

128K

TRACKSTAR™

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DIAMOND
COMPUTER SYSTEMS INC.

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(408) 736-2000

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TRACKSTAR 128

Users Manual

DIAMOND COMPUTER SYSTEMS INC
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I. INTRODUCTION

A. TRACKSTAR System Features

- 65C02 Microprocessor
- 128K Memory
- 40/80 Column
- Apple Game Port
- Support for the Serial and Parallel Ports
- Apple Compatible Disk Drive Port

B. System Requirements

- Tandy 1000, Tandy 1000A, Tandy 1000SX, IBM PC, IBM PC XT, IBM PC XT Compatible
- MS-DOS 2.0 or newer
- Minimum 128K Memory
- Monitor:
 1. Color or Composite Monitor Pixel Size 640 X 200
 2. TTL Monochrome Monitor Pixel Size 720 X 350 (Selective)
- 360K Floppy Disk Drive

C. Equipment Included with the TRACKSTAR Board

- Disk Adaptor Board
- Disk Adaptor Cable
- RGB Video Cable
- Composite Video Cable
- Two Capacitors for the Teac Drive (Optional)
- Two Trackstar Utility Diskettes with the Following Files:
 1. STAR.EXE (MS-DOS)
 2. STAR.SYS (MS-DOS)
 3. INSTAR.EXE (MS-DOS)
 4. SYSCOPY.EXE (MS-DOS)
 5. AUTOEXEC.BAT (MS-DOS)
 5. FILE TRANSFER (Apple DOS) - Not visible in MS-DOS mode

NOTE: The Trackstar Utility Diskettes are Copy Protected.

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

II. INSTALLATION

A. TRACKSTAR Board Installation

Detailed installation procedures for the Trackstar+ board can be found in the Appendix on page 28.

Note: For installation in Tandy Computers Radio Shack highly recommends that the installation be performed at a Radio Shack Business Product Service Center.

B. MS-DOS Installation

The Trackstar Utility Diskette does not include the MS-DOS system files. It cannot therefore be booted. To make the Trackstar Utility Diskette bootable, the Trackstar MS-DOS system copy utility, SYSCOPY, should be run, as follows:

1. Install the Trackstar board.
2. Turn on the PC and insert the MS-DOS diskette in Drive-A.
3. At the system prompt, A>:
 - Remove the MS-DOS diskette.
 - Insert the Trackstar Utility Diskette in Drive-A.
4. Type SYSCOPY <ENTER>
The following message will appear on the screen.

Insert the MS-DOS Diskette in Drive-A
When ready, press <ENTER>

5. Remove the Trackstar Utility diskette and insert MS-DOS diskette in the Drive-A. Then press <ENTER>. The drive will spin for a while and then the following message will appear.

Insert the Trackstar Utility Diskette in Drive-A
When ready, press <ENTER>

6. Proceed as follows:
 - Remove the **MS-DOS diskette**.
 - Insert the **Trackstar Utility Diskette** in Drive-A.
 - Press **<ENTER>**
 - The Drive will spin for a while and then the following message will appear:

```
-----
MS-DOS System Files Copied Successfully
-----
```

The Trackstar Utility Diskette now has the MS-DOS system on it and is bootable.

C. Repair of "Damaged" TRACKSTAR 128K Diskettes

To repair a damaged Trackstar 128K diskette the following procedure should be used:

NOTE: DO NOT reformat the damaged Trackstar 128K diskette.

1. Boot the computer using the latest available version of MS-DOS.
2. Insert the backup (good) copy of the Trackstar 128K diskette into Drive-A.
3. Type **SYSCOPY**.
4. Follow the procedures listed in B. 4 and 5 on page 6 until the message "Insert the Trackstar Utility Diskette in Drive-A" is obtained.
5. Insert the damaged diskette, **NOT** the good backup diskette with which this process was initiated, into Drive A.
6. When the process is completed SYSCOPY should have repaired the damage to the diskette.
7. If the diskette still does not function then the user should call Diamond Computer Systems at (408) 736-2000 ext. 171 for a replacement.

III. GETTING STARTED

Read carefully the previous sections, Introduction and Installation, before beginning this section.

A. To Run TRACKSTAR Proceed As Follows:

1. If the computer is turned off:
 - a. Turn on the computer.
 - b. Insert the **Trackstar Utility** diskette in Drive-A.
 - c. The disk drive will spin and the menu described in Section IIIB will appear.
2. If the computer is already in operation:
 - a. At the system prompt, **A>**, type **STAR <ENTER>**.
 - b. The disk drive will spin and the menu described in Section IIIB will appear.

B. To Initialize TRACKSTAR:

The following menu will appear on the screen:

```
-----
TRACKSTAR128 Program Version X.X
(c) Diamond Computer Systems, Inc., 1986
```

- INITIALIZATION MENU -

[A] Normal Initialization

[B] High Compatibility Initialization

For option [B]

Apple DOS 3.3 Master Diskette is required.

Please Select Item !

- * Trackstar is the trademark of Diamond Computer Systems, Inc.
- * Apple is the trademark of Apple Computer, Inc

1. Option [A] is the default. Type **<ENTER>** to select it.
2. For higher compatibility select option [B] by typing **B <ENTER>**. Selecting option [B] makes the TRACKSTAR more compatible with the Apple computer. The FPBASIC emulation program is replaced by

FPBASIC from the Apple DOS Master diskette. This option is recommended if the Apple DOS 3.3 Master diskette is available.

3. When option [B] is selected, the following message is displayed:

Do you want to load FPBASIC from Apple DOS 3.3 Master ?

4. Press the <Y> key. The following message will be displayed:

-
- Insert APPLE DOS 3.3 Master Diskette in Drive-X
 - Press <ENTER> when ready, or <ESC> to abort
-

NOTE: Drive-X indicates which drive is to be used, either Drive-A, Drive-B, or the External Apple Drive. This choice is made when the system is configured. See System Configuration section on page 24.

5. Insert the Apple DOS 3.3 Master Diskette and press <ENTER>. The following message will be displayed:

Wait! Loading <FPBASIC> from Apple diskette

6. When the program is loaded the screen will display the following message. This message will be displayed immediately when option [A] is selected.

-
- * Remember the Help function is invoked by pressing [F1] then [ESC], when Trackstar is operating
 - * Insert the diskette that you wish to run in Drive-X
 - * Press the <ENTER> key when ready
-

7. The PC is now a full-fledged Apple compatible computer.
8. Insert the desired Apple program diskette in the drive indicated and press <ENTER>. The diskette will boot as if it were on an Apple IIe.

IV. HELP FUNCTIONS

A. Viewing the Help Menu

The HELP menu can be obtained when the <F1> and <ESC> keys are pressed while an Apple program is running.

- TRACKSTAR HELP MENU -

- [R] Reset Trackstar (Control-Reset on Apple IIe)
- [B] Reboot the Disk (Control-Open Apple-Reset on Apple IIe)
- [F] Display/Modify Function Keys
- [+] Apple II+ Mode Disabled
- [K] Other Control Keys
- [X] Exit to MS-DOS
- [ENTER] Go Back to Trackstar

Please Select!

