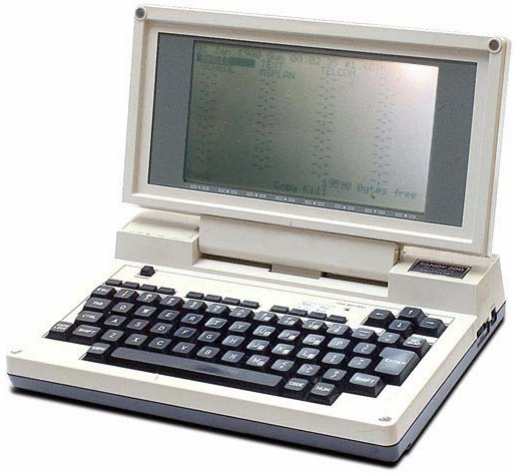
TS-DOS Manual



A Disk-Operating System for the Tandy 100, 102, 200 and the NEC PC-8201 and PC-8300

Welcome to TS-DOS

As you may remember, users of Tandy and NEC notebook computers once were faced with a dilemma: limited room for files and no efficient way of storing and retrieving them. Files could be stored only on cassettes-a slow and not very reliable method. Then disk drives were introduced. They greatly increased the flexibility of notebook computers, but the first disk operating systems left much to be desired.

In this vacuum Traveling Software developed TS-DOS so that notebook computer users could realize much more of the potential of their machines. TS-DOS continues to prove itself as one of our most popular programs for notebook computers.

Though it has undergone various changes since its introduction, TS-DOS retains its original design. It provides menus as easy to use as those built into the computer themselves: the user need only move the bar cursor to select a file and then press a function key to perform a particular operation. By adding the tagging feature, we speeded up those operations that involve several files at once: the user need only tag the files to be copied or deleted and then complete the operation with a keystroke or two.

We also made it possible to leave a small portion of TS-DOS resident in RAM for use with TEXT and BASIC files. When this portion is resident, the user can press a function key to copy a TEXT file to and from disk either from within the file (on Tandy computers) or from the main system menu (on NEC computers). Programmers can use this resident portion to access disks through standard BASIC commands.

And now Traveling Software is pleased to make available this version of TS-DOS, which allows notebook computer users to store their data directly on an IBM-compatible PC, greatly increasing storage size and ease of use.

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Section 1: Using This Book

How to Get Started

If you are like most people, the question on your mind right now is How do I get the program started?

The answer is, it depends. It depends first on whether you intend to use TS-DOS with a portable disk drive or a PC compatible computer. Then it depends on the version of TS-DOS you purchased-whether on the TS-DOS ROM chip or a 3 1/2 inch disk.

As you soon will discover, the pages of this manual explaining the operation of TS-DOS are few compared with those explaining the steps necessary to getting the program started. Because the getting-started pages cover a variety of situations, it is important that you locate the instructions you need; ignore the rest.

Choose the description that fits you and turn to the sections that will get you started:

You want to use the ROM chip version of TS-DOS with a portable disk drive: Turn to Section 2. There you will learn how to install the ROM chip in your computer and make TS-DOS available for use.

You want to use the disk version of TS-DOS with a portable disk drive: Whether you intend to use TS-DOS by itself or in combination with the Ultimate ROM II or the T-Word/Sardine chip, turn to Section 3. There you will learn how to prepare the disk drive, run TS-DOS off the master disk, and prepare a disk of your own to run the program

You want to use the TS-DOS ROM chip with BOOSTER-LINK and a PC-compatible computer: Section 4 will orient you to the use of TS-DOS with your PC-compatible computer. You will be referred to the pages in Section 2 you need to follow for installing the TS-DOS chip and starting the program

You want to use the disk version of TS-DOS with BOOSTER-LINK and a PC-compatible computer: Turn to Section 4 for a general orientation to the use of TS-DOS with your PC-compatible computer. There you will be referred to the parts of Section 3 you need to get TS-DOS started.

