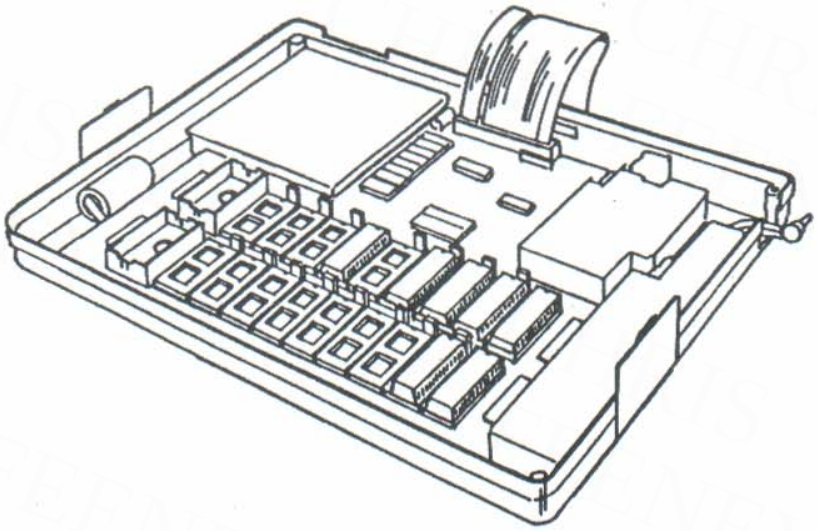
BOOSTER PAK™



RAM and ROM Expansion for the Tandy 100 and 102 Computers

TRAVELING SOFTWARE®

BOOSTER PAK™

RAM and ROM Expansion
for the
Tandy 100 and 102 Computers

Traveling Software, Inc.
North Creek Corporate Center
19310 North Creek Parkway
Bothell, WA 98011

PAK-H87

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Contents

Section 1

Getting Started

Where to Look in Section 1

Overview: Read This First

Before you proceed, take a few minutes to orient yourself to the world of the BOOSTER PAK. You may know your Tandy computer thoroughly, but the BOOSTER PAK introduces new considerations with which you must become familiar. Understand these considerations, and you soon will become as accustomed to using your computer *with* the BOOSTER PAK as you now are to using your computer by itself.

Two of these considerations—*directories* and *environments*—are particularly important. They are involved in many of the operations you will undertake with the BOOSTER PAK. And the manner in which you set up your directories and environments will determine how efficiently the BOOSTER PAK serves you.

The Workspace and the RAM Disk

With the addition of the BOOSTER PAK your Tandy 100 or 102—with its limited memory—is freed of the need to store your programs and data files while they are not in use. You will now store them in the BOOSTER PAK. When you want to run a program and work on your files, you will instruct the BOOSTER PAK to load them into your computer. When you are through, they will be returned to the BOOSTER PAK for storage.

In terms of the BOOSTER PAK, then, your computer has become a *workspace*—the place where programs are run and information is created and altered.

When they are not in use, your programs are stored in the BOOSTER PAK—in either the ROM or RAM chips installed in the PAK, depending on the program. Your data files are all stored in the RAM chips.

The part of the BOOSTER PAK which stores your data files and any programs not on ROM chips is called the *RAM disk*.

Directories

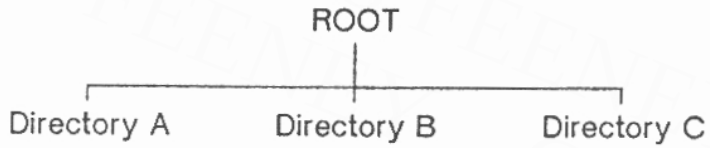
Before initializing the BOOSTER PAK you will be advised to back up all important files in your computer and then cold start the computer. You will thus start with a clean slate. Once the BOOSTER PAK is installed, you will copy files into the RAM disk—the expanded RAM now available in the PAK. When you copy files into your RAM disk, you will place them into *directories*. And as you continue using the BOOSTER PAK, you will create and store files in directories.

The large amount of memory available in the RAM disk permits the storage of many more files than you are used to with your computer. In fact, you can quickly accumulate so many files that their number becomes unwieldy. Like disk-operating systems on desktop computers, then, the BOOSTER PAK allows you to create a hierarchy of directories and thus group your files in a way that makes sense to you.

When you initialize the BOOSTER PAK a *ROOT directory* is created automatically in the RAM disk. You can then create virtually as many directories as you need—up to 254 in all.

Unlike desktop computers, the BOOSTER PAK allows directories at only two levels: the ROOT directory and one level below the ROOT. Because they branch off the ROOT directory, the optional directories are sometimes call *subdirectories*.

This diagram illustrates a RAM disk for which the user has set up three directories (or subdirectories):



The names of all the directories you create will appear in the menu of the ROOT directory. You can find any file stored in the RAM disk by traveling from the ROOT directory to the directory in which the file is stored: simply place the bar cursor over the name of the directory and press [ENTER]. There is also a function key that allows you to move directly from any directory—either the ROOT or one of the subdirectories—to another directory.

The process of moving from one directory to another is called *logging*. And the directory you are in at the moment is called the *logged, or current, directory*.

Setting Up Your Own Directories. When setting up your own directories consider how you use your Tandy computer. Which files do you want grouped together, separately from the others? When you use a particular file, which other files do you also want to have quick access to?

Let's consider that you use your computer for these purposes: writing articles for magazines; corresponding with publishers and with family and friends; keeping your business and personal accounts; and doing miscellaneous other tasks. Under these circumstances you might decide to create six directories: one each for magazine articles, business correspondence, personal correspondence, business accounts, personal accounts, and miscellaneous work. Allowing up to six characters for each name, you could designate these directories as MAG, CORR1, CORR2, ACCTS1, ACCTS2, and MISC.

This diagram illustrates the directory structure just proposed:

Environments

In addition to directories you will create environments. Whereas directories have to do with the storage of files in the RAM disk of your BOOSTER PAK, environments have to do with the operation of the workspace in your Tandy computer. Each time you load an environment, you in effect create a new workspace in your computer.

Environments serve two main purposes:

- to load programs and data files from the RAM disk into the workspace—and back into the RAM disk
- to prepare the workspace to run ROM-based programs and other programs

Preparing the Workspace. If you have ever switched from one machine-language program to another or from one ROM-based program to another or have tried to run one program while another is in high memory, you already know the problems and dangers that can arise out of conflicts between programs. At worst you may inadvertently cold start your computer and lose valuable files.

The BOOSTER PAK makes use of environments to avoid these conflicts and make it easy to switch from one program to another.

When you initialize the BOOSTER PAK a *NULL environment* is created automatically. This environment duplicates in many respects the state of your computer after a cold start: the RAM in the workspace is cleared of all files, both program and data; high memory is cleared as are the buffers that temporarily store data for processing. The NULL

environment, in short, is a clean slate, waiting for programs and data files and the information necessary to operate the programs.

The NULL environment is all you will need to operate some programs. You can move from one program to another within the NULL environment—as long as those programs do not conflict with each other.

When you are using programs based on ROM chips in the BOOSTER PAK, however, you will have to create special environments. Each environment will prepare the workspace to operate a particular ROM-based program.

Loading Files into and out of the Workspace. As part of the process of creating an environment for a particular program, you will take the steps necessary to include in the environment the file for that program. Each time thereafter that you load that environment the program automatically will be loaded into the workspace along with the environment. Remember that programs must be loaded from the RAM disk into the workspace before they can be used.

Environments are useful also for loading data files. (Like program files, data files must be loaded into the workspace before they can be used.) Assume now that you make regular use of certain data files in connection with a particular program. By including those files in the environment, you can load everything—program *and* data files—in the few keystrokes it takes to load the environment.

The files associated with an environment are not fixed. You can add or delete them as the situation demands. Each time you exchange environments (that is, replace one environment with another), you are asked if you want to update the environment as it now exists (the current environment). If you reply that you do, all files currently in the workspace—even those you have added since loading the environment—now become part of that environment.

And the next time you load that environment, those same files will be loaded into the workspace. If you reply that you do *not* want to update the environment, you will leave the environment as it was the last time it was updated. And only those files loaded into the workspace the last time you loaded that environment will be loaded into the workspace the next time you load the same environment.

Environments are not the only means of loading files into and out of the workspace. You may, for example, use the Copy or Kill function keys to move them one at a time or several at once. The BOOSTER PAK also lets you set up macros, by which you can reduce to 2 the number of key-strokes necessary to move files into the workspace. You might, for example, set up a macro to load a data file into the workspace, activate the program associated with that environment, then open the file.

The Link between Environments and Directories

Though distinct in purpose, environments and directories are inextricably linked by certain rules. These rules are in force whenever you exchange one environment for another.

Updating an Environment. As part of the process of exchanging environments you have the choice of updating or not updating the current environment.

If you opt to update the environment, all files currently in the workspace will be saved to the directory of the RAM disk you were in when you loaded that environment. They will be saved to that directory even if you have logged onto a different directory in the meantime. Any changes you made in the files while they were in the workspace will then be saved to the RAM disk. (If you opt *not* to update the current environment, none of the changes you made to the files will be saved to the RAM disk.)

Loading an Environment. When you load an environment you replace the files of the current environment with those of the new environment. In loading the new environment, the BOOSTER PAK software looks for files only in the *current* directory—that is, the directory you are in when you load the environment. If you wish, you can then copy files from other directories into the workspace; these files become part of that environment and will remain so until you delete them.

Setting Up Environments. The crucial link between environments and directories, then, is the directory you are in when you load an environment. From this it follows that you should set up each environment *within* the directory containing the program and data files you want to use when you load that environment.

When you create an environment, you create a file. That file is stored in the directory in which you created the environment. To load that environment move to the directory in which the file for that environment is stored. Then activate the file by placing the bar cursor over its name and pressing [ENTER].

