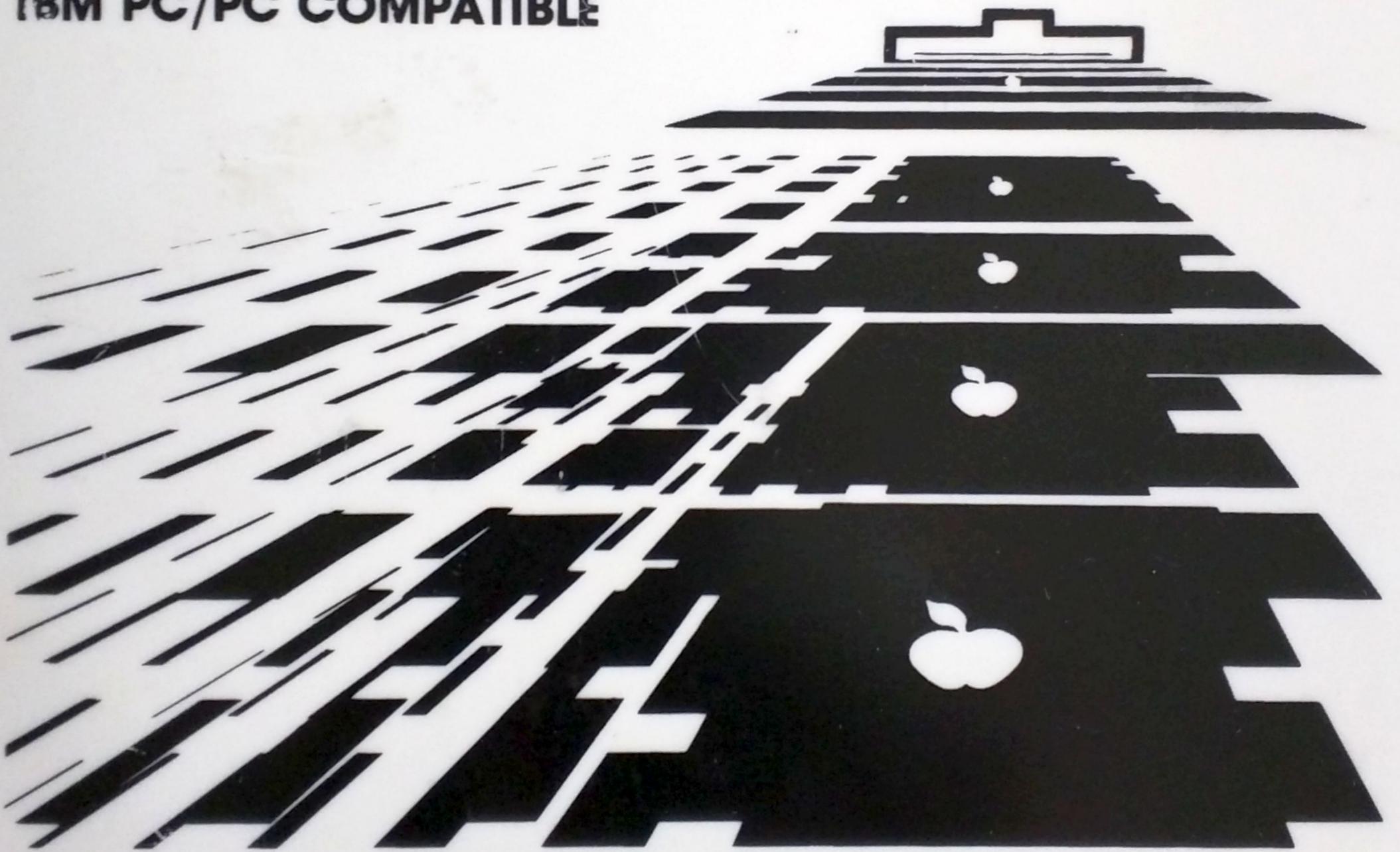

Accessory Board
And Software
for the IBM PC

APPLE TURNINGOVER™

READ, WRITE AND FORMAT
APPLE DISKS IN YOUR
IBM PC/PC COMPATIBLE



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APPLE TURNOVER

USER'S MANUAL

VERTEX SYSTEMS, INC.

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1 INTRODUCTION

The APPLE][and IBM PC use completely different approaches to floppy disk storage. Consequently, an APPLE][disk cannot be directly used in an IBM PC and vice versa. Previously, the only practical method for transferring files between an APPLE][and IBM PC involved slow, complicated serial file transfer methods.

Apple-Turnover's specially designed hardware and software enables your IBM PC to directly read and write APPLE][disks. Now, you can copy files between APPLEDOS 3.3, APPLE CP/M, and IBM MS-DOS disks easily and quickly.

1.1 Functional Description

Apple-Turnover consists of the following:

- A printed circuit card that fits into an expansion slot inside your IBM.
- A program disk with software to read, write and format APPLE disks in your PC.
- Documentation consisting of this User's Guide, product warranty, software license agreement, and registration card.

Apple-Turnover is intended for the IBM PC, XT and selected "PC-compatible" computers. It enables these host computers to directly read, write and format APPLEDOS 3.3 and APPLE CP/M disks. Consequently, you can easily transfer files from APPLE disks to IBM disks, and vice versa.

Apple-Turnover can be used to copy or transfer any type of disk file including APPLE text files, APPLESOFT programs, APPLE integer basic programs, APPLE binary files, MS-DOS binary and text files, etc.

NOTE

Apple-Turnover will not transfer files from copy-protected disks.

Text files and various types of datafiles can usually be used on the other computer "as-is" or with minor modifications. An additional utility program (ATSIFT) is included in the Apple-Turnover package for making minor file modifications to text files.

Although executable programs can be transferred from one computer to the other, they will not generally run. There are, however, important exceptions. For example, many APPLE CP/M programs will run on the IBM if you install a Z80 coprocessor card. Since these cards are expensive, you may want to consider the "80MATE CP/M Emulator" from Vertex Systems. This software enables your IBM to directly run most types of CP/M software, including APPLE CP/M programs.

The Apple-Turnover printed-circuit card provides the hardware interface that enables your PC to read and write APPLE II disks. The Apple-Turnover software activates the card when required to read, write or format APPLE disks. The Apple-Turnover card has no effect on normal operation and can remain permanently installed.

Since the printed-circuit card remains "invisible" during normal operations, we can discuss the Apple-Turnover's features in terms of the supplied software. The main programs supplied are described in Table 1-1.

These programs are fully-menu driven and easy to use. Each program contains user-selectable options to help match program function to your specific needs.

1.2 User Support

If you need help, please refer to the Appendices for a description of our support services and policies. Please note that a signed registration card must be on file BEFORE we can provide customer support.

Table 1-1. Apple-Turnover Programs

ATREAD	copies files from APPLIEDOS 3.3 or APPLE CP/M disks to MS-DOS disks.
ATWRITE	copies files from IBM format, MS-DOS disks to APPLIEDOS 3.3 or APPLE CP/M disks.
ATINIT	initializes blank disks for APPLIEDOS 3.3 or formats disks for APPLE CP/M.
ATSIFT	modifies MS-DOS text files by adding or removing linefeeds, stripping the high-bit, etc.

1.3 Documentation Notes

Throughout this documentation, please note the following conventions:

Table 1-2. Notation in This Guide

COMMAND	Program commands or user input are shown in upper-case type.
[Enter]	The "Enter" (or Return) key terminates most commands or other user keyboard input.
[F1]	Function-key commands are shown in parenthesis. Pressing the [Enter] key is not required.
Q or q	Single-letter commands can be entered in either upper or lower-case, but are shown in upper-case.
MS-DOS	MS-DOS refers to PC-DOS as well.



2 INSTALLATION

Apple-Turnover installation consists of:

- making sure your computer meets minimum system requirements (see Section 2.1)
- reading the enclosed software license agreement and product warranty, and returning your product registration card ✓
- installing the printed-circuit card in one of your computer's expansion slots ✓
- preparing an Apple-Turnover work disk from the original program disk, storing the original disk in a safe place

2.1 Minimum Requirements

Please check to make sure that your computer meets the minimum hardware and software requirements outlined in Table 2-1.

Table 2-1. Minimum System Requirements

COMPUTER	IBM PC, IBM PC-XT, or selected "PC-compatible" computer
MEMORY	192 KB minimum of main system memory
DISKS	Two floppy disk drives, or one floppy disk drive plus an "XT-compatible" hard disk system
MS-DOS	PC-DOS version 2.xx or the MS-DOS equivalent is strongly recommended. Under earlier versions, many important features like filename wildcards, etc. are not available.

Apple-Turnover will not function properly with some computers and peripherals. These are listed in the Appendices.

Your Apple-Turnover package should contain the following components: (1) Apple-Turnover board, (2) auxiliary cable, (3) program disk, (4) program manual, (5) product warranty, (6) software license agreement, (7) registration card, and (8) problem report form.

Apple-Turnover is sold with a warranty covering materials and workmanship of the printed-circuit card. Proprietary software is furnished under the terms of the enclosed license agreement without express or implied warranty.

Please read the warranty and license agreement. Then, please sign the enclosed product registration card indicating your acceptance of the license agreement, and mail the card within 10 days of purchase.

2.2 Installing the Card

This section presents instructions for installing the Apple-Turnover printed-circuit card in an IBM PC or XT. This approach will also work for selected PC-compatible computers.

If you have installed non-IBM components in you IBM PC or XT, have a Compaq, or need additional information, please refer to Appendix 2.

The Apple-Turnover printed-circuit card is the electronic interface that enables your PC to read and write Apple disks. The Apple-Turnover software will not function unless the card is installed. Since the card has no effect on ordinary disk function, you may leave it permanently installed.

Conceptually, the Apple-Turnover card is installed in series with your existing disk controller card. Figure 2-1 below shows the original configuration in most computers.

After you install the Apple-Turnover printed circuit card, your computer configuration will resemble the sketch in Figure 2-2.

If you are installing Apple-Turnover in an IBM PC or XT, then follow the instructions in the next section. Check the Appendices for Compaq installation instructions. Contact your dealer or Vertex Systems for help with installation in other computers.

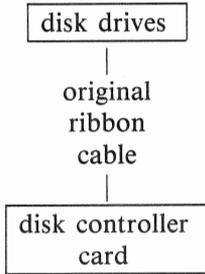


Figure 2-1. Original Disk Drive Configuration

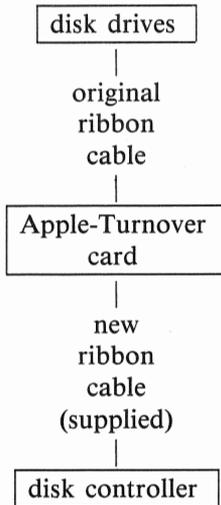


Figure 2-2. Configuration After Installing Apple-Turnover

NOTE

The Apple-Turnover card can be installed almost anywhere between the disk drives and disk controller card. Just make sure that "pin 1" on the drives, boards and cables (colored stripe) all mate properly.

2.2.1 Procedure

Use the following procedure for installing the board in an IBM PC or PC-XT *only*:

- STEP 1 Gather the following items: the Apple-Turnover card, the supplied auxiliary cable, and a medium-size, flat-bladed screwdriver. A smaller phillips or cross-head screwdriver is also useful.
- STEP 2 Turn off your computer's main AC power switch and remove the AC power cord from the electrical socket. Attempting to install the board while the AC power is on will damage the board, your computer, and void your warranty.
- STEP 3 Remove the computer's cover to obtain access to the expansion slots. Refer to your computer operating manual for additional information on removing the cover.
- STEP 4 Locate your floppy disk drive controller board.
The controller board is usually plugged into a full-length slot closest to the power supply box. Look for a card connected to the floppy disk drives by a wide ribbon cable.
- STEP 5 Note the orientation of the cable attached to the controller board. The colored stripe on one edge of the ribbon cable shows "pin 1" and can be used as an aid to orientation.

Carefully plug the female pin connector on the supplied ribbon cable into the male pin connector on the board. The colored stripe on the ribbon cable should be oriented towards the top of the board, matching the orientation of the original disk drive cable.

