The

DISKMAKER™

with

MASTERKEY™

System

1. DiskMaker Fast-Track Backup
2. State of the "Arts" Backup
3. MasterKey Nibble Backup

NOTICE: DiskMaker with MasterKey is designed solely for the purpose of creating backup copies of programs already owned by the user. Making backup copies of programs you do not own is against the law and violates the author's copyright.

YOU SHOULD CAREFULLY READ THE LICENSE AGREEMENT ON PAGE 23.

Courtesy of
Commodoregames.net

INTRODUCTION

By purchasing DiskMaker, you have insured that your valuable software library will not be lost! Now you too can safeguard your Commodore software against loss or damage — just as professional programmers do — by creating backup copies of your software programs. And by keeping a backup of programs that you personally are creating, you will avoid wasting countless hours re-entering data, in case you accidentally erase your work.

Making backup copies of the delicate magnetic material that stores data is a common practice when using computers. Most computer operating systems allow for this, but due to the design of the Commodore 1541 disk drive, numerous schemes for copy-protection have been developed that prevent the user from making backups.

Your DiskMaker with MasterKey system creates backups by feeding data from an original diskette directly into computer memory, and then onto a backup diskette. The process bypasses the standard load and save commands, and even cuts through disk protection. DiskMaker is quick, reliable and easy to use. Best of all, DiskMaker doesn't cause damaging drive "knock" during the backup process.

You have a right to make a backup of commercially produced software — provided that you purchased the original. This manual will help you make backups of your valuable programs using the DiskMaker with MasterKey system.

YOUR DISKMAKER DISKETTE

The DiskMaker system disk is a powerful utility program and a necessary addition to your Commodore system. DiskMaker's three backup utilities will truly enhance your software library.

Your DiskMaker system disk comes on a single-sided double-density diskette which has been certified by the manufacturer as 100 percent error-free. Treat your DiskMaker disk as you would treat a good dictionary or other reference book — with great care. Always keep it in its protective sleeve when not in use. Since the DiskMaker system disk is uniquely encoded with specially formatted and highly complex program information, use extra caution when handling it.

Your present version of DiskMaker, and any upgraded or revised editions, can be an integral part of your computer experience and will help to maximize enjoyment of your entire system.

LOADING DISKMAKER

With both computer and disk drive OFF, first turn your disk drive ON and then turn your computer ON. Insert your DiskMaker system disk into the drive and type the following command:

```
LOAD " * ",8,1
```

and press the [RETURN] key.

For detailed operating instructions, see How to Use DiskMaker, page 10.

If you have repeated problems loading DiskMaker, it is recommended that you initialize your 1541 drive before beginning a backup session. To do this, insert a standard formatted disk into the drive and type the following command:

```
OPEN 1,8,15,"I"
```

and then press the [RETURN] key.

HOW TO USE DISKMAKER

To create a backup of your program, you will need a high quality diskette. If you plan to reproduce your program onto a used diskette, be sure that the information on the diskette is not needed. DURING THE PROCESS OF CREATING A BACKUP, DISKMAKER WILL ERASE ALL DATA ON YOUR "TARGET" DISKETTE. Your diskette does not need to be formatted; DiskMaker will format the "target" diskette automatically during the backup process.

DiskMaker is easy to operate — the only decision you have to make is which backup option to use!

You may choose a backup option from the menu and operate the DiskMaker system by using either the keyboard function keys or a joystick plugged into control port 2 as follows:

Keyboard:

```
[F1]  = begin/continue backup
[F3]  = select menu option
[F5]  = move selection arrow up
[F7]  = move selection arrow down
```

Joystick:

```
up          = move selection arrow up
down  = move selection arrow down
fire button      = select menu option
```

After selecting your backup option from the menu, press fire button or the [F1] key to begin or continue the backup process. When DiskMaker is ready to begin the backup operation, a chime will sound and the screen will display the message:

INSERT SOURCE DISKETTE

Remove your DiskMaker system disk from the drive. Check to see if your original "source" diskette has a square notch hole in the upper right-hand corner. If it does, be SURE to place a write protect tab over the notch. This will insure that the original is not accidentally erased! Insert the original diskette that you want to duplicate (this is your "source" diskette) into the drive. Then press the joystick fire button or the [F1] key on the upper right of your keyboard to begin the backup.