You want to use the disk version of TS-D05 with BOOSTER-LINK and the Ultimate ROM II, the T-Word/Sardine ROM chip, or the Sardine Plus ROM Pack: Turn to Section 4 for a general orientation to the use of TS-DOS with a PC-compatible computer. As that section explains, you must refer to your BOOSTER-LINK manual and to the manual for the Ultimate ROM II, T-Word/Sardine, or the Sardine Plus ROM Pack to get started.

How to Use the Program

Once you have TS-DOS running you are ready to learn how to use it.

Section 5: The TS-DOS File Menus, begins with a brief overview of the TS-DOS program. The remainder of the for files in your computer (RAM files) and the other for section introduces you to the two TS-DOS menus: one files on disk. The function keys available in each menu are listed and explained.

Section 6: Using TS-DOS with TEXT and BASIC, explains how to install and use the resident portion of TS-DOS. Whether working with TEXT files or programming in BASIC, you may find that this small portion of the program will meet your needs. Here you will learn how to use **SAMPLE.BA**, the sample program that illustrates the use of BASIC commands with the resident portion of TS-DOS.

Also in this book ...

Appendix A: An alphabetical list of error messages and steps to recover from them.

Appendix B: Instructions on removing the TS-DOS ROM chip from your computer.

Appendix C: A listing of SAMPLE.BA, the sample BASIC program included on the master disk as an illustration of how to program with TS-DOS.

Appendix D: The steps to take to recover TEXT files in the event that you accidentally cold start your computer.

Terms Used in This Book

Listed below are some terms frequently used in this book.

Byte: A unit of information. Example: the word random requires six bytes of memory, one for each character. When this manual specifies that a certain operation requires so many bytes free, look at the number in the lower right corner of your computer's main system menu to determine if you meet the requirement. There are 1,024 bytes in one kilobyte (1K).

Cold Start: The process by which all the contents of RAM even the date and time-are cleared. After a cold start the main system menu of your computer will show only the BASIC, TEXT, TELCOM, ADDRSS, and SCHEDL files (all located in ROM). Cold starts may happen spontaneously, while you are performing some operation on your computer. Or as a last resort you may have to cold start the computer yourself if it locks up and you are unable to use the keys even after pressing the RESET button.

To cold start a Tandy computer, make sure the computer is oil and then hold down **CTRL BREAK** while you press **RESET** . To cold start an NEC computer, make sure the computer is on and then hold down **SHIFT CTRL** while you press **RESET**

DIP Switches: The four small switches on the bottom of many models of portable disk drives which determine the rate of transmission between the disk drive and the computer. (DIP is an acronym for Dual In-line Package.)

Formatting: The process that prepares a disk to accept data. Only after a disk is formatted can it be used to store and retrieve files. **Note:** Formatting a disk also erases any information that may be on that disk. Format only blank disks or disks containing information you no longer want to save.

High Memory: The part of RAM used by machine-language and some BASIC programs while they are operating. Files located in high memory do not appear on the computer's main system menu-but they eat up memory just the same.

K: The abbreviation for kilobyte, a unit of measure that equals 1,024 bytes. If a file is 4K in size, it contains 4,096 characters, spaces, numbers, and symbols.

RAM: Random Access Memory, the part of the computer's internal hardware that makes it possible to store and retrieve information. In this book, RAM is used as shorthand for the part of memory in which document and program files are stored.

ROM: Read Only Memory, the contents of a ROM chip are set during manufacture and are permanent unless erased by ultraviolet irradiation. The user cannot modify the chip. Information can be read from a ROM chip but not to it.

Section 2: Getting the ROM Version Started

Introduction

Follow the instructions in this section, and you will be ready to use the ROM version of TS-DOS.

Once you complete these instructions, skip sections 3 and 4 and move on to sections 5 and 6 for instructions on how to use the program.

Getting the ROM version started requires three steps:

1. Prepare the disk drive
2. Install the chip in your computer
3. Initialize the chip

If you are used to installing and initializing the Ultimate ROM II chip, you are prepared for the TS-DOS chip. These processes are identical for the two chips.

