

**MANUAL FOR EDUCATIONAL
AND INSTITUTIONAL USE**

TRACKSTAR™

**Now you can run Apple™ software on
TANDY® 1000, IBM PC™, IBM PC/XT™
and selective compatibles; Even the
difficult “copy protected” programs.**

DIAMOND
COMPUTER SYSTEMS INC.

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TRACKSTAR

Users

Manual

for

Tandy 1000

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TABLE OF CONTENTS

1. Introduction	5
2. Installation	7
3. Getting Started	8
4. Control Keys	9
5. Increasing Compatibility	10
6. Running Programs in 80 Column Mode	12
7. Exit to MS-DOS	13
8. Programming the Function Keys	15
9. The File Transfer Utility	18
10. The Differences between Trackstar and an Apple II+	21
11. System Reconfiguration	23

APPENDIX

Trackstar Board Installation	27
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I. INTRODUCTION

A. Equipment Supplied

The following is a list of the equipment which is supplied with each Trackstar board:

- floppy interface cable
- RGB video cable
- composite video cable
- two capacitors for the Tandy disk drives
- two diskettes
 - Apple DOS Transfer Utility Diskette with the following file:
 - FILE TRANSFER UTILITY
 - Trackstar Utility Diskette with the following files:
 - STAR.EXE
 - INSTAR.EXE
 - STAR.SYS
 - AUTOEXEC.BAT

Please check to make sure that none of this equipment is missing.

B. Backup Procedures

Before installing the Trackstar board the Trackstar Utility Diskette should be backed up. These directions should be followed carefully; otherwise damage to the diskette may ensue.

1. Two-Drive System

a. MS-DOS Installation

The Trackstar Utility Diskette does not include the MS-DOS system files. These should be installed as follows:

- (1) Turn on the computer and place an MS-DOS system diskette in Drive A
- (2) Insert the Trackstar Utility Diskette in Drive B
- (3) At the system prompt, A>, type: **SYS B: <ENTER>**
- (4) At the next system prompt, A>, type:

COPY COMMAND.COM B: <ENTER>

The Trackstar Utility Diskette is now a system diskette. It can be used to boot the computer automatically.

b. Backing up the Trackstar Utility Diskette

To make a working copy of the Trackstar Utility Diskette proceed as follows:

- (1) Insert the Trackstar Utility Diskette in Drive A
- (2) Insert a blank diskette in Drive B
- (3) At the system prompt, A>, type **DISKCOPY A: B: <ENTER>**
- (4) The following message appears on the screen:

**Insert source diskette into Drive A:
Insert target diskette into Drive B:
Press any key when ready**

Press any key to begin.

- (5) When the backup is complete the following prompt appears:

**Copy Complete
Copy Another (Y/N)?**

Press the N and the ENTER keys. Remove the original Trackstar Utility Diskette and store in a safe place. Label this new backup as the Working Copy of the Trackstar Utility Diskette and use it for all subsequent work.

2. Hard-Disk System

- a. Turn on the computer and place an MS-DOS system diskette in Drive A
- b. At the system prompt, A>, remove the MS-DOS diskette and insert the Trackstar Utility Diskette in Drive A
- c. If the system was booted with the hard disk drive select Drive A by typing A: <ENTER>
- d. At the system prompt, A>, type **ERASE AUTOEXEC.BAT <ENTER>**
- e. At the next system prompt, A>, type **COPY *.* C: <ENTER>**
- f. Remove the original Trackstar Utility Diskette and store in a safe place. All the files needed to run TRACKSTAR have been installed on the hard disk drive.

II. INSTALLATION

Detailed installation procedures for the Trackstar board are to be found in the Appendix beginning on page 27. The following precautions should be noted before the installation process is begun:

1. All power should be turned off and all cables disconnected
2. The workspace should be clean
3. All diskettes should be removed from the area
4. Each step of the installation process should be followed **CAREFULLY**
5. These tools will be needed:
 - Phillips screwdriver
 - Metric socket wrench
 - Straight screwdriver
 - Nutholder to hold hexscrew on left side of Drive A

III. GETTING STARTED

Check that the previous sections, **Introduction** and **Installation**, have been read and the directions completed satisfactorily before beginning this section.

The diskette to be used in this and subsequent sections is the working copy of the Trackstar Utility Diskette that was made on page 5.

A. Two-Drive System

To use Trackstar with a two-drive system proceed as follows:

1. Turn on the Tandy 1000
2. Insert the working copy of the Trackstar Utility Diskette in Drive A. If the Tandy 1000 is already turned on, at the system prompt, A>, type
STAR <ENTER>
3. The following message appears on the screen:
 - * Please remember the HELP function is invoked by pressing [F1] then [ESC] - when Trackstar is in operation -
 - * Insert the diskette that you wish to run in Drive-X
 - * Press <ENTER> when ready
4. The Tandy 1000 is now a full fledged Apple compatible computer. Insert the Apple program diskette in the drive and press <ENTER>. The diskette will boot as if it were running on an Apple II.

B. Hard Disk System

To use Trackstar with a hard-disk system proceed as follows:

1. Turn on the system
2. At the system prompt, C>, type STAR <ENTER>
3. Follow Steps 3 and 4 from Section A

More help in using Trackstar will be found in these sections:

For higher compatibility:	Section 5	Increasing Compatibility.
To use the external Apple drive:	Section 11	System Reconfiguration.
To run in 80 column mode:	Section 6	Running 80 Column Programs

IV. CONTROL KEYS

A. Description of Keys

This information is available by selecting **Control Key Description** from the Help Menu, as follows:

1. Press <F1><ESC> for the Help Menu
2. Select <C>
3. Special features have been assigned to the following function keys:

F9	Open Apple key
F10	Solid Apple key
F11	Color enable/disable
F12	Load the FPBASIC program on the Apple Master to increase compatibility
CTRL-F12	Reset Trackstar
CTRL-F9-F12	Boot the diskette
ALT-ESC	Switch between Apple DOS and MS-DOS

B. Control Key Explanation

1. **F9** Emulates the <Open Apple> key on the Apple IIe or the push button #0 on the game port. This key should be used whenever a program requires the <Open Apple> key or the push button #0 on the game port.
2. **F10** Emulates the <Solid Apple> key on the Apple IIe or the push button #1 on the game port. This key should be used whenever a program requires the <Solid Apple> key or the push button #1 on the game port.
3. **F11** Works as a toggle switch. The color on the screen is turned on and off each time this key is pressed. This key should be used to increase the readability of text which was created on a graphics screen. Sometimes this text is difficult to read if the color is enabled.
4. **F12** See Section 5, Page 10 **INCREASING COMPATIBILITY**
5. **CTRL-F12** Emulates the effect of pressing <CTRL><RESET> on Apple IIe. Use it when an Apple program hangs up.
6. **CTRL-F9-F12** Emulates the effect of pressing <CTRL><OPEN APPLE> <RESET> on the Apple IIe. Used when rebooting the Apple system or starting a new Apple program.
7. **ALT-ESC** Refer to Section 7, Page 13 **EXIT TO MS-DOS**.

