Trackstar Plus

Addendum

DIAMOND
Computer Systems, Inc

APPENDIX C:

Trackstar Installation for PS/2 Model 30/286

These installation directions are written for the **PS/2 Model 30-286** only.   Owners of **PS/2 Model 25** should use diections in Appendix A.   Owners of **PS/2 Model 30** or **PC/AT** using **VGA** monitor should use Appendix B.

This section contains diagrams of the components that are used for installation.   These diagrams should be studied carefully both before and during the installation process.   Familiarity with each part will help significantly in installing the board.

Before you begin installation, the workspace should be clean and neccessary parts and tools should be available. Please observe the following precaution :

   • **All power to the computer must be turned off.**

Each step of the installation should be followed carefully.

Equipment Used for the PS/2 Model 30/286.

The following parts are used for the Model 30/286. (figure 1 and 2) Parts not shown in these figures are not used for this installation.
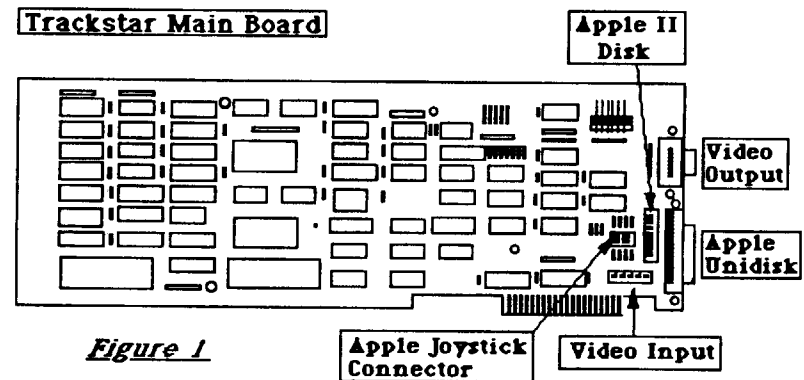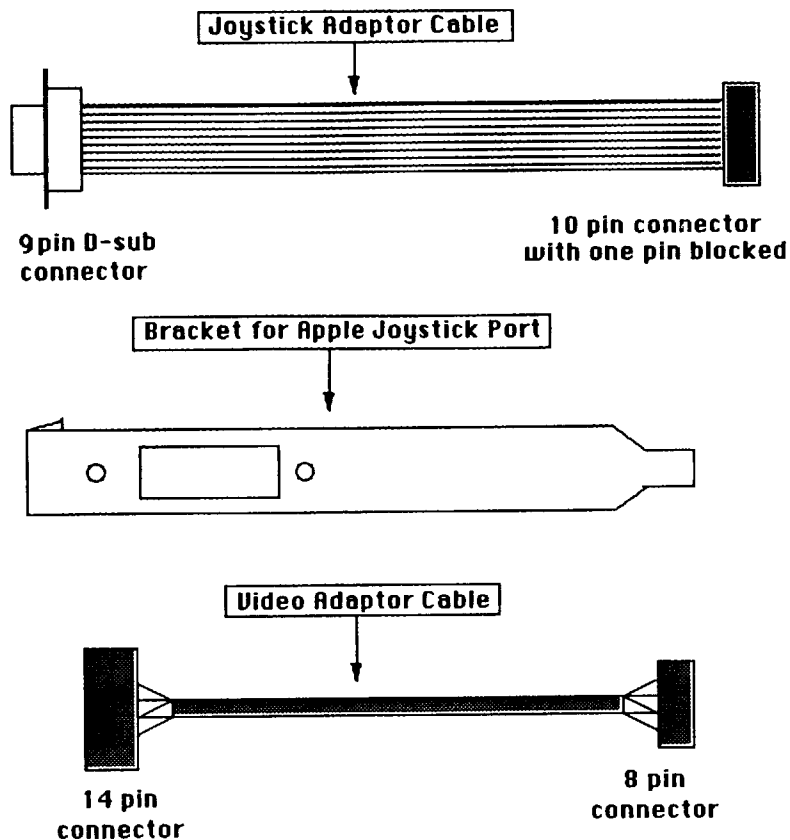

| Trackstar Main Board | Apple II Disk | Video Output | Apple Unidisk |

Figure 1 | Apple Joystick Connector | Video Input |

Joystick Adaptor Cable

9 pin D-sub
connector

10 pin connector
with one pin blocked

Bracket for Apple Joystick Port

Video Adaptor Cable

14 pin
connector

8 pin
connector

Figure 2

Installation Procedure

Remove the PS/2 Model 30/286 cover to expose the computer's
main system board. (see figure 3)

