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.

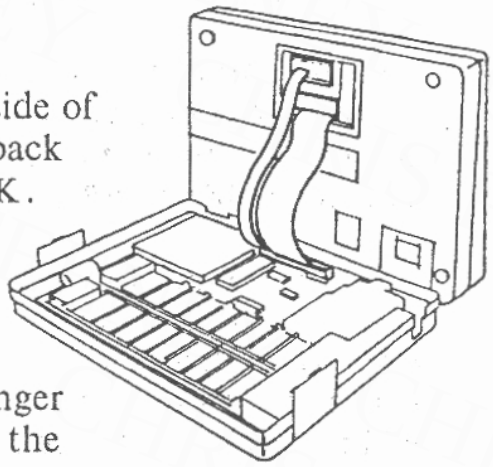
2. Locate the ROM module expansion compartment and remove the cover. This compartment is located at the bottom center of the Tandy 100, near the lower right corner of the Tandy 102. Store the cover; you will not need it as long as you are using the BOOSTER PAK with your computer.

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.

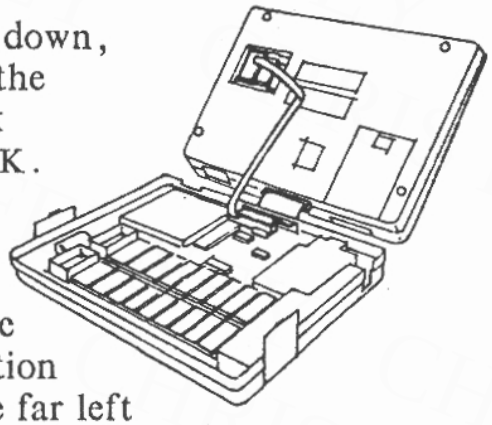
4. Take the connector at the free end of the *narrower* connector cable and insert it into the option ROM socket—now the only open receptacle in the ROM module expansion compartment of your computer. Press the connector firmly into place.

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 5,0 [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 5,0 [ENTER]
CALL 911
```

Then press only [ENTER].

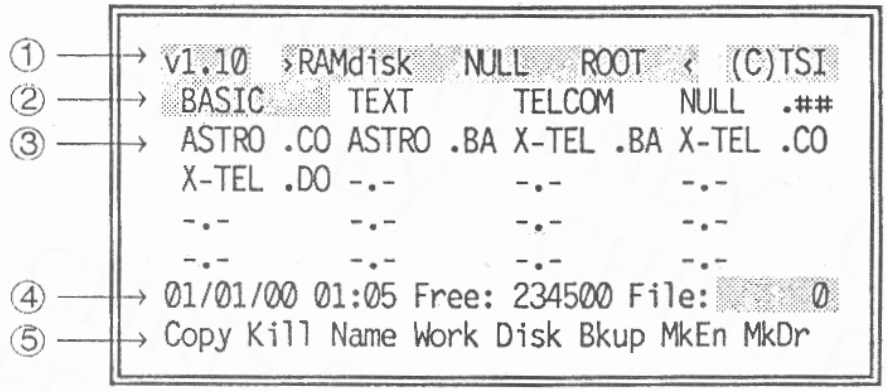
Section 2

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.

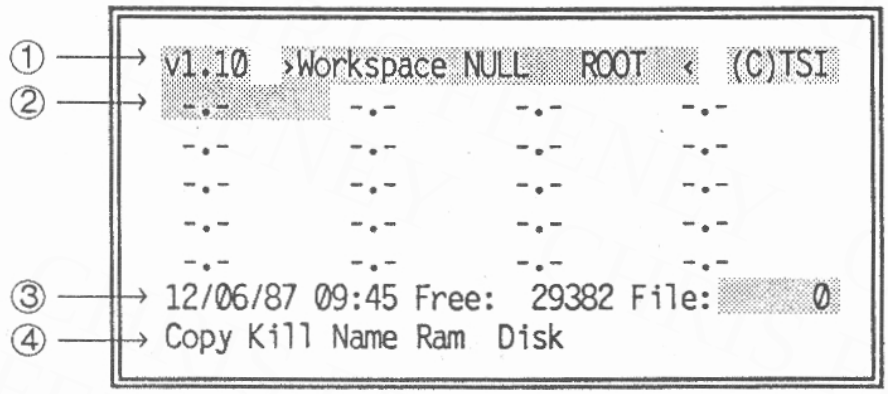
⑤ The bottom line lists the function key options available in this menu.

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.

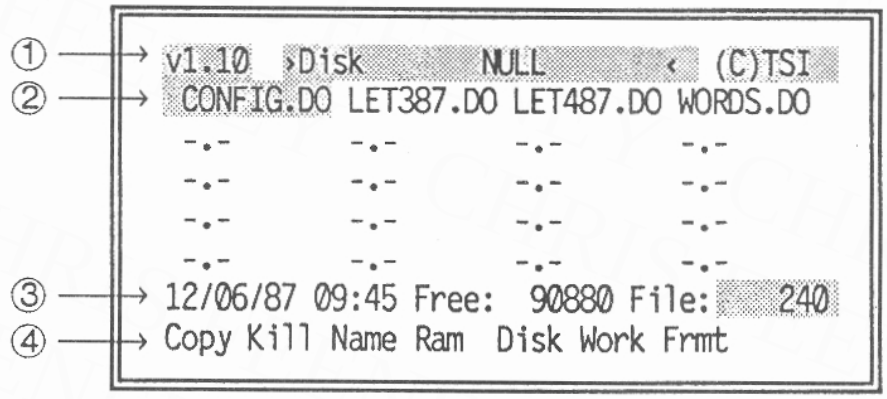
④ The bottom line lists the function key options available in this menu.

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.)

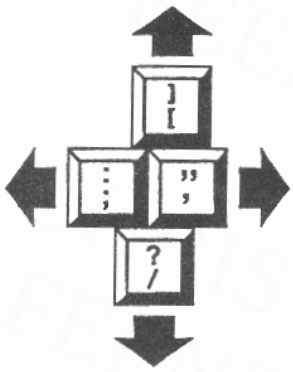
Special Keys

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—



[E] 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]-[E] 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.