STEP 8 Locate a free expansion slot. If the original metal bracket cover is still in place, use a screwdriver to remove bracket retaining screw. Then, remove the metal bracket that covers the cut out in the back panel of the computer chassis. Save the retaining screw.

STEP 9 Position the Apple-Turnover card over the expansion slot so that the metal bracket will slip behind the cut out in the back panel. Lower the card until it rests on the slot.

Keeping the card level, use even pressure on the back and front of the card to press it straight down.

The metal bracket on the Apple-Turnover board should be flush against the back of the computer chassis. Use the retaining screw you removed earlier to secure the metal bracket to the chassis.

STEP 10 Take the ribbon cable coming from your Apple-Turnover board and plug it into the disk controller card. Don't forget to make sure the cable stripe is up.

All the cables should be plugged in. If you have one loose, go back to the beginning of this section and retrace the steps for installation.

STEP 11 Replace the case on the computer. This completes the printed-circuit board installation.

2.2.2 Problems

If your disk drive(s) stay on when you power up your computer, one of the ribbon cables (either the newly supplied cable or your original disk drive cable) has been installed upside down on the Apple-Turnover board.

This will not harm your drives or controller. To restore normal operation, turn off the AC power to your computer, check the cables for a reversed cable, and correct the situation.

2.3 Software Installation

Software installation consists of "backing-up" the Apple-Turnover programs and installing all or a portion of MS-DOS. Please note that there are two different procedures. Section 2.3.1 presents the procedure for a PC with floppy disk drives. Section 2.3.2 presents a different procedure for an IBM XT or a PC with an "XT compatible" hard disks.

The Apple-Turnover programs are provided on an IBM format, MS-DOS disk. The disk is not copy-protected. However, the disk or individual disk files should be copied only in accordance with the license agreement.

2.3.1 PC Installation

This section describes the installation procedures for a PC with floppy-disk drives. Use the process described below to produce an Apple-Turnover work disk. Store the original Apple-Turnover program disk in a safe place.

Use the following procedure to prepare a work disk from the original program disk:

1. Place a write-protect tab on the original Apple-Turnover program disk.
2. Insert your MS-DOS system master disk in Drive A and boot your computer using your normal startup procedure.
3. Insert a blank disk into Drive B.
4. Enter the command: `FORMAT B:/S [Enter]`
5. When the formatting operation is completed, remove the system master disk from Drive A and insert the Apple-Turnover disk.

6. Issue the command: `COPY A:*. * B:` [Enter]
7. After all files have been copied from the Apple-Turnover program disk to your new work disk, remove the program disk from Drive A and store it in a safe place.

2.3.2 *XT Installation*

If you are using a hard disk computer similar to an IBM XT, then use the following procedure:

1. Place a write-protect tab on the original Apple-Turnover program disk.
2. Create or choose a directory on your hard disk for the Apple-Turnover programs. Make this the active directory on the hard disk.
3. Insert the Apple-Turnover program disk into Drive A.
4. Enter the command: `COPY A:*. * C:` to copy all the Apple-Turnover programs from the program disk to your hard disk.
5. After the copy process is completed, store the original program disk in a safe place.

NOTE

Default program options initially are set for an IBM PC with two floppy disk drives. On an IBM XT or similar hard-disk computer, you **must** change the program options for proper operation. Refer to Section 4.1 for instructions.

3 TUTORIAL

The Apple-Turnover programs share a common "user-interface." Learn to use one program, and you have learned how to use them all. Despite the similarity, there are still some important differences between the various Apple-Turnover programs. Therefore, this summary is organized as follows:

- Sect. 3.1 introductory material
- Sect. 3.2 general instructions for all programs
- Sect. 3.3 specific instructions for ATREAD and ATWRITE
- Sect. 3.4 specific instructions for ATINIT
- Sect. 3.5 specific instructions for ATSIFT

The general approach to using Apple-Turnover is summarized below:

- PLAN ACTIVITIES** Select the files to be copied from one disk format to the other. Gather enough blank or pre-formatted disks, and label them for easy identification during your work.
- FORMAT DISKS** Run the ATINIT program to format blank disks for APPLIEDOS or APPLE CP/M as required.
- COPY FILES** Run the ATREAD program to copy files from APPLE disks to MS-DOS disks. Run the ATWRITE program to copy files from MS-DOS disks to APPLE disks.
- MODIFY FILES** Use the ATSIFT program (as needed) for ASCII text files that need minor modifications.

3.1 Introduction

In the material that follows, a section of text is often devoted to explaining a single menu screen. These sections will be headed by a flow diagram or "roadmap" similar to the example shown in Figure 3-1.

Present Menu	Available Choices	Command
TITLE PAGE	continue	[F1]
	Options Menu	[F2]
	Exit	[F10]

Figure 3-1. Example of Program Roadmap

In Figure 3-1, The legend on the left (TITLE PAGE) identifies the present menu or screen. The legends in the center column (Format Menu, Options Menu, etc.) show possible selections for next action. The right column shows the command required for each selection. For example, to move from the TITLE PAGE to the Options Menu, press function key [F2].

Menu selections and most other commands can be entered using either of the methods described below:

1. FUNCTION KEYS

press a function key corresponding to the desired command. Each menu screen will display the active function key selections in inverse video along the bottom of the screen.

2. "ALPHA" KEYS

press a key (upper-case or lower-case) corresponding to the first letter of the command name. For example, press the key for the letter "Q" (or "q") to execute the command "QUIT."

Function-key commands and corresponding "alpha" key commands are identical. This control setup enables you to program the function keys for other tasks using a utility like Vertex's KEYSWAPPER while retaining control of Apple-Turnover through the "alpha" key commands.

All menus share a common basic screen layout. In this guide, the screen menu is represented by the drawing shown in Figure 3-2.

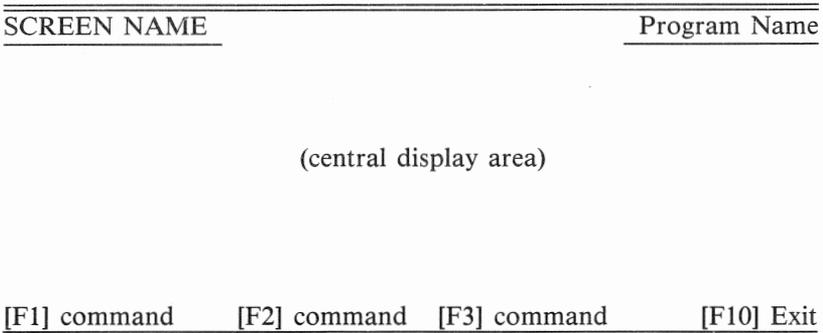


Figure 3-2. Menu Screen Layout Example

All screens display the name of the current program or program function in the upper right-hand corner. The current screen or screen function is displayed in the upper left hand corner. Function key selections are displayed along the bottom of the screen. The lower central part of the screen usually displays corresponding "Alpha" key commands.

3.2 Common Procedures

The following instructions apply to all Apple-Turnover programs.

3.2.1 Startup

On floppy-disk based systems, insert your Apple-Turnover work disk in Drive A and boot the computer. If your computer is already at system level, be sure you see the "A" prompt on your

screen.

On an IBM-XT or similar hard disk-based computer, boot from the hard disk as you normally would. Use the DOS "CD" command to switch to the directory containing the Apple-Turnover programs. Please note that the MS-DOS "PATH" capability is not supported. All files will be copied to and from the same directory that contains the Apple-Turnover programs.

Select the desired Apple-Turnover program by entering one of the following commands:

ATREAD [Enter]	to copy files from an APPLE disk to an MS-DOS disk
ATWRITE [Enter]	to copy files from an MS-DOS disk to an APPLE disk
ATINIT [Enter]	to format a blank disk in an APPLE disk format
ATSIFT [Enter]	to modify text files

After entering one of the commands listed above, the corresponding program will load from disk and execute. After the title page appears on your video display, you may remove your Apple-Turnover work disk (for floppy-disk systems). Since the program has been loaded into memory, the disk drive that previously contained your Apple-Turnover work disk is now available for copying files.

Most of the Apple-Turnover programs store default program options in separate disk files. These files have an ".OPT" filetype or suffix in the filename (e.g. ATREADDEF.OPT, etc.). These default options files must always reside on the same floppy disk, or in the same subdirectory, as the other Apple-Turnover programs. If you accidentally try to run one of the programs without its companion default options file, the program will cease execution and DOS will display a "file not found" error.

3.2.2 Title Page Menu

Present Menu	Available Choices	Command
TITLE PAGE	APPLE Formats	[Enter]
	Options Menu	[F2]
	Exit	[F10]

Figure 3-3. Title Page Roadmap

Each program presents a "title page" screen that displays the program name, version, serial number and copyright notice. Take one of the following actions:

- On floppy disk systems, press [Enter] to continue.
- On hard disk systems:
 - press the letter "O" or function key [F1] to enter the Options Menu.
 - enter "XT" for type of host computer
 - press function key [F1] to leave the Options Menu

Please refer to the Program Reference Section to learn how to change program options, load and save modified default options files, etc.

3.2.3 Select Apple Format

Present Menu	Available Choices	Command
APPLE FORMATS	APPLEDOS	1
	APPLE CP/M	2
	Options Menu	[F3]
	Exit	[F10]

Figure 3-4. APPLE Disk Formats Roadmap

Apple-Turnover supports APPLEDOS 3.3 and APPLE CP/M. Computers that use the standard, unmodified 16-sector APPLEDOS 3.3 disk format should be compatible with Apple-Turnover. APPLE CP/M disks must be compatible with the Microsoft Softcard disk format.

Select the desired APPLE disk format from the menu. Type the numeral "1" or "2" [Enter] to select the desired APPLE disk format. Alternately, press function-key [F3] to exit from Apple Formats Menu and enter the Options Menu. Press [F10] to Exit.

3.2.4 Exit Menu

Present Menu	Available Choices	Command
EXIT	run ATREAD	[F2]
	run ATWRITE	[F3]
	run ATINIT	[F4]
	exit to DOS	[F10]

Figure 3-5. Exit Screen Roadmap

The Exit screen is similar to a road or highway that forks into several different directions. You can exit from the current Apple-Turnover program and return to DOS, or you can run one of the other Apple-Turnover programs.

On floppy-disk systems, be sure to remove the current disk from the active or default drive and re-insert the Apple-Turnover work disk *before* making your command selection.

3.2.5 Error Handling

With a few exceptions, the Apple-Turnover programs manage to trap most errors. Functionally, this means that you can correct the problem and continue, instead of "crashing" the program and starting all over again.

When a problem occurs, an "ERROR!" screen will appear explaining the problem and offering several options for further action. Please refer to Section 7 (Solving Problems) for additional information about the ERROR! screen.

3.3 ATREAD/ATWRITE Procedures

The previous sections presented instructions for menus or procedures that apply to all programs. This section presents instructions for the remaining ATREAD and ATWRITE menu screens.

The ATREAD and ATWRITE are almost mirror images of one another. The ATREAD program copies or transfers files from an APPLE disk to an MS-DOS disk. The ATWRITE program is virtually identical, but it transfers or copies files in the opposite direction: MS-DOS to APPLE.

3.3.1 *Insert Disks Menu*

Present Menu	Available Choices	Command
INSERT DISKS	continue	[F1]
	APPLE Formats	[F2]
	Options Menu	[F3]
	Exit	[F10]

Figure 3-6. Insert Disks Roadmap

After the desired APPLE format is selected, you are prompted to insert the proper disk or disks in their respective drives. Please read the instructions on the screen indicating the proper disk drive for the "source" disk and "destination" disk.

The meaning of source and destination disk will change depending on the program in use (ATREAD or ATWRITE). Please note that files are always copied FROM the source disk TO the destination disk. These designations will change depending on the Apple-Turnover program in use.

Any available disk drive in your system can be the source disk or the destination disk. Each Apple-Turnover program has default disk drive assignments that can be changed within the Options Menu.

After inserting the proper disk in the correct drives, press [Enter] or function key [F1] to read the catalog or directory of the APPLE disk. You may, instead, return to the Format menu, Options menu, or exit.