V. INCREASING COMPATIBILITY

Trackstar is an excellent Apple II+ compatible computer. In some ways, for example, faster graphics and programmable function keys, Trackstar is much better. In other ways, (for example, total compatibility with all software), it is not as good. However, there are a few tricks which can increase the compatibility of the Trackstar to nearly 100%.

A. Software Option

Trackstar uses a compatible program to FPBASIC. While it is an excellent program, Diamond Computer Systems, Inc. does not claim 100% compatibility with all Apple programs. If a certain program should fail to boot, try the following:

1. Press the <F12> key while in the Trackstar mode (Apple screen)
2. The following message is displayed:
Do you want to load FPBASIC from APPLE DOS 3.3 MASTER?
3. Press the <Y> key. The following message is displayed:
 - Insert APPLE DOS 3.3 Master Diskette in Tandy Drive-X
 - Press <ENTER> when ready, or <ESC> to abort
4. Insert the Apple Dos 3.3 Master diskette and press <ENTER>. The following message will be displayed:
Wait! Loading <FPBASIC> from APPLE diskette
5. When the program is loaded the screen will display the following message:
Finished!
Insert the diskette you want to run in Drive-X.
Press <ENTER> when ready.
6. The FPBASIC emulation program has been replaced by FPBASIC from the Apple Master Diskette.
7. It is not necessary to repeat these steps for each Apple program. Unless Trackstar is reinitialized FPBASIC will remain in memory.

B. Hardware Option

The internal Tandy drives, under the control of Trackstar, are good Apple compatible disk drives, but there are a few things they cannot do. The Tandy drives will read most Apple diskettes, but they have difficulty reading diskettes that are heavily copy protected, particularly those that use half track copy protection methods.

To run Apple programs that are half track copy protected an external Apple compatible disk drive should be installed. Instructions for the installation of this drive are to be found in the Appendix on pages 31 and 37. Designate the external Apple drive as D1 (Drive 1) in the Software Installation Menu. This is explained in detail in Section 11, **SYSTEM RECONFIGURATION**.

With Apple FPBASIC installed and an external Apple drive connected, Trackstar becomes very compatible with an Apple computer.

VI. RUNNING PROGRAMS IN 80 COLUMN MODE

The 80 column mode is disabled when Trackstar is initialized. It must be enabled to run programs that use the 80 column mode. The following directions will allow Trackstar to run in the 80 column mode.

1. Press <F1>-<ESC> in the Trackstar mode to obtain the Help Menu
2. Select 80 Column Disabled
3. Type <C>. The message 80 Column Enabled will be displayed. This key functions as a toggle switch to enable or disable the 80 column mode
4. To return to the Apple screen press <ENTER>
5. Insert in the disk drive the Apple program disk that requires the 80 column mode and press the <CTRL><F9><F12> keys simultaneously
6. The 80 column mode is now enabled and will remain effective until it is disabled by repeating Steps 1 - 4 above or by reinitializing Trackstar
7. To run a program that needs the 80 column mode select the 80 column slot by typing PR#3 at the] prompt after the 80 column feature has been enabled

This option is provided to enable programs which support both 40 and 80 column modes to run on Trackstar.

NOTE: After the 80 column option has been enabled it still needs to be engaged. To engage this mode the user must type PR#3 after the Apple prompt.

VII. EXIT TO MS-DOS

There are two ways to exit to MS-DOS from Trackstar.

A. From the HELP Menu

When exiting Trackstar from the help menu the user has two options, either to completely exit from Trackstar, or to allow Trackstar to run in the background while actively working in MS-DOS. The following steps explain how to exit in either way:

1. Press <F1>-<ESC> from Trackstar to see the Help Menu
2. Type <X>. The following message appears on the screen:

You have 2 options when you move to MS-DOS:

(1) Terminate Trackstar operation

You will need to run the Trackstar Utility Program to return to the Trackstar mode

(2) Let Trackstar run in the background

40K of the Tandy 1000's RAM will be reserved for Trackstar. If you do not have enough RAM, you may have difficulty running MS-DOS programs. In this case, restart the system by pressing the restart button or <Ctrl><Alt> keys

If this option is selected, to return to the Trackstar mode from the MS-DOS mode, press <ALT><ESC>

3. If Trackstar is to run in the background select option 2. In this case, 40K of the Tandy 1000's RAM memory will be reserved for the Trackstar Utility Program. Press <ALT><ESC> to return to the Trackstar mode while the MS-DOS program is running. This option allows the user to work with the MS-DOS and Trackstar programs simultaneously. This may cause some problems if the desired MS-DOS program requires more than the available memory.
4. If the user returns to Trackstar after option 2 has been selected, all subsequent exits to MS-DOS will assume the option 2 selection.
5. If option 1 was selected, no memory will be reserved for Trackstar. Thus all of the Tandy 1000's memory will be available for the MS-DOS program. However, the user cannot return to Trackstar by pressing <ALT><ESC>. To return to Trackstar, the Trackstar Utility Program must be executed.

B. By using <ALT><ESC>

1. If the <ALT><ESC> keys are pressed while in the Trackstar mode the user moves immediately to MS-DOS
2. This action has the same effect as option 2 followed by <X> in the Help Menu

Once the Trackstar Utility Program is installed in the Tandy 1000's memory, the only way to eliminate it is by resetting the computer. This is done by pressing the **RESET BUTTON** or the <CTRL><ALT> keys.

VIII. PROGRAMMING THE FUNCTION KEYS

Trackstar takes advantage of the function keys that are present on the Tandy 1000's keyboard. They are easy to program and wonderful to use. For example, instead of typing in CATALOG each time it is needed, if <F2> has been programmed for this function, all the user needs to do is to press <F2>.

A. To Program the Function Keys

1. Press <F1>-<ESC> to enter the Help Menu, and then type <F>. The DISPLAY/MODIFY menu is displayed on the screen:

****DISPLAY/MODIFY FUNCTION KEY SETS****

There are 8 sets of function Keys

[C] Current Selected Function Key Set : 1

- [1] Function Key Set 1
- [2] Function Key Set 2
- [3] Function Key Set 3
- [4] Function Key Set 4
- [5] Function Key Set 5
- [6] Function Key Set 6
- [7] Function Key Set 7
- [8] Function Key Set 8

[S] Save Modified Function Key Sets on Diskette
[ENTER] Exit

Please Select Function !

2. Select the desired function key set. If, for example, [1] is selected, the following screen will appear:

CURRENTLY DEFINED FUNCTION KEYS FOR SET 1

-F2 : CATALOG,D1^M
-F3 : RUN
-F4 : BRUN
-F5 : LOAD
-F6 : LIST^M
-F7 : SAVE
-F8 : RUN HELLO^M

Please Enter Command !

[M] Modify Function Key

[ENTER] Exit to Function Key Sets

This menu displays the contents of the selected function key set.

3. There are 8 function key sets with seven function keys available in each. Each key can accept up to 32 characters.

NOTE: F1, F9, F10, F11 and F12 are dedicated to control key functions in all sets and cannot be programmed.