Remember, while this menu is displayed the Apple program is still running!

B. Using the Help Menu

The help menu provides the following options.

- [R] Reset Trackstar
Emulates the effect of pressing <Control><RESET> on an Apple IIe. Select this key when an Apple program hangs up.
- [B] Reboot the Disk
Emulates the effect of pressing <Control><OPEN-APPLE><RESET> on the Apple IIe. Used when rebooting the Apple system or starting a new Apple program.
- [F] Display/Modify Function Keys

This allows the user to define the function keys to emulate specific commands, such as, DOS or program commands, for example, F3 = CATALOG, F4 = LIST. For more details see page 15.

[X] Exit to MS-DOS

Refer to the "Exit to MS-DOS" section of the manual on page 12.

[+] Apple II+ Mode Disabled

This is a toggle switch. It enables and disables the Apple II+ mode. This option is only needed when option [B] is selected from the "INITIALIZATION MENU" and the Apple II+ version of Apple DOS 3.3 is used. Some Apple programs use abnormal Apple monitor entries, which are not supported by Trackstar. These programs will not run if the II+ mode is not enabled.

[K] Other Control Keys

The active control keys will be displayed. These keys are only needed when Apple programs are being run. They are:

- <F2> This is 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 the graphics screen. Sometimes this text is difficult to read if color is enabled.
- <F9> Emulates the <Open Apple> key on the Apple IIe or Button Number 0 on the game port. This key should be used whenever a program requires either the <Open Apple>, or the Button Number 0 on the game port.
- <F10> Emulates the <Solid Apple> key on the Apple IIe or Button Number 1 on the game port. This key should be used whenever a program requires the <Solid Apple> key or Button Number 1 on the game port.
- <ALT-ESC> This is used as a switch between Apple DOS and MS-DOS. See the "Exit to MS-DOS" section of this manual on page 12.

V. EXIT TO MS-DOS

The user may either exit Trackstar from the HELP menu or by pressing ALT-ESC. These two methods are described here.

A. From the HELP MENU

1. Press <F1><ESC> from Trackstar to see the HELP Menu.
2. Type <X> and the following message will appear 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 PC RAM will be reserved for Trackstar. If there is not enough RAM, some difficulty may be experienced in running MS-DOS programs. In this case, restart the system by pressing the reset button or the <Ctrl><Alt> keys.

To return to the Trackstar mode from the MS-DOS mode, press <ALT><ESC>.

Which Number?

3. If Trackstar is to run in the background select option 2. In this case 40K of PC RAM memory will be reserved for the Trackstar Utility Program.
4. To return to the Trackstar mode while the MS-DOS program is running press <ALT><ESC>. This option allows the user to work with MS-DOS and Trackstar program simultaneously. This can cause problems if the MS-DOS program requires more than the available memory.
5. If the user returns to Trackstar after option 2 has been selected, then the option 2 selection is assumed for all subsequent exits to MS-DOS.
6. If option 1 was selected, no memory will be reserved for Trackstar. All of the PC memory will be available for the MS-DOS program. The user cannot return to Trackstar by pressing <ALT><ESC>. To return to Trackstar, the Trackstar Utility Program must be reexecuted.

B. By Pressing <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 after selecting <X> in the HELP Menu.

Once the Trackstar Utility Program is installed in the PC memory, the only ways to erase it are:

1. By pressing the **RESET BUTTON**
2. By pressing the <CTRL> <ALT> keys
3. By going to the Trackstar Help Menu and by selecting **OPTION X, OPTION 1.**

VI. SOFTWARE COMPATIBILITY

Trackstar is an excellent Apple IIe compatible computer. In some ways, (i.e. faster graphics and programmable function keys) Trackstar is much better. However, the user may find some programs which do not run. In this case, the following suggestions should be tried to increase the compatibility.

A. Software Options

1. Select the High Compatibility Option [B], from the **INITIALIZATION MENU**

Some graphics programs use Apple **FPBASIC** routines. For programs of this type selecting [B] from the **INITIALIZATION MENU** will solve the problem - see directions on page 6.

2. Select the **Apple II+ Mode**

This will solve the problem for programs which use abnormal **Apple Monitor ROM** entries - see details on page 11.

3. **Apple Diskette Compatibility**

Some copies of diskette may have been made using an Apple drive which is not well aligned. In this case try another back-up diskette which has been copied using a different Apple disk drive, or change the selected PC drive. For example, change from PC-Drive A to PC Drive-B as D1 of Trackstar, or vice-versa. See "SYSTEM CONFIGURATION" section on page 24.

B. Hardware Alternative

1. **Attaching an External Apple Compatible Drive**

If the software uses half track protection schemes, the MS-DOS drive cannot access the data from the diskette. Attaching an external Apple compatible drive will solve this problem. To install this drive see the directions on page 36, and for configuration details see page 24. This drive should be configured as D1.

2. The above suggestions will solve most of the problems.

VII. PROGRAMMING THE FUNCTION KEYS

Trackstar takes advantage of the function keys that are present on the PC keyboard. They are easy to program and wonderful to use. For example, instead of typing CATALOG each time it is needed, if <F3> has been programmed for this function, all the user needs to do is to press <F3>.

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. For example, if [1] is selected, the following screen will appear:

CURRENTLY DEFINED FUNCTION KEYS FOR SET 1

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

Please Select Command !

[M] Modify Function Key

[ENTER] Exit to Function Key Sets

3. There are 8 sets of function keys. Each set has seven available keys. Each key can accept up to 32 characters.

NOTE: F1, F2, F9 and F10 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 described above.
5. Pressing <M> causes the EDIT FUNCTION KEY menu to reappear. This time it is displayed with the addition of some modification commands, as follows:

CURRENTLY DEFINED FUNCTION KEYS FOR SET 1

- F3: CATALOG, D!^M
- 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

Enter Command:

6. Pressing the desired function key prepares it for modification. The selected character, words, or commands, 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 this menu.
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. Selecting the Current Function Key Set

1. Type <C> from the DISPLAY/MODIFY menu. The cursor will then move to the function key set number.
2. Type the number of the set to be selected.

C. Saving the New Programmed Key Sets

1. Once the desired modifications have been completed, press <ENTER> two times to return to the DISPLAY/MODIFY FUNCTION KEY SETS menu. Here one has the option to save the newly selected 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 eight (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 the PC.

[ENTER] To Save
[ESC] To Abort

Please Enter Command!

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

VIII. TRACKSTAR I/O's (Input/Output devices)

A. The Keyboard

The PC keyboard offers many keys which are not available on Apple II keyboards. There are, therefore, a few things to watch for:

1. Trackstar supports **upper** and **lower** case letters. Upper case letters are obtained by pressing either the shift key or the caps lock key in the same way as on the Apple IIe.
2. Many early Apple programs were not designed to support lower case letters. Therefore, when running one of these programs make sure the <CAPS LOCK> key is depressed.
3. <Open Apple> and <Solid Apple> keys are supported by using the PC's <F9> and <F10> function keys.