Power Supply

Disk Drive

"A"

Disk Drive

Video extension cable
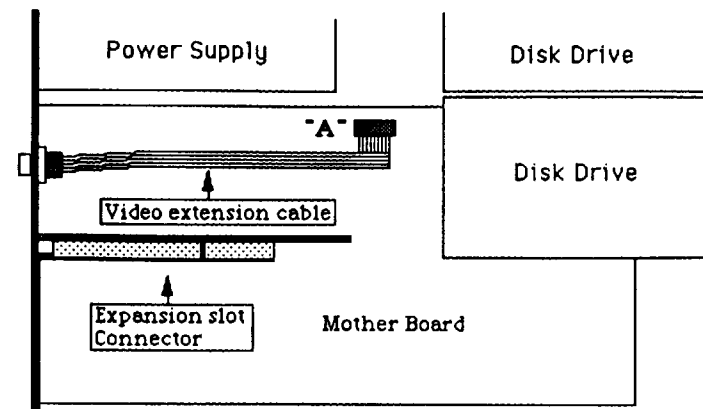
Expansion slot
Connector

Mother Board

Figure 3

Installing the Trackstar board and Video Adaptor Cable:

1. Disconnect the Video extension cable from the mother board.
   (figure 3, point "A") This cable may be taken completely from
   the machine by removing the screws on the rear side of the
   computer, or simply left unplugged from the mother board.

2. Use the PS/2's middle expansion slot for the Trackstar board,
   and the top slot for the Apple joystick port. Remove the
   endplates from these slots.

3. Plug the Trackstar board into the middle expansion slot and
   fasten it down with the endplate screw.

4. Connect the Video Adaptor cable (see figure 2) between the
   video extension cable connector (figure 3, point "A") and the
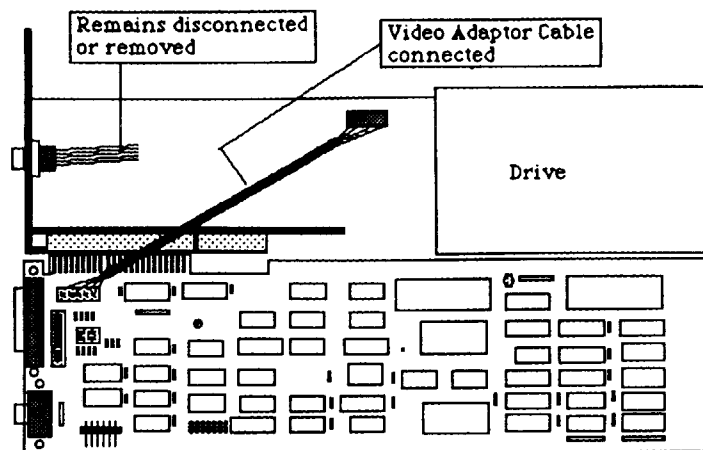   Video Input Connector(J4) on the Trackstar Board.(see figure 4).

Remains disconnected or removed

Video Adaptor Cable connected

Drive

Figure 4

Connecting an Apple Joystick Port:

1. Attach the Joystick Adaptor Cable (see figure 2) to the endplate as shown in figure 5.

Joystick Adaptor Cable
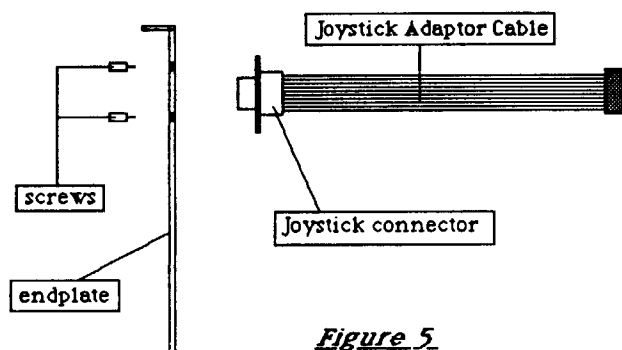
screws

Joystick connector

endplate

Figure 5

2. Connect the joystick adaptor cable to the J11 connector on the Trackstar board as shown below. Pin 10 of the cable connector is blocked, and pin 10 of the board connector is missing to ensure proper alignment.
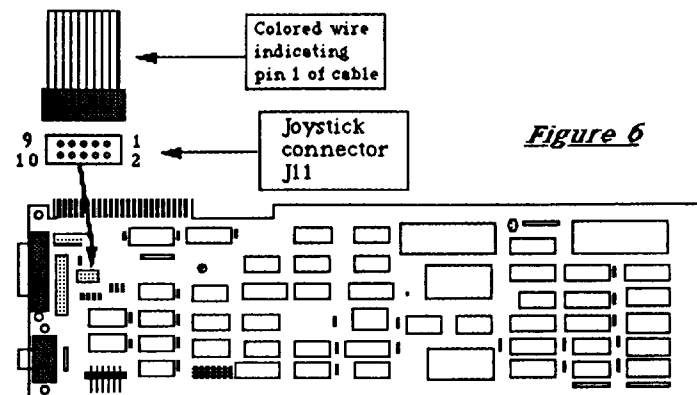

Colored wire indicating pin 1 of cable

Joystick connector J11

Figure 6

3. Attach the Apple Joystick Cable and endplate to the top expansion slot. If the PS/2 video expansion cable is completely removed, the joystick connector plug may be attached directly to the case in place of the PS/2 video connector.

Connecting an Apple Disk Drive:

Note: Only one Apple disk drive may be attached to the Trackstar board. If two are attached, both will be non-functional.
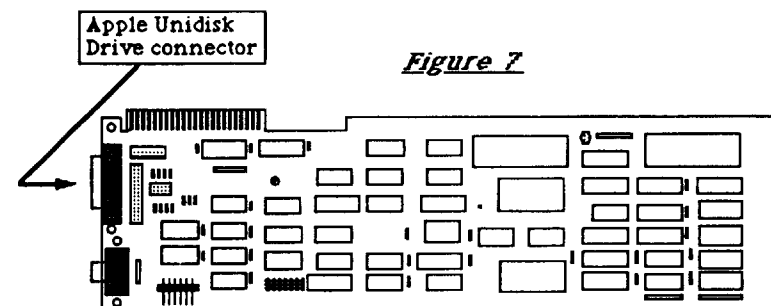
1. Attaching a 5 & 1/4" Unidisk style drive

Apple Unidisk Drive connector

Figure 7

If the Unidisk style drive is used, it should be connected after the Trackstar board is fully installed.

2. Attaching a 5 & 1/4" Apple Disk II style drive. (See figure 8)

If the Apple Disk II style drive is used, it is easier to connect the drive before the Trackstar board is plugged into the slot. Pin 1 of the cable, which is normally a blue or red-colored wire, should match up with pin 1 of J2 on the Trackstar board. (see figure 8)

Note: Connecting this cable in incorrectly may result in damage to the computer, disk drive, or the Trackstar board
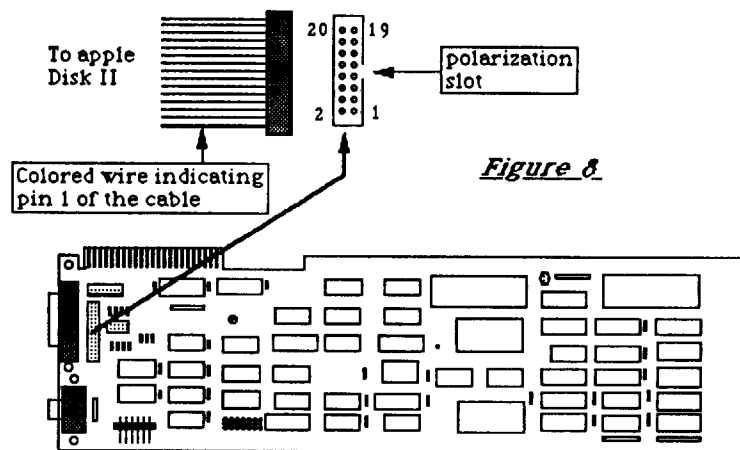
Figure 8