If you wish, you can set up more than one environment in a directory. You may, for example, have more than one ROM-based program you want to use with the files in that directory; by setting up an environment for each program you can move easily from one program to another. You can even set up more than one environment for a single program. If you find, for example, that you are using a program with certain data files at times and certain other data files at other times, you may find it economical to create an environment for each set of files. Moving from one set of files to the other then becomes a matter of a few keystrokes.

The BOOSTER PAK as an Open-ended System

> **open-end·ed**, *adj*. not rigorously fixed, adaptable to the developing needs of a situation.

As you have discovered, the BOOSTER PAK imposes certain rules. But those rules are general enough to make the BOOSTER PAK a truly open-ended system. Operating within those rules leaves you considerable latitude in how you use your BOOSTER PAK, particularly in the creation and use of directories and environments.

Because it describes an open-ended system, this manual sometimes explains different ways of accomplishing the same end. It will be up to you to choose among the possibilities in light of your own requirements and habits. You will find that one approach works well for you in certain situations while another approach works better in others. Only by knowing the possibilities can you make the best choice.

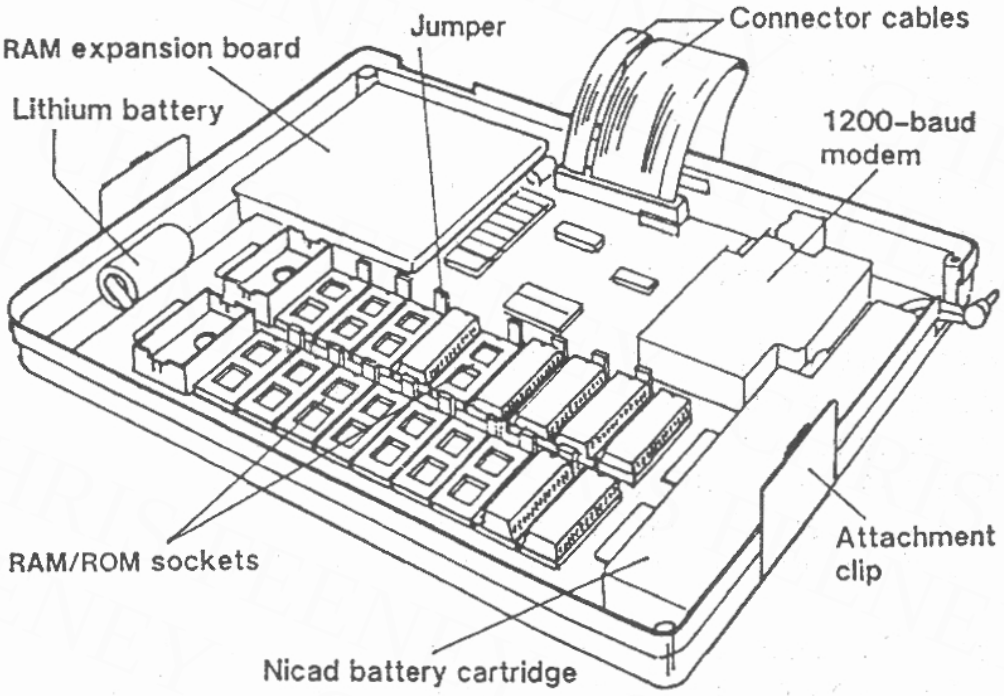
What You Need to Use the BOOSTER PAK

The BOOSTER PAK can be used only with a Tandy 100 or 102 computer with 32K of memory.

In order to use the disk operations described in Section 2 you must also have a 3½-inch portable disk drive or an IBM PC, XT, AT, or compatible desktop computer and the DESK-LINK program, available separately from Traveling Software.

What's What in the BOOSTER PAK

Now that you have acquainted yourself with directories, environments, and other matters essential to the operation of the BOOSTER PAK, let's look at the BOOSTER PAK itself.



RAM/ROM Sockets: The basic BOOSTER PAK has a total of 20 sockets for RAM and ROM chips; 18 of those sockets may be in use at one time. Already installed in 7 of these sockets are 3 chips (both RAM and ROM) for the BOOSTER PAK software and operating memory, 1 ROM chip containing the software for the telecommunications program and the Asteroids game, and 3 other RAM chips of 32K each. If you ordered just the basic BOOSTER PAK, you then have 11 open sockets in which you can install your own chips—12 sockets if you remove the telecommunications/Asteroids chip. (See page 1-14.) If you ordered additional RAM or ROM chips, those chips have already been installed.

Jumpers: There are 15 jumpers, one at each of the sockets designed to hold either a RAM or a ROM chip. The jumper at each of these sockets must be positioned in such a way that it designates the chip in that socket as either a RAM or a ROM chip. The jumpers for all of the factory-installed chips are in the correct position.

Connector Cables: The two connector cables link the BOOSTER PAK to the computer. The narrower cable attaches to the option ROM socket inside the ROM module expansion compartment of your computer, the wider cable to the system bus. (See page 1-16.)

Lithium Battery: The lithium battery, rated to last 7–10 years, retains any information you place in the memory of the BOOSTER PAK RAM chips.

Attachment Clips: These handy clips hold the computer securely in place, on top of the BOOSTER PAK. Once you are ready to do so, simply lower the computer into the BOOSTER PAK and the clips will snap into a secure lock on the computer. To remove the computer, spread both clips and lift the computer way from the BOOSTER PAK.

Note: The remaining items in the illustration above are *optional* and will be included in your BOOSTER PAK only if you have ordered them:

Nicad Battery Cartridge: This rechargeable battery cartridge plugs into the external power adapter connector on the side of the Tandy computer. When the cartridge becomes exhausted, the low battery indicator on the computer will light up. Unplug the battery cartridge and operate the computer off the alkaline batteries inside the computer. Or plug your Tandy AC adapter into the cartridge and continue working as the cartridge is being recharged. (A separate pamphlet describes the battery cartridge.)

1200-baud Modem: With this modem you can load files

directly into and out of the RAM disk of your BOOSTER PAK or the workspace of your computer at the rate of 1200 baud. It operates off the X-TEL software included in the basic BOOSTER PAK as well as the TELCOM software built into your computer. Powered by its own 9-volt battery, the modem has a cable, which connects to the computer's RS232C serial port, and an RJ11 telephone jack; plug one end of the telephone cable included with the modem into the jack, the other end into a telephone wall outlet. (There is separate documentation for the modem and for the X-TEL software.)

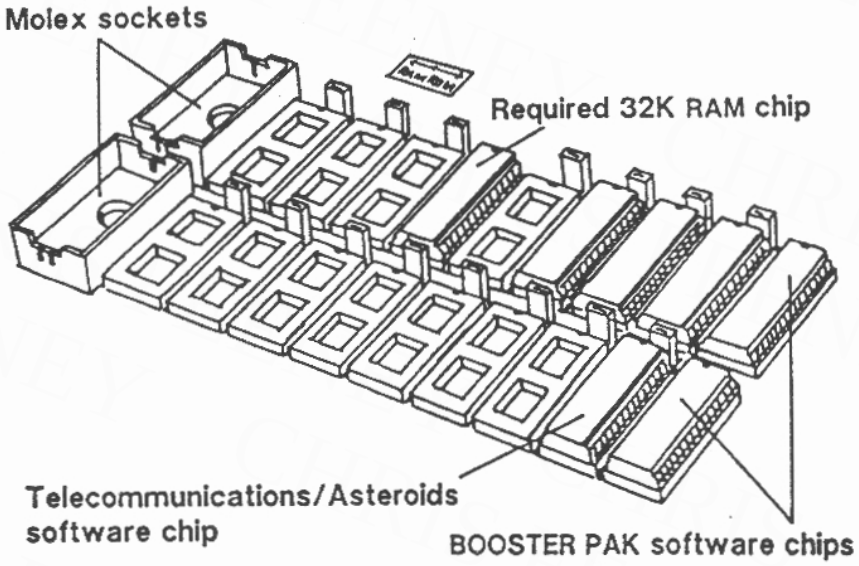
RAM Expansion Board: There are 6 sockets in the RAM expansion board, each designed for a 256K RAM module. Like the 32K RAM chips in the basic BOOSTER PAK, these modules provide *unsegmented* memory for the storage of files: there is no need to change banks, and the only limit on the size of a particular file is that imposed by the total amount of memory in the RAM disk. If you ordered 256K modules with the BOOSTER PAK, those modules have been installed for you.

Installing Your Own Chips

Any chips—whether RAM or ROM—you ordered with the BOOSTER PAK are already installed. If you have no chips of your own to be installed, you are ready to install the BOOSTER PAK. Turn to page 1-16.

If you have chips to install there are a few requirements you need to know about.

Requirements of the RAM/ROM Sockets



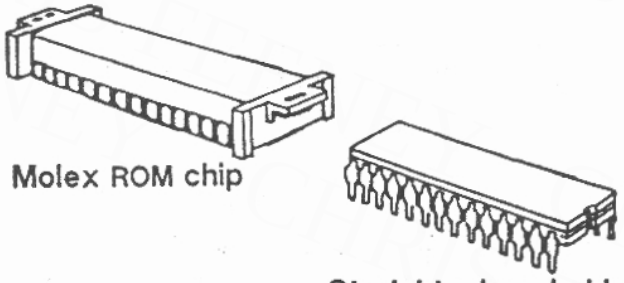
Of the 20 RAM/ROM sockets all but five are designed to hold either RAM or ROM chips. These are the five exceptions:

- **BOOSTER PAK System Chips:** The 2 sockets at the right end of both rows of sockets contain the software and part of the operating memory for the BOOSTER PAK; no other chips should be put in their place.
- **Required 32K RAM Chip:** A 32K RAM chip now occupies a socket near the middle of the upper row of

sockets; this socket, which provides additional memory for the operation of the system, *must* contain a 32K RAM chip.

- **Molex Sockets:** The Molex socket at the left end of both rows of sockets can be occupied only by the kind of *ROM* chip that fits into a Molex socket.