B. Game Port

Trackstar supports the game port which is either the bottom DB 9 connector or the 16 pin DIP Socket. An Apple compatible joystick can be connected to either port.

C. Printer (Parallel) Interface

1. Trackstar emulates the standard parallel printer interface card as if it is connected in Slot 1 of an Apple.
2. The printer should be connected to the printer port of the PC.
3. The Apple command PR#1 or IN#1 will initialize the printer. Most Apple programs do this automatically. Some programs have Setup Programs or Menus to allow the user to select the slot, interface card and printer. In this case, the user will need to set up the parameters in the same way as if the software were being run on an Apple computer. This should be achieved by setting or changing the parameters in the INSTAR program, see Section X, Page 24 for more details. When there is a printing problem changing some of these parameters will often solve the problem. Do not change the slot selection. This should remain as slot 1.

NOTE: Trackstar emulates this function through software and passes the printing information to the PC for printing. Some software which accesses the printer interface hardware directly will have printing problems. (This appears to be confined to some graphics programs.)

4. If the Tandy DMP 130 or DMP 430 printers are selected in the INSTAR program the user should select the Epson RX Series printers in the application software. If the RX series is not available then the Epson FX series should be chosen.

D. Serial Interface

1. The serial interface is normally used with two types of programs:
 - a. Communications programs, such as those that use the phone lines to access a database.
 - b. Serial interface printer.
2. Trackstar emulates this function through software and passes the information to the PC for execution.
3. This function is only available if the PC is equipped with as RS232C Option Board.
4. The Apple command PR#2 initializes the Apple software so that it will access the serial port of the PC.
5. To improve the performance most communication programs are written for specific hardware. Since Trackstar does not provide that hardware it may not work with some communication programs.

IX. THE FILE TRANSFER UTILITY

This utility program transfers files between Apple DOS 3.3 and MS-DOS files. It requires two (2) disk drives. It is provided on the Trackstar Utility diskette. This File transfer can only be achieved if an Apple DOS 3.3 Master diskette is used.

A. Introduction

1. Only Apple DOS 3.3 text or binary files can be transferred to MS-DOS. Other types of file will need to be converted to the binary or text mode prior to transferring.
2. Any type of MS-DOS files can be transferred to Apple DOS 3.3. After transferring, the new Apple files will be in either binary or text format.
3. At completion of the file transfer sequence the user will be prompted to insert the diskette and reboot the computer.

B. To Transfer Files

1. Boot the APPLE DOS 3.3 MASTER in TRACKSTAR MODE.
2. At the APPLE prompt, insert the Trackstar Utility diskette in Drive-D1.
3. Type BRUN FILE TRANSFER <ENTER.>.
4. The following menu will appear on the screen:

- FILE TRANSFER UTILITY V. x.x -
for Apple DOS 3.3 file

(c) Diamond Computer Systems Inc. 1986

ENTER SELECTION

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

Apple is the trademark of Apple Computer Inc.

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 then be transferred.

7. File Names

- a. The file transfer utility will accept invalid characters in the file names. Care should be taken to use only names that are valid for both operating systems during the transfer process. Normally this would be only alpha-numeric characters where the first character is an alpha character.

b. Apple DOS to MS-DOS:

The Apple filename will be converted into MS-DOS format.

- 1) MS-DOS filenames will be limited to a FILENAME.EX format.
- 2). Apple filenames can have up to 30 characters, so when they are changed into MS-DOS format the following changes will occur:
 - a) All characters past the eighth will be ignored.
 - b) If a period (.) is after the eighth character, a three character extension will be added, for example:
SUPERDUPERFILE becomes SUPERDUP
TESTFILE.APPLEDOS becomes TESTFILE.APP
 - c) Spaces are ignored, for example:
FILE TRANSFER UTILITY becomes FILETRAN
 - d) Illegal characters cause difficulties. Remove control characters, and /'s from the Apple names. If present they will cause an MS-DOS 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

To convert an APPLE DOS binary data file into an MS-DOS text file:

1. Apple application programs often store text and data files in binary format to save storage space and quicken access time.
2. To convert an APPLE DOS binary data file into an MS-DOS text file:
 - a. Transfer the APPLE binary file to MS-DOS mode using the File Transfer Utility.
 - b. Transfer the new MS-DOS file back to APPLE DOS as a text file. This will disassemble the file.
 - c. 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. SYSTEM CONFIGURATION

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. At the system prompt, type INSTAR <Enter>.
- c. The following menu will be displayed:

Currently Installed Parameters

- | | |
|------------------------------------|------------------|
| 1. Display monitor type ----- | Color monitor |
| 2. Serial port identification----- | COM1: 9600,N,8,1 |
| 3. Parallel printer port | |
| a. Port identification----- | LPT1 |
| b. Data length----- | 8 bits |
| c. Printer----- | EPSON SERIES |
| 4. Floppy disk drive assignment | |
| a. Drive 1 (D1)----- | Drive-A |
| b. Drive 2 (D2)----- | Drive-B |

Which option?

<Number> to modify
<S> to save and exit
<ENTER > to exit

B. Changing the System Parameters

1. Display Monitor Types:
 - a. Entering 1 will show this menu at the bottom of the screen:

Select monitor type:

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

- b. Select the number that corresponds to the type of monitor that is connected to the PC as follows:
 - 1) Color monitors are TTL RGB and use a DB9 connector.
 - 2) 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) Monochrome monitors are TTL monochrome monitors.

2. Serial Port Identification

Trackstar must know which serial port will be used for the output.

- a. Select 2 to get the serial port menu.
- b. The following options are then available:
 - 1) Select serial port
 - COM1 for PC computers with one serial port.
 - COM2 if COM1 is reserved for another special function.
 - 2) Select Baud Rate
 - a) 110 b) 150 c) 300 d) 600
 - e) 1200 f) 2400 g) 4800 h) 9600
 - 3) Select Parity
 - a) none b) odd c) even
 - 4) Select Data Length
 - a) 7 bits b) 8 bits
 - 5) Select Stop Bits
 - a) 1 bit b) 2 bits.

NOTE: For these items refer to the serial device manual.

3. 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. Select 3 to get the menu.

Select the PC parallel printer port identification for the 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 PC 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 change the data length to 7 bits.

Select the parallel printer data length:

- 1) 8 bits
 - 2) 7 bits
-

- c. Two printer options are available.

- 1) Epson Series
- 2) Tandy DMP 130 or 430

If the Epson series is chosen then the Epson RX printer driver, if available, should be selected in the desired software program. If the software does not offer this option select the Epson FX series. For most other printers select the Epson Series, however, if that does not work try selecting the Tandy DMP 130 or 430.

NOTE: Some programs allow the user to create a printer driver for specific functions or specific printers.

4. 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 2.
- b. All Apple programs are booted on drive 1.
- c. Should there be difficulty booting programs, with a two drive PC system, the location of drive 1 should be changed to Drive B.
- d. When an external Apple compatible drive is attached to Trackstar, it is recommended that it be designated as drive 1.

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 the Trackstar board is initialized.