4. Pressing <ENTER> returns the user to the **DISPLAY/MODIFY FUNCTION KEY SETS** menu.
5. Pressing <M> causes the **EDIT FUNCTION KEY** menu to reappear, with the addition of some modification commands, as follows:

CURRENTLY DEFINED FUNCTION KEYS FOR SET 1

-F2 : CATALOG,D1^M
-F3 : RUN
-F4 : BRUN
-F5 : LOAD
-F6 : LIST^M
-F7 : SAVE
-F8 : RUN HELLO^M

Editing Commands

[DEL Key] Deletes Character

[END Key] Ends Input to Function Key

[FUNCTION Key] Identify Function Key to be Modified

[ENTER] Exit to Function Key Sets

6. Pressing the desired function key prepares it for modification. Selected characters, including <ENTER>, may then be assigned to this key.
7. The only characters or keys that cannot be assigned to a function key are the DEL and END keys. These keys are reserved for command functions as shown on the menu on page 9.
8. The DEL key is used to delete selected characters.
9. The END key tells the system the command string is complete. When END is selected the user is returned to the menu and may then choose either to modify another function key in this set, or to press the <ENTER> key twice to return to the **DISPLAY/MODIFY FUNCTION KEY SETS** menu.

NOTE: In all cases, selecting a function will move one to the next menu; pressing <ENTER> will return one to the previous menu.

B. Saving the New Programmed Key Sets

1. Once the desired modifications have been completed, press <ENTER> twice to return to the **DISPLAY/MODIFY FUNCTION KEY SETS** menu. Here the option is given to save the commands to the working copy of the Trackstar diskette.
2. There is a section of **STAR.SYS** that is set aside to store these commands. Press S at this menu and all 8 command sets will be saved.

The following screen is then displayed:

****DISPLAY/MODIFY FUNCTION KEY SETS****

There are 8 Sets of Function Keys

[C] Current Selected Function Key Set : 1

- [1] Function Key Set 1
- [2] Function Key Set 2
- [3] Function Key Set 3
- [4] Function Key Set 4
- [5] Function Key Set 5
- [6] Function Key Set 6
- [7] Function Key Set 7
- [8] Function Key Set 8

[S] Save Modified Function Key Sets on Diskette
[Enter] Exit

Please be sure that Trackstar Utility Files are in Drive-X of your Tandy 1000

[ENTER] To Save
[ESC] To Abort

Please Enter Command!

3. If the function key modifications are deemed to be temporary, then press <ENTER> to exit this menu. These modifications will be available until the system is shut down.

IX. THE FILE TRANSFER UTILITY

This utility program transfers files between Apple DOS 3.3 files and MS-DOS files. It is provided on the Apple formatted diskette, labeled **Apple DOS File Transfer Utility Program**. File transfer can only be effected using an Apple DOS 3.3 Master diskette.

A. Introduction

1. Only Apple DOS 3.3 text or binary file can be transferred to MS-DOS. Other types of file will need to be converted to the binary or text mode prior to conversion.
2. Any type of MS-DOS files can be transferred to Apple DOS 3.3. On conversion the new Apple files will be in either binary or text format.

B. To Transfer Files

1. Boot the APPLE DOS 3.3 MASTER in TRACKSTAR MODE .
2. Make a backup copy of the File Transfer Utility diskette. Put the original away in a safe place and use the backup copy to implement the rest of these instructions
3. At the APPLE prompt, insert the APPLE DOS File Transfer Utility Diskette in drive-D1
4. Type **BRUN FILE TRANSFER <ENTER>**. The following menu will appear on the screen

**FILE TRANSFER UTILITY V. 3.0 -
for Apple DOS 3.3 file**

[C] Diamond Computer Systems Inc, 1984

ENTER SELECTION

**[A] Directory of Apple Disk
[I] Directory of MS-DOS Disk
[T] File Transfer
[Q] Quit**

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5. Follow the screen prompts to effect the transfer.
6. To transfer the contents of the entire disk use the **Wild Card Function** as follows:
 - a. When the program asks for the source file name enter *.*
 - b. All files which are binary or text will be transferred.

7. File Names

- a. Apple DOS to MS-DOS - The Apple filename will be converted into MS-DOS format. MS-DOS filenames are limited to FILENAME.EXT format, Apple filenames are limited to 30 characters; therefore, some changes will occur. These changes include:
 - (1) All characters past the eighth are ignored
 - (2) If a period (.) is after the eighth character, a three character extension is added, for example:
SUPERDUPERFILE becomes SUPERDUP
TESTFILE.APPLEDOS becomes TESTFILE.APP
 - (3) Spaces are ignored, for example:
FILE TRANSFER UTILITY becomes FILETRAN
 - (4) Illegal characters cause difficulties. Remove control characters, and /s from the Apple names. If present they will cause an IBM Disk Read Error message to appear and the transfer will stop
- b. MS-DOS to Apple - The full filename is converted

C. Text File Transfer

1. From APPLE DOS to MS-DOS
 - a. Bit 7 of ASCII data of the text file is reset
 - b. Carriage Return code (HEX 8D) is converted to Carriage Return (HEX OD) and Line Feed (HEX OA)
 - c. End of file mark of Apple DOS (Code 0) is converted to Control-Z (HEX 1A)
2. From MS-DOS to APPLE DOS
 - a. Bit 7 of ASCII data of the MS-DOS text file is set
 - b. Line feed code (HEX OA) is ignored
 - c. MS-DOS end of file mark (Code 1A) is converted to the Apple end of file mark (Code 0)

D. Binary File Transfer

1. From APPLE DOS to MS-DOS
 - a. The first two bytes of the APPLE binary file, the start address of the binary file, are cut out
 - b. The second two bytes of the APPLE binary file, the length of the binary file, are cut out
 - c. The rest of the file is transferred without any conversion
2. From MS-DOS to APPLE DOS
 - a. Two bytes (HEX 00, HEX 10) are added at the beginning of the file. These indicate the start address (HEX 1000) of the binary file. This file will be loaded at the address HEX 1000
 - b. The next two bytes are added according to the file size. They indicate the size of the binary file

- c. The rest of the file is transferred without any conversion

E. Tricks and Tips

Converting an APPLE DOS binary data file into an MS-DOS text file

- a. Apple application programs often store text and data files in binary format to save storage space and quicken access time.
- b. To convert an APPLE DOS binary data file into an MS-DOS text file:
 - (1) Transfer the APPLE binary file to MS-DOS mode using the File Transfer Utility.
 - (2) Transfer the new MS-DOS file back to APPLE DOS as a **text** file. This will disassemble the file.
 - (3) Transfer the file a third time, this time as a text file, to MS-DOS. The file can now be read using the TYPE command.