3.3.2 Select Files Menu

Present Menu	Available Choices	Command
SELECT FILES	pick files to copy	
	ask/copy files (#)	[F1]
	copy all files (*)	[F2]
	Newdisk	[F3]
	Options Menu	[F4]
	APPLE Formats	[F5]
	show MSDOS direct.	[F6]
	re-display screen	[F7]
	Exit	[F10]

Figure 3-7. Select Files Roadmap

The "Select Files" screen is usually the center of activity. The general approach to using the this screen is summarized below:

- view the APPLE disk catalog or directory, and (optionally) the MS-DOS disk directory
- select the desired files by type the filename, with or without "wildcards"
- copy the selected files from one disk to the other
- repeat this process as desired

- alternately, use the function keys to insert another disk, change APPLE format, change the program options, exit to another Apple-Turnover program, or exit back to MS-DOS

The following sections describe the most important aspects of using the "Select Files" screen.

3.3.2.1 Directory Displays

After inserting the disks in the proper drives, the process of reading the catalog or directory of the APPLE disk will begin. The program will inform you of its progress by displaying the count of the directory sector or record currently being read.

After successfully reading the entire catalog or directory, the contents of the APPLE disk will be displayed. Note the example APPLIEDOS catalog shown in Figure 3-8.

Sorted Catalog of APPLIEDOS 3.3 Disk

CURVE FIT	*A
HELLO	*A
MAGIC	T
PIX	B
PLOT6A	A
RIAMU MASTER	*A
RIAVOL	T
RIAXY MASTER	*A
DOIT TO ME	I

Figure 3-8. Apple-Turnover Display of an APPLIEDOS Catalog

The filenames are sorted alphabetically for your convenience. The code letter to the right of each filename shows the type of APPLIEDOS file. The code is displayed in Table 3-1.

When ATWRITE copies a file from an MS-DOS disk to an APPLIEDOS disk, you will be prompted to enter the filename and the APPLIEDOS file type. Please enter the byte value 0, 1, 2, or 4 as appropriate. Most of the time, the byte value 4 for text file will be appropriate. Text files will have their "eighth bit" set

Table 3-1. APPLESOFT File Codes

CODE	BYTE VALUE	FILE TYPE
A	0	APPLESOFT
I	1	Integer Basic
T	2	Text
B	4	Binary
*	+128	locked

automatically as they are copied from MS-DOS to APPLIEDOS. Entering the wrong file type code may make the file unusable in the APPLE computer.

APPLE CP/M directories are displayed in alphabetical order. No additional information is displayed.

The directory of the MS-DOS disk can be displayed by pressing function key [F6]. To recall the Apple directory, press function-key [F7].

3.3.2.2 *Selecting Files*

There are four ways to select files:

1. press [Enter] to select the default filename (# unless changed in Options Menu)
2. select a single file by entering the complete and accurate filename
3. select several similar files by entering a generic filename using "wildcards"
4. copy all the files on a disk, with or without "query"

The simplest (and least efficient) method for selecting a file to copy involves typing the complete filename at the prompt. The filename may be typed in upper-case or lower-case letters. Your input is converted to upper-case unless you change one of the default options within the Options Menu.

APPLE CP/M filename syntax is virtually identical to MS-DOS. However, the syntax of APPLIEDOS filenames is different from the syntax used by MS-DOS and CP/M. If you are not familiar with APPLIEDOS and MS-DOS filename conventions, be sure to read Section 5-1 before proceeding.

Select a similar class of files by using the four types of wildcard characters supported by the Apple-Turnover programs. These are listed in Table 3-2 below.

Table 3-2. Filename Wildcards

?	represents any single character
*	represents any combination of characters in the filename or extension
!	just like "?" except the program will pause to ask: (Yes/No) before copying
#	just like "*" except the program will pause to ask: (Yes/No) before copying

The first two shown in Table 3-1 are the standard wildcards used within MS-DOS and CP/M. The last two are additional wildcards provided by Apple-Turnover to support "queried" filename selection. Queried filename selection means that the program will ask whether a file should be copied before it proceeds to do so.

This leads to the two most common uses of filenames. Note that function key [F1] selects "*.*" and function key [F2] selects "#.#" as the desired filename. The "*.*" selection will copy all the files on a disk. It use is the same as it would be under MS-DOS or CP/M. The "#.#" selection is just like "*.*" except that you will be asked whether to copy each file.

Due to the vast differences between APPLIEDOS and MS-DOS filenames, selecting either "*" or "#" will force you to rename each file as it is copied. Make sure to enter a legal MS-DOS filename for each APPLIEDOS file copied.

3.3.2.3 Copying the File

After selecting the desired files, ATREAD will begin the process of copying the files from the APPLE disk to the MS-DOS disk. The cumulative quantity of sectors or characters transferred for each file will be displayed along the bottom of your screen.

For APPLIEDOS, the sector count proceeds from sector 0, not sector 1. Therefore, if your APPLIEDOS file consists 20 sectors, then the file transfer will be completed at sector #19, not sector #20.

With APPLIEDOS, selecting "*" (copy all files), or "#" (queried copy of all files) automatically invokes the "rename" mode. Each APPLIEDOS filename will be displayed with a prompt requesting the new MS-DOS filename. Please note the following important guidelines:

- Most APPLIEDOS filenames do not qualify as legal MS-DOS filenames and must be renamed.
- If you press [Enter] in response to the rename prompt, ATREAD will try to use the APPLIEDOS filename. Names exceeding 12 characters in length will generally be truncated.
- Pressing [Enter] is generally a bad idea. The truncated APPLIEDOS filename may contain spaces, punctuation, identical characters in the first 12 letters of the name, etc. that will cause problems under MS-DOS.

Under APPLE CP/M, none of these difficulties exist because MS-DOS and CP/M filenames are virtually identical in structure.

When ATWRITE copies files from MS-DOS to APPLIEDOS disks, there is an additional consideration. As shown in Table 3-1, APPLIEDOS 3.3 recognizes four different types of files. In an APPLIEDOS disk catalog, each file entry contains code indicating file type.

When an MS-DOS file is copied to an APPLIEDOS disk, the ATWRITE program has no way of knowing the intended type of APPLIEDOS file. Therefore, you must enter a file type code for each file copied.

The Select Files screen will prompt you to enter a file code before the file copy begins. Enter the numeral "0" for ASCII text files. Enter the numeral "1" to indicate an APPLE Integer Basic file (stored as integer basic tokens and strings, not converted to ASCII). Enter the numeral "2" to indicate an APPLESOFT file stored as tokens and strings. Finally, a "4" indicates an APPLE 6502 binary file. Please refer to Section 5 for additional information and examples of APPLESOFT file codes.

As a note of warning, it is important to enter the correct file type code. Otherwise, the file copied to your APPLEDOS disk may not be directly usable in the APPLE computer.

3.3.2.4 NEWDISK Function

If you wish to substitute another APPLE disk for the one currently in use, you must use the "NEWDISK" function. Exchange the disks. Then, press function key [F3]. The program will display the "Insert Disks" screen.

Press [Enter] to continue. The APPLE disk catalog or directory will be read from the newly inserted disk. You will be returned to the "Select Files" screen and may proceed as desired.

3.3.2.5 Changing Apple Formats

Pressing function key [F5] enables you to change APPLE disk formats with an automatic "NEWDISK" as well. After pressing the function key, the "Apple Formats" screen will be displayed.

Select the desired APPLE disk format. The "Insert Disks" screen is displayed. Insert the new disk in the proper disk drive. Press [Enter] to read the new disks catalog or directory. You are then returned to the "Select Files" screen.

3.4 ATINIT Procedures

The ATINIT program will format blank disks for APPLE CP/M and initialize blank disks for APPLEDOS 3.3. The initialization process for APPLEDOS disks will format the disk and write a "HELLO" file. However, ATINIT does not write an

APPLEDOS system onto the disk. Therefore, the resulting APPLEDOS disk will not boot in an APPLE computer.

In a similar fashion, ATINIT does not write a CP/M system onto a formatted disk. In both cases, this should cause no problems whatsoever. Use the disks as data disks.

The material that follows discusses unique aspects of the ATINIT program.

3.4.1 Insert Disks Menu

Present Menu	Available Choices	Command
INSERT DISKS	continue	[Enter]
	APPLE Formats	[F2]
	Options Menu	[F3]
	Exit	[F10]

Figure 3-9. Insert Disks Roadmap

Place the blank disk to be initialized or formatted into the target disk drive. The target disk drive is displayed on the "INSERT DISKS" screen. On a floppy-disk system, the default target drive is Drive B. On an XT, the target disk drive is Drive A. The target disk drive assignment can be changed from the Options Menu. As a safety precaution, remove all disks from other floppy disk drives.

The initialization or formatting process is not particularly rapid. It takes about two to three minutes to complete the operation.

3.5 ATSIFT Procedures

The Apple-Turnover Sift program (ATSIFT) is a utility for making minor modifications to text files. Minor changes to are sometimes required to make APPLE text files usable in MS-DOS applications and vice versa.

ATSIFT can modify ASCII text files in the following ways:

1. convert Wordstar document files to standard ASCII text files
2. strip the "high bit" from ASCII text files
3. remove a linefeed character after each carriage return character
4. remove carriage return characters
5. remove the combined carriage return-linefeed characters
6. do simple search and replace functions

Please refer to Section 4 (Program Reference) for additional information about these functions.

To run ATSIFT, type the command: ATSIFT [Enter]. When prompted, type the name of the ASCII text file to be modified. Then, type the name of the new file that will contain the modified text. Do not use the same filename for both.

After entering the names of the original, source text file and the new, modified text file, the main menu will be displayed. Select the desired type of modification. Exit the program when modifications have been completed.



4 REFERENCE

4.1 Program Options

The Apple-Turnover programs can be modified to meet specific needs through a system of user-selectable program options. The following points summarize how the system works:

- Each program (except ATSIFT) uses several different global options.
- Each program initially reads a set of default options from a disk file. These default option settings remain in effect unless changed.
- Individual option settings can be temporarily changed within the Options Menu. Temporary changes can be saved in a disk file and recalled when needed.
- You can modify or duplicate options files as desired. However, a default options file must be available for each program.

4.1.1 Default Options Files

Your program disk contains files which store default options for each program. Each Apple-Turnover program has a specific default options file. The name of the default options file must not be changed. Table 4-1 lists the default options file for each program.

Table 4-1. Default Options Filenames

Program	Default Options File
ATREAD	ATRDEF.OPT
ATWRITE	ATWDEF.OPT
ATINIT	ATIDEF.OPT

A properly named copy of each required option file must always reside on your Apple-Turnover disk. If this file is not available, then the Apple-Turnover program will abort displaying the following DOS error message: "File not found ..."

If the default options file on your work disk is accidentally erased or damaged, then it can be restored by copying the options file from the original program disk.

Any operation involving program options takes place within the Options Menu. This menu can be accessed from the program title page and from most other program menus. The next section describes the Options Menu screen and defines the program options.

4.1.2 The Options Menu

Present Menu	Available Choices	Command
OPTIONS MENU	change option	
	continue	[F1]
	Load New Options	[F2]
	Save New Options	[F3]
	Exit	[F10]

Figure 4-1. Options Menu Roadmap

Within the Options Menu, the setting of individual program options may be changed. Many settings are changed by typing a "Y" (for "yes") to activate the option, or "N" (for "no") to deactivate the option. Others require a disk drive letter, number, or filename.

Pressing the [Enter] key moves the cursor down to the next row in the option column. You can use the up and down cursor keys to move the cursor along the options column. The backspace key will delete characters to the left of the cursor.

After making some changes, press function key [F1] to continue to the next program menu. In this instance, the modified program options will remain in effect for the current session only. The next time you run the program, the default options will be back in effect.

If you want to use the modified options at some later date, they can be saved to a file. Press function key [F3]. The program will prompt: "Filename to write?" Enter the name of the new options file and press [Enter], or just press [Enter] if you want the changes to be saved to the default options file.

To load an alternate options file, press function key [F2]. The program will prompt: "Filename to read?" Enter the name of the desired file and press [Enter]. However, if a nonexistent or incorrectly spelled filename is entered, the program will abort. DOS will display a "File not found ..." error message. You will need to restart the program.

Finally, press function key [F10] to leave the Options Menu and go to the "Exit" screen.

4.1.2.1 ATREAD/ATWRITE Options

The following material describes the program options shown in Figure 4-2.

