the first time. *** NOTE *** :
You will use the same procedure to copy your own DISK-O-TAPE backed up tapes
from your own tapes to disk.

HOW DISK-O-TAPE WORKS:

DISK-O-TAPE loads and examines a disk's Volume Table of Contents (VTOC). It
saves this, along with a portion of itself, on tape. Then it loads the
content of the disk, sector by sector, into an 8K buffer in memory. When the
buffer is full, it's contents are written to the tape. This is repeated
until all the disk data has been transfered. At this point, DISK-O-TAPE
prompts you to rewind the tape. It reads in every block of data on the tape,
comparing it with data on the disk or in memory. This affords true
read-after-write verification for total confidence and reliability.

'HELLO' AND OTHER MYSTERIES

After copying a tape to disk you may find that something unexpected has
happened. When you boot the newly copied disk, the message 'FILE NOT FOUND'
may appear. The reason for this is that DOS, at startup, looks though the
disk directory for a 'greeting' program. The name of the greeting program is
customarily 'HELLO', but may in fact be initialized to any name that you
desire. Since DISK-O-TAPE does not copy DOS tracks 0, 1 or 2, you may wind
up with a disk on which DOS is looking for a greeting program filename which
is not present. The solution to this is simple: do a catalog of the disk and
decide which program you wish to be the greeting program. Install your DOS
System Master disk and BRUN UPDATE 3.2.1 (refer to your DOS manual for
details) to install the desired greeting program filename on your disk.

COPYING A DISK TO CASSETTE TAPE

With the DISK-O-TAPE disk in your disk drive, type BRUN DISK-O-TAPE and then
press [RETURN]. The following message will appear:

DISK-O-TAPE
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PLEASE INSERT DISK TO BE COPIED

Place a write protect tab on the disk you wish to copy and insert it in the disk drive.

DISK NAME?

Type in a name up to 30 characters in length, followed by a [RETURN]. This name will be stored on tape along with the disk data.

DISK-O-TAPE will now prompt:

PLEASE REWIND TAPE, START
RECORDER AND PRESS RETURN

Be sure to put the recorder in 'RECORD' mode and then press [RETURN] immediately. The screen will read:

COPY DISK -> TAPE

YOUR DISK NAME WILL BE HERE

TK/SC
-- --

After a length of time depending on the amount of data on your disk (up to 15 minutes) the screen will clear and display the following:

TAPE VERIFY

PLEASE REWIND TAPE, START
RECORDER AND PRESS RETURN

This time, be sure the recorder is in 'PLAY' mode and immediately press [RETURN].

YOUR DISK NAME WILL BE HERE

TK/SC
-- --
After the disk is completely verified against the tape copy, the message

VERIFY COMPLETE -will be displayed. Press [RETURN] to stop the 'beeping'. Stop the recorder and rewind the tape. You have successfully copied a disk.

ERROR MESSAGES

You may feel perfectly confident in starting DISK-O-TAPE and walking away while it works for you. If DISK-O-TAPE encounters any errors it will report them to you, stop the copy process and signal you with intermittent 'beeps' until you press a key. Here is a list of error messages and their causes:

DISK DRIVE ERROR - an unspecified disk I/O error was detected
DISK READ ERROR - a sector in the DOS map was unreadable
DISK WRITE PROTECTED - detected when copying disk to tape
TAPE READ ERROR - detected when copying tape to disk or verifying
VERIFY ERROR - a discrepancy was found between disk and tape
COPY ABORTED - appears after any of the above errors

TAPE RECORDING NOTES

DISK-O-TAPE has been tested with a number of relatively inexpensive (under $50.00) cassette tape recorders and has been found to be very reliable. Among those recorders tested are the following:

GE Model No. 3-5121-B "One Button Record"   Sankyo Model No. ST-60
GE Model No. 3-5105A   Panasonic Model No. RQ-309DS
J.C. Penny Catalog No. 851-0018   Panasonic Model No. RQ-2107
Sankyo Model No. ST-45

If you should experience any difficulty using DISK-O-TAPE, try going through the following checklist:

[ ] Are you using a good quality cassette? Does it have a short leader or is it leaderless? In the case of a long leader, try spacing a bit past the leader before recording. Cue the tape into the header tone before verifying or playing back.