Connecting Outside Cables:

Connect devices to the following connectors: (see figure 9)

P1: Display Monitor
P2: Apple Joystick (optional)
P3: Apple Unidisk Drive (optional)
P4: Parallel Communication Device (optional)
P5: Serial Communication Device (optional)
P6: Keyboard
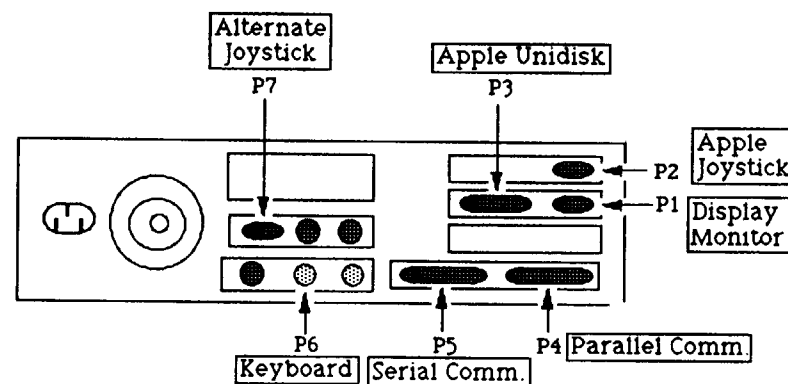
Rear view of PS/2 Model 30/286

Figure 9

Installing the Cover:

Install the cover on the PS/2 Model 30/286 and re-attach the mounting screws.

The hardware installation is complete.

Appendix **D**:
Education and Networking

This appendix is included as a general guide to the use of Trackstar in a hard disk or network environment. It addresses in more detail areas of specific interest to the network user. Several special features unique to educational and network operations are explained here.

The new Trackstar from Diamond Computer Systems contains some additional features that make it especially useful in an educational or network environment. With it you can:

- Store and run Apple programs from a local hard disk or remote file server.

- Run both Apple and MS-DOS programs from a central menu. (without requiring an additional special sub-menu for Apple software).

- Provide a uniform interface for choosing either Apple or MS-DOS programs.

- Provide floppy diskette support for student data files.

- Bypass Trackstar screen prompts and menus for expert users.

- The Trackstar is supported by mostl educational network environments.

The Network Advantage

Networking a lab of computers has several advantages over floppy or stand alone hard disk installations. A network allows the student to be station-independent. Wherever a student chooses to sign in becomes his or her computer, with all of the student's resources and files remotely attached to that computer by the network.

In a network environment, the hard disk capacity is shared among all users as needed. The network manager can manipulate or control the use of storage space to the best advantage. Data on the File Server can be protected from unauthorized alteration or deletion. Trackstar can store Apple disk images on floppy, hard disk, or network volumes with equal ease.

Most network software can provide a menu system to access application software. All the user needs to know is what software is wanted and how to select that software. Knowledge of the computer and its inner workings is no longer necessary. Advanced networks provide a menu environment for teachers and students. The teacher may use menus and a 'fill in the blanks' approach to create a course of study for all students, each class, each student, or any combination of these. The students use menus to access the software the teacher has given them access to. Trackstar and Apple software products are available to your students as easily as MS-DOS products are.

Taking advantage of these new features involves some careful pre-planning. Please be sure that you have read the Trackstar or Trackstar Plus User's Manual and become familiar with the operation of your Trackstar before attempting a network installation. The sections in the Users manuals entitled Diskettes in Detail and Important Concepts are especially important.

A thorough understanding of the particular network in use at your site and the proper method of installing MS-DOS application programs on it is also essential.

A Brief Review - TrackStore

Let's take a moment to review how the Trackstar stores Apple information on an MS-DOS floppy, hard disk or network file server.

As you will remember from the chapter on Diskettes in Detail in the Trackstar Users Manual, Apple software is stored on an MS-DOS disk drive as a series of diskette images called TrackStore files.