X. THE DIFFERENCES BETWEEN TRACKSTAR AND AN APPLE II+

A. The Keyboard

Although the Tandy keyboard offers many keys which were not available on the Apple II+, in reality, there are only a few things to watch for:

1. Trackstar supports lower case letters . These are obtained by pressing either the shift key or the caps lock key as on the Apple IIe. They are not supported on the Apple II+
2. Many earlier programs were not designed to support lower case letters. Therefore, if you are running one of these programs make sure the <CAPS> key is depressed
3. <Open Apple> and <Solid Apple> keys are supported by using the <F9> and <F10> function keys of the Tandy 1000.
4. Some of the keys on the Tandy keyboard are not supported on the Apple II+ keyboard. For example, if you press the Tandy <ALT> key nothing will happen.

B. Game Port

Like the Apple IIe, Trackstar supports two different game ports. One is the external game port which uses a DB9 connector and the other is the internal game port which is an empty IC socket. These are shown in the diagram on page 27.

1. The external game port on the Trackstar is the same as the Apple IIe or IIc.
2. The internal game port on the Trackstar supports all the signals of an Apple IIe except for two. These are:
 - a. the Strobe signal (pin 5)
 - b. the Annunciator 3 signal (pin 12).

C. Slots

1. Both Apple and Tandy computers provide special features through cards that plug into slots inside the computer. In the Apple environment, access to these features is obtained by calling a specific Slot # using the command PR# or IN#. Much of the Apple software does this automatically . The user will need to check with a particular software manual to see what slots are used. The slot compatibility listing below should provide the needed information.

2. Trackstar does not have physical slots, like an Apple, but it does support several of the slot functions. The following is a list of the supported slots with their features, and limitations:

D. Slot functions

SLOT COMMENTS

- Slot 0**
- a. This slot supports the Language Card commands and functions.
 - b. The language card function of the Trackstar provides an additional 16K of memory. This is required for Pascal programming and some programs that use the extra memory for storage, for example, Apple Writer II.
- Slot 1** Parallel Interface
- a. This is the slot which is normally reserved for the parallel printer interface. Trackstar emulates a standard parallel interface card to match Apple programs.
 - b. There is however, one major difference. The data it receives for printing is passed along to the Tandy parallel interface which is connected to the printer.
 - c. Your Tandy 1000 must have a parallel interface for this slot to be supported.
NOTE: Even though every command you send to the printer is supported, just as it would be on the Apple][+, Trackstar does not support special graphics commands, such as those found on a GRAPPLER™ Card. Trackstar does not emulate printer cards. This means that a program which only runs with a specific piece of hardware may not run with Trackstar (this only seems to be a problem with some graphics programs).
- Slot 2** Serial Interface
- a. The serial interface is normally used with two types of programs
 - (1) Communications programs, such as those that use the phone lines to access a database
 - (2) Serial interface printers
 - b. Trackstar emulates this function through software and passes the information to the Tandy for execution.
 - c. In order to use this function the Tandy serial port must first be initialized.
 - d. This function is only available if the Tandy 1000 is equipped with an RS232C Option Board.
 - e. To improve performance most communication programs are written for specific hardware. Since the Trackstar does not provide that hardware it may not work with a particular communication program.
- Slot 3** 80 Column Operation.
- a. Before the 80 column mode can be used it must first be enabled. To do this refer to the section **Running Programs in 80 Column Mode**, page 12
 - b. The 80 Column mode is then engaged by typing PR#3 at the Apple prompt (I).
 - c. All further operations will be in 80 column mode until Trackstar is reset or rebooted

- d. Trackstar's 80 Column effect is created using software and not hardware. Some programs that use the 80 column mode do so through hardware and therefore cannot be used with the Trackstar 80 Column feature.

Slot 4 Not supported.

Slot 5 Not supported.

Slot 6 Supports standard Apple disk controller commands.

Slot 7 Not supported.

XI. SYSTEM RECONFIGURATION

A. System Parameters

1. This section describes how to change the following system parameters:
 - drive assignment
 - serial printer assignment
 - parallel port assignment
 - monitor assignment
2. To change or to view the system configuration
 - a. Run the system in MS-DOS mode with the Trackstar Utility Diskette in Drive-A
 - b. With a hard disk system, the Trackstar Utility Files should be in Drive-C
 - c. Type **INSTAR** <ENTER>
 - d. At the system prompt, A> or C>, (hard disk system) the following menu will be displayed:

Current Installed Parameters

- | | | |
|----|------------------------------|--------------------|
| 1. | P/C name | Tandy 1000 |
| 2. | Display monitor type | Color monitor |
| 3. | Serial port identification | COM 1 |
| 4. | Parallel printer port | |
| | a. Port identification | LPT 1 |
| | b. Data length | 8 bits |
| | c. Auto Line Feed | Yes |
| 5. | Floppy disk drive assignment | |
| | a. Drive 1 (D1) | Tandy 1000 B-drive |
| | b. Drive 2 (D2) | Tandy 1000 A-drive |
- Which option ?
- | | |
|----------|------------------|
| <Number> | to modify |
| <S> | to save and exit |
| <ENTER> | to exit |

B. Changing the System Parameters

1. P/C name: This cannot be changed.
2. Display Monitor Types:
 - a. Entering 2 will present the following menu at the bottom of the screen.

Select monitor type !

1. Color monitor (60Hz)
2. Composite monitor (60Hz)
3. Monochrome monitor (50Hz)

- b. Select the number that corresponds to the type of monitor that is connected to the Tandy 1000 as follows:

Color monitors are TTL RGB and use a DB9 connector

Composite monitors are either color or monochrome and connect to the computer by an RCA jack.

A TV set should use the composite monitor setting

3. Serial port identification

- a. Trackstar must know which serial port will be used for output
- b. Enter 3 to get the menu

Select Tandy serial port id. to be used for the Trackstar serial port

- 1. COM 1
- 2. COM 2

- c. Use COM 1 for Tandy 1000 computers with one serial port
- d. Use COM 2 if COM 1 is reserved for another special function

4. Parallel printer port

- a. The default settings will serve well for most situations. These should only be changed if problems occur. Trackstar must know where the printer is located. Enter 4 to get the following menu:

Select P/C parallel printer port id. for Trackstar printer

- 1. LPT 1
- 2. LPT 2
- 3. LPT 3

- b. When an Apple program sends a character to the printer the 7th bit is always set. When the Tandy 1000 sends a character to the printer the 7th bit is always reset. In most instances the data length will be set at 8 bits. When problems occur with character printing, it may be necessary to set the data length at 7 bits.

Select parallel printer data length !

- 1. 8 bits
- 2. 7 bits

- c. Some Apple programs do not use a line feed code to tell the printer that it must advance to the next line. For those particular programs select "1".

Auto line feed on ?