At this point, and at various times during the DiskMaker's backup operation, your screen will blink to the border color and the red light on the drive will blink rapidly. Do not panic. This is normal. When DiskMaker has accessed the information on your "source" diskette, the chime will sound again and the screen message will read:

INSERT TARGET DISKETTE

Remove your "source" diskette from the drive. Insert the diskette that will become your duplicate (this is your "target" diskette) into the drive. Be sure that your "target" diskette does NOT have a write protect tab on it. Then press the joystick fire button or the [F1] key to continue the backup

operation. After DiskMaker has finished writing data onto the “target” diskette, you will hear the chime again and the screen message will read:

INSERT SOURCE DISKETTE

Repeat the process as described above. This process will be repeated four or more times for a complete backup of your diskette, depending on the backup option that you have chosen. When the entire backup operation is done, the screen message will read:

BACKUP COMPLETE

Remove the “target” diskette from the drive. Store your diskettes and the DiskMaker system disk in a clean, safe place.

If you are operating Fast-Track or State of the “Arts” Backups, you may now press the [F3] key to begin the backup process again. You may create additional backups of the same “source” diskette, or use a different “source” diskette. If you are operating the MasterKey Nibble Backup, you must turn your computer and disk drive OFF and then re-load the DiskMaker system to create additional backups. For specific information on how to use MasterKey Nibble Backup, see page 15.

FAST-TRACK BACKUP

You will use Fast-Track Backup more often than any other part of your DiskMaker system. It is the fastest and easiest automatic backup utility available. Fast-Track Backup will encode your "target" diskette with data and "errors" as required by the original program. It will take about 4 to 5 minutes for a complete backup, as DiskMaker reads the "source" and "target" diskettes 4 times each.

Fast-Track Backup is capable of reproducing the majority of the software on the market today. Most of your games, utilities and educational program diskettes will fall into the "standard" format category — this is Fast-Track's specialty. In fact, you may rarely need to use the other options in the DiskMaker system until you expand your software library.

STATE OF THE "ARTS" BACKUP

State of the "Arts" Backup is designed to duplicate specific "non-standard" formats used in some of the latest software. This option enables you to make a 5-pass backup of software titles that were previously considered impossible to duplicate.

State of the "Arts" Backup should be used for sophisticated, well-protected software that will be used as a read-only diskette. Since the backup copy will be of non-standard format, data disks (such as those used with word processors or spreadsheets) should be backed up with Fast-Track only.

Since the DiskMaker system options are upwardly compatible, you may also use State of the "Arts" to create backups of diskettes normally duplicated with Fast-Track.

MASTERKEY NIBBLE BACKUP

The DiskMaker MasterKey Nibble Backup allows you the greatest flexibility for duplicating "non-standard" format diskettes. This powerful component of the DiskMaker system gives you MasterKey access to the track(s) of your choice. You may nibble individual tracks or groups of tracks up to track 40. You may also choose the half-track option. These capabilities allow you to backup some of the most sophisticated copy-protected software available today, and quite possibly some programs yet to be developed.

After you have selected MasterKey Nibble Backup, the Nibble Options screen will read:

```
STARTING TRACK  =  01
```

This will be the track at which the backup will begin. If you want to start your backup at track 1, then just press [RETURN]. If you want to start at a location other than track 1, type in the starting track number (using two digits) and press the [RETURN] key.

IMPORTANT NIBBLE NOTE: When selecting track numbers you MUST enter two digits. For example, to nibble from starting track 1, you must type [01] and press [RETURN]. This rule also applies to ending track entries. Do NOT press the SPACE bar when entering track numbers.

Valid track selections are tracks 1 to 40. The ending track number must be equal to or greater than the starting track number. An invalid number will not allow you to continue. Use the [DEL] key to erase your entry, and start over. If at any time during this entry process you wish to start over, press the [RESTORE] key to begin again.

After you have entered your starting track selection, the next line on the screen will read:

ENDING TRACK = 35

This will be last track backed up. Press [RETURN] to end at track 35, or enter another number (be sure to use two digits) and press [RETURN] to end at a location other than track 35. If you notice an error in your entries, press the [RESTORE] key to start over.

At this point, the next line on the screen will read:

HALF TRACKS = N

Press [RETURN] to nibble the source diskette at standard track locations. If you want the half-track option, type [Y] and then press [RETURN].

Follow the prompts to insert your "source" and "target" diskettes. Use the [F1] key or joystick fire button to begin/continue the nibble backup.