Apple diskettes are copied onto an MS-DOS volume using the Disk Conversion Utility contained in the TSUTILITY program supplied with your Trackstar.

The Trackstar Disk Conversion Utility accomplishes this in two

steps. First, a 266Kb file is opened under MS-DOS. Second, the contents of an entire Apple diskette are read (or copied) into this MS-DOS file.

To MS-DOS, this file contains a collection of random seeming numbers. The file can be copied, renamed, archived, or deleted just as any other MS-DOS file. When the file is examined by the Trackstar system these "random' numbers again appear as readable Apple programs and data.

TrackStore diskettes can be identified under MS-DOS as files with a suffix of **.APP**.

AWORK1.APP	(contains AppleWorks boot disk)
AWORK2.APP	(contains AppleWorks program disk)
SSUB.APP	(contains Space Subtraction disk)
PRODOS.APP	(contains ProDOS Utility disk)
STKBAR.APP	(contains a "Stickybears" disk)

are all examples of Track*Store* files. Of course, you can name them anything you want. An abbreviated directory of your MS-DOS hard disk might look like the one in Figure 1.

```
C:>DIR C:

C:     COMMAND.COM
       CONFIG.SYS
       AUTOEXEC.BAT
       other root directory files...
       /DOS  (sub-directory containing ms-dos files)
               Miscellaneous MS-DOS files...
       /WORDSTAR (sub-directory for Wordstar)
               Wordstar program and data files...
       /STAR   (sub-directory for Trackstar files)
               STAR.COM
               STAR.SYS            Trackstar programs
               TSUTILITY.COM
               FILETRN.APP         assorted Track Store files.
               STKBAR.APP
               AWORK1.APP
       /OTHER SUBDIRECTORIES...
```

Figure 1

For the purpose of using the Trackstar with a hard disk or network

system these Track*Store* diskettes may be used in exactly the same fashion as an Apple floppy diskette.

A Brief Review - Booting an Apple Disk

Slots and Drives

Before you attempt to access a library of Apple programs from your MS-DOS hard disk you should understand how an Apple computer boots a disk.

Apple computers use a different method of identifying disk drives than you may be used to under MS-DOS. The location of a particular Apple diskette is specified by its **SLOT** and **DRIVE** numbers rather than a designation such as A:, B:, or C:.

Let's look at this in more detail:

Like an MS-DOS machine, the Apple computer has a series of electrical SLOTS inside its case where peripheral cards may be added. Each peripheral card is known by the slot number (0-7) in which it was inserted. For example, a particular Apple might have two printer cards; one in SLOT# 1 and one in SLOT #2. The program would indicate which printer was to be used by directing output to a specified slot. It might do this using the printer commands PR#1 or PR#2.

Similarly, the disk controller card(s) are also located in specific slots. Each controller card can have one or two disk drives attached to it. By convention, the first disk controller card is placed in slot #6, the second controller, if present, is placed in slot #7. Thus, an Apple diskette in a drive might be addressed as Slot 6, Drive 1; Slot 6, Drive 2; Slot 7, Drive 1; or Slot 7, Drive 2. This is often abbreviated as: S6, D1; S6, D2; ...

When an Apple computer is turned on it will always start by running the program on the diskette in Slot 6, Drive 1 (S6, D1).

Since your MS-DOS computer does not have "SLOT" and "DRIVE" numbers of it's own, the Trackstar Disk Configuration program is used to assign an Apple slot and drive number to each MS-DOS volume that will be used with Apple programs (see *Configuring the Software* in your Trackstar Users Manual).

Figure 2

Apple Floppy Drives

Slot 6,D1 — Boot Drive   Slot 6,D2 — Data Drive
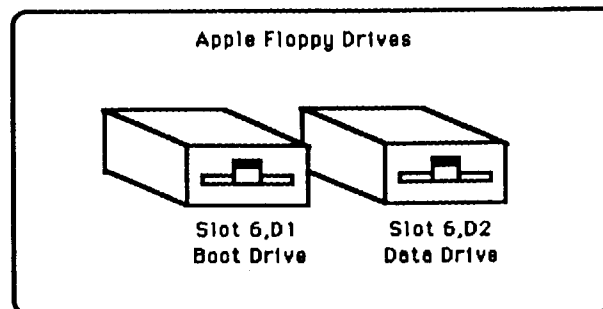
The Trackstar will start by running the Apple program located in the MS-DOS volume assigned as Apple drive S6, D1.