1. Which Machine (PC/XT)

The default value is "PC" which may be changed to "XT." This option sets internal program parameters. The "PC" setting will work with a PC or XT. If your computer is neither an IBM PC, XT or similar compatible, use the default "PC" mode.

2. Which drive contains APPLE disk to read

— ATREAD

The source disk is an APPLE disk. The default setting is Drive B (assuming a floppy-disk system). On hard-disk systems (XT), change the source drive to Drive A.

— ATWRITE

The source disk is an MS-DOS floppy or hard disk. The default setting is Drive A (assuming a floppy-disk system). On hard-disk systems (XT), change the source drive to Drive C.

C	Which Machine (PC/XT)
B	Which drive contains APPLE disk to read
A	Which drive contains MS-DOS disk to write
1	What is the default format number
#	What is the default filename
N	Display files on screen during transfer
N	Show record boundaries when files displayed
N	Suppress copying (view file only)
N	Change filename when copied
Y	Consider lower case same as upper case
N	Ignore rest of file after Ctrl-Z
Y	Strip high bits in text files
8	How many retries on read error

 [F1] Continue [F2] Load [F3] Save [F10] Exit

Figure 4-2. ATREAD Options Menu Screen

3. Which drive contains MS-DOS disk to write

— ATREAD

The destination disk is an MS-DOS floppy or hard disk. The default setting is Drive A (assuming a floppy-disk system). On hard-disk systems (XT), change destination drive to Drive C.

— ATWRITE

The destination disk is an APPLE disk. The default setting is Drive B (assuming a floppy-disk system). On hard-disk systems (XT), change the destination drive to Drive A.

4. What is the default format number

Designates whether Apple-DOS 3.3 or Softcard CP/M is the default format. In the Apple Formats menu, pressing [Enter], instead of the number "1" or "2," will select the format currently designated as the default format.

5. What is the default filename

The default setting is the pound sign (#), which will query for each file. Use an asterisk (*) instead to copy every file on the disk without a query.

Any valid filename may be entered as the default filename. For APPLIEDOS, the default filename may be up to 30 characters in length and may contain wildcards.

The filename designated is used in the Select Files menu. Within the Select Files menu, press [Enter] to input the default filename and begin the file copy operation.

6. Display files on screen during transfer

Activate this option to display a file's contents on your screen as it is copied. The default setting is "N" for NO display. Enter "Y" (for YES) to activate the file display mode.

This feature is really intended for readable ASCII text files. It should not be used with binary files or other files that do not contain readable text. If you attempt to display the contents of binary files, expect to be treated to a "fireworks" display of jumbled characters and graphics jumping around the screen with bells and whistles. However, the file will still transfer OK.

APPLESOFT and APPLE integer basic files are normally stored as binary files and cannot be viewed directly using this option.

While viewing a file, the video scroll can be paused by pressing "(Ctrl)-(Numlock)" simultaneously. Press any key to restart the display.

7. Show record boundaries when files displayed

Activate this option to insert record boundary headers into the display of ASCII text files. Combine the headers with printed output (Ctrl-P will toggle your printer ON and OFF) for a complete record. This feature is useful in certain specialized applications.

8. Suppress copying (view file only)

This option should only be activated along with the Display Files option. Activating both options (by entering a "Y" for yes) will display an ASCII text file's contents without copying the file. This combination of options is equivalent to the MS-DOS or CP/M "TYPE" command.

9. Change filename when copied

Activate this option to change a filename when it is copied. This function is similar to the MS-DOS "RENAME" command.

The use of wildcard filenames like "*" and "#" in the Select Files menu for APPLIEDOS disks will automatically activate this option.

10. Consider lower case same as upper case

In the default mode, the significance of upper case vs. lower case in filenames is ignored. User input and directory entries are all considered to be upper case. In most instances, this default setting should not be changed.

Deactivate this option by entering "N" (for NO). Then, the case of entered filenames and directory or catalog entries must be identical. If a lower-case filename is entered in the Select Files menu in search of an identical (but UPPER CASE) filename, the program will not find a match. Similarly, using ATWRITE, making a lower-case directory entry on a disk where the operating system expects upper-case entries may make the file "invisible."

A third setting involves entering "A" (for ASK). In this mode, the program will query when it finds entries that match except for case difference.

11. Ignore rest of file after Ctrl-Z

This option limits file size growth when using ATREAD. Normally, ATREAD will pad the last physical sector of a file as it is copied onto the DOS disk. This usually causes the DOS copy of the file to be slightly larger than the original.

Most of the time, this file size growth is unimportant. However, some applications programs are sensitive to file size and will not load critical files properly if the size changes. These instances are rare.

When this option is activated (type "Y" for yes), the last sector of the file is not padded. The file copy process terminates upon encountering a "Control-Z" character instead of proceeding to the end of the last physical sector in the file.

The default setting for this option is "N" or deactivated. Do not activate this option unnecessarily. You may lose the end of a file if ATREAD encounters a "Control-Z" before the end of the disk file. Normally, this option should only be activated for occasional binary files.

12. Strip high bits in text files

APPLEDOS likes text files to have the "eighth-bit set" on each character. MS-DOS is just the opposite. It likes text files where the eighth-bit is not set. Unmodified APPLE text files look like a maze of graphics characters on the IBM and vice versa.

When activated, this option will automatically strip the high-bit from APPLE text files in ATREAD, and set the high-bit on MS-DOS files in ATWRITE. This option has no effect on other types of APPLEDOS files.

This points out the importance of correctly entering file type codes for APPLIEDOS files within the ATWRITE program. If an APPLIEDOS text file is incorrectly coded as a basic or binary file, the eighth-bit processing will not take place.

The default setting for this option is "Y" or option active, which allows you to forget about eighth-bit incompatibility most of the time. For special applications, enter "N" to deactivate this option.

13. How many retries on read error

If a error occurs during a disk read operation, the program will make several attempts to read the problem disk sector before giving up and displaying the ERROR! screen. Increasing the number of retries from the default setting of 8 to higher value (15 or 20) will improve your chances of reading a marginal disk.

4.1.2.2 ATINIT Options Menu

OPTIONS	ATINIT
PC	Which Machine (PC/XT)
B	Which drive contains APPLE disk to format
1	What is the default format number
8	How many retries on read error
N	Continuously format more disks

[F1] Continue [F2] Load [F3] Save [F10] Exit

Figure 4-3. ATINIT Options Menu Screen

The ATINIT options are similar to those used in ATREAD and ATWRITE. If you wish to initialize or format several disks at one time, activate the "Continuous Format" option (by entering "Y" for yes) to speed up the process.

4.1.3 Using Options Files

If you regularly use Apple-Turnover for repetitive tasks, the program options disk files can be customized to speed overall operations. This section describes the following:

- how to save modified program options in a disk file
- how to load a new set of program options from a disk file
- how to modify the default options disk file
- how to create multiple program options disk files

4.1.3.1 Custom Options Files

You can create your own customized options files. This allows you to easily install desired options settings without going through the Options Menu to manually reset options.

Use the following steps to create your own default options file:

- Run the desired Apple-Turnover program. Go to the Options Menu.
- Change the default options settings to the desired values.
- At the bottom of Options Menu, note the legends for function keys [F2] "Load options file" and [F3] "Save options file." You want to save your new option settings to a file, so press [F3].
- A prompt will appear on the screen, "Filename to write?" Enter any valid filename. Make it a habit to end each options file with the extension ".OPT". Press [Enter]. A new options file will be saved to your work disk or directory.

If you decide to switch to your customized file, go to the Options Menu and press [F2], "Load options file." Respond to the prompt, "Filename to read?" by typing the name of your customized file, and pressing [Enter]. Your customized file will be

read and the Option Menu settings reset. You can have as many options files as there is space on your work disk

4.1.3.2 *Modifying the Default File*

If you are using an IBM XT, or normally need option settings that are different from those that come with the Xeno-Format program, you may want the program to load your customized default options automatically

The recommended procedure is described below:

1. Make a backup copy of the original default options file using a command like: `COPY ATRDEF.OPT ATRDEF.BAK` [Enter]. This preserves the original default options file.
2. Run the appropriate Apple-Turnover program. From the Title Page Menu, press [F1] to enter the Options Menu.
3. Change individual options settings as desired.
4. Press function key [F3] to save your changes to a file. In response to the filename prompt, enter the name of the original default options file. For ATREAD, the correct filename would be ATRDEF.OPT, etc.
5. Proceed with other operations, or exit from the Apple-Turnover program.
6. In the future, whenever you run the Apple-Turnover program, you modified default options file will automatically be installed.

This type of procedure is particularly important for those using an XT or other hard-disk based system. In this case, change the options as follows: (1) change "Which Machine" from PC to XT, (2) for ATREAD, change source disk from B to A and change destination disk from A to C, (3) for ATWRITE, change source disk from A to C and change destination disk from B to A, and (4) for ATINIT, change the drive containing the disk to be formatted from B to A.

4.2 Using Wildcards

Transferring several files is much easier when "global specifiers" or wildcards are used in the filename. Instead of laboriously typing each complete filename, enter some unique portion of the filename plus the appropriate global specifiers. The Select Files menu displays a list of valid Apple-Turnover wildcards.

Four global specifiers or wildcards are available as shown in Table 4-2. The first two shown in Table 4-2 are the standard wildcards used within DOS. The last two are additional wildcards provided by Apple-Turnover for "queried" filename selection.

Table 4-2. Apple-Turnover Filename Wildcards

?	represents any single character
*	represents any combination of characters in the filename or extension
!	just like "?" above except the program will pause to ask: (Yes/No) before copying
#	just like "*" above except the program will pause for query

4.2.1 Wildcards with APPLE CP/M

APPLE CP/M uses the same system of wildcards as other varieties of CP/M 2.2. This wildcard structure is also similar to the MS-DOS wildcard structure. Refer to Table 4-2 for a listing of supported wildcards.

Table 4-3 presents several examples showing the use of Apple-Turnover wildcards for selecting filenames.

4.2.2 Wildcards with APPLE DOS

The Apple-Turnover wildcards shown in Table 4-2 will also work with APPLE DOS filenames. However, the vast differences between APPLE DOS and MS-DOS filename syntax requires some thought in the use of wildcards.

Table 4-3. Examples of APPLE CP/M Wildcards

.	copies all files on the source disk
*.BAS	copies all files with a ".BAS" extension
DATA.*	copies all files named "DATA" with any extension
#.BAS	asks whether any file with a ".BAS" extension should be copied
DAT?.PRN	copies all files named "DAT" with any character in the fourth position and with an extension of "PRN" (like DATA.PRN, DAT2.PRN, etc.)
DAT#.PRN	similar to the previous example but queries whether to copy DATA.PRN, DAT2.PRN, etc.
DAT#.#	queries whether to copy files beginning with "DAT" and any additional characters in the filename or extension.

For example, MS-DOS filenames may not exceed 12 characters in length. However, APPLEDOS filenames are often more than 12 characters in length. Therefore, Apple-Turnover wildcards may be used in that portion of the filename past the twelfth character. This is not possible within MS-DOS or APPLE CP/M.

However, a potentially greater problem is the conversion of APPLEDOS filenames to legal MS-DOS filename. This occurs regularly using the ATREAD program. Please refer to section 5.1.1 for additional information.

4.3 APPLEDOS File Codes

When ATWRITE copies files from MS-DOS to APPLEDOS disks, there is the additional consideration of APPLESOFT file codes. As shown in Table 4-4, APPLEDOS 3.3 recognizes four different types of files.

Table 4-4. APPLESOFT File Codes

CODE	BYTE VALUE	FILE TYPE
A	0	APPLESOFT
I	1	Integer Basic
T	2	Text
B	4	Binary
*	+ 128	locked

In an APPLIEDOS disk catalog, each file entry contains the byte value shown above (in hex, not decimal) indicating file type.

When an MS-DOS file is copied to an APPLIEDOS disk, the ATWRITE program has no way of knowing the intended type of APPLIEDOS file. Therefore, you must enter a file type code for each file copied.

The Select Files screen will prompt you to enter a file code before the file copy begins. Enter the number "0" for ASCII text files. As the file is copied from MS-DOS to APPLIEDOS, the eighth-bit of each character will automatically be "set" to conform with APPLIEDOS standards. This feature can be deactivated from the Options Menu for special applications. In general, however, it should remain active.