APPENDICES

Appendix 1

Trackstar Board Installation for Tandy 1000 SX Computers

Pages 29 and 30 contain diagrams of the components that are part of the Trackstar system. These diagrams should be studied carefully before the installation process is begun, and subsequently throughout the process. Familiarity with each part will help significantly in installing this board.

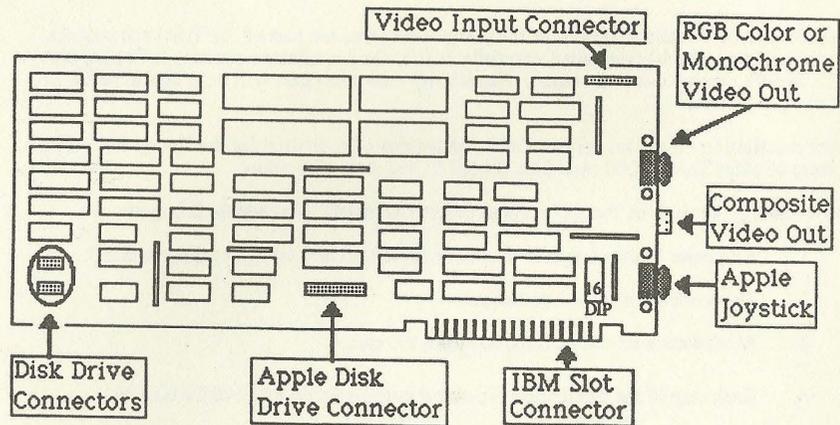
These installation directions for the Trackstar system were written for the Tandy 1000 SX. Owners of older Tandy 1000 machines should follow these directions.

The following precautions should be noted before the installation process is begun:

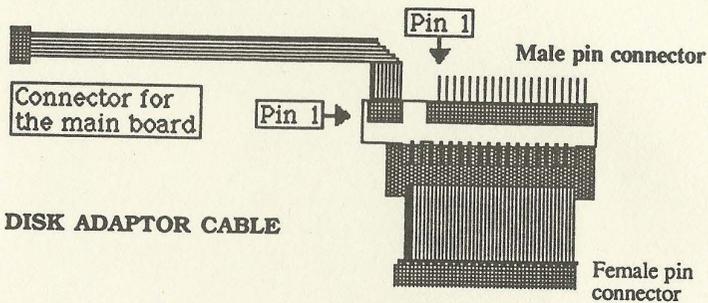
1. All power to the computer should be turned off and all cables disconnected.
2. The workspace should be clean.
3. All diskettes should be removed from the area.
4. Each step of the installation process should be followed **CAREFULLY**.

**Diagram of the Equipment Included
with the Trackstar 128 Board**

TRACKSTAR MAIN BOARD

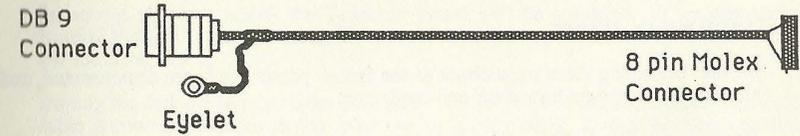


DISK ADAPTOR BOARD

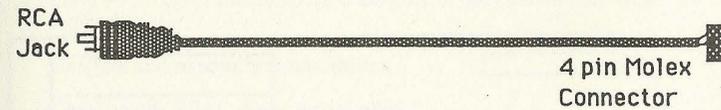


DISK ADAPTOR CABLE

RGB or MONOCHROME VIDEO CABLE



COMPOSITE VIDEO CABLE



CAPACITORS FOR TEAC DRIVES



NOTE: These capacitors are only included in the Trackstar packages that are designed for the Tandy 1000 SX computers. They are only needed in computers that use TEAC Disk Drives. These include the Tandy 1000 series and some other IBM compatible computers.

APPLE UNIDISK DRIVE CABLE

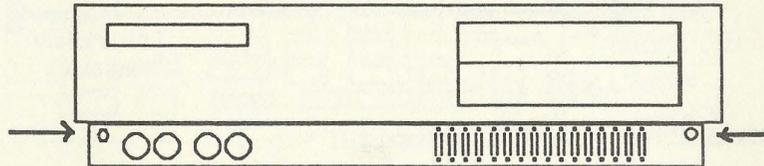
The Apple Unidisk Drive cable is optional. It can be obtained from Diamond Computer Systems, Inc.

THE INSTALLATION PROCESS

Pre-Installation Check

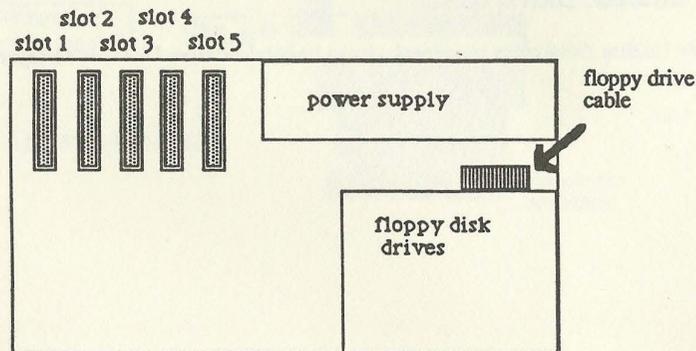
1. Before beginning these steps check to see that all power cords are disconnected, and all peripheral devices turned off and unplugged..
2. Remove the Tandy SX cover. This is attached by two screws on the front of the computer. When the screws have been removed the cover will slide forward.

Front View of the Tandy 1000



The following diagram should be used to help identify the various internal features of the Tandy 1000 SX.

Inside View of the Tandy 1000



Connecting the Disk Drive Cable

Select the slot into which the Trackstar board will be mounted. If an external Apple Unidisk[®] Drive is used, reserve the adjacent slot for the extra bracket that is required by the Trackstar board.

Unplug the disk drive cable from the Tandy 1000 disk drive interface card. The disk drive cable is connected to the mother board of the Tandy 1000. It must be disconnected from this board.

Installation Procedures

1. Remove the disk drive cable from the back of both the disk drives and the motherboard.
2. Unscrew and remove both disk drives.
3. Check which TEAC drives are installed.
4. Install the capacitors following the directions on pages 33 and 34.
5. Connect the disk drive cable to the disk adaptor card so that all PIN 1 indicators are lined up on the same side of the following:
 - the 10 pin ribbon cable
 - the disk adaptor cable
 - the disk adaptor card.
6. Insert the disk adaptor cable onto the motherboard so that all PIN 1 INDICATORS are facing the INSIDE of the computer.
7. Without twisting the cable, FOLD the disk drive cable over and connect the disk drive cable to the back of the disk drives.
8. The relocation of the cable will not change disk drive performance or location. There are jumpers on the back of the disk drives which identify the drives as DRIVE A or DRIVE B.
9. If this procedure is not completed correctly then, when the computer is turned on, both disk drive access lights will be lit at the same time.