Memory Requirements

The ROM version of TS-DOS places few requirements on the limited memory of your notebook computer. Unlike the disk version, the ROM version does not require that you store the operating program, **D0SXXX.CO**, on disk or in RAM. This program resides in the ROM chip and is ready for use whenever your chip is installed and initialized.

When you initialize the ROM chip a small file is created to give you access to the program. Other than the few bytes occupied by this file you may never need additional memory to operate TS-DOS.

If you are using TS-DOS to operate a 200K Tandy Portable Disk Drive or, through BOOSTER-LINK, a PC-compatible computer, there are no additional memory requirements for TS-DOS. But if you are using a 100K Tandy or Purple Computing disk drive, you will need a certain number of bytes free to perform a few operations like renaming a file; the memory requirements for these operations are noted wherever in this manual those operations are explained.

Software on Disk

The disk you received with your TS-DOS ROM chip contains several files, only one of which may interest you. The file named **SAMPLE.BA** is a sample program that demonstrates the use of BASIC commands with TS-DOS. See Section 6 and Appendix C for more information.

The other files on the disk are intended for use with the disk version of TS-DOS. On the ROM version the functions of these files are performed entirely by the ROM chip. (If these files, see page 3-3).

Preparing the Portable Disk Drive

Follow the instructions below to prepare your portable disk drive for TS-DOS.

If you have a 200K Tandy Portable Disk Drive ignore the first step; this drive has no DIP switches. But if you have a 100K Tandy or Purple Computing portable disk drive be sure to follow the instructions in the first step for turning the DIP switches off.

1. If you have a 100K drive, turn it upside down and locate the small rectangular DIP switch cover. Using a paper clip or the top of a pen, remove the cover and set the four DIP switches to off. Replace the cover and turn the drive right side up.

2. If the disk drive is turned on when you change the DIP switches on your portable disk drive, remember to turn the drive off, wait a few seconds, and turn it on again. The drive will not recognize the new settings otherwise.

3. Connect the disk drive to the computer using the connector cable: the larger end of the cable plugs into the RS-232C port in the rear of the computer; the smaller end plugs into the RS-2320 port in the rear of the disk drive. If either end doesn't go in easily, turn it over and try again. Make the connections secure. Loose connections cause problems!

4. Give power to the disk drive using either four AA batteries or an AC adapter.

5. Turn the ON/OFF switch on the front of the disk drive on. The disk drive is now ready to be used.

Installing the Chip

Follow these steps to install the TS-DOS chip in your computer.

Handle your TS-DOS chip with care. Do not touch the contact pins, and leave the label in place; by removing it, you may destroy the program.

1. Make sure you have exited any application now on your computer and returned to the main system menu. If you are using the Ultimate ROM II chip, remove the chip and its programs before installing the TS-DOS chip. See page 13 of the Ultimate ROM II Installation Guide for instructions.

2. Is there anything in your computer you don't want to lose? Back it up! Something may go wrong, causing your computer to cold start and destroy all of your files. Back up all irreplaceable document files and programs before proceeding.

3. Check the main system menu of your computer; it should have at least one empty file slot and **500** bytes free. Delete files if necessary.

4. Turn the computer off.

5. Turn the computer bottom side up, so that the type on the labels on the bottom is right side up.

6. Locate the ROM module expansion compartment and gently remove the cover.

   Tandy 100: The ROM module expansion compartment is located at the bottom center of the Tandy 100.
   Tandy 102: The ROM module expansion compartment is located near the lower right corner of the Tandy 102.
   Tandy 200: The ROM module expansion compartment is the one at the lower right corner of the Tandy 200.
   NEC PC-8201 or 8300: The ROM expansion compartment is located at the bottom of the NEC. (Remove the three screws.)

7. Locate the receptacle into which you will place the TS-DOS chip:

   Tandy 100: The receptacle is the lower of the two in the compartment.
   Tandy 102: The receptacle is the one on the far right side of the compartment.
   Tandy 200: The receptacle is the one on the left side of the compartment.
   NEC PC-8201 or 8300: The receptacle, labeled ROM 1, is the second one from the left side of the compartment.