- 1. Yes
- 2. No

5. Floppy disk drive assignment

- a. Trackstar enables the user to define how the disk drives will function in the Apple system, that is, which will be drive 1 and which will be drive
- b. All Apple programs are booted on drive 1
- c. Sometimes with a two drive Tandy system, if there is any difficulty booting programs, the location of drive 1 can be changed to Drive B
- d. When an external Apple compatible drive is attached to Trackstar it is always designated as drive 1

Select drive for Trackstar Drive-1

1. External apple drive
2. Tandy A-Drive
3. Tandy B-Drive

C. Initializing System Parameters

1. Once all necessary changes have been made to the menu, press the "S" key to save and exit the program
2. All changes that are to be implemented, must be saved before initializing the Trackstar board

APPENDIX

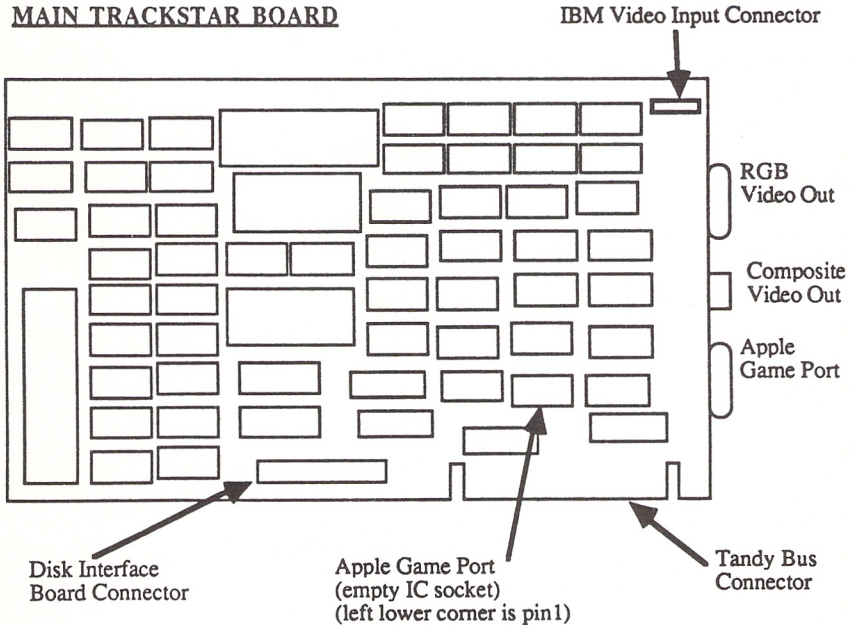
TRACKSTAR BOARD INSTALLATION

Before the installation process is begun the user should ensure that the precautions listed on page 7 have been carefully observed and implemented.

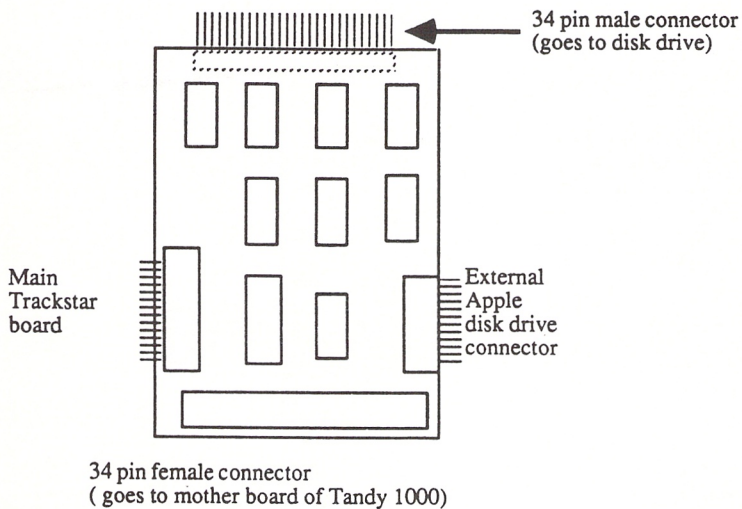
A. The Trackstar Board

Pages 27 and 28 contain diagrams of the components that are a part of the Trackstar system. These diagrams should be studied carefully before installation begins, and subsequently throughout the installation process. Familiarity with each part will help significantly in installing this board.

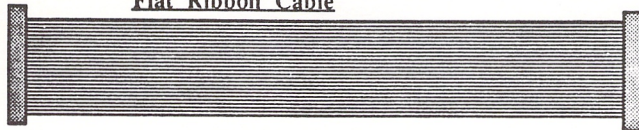
MAIN TRACKSTAR BOARD



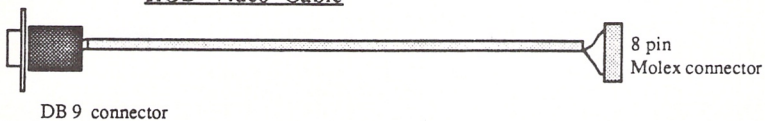
Disk Interface Board



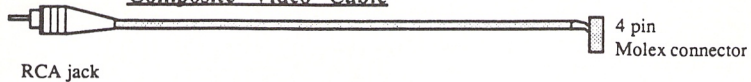
Flat Ribbon Cable



RGB Video Cable



Composite Video Cable

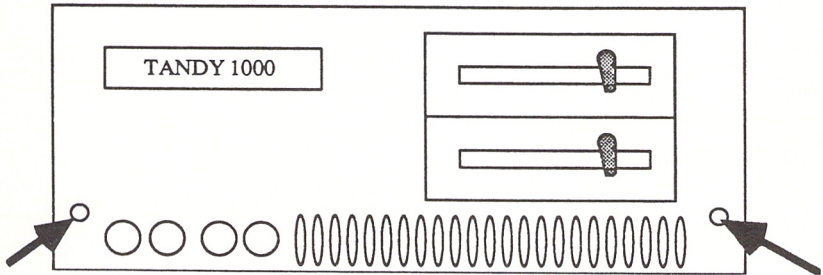


Capacitors for Disk Drives

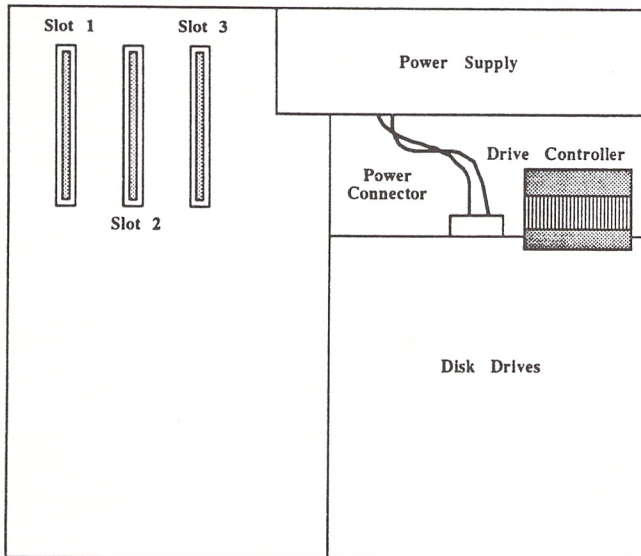


B. The Installation Process

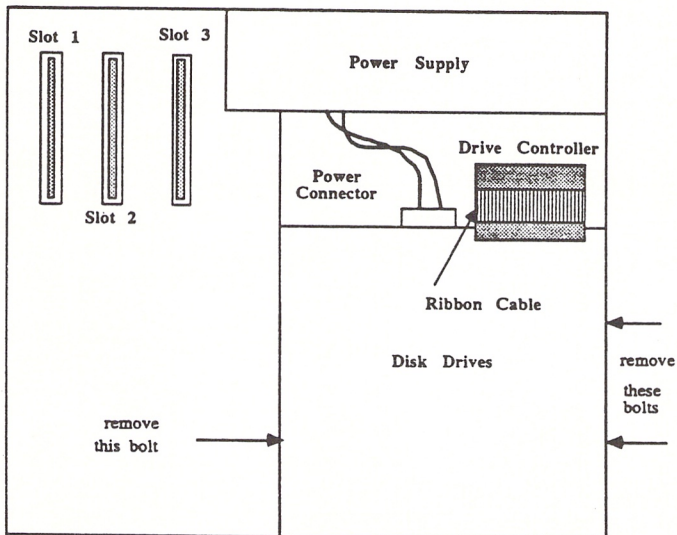
1. **Pre-Installation Check**
Before beginning these steps check to see that all power cords are disconnected, and all peripheral devices turned off and unplugged.
2. Remove the Tandy 1000 cover. This is attached by two Phillips screws in the front of the case as shown in the following diagram. When the screws have been removed the cover will then slide forward.