Your Trackstar can read Apple software in either of two formats: either from an actual Apple format diskette, or in Track*Store* format as described above.

Apple-Ready Disk Drives

5.25 inch Apple formatted diskettes may only be read from an Apple compatible disk drive or an "Apple-ready" MS-DOS 360K disk drive.

"Apple-ready" is used to describe an MS-DOS 360K drive that is compatible with Apple formatted diskettes or has been modified to make it compatible with Apple diskettes.

An "Apple-Ready" 360K drive is capable of reading both Apple formatted diskettes and MS-DOS diskettes (or Track*Store* files), although not at the same time.

Most, but not all, MS-DOS 360K floppy disk drives are compatible with Apple software.

Disk drives known to be incompatible with Apple media are listed below:

Mitsubishi	(all drives)
Fujitsu	(all drives)
EPSON	(621L only)
Chinon	(FZ-502 only)
TEAC	(all drives- see note*)

All other MS-DOS 360K disk drives may be considered to be Apple-ready.

Master Stations

Every Trackstar installation, whether stand-alone, lab, or network, needs at least one *Master Station*. A Master Station is an MS-DOS computer, with Trackstar, that has at least one floppy drive that can read Apple media.

The Trackstar manual describes the Master Station and its use. It is probably the only computer that will use Apple diskettes. You will find it most efficient and convenient, even with floppy disks, to move the Apple software into MS-DOS Track*Store* files.

There are two ways to create a Master Station. The first is to connect an Apple compatible floppy drive to the Trackstar (internal or external). The second is to have an Apple-ready MS-DOS 360K drive installed by your dealer. In addition to making the drive Apple-ready (if necessary), the dealer will establish a connection between the Apple-ready drive and the Trackstar.

The Master Station is now able to copy Apple disk images onto MS-DOS floppies, hard disk, and network volumes so that Trackstar stations on other computers can use the same software in a more economical way. It also allows the software to be copied with MS-DOS COPY or DISKCOPY commands and distributed on MS-DOS floppies.

if you have chosen software that is copy protected, you may have to install an entire room of Master Stations. In an extreme case you may need an Apple or Apple compatible drive for every station. This will be determined by your choice of software. In either case you may still share, via the network, other Apple software that is not protected.

Before copying any software to an MS-DOS (TrackStore) disk, you should read the copyright notice accompanying the original software. Most publishers allow duplication to a hard disk for personal use by the purchaser; this may not be true in all cases. A site-license may be required before copying programs to a file server that many individuals have access to. It is the responsibility of the
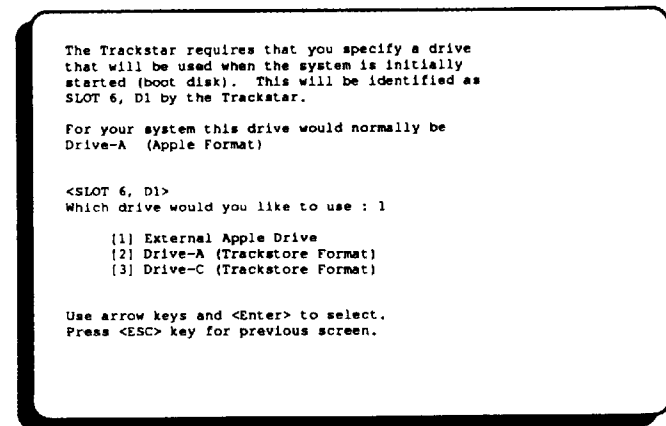
user to comply with all applicable copyright laws.

Configuring the Trackstar for the Hard Disk/Network

The TSUTILITY program supplied with your system is used to specify where on your system the Trackstar will look for Apple programs.

Figure 3 is a sample screen from the Disk Configuration section of the TSUTILITY program.