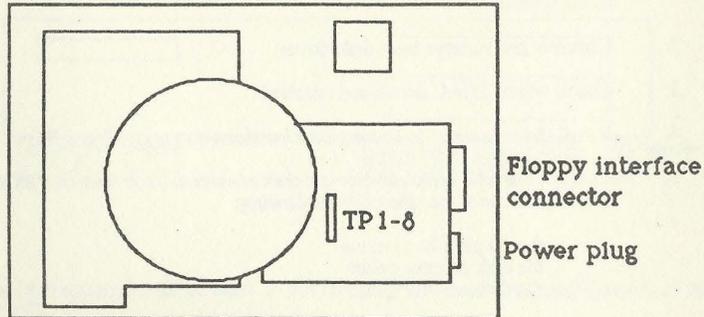
Installing Capacitors in the TEAC Disk Drives

Capacitors must be installed in computers which use TEAC disk Drives. These capacitors allow Apple diskettes to boot in a Tandy 1000 SX computer.

A. Installation in TEAC FD55BV-75-U Drives

These are the drives found in a Tandy 1000 SX computer.

1. Remove the screws that hold the disk drives to the chassis.
2. Remove the interface cable located on the back of the drives.
3. Slide the disk drives forward and out of the chassis.
4. Turn the disk drives over and locate TEST PINS 1-8 (TP 1-8).
5. Connect the capacitors between TP4 and TP5 on both drives.
6. Return the drive to the chassis, reconnect the power plug and interface cable.
7. Reinsert the mounting screws, tighten and secure the drives to the chassis.



B. Installation in TEAC 55BV-06 Disk Drives

1. Remove the screw that secure the drives to the chassis.
2. Remove the power plug and interface cable.
3. Remove the drives from the chassis
4. Turn the drives over and locate the TEST PIN.S (TP 1-8)...
5. Install the capacitors between TP5 and TP6
6. Reinstall the disk drives

C. Installation in TEAC FD-54B-02-U Drives

1. Remove the screws that secure the drives to the chassis.
2. Remove the power plug and the interface cable.
3. Remove the drives from the chassis.
4. Locate the TEST PINS (TP 7 - 10, G).
5. Install the capacitors between TP 7 and TP8.
6. Reinstall the disk drive.

NOTE: These are the drives that were installed in the older Tandy 1000 computers.

D. Installation in Other TEAC 55B Disk Drives

1. Remove the screws that secure the drive to the chassis.
2. Remove the power plug and the interface cables.
3. Turn the disk drive over and locate the custom I.C. TEAC 7358-00. Just above the I.C. are the TEST PINS (TP 1 - 8).
4. Install the capacitors according to the following table:

Drive #	Test Pins
FD 55b 01 LL	7 and 8
FD 55BV 221 - U	4 and 5
55BV - 06 - U	4 and 5

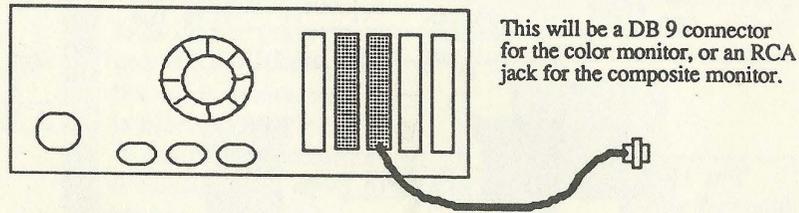
5. Reinstall the disk drive.

NOTE: TEAC disk drive model identification is to be found on the rear of the disk drive unit.

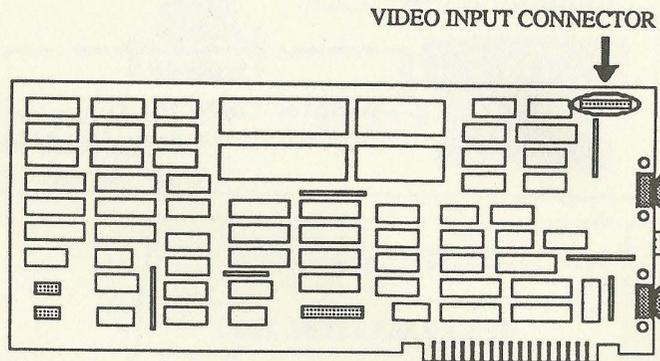
Connecting the Video Cable to the Tandy 1000 SX

1. Select the video cable that matches the chosen monitor:
 Color or TTL Monochrome Monitor: RGB or Monochrome Video Cable
 Composite Monitor: Composite Video Cable
2. Feed the molex connector of the video cable through the opening of the expansion slot in the rear of the Tandy 1000SX.

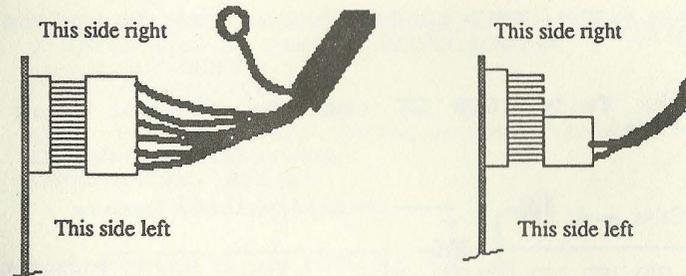
Rear View of the Tandy 1000 SX



3. Connect the molex connector of the selected video cable to the Video Input Connector on the main Trackstar board as shown below.



Top View of the Tandy Video Input Connector



This connection is used when an RGB color monitor or a TTL monochrome monitor is attached. It is important that care be taken with the connector polarization. The female connector has been modified to fit one way only.

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

4. The Trackstar board should be installed into the selected expansion slot.
5. The Video cable should be inserted through the bottom hole of the bracket. The diagrams below show the inside of the Tandy 1000SX after installation.
6. Slot selection will depend on the following
 - Ease of installation
 - The length of the cable.
7. Secure the grounding eyelet on the video cable to the chassis. This is done using the mounting screw for the Trackstar Board. Put the screw through the eyelet and then secure the Trackstar board to the chassis, see Fig. 1.

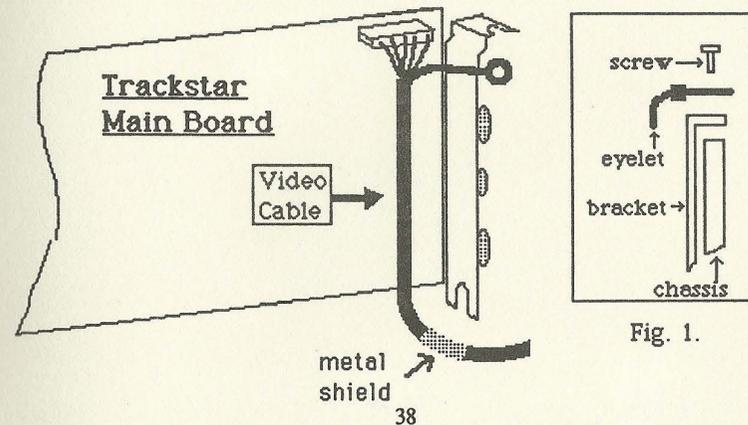
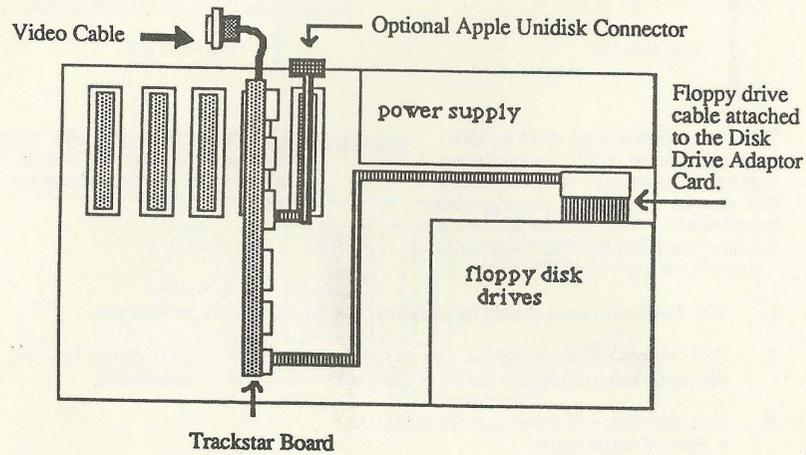


Fig. 1.