Enter the number "1" to indicate an APPLE Integer Basic file (stored as integer basic tokens and strings, not converted to ASCII). Enter the number "2" to indicate an APPLESOFT file stored as tokens and strings. Finally, a "4" indicates an APPLE 6502 binary file. You can also cause the file to be copied to the APPLIEDOS disk as a "locked" or read-only file by adding 128 to each value. For example, a locked text file would be indicated by entering 128, a locked integer basic file by 129, and so forth.

As a note of warning, it is important to enter the correct file type code. Otherwise, the file copied to your APPLIEDOS disk may subsequently not be directly usable in the APPLE computer. Since MS-DOS programs do not usually generate integer basic, APPLESOFT, or 6502 binary files, these types of files are usually copied to MS-DOS as an intermediate stop before being ultimately

copied to another APPLE disk.

Since most APPLESOFT files should be renamed as they are copied to MS-DOS, you may want to use a filename convention indicating the APPLESOFT file type. For example, you could use a suffix of ".INT" for integer basic, ".APS" for APPLESOFT, and ".65B" for 6502 binary files. This process is demonstrated in Figure 4-4.

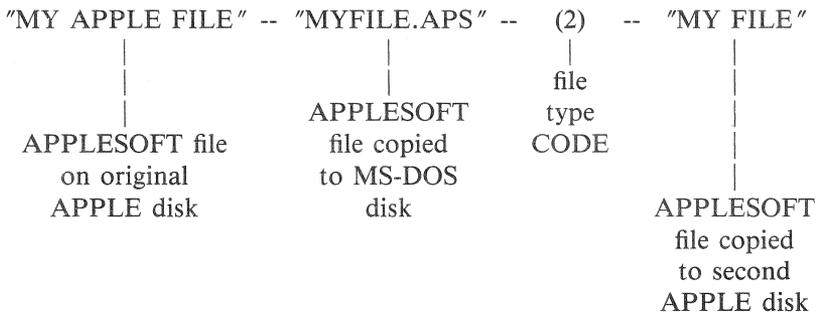


Figure 4-4. Example of Filename Conversions

In Figure 4-4, the original APPLESOFT file is copied to an MS-DOS disk using ATREAD. The file is renamed "MYFILE.APS" to conform to MS-DOS filename syntax. The suffix ".APS" means APPLESOFT file. Months later, you need to copy that particular file back to an APPLESOFT disk. Luckily, you know that "APS" means APPLESOFT. Using ATWRITE, you enter the file type byte value of "2" at the appropriate time.

4.4 Growth in File Size

Using ATREAD and ATWRITE with default options, a disk file will tend to "grow" in size as it is transferred between disk formats.

This "growth" effect results from the way most operating systems distribute disk space. There is usually a minimum file size or "disk storage unit" associated with any disk format or system.

A file can never be smaller than this minimum unit regardless of the contents. The number of bytes or characters contained in a unit will vary from system to system.

When you transfer files between systems with different minimum "units" there will usually be an increase in the size of the file on the destination disk. The unused disk storage space in the last "unit" of a disk file is filled with a non-printing character. This is the graphics character that you see at the end of a file when you activate the "display" option with ATREAD or ATWRITE.

The "Control-Z" program option is available for ATREAD to avoid file size growth as it is copied from the APPLE disk to the MS-DOS disk. This function operates through detecting a valid "end-of-file" character (usually a control-z) and deleting the "padding" characters that remains in the last sector or record.

Generally, we recommend using the following techniques only with ASCII files (preferably readable text or periodic data) where you can visually check the accuracy of the deletion. Although these methods can also be used with binary files, you can never be absolutely sure that an end-of-file character is not being used for some other purpose within a binary file.

In the unlikely event that an end-of-file character is being used in the middle of a file for some other purpose, then using the following techniques would result in deleting an important section.

Therefore, we recommend the following guidelines:

1. If slight growth in file size is not significant, skip this entire section and don't worry about it.
2. If you need to maintain files at their original size, and have no method for checking the integrity of the files after being copied and "shrunk," then do NOT use these techniques with binary files of any type.

3. If you need to maintain file size and are certain that a control-z or other end-of-file character cannot be buried in the middle of a binary file, then use the following techniques for binary as well as ASCII files.

4.4.1 Shrinking Files

After copying a file to an APPLE CP/M disk with ATWRITE, file compression must be done on an APPLE computer. Under APPLE CP/M, you can use the "PIP" command to shrink a file.

However, the use of PIP and the syntax involved is considerably different from the MS-DOS "COPY" command. Please refer to your APPLE CP/M documentation for exact details.

4.5 Using ATSIFT

Apple-Turnover can transfer any type of file from one disk format to another. However, this does not necessarily mean that the file will be immediately usable in your specific application. The ATSIFT program is intended to help you modify standard ASCII text files, when required, for your applications. ATSIFT does not work with binary files. Please refer to the "APPLPEEL" and "UNPEEL" programs for binary files.

You can think of ATSIFT as a "post-processor" for the Apple-Turnover programs. In other words, transfer your files to an MS-DOS disk using the Apple-Turnover programs. Then, as required, use ATSIFT to modify ASCII text files for the given application.

For example, assume you want to use a document file created by APPLE CP/M Wordstar with the Final Word word processor on your IBM PC. Use the following procedure:

- Use Apple-Turnover to transfer the original Wordstar document file to an MS-DOS disk.
- Use ATSIFT to convert the Wordstar document file to an ordinary text file.
- Run Final Word using the newly created text file as input.

However, ATSIFT can do a lot more than convert Wordstar document files. ATSIFT can modify ASCII text files in the following ways:

1. Convert Wordstar document files to standard ASCII text files.
2. Strip the "high bit" from ASCII text files.
3. Remove a linefeed character after each carriage return character.
4. Remove carriage return characters.
5. Remove combined carriage return & linefeed characters.
6. Do simple text search and replace functions.

The next section presents instructions for using the ATSIFT program. The following sections present examples showing ATSIFT functions in use. We strongly recommend that you read the sections containing examples before using ATSIFT.

4.5.1 *Operating Instructions*

You should understand the terms "Source File" and "Destination File" before proceeding. The Source File is the original ASCII text file to be modified by ATSIFT. The Destination File is the new, modified text file created by ATSIFT. All Source Files and Destination Files must reside on MS-DOS disks.

Use the following procedure to modify text files with ATSIFT:

1. Begin by typing the command: **ATSIFT [Enter]**.
2. After the title page appears on your screen, press **[Enter]** to continue, or press the letter **Q** to quit and return to MS-DOS.
3. The next screen will prompt you to enter the name of the Source File and the Destination File.

Enter each filename using the standard MS-DOS syntax: **Drive:Filename.Typ**. For example, if the original file is on Drive A and you wish to place the new, modified file on drive B, then use the following syntax:

Source filename? **OLD.TXT**
Destination filename [OLD.TXT]? **B:NEW.TXT**

The drive letter is optional and should be used if the Source File or Destination File reside on another disk drive.

The default filename is shown in brackets (e.g. [OLD.TXT]) under Destination Filename. If you press **[Enter]** in response to this prompt, then ATSIFT will overwrite the original file. We do **NOT** recommend overwriting the original file. You should enter another filename for the new, modified file.

Make sure you have enough free space on the Destination File

disk drive. As a general rule of thumb, you should have at least two times the size of the Source File available as free space. For example, if the Source File is 10K, you should have at least 20K free on the disk. The extra space is required because ATSIFT creates a temporary work file during modifications.

4. After entering the Source and Destination filenames, the main menu will be displayed as shown below:

Source Filename?
Destination Filename[]?

COMBINATION:
1. WS to ASCII
 Remove Soft Carriage Returns|
 Strip Hi Bit

INDIVIDUAL:
2. Strip Hi Bit
3. Add LF After CR
4. Remove LF After CR
5. Strip CR
6. Remove CR/LF Combinations
7. Replace String With Another

0. Exit to DOS

Which operation do you want to do?

Figure 4-5. ATSIFT Main Menu

Select the desired modification by entering the appropriate number (1 to 7), or enter the number 0 to quit and return to MS-DOS.

5. After selecting the modification, ATSIFT will perform the conversion. After the conversion is completed, ATSIFT will display the "Source Filename?" prompt. At this point, you

may enter the name of the next file to be modified. To quit, simply press **[Enter]** in response to both "Source Filename" and "Destination Filename" prompts. When the main menu appears, press the number **0** to exit.

4.5.2 *Application Examples*

4.5.2.1 *Converting Wordstar Files*

Wordstar documents are stored as modified text files. These files usually cannot be used by other word processors or applications programs. ATSIFT can be used to convert Wordstar "document" files into ordinary ASCII text files.

For example, if you try to display a document file on your screen (using the MS-DOS "TYPE" command), you will see a mixture of text and graphics characters. ATSIFT will convert the graphics characters to ordinary text by stripping the "high bit," removing soft carriage returns, etc.

4.5.2.2 *Strip High Bit*

Many applications programs cannot use text files that have the high bit set. ATSIFT will strip the high bit from appropriate characters in a file. Use this option when a file appears to have mixed graphics and text on the screen.

This ATSIFT function is similar to the Wordstar conversion (No. 1 above), but more limited in scope. Don't use this function for Wordstar document files.

ASCII characters can be represented by a numeral from 0 to 255. Normal printable text characters (plus a few non-printing control characters) are represented by a value between 0 and 127. If a character has the "high-bit set," it is represented by a comparable value between 128 and 255.

For example, the letter "A" is represented by the ASCII value 065 (decimal). Add 127 to 065 and you get the letter "A" with the high-bit set. This becomes a graphics character on your IBM's video screen. The IBM PC character set uses ASCII value between 128 and 255 to represent different graphics characters. That's why files with the high-bit set look like mixed graphics and text on your screen.

Therefore, stripping the high bit is equivalent to subtracting 127 from the value of an ASCII character when that character has an original value of 128 or greater. This usually converts a graphics character into an ordinary text character.

4.5.2.3 Add Linefeed After CR

NOTE

This ATSIFT function is used to convert APPLE Visicalc files to Lotus 1-2-3 worksheet files.

Please refer to section 5.2.1 for more information.

Consider the following example. Assume that you create a short note using the "HOCUS-POCUS" Word Processor on your APPLE. The original note looks like the example shown below:

Hi Fred:

I am finally giving up on this silly word processor. I plan to start using a better one on my IBM real soon.

Bye for now ...

Figure 4-6. Original Text on APPLE

Now, you copy this file from the APPLE disk to an IBM MS-DOS disk using Apple-Turnover. Since you are anxious to see the file, you use the MS-DOS "TYPE" command to view the file on your screen. Instead of the original text of your note, you see a blur of letters ending with the single line shown on the next page.

```
A>type FREDNOTE
Bye for now ... my IBM real soon.using
A>
```

Figure 4-7. Text Without Linefeeds

Is there is problem with Apple-Turnover? No, there is not. Apple-Turnover always copies a file verbatim from one disk format to another. The problem here is that the "HOCUS-POCUS" word processor uses only a carriage return character to end each line. MS-DOS (and most MS-DOS applications programs) expect each line to end with a carriage return and linefeed character. When you try to display the file on your screen, each line of text is being directly overlaid on top of one another. The absence of linefeed characters prevents the display from scrolling as it normally would.

The end of a line can be terminated by several different combinations of carriage return or linefeed characters. Different applications programs or operating systems may handle the "end of line" situation differently, and cause compatibility problems. This option will add a linefeed character to each carriage-return character in a file.

4.5.2.4 *Remove Linefeeds After CR*

This ATSIFT function is the opposite of the previous one. Instead of adding a linefeed character to each carriage return, ATSIFT will remove one linefeed character from each carriage return encountered in a file.

One possible application involves converting "double-space" text into "single-space" text. Going back to the "FREDNOTE" example of the previous section, assume you text looks like the following example:

Hi Fred:

I am finally giving up on this silly
word processor. I plan to start using
a better one on my IBM real soon.

Bye for now ...

Figure 4-8. Double-Space Text

Using the remove linefeed function of ATSIPT would convert this file into text that looked like:

Hi Fred:

I am finally giving up on this silly
word processor. I plan to start using
a better one on my IBM real soon.