Figure 3


```
The Trackstar requires that you specify a drive
that will be used when the system is initially
started (boot disk).  This will be identified as
SLOT 6, D1 by the Trackstar.

For your system this drive would normally be
Drive-A  (Apple Format)


<SLOT 6, D1>
Which drive would you like to use : 1

      [1] External Apple Drive
      [2] Drive-A (Trackstore Format)
      [3] Drive-C (Trackstore Format)


Use arrow keys and <Enter> to select.
Press <ESC> key for previous screen.
```

This screen is where you choose the drive that will be regarded as Slot 6, Drive 1 on your system.

As we have just seen, Slot 6, Drive 1 is the drive that contains the disk from which an Apple computer is booted.

Let's look at the possibilities:

If you choose **[1] External Apple drive** as your boot drive, the Trackstar will look for the external Apple drive attached to your machine. The system will then be started from the Apple diskette located in that drive.

If you choose **[2] Drive A: (Trackstore format)** the Trackstar will look at the diskette in drive A: for one or more MS-DOS files with the suffix **.APP.** If such a Track*Store* file is found, the name(s) will be displayed and you may select the one to use. The system will start from the Track*Store* diskette selected.

If you choose **[3] Drive C: (Trackstore format)** The Trackstar will look on the hard disk (or file server) for Track*Store* diskettes. Any Track*Store* files in the current subdirectory will be listed and you may select the one to start from. Note: Any drive C: through Z: may be used as the hard drive.

Additional screens in the TSUTILITY program allow you to configure the drive assignments for S6, D2; S7, D1; and S7, D2. Refer to the Trackstar User's Manual if necessary.

Large ProDOS volumes

As described in the Trackstar Users Manual, the Trackstar also supports two "Apple // hard disk images". These ProDos volumes are specialized versions of the Track*Store* disks described above. A ProDOS volume is created on the MS-DOS hard disk or network with the Trackstar Utility program and behaves as if it were an Apple compatible hard disk attached to an Apple computer. Up to two ProDOS volumes can be created with up to 10Mb of space in each. The volumes are considered to be attached to Slot 7, D1 and Slot 7, D2 respectively.

The large ProDOS volumes are accessed in the same fashion as standard Track*Store* diskettes. These disks will be accessed just as if they were hard disks attached to an Apple computer. Refer to your *ProDOS Users Manual* for details on hard disk setup.

Under MS-DOS these files are referred to as PRODOS.HD1 and ProDOS.HD2.

Bypassing the Trackstar Menus

The Trackstars default mode of operation, when the command **STAR** is typed, will first prompt for the location of a boot volume and then display a list of available programs on the selected volume. The user may then choose from that list the Apple program to be run.

Trackstar software version 1.4 or later incorporates a new feature that can be used to simplify network use.

As described in the review of Track*Store* above, Track*Store* files have the form **NAME.APP.** where NAME is assigned by the user when the file is created and .APP is added by the Trackstar software.

With the new revision of the software, Apple programs may be run directly from the MS-DOS prompt using the following command:

	STAR <NAME1.APP>
or	**STAR <NAME1.APP> <NAME2.APP>**
or	**STAR <PRODOS.HD1>**
or	**STAR <PRODOS.HD1> <NAME1.APP>**
or	**STAR <PRODOS.HD1> <NAME1.APP> <NAME2.APP>**

Where NAME1.APP is a Track*Store* disk on the volume assigned as S6, D1 and, NAME2.APP is a Track*Store* disk on the volume assigned as S6, D2.

When you type this command from MS-DOS, the specified Track*Store* files are inserted into their respective volumes and the Trackstar system is booted.

If PRODOS.HD1 is present in the command, the system will boot from S7, D1. PRODOS.HD1 must be the first name in the command list.

If the specified Track*Store* file is not found on the MS-DOS volume the user will be asked to choose a new name from a list of available Track*Store* files.

If you specify a Track*Store* disk name for a volume configured as "Apple format" the assignment will be ignored.

This method bypasses all of the Trackstar menus. and allows a single MS-DOS menu system to load and run both MS-DOS and Apple programs without special knowledge or action by the user.

Most network menu programs allow the system manager to specify a command sequence like the one described above. If this command-argument structure is not supported on your network the command sequence can be placed in a batch file and executed with a call to the batch file name.