About the Molex Sockets. If you have any software on ROM chips that you have been plugging into the ROM module expansion compartment of your computer, you should now install those chips in either of the Molex sockets. Only these two sockets are equipped to hold Molex chips. Any ROM chips you place elsewhere in the BOOSTER PAK must be straight-pinned chips.



If you have more than two Molex ROM chips and would like to continue to use all of them, contact Traveling Software. We can convert Molex chips to straight-pinned chips.

The socket just to the right of each Molex socket is specially defined. These sockets can accommodate either a ROM or a RAM chip, but their use is mutually exclusive with that of the Molex sockets: if you install a chip in either Molex socket, you cannot install a chip in the socket immediately to the right. Conversely, if you install a chip in the socket immediately to the right of either Molex socket, you cannot install a chip in the adjoining Molex socket. This is why only 18 of the total 20 sockets can be filled at one time.

32K RAM Chips. Use only RAM chips with 32K of memory. The BOOSTER PAK will not work properly with other RAM chips.

Telecommunications/Asteroids Chip. You can remove the ROM chip containing the telecommunications and Asteroids software if you have use for neither program and would like to put a 32K RAM chip or a ROM software chip it its place. (See the illustration on page 1-12 for its location.)

Where to Install Chips

You are free to place RAM and ROM chips in any of the sockets that are open when you receive the BOOSTER PAK as long as you observe these conditions:

- Place Molex chips only in the Molex sockets.
- If you place a chip in either of the Molex sockets, do not place a chip in the socket immediately to the right of it.

Reminder: Do *not* remove the 2 BOOSTER PAK system chips or the required 32K RAM chip. You *can*, however, remove the telecommunications/Asteroids chip.

How to Install Chips

Molex Chips. Press a Molex chip evenly and steadily into one of the two Molex sockets. If it does not begin to go in easily, turn the chip end for end and try again. There is only one way for the chip to fit into the socket. Press down on the chip until the top of the chip is flush with the top of the socket.

Straight-pinned Chips. Follow this procedure for each straight-pinned chip:

1. Check that the pins on the underside of each chip are straight and at a right angle to the chip. If you find that the pins are turned slightly outward press each row of pins against a hard surface to bend the pins until they form a right angle with the chip.

2. Each chip as well as each socket has a small semicircular notch at one end. Hold the chip (pins down) over the socket so that the notch on the chip is over the notch on the socket.

3. Press the chip firmly into the socket, making sure that the pins are entering the pin holes.

4. Locate the jumper in the upper right corner of the socket and remove it by pulling straight up. You now see 3 pins. The jumper can cover only 2 of these pins at a time. If you have installed a RAM chip in that socket, replace the jumper so that it covers the 2 pins on the *left*. For a ROM chip, cover the 2 pins on the *right*.

Mapping Your ROMs

To use the programs on the chips you have installed in the BOOSTER PAK, you must know in which sockets you have placed the chips. For reference, then, note in the diagram below which ROM is in which socket. (You will use this map later, when you create an environment for each ROM-based program.)

Note that the leftmost socket in both rows of this map represents *either* the Molex socket *or* the socket immediately to its right. Omitted from this map are the sockets for the required 32K RAM chip (this accounts for the gap between the third and fourth sockets in the top row) and the two BOOSTER PAK system chips.

Installing the BOOSTER PAK

Once your BOOSTER PAK holds all the chips you want it to have, you are ready to take the three steps necessary to getting the BOOSTER PAK running:

- preparing the computer
- attaching the computer to the BOOSTER PAK
- initializing the BOOSTER PAK

Note: If you purchased a computer with the BOOSTER PAK—and have added no chips to the BOOSTER PAK yourself—ignore the following instructions. You are ready to begin using the BOOSTER PAK: turn to Section 2.

Preparing the Computer

1. If there is anything on your computer you want to keep, back it up now! You will soon cold start the computer and erase all of its files.

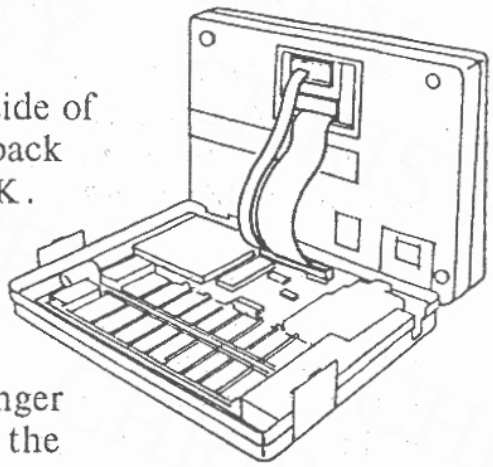
2. Locate the ROM module expansion compartment and remove the cover. This compartment is located at the bottom center of the Tandy 100, near the lower right corner of the Tandy 102. Store the cover; you will not need it as long as you are using the BOOSTER PAK with your computer.

3. If there is a ROM chip in the compartment remove it.

Attaching the BOOSTER PAK

The BOOSTER PAK attaches to the computer through the two connector cables. The method of attaching these cables to the computer is different on the Tandy 100 and the Tandy 102.

Tandy 100. The illustration below shows the connector cables attached to the Tandy 100.



1. Lay the Tandy 100 face down, so that the back side of the computer abuts the back side of the BOOSTER PAK.

2. Locate the system bus inside the ROM module expansion compartment. This is the longer of the two receptacles in the compartment.

3. Take the connector at the free end of the *wider* connector cable and carefully insert it into the system bus. (See the illustration above.) Once you are sure that the pins are going into the pin holes, press the connector firmly into place.

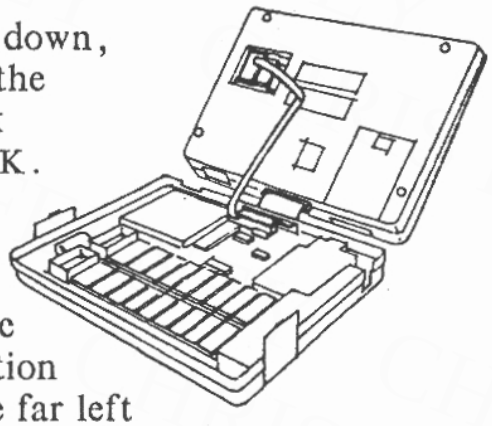
4. Take the connector at the free end of the *narrower* connector cable and insert it into the option ROM socket—now the only open receptacle in the ROM module expansion compartment of your computer. Press the connector firmly into place.

5. Pick up the computer and turn it face up. Making sure that connector cables do not extend outside of the BOOSTER PAK, lower the computer into the BOOSTER PAK until the attachment clips lock the computer into place.

   If you wish to elevate the computer and BOOSTER PAK insert the prop legs into the rear holes on the bottom of the BOOSTER PAK.

   You are now ready to initialize the BOOSTER PAK; turn to page 1-18.

Tandy 102. The illustration below shows the connector cables attached to the Tandy 102.



1. Lay the Tandy 102 face down, so that the back side of the computer abuts the back side of the BOOSTER PAK.

2. Take the connector at the free end of the *narrower* connector cable and insert it into the option ROM socket—now at the far left side of the ROM module expansion compartment of the computer. Press the connector firmly into place.

3. Pick up the computer and turn it face up. Lower it into the BOOSTER PAK until the attachment clips lock the computer into place.

4. Turn the BOOSTER PAK and computer around until the back side is facing you. Press the connector extending through the BOOSTER PAK into the SYSTEM BUS just above it. If you wish to elevate the computer and BOOSTER PAK insert the prop legs into the rear holes on the bottom of the BOOSTER PAK.

   You are now ready to initialize the BOOSTER PAK.

Initializing the BOOSTER PAK

As the last step in installing the BOOSTER PAK, you must initialize it.

Note: If you are restarting the BOOSTER PAK after an accidental cold start please refer to the next page before taking any action.

1. Turn the computer *on*. You now see the main system

menu you are accustomed to seeing each time you start your computer.

2. Cold start the computer: hold down [CTRL]-[SHIFT]-[BREAK] while you press the RESET button at the rear of the computer or while you turn the computer *off* for a few seconds and then *on* again.

3. With the bar cursor still over BASIC press [ENTER].

4. Type—

```
OUT 5,Ø [ENTER]
CALL 911
```

   Now hold down [CTRL]-[SHIFT]-[GRPH] and press [ENTER].

5. There will be a slight pause while the RAM disk is being formatted. You will then see the first menu of the BOOSTER PAK.

Restarting the BOOSTER PAK after a Cold Start

If your computer should ever cold start after you have begun using the BOOSTER PAK you will lose only the contents of the workspace. Whatever you have stored in the RAM disk will remain intact.

To restart the BOOSTER PAK after an accidental cold start—*without reformatting the RAM disk and erasing all of its contents*—enter BASIC and type:

```
OUT 5,Ø [ENTER]
CALL 911
```

Then press only [ENTER].

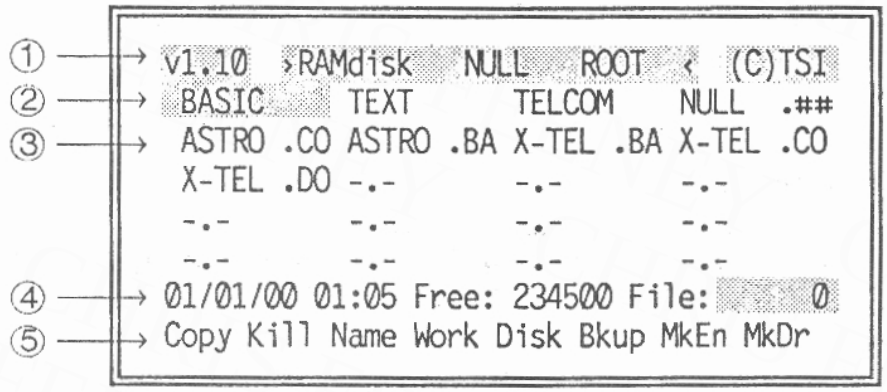
Section 2

Using the BOOSTER PAK

Where to Look in Section 2

The RAM Disk Menu

As soon as you initialize the BOOSTER PAK, you see the menu of the RAM disk:



RAM Disk Menu

① The top line of the RAM Disk Menu tells you—

RAMdisk—you are looking at the menu of the RAM disk

NULL—you are currently in the NULL environment

ROOT—you are currently in the ROOT directory

At the far left end of the line you see the version of the BOOSTER PAK software you have received.