8. **Tandy 100, 102, 200**: Evenly and steadily press the TS-DOS chip into the receptacle. If it does not go in easily, turn the chip end for end and try again. There is only one way that the chip will fit into the receptacle properly. The top of the chip should wind up flush with the top of the receptacle.

   Though interchangeable with each other, the Tandy 100 and 102 versions of TS-DOS are not interchangeable with that for the Tandy 200. Installing a Tandy 100 or 102 version in a Tandy 200, or vice versa, will cold start the computer and destroy all data in RAM.

   NEC PC-8201/8300: Hold the TS-DOS chip so that the notch on the chip is toward the small ROM 1 label on the computer, near the receptacle. Align the pins with the receptacle and gently but firmly press the chip into place. Be careful not to bend the pins: they may break! Make sure all the pins are inserted.

9. Replace the cover, turn the machine over, and turn the computer on. If the main system menu reappears on your computer, the TS-DOS chip is properly seated, and you are ready to initialize it.

   If the screen is blank, immediately turn the computer off, return to the ROM module expansion compartment remove the chip, and repeat the entire installation process. If your system has locked up so that the keys are inoperative, press the **RESET** button on the back of your computer. If that fails, you will have to cold start your computer.

Initializing the Chip

Once your TS-DOS chip is properly installed, you must initialize it before you can begin using the program.

1. Turn your computer on.

2. With the cursor over BASIC, press **ENTER**

3. Locate the command below that is appropriate to your computer. Type the command and press ENTER:

   On the Tandy 100/102: `CALL 63013,1`

   On the Tandy 200: `CALL 61167,2`

   On the NEC 8201/8300: `POKE63911,1:EXEC62394`

If you have an NEC PC-8201/8300 with more than one memory bank or if you have outfitted your computer with some kind of memory expansion device, you must perform this step for each of the banks in which you want to make TS-DOS available.

4. As soon as you have performed the previous step, you see the TS-DOS RAM File Menu. Turn to Section 5 for an explanation of this menu or press **F8** on a Tandy or **SHIFT F5** on an NEC to quit the menu.

   If the screen is blank immediately turn the computer off, return to the ROM module expansion compartment, remove the chip, and repeat the entire installation process. If your system has locked up so that the keys are inoperative, press the **RESET** button on the back of your computer. If that fails, you will have to cold start your computer.

Restarting TS-DOS

To restart TS-DOS anytime after the initialization session, place the bar cursor in the main system menu over **TS-DOS** and press **ENTER**

The TS-DOS file is created each time the TS-DOS chip is initialized. This small file must reside in the RAM of your notebook computer if you are to have access to TS-DOS.

Removing the Chip

If you want to replace the TS-DOS chip with another chip be sure to delete (kill) it before removing the chip. See Appendix B for detailed instructions.

Section 3: Getting the Disk Version Started

Introduction

If you intend to use TS-DOS to operate a portable disk drive, the instructions in this section are geared specially to you. But if you intend to use TS-DOS in combination with BOOSTER-LINK to operate a PC-compatible drive, please see Section 4 first; only a few parts of this section apply to you.

Operating a Portable Disk Drive

In any version other than the TS-DOS ROM chip, TS-DOS consists of two programs: an operating program and a program that loads the operating program into the high memory of your notebook computer.

The loading program must reside in your notebook computer before you can start TS-DOS. It can reside there as a separate file or as a function built into one of Traveling Software's ROM products, including the Ultimate ROM II and the T-Word/Sardine ROM chip. If you have one of these ROM products the loading program resides in your notebook computer as soon as you install and initialize the chip. If you lack these ROM products you must follow the procedures outlined later in this section for creating the loading program in your notebook computer; you will then activate this program each time you want to run TS-DOS.

The TS-DOS operating program may reside either in your computer or on a 3 1/2 inch disk in the portable disk drive. Most users prefer to keep the operating program on disk and save the limited RAM in the computer for other files, but the decision is yours.