8. The metal shield should be threaded through the opening in the bottom of the Trackstar mounting bracket. This provides some relief to the strain on the cable and also gives another grounding point.

The following diagram illustrates how the Trackstar board looks after installation in a Tandy 1000 SX.

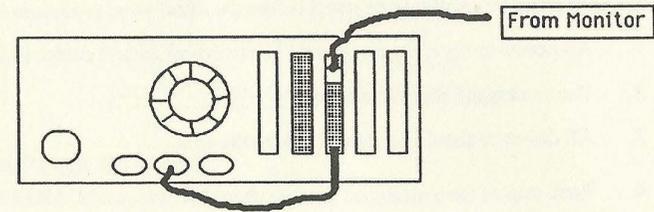
Inside the Tandy 1000 SX after the Trackstar Board has been installed



Connecting the Video Cable to the Tandy 1000 SX

1. Connect the video cable that is threaded through the Trackstar mounting bracket to the right port on the back of the Tandy 1000 SX, as follows:
Color Monitor - RGB Port
Composite Monitor - Video Port.
2. Connect the monitor cable to the right Trackstar video port, as follows:
Color Monitor - top DB-9 connector
Composite Monitor - RCA jack.

Rear View of the Tandy 1000 SX



Appendix 2

Trackstar Board Installation for IBM PC Computers

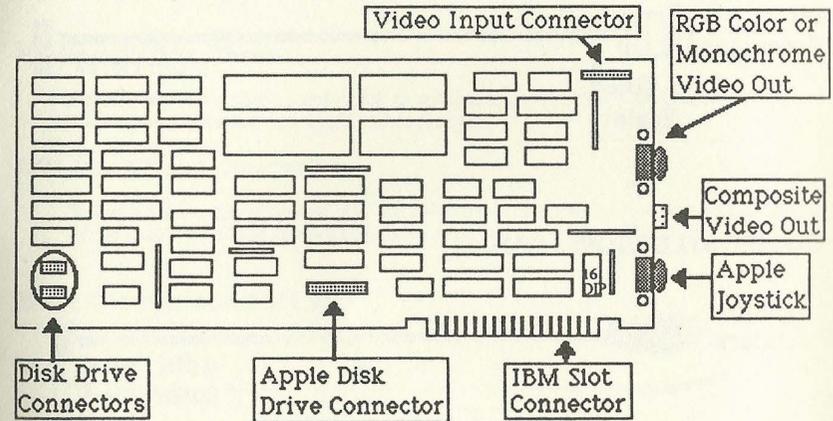
Pages 42 and 43 contain diagrams of the components that are part of the Trackstar system. These diagrams should be studied carefully before the installation process is begun, and subsequently throughout the process. Familiarity with each part will help significantly in installing this board.

These installation directions for the Trackstar system were written for the IBM PC family of computers.

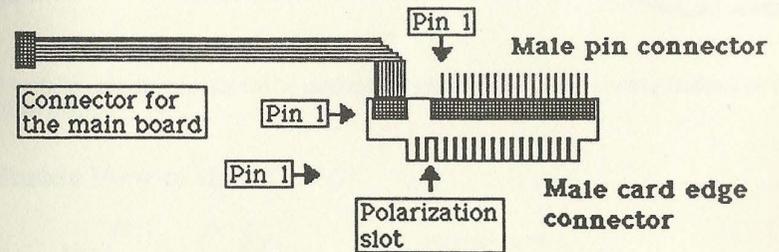
The following precautions should be noted before the installation process is begun:

1. All power to the computer 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**.

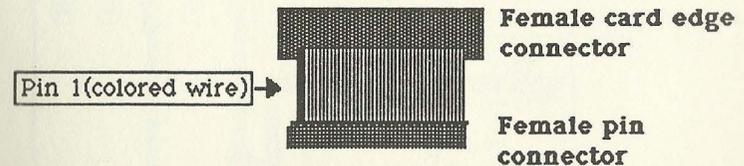
TRACKSTAR MAIN BOARD



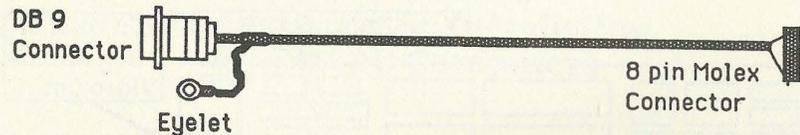
DISK ADAPTOR BOARD



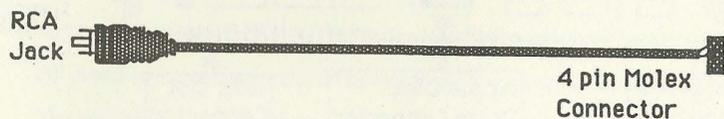
DISK ADAPTOR CABLE



RGB or MONOCHROME VIDEO CABLE



COMPOSITE VIDEO CABLE



APPLE UNIDISK DRIVE CABLE

The Apple Unidisk Drive cable is optional. It can be obtained from Diamond Computer Systems, Inc.

THE INSTALLATION PROCESS

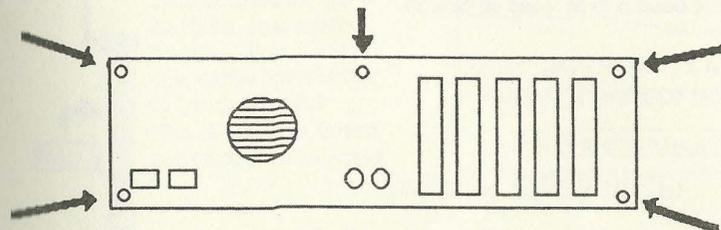
Pre-Installation Check

Before beginning these steps check to see that all power cords are disconnected, and all peripheral devices turned off and unplugged.