3. Use the following diagram to help identify the various internal features of the Tandy 1000 computer.

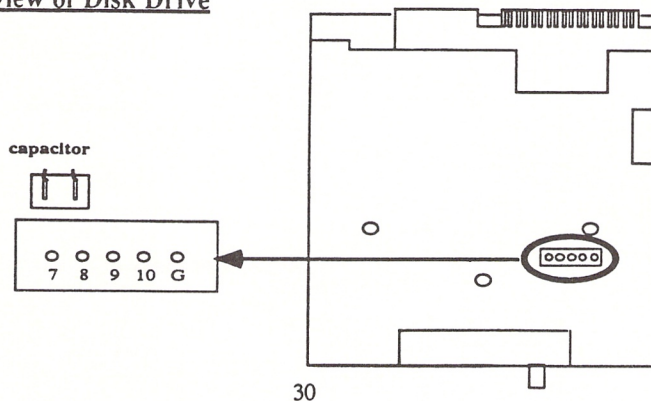


4. Remove both Tandy disk drives as follows:
 - a. Unplug the ribbon cable and the power connector
 - b. Unscrew the three bolts that fasten the disk drives to the disk drive housing
 - c. Lift the drives free
 - d. The diagram below shows the location of the items that must be removed
 - e. Be sure to note which drive is A and which is B



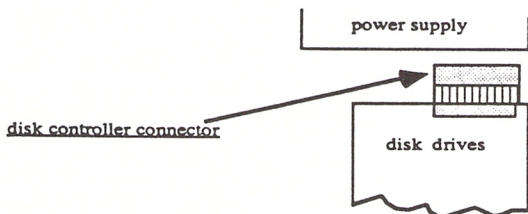
5. Locate test leads 7 and 8 on each disk drive, see the diagram below. Attach the capacitors across these two leads on both disk drives.

Top view of Disk Drive



6. Replace Disk Drives

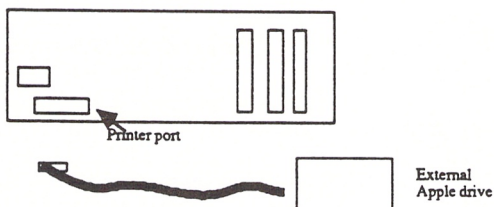
- a. Make sure that drives A and B are both returned to their original positions.
 - b. Reconnect the disk drive cables, as they were originally connected, to both disk drives
7. Disconnect the disk drive cable from the disk controller. This is located on the mother board.



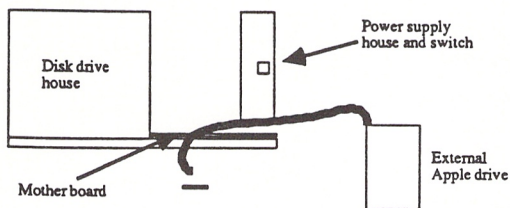
8. OPTIONAL STEP to allow for the installation of an Apple external drive

Thread the cable which is connected to the Apple drive from the outside to the inside of the Tandy 1000, through the parallel printer port, at the rear of the computer. The cable will run between the mother board and the underside of the power supply housing.

Rear View of the Tandy 1000



Side View of the Tandy 1000



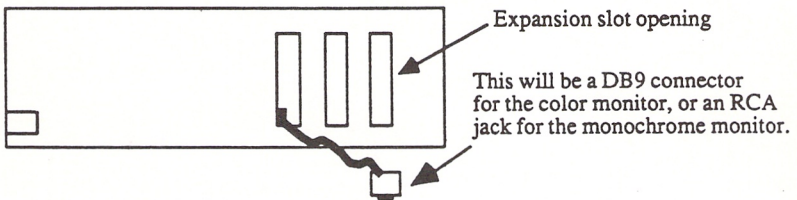
9. Select the video cable that matches the chosen monitor as follows:

Color Monitor	RGB Video Cable with 8 pin molex connector
Monochrome Monitor	Composite Video Cable with 4 pin molex connector

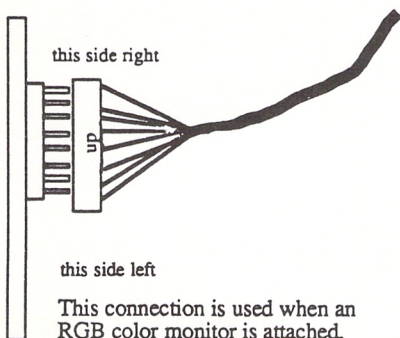
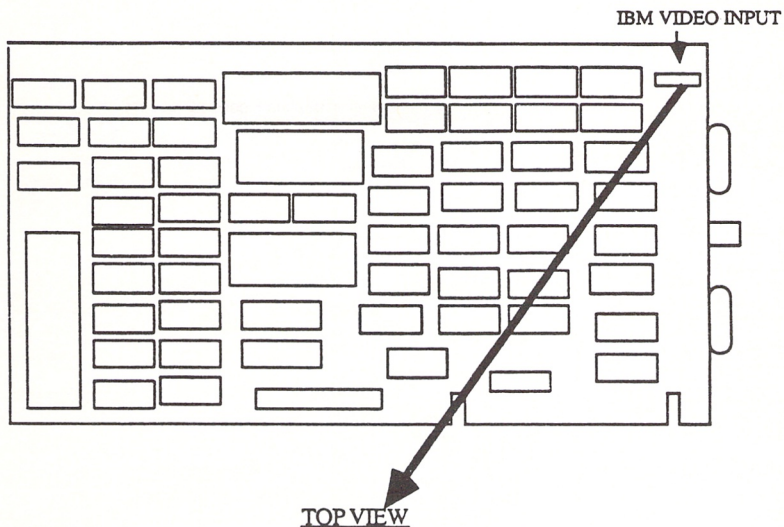
See page 28 for diagrams of each of these cables,

10. Select the slot into which the Trackstar board will be mounted. Slot three is the preferred location for this board. Remove the empty slot bracket and feed the molex connector through the opening of the expansion slot. This is located at the rear of the Tandy 1000.