Bye for now ...

Figure 4-9. Single-Space Text

4.5.2.5 Strip CR or CR/LF

These ATSIPT functions can be used to prepare ASCII text for later use with a word processor or text editor.

Ordinary ASCII text files use a carriage return and linefeed (or less commonly just a carriage return) to end each line. Since most word processors use a carriage return and/or linefeed to mark the end of a paragraph, ordinary text files cannot easily be changed to other formatting arrangements like right justification, etc. ATSIPT

enables you to remove all carriage returns and/or linefeeds to make text reformatting possible.

For example, lets say you have a short ASCII text file that is currently unjustified (ragged right), and you wish to justify the text using Wordstar. The initial text file is shown in the Figure below:

Hi Fred:

I am finally giving up on this silly
word processor. I plan to start using
a better one on my IBM real soon.

Bye for now ...

Figure 4-10. Original ASCII Text File

Using XSFIT menu option no. 5 (Strip CR), remove all carriage returns. Then, load the modified text file into Wordstar (or some other word processor) and right justify the text. The final, justified text will look like:

Hi Fred:

I am finally giving up on this silly
word processor. I plan to start using
a better one on my IBM real soon.

Bye for now ...

Figure 4-11. Right-Justified Text File

4.5.2.6 Search & Replace

This option (Replace String With Another) is similar to the "search and replace" function found in most text editors or word processors. The term "string" refers to a sequential group of text characters, i.e. letters, words and spaces.

To use this function, press number 7 from the ATSIFT main menu. The prompt **find string?** will be displayed. Type the letters or words to search for. Press **[Enter]** at the end of the search phrase.

Then, the prompt **replace it with?** will appear. Type the NEW phrase which will replace the old one. Press **[Enter]** at the end of the replacement phrase. ATSIFT will find each occurrence of the old phrase and replace it with the new one.

For example, suppose you had a text file where you wanted to replace the phrase "star-spangled banner" with "Old Glory." You would enter the following:

```
find string? star-spangled banner[Enter]
replace it with? Old Glory[Enter]
```

ATSIFT would then find and replace the phrase. Upon completion, the screen would clear and the prompt **Source File?** would appear, indicating that the prior process was completed.

4.6 USING APPLPEEL & UNPEEL

NOTE

These utility programs are intended for programmers and others with a good working knowledge of APPLE and IBM file structures.

These MS-DOS programs are tools for binary files. APPLPEEL can convert a binary memory-image file into a binary byte-list file by stripping the file header. UNPEEL does the opposite. It can convert a byte-list file into a binary-image file by adding a file header. Header bytes often need to be removed or modified when APPLE binary files are used in MS-DOS applications or vice versa.

Since this type of file sharing is quite specialized, most users will not need to use APPLPEEL or UNPEEL. For those that do, this section provides instructions. However, since we do not know your specific application, we cannot advise on the more general topic of using APPLE binary files in MS-DOS applications. That part of the puzzle is up to you.

4.6.1 Operating Instructions

There are two basic ways to use the APPLPEEL/UNPEEL programs:

1. Use APPLPEEL to convert a binary-image file into a byte-list file by stripping off the file header.
2. Use UNPEEL to convert a byte-list file into a binary-image file by adding a file header.

The general approach to using APPLPEEL/UNPEEL is summarized below:

- To use APPLE binary files in MS-DOS applications:
 1. Create an MS-DOS program that will use the APPLE byte-list file.
 2. Use Apple-Turnover to transfer the APPLE binary file from an APPLIEDOS disk to an MS-DOS disk.
 3. Run the APPLPEEL program under MS-DOS and strip the header - converting a memory image binary file to a byte-list binary file.
 4. Run your MS-DOS applications program on the newly created binary file.

- To use MS-DOS binary files in APPLIEDOS applications:
 1. Create an APPLE program that will use the MS-DOS byte-list file.
 2. Run the APPLPEEL program under MS-DOS and strip the header from the MS-DOS file - converting a memory image binary file to a byte-list binary file.
 3. Use Apple-Turnover to transfer the MS-DOS binary file from an MS-DOS disk to an APPLIEDOS disk.
 4. Run your APPLE applications program on the newly created binary file.

4.6.2 APPLE Binary File Structure

Since the APPLPEEL/UNPEEL programs edit file headers, it is important to understand APPLIEDOS file structures. This section briefly describes the binary image file structure created by the APPLIEDOS "BSAVE" command.

In the APPLE II, a binary file (Type 04) is an exact copy of some portion of memory. This memory image is preceded by the memory address (low order/ high order format) and the length. This structure is shown schematically in the figure shown below:

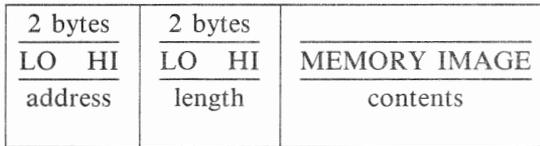


Figure 4-12. APPLIEDOS Binary File Structure

As an example, consider the hex dump of a typical APPLE binary file (BOOT13) shown in the figure below:

The header bytes are shown in boldface type in the figure shown above. In this example, the load address and file length on an APPLE are:

```
00 0C 00 05 20 58 FC A0 00 B9 4D 0C F0 06 20 ED
FD C8 10 F5 A9 BF 85 33 20 6A FD AD 00 02 C9 8D
F0 21 C9 B1 90 DE C9 B8 B0 DA 29 07 0A 0A 0A 0A
```

etc.

Figure 4-13. APPLEDOS Binary File Hex Dump

LOAD ADDRESS: 00 0C converts to 0C00H as the load address
FILE LENGTH: 00 05 converts to 0500H bytes in length

Typically, these four header bytes are the bytes that need to be stripped from the file before using that file in an MS-DOS application.

NOTE

The header bytes stripped by APPLPEEL can be subsequently replaced by UNPEEL. However, you need to know the actual byte values. If you ever intend to convert the stripped file back into an APPLEDOS binary file, make sure to record those values.

Incidentally, the structure of an MS-DOS binary image file is different. It consists of a seven byte header as follows:

Byte 1 - File type verification

Byte 2-5 - Load address

Byte 6-7 - File length

Figure 4-14. MS-DOS Binary Image File Structure

5 USING APPLIEDOS FILES

5.1 Filename Syntax

APPLEDOS filenames must conform to the following rules:

1. Filenames may be from one to 30 characters in length. Any portion over 30 characters is truncated by APPLIEDOS.
2. Any typable character except the comma (,) may appear in the name. A blank space between two "words" is also OK.
3. Filenames must not contain any control characters.

Since APPLIEDOS filename syntax is very different from MS-DOS, you will frequently need to manually convert APPLIEDOS filenames to acceptable MS-DOS filenames. This topic is covered in the next section.

5.1.1 *Converting APPLIEDOS Filenames*

Unlike CP/M and MS-DOS, APPLIEDOS filenames have no regular structure. Therefore, the MS-DOS convention of a period (.) separating the filename and extension has no meaning. The single asterisk (*) means any file, and is similar to "*.*" for MS-DOS or CP/M. The single pound sign (#) means query any file, and is similar to the Apple-Turnover "#.#" for MS-DOS or CP/M.

In the Select Files menu, whenever you enter an asterisk for copy all files or pound sign for query and copy all files, the programs will automatically force you to rename all files as they are copied. Using ATREAD, type a legal MS-DOS filename in response to the prompt. Press [Enter] to accept the APPLIEDOS filename as-is **** ONLY **** if the APPLIEDOS filename is ALSO a legal MS-DOS filename.

The instructions noted above are extremely important. If an illegal MS-DOS filename is entered, the result will be an error condition and the program will abort. For example, punctuation like

commas, colons, backslashes, asterisks, questions marks, etc. should be rigorously avoided. These will cause the program to crash with MS-DOS displaying the totally inappropriate message: "Too many files..."

If you simply press [Enter] in response to an APPLEDOS filename with more than 12 characters, then the Apple-Turnover programs will simply truncate the name MOST of the time. This can also cause problems. If the APPLEDOS filename happens to have a space between two words (which is legal for APPLEDOS), then that space will be copied to the MS-DOS filename. However, a space is not allowed in an APPLEDOS filename. You will not be able to easily access or delete this file.

5.2 Application Notes

5.2.1 Visicalc to Lotus 1-2-3

There are two ways to transfer your Visicalc files to Lotus 1-2-3. The first method involves the use of Visicalc "DIF" format files. This is the easiest method. However, it suffers from the disadvantage that formulas are not translated — only numerical values. This method is described below:

1. On the APPLE, save your Visicalc worksheet as a "DIF" file.
2. Then, use Apple-Turnover to copy the DIF format files from the APPLEDOS disk to an MS-DOS disk.
3. Use Lotus' translate function to convert the DIF file into a Lotus file.

The second method involves the use of the ATSIFT program. Although an extra step is required, it will transfer formulas as well as numerical values. This method is described below:

1. Use Apple-Turnover to transfer your Visicalc worksheet file (.VC) from the APPLEDOS disk to an MS-DOS disk.
2. Use the ATSIFT program, select function number 3 (Add Linefeed) to add a linefeed to each carriage return in the Visicalc file.

3. Use the Lotus 1-2-3 utility program "VCWKS.EXE" to translate the Visicalc file to a Lotus format file. Make sure that the newly created Lotus file has a ".WKS" suffix on the filename.

5.2.2 Lotus 1-2-3 to Visicalc

Apple-Turnover does not currently have the capability of translating Lotus 1-2-3 worksheet files into their Visicalc equivalents. We are working on this enhancement. Please contact your dealer or Vertex Systems for more information on the availability of this enhancement.

5.2.3 Magic Window/Acewriter

This section describes the steps necessary to convert Magic Window document files into MS-DOS text file. After the conversion, most MS-DOS text editors or word processors can be used as required. Magic Window is also known as "Acewriter" on Franklin computers.

- APPLIEDOS files with a ".MW" suffix or ending contain the text. Copy these files to an MS-DOS disk using the ATREAD program.
- After all files have been copied to MS-DOS disks, run the APSIFT program. Two file conversion steps are required:
 1. Select option no. 2 to strip the high bit.
 2. Then, select option no. 3 to add a linefeed character to each carriage return.
 3. The file can then be further modified with almost any text editor or word processor that accepts straight ASCII text files. We have used Final Word and Wordstar.
- Load the file into your editor or word processor. The first couple of lines will appear to contain a jumble of graphics characters and random letters. Delete these lines with the appropriate editor or word processor command.

- Any characters starting with an "Esc" character (shown as ~ in Final Word) are left-over Magic Window characters, and should be deleted or removed. Typical combinations noted are:
 - Esc-O (shown as ~O)
 - Esc-& (shown as ~&)
 - Esc-E (shown as ~E)
 - Esc-R (shown as ~R)
- The end of your converted Magic Window document file may also contain a string of graphics characters used to "pad" or file the remaining space in the last disk record. They are typically displayed as a string of characters like "~@^@^@^@^@^@". This string of graphics characters should also be deleted.

5.3 Incompatible APPLE programs

Apple-Turnover only works with normally formatted APPLIEDOS 3.3 disks. This eliminates all APPLE copy-protected disks or files. Unfortunately, it also eliminates several popular applications programs that do not use standard APPLIEDOS disks for data storage.

To date, the following APPLE applications programs produce incompatible data disks and cannot be used with Apple-Turnover:

- PFS File
- DB Master

We have also had preliminary reports that the APPLE version of Visifile produces data disks/files which are not compatible with the IBM version of Visifile. This aspect is currently being investigated.

5.4 Converting BASIC files

If you are interested in converting APPLE BASIC programs for use on your IBM or other computers, then you need to convert the APPLESOFT or Integer Basic file from its normal type of disk file (binary tokens plus strings) to an ASCII text file. Do this on your APPLE computer before transferring the file with Apple-Turnover.