IBM PC, XT and Compatibles

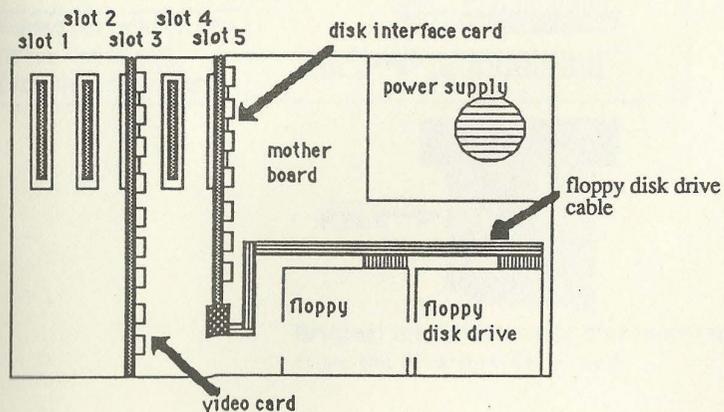
Remove the computer cover. On the IBM this is attached by five screws on the rear of the case. When the screws have been removed the cover will slide forward.

Rear View of the IBM PC



The following diagram should be used to help identify the various internal features of the IBM PC.

Inside View of the IBM PC



Connecting the Disk Drive Cable

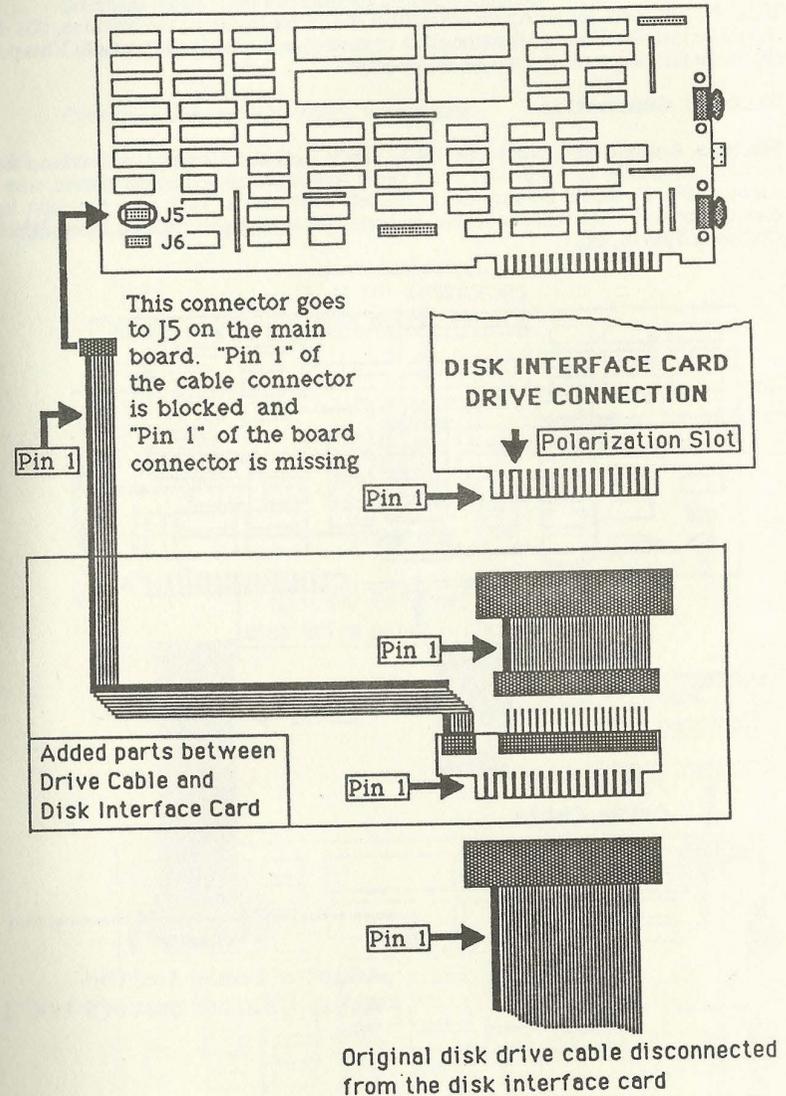
Select the slot into which the Trackstar board will be mounted. If an external Apple Unidisk[®] Drive is used, reserve the adjacent slot for the extra bracket that is required by the Trackstar board.

Unplug the disk drive cable from the PC disk drive interface card. If the disk drive cable is connected to the mother board of the PC, it must be disconnected from this board.

Two different types of connectors are used. One is a card edge connector, the other a pin connector. The type of connector which is used will determine how the Disk Drive Adaptor Card and the cables are to be connected. Page 46 shows the connections to be made for the card edge connector. For computers that use a pin edge connector a diagram of this type of board is to be found on page 35.

Card Edge Type Disk Interface Card

Note: Assemble the disk drive adaptor card first.



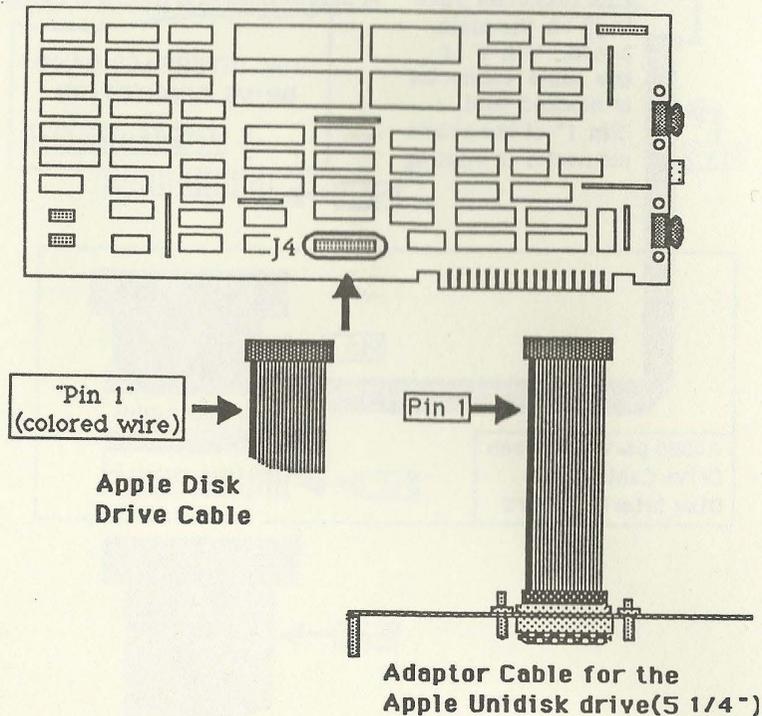
Attaching the Optional Apple Disk Drive

Internal Connection

If the PC has room for an Apple compatible disk drive inside of the machine, this drive should be installed first and then the cable connected to the Trackstar port, J4. This port is shown on the diagram in the middle of this page.