These are the main steps you must follow to get TS-DOS started:

1. Prepare the disk drive
2. Turn TS-DOS off the master disk
3. Prepare a disk to run TS-DOS
4. Run TS-DOS off the prepared disk

In Preparing the Portable Disk Drive you will find important information about your disk drive and how it must be prepared for TS-DOS.

In Starting TS-DOS for the First Time you will learn how to operate the program from the master disk.

In Preparing to Use TS-DOS you will learn how to prepare a disk of your own to operate the program.

And in Running TS-DOS you will learn how to use that disk to run TS-DOS.

Software on the Master Disk

The TS-DOS master disk contains four files. Note that if you are using TS-DOS with the Ultimate ROM II or T-Word/Sardine, only the last two files — **DOSXXX.CO** and **SAMPLE.BA** — are of interest to you.

BOOT: The file that loads the TS-DOS loading program, **TSLOAD.CO**, from disk into RAM. The BOOT file will remain on the disk, never to be loaded into the computer.

TSLOAD.CO: The TS-DOS loading program. It loads the TS-DOS operating program into high memory and runs TS-DOS. Size: about 550 bytes.
DOSXXX.CO: The TS-DOS operating program. To run TS-DOS you will load this program into the high memory of your notebook computer — either from your portable disk drive or from your PC compatible. The name of this file differs according to the make of your notebook computer:

Tandy 100/102: DOS100.CO
Tandy 200: DOS200.CO
NEC PC-8201/8300: DOSNEC.CO
Size: about 5,200 bytes.
SAMPLE.BA: A sample program included to demonstrate the use of BASIC commands with TS-DOS. Size: about 4,000 bytes.

Preparing the Portable Disk Drive

TS-DOS operates a variety of portable disk drives. Regardless of the kind of portable disk drive you have, follow these steps to prepare the drive for TS-DOS:

1. Connect the disk drive to the notebook computer using the connector cable: The larger end of the cable plugs into the RS-232C port in the rear of the computer. The smaller end plugs into the RS-232C port in the rear of the disk drive. If either end doesn't go in easily, turn it over and try again. Make the connections secure. Loose connections cause problems!

2. Give power to the disk drive using either four AA batteries or an AC adapter.

If you have the Tandy Portable Disk Drive 2 (the 200K version) you are ready to start TS-DOS. Since your disk drive lacks DIP switches, ignore any instructions in this section relating to changes in these switches. Note that this drive is referred to as the 200K drive later in this section

If you have the original Tandy Portable Disk Drive (the 100K version) or the Purple Computing disk drive, continue reading for instructions on setting the DIP switches on these disk drives. Note that these drives are referred to as 100K drives later in this section.

Setting the DIP Switches

There are four switches-called the DIP switches-on the bottom of the 100K Tandy or Purple Computing disk drive. Their settings are vital to the operation of TS-DOS.

The DIP switches must all be in the off position when you are operating TS-DOS. But to begin loading TS-DOS the first time many users will have to set the DIP switches temporarily to the on position. Only users of Traveling Software's Ultimate ROM II or the T-Word/Sardine ROM are exempt from this.

If you have the Ultimate ROM II or T-Word/Sardine ROM chip set all the DIP switches to the off position.

If you do not have the Ultimate ROM II or the T-Word/Sardine ROM chip, set all the DIP switches temporarily to the on position. (You will be instructed to reset them once you have completed the initial loading process.)

Follow these steps to set the DIP switches:

1. Turn the disk drive upside down and locate the small rectangular DIP switch cover. Using a paper clip or the top of a pen, remove the cover.

2. Set the DIP switches as instructed above. Replace the cover and turn the drive right side up.

3. Turn the disk drive off for a few seconds and then on again.

If the disk drive is turned on when you change the DIP switch settings, remember to turn the drive off, wait a few seconds, and turn it on again. Otherwise the drive will not recognize the new settings.

Starting TS-DOS for the First Time

You are about to learn how to operate TS-DOS from the master disk. To do so, you must load the operating pro gram, **DOSXXX.CO**, into the high memory of your notebook computer.