Although there are several APPLE utility programs that can do the job, we suggest that you refer to the APPLE II DOS Manual which contains instructions and a short program for converting APPLESOFT program files into their ASCII text file equivalents. This APPLESOFT program is reproduced below for your convenience:

```
1 REM CAPTURE APPLESOFT PROGRAM IN TEXT FILE
2 D$ = CHR$(4) : REM CTRL-D
3 PRINT D$; "OPEN LISTING"
4 PRINT D$; "WRITE LISTING"
5 POKE 33,30
6 LIST 2270,5130
7 PRINT D$; "CLOSE LISTING"
8 TEXT : END
```

In the APPLESOFT program shown above, the line numbers 2270 and 5130 should be replaced by the line numbers of the APPLESOFT program in memory that you wish to capture. The name of the text file which will contain the program is call "LISTING" in the program. You can change the filename LISTING to another file name if desired.

6 USING APPLE CP/M FILES

6.1 CP/M Filenames

In general, CP/M filename syntax is identical to MS-DOS. Therefore, there is no need to convert or modify filenames when transferring APPLE CP/M files to MS-DOS. However, there is one important exception.

The Apple-Turnover programs cannot handle filenames that contain any punctuation like a comma (,), dash (-), semicolon (;), etc. If your CP/M filename has any punctuation, then the Apple-Turnover programs will abort, and you will receive the MS-DOS error message: "Too many files at address"

In this event, you will have to go back into APPLE CP/M and use the "REN" command to remove the punctuation from the offending filenames.

6.2 Supported Formats

Apple-Turnover supports the APPLE CP/M disk format used by the Microsoft "Softcard" for the APPLE II computer. In practice, the disk format used by the Appli-Card, the Micropro Starcard, and the ALS Z-Card II should be acceptable to Apple-Turnover as well.

There is a potential problem with APPLE CP/M version 2.20. This version has a bug which does not allow CP/M to read the last two directory sectors on the APPLE CP/M disk. Instead of using all eight directory sectors, only six directory sectors are used. Since each directory sector holds eight directory entries, Version 2.20 allows a maximum of 48 files per disk. This bug was corrected in APPLE CP/M version 2.23 and later.

The Apple-Turnover software allows for 64 directory entries per APPLE CP/M disk. Therefore, using the ATWRITE program, you can create an APPLE CP/M disk containing a maximum of 64 files. If you try to use this disk on an APPLE under CP/M version 2.20, the first 48 files will be OK. However, the 49th through 64th

file will NOT appear on the disk directory. The same disk read on an APPLE under CP/M version 2.23 or later will show all 64 files.

In a similar fashion, Apple-Turnover does not support APPLE CP/M variations with more than 64 directory entries or files per disk. For example, the "Apple Dumpling" card seems to offer a version of CP/M which allows 96 directory entries or files per disk. The Apple-Turnover software will be able to read the first 64 directory entries. The additional files will not appear in the Apple-Turnover CP/M disk directory display.

As of the publication date of this manual, CP/M PLUS (or version 3.0) for the APPLE has not been tested for compatibility with Apple-Turnover. Please contact your dealer or Vertex Systems for more information.

6.3 Application Notes

6.3.1 dBASE II

The dBASE II DBMS package for APPLE CP/M is similar to versions of dBASE II for generic 8-bit CP/M and MS-DOS. You should be able to transfer your dBASE II files to MS-DOS disks using Apple-Turnover, and then be able to use the files directly with only a couple of modifications to some of the filenames.

dBASE II command files use the suffix ".CMD" under CP/M. When you transfer these command files to MS-DOS and wish to use these files under an MS-DOS version of dBASE II, then these files must be renamed with a ".PRG" suffix. Other dBASE II files like ".DBF", ".NDX", etc. should function without changes to filenames.

6.3.2 Wordstar

Wordstar document files are stored as ASCII text files with the "eighth-bit" set. This explains the odd appearance of these files when they are viewed directly using the "TYPE" command under MS-DOS or CP/M. The characters that have the eighth-bit set often display as graphics characters instead of text characters.

Unaltered wordstar document files should be directly usable under the MS-DOS version of Wordstar. If you want to use Wordstar document files in other word processors or applications, then they should be processed with ATSIFT after being copied to MS-DOS disks.

Select the first option in ATSIFT (convert wordstar files) to convert document files into ASCII text files.

6.3.3 MBASIC Programs

Program source code developed under APPLE CP/M versions of MBASIC can easily be transferred to MS-DOS. However, that does not mean that the program will run on your IBM PC. While MBASIC and MS-DOS BASIC share many commands, many differences exist. Most MBASIC programs will have to be modified by a competent BASIC programmer before they will run under MS-DOS BASIC.

Use the following procedure to transfer MBASIC programs from an APPLE CP/M disk to an MS-DOS disk:

1. On the APPLE, save the BASIC source code or program as an ASCII file. Use the following command: **SAVE "FILENAME",A** where the letter **A** will cause the file to be saved as ASCII text instead of BASIC tokens.
2. Then, use Apple-Turnover to transfer the file from the APPLE CP/M disk to your MS-DOS disk.



7 SOLVING PROBLEMS

Most problems using Apple-Turnover can be traced to one of the following causes:

- Marginal disk drive performance
- Operator error
- Current limitations of the Apple-Turnover software

The first part of this section discusses the three problem areas listed above. The next part explains the ERROR! screen and Error Codes. The last part explores some common problems and solutions.

7.1 General Problem Areas

7.1.1 Marginal Drives

When you use Apple-Turnover, you are asking your IBM's disk drives to routinely read and write two different types of disks: APPLE's "GCR" encoded disks and IBM's "MFM" encoded disks. This requires well-maintained drives in both your IBM and the APPLE computer.

Sometimes, a disk drive can be in terrible shape, and still be able to read and write its own disks. However, when you place a similar type of disk (made on another drive) in the poorly-maintained drive, all you get is errors. This becomes even worse when you are trying to read disks using another encoding method and operating system.

It is possible to have a situation where a set of disk drives can read and write MS-DOS disks with no real problems. However, attempts to read and write APPLE disks with Apple-Turnover are only partially successful. This indicates that your drives are sufficiently "out-of-tolerance" to have problems with APPLE disks. However, the deviation from factory specifications is still small enough to allow reading MS-DOS disks.

The disk drives on your IBM and Apple must be well maintained. The recording heads must be clean, demagnetized, and properly aligned. Disk drive rotational speed should be within 1% of the specified value, and should not exhibit excessive rotational speed variations.

If you get frequent, but random occurrences of disk read errors on your APPLE disks, we encourage you to have your drive or drives inspected by a competent specialist.

If you have a copy of the IBM Advanced Diagnostics Disk, run the disk drive test sequence. This set of tests will detect really bad drives, but will not reliably detect marginal disk drive performance. Several commercially available software products are offered to test and analyze drive performance. You may want to investigate using one of these utilities to further investigate drive performance.

7.1.2 Operator Error

The most common operator error selecting the wrong format for the Apple disk. As a general rule, if you select the wrong format, you will get an empty directory or an Error Code 129 when you attempt to read that disk.

ATREAD and ATWRITE read the directory of the Apple disk before taking any further action. If you select APPLIEDOS and try to read an APPLE CP/M disk, the program will show an empty directory.

7.1.3 Limitations

Apple-Turnover currently (12/84) has several limitations that effect error handling. For example, the "low-level" routines that interface the Apple-Turnover card to the floppy disk controller have little ability to trap errors because of very tight timing loops required to read the disk drive impulses.

As a result, severe disk errors which occur at just the right instant can cause the Apple-Turnover programs to "crash" without a return to the higher level software. This can cause your computer to "hang" without any apparent recourse except shutting down the power and rebooting. Please refer to Section 7-3 for additional information.

7.2 Error Responses

7.2.1 The ERROR! Screen

ERROR ATREAD

ERROR ENCOUNTERED DURING READ <1>

Drive not Ready. Please check ... <2>

Error code: 128 DRIVE: 1 TRACK: 1 SECTOR: 1 <3>

Please press:

[F1]Retry [F2]Ignor [F3]Option [F4]Formt [F10]Abort

Figure 7-1. ATREAD ERROR! Recovery Screen for ATREAD

Figure 7-1 shows the ERROR! recovery screen for ATREAD and ATWRITE. The numbers shown in carets (e.g. <1>) do not appear on the screen, but are used as a key for the discussion that follows:

1. ERROR ENCOUNTERED DURING READ

This portion of the screen shows the general type of error. In this example, the error resulted from an unsuccessful disk read operation.

2. Drive Not Ready ... Your computer is unable ...

This portion presents a brief description of the specific problem suggested by the Error Code.

3. Error code:4 DRIVE:1 TRACK:3 SECTOR:1

The decimal value of the Error Code is displayed along with the exact disk location where the error occurred.

4. Please Press:

This is the error recovery menu. Select the appropriate response to the error by pressing one of the indicated letters. The following material briefly discusses these options:

RETRY - Try this first. Press the letter "R" to attempt the operation again. If unsuccessful, try pressing "R" again. After four or five attempts, assume that this approach is not going to work.

The numeric value in this line of the menu (not shown above) refers to the number of times the disk system will repeat the operation before generating an ERROR! screen again. This numeric value can be changed within the Options Menu

IGNORE - This response will skip problem disk location and continue the previous disk operation. Use this response with care. Sometimes this response can be a lifesaver, and other times it will cause even more problems.

Do not use the Ignore response if: (1) an error is encountered while a disk catalog or directory is being read, (2) an error is encountered reading any binary or other non-text file like an APPLESOFT or Integer basic file, or (3) an error is encountered in any file where total integrity of the contents is important.

However, this option can provide a badly needed "last resort." A typical example might be a long text file for word processing. If an error is encountered and skipped using the "I" option, then the transferred file would

contain a bad or missing section corresponding to the location of the read error in the original file. However, the Ignore response would allow you to salvage the rest of the file. Sometimes half a pie is better than none.

OPTIONS - This response moves you to the Options Menu. Typical recovery attempts using the Options Menu could involve switching the source and destination disk drives in an attempt to read a marginal disk, changing the number of error retries, etc.

FORMAT - Switch to the other APPLE disk format. This is the proper response when the problems stem from a mismatch of selected disk format and actual APPLE disk. This is often the proper response when Error Code 129 is shown.

ABORT - Return to DOS or system level. Provides a graceful exit to DOS. Sometimes, discretion is the better part of valor.

5. Function key commands

The function keys provide a convenient alternative to the single-letter commands noted above.

The **ERROR!** recovery screens for **ATREAD**, **ATWRITE** and **ATINIT** are quite similar. **ATSIFT** has no error recovery screen because significant disk errors are rare and tend to be an MS-DOS problem best solved elsewhere.

Significant differences between the three main programs are noted below:

- **ATWRITE** offers the "Exit" response in lieu of **ATREAD**'s "Abort" response. Exit will move you to the "Exit" screen instead of aborting the program back to DOS level.
- **ATINIT** does not offer the "Ignore" function. Ignoring an error during a disk format or initialization is hazardous, and is therefore not offered as a response.

7.2.2 Error Codes

- Error Code 3 - Write Protected Disk This Error Code means that your disk drive could not write a file to the destination floppy disk because it is write-protected.

Look for a "write-protect tab" covering the notch on your destination or target disk while using ATWRITE or ATINIT. Remove the write-protect tab. Then, press "R" or function-key [F1] to retry the disk operation.

- Error code 64 - Seek error

Apple-Turnover could not locate a track or read a sector. The error message will report the problem track and sector.

The APPLIEDOS and CP/M directory should be on track 17 (decimal), and the boot sector to be on track 0. Any other track is indicative of a sector not found as a part of the file being copied.

- Error Code 128 - Drive Not Ready

The drive read head was not engaged when Apple-Turnover tried to read the disk. This problem can result from many different (and easily corrected) problems like: (1) disk not inserted in drive, (2) disk not properly seated within drive, (3) disk drive door left open, etc., etc.

- Error Code 129 - Bad Data

This error code usually means that Apple-Turnover was able to physically read the disk, but was unable to make any sense out of the data.

The most common cause of this problem is selection of the wrong disk format. For example, selecting an APPLIEDOS format and inserting an APPLE CP/M disk in the drive will cause an error of this type.

Minor disk media problems or marginal disk recordings which are not quite bad enough to cause an unsuccessful read may nonetheless cause an error 129.

- Other Error Codes

Any other error code is a soft error from the Floppy Disk Adapter Card, and is not related to the operation of the Apple Turnover card. This type of error is both rare and intermittent. A retry will generally continue with the transfer without further problems.