② The first three items in the second line are application programs built into your computer—BASIC, TEXT, and TELCOM. The last item—NULL.##—is the file for the NULL environment.

③ Listed in the third and fourth lines are the files for the Asteroids game (ASTRO.CO and ASTRO.BA) and the telecommunications program (X-TEL.CO, X-TEL.BA, and X-TEL.DO). These programs are contained on a ROM chip in the BOOSTER PAK. The remainder of this line and the next two lines will show the names of any directories you create as well as any environments and files you place in the ROOT directory.

④ The seventh line shows date and time; having cold started your computer, you will now have to reset the date and time. In the middle of this line you see Free followed by a number. The number tells you in bytes how much free memory is available for the storage of files in the BOOSTER PAK. File tells you the size, in bytes, of the file marked by the bar cursor.

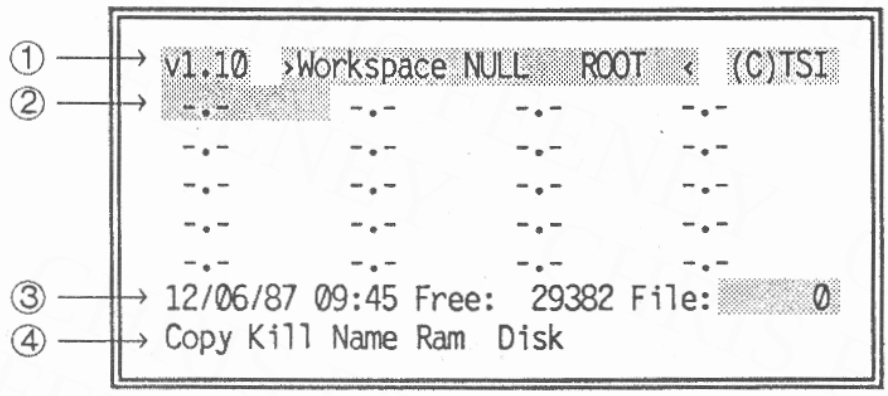
⑤ The bottom line lists the function key options available in this menu.

Function Key Options in the RAM Disk Menu

Key	Prompt	Operation
F1	Copy	Copies the file marked by the cursor elsewhere in the RAM disk, to the workspace, or to disk. See page 2-24.
F2	Kill	Kills the file marked by the cursor. After you press F2, press Y to verify the deletion, any other key to leave the file intact.
F3	Name	Renames the file marked by the cursor.
F4	Work	Moves to the workspace and displays the Workspace Menu. See next page.
F5	Disk	Accesses a disk (portable disk drive or desktop computer) and displays the directory of that disk. Files may then be copied from the disk to the RAM disk or workspace. See page 2-5.
F6	Bkup	Copies to disk the contents of the entire RAM disk or of the current directory. See page 2-29.
F7	MkEn	Creates an environment in the current directory. See page 2-15.
F8	MkDr	Creates a new directory or logs onto an existing directory. See page 2-13.

The Workspace Menu

To move to the workspace press [F4] in the RAM Disk Menu. You then see the menu of the workspace:



Workspace Menu

① The top line of the Workspace Menu illustrated above tells you—

Workspace—you are looking at the menu of the workspace

NULL—you are currently in the NULL environment

ROOT—you are currently in the ROOT directory of the RAM Disk

② The next five lines are reserved for the files you will move into the workspace while you are using them.

③ The seventh line shows the date and time. In the middle of this line you see Free followed by a number. The number tells you in bytes how much free memory is available in the workspace. File tells you the size, in bytes, of the file marked by the bar cursor.

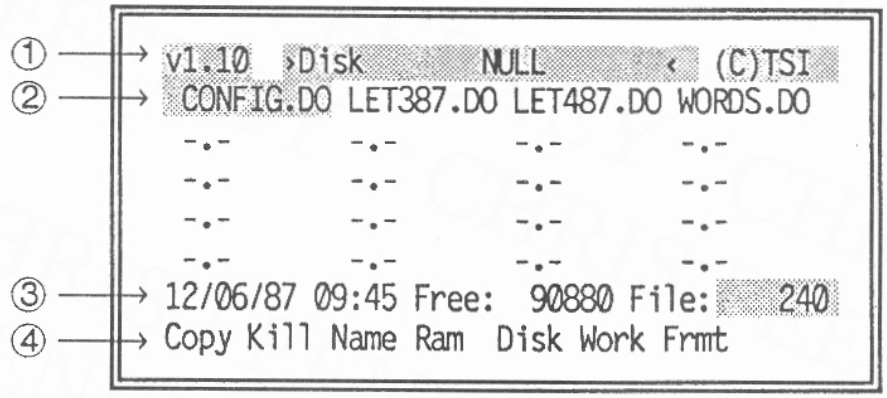
④ The bottom line lists the function key options available in this menu.

Function Key Options in the Workspace Menu		
Key	**Prompt**	**Operation**
F1	Copy	Copies the file marked by the cursor to the RAM disk or to disk. See page 2-26.
F2	Kill	Kills the file marked by the cursor. After you press F2, press Y to verify the deletion, any other key to leave the file intact.
F3	Name	Renames the file marked by the cursor.
F4	Ram	Returns to the RAM disk and displays the menu of the current directory.
F5	Disk	Accesses a disk and displays the directory of that disk. Files may then be copied from the disk to the RAM disk or workspace. See next page.

The Disk Menu

Before you can move to the Disk Menu you must have your Tandy computer attached through its RS232C serial port to either a portable 3½-inch disk drive or to a desktop computer. The software for operating the portable disk drive is contained in the BOOSTER PAK software and is ready to use. DESK-LINK, the software that links a laptop computer to a PC-compatible desktop computer, is available separately from Traveling Software.

To call up the Disk Menu press F5 in either the RAM Disk Menu or the Workspace Menu.



Disk Menu

① The top line of the Disk Menu illustrated above tells you—

Disk—you are looking at the menu of the disk in either a portable disk drive or a desktop computer

NULL—you are currently in the NULL environment

If you are accessing a Tandy Portable Disk Drive 2, this line will also show #0 or #1, indicating the bank to which you are currently logged. If you are accessing a desktop computer through the DESK-LINK program, you will see the name of a directory on that computer; files will be exchanged between this directory and the BOOSTER PAK.

② The next five lines will display files on the disk.

③ The seventh line shows the date and time. In the middle of this line you see Free followed by a number. The number tells you in bytes how much free memory is available on the disk. File tells you the size, in bytes, of the file marked by the bar cursor.

④ The bottom line lists the function key options available in this menu.

Function Key Options in the Disk Menu

Key	Prompt	Operation
F1	Copy	Copies the file marked by the cursor to the RAM disk or the workspace. See page 2-28.
F2	Kill	Kills the file marked by the cursor. After you press F2, press Y to verify the deletion, any other key to leave the file intact.
F3	Name	Renames the file marked by the cursor.
F4	Ram	Moves to the RAM disk and displays the menu of the current directory.
F5	Work	Moves to the workspace and displays the directory of files currently in the workspace.
F6	Frmt	Formats the disk in the portable disk drive. (Not available when DESK-LINK is being used.)
F8	Bank	Switches between the 2 banks of the Tandy Portable Disk Drive 2. (Not available with any other disk drive.)
F8	MkDr	Creates a new directory on a desktop computer. (Not available unless DESK-LINK is being used.)

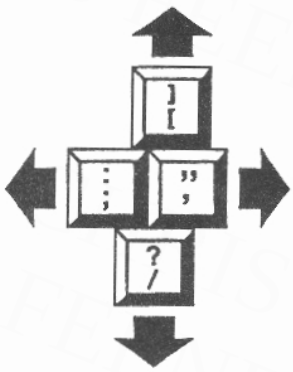
Special Keys

Explained below are keys that are specially defined to perform certain operations in the BOOSTER PAK menus.

Moving the Bar Cursor

When you are selecting a file in any of the the BOOSTER PAK menus you can move the bar cursor as you are accustomed to doing in the main system menu of your Tandy computer: press any of the arrow keys—[↑], [↓], [←], or [→]—or the spacebar.

Cursor Diamond. For your convenience the BOOSTER PAK offers yet another way of moving the bar cursor in the 3 menus. Four keys have been specially defined for that purpose. These keys form a diamond on the keyboard, as shown at right. Instead of the arrow keys or the spacebar, press—



[[] to move the bar cursor up

[/] to move it down

[;] to move it left

['] (apostrophe) to move it right

Moving from Page to Page. There is room in each menu for 20 files. When there are more than 20 files the files are divided into "pages," each page containing up to 20 files. To move from page to page press—

[SHIFT]-[↑] or [SHIFT]-[[] to go to the top of the *previous* page

[SHIFT]-[↓] or [SHIFT]-[/] to go to the top of the *next* page

[CTRL]-[↑] or [CTRL]-[W] to go to the top of the *first* page no matter which page you may be viewing at the moment

Using the ENTER Key

In the menu of either the RAM disk or the workspace the [ENTER] key performs different functions depending on the type of file selected by the bar cursor. In many circumstances, again depending on the type of the file, you will see no difference in the operation of the [ENTER] key from what you are used to on your computer. (Note that [ENTER] performs no functions in the Disk Menu.)

Opening Data Files. When you select a data file with a DO extension and press [ENTER] you open that file in the TEXT program built into your computer. You can then begin typing. To close the file press [F8].

When you open a data file in the RAM Disk Menu you cause that file to be moved into the workspace. When you close the file you move the file back into the RAM disk and overwrite the earlier copy stored there. All of this goes on behind the scenes once you press [ENTER] or [F8].