[ ] Is your cassette recorder in reasonably good condition? Although I have successfully used a 50 cent garage-sale special with DISK-O-TAPE, the less hard knocks your recorder has seen, the better.

[ ] Is the tape head clean?

[ ] Is the head properly aligned?

[ ] Are volume and tone properly adjusted? If in doubt on this point, use the TESTAPE program included with DISK-O-TAPE to aid in adjusting your recorder. TESTAPE is usable at any memory location in your APPLE.

TESTAPE HEX DUMP

```
1000- A0 00 20 FD FC EA EA EA EA EA EA EA 98 48 A0 00
1010- 20 FD FC 98 20 DA FD 68 20 DA FD A2 80 A0 00 84
1020- 24 A0 00 20 FD FC CA D0 F8 F0 D5 A9 FF 4C C9 FC
```

BLOAD TESTAPE or enter it from the above listing. Put a blank tape in your recorder, set it to 'record' and type 102BG followed by a [RETURN]. This will put a synch tone on your tape just like the header on all APPLE cassette recordings. Rewind the tape and play it back. Type 1000G followed by a [RETURN]. Two HEX bytes will appear side by side on your APPLE screen. Now adjust your recorder's volume control to make the two bytes as near as possible to the same value. If you have a tone control, set it to it's highest position.

ALSO BY DANN MCCREARY:

APPLE-80 AND COSAPPLE
These Cross-Simulator/Debuggers let you run and test 8080 and 1802 code on your APPLE][or APPLE][PLUS.

APPLE-80 AND COSAPPLE DISASSEMBLERS
These Cross-Disassemblers let you disassemble 8080 and 1802 code on your APPLE][(or APPLE][PLUS with INTEGER card or LANGUAGE card).

DISK-O-TAPE was originally designed to run under DOS 3.2.1 but to be upward compatible with release 3.3. In order to accomplish this, DISK-O-TAPE refers to data in a disks' Volume Table Of Contents (VTOC) to determine how many sectors there are per disk track. It turns out that a 3.2.1 VTOC can run on a 3.3 disk but the opposite is not necessarily true. For this reason, all DISK-O-TAPE Master Tapes (such as the one you purchased with this package) are made under DOS 3.2.1. The DISK-O-TAPE program itself is fully compatible with either DOS 3.2.1 or DOS 3.3 and will run with either DOS release: however, you should never attempt to load a DISK-O-TAPE - saved disk which was saved under 3.3 onto a 3.2.1 disk. The obvious reason for this is that the program will try to write data onto sectors 0D - 0F, which just are not available on a 3.2.1 disk. On the other hand, it is possible to copy a DISK-O-TAPE which was recorded under 3.2.1 onto a 3.3 disk, but this has certain drawbacks. After such a copy, you will have a 3.3 disk that contains a 3.2.1 VTOC. It will work fine, but it will only be able to use 13 sectors of each track instead of the normal 3.3 16 sectors.

What is the solution to this? In the case where you must copy a DISK-O-TAPE made under 3.2.1 onto a 3.3 disk (for example, to copy the DISK-O-TAPE Master Tape onto your 3.3 disk), use this simple procedure:

1. Follow the standard instructions in the DISK-O-TAPE manual.
2. Use the DOS 3.3 'FID' program to move the DISK-O-TAPE files onto another DOS 3.3 disk.
3. Re-initialize the disk first used to load DISK-O-TAPE from tape, in order to clear the 3.2.1 VTOC. Now this disk is again available for unrestricted 3.3 use.