7.3 Common Problems

7.3.1 Computer Hangs

If your APPLE disk contains bad sectors or other disk defects, Apple-Turnover is usually able to trap these errors, and provide the "ERROR!" screen to help you recover from the problem.

Sometimes, error recovery is not possible. If this occurs, a variety of unpleasant things can happen. Your video screen may become blank or all white. Your disk drive may "hang" (light remains on, motor spins indefinitely). In any event, you will probably lose control of the computer.

Do not become unduly alarmed. Turn-off the AC power, wait 15 seconds, and turn on the power to reboot your computer. Then, try to determine what the problem might be in the APPLE disk and restart the appropriate Apple-Turnover program.

User Support

We try to provide the best possible level of user support to our valued customers. Therefore, we require a valid product registration on file with our Customer Support Department before providing help. Therefore, please note your product version and serial numbers in any correspondence or telephone calls.

If you run into a minor problem or have any suggestions for improving Apple-Turnover, we would like to hear about it. Use the Problem Report Form in this package. Mail it to Vertex Systems and include a sample problem disk if appropriate. We will acknowledge receipt and get back to you with some answers as soon as possible.

If your problem is more serious, contact your dealer or vendor for support. If they can't provide an immediate solution, they will contact Vertex Systems for dealer support services and solve your problem as quickly as possible.

If you have purchased this product direct from Vertex Systems and need assistance, then please feel free to write or telephone. Customer Support Personnel are generally available from 10:00 AM - 3:00 PM (Western Time Zone), Monday through Friday. At other times, our answering service will record your request and we will get back to you as soon as possible.

Overseas, support is available through the following organizations:

- United Kingdom:
 - Microware London, Ltd. (United Disk Memories/UDM), London N19
- Western Europe:
 - Dataplus Benelux BV, Waalre, Netherlands
 - Dataplus Belgium, Brussels, Belgium
 - Technical Marketing Consulting, Steenberg, Netherlands

- Polysoft, Drammen, Norway
- Software House Expander, Solna, Sweden
- Microsystems Data Systems, Vienna, Austria
- BSP Thomas Krug, Regensburg, West Germany

From time to time, we will make significant improvements in Apple-Turnover or introduce other related software products. Registered owners are eligible to receive upgrades at the lowest possible cost. Our upgrade policy is as follows:

- Customers who have purchased Apple-Turnover with a serial number below 1300 are entitled to one software upgrade at no additional cost.
- Replacements for damaged program disks and software upgrades cost \$20 postpaid. Please include your original program disk with your order.

Incompatible Hardware

Computer Systems

- | | |
|----------------|---|
| IBM AT | Apple-Turnover does not currently work on the AT. A new version is being developed. Please contact your dealer or Vertex systems for information on availability. |
| Columbia MPC | Require special cables to connect the Apple-Turnover card. Contact your dealer or Vertex Systems for assistance. |
| Corona PC | Requires special cables to connect the Apple-Turnover card. Contact your dealer or Vertex Systems for assistance. |
| Eagle Turbo XL | XL's with Qume 142 disk drives will work OK. XL's with Teac drives will not work unless the Teac drive is modified. |
| Heath/Zen 150 | Apple-Turnover will not work reliably on both the 150 and 161. |
| IBS | The IBS computer (PC-compatible "look alike") will not work with Apple-Turnover. |
| Leading Edge | Problems have been reported on computers with Mitsubishi 1/2 height drives. Cables must be swapped around to fit the computer. |
| NCR PC | The NCR PC-4 will not work with Apple-Turnover unless one of the Teac disk drives is modified. |
| Olivetti M-18 | Apple-Turnover will not work with the Olivetti M-18 or M-24. |
| Sperry PC | Same as Leading Edge PC. |

Disk Drives

- | | |
|-------------------|---|
| Hitachi Drives | Hitachi 505B disk drives installed in an IBM PC will not work properly. |
| Matsushita Drives | Matsushita (Panasonic) disk drives will not work reliably. |
| Teac Drives | Apple-Turnover will not work with TEAC half-height disk drives unless they are modified. Refer to these Appendices for modification instructions. |
| Vista Board | Some Vista floppy disk controller boards installed in an XT will not work with Apple-Turnover. |

Installation in a Compaq Computer

This Appendix describes the process of installing the Apple-Turnover printed-circuit card in a Compaq computer. The process is similar to the steps described in Section 2. However, there are a few differences due to the different physical layout of the Compaq expansion slots.

The main problem is the short length of the Compaq disk drive ribbon cable. There are two ways to solve this problem. The first involves moving the existing floppy disk controller card and video card (located in the first two slots towards the front) back one slot. Then, plug the Apple-Turnover card into the free slot.

The second approach involves purchasing a longer disk drive ribbon cable. The cable used in the IBM PC and many compatibles should work OK, but will leave some excess cable which may be difficult to fit into the small space around the expansion slots.

Assuming you wish to proceed with the first approach, the following steps generally supplement or replace Steps 4 - 10 in Section 2.2.1:

STEP A MAKE SURE THE AC POWER IS OFF BEFORE YOU PROCEED.

Locate the disk drive controller board. Assuming that you are facing the front of the Compaq, it is the first card. The second card towards the back is the video card.

Locate the pin connector where the short disk drive ribbon cable plugs into the disk controller board. Note that there are two short levers on the sides of the connector. These two levers lock the cable into the connector. To unlock, push each lever sideways, away from the center of the card. Remove the ribbon cable by lifting the connector.

- STEP B Remove the retaining screws from the disk controller board and video card. Save the screws. Remove both boards by lifting vertically. You may find it convenient to temporarily remove the round cable that plugs into the center of the video card. If the third slot from the front contains a card, move it back one slot as well.
- STEP C (See Figure 2-3) Plug the original disk drive cable into the Apple-Turnover pin connector (J2). The colored stripe on the cable should be oriented towards the top of the Apple-Turnover card.
- STEP D Locate the female card-edge connector on the new ribbon cable (supplied). Plug it into the Apple-Turnover card male card-edge connector (J1). The colored strip on the new cable should be oriented towards the top of the Apple-Turnover card, just like the cable in Step C. Make a 90-degree bend (free end oriented towards top of Apple-Turnover card) in the new ribbon cable.
- STEP E Plug the Apple-Turnover card into the first expansion slot. You may have to rotate the Apple-Turnover card as you insert it into the available space to position the cables properly.
- STEP F Plug the free end of the new ribbon cable into the disk drive controller card (now in slot 2). Push the connector in firmly, but gently. Push the locking levers in, towards the center of the board to lock the cable in.
- STEP G Reinsert the card retaining screws for the disk drive and video boards. If you removed the video cable from the video card in an earlier step, be sure to reinstall it.

The Compaq computer used a non-standard retaining screw for the first three slots. Therefore, there is no neat way to secure the Apple-Turnover mounting bracket. However, with the covers properly installed, the card will be OK without additional retaining screws.

Modifying Teac Drives

Teac half-height disk drives have become a popular alternative to full size disk drives. Unfortunately, Teac drives must be modified to work properly with Apple-Turnover. The required modification will have no effect on normal operation.

The modification consists of soldering a resistor onto the Teac disk drive electronics board. Please do not perform the modification yourself unless you are familiar with removing and replacing the disk drive, component identification, and soldering.

If you feel uncomfortable doing the modification yourself, then contact your dealer's service department or other computer repair service for assistance. Alternately, Vertex Systems will modify your disk drive for a charge of \$50.00 plus shipping.

NOTE

Vertex Systems Inc. provides this modification as a courtesy and assumes no liability whatsoever for modifications performed by the user or other repair services.

This modification may void your Teac disk drive or computer warranty.

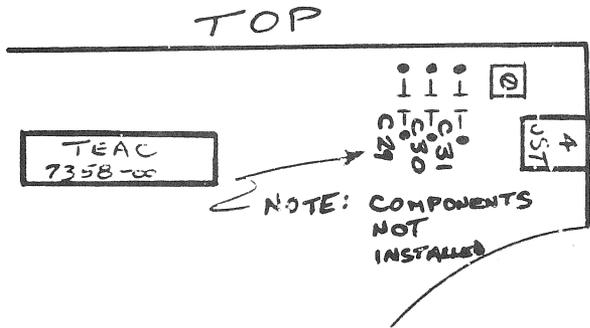
Required Materials

- 150 ohm, 1/4 watt resistor (5% tolerance or better)
- The following tools are recommended:
 - low-wattage soldering iron
 - desoldering tool or toothpick
 - small crosshead screwdriver
 - needle-nose pliers

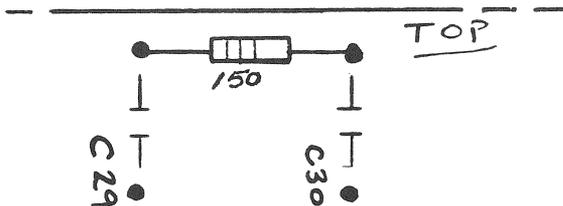
Modification Instructions

These instructions apply to 40-track Teac disk drives, Model no. FD-55B-01-U and may vary slightly for other models.

1. Remove the Teac disk drive from your computer.
2. Turn the drive upside down so the large motor shaft flywheel is visible. Locate the dark green main board (also contains the power connector and card edge connector).
3. Remove the three cross-head screws that secure the main board to the drive chassis.
4. Disconnect all cable connectors from the board. Use a pair of needle-nose pliers and carefully note the configuration (make a sketch if necessary). There are four connectors. Two large white connectors (marked 6 JST and 4 JST) are located on top of the board. The other two black connectors are located on the underside of the board near the head-load solenoid.
5. Locate C29 and C30 on the board (components *NOT* installed) as shown in the drawing below:



6. Remove the solder from the top holes of locations C29 and C30. Insert and solder the 150 ohm resistor into these two holes as shown below:



7. Replace the Teac board making sure that all four cable connectors are properly connected.
8. Replace the disk drive in the computer and test the drive without installing the Apple-Turnover board to make sure everything is OK.
9. Replace the Apple-Turnover board in the computer.

Modifying Older Models

Older Teac half-height drives can be identified by the presence of circuit boards on both top and bottom of the drive. Use the same procedure as above with the following exceptions:

- Remove the circuit board from the top (instead of bottom) side of the disk drive. This is the read/write board.
- Locate the single in-line resistor pack labeled RA308.
- Connect and solder the 150 ohm resistor across pins 4 and 5 of the resistor pack.



APPLE HIRES Conversion Option

What about Apple HIRES picture files? Yes, Apple-Turnover will transfer ANY APPLEDOS 3.3 or Apple CP/M file. However, the hardware is different, so the picture will not display properly on your IBM video screen.

Can we do anything about getting Apple pictures to display on the IBM-PC? Yes, the Apple-Turnover Graphics utility package can transform, display and rotate Apple II picture files for use on your IBM's video system. The utility package consists of three programs providing a lot of graphics interchange value.

Apple owners can create a disk file which contains the hi-res graphics screen image. Then, use the ATREAD to copy the file to an MS-DOS disk in your IBM. The first graphics program, ATGRAPH, converts the data in the APPLE HIRES picture file to conform to IBM screen graphics format.

Since the resolution on the IBM color graphics adapter is higher than Apple II screen graphics, he also makes some changes so that the resulting picture will not appear visually deformed. The resulting file may then be displayed on your IBM video screen using the ATDISP program. The picture may also be sent to a graphics printer using the PC-DOS utility "GRAPHICS."

If the colors do not suit you, the program ATROTATE enables you to change each color in the picture to any other color. We call this color change process rotation because the colors displayed on the screen are controlled by certain bits set in the attribute byte of pixel data. The ATROTATE program rotates these bits at the touch of a key.

This optional graphics utility package is available only to registered Apple-Turnover users for the price of \$49.50 plus shipping. Contact your dealer or Vertex Systems directly to get additional information or to place an order.

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LIMITED WARRANTY

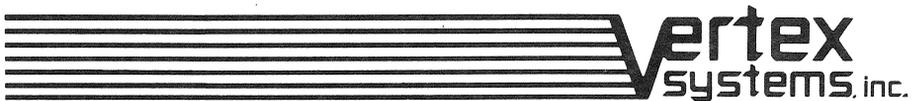
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