When you open a data file in the Workspace Menu the file remains in the workspace. When you close the file you overwrite the earlier copy of that file in the workspace. To store the revised file you must then move it into the RAM disk either by copying it or by closing the environment.

If you happen you go to the RAM Disk Menu and open a file a copy of which is already in the workspace, you will see this message:

```
File exists. Replace? (Y/N):
```

Press [Y] only if you want to delete the copy of the file in the workspace and replace it with the copy in the RAM disk. Otherwise press [N] or any other key.

Running Programs. When you select a BASIC or a machine-language program file—that is, a file with a BA or CO extension—and press [ENTER], you run the program.

If it is not there already, the program is loaded into the workspace before it is run.

A special word about machine-language programs: these programs must be loaded into the high memory section of the workspace. Unless you create an environment to handle this operation automatically, you will have to ensure that high memory is set appropriately before you select a CO file and press [ENTER]. If high memory is not set appropriately, you will see a message like this when you attempt to run a CO file in the RAM Disk Menu:

```
Set HIMEM to $$$$$  Press any key.
```

This message (with numbers substituted for $$$$$) tells you that high memory is not set low enough for that program. To run the program make a note of the numbers in the message; then follow these steps:

1. Press any key to remove the message.

2. Enter BASIC: place the bar cursor over BASIC and press [ENTER].

3. Type this command—

   ```
   CLEAR 256,$$$$$ [ENTER]
   ```

   —substituting the numbers in the previous message for $$$$$.

   Note: The 256 number (for string space) in this command does not affect the operation of the machine-language program you are about to run, but it may affect the operation of any BASIC program you may run hereafter. If you know that you will be running a BASIC program that requires a different value for string space, substitute that value for 256. Otherwise, type 256.

4. Leave BASIC: press [F8]. Run the CO program again.

Changing Directories. Directory files appear on the screen with this extension: ‹›. To move to a directory whose file appears on the screen place the bar cursor over its name and press [ENTER].

For more about changing directories see page 2-13.

Changing Environments. Environment files appear on the screen with this extension: ##. To move to an environment whose file appears on the screen place the bar cursor over its name and press [ENTER].

For more about changing environments see page 2-23.

Running Built-in Applications. Three of the applications built into your computer—BASIC, TEXT, and TELCOM —are available through the RAM Disk Menu. By placing the bar cursor over BASIC, TEXT, or TELCOM and pressing [ENTER], you run the program just as you are used to doing on your computer.

Note: The ADDRSS and SCHEDL applications are not available through the BOOSTER PAK.

Tagging Files

The tagging feature is a time-saving means of selecting several files to be copied or killed at once. It is available in the RAM Disk Menu, the Workspace Menu, and the Disk Menu. After tagging files, press [F1] to copy them or [F2] to kill them.

When you tag files you place a temporary marker (›) beside each file name. This marker will disappear as soon as the copy or kill operation is complete. It will also disappear if you move to a different page of files or to a different menu.

These are the keys available for tagging:

[T]	alternately tags or removes the tag from the file marked by the bar cursor
[G] or [A]	tags all files displayed in the menu
[U]	removes all tags

Printing and Viewing Documents

While working in the RAM Disk Menu, the Workspace Menu, or the Disk Menu, you can select a data file to be viewed on the screen or printed. You can also print the menu, a handy way of keeping track of your files. You can print or view only files with DO extensions.

These are the keys available for printing and viewing:

[P]	prints the file marked by the cursor
[L]	lists on screen the file marked by the cursor
[D]	prints the current menu

Once you have pressed one of these keys, you can suspend or abandon the process:

[SPACE]	suspends the operation (press any key to resume)
[ESC]	abandons the operation

Note that your printer may not respond immediately to either of these keys, particularly if it has a large buffer for the storage of information.

Canceling an Action: [CTRL]-[C]

Once you press certain of the function keys to begin an operation, you have the chance to cancel the operation without any action begin taken: press [CTRL]-[C].

The time to abandon an operation always comes when you are required to enter some kind of information from the keyboard. This may occur when you are asked to name a file you are about to copy, for example, or when you are asked to name a new environment. Normally you would type a response and press [ENTER], but to abandon the operation press [CTRL]-[C] *rather than* [ENTER].

Playing Asteroids

Included on one of the ROM chips in the BOOSTER PAK is the Asteroids game. When you initialized the BOOSTER PAK two files were created for this game in the RAM disk: ASTRO.CO and ASTRO.BA.

Before playing Asteroids, take the precaution of resetting the high memory of your computer: move to the ROOT directory of the RAM disk and load the NULL environment. Then move the bar cursor over ASTRO.BA and press [ENTER].

You will now see instructions for playing the game.

Note: If you delete the ASTRO.CO and ASTRO.BA files for Asteroids (or the three files for X-TEL), you can load them back into the BOOSTER PAK by holding down [SHIFT]-[GRPH] and pressing [L]. The files will then be loaded into the currently logged directory.

Creating and Using Directories

As explained in Section 1, directories are means of dividing the RAM disk into compartments for the storage of files. For greatest efficiency you should create your directories before you copy files into the RAM disk and before you create environments.

If you have not done so already, please read pages 1-1 through 1-3 for an orientation to directories and their relation to environments.

Creating Directories in the RAM Disk

Begin in the RAM Disk Menu and activate the MkDr function key: [F8]. Note that it makes no difference which directory you are in when you activate this key.

In response to this prompt—

```
Directory Name:
```

type up to six characters, following the rules for naming files, and press [ENTER]. You do not have to include the ‹› extension; the program does this for you. (If you enter an inadmissible name, you will see a message informing you of that fact; press any key to remove the message, and try again.)

As soon as you enter a directory name the RAM Disk Menu changes to reveal the menu for that directory. You may now begin copying files into that directory or creating new ones.

Changing Directories

Each time you create a directory a you will see a ROOT.‹› file listed in that directory. To move back to the ROOT

(main) directory of the RAM disk place the bar cursor over ROOT.‹› and press [ENTER].

Once in the ROOT directory you will see the names of all the directories you have created. They are listed before other files, immediately after the three built-in applications. To move to any of these directories, place the bar cursor over its file name and press [ENTER].

An alternative method of changing directories is the MkDr function key ([F8]). Press [F8], type the name of an *existing* directory, and press [ENTER].

Removing Directories

Directories can be removed only if they contain no files other than for the BASIC, TEXT, and TELCOM applications and the ROOT directory. To remove all other files at once, move to the directory, press [A] to tag all files, and press [F2] [Y] to kill them. If there is more than one page of files, move to those pages and repeat the process.

Then move to the ROOT directory, place the bar cursor over the name of the directory you want to delete, and press [F2] [Y].

Note that you cannot rename directories. If you decide that you want a different name for a directory, you must create a directory with that name, copy the files from the old directory to the new one, and remove the old directory.

Creating Environments

The BOOSTER PAK provides environments to make these operations easier:

- loading associated files from the RAM disk into the workspace and back to the RAM disk again
- preparing the workspace to run programs and avoiding conflicts between programs
- switching from one ROM-based program to another

You may choose to create environments to simplify any or all of these operations. If you use programs with conflicting requirements for the high memory of your computer, you will find environments an invaluable and effortless means of moving from one program to another.

If you have installed programs on ROM chips in the BOOSTER PAK, you *must* create at least one environment for each chip.

If you do not have conflicting programs and have not installed any ROM chips of your own, you may create environments solely to move files into and out of the workspace. You may, for example, use a program that always requires a particular file for its operation. Rather than copy the program and the file into the workspace each time you want to run the program, set up an environment to do it for you, in one operation.

If you have not done so already, please read pages 1-4 through 1-7 for an orientation to environments.

Creating Your First Environment

To create your first environment you will use the NULL environment—NULL.## in the ROOT directory of the RAM disk.

Before creating an environment, create the directory in which you want to use the new environment. Copy into that directory any data or program files you want to include in the environment. (Files for programs on ROM chips will be created as part of the process of creating an environment.) Then follow these steps:

1. Begin in the ROOT directory of the RAM Disk Menu. Place the bar cursor over NULL.## and press [ENTER]. In response to this question—

   Load NULL Environment (Y/N)?

   press [Y]. This step ensures that the NULL environment is loaded.

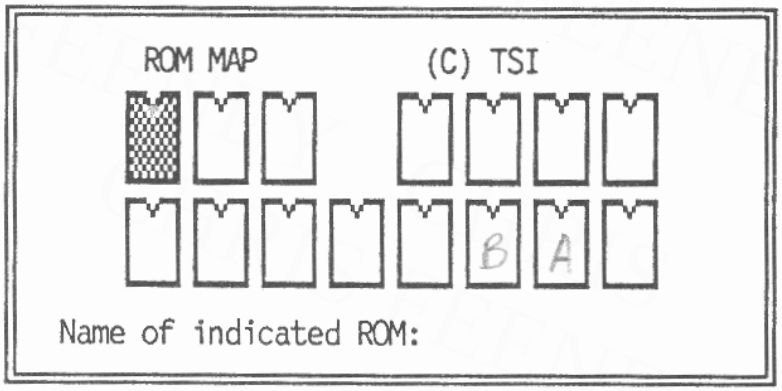
2. Place the bar cursor over the name of the directory in which you want to create the environment. Press [ENTER] to log onto that directory.

3. Once in that directory, press [F7] (MkEn). In response to this prompt—

   Environment Name:

   type a name as you would for a file, omitting an extension. Press [ENTER].

4. If you installed no ROM chips of your own in the BOOSTER PAK, skip to step 7. If you did install chips, you will now see a screen similar to this:



ROM Map

A = "ULTIMATE"
B = "SARDINE"

This ROM Map represents all of the sockets in the BOOSTER PAK which are available to you for the installation of ROM chips. It is similar to the one on page 1-15 in which you were to note the locations of the ROM chips you installed. Refer to that page to refresh your memory about this map and the locations of your ROMs.