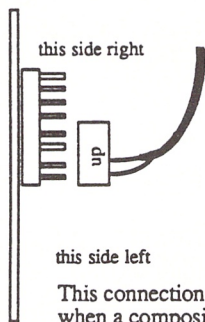
Rear View of the Tandy 1000



11. Connect the molex connector of the selected video cable to the IBM video output connector on the main Trackstar board as shown in the diagram below.



This connection is used when an RGB color monitor is attached. Be careful with the connector polarization. The female connector has the word "up" printed on it.



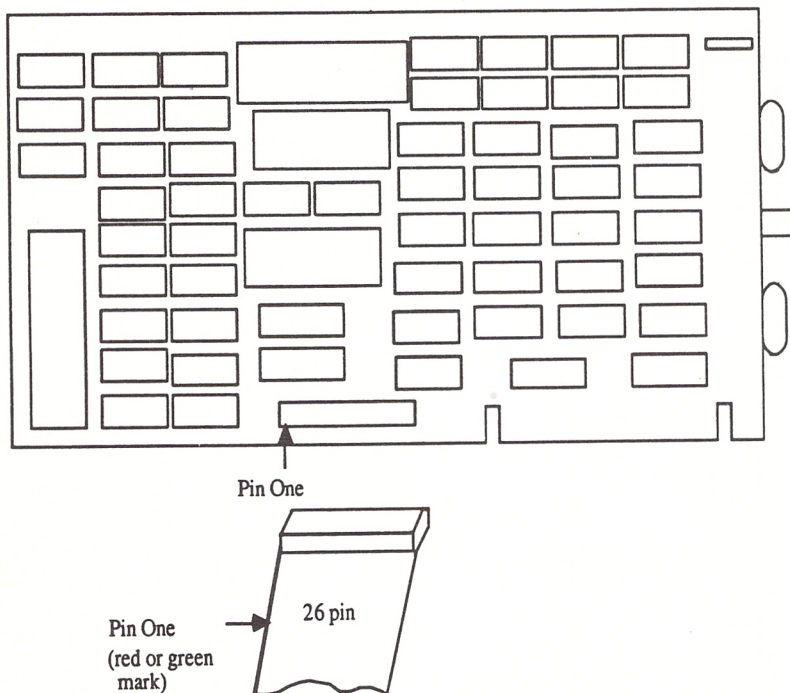
This connection is used when a composite monochrome monitor is attached. The left 4 pins of the connector are used.

12. Connect the flat ribbon cable to the 26 pin connector located at the bottom center of the main Trackstar board. The green or red marking on the ribbon cable indicates the location of pin 1 on the cable. The arrow located below the 26 pin connector on the board indicates the location of pin 1. Line up these two connectors carefully to obtain the correct connection.

To aid in the correct installation of this cable one hole in the ribbon cable connector has been blocked to match the pin that has been removed from the connector on the board.

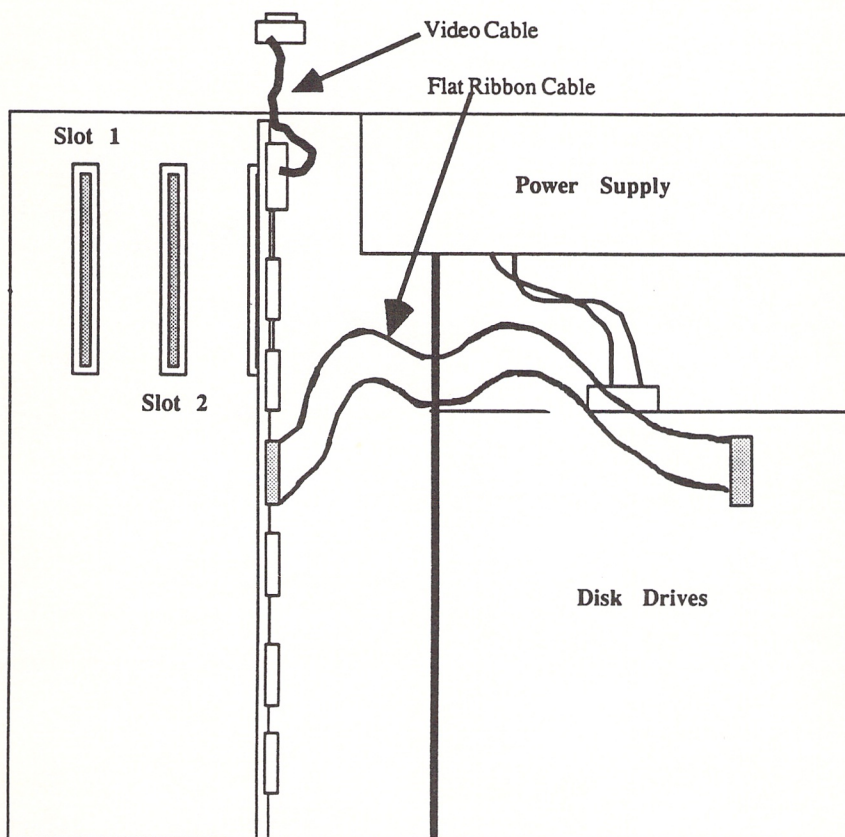
NOTE: The connector at either end of the flat ribbon cable may be used.

Main Trackstar Board Showing the Location of the 26 Pin Connector



13. To complete the installation of the Trackstar main board

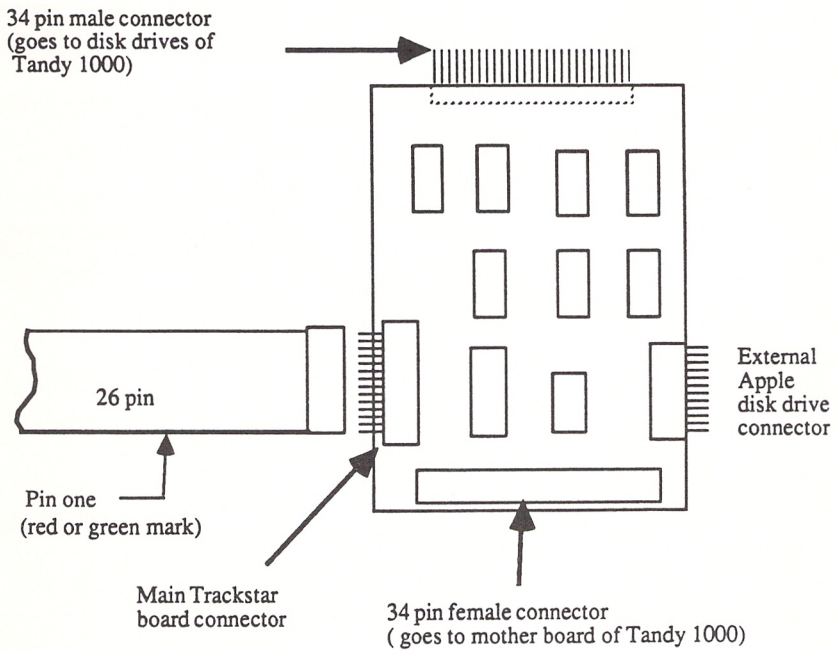
- a. Route the video cable through the bottom section of the Trackstar main board mounting bracket
- b. At this point, if desired, install joysticks or other peripherals in the internal Apple game port
- c. Install the main board into the chosen slot
- d. Thread the ribbon cable underneath the disk drive housing and bring it up on the other side