Choosing your Configuration

When adding Trackstar capability to a network or hard disk you must decide where on the system you will keep your Apple programs and where you will store the data files. The requirements of the network program may influence this decision.

As an example, let's look at the most common Trackstar installation in a network or file server:

• All Trackstar files and Apple programs are stored on the hard disk or network in the same subdirectory. Apple programs have been previously converted to Track*Store* files on a Master Station.

• The hard disk or file server is configured as S6, D1. The Trackstar will look there for an Apple program to boot.

• The local floppy drive A: (either Apple or Track*Store* format) is configured as S6, D2. Many Apple programs use the second disk drive as a data drive. The student can thus store his or her own data on floppy disks for later use.

• Also in the Trackstar subdirectory is a 1Mb ProDOS volume named PRODOS.HD1. This ProDOS volume may contain, for example, a copy of the Apple program *AppleWorks* Placing a large program like *AppleWorks* in the ProDOS volume eliminates the need to swap floppy disks when booting.

• The ProDOS volume is assigned as S7, D1 and may be booted using the command **STAR PRODOS.HD1** as described above.

The above configuration provides the ideal setup for the vast majority of Apple programs. Using the TSUTILITY program you can change this configuration as necessary to best suit your needs.

The NETMOD Utility

On your Trackstar Utility diskette is an MS-DOS program called **NETMOD**. NETMOD is used to change two specific Trackstar functions for network use. See Figure 4

In normal operation it is possible to switch between MS-DOS and Trackstar mode at will. Pressing <ALT> and then <ESC> in sequence will take you from an executing Apple program to an executing MS-DOS program or vice versa.

In a stand alone or home system this is an extremely useful feature. In an educational or network system you may need more control over student activities. A system error could easily be generated if a student switches into MS-DOS and changes the active directory Particularly if that directory is the one currently being used by the Apple program.

NETMOD can be used to modify the <ALT><ESC> (return to MS-DOS) feature. If the <ALT><ESC> feature is in "network" mode (disabled) the user will be asked to confirm any request to return to MS-DOS. If the user still wants to exit the Trackstar program will be terminated before the return to MS-DOS is made. Any Apple program currently in memory will also terminate. The STAR program must be re-run before another Apple program can be started.

If the user does not wish to exit, he or she will be returned to the Apple program in progress.

```
NETMOD Utility program Version 1.0
Copyright 1988-1989 Diamond Computer Systems, Inc.


   [1]  <ALT><ESC> between Trackstar and MS-DOS

        ENABLED      for stand-alone applications

        DISABLED     for network or menu driven applications

   [2]  External Apple drive option

        ENABLED      for stand-alone applications

        DISABLED     for network or menu driven applications


   [3]  Save and Exit
```

Figure 4

NETMOD is also capable of disabling another Trackstar feature. Normally, in the Trackstar Main Menu, the user is always given the option to boot from an Apple compatible drive. Again, for a single user, this increases the utility of the Trackstar system. For a network or lab system it may not be an appropriate choice.

NETMOD can be used to disable the Apple drive boot option, thus forcing the student to boot from the drive selected by the teacher.

Multiple Configurations

Here is an advanced tip...

When the TSUTILITY program is used to configure the Trackstar to your system, it stores the configuration information in the file STAR.COM. This means that STAR.COM contains all of the information for Slot, Drive, Printer, and Monitor assignment.

If, for example, you have one Apple program that requires an actual floppy disk as Drive 2, another Apple program that needs both S6, D1 and S6, D2 assigned to the hard drive, and a third Apple program that must be booted from a floppy drive..... what do you do?

It is possible to configure multiple copies of the STAR.COM program; one for each situation.

Here is the procedure for creating multiple configurations:

Use TSUTILITY (and possibly NETMOD) to configure STAR.COM for the first situation.

COPY STAR.COM to a new file named STARA.COM.

Use TSUTILITY to re-configure STAR.COM for the next situation.

Again, COPY STAR.COM to STARB.COM.

Use TSUTILITY once again to configure STAR.COM for a third possible situation.

Now you have three executable versions of the STAR program: STAR, STARA, and STARB. Each version can be run and each version will be appropriate for different Apple programs or different system configurations.