At present, one of the sockets in the menu is darkened; you must now identify for future reference which chip you have placed in this socket. Note that this socket may not contain the program for which you are now creating an environment. The first time you create an environment you must identify *all* of the program ROM chips you have installed; any ROM chips you are not asked to name are special chips used by program ROMs to store data.

In response to this prompt—

```
Name of indicated ROM:
```

type up to 9 characters to identify the chip and press [ENTER].

Repeat this process until you have identified all of the indicated sockets.

5. Once you have identified each of your installed ROM chips you will see the ROM Name Menu, showing the names you have assigned to the ROM chips. At the bottom of the menu this message appears:

```
Press ESC for NO ROM, or
Select ROM name then press ENTER
```

If you are creating this environment for a program not on one of your ROMs, press [ESC]. Otherwise, move the bar cursor over the name of the ROM chip for which you are creating the environment and press [ENTER]. Either way you will be returned to the current directory of the RAM Disk Menu.

6. You must initialize the ROM chip you have associated with this environment: place the bar cursor over BASIC, press [ENTER], and initialize the chip as instructed by the manual for that chip. (If you did not select a ROM name in the previous step, move on to the next step.)

   When the chip is initialized and the program on it is running, exit the program, usually by pressing [F8]. You are now back in the RAM Disk Menu. For your own information you might want to check the Workspace Menu; this is where the files created when you initialized the ROM chip are now stored. Press [F4] (Work) to move to the workspace. Then return to the RAM Disk Menu; press [F4] (now RAM).

7. Now is the time to load into the workspace any files from disk or the RAM disk which you want included in the environment you have just created. These are files that you want loaded into the workspace each time you activate this environment. (If you have initialized a ROM chip of your own, these files will be added to those already in the workspace.)

   Remember that the data files associated with an environment are not fixed. You may add or delete files each time you use that environment.

   Refer to page 2-24 for instructions on copying files from the RAM disk to the workspace or page 2-28 for instructions on copying files from disk to the workspace.

8. You are now ready to save your new environment: place the bar cursor in the RAM Disk Menu (and in the directory where you created that environment) over the name of the environment and press [ENTER]. You are now asked if you want to update that environment:

   Update _____ Environment (Y/N)?

   Press [Y] to save for future use the environment named in the message.

Creating Other Environments

In general you will create new environments much as you created the first one—that is by creating an entirely new environment. There will be times, however, when you may want to save time by duplicating an existing environment, which you can then modify at your discretion.

Creating New Environments. You must start anew each time you create an environment for a different ROM chip—that is, a ROM chip for which you have not yet created an environment. You will also want to start anew if you have created environments for only ROM-based programs and now want to create an environment for some other program.

To create an entirely new environment begin as instructed on page 2-15—that is, *load the NULL environment as the first step*. (When asked whether you want to update the current environment you will probably want to answer yes.)

Then proceed as before. Note that you will not see the ROM Map (step 4) again unless you have installed a new ROM chip or have changed the chip in any of the sockets in the meantime.

Duplicating Environments. You may want to duplicate one or more of the environments you have created for programs on ROM chips. In doing this you will save yourself the time of reinitializing the chips.

To duplicate an existing environment move to the directory where that environment is located and *load that environment instead of the NULL environment as the very first step*. You may now remain in the current directory or move to another directory where you want the environment duplicated. Press F7 (MkEn). Assign this environment a new name. Once you have loaded into the workspace any files from the current directory you want

included in the environment, update the environment (step 8).

Example: Let's say that you have created a WORD environment for T-Word or some other ROM-based word processor in the LETTER directory. Now you want to create a similar environment in the PROJ1 directory. First move to the LETTER directory and load the WORD environment by placing the bar cursor over WORD.## and pressing [ENTER]. Now log onto the PROJ1 directory: press [F8] (MkDr) and type PROJ1 [ENTER]. To duplicate the current environment (WORD) press [F7] (MkEn), type WORD2, and press [ENTER]. Once you have copied whatever files into the workspace you want to include in the environment, save the environment: in the RAM Disk Menu of the PROJ1 directory place the bar cursor over WORD2.## and press [ENTER]. In response to the next two prompts press [Y].

In practice, you will probably have in each directory just one environment for each ROM-based program, but you are not limited to just one. With a program like Traveling Software's T-Base (part of the Ultimate ROM II chip), for example, there are certain files associated with different operations of the program. For ease of use you might create different versions of the same Ultimate ROM II environment: one designed to load only the files necessary to add entries to a name and address file, for example, and another to enter orders.

Using Environments

Now that you have set up environments for your programs and data files, these are the steps you must take to move from one program to another, from one environment (the current environment) to another:

1. Make sure that you are in the directory in which you created the environment for the program you want to use. Place the bar cursor over the name of that directory and press [ENTER].

2. You now must choose whether to update the *current* environment before you replace it with the new environment. Usually you will press [Y] to update. You are then asked whether to load the environment you have selected. Press [Y]. For more about these options see below.

3. Move to the workspace: press [F4] (Work).

4. In the Workspace Menu place the bar cursor over the program file and press [ENTER] to run the program.

When you have finished, exit the program and press [F4] (Ram) to return to the RAM Disk Menu.

Updating Environments

When you load an environment the original files associated with that environment remain in the RAM disk while you work on copies in the workspace. When you update that environment the copies in the workspace (with all your changes and additions) are stored in the RAM disk and replace the original files. (Remember that the copies are stored in the directory of the RAM disk which was current when you loaded that environment.)

> Consider the RAM disk as a safe repository for your files, and the workspace as a place where you will have files only while you are working on them. Once you have finished working on the files, update the current environment to save your changes! It's a good practice, too, to update an environment periodically while you are working on any of its files, to guarantee that you will not lose the work you have done in the event of a cold start or some other problem.

To update an environment you must return to the RAM Disk Menu and select an environment. If you want to continue working in the same environment select the current environment. Then press [Y] in response to the first question: Update _____ Environment (Y/N)?.

If updating is essential to saving your work, why are you given the choice of *not* updating? There may be times when something goes wrong while you are working in the workspace: files may become corrupted or you may do something that you do not want to save. In this case you will want to press [N] (or any other key except [Y]) in response to the Update _____ Environment (Y/N)? question. In so doing you will leave the files in the environment just as they were the last time you updated this environment.

When you are exchanging one environment for another there is one situation in which you will not be asked whether to update the current environment. This happens only when the current environment is the NULL environment. Since this environment is unchangeable, the question is irrelevant.

By updating an environment you are not removing anything from the workspace. You are simply *copying* the contents of the workspace to the RAM disk. The current contents can be removed only by loading a different environment or by killing all of the files.

Files That Do Not Appear in the RAM Disk Menu. There are certain kinds of files that appear in the Workspace Menu but not in the RAM Disk Menu. These are usually files created when a ROM chip was initialized (UR-2 for the Ultimate ROM II, for instance).

Though not visible in the RAM Disk Menu, these files are not lost. In fact, each time you update an environment containing any of these files, you are storing them in the RAM disk, as part of the file for that environment. Any changes you made in the current session will be saved for future use. Whenever you load that environment in the future, you will see these files as soon as you move to the Workspace Menu.

Loading Environments

Only by pressing [Y] in response to the Load _____ Environment (Y/N)? question can you load the environment you have selected by the bar cursor. (The name of that environment will appear as part of the question.)

If you press [N] (or any other key except [Y]) the current environment will remain in effect and the contents of the workspace will remain unchanged.

More often than not you will want to load the designated environment. You might *not* do so, however, if you realize that you have selected the wrong environment or if you mistakenly chose not to update the current environment in the previous question and now want to retain the changes you have made in the files.

There is only one circumstance in which the Load _____ Environment (Y/N)? question will not follow the Update _____ Environment (Y/N)? question: when you select the name of the *current* environment and press [ENTER]. When you are updating an environment with the intention of continuing to work on its files, select the name of that environment and press [ENTER]; then press [Y] to update. The current environment remains loaded.

Copying Files

The BOOSTER PAK lets you copy files freely between the RAM disk, the workspace, and a disk drive. Copying makes an exact duplicate of the file; the original is preserved, not erased.

You can copy files individually or, through tagging, several at once. You can also back up to disk the entire contents of the RAM disk—or of a single directory in the RAM disk—in one operation.

All of the copy operations are available through function key options in the three BOOSTER PAK menus.

Copying Files from the RAM Disk

Files in the RAM disk can be copied—

- to the workspace
- to a disk drive
- or to some other directory in the RAM disk

To copy files in the RAM disk to any of these locations, move to the RAM Disk Menu. Then log onto the directory containing the file or files you want to copy. (To backup the entire RAM disk or a single directory of the RAM disk, see *Backing Up the RAM Disk*, page 2-29.)

If you intend to copy to a portable disk drive, attach the disk drive cable to the RS-232C serial port of your Tandy computer, turn the disk drive on, and insert a disk into the drive. If you are using DESK-LINK to copy files to a desktop computer, connect the cable from the desktop computer to the RS-232C serial port of your Tandy computer; then start DESK-LINK on the desktop computer.

Copying One File at a Time. To copy a single file place

the bar cursor over its name and press [F1] (Copy). The function key prompts then change to reveal four new options. Press—

[F1] (Ram)	to copy the file to another directory in the RAM disk
[F2] (Work)	to copy the file to the workspace
[F3] (Disk)	to copy the file to the disk drive
[F8] (Quit)	to abandon the copy operation

Once you press [F1], [F2] or [F3], this prompt appears:

```
New Name:
```

Unless you are copying to a different directory in the RAM disk, you have this choice: press [ENTER] to copy the file with its current name or type a new file name and then press [ENTER].

When you are copying to a different directory in the RAM disk you must designate the name of that directory. Follow this format:

```
/DIR
```

where DIR is the name of the directory you are copying to. You now have this choice: press [ENTER] to copy the file with its *current* name or type a new file name and then press [ENTER].