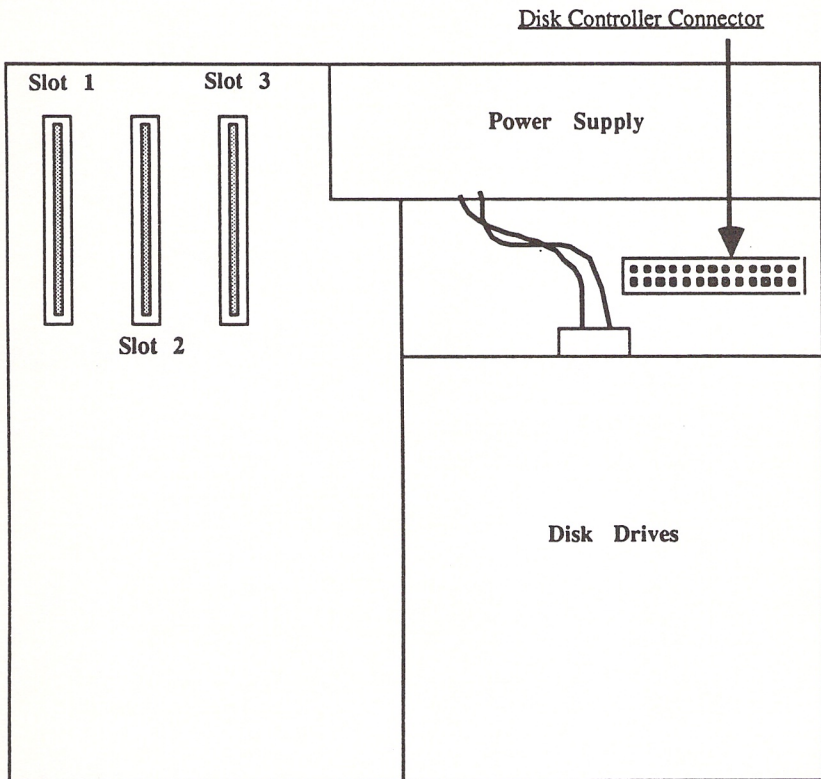
14. Installing the Disk Interface Board

- a. Connect the free end of the flat ribbon cable to the Disk Interface board
- b. One pin has been removed from the 26 pin connector on the board
- c. The connector is labeled in the same way as on the main board
- d. Pin 1 of the flat ribbon cable, the red or green marking, should be connected to pin 1 of the connector on the board. This pin is marked with an arrow

Disk Interface Board

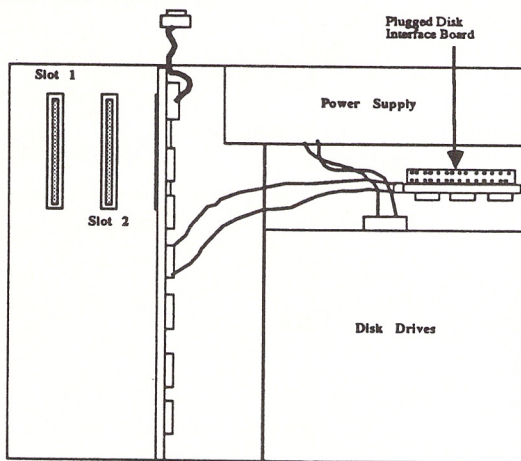


15. **Installing the Disk Interface Board**
This board is already connected to the Trackstar main board by the flat ribbon cable. It should be installed as follows:
- Plug the 34 pin female connector at the base of this board into the Disk Controller connector, which is located on the mother board of the Tandy 1000 (see diagram page 36)
 - Care should be taken not to miss or damage any of the pins
 - The component side of the Disk Interface board, on which the chips are located, should face the disk drives and the solder side should face the power supply



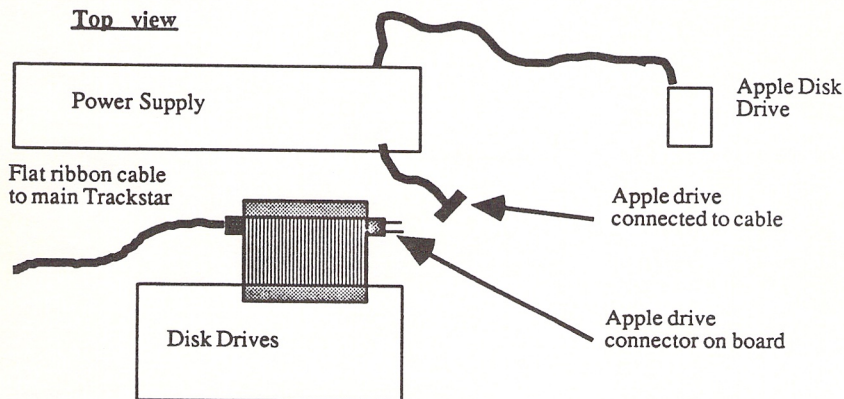
16. After step 15 has been completed the system should look like the following diagram.

- a. Connect the disk drive cable, which is connected to both drives, to the top connector, a 34 pin male, on the Disk Interface board
- b. Take care not to bend or miss any of the pins

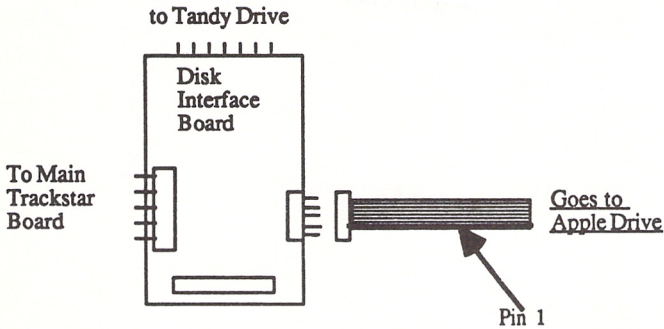


17. **OPTIONAL SEQUENCE** to Complete Installation of External Apple Drive

- a. Connect the Apple disk drive connector, on the cable from the disk drive, to the external Apple disk drive connector on the Disk Interface board (see diagram page 36)
- b. Most Apple disk drive cables have a red or green marking indicating pin 1. Pin 1 should face towards the mother board when it is connected



Side View of Disk Interface Board



18. Completing the Installation

- Connect the selected video cable to the correct connector located on the rear of the Tandy 1000. For an RGB color monitor connect the DB connector to the Tandy RGBI monitor connector. For a composite monochrome monitor connect the RCA jack to the Tandy 1000 video connector
- Replace the cover of the Tandy 1000 and tighten the two retaining screws
- Reconnect any peripheral devices
- Connect the Tandy 1000 monitor to the computer and the power supply
- The installation process is complete and the system now ready for use

Rear View of the Tandy 1000