How you load **DOSXXX.CO** into high memory depends on the form of the loading program you have at your disposal:

- If you have the Ultimate ROM II or the T-Word/Sardine ROM chip, you will use the software on that chip to load **DOSXXX.CO** into high memory. See Staring with the Ultimate ROM II or T-Word/Sardine, below.
- If you lack the Ultimate ROM II or T-Word/Sardine, you must create the loading program, TSLOAD.CO, in your notebook computer. With that program you can then load **DOSXXX.CO** into high memory.

Once you have completed either of these sets of instructions, you are ready to prepare your own disk for TS-DOS.

Starting with the Ultimate ROM II or T-Word/Sardine

You are about to use your Ultimate ROM II or T-Word/Sardine ROM chip to load the TS-DOS operating program into the high memory of your notebook computer.

Make sure you have installed your ROM chip and initialized the programs according to directions in the manual for the chip. Then follow these steps:

1. Check the portable disk drive. If your disk drive has DIP switches, make sure they are all off. The disk drive must be on and connected by cable to the computer.

2. Check your computer. Are there any machine-language programs you cannot risk losing? If so, back them up before proceeding! By installing TS-DOS in high memory, you will very likely remove any other machine-language programs.

3. Look at the back side of the master disk (the side with the round metal circle in the middle). The write-protect tab in one of the corners should be set to let you see through a small window. With the tab set thus, you cannot accidentally destroy files on this disk.

4. Turn the disk over, and with the label end toward you, insert the disk into the drive. The disk will click into place. Press down on the bar just above the disk to close the drive door.

5. In the main system menu of your computer, make sure that you have at least 6,500 bytes free. Kill files if necessary.

6. If you have the Ultimate ROM II place the bar cursor over UR-2 and press **ENTER** to call up the Ultimate ROM II menu. If you have T-Word/Sardine, place the bar cursor over TWORD+ and press **ENTER** twice to call up the T-Word file-selection screen.

7. In the Ultimate ROM II menu place the bar cursor over TS-DOS and press ENTER. In the T-Word file selection screen press **F7** on a Tandy or **SHIFT F2** on an NEC.

   The disk access light on the disk drive should light, indicating that TS-DOS is being loaded. After a few seconds, you will see the RAM File Menu of TS-DOS.

   (If your computer beeps or if you see a Can't message on the screen see step 4) **DOSXXX.CO** is temporarily loaded into high memory; it will not appear in the main system menu when you exit the Ultimate ROM II or T-Word/Sardine.

   Sometimes when you select TS-DOS, you will see this message: `Change HIMEM? (Y/N)?` If you have backed up your machine-language programs (step 2), press **Y** to start TS-DOS. Otherwise, press **N**, save the programs, and repeat the above steps.

8. Remain in the RAM File Menu and turn to Preparing to Use TS-DOS.

Booting from Disk

If you do not have the loading program built into the Ultimate ROM II or the T-Word/Sardine ROM chip you must load the loading program, TSLOAD.CO, into your notebook computer from the TS-DOS master disk. Once that program is in your computer you can load the operating program into high memory.

If you intend to operate a portable disk drive rather than a PC compatible, these are the procedures you are about to undertake:

1. Create a BASIC program **IPL.BA**

2. Run **IPL.BA** to load **TSLOAD.CO** into RAM

3. Run **TSLOAD.CO** to load the operating program into high memory

Creating the IPL.BA

You are about to type a short program. Type it accurately: just one wrong character will foil your efforts.

1. In the main system menu of your computer, with the bar cursor over BASIC, press ENTER

2. Select the program below that applies to your make of computer and disk drive; type it in CAPITAL letters:

   For the Tandy 100 or 102 and the 200K disk drive:

```
10 RUN "COM: 98N1E" ENTER
SAVE "IPL.BA" ENTER
```

   For the Tandy 200 and the 200K disk drive:

```
10 RUN "COM:98N1ENN" ENTER
SAVE "IPL.BA" ENTER
```

For the NEC PC-8300 or 8201 and the 200K disk drive:

```
10 RUN "COM:9N81XN" ENTER