If you want to change the name of the file follow this format:

```
/DIR/NAME
```

where DIR, again, is the directory you are copying to and NAME is the name you want assigned to the file in its new location.

Once the copy operation is under way a Working message will appear in the lower left corner of the screen. When the message disappears, the copy operation is complete.

Copying Over Files. Anytime you try to copy a file to a location where a file of the same name is stored you will see this message:

```
File exists. Replace (Y/N):
```

Press [Y] to copy over the file—that is, replace it with the file you are copying. Press any other key not to copy the file.

Copying Tagged Files. Copying files you have tagged is like copying files individually, with this exception: you cannot change the names of the files. Once you have tagged the files to be copied (see page 2-10 for instructions), press [F1] (Copy). Then press [F1], [F2], or [F3] to select where you want the files copied.

If you press [F1] (Ram) to copy files to a different directory, this prompt will appear:

```
Directory Name:
```

Type / followed immediately by the name of the directory to which you want to copy the file; press [ENTER].

The copy operation begins immediately; it is complete when the Working message disappears and the tags are removed.

Files You Cannot Copy. There are certain files that appear in the RAM Disk Menu but cannot be copied elsewhere. These include the files for the BASIC, TEXT, and TELCOM applications and the files for directories.

Environment files can be copied only to disk. They cannot be copied to the workspace.

Copying Files from the Workspace

Files in the workspace can be copied—

- to a directory in the RAM disk
- or to a disk drive

If you intend to copy to disk, make sure that the disk drive is connected to your Tandy computer and turned on. If you are using DESK-LINK to copy files to a desktop computer, start that program on the desktop computer.

In the Workspace Menu place the bar cursor over the file to be copied or tag several files to be copied at once. Press [F1] (Copy). The function key prompts then change to reveal three new options. Press—

[F1] (Ram)	to copy to a directory in the RAM disk
[F3] (Disk)	to copy to the disk drive
[F8] (Quit)	to abandon the copy operation

Copying One File at a Time . When you have moved the bar cursor to select a particular file (and have not tagged any files) you will see the New Name prompt as soon as you press either [F1] or [F3].

You may now either press [ENTER] to copy the file with its current name or type a new name and then press [ENTER]. When you are copying to the RAM disk, either of these actions will copy the file to the *current* directory. To specify a different directory enter /DIR, where DIR is the name of that directory; to change both the directory and the file name, enter /DIR/NAME, where DIR is the name of the directory and NAME is the name you want assigned to the file in the RAM disk.

Copying Tagged Files. Copying tagged files from the workspace is like copying individual files, with this exception: you cannot change the names of the files as part of the copy process.

When files in the Workspace Menu have been tagged, the copy operation begins as soon as you press [F3] (Disk). If you press [F1] (Ram) the Directory Name prompt appears: press [ENTER] to copy the files to the *current* directory, or type another directory name in the /DIR format and then press [ENTER].

Files You Cannot Copy. There a certain kinds of files that appear in the Workspace Menu but cannot be copied elsewhere. Among these are invisible files, files without extensions (the UR-2 file which activates the Ultimate ROM II, for example), and files whose extensions do not match the type of file. Included in this last group are files like the WSPECT.DT file of Write ROM; though a machine-language file, this file does not have the CO extension characteristic of machine-language files.

Copying Files from Disk

Files on disk can be copied—

- to a directory in the RAM disk
- or to the workspace

If you are going to copy files from a portable disk drive, make sure that the drive is connected to your Tandy computer and that the drive is turned on and contains the disk from which you want to copy files. If you are going to copy files from a desktop computer, connect that computer to your Tandy computer and start the DESK-LINK program.

In the Disk Menu place the bar cursor over the file to be copied or tag several files to be copied at once. Press F1 (Copy). The function key prompts then change to reveal three new options. Press—

F1 (Ram)	to copy to a directory in the RAM disk
F2 (Work)	to copy to the workspace
F8 (Quit)	to abandon the copy operation

Once you press F1 or F2 the procedures for copying files are exactly like those for copying files from the workspace. See *Copying One File at a Time* and *Copying Tagged Files* on page 2-27. Also see *Copying Over Files*, page 2-26.

Backing Up the RAM Disk

The backup option in the RAM Disk Menu lets you back up all the files in the RAM disk or in just one of its directories. The files can be backed up on a 3½-inch disk in the portable disk drive or, through DESK-LINK, on a desktop computer.

Before you can back up files to the portable disk drive, the drive must be turned on and connected to your Tandy computer. If you are backing up files to a desktop computer, it must be connected to your Tandy computer and the DESK-LINK program must be running.

It might be worth your time to look at the Disk Menu to see if the disk to which you will backup your RAM disk files has room for more files. (Check the number following Free.) Should the disk fill before the operation is complete you will see a message informing you of that fact. Replace the disk with another; then press any key to resume copying. If you insert an unformatted disk, you will be asked whether you want it formatted; press any key and the disk will be formatted and the copy operation will continue.

To back up a single directory log onto that directory before beginning the backup operation. It does not matter which directory you are logged onto when you back up the entire RAM disk.

In the RAM Disk Menu press [F6] (Bkup). In response to this prompt—

```
Current directory or All files  C/A
```

press [C] to back up only the current directory; press [A] to back up the entire RAM disk.

As the copy operation proceeds you will see a message indicating which file is being copied at the moment and from which directory. You will also see this message:

Working. When both of these messages disappear, the operation is complete.

By backing up the RAM disk to a desktop computer you will preserve the directory structure of your files as it exists on the RAM disk. Any directories not on the desktop computer when you start the process will be created as the copy process proceeds. The directory structure is not preserved, however, when you back up the RAM disk to a portable disk drive.

There are certain kinds of files that will not be copied as part of the backup operation. These are the same files that are not copied from the RAM disk by the Copy function key; see page 2-26.

Macros

Macros allow you to reduce several keystrokes to just two. Macros are not essential to the operation of the BOOSTER PAK, but they can save you time and effort on repetitive tasks.

As an example, let's say that you use T-Word or some other word processor to print files on a regular basis. You could define a macro to handle this process for you. After moving to the appropriate directory and loading the appropriate environment, you can print a file simply by placing the bar cursor over the name of that file and executing the macro.

How Macros Work

Macros in the BOOSTER PAK can be defined for [ENTER] in combination with one other key. To execute a macro you will select a file and press that key and [ENTER].

Since [ENTER] is always part of a macro, the first step in the execution of a macro is to load the selected file into the workspace. What happens then depends on whether there is a ROM-based program associated with that environment.

If there *is* such a program the selected file is loaded into the workspace and the ROM-based program is run. Then the macro takes control. Whatever keys you have defined for the macro now operate the program for you: function keys are activated, the bar cursor is moved, arrow keys are pressed, and so on.

If there is *not* a ROM-based program associated with the current environment the BASIC or machine-language program selected by the bar cursor is loaded into the workspace and run. The macro then takes control, operating

the program according to the keystrokes you have defined for that macro. (Unless the current environment has a ROM-based program, there is little point to using macros with data files; the macro would merely open that file in the TEXT program and enter whatever keystrokes are defined for that macro.)

Once a macro is finished, the program takes over. When you exit the program, you will return to the RAM disk and the file selected by the bar cursor when you executed the macro will be copied back to the RAM disk along with any changes you made in that file in the meantime.

When you execute them, macros are stored in the keyboard buffer of the Tandy computer. Certain programs (like Write ROM and Lucid), however, empty the keyboard buffer when they are run. You cannot use macros with such programs.

Defining Macros

There are certain rules that govern the definition of macros:

- Each macro is associated with a particular environment, and no more than 4 macros can be defined for each environment.
- Macros can be defined for [ENTER] and one of these keys: [CTRL], [SHIFT], [GRPH], and [CODE].
- No more than 14 keystrokes can be defined for each macro.
- When defining a macro, you can include any of the letter and number keys, the function keys, the arrow keys, [ENTER], [BKSP], [TAB], [ESC], and the [SHIFT] and [CTRL] keys in combination with other keys.

1. The first step in defining a macro is to determine exactly what operations you want it to perform. Then

go through these operations yourself, making notes of the keystrokes you want the macro to perform for you *once a program is running*.

Example: To use a macro to print a file through T-Word on the Ultimate ROM II chip, run the Ultimate ROM II with a file you want to print. The bar cursor in the Ultimate ROM II menu now selects the T-Word program: press [ENTER] to run T-Word. (This will be the first keystroke for this macro.) In the T-Word file-selection screen the file to be printed appears just to the right of the one selected by the bar cursor: press [SPACE] or the [→] arrow key and then [ENTER]. In the T-Word print menu now on the screen, select the Prnt function key to print: press [F5].

2. Return to the directory of the RAM disk where you want to use the macro. *Make sure that the environment in which you want to use this macro is loaded.*

3. Press [M]. You will then see a message telling you to press one of the four macro keys and then [ENTER]. Hold down [CTRL], [SHIFT], [GRPH], or [CODE] and press [ENTER]. You have just selected the macro key to be defined.

4. The screen now shows these prompts:

   Current:
   New Macro:

   If this is the first time you have defined this macro, there will be nothing after the Current prompt. Once you have defined this macro, however, you will find its current definition here. To retain the current definition press [CTRL]-[C].

   To define a new macro—or to redefine an existing one—type the keystrokes you want the macro to perform. Type as many as 14 keystrokes. When you have finished press [CTRL]-[C].

If you make a mistake press [CTRL]-[C] and resume with the previous step.

For the most part the screen will display the keystrokes you enter just as you might expect: f2 for [F2], A for [SHIFT]-[A], → for [→], and so on. Other keystrokes are less obvious: ^M for [ENTER], ^I for [TAB], ^[for [ESC], for instance.

Example: To define a macro for the T-Word printing operation suggested in step 1, press [ENTER], [SPACE], [ENTER], and [F5] or [ENTER], [→], [ENTER], [F5]. This will appear on the screen like this: ^M ^Mf5 or ^M→^Mf5. Now press [CTRL]-[C] to save the definition.