External Connection

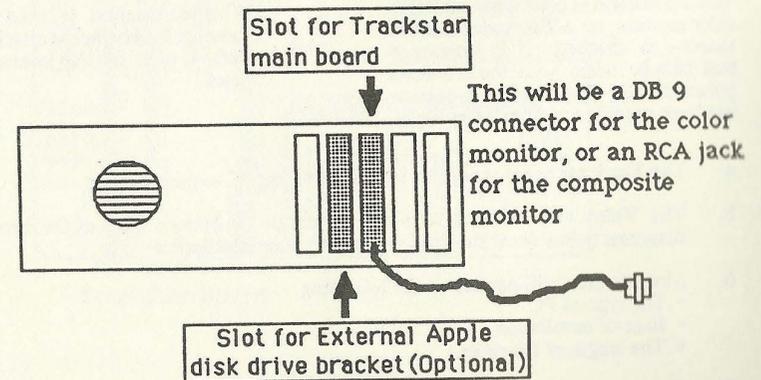
When an Apple Unidisk drive (5 1/4"), which uses the 19 pin D-sub connector, is installed externally an Apple disk drive cable adaptor is needed. The colored wire that denotes "Pin 1" should be attached to the left hand side as shown on the right in the diagram below. The adaptor cable is optional and can be ordered from Diamond Computer System, Inc.



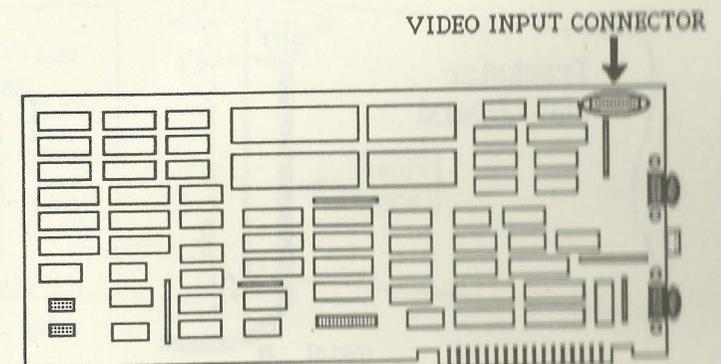
Connecting the Video Cable to the IBM PC

1. Select the video cable that matches the chosen monitor:
Color or TTL Monochrome Monitor: RGB or Monochrome Video Cable
Composite Monitor: Composite Video Cable.
2. Feed the molex connector of the video cable through the opening of the expansion slot in the rear of the IBM PC.

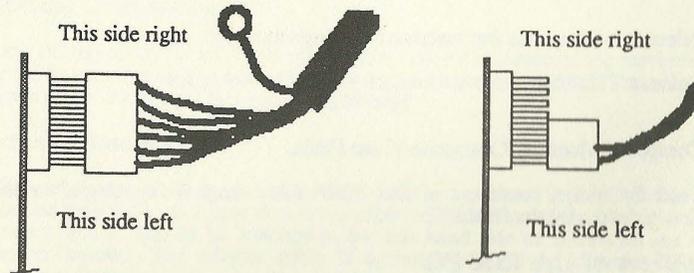
Rear View of the IBM PC



3. Connect the molex connector of the selected video cable to the Video Input Connector on the main Trackstar board as shown below.



Top View of the IBM Video Input Connector



This connection is used when an RGB color monitor or a TTL monochrome monitor is attached. It is important that care be taken with the connector polarization. The female connector has been modified to fit one way only.

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

4. The Trackstar board should be installed into the PC expansion slot
5. The Video cable should be inserted through the bottom hole of the bracket. The diagrams below show the inside of the PC after installation
6. Slot selection will depend on the following
 - The type of PC
 - Ease of installation
 - The length of the cable
7. Secure the grounding eyelet on the video cable to the chassis. This is done using the mounting screw for the Trackstar Board. Put the screw through the eyelet and then secure the Trackstar board to the chassis, see Fig. 1.

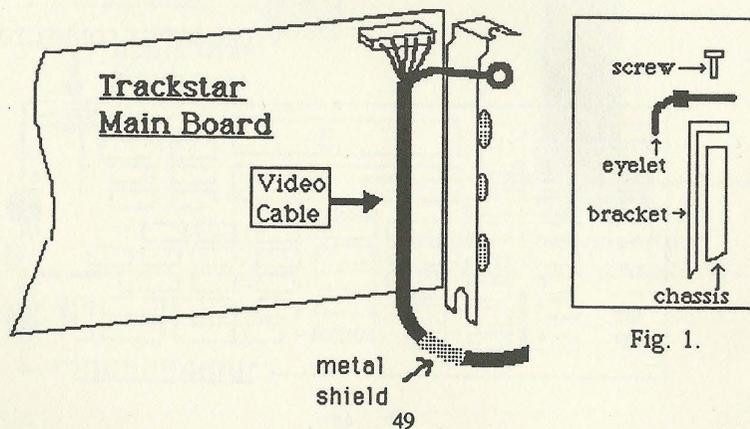
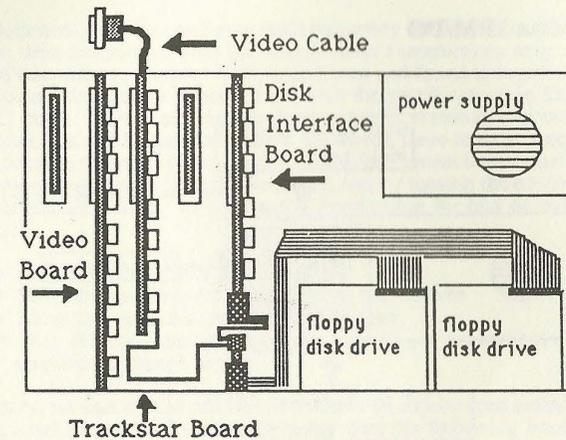


Fig. 1.

8. The metal shield should be threaded through the opening in the bottom of the Trackstar mounting bracket. This will provide some relief of the strain on the cable and also gives another grounding point.

The following diagram illustrates how the Trackstar board looks after installation in an IBM PC.

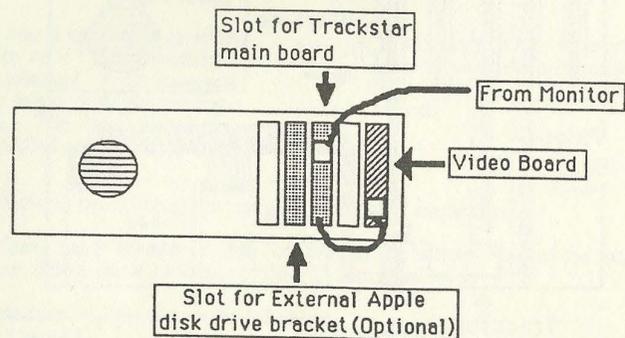
Inside the IBM PC After the Trackstar Board is Installed.



Connecting the Video Cable to the IBM PC

1. Connect the video cable that is threaded through the Trackstar mounting bracket to the VIDEO BOARD.
2. Connect the MONITOR CABLE to the right Trackstar Video Port, as follows:
Color Monitor - top DB-9 connector
Composite Monitor - RCA Jack.

Rear View of the IBM PC



Warning

"This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only computers certified to comply with the Class B limits may be attached to this equipment. Operation with noncertified computers is likely to result in interference to radio and TV reception."

"This equipment generates and uses radio frequency and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of the FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock NO. 004-000-00345-4.

"It is necessary to use shielded interconnect cables to insure compliance with FCC Class B limits for radio frequency emissions."