Some other important points: due to the increased capacity of DOS 3.3 disks, you will need to use tapes with a playing time of at least 20 minutes per side for copying full 3.3 disks. Also, references in the DISK-O-TAPE manual to the UPDATE 3.2.1 program should refer to the MASTER CREATE program described in the DOS 3.3 manual.

There are several reasons why DISK-O-TAPE does not copy tracks 0-2. Normally, these tracks contain DOS itself, which is placed there during an INIT, UPDATE or MASTER CREATE anyway. Copying DOS would most often waste time and tape. Also, some releases of DOS leave several sectors of those tracks unwritten. The unfortunate result of this is that DISK-O-TAPE detects a READ ERROR and aborts. If you have a good reason for wanting to copy those tracks (I.E., you may have replaced DOS with data files or even your own operating system) then here is a way to do that: BLOAD DISK-O-TAPE. CALL -155. Enter the following:

```
*5172:00
*521D:00
*559C:00
*5100G                    (NOTE: The APPLE prints all '*'s)
```

Now DISK-O-TAPE will copy all tracks, provided that there is data in every sector listed in the VTOC.

DISK-O-TAPE/PASCAL

A DISK TO TAPE TRANSFER UTILITY
FOR THE APPLE II AND APPLE II PLUS

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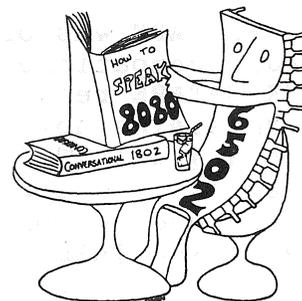
DISK-O-TAPE/PASCAL is a specialized version of the DISK-O-TAPE disk copying
program. Some of DISK-O-TAPE/PASCAL's features:

* Frees your mind without tying up your disks
* Copies PASCAL language disks to tape using DOS 3.3
* Copies DOS 3.3 disks with unusual file structures
* Provides a verification pass for read-after-write reliability
* Copies an entire disk in about 17 minutes
* Each tape contains its own bootstrap for loading onto disk
* Pays for itself in media savings as well as peace of mind

Use DISK-O-TAPE/PASCAL with confidence for:

* Disk backup
* Archival storage of data disks
* Offline storage of infrequently used disks
* A secure means of mailing a disk to a friend on a durable cassette
* Freeing up disk workspace

System requirements:

APPLE II or APPLE II PLUS with at least 32K RAM
DISK II in Slot 6, Drive 1
DOS 3.3 and initialized diskettes
Cassette recorder and tapes (20 min./side minimum)

DISK-O-TAPE/PASCAL is intended for several uses. Primarily, DISK-O-TAPE/PASCAL
is for copying PASCAL disks under DOS 3.3. DISK-O-TAPE/PASCAL may also be used
with any DOS 3.3 disk, regardless of its file structure, because DISK-O-TAPE/
PASCAL does a complete physical copy of every sector on every track of the
disk being copied.

Since DISK-O-TAPE/PASCAL is used very much like DISK-O-TAPE, it is supplied
with this appendix and a copy of the original DISK-O-TAPE manual. DISK-O-TAPE/
PASCAL must be run under one of the DOS 3.3 BASICs. It is loaded onto your
own disk by using this proceedure:

1. Boot DOS 3.3 with either INTEGER or APPLESOFT BASIC
2. Follow the rest of the loading instructions in the DISK-O-TAPE manual

DISK-O-TAPE/PASCAL differs from DISK-O-TAPE in two signifigant respects. It
copies every sector of every track of each disk it copies. Each copy thus takes
about 17 minutes regardless of the amount of data saved on the disk. Be sure to
use a long enough tape. Also, DISK-O-TAPE/PASCAL is only for 16 sector disks,
so do not attempt to use it with DOS versions prior to 3.3. Aside from this,
DISK-O-TAPE/PASCAL gives you all the features and benefits of DISK-O-TAPE.