Using Macros

To use a macro be sure that you have logged onto the directory containing the environment in which you created that macro. Then load that environment.

Place the bar cursor over a file name. Then hold down [CTRL], [SHIFT], [GRPH], or [CODE]—whichever you have defined for that macro—and press [ENTER].

If the macro does not work as expected, you may have to repeat step one in the definition process, making sure that the keystrokes you defined are the ones you want performed in the program. To correct your definition, return to the RAM disk. In the directory and environment for that macro press [M]; then hold down whichever key you defined for that macro and press [ENTER]. Check the current definition; to enter any changes you must start fresh. Then press [CTRL]-[C] to save the definition.

Section 3

Accessing Files through TEXT and BASIC

Where to Look in Section 3

Accessing Files through TEXT and BASIC

There is a part of the BOOSTER PAK software which gives you access to files in various locations whenever you are working in either the TEXT or the BASIC application built into your computer.

The files to which you have access may be on disk in either a 3½-inch portable disk drive or (through the DESK-LINK program) a desktop computer. They may also be in the RAM disk of the BOOSTER PAK itself. (Remember that while in either TEXT or BASIC you are working in the BOOSTER PAK workspace.)

Accessing files is a two-way street: information can be transferred from the workspace to disk (or RAM disk) or vice versa, from disk (or RAM disk) to the workspace.

While you are working on a file in TEXT, for example, you can save that file directly to the RAM disk—a good way to ensure against losses in the event of a cold start. You can also load another file (from a portable disk drive, for example) directly into the file you are working on; this is a good way to add boilerplate or to join two files you no longer want separate.

The possibilities open to anyone with a mind for programming in BASIC are more numerous. Through BASIC you have access to large data files stored in the RAM disk or a desktop computer; these may be files that are too large to fit into the workspace of your laptop computer. From within a BASIC program, too, you can view a directory of files stored in the RAM disk or a desktop computer.

Designating the Location of Files

Since the BOOSTER PAK gives you access to files in three different locations—portable disk drive, RAM disk, and (through DESK-LINK) desktop computer—you must designate the *location* of the file you want access to along with its name. Designate location *before* file name.

Accessing Files on Disk—Ø: or 1:

With only one exception you will always type Ø: to designate a file stored on disk in either a portable disk drive or a desktop computer. The exception applies to owners of the Tandy Portable Disk Drive 2. Since this disk drive stores files in two banks—Ø and 1—you must designate which bank you want access to: type Ø: for access to bank Ø, 1: for access to bank 1.

Examples: To access a file named LET887 on disk in the original version of the Tandy Portable Disk Drive, type Ø:LET887. To access a file of the same name in bank 1 of the Tandy Portable Disk Drive 2, type 1:LET887.

Accessing Files in the RAM Disk—R:

To access a file in the RAM disk of the BOOSTER PAK, type R: followed by the file name. This designation will give you access to any file in the *current* directory; if you want access to a file in a different directory, follow this format:

```
R:/DIR/FILENAME
```

where DIR is the name of the directory to which you want access. Type / before and after the directory name.

Examples: Type R:TEXT1B to access the TEXT1B file in the current directory. Type R:/UR-2/TEXT1B to access the TEXT1B file in the UR-2 directory (not the current directory).

Accessing Files in TEXT

While working on a file in TEXT you can—

- save the file to disk or RAM disk
- load another file from disk or RAM disk into the current file

Saving Files—F3

Press F3 to save a TEXT file to disk or to RAM disk.

When you press F3, this prompt appears:

Save to:

Type the location (0:, 1:, or R: and the directory, if applicable) and then the file name. There is no need to type the DO extension. Press ENTER.

If you press ENTER without typing a file name, you will abandon the process.

Caution: If you type a file name that already exists in the location you have specified, the TEXT file you are working on will overwrite the file in that location with the same name.

Loading Files—F2

Press F2 to load another TEXT file into the current file; the loaded file will be placed at the end of the current file.

When you press F2, this prompt appears:

Load from:

Designate the location (0:, 1:, or R: and the directory, if applicable) and then the file name. There is no need to type the DO extension. Then press ENTER.

If you press ENTER without typing a file name, you will abandon the process.

Accessing Files in BASIC

The BOOSTER PAK software gives access to files on disk or in the RAM disk through standard BASIC commands. Whenever you use an input or output command, remember to precede the file name with the appropriate designation for location. (See page 3-2.)

Note: When you are accessing files on disk (in a portable disk drive or a desktop computer) you can have only *one* file open at a time. Close that file *before* opening another. In practice, this means that you must separate your read and write commands. Once you have opened a file, you cannot use any commands other than CLOSE or variations of INPUT and PRINT. When you are accessing files in the RAM disk you may open as many files at one time as you wish.

The following is a list of some of the BASIC commands you can use with the BOOSTER PAK.

CLOSE	Closes a file *Example:* CLOSE #1
EOF	Determines if the end of a sequential file is reached *Example:* IF EOF(1) THEN GOTO 4600
INPUT$	Returns a specified number of characters from a file *Example:* A$=INPUT$(5,#1)
INPUT#	Reads data from a file *Example:* INPUT#1,A$,B$,C$
KILL	Kills a file in the specified location *Example:* KILL "0:file.BA"
LFILES	Lists files on disk in portable disk drive or desktop computer

LFILES Ø LFILES 1	Lists files in bank Ø (LFILES Ø) or bank 1 (LFILES 1) of Tandy Portable Disk Drive 2
LFILES R	Lists files in *current* directory of RAM disk
LFILES "DIR"	Logs onto DIR directory of the RAM disk and lists files in that directory *Example:* LFILES "MISC"
LINE INPUT#	Reads a string of characters terminated by a carriage return *Example:* LINE INPUT#1 , A$
LOAD	Loads a BASIC program from disk or RAM disk into memory *Example:* LOAD "R:file . BA"
LOADM	Loads a machine-language program into memory *Example:* LOADM "1:file"
MERGE	Merges two BASIC programs *Example:* MERGE "Ø:file"
NAME	Renames a file *Example:* NAME "Ø:old" AS "Ø:new"
OPEN	Opens a file for input or output; OUTPUT, INPUT, APPEND modes are available for use *Example:* OPEN "Ø:file"FOR OUTPUT AS 1
PRINT#	Prints data to an open file *Example:* PRINT#1 , A$, b$
PRINT# USING	Prints formatted data to an open file *Example:* PRINT#1 USING "## . ###";A

RUN	Loads a BASIC program and begins execution *Example:* RUN "Ø:file"
RUNM	Loads and runs a machine-language program *Example:* RUNM"R:file"
SAVE	Saves a BASIC program to disk or RAM disk. (Include a .DO extension, to store the program in an ASCII format; omit any extension or type .BA to store in binary format.) *Example:* SAVE"Ø:file.BA"
SAVEM	Saves a machine-language program to disk. Specify start location, end location, and execution address. *Examples:* SAVEM"Ø:file",6ØØØØ,6Ø9ØØ,62ØØØ BSAVE"Ø:file",6ØØØØ,9Ø1,6ØØØØ

Specifications

Physical

Dimensions: 11 3/4" (L) × 8 3/8" (W) × 1 1/8" (H)
(30 cm × 21.5 cm × 3 cm)

Weight: 1 lb. 1 oz. (base unit, without options)
(486 g)

Environmental Conditions

Operating

Temperature: 35° F to 115° F (2° C to 46° C)

Humidity: 30% to 80% non-condensing

Storage

Temperature: -10° F to 140° F (-23° C to 60° C)

Humidity: 20% to 90% non-condensing

Non-Operating Power Requirements

Source: Built-in 3VDC 1.2A lithium battery for RAM backup

Usage: 10μA with 136K RAM (estimated battery life 10 years)
50μA with 2MB RAM (estimated battery life 2.78 years)
Measurements taken at room temperature (68° F, 20°C)

Operating Power Requirements

Source: Host computer (Model 100/102)
5VDC at bus.

Usage: 5mA–10mA depending on configuration and activity (for an increase of the host computer's power usage of 10% to 15%)

Limited Warranty

Hardware. Traveling Software, Inc., ("TSI") warrants to the original purchaser that this hardware product (not including RAM or ROM chips or documentation) shall be free from defects in materials and workmanship for a period of one year from the date of purchase. At its option TSI will repair or replace at no charge any TSI hardware product that proves to be defective within the warranty period. This limited warranty shall not apply if the hardware product has been damaged by unreasonable use, accident, or negligence or by service or modification by anyone other than a service center authorized by TSI, or by any other causes unrelated to defective materials or workmanship.

The original purchaser must return the owner registration card (included with the product) as a condition precedent to warranty coverage and performance. To receive warranty service a defective hardware product must be received by a TSI-approved service center no later than one week after the end of the warranty period. The hardware product must be accompanied by proof of the date of purchase satisfactory to TSI and by a Return Merchandise Authorization (RMA) number issued by TSI. For an RMA number and the location of the nearest authorized service center contact Traveling Software, Inc., 19310 North Creek Parkway, Bothell, WA 98011, (206) 483-8088. Purchasers must prepay all delivery costs or shipping charges to return a defective TSI hardware product under this warranty policy. If you ship any such hardware product, package it securely (using the original packing materials, if possible) and insure it for value; TSI assumes no liability for loss or damage incurred during shipment.

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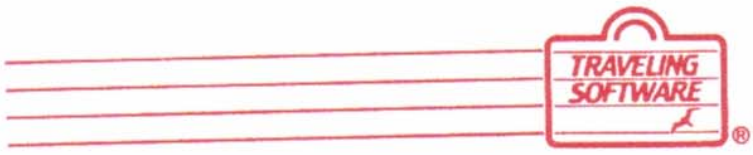

Traveling Software, Inc.
North Creek Corporate Center
19310 North Creek Parkway
Bothell, WA 98011
(206) 483-8088