There are some important considerations to keep in mind when using the MasterKey Nibble Backup. Most software designers will not use any track over 38, since some 1541 disk drives have difficulty moving the drive head to tracks 39 and 40. We have noticed very little software which utilizes half-tracking. This is due to limitations of the Commodore 1541 disk drive, one of which is that the drive has a wide read/write head. Because of this, valid data cannot be accurately read or written onto adjoining half-tracks. For example, if there is data on track 7, tracks 7½ and 8 are not available for data, or if there is data on track 7½, tracks 7 and 8 are unavailable.

Therefore, when you choose the half-track option of the MasterKey Nibble Backup, all reading from the "source" diskette and writing onto the "target" diskette will be offset a half-track from the normal position. For example, if you choose to back up tracks 3 to 5 with the half-track option, the tracks backed up will be 3½ to 5½.

The Nibbler options will be invaluable if nothing else seems to work, or if you think that data may exist at non-standard positions.

After using the MasterKey Nibble Backup, turn your drive and computer OFF, and then re-load the DiskMaker system to continue making backups.

THEORY OF OPERATION

DiskMaker with MasterKey was designed to provide fast, easy disk backup capability for the computer enthusiast. The program uses quick, direct-access drive routines. These routines facilitate the fastest disk access possible using factory-installed serial data transmission lines. DiskMaker version 1.0 was designed to copy a diskette in approximately 3 minutes, and was relatively effective for many software titles. Revision became necessary with the introduction of many new software programs with more sophisticated forms of protection.

Version 1.1 now backs up even more software, in an average of only 4 to 5 minutes. To gain speed DiskMaker uses a unique communications protocol between the 1541 disk drive and the Commodore 64. This is why all other peripherals must not be present on the serial line. Always disconnect them prior to loading DiskMaker.

DiskMaker does not use the 1541 internal ROM (Read Only Memory). DiskMaker takes total control of the drive with its own DOS (Disk Operating System). The Commodore 64 operating system is also modified. To create maximum buffer space, BASIC and the Kernal ROM are switched off. The screen is blanked during serial communication with the drive to allow the 6510 microprocessor to perform at maximum speed. As a result, house-keeping chores for screen display are eliminated.

Disk access is performed in both “standard” and “non-standard” formats. A standard format conforms to the normal Commodore disk format as outlined in the 1541 manual. Some copy-protection schemes that rely on standard DOS errors adhere to the standard format specifications. Non-standard formatted diskettes go beyond the Commodore format, do not rely on the DOS error messages, and function partly outside of the normal Commodore DOS.

Each option in the DiskMaker system was designed to be upwardly compatible. The more sophisticated backup options retain the backup capabilities of their faster, less extensive counterparts, while giving up certain standard DOS format parameters.

ABOUT COPY-PROTECTION

Disk copy-protection is the way in which individuals or computer software companies prevent copying of their programs. Protection schemes were originally developed for security reasons, to protect confidential information from being accessed by unauthorized persons. In recent years, the practice has spread into the area of commercial software to prevent copying by users. Most software manufacturers utilize copy-protection to inhibit piracy, but this also prevents legitimate users from duplicating their valuable software. The word "software" itself describes the delicate nature of disk-based computer programs. It is a practical necessity to make a backup.

In recent years, copy-protection has become an integral part of commercially produced software. As the industry evolves, the protection schemes have and will become more sophisticated. The newest forms of disk protection are certainly more difficult to detect and can make the job of reproducing a disk much harder. DiskMaker with MasterKey helps you conquer these problems quickly and easily.

A common type of protection in use today is "standard error checking" or "lock protection". This type of scheme is usually implemented on a "standard" format. In the past, users wishing to duplicate diskettes with this type of protection were forced to perform a lengthy analysis and manual decoding of errors. Now the DiskMaker Fast-Track Backup performs AUTOMATIC data and error encoding.

Some software protection utilizes the "non-standard" format, requiring more complete access to disk information. Previous methods of disk error analysis simply will not work with non-standard formats. DiskMaker State of the "Arts" Backup provides more in-depth capability.

There is no question that software protection will continue to evolve. The MasterKey Nibble Backup obtains access to more information and performs automatic data and error encoding even beyond the scope of today's software.

DISKETTE CARE

After making your backup, put the original diskette in a safe place. Now you may use the backup without fear of losing or wearing out your valuable original diskette.

The most comfortable environment for a diskette is room temperature between 50 and 85 degrees Fahrenheit, and average humidity. Keep these original diskettes away from TVs, telephones, audio speakers, motors, screwdrivers, paper clips, or any other objects that have magnetic properties. And to avoid unauthorized nibbling, make sure that these "master" diskettes are out of the reach of animals and small children.

To ensure the best possible results, be extra careful with your equipment while making backups. Place the diskettes in the drive slowly to prevent bending. Open and close the drive door gently — snapping the drive door repeatedly can knock the head out of alignment or damage the hub pressure mechanism.

Avoid placing any diskettes on top of the ventilation slots at the rear of the 1541 drive unit. The heat that is emitted from your drive will most likely warp the diskette. It is also a good idea to remove your diskettes from the drive whenever turning the drive unit ON or OFF. This will prevent any unwanted electrical impulses from being accidentally written to a diskette.

IF YOU HAVE PROBLEMS

If you have any problems loading DiskMaker, the very first thing you should do is to turn your computer and all of your peripherals OFF. Check to see if any devices are connected to any port or the serial bus. Make sure that the disk drive is the ONLY device connected to your computer. Now you are ready to try loading the DiskMaker system disk once again. The only way the program will run is if you type in the command:

```
LOAD " * ",8,1
```

and press the [RETURN] key.

If you still are having trouble loading, insert a standard formatted disk into the drive and enter the command:

```
OPEN 1,8,15,"I"
```

and then press the [RETURN] key.

Then repeat the loading procedure as outlined above.

Once you have successfully loaded DiskMaker, if you have repeated difficulty making a backup of a particular disk, run through the following checklist:

1. Try using a different "target" disk, preferably a different brand of superior quality.

2. Use a different selection from the DiskMaker system disk. State of the "Arts" Backup and MasterKey have more extensive capabilities for diskettes with advanced copy-protection.

3. Check your disk drive for proper alignment. If your drive often has trouble loading, you may have an alignment or hardware problem. We recommend the 1541 DISK DRIVE ALIGNMENT PROGRAM from C.S.M. SOFTWARE, P.O. Box 563, Crown Point, IN 46307. This product was reviewed in the October 1984 issue of COMPUTE!'s GAZETTE magazine, and it requires no special equipment.

4. If you are still having problems and your drive seems to be operating properly with your other software, you may have encountered an unusual protection scheme that we will definitely want to know about. Call the BASIX Technical & Product Support Line at 805-682-4000 ext. 13. This line is answered by our technical staff from 10AM–7PM Monday through Friday, California time, and Noon – 5PM on Saturday. We want to assist you and hear your comments.

APPENDIX A

REVISIONS AND UPGRADES

We are committed to the continuing process of protection analysis and plan to maintain the status of DiskMaker as the Number One backup utility for years to come. To achieve this we intend to revise the product when necessary as new types of software are implemented.

The customer registration card in your DiskMaker package is your ticket to future upgrade discounts. Be sure to fill out this card and mail it immediately. This will not only activate the product warranty, but will also certify you as the registered owner. You will then be entitled to a substantial upgrade discount on the BASIX product registered. This will also entitle you to user product support. Simply call the BASIX product serial number ready when calling. For product support, customers who own the previous version will receive a card notifying them of the upgrade. This card must be sent in to qualify for the upgrade discount. All registered customer names are kept on file in our database.

APPENDIX B

MAINTENANCE NOTES

Your 1541 disk drive is a delicate piece of electronic equipment. Do not let the drive door snap when inserting or removing diskettes. This can cause drive-head alignment problems or damage to the hub mechanism.

Keep the drive unit one or two feet away from your TV or monitor. TVs generate high-voltage radiation that may cause permanent brain damage. This radiation may also interfere with reading data from the diskette, causing possible load errors.

Due to the limited ventilation of the 1541 drive, some users have experienced difficulties ranging from read/write problems to total equipment failure. Never place diskettes or other materials on top of the ventilation slots at the rear of the drive unit. To aid in heat dissipation, consider adding a fan unit or heat sink kit. Or simply remove the disk drive cover, PROVIDED that you are operating the drive in a relatively dust-free environment. This will only be necessary if you plan on operating your 1541 for extended periods of time. For details on cover removal, consult your Commodore 1541 User's Guide.

It is always a good idea to remove your diskette from the drive when turning your computer or disk drive power ON or OFF. During extended periods of computer use, always remove your diskette from the 1541 drive. This relieves pressure on the diskette and the internal mechanics of the drive unit. This also prevents accidental overwriting of diskette data when turning the drive power ON or OFF.

It is NOT recommended to use both sides of any diskette in the 1541 drive. Although some other disk drives are made to use both sides, the 1541 was designed to access only one side of a diskette. Using the second side can dislodge dust and other particles that accumulate in the corners of the diskette jacket. These particles may scratch the magnetic media, or cause dust deposits in the 1541 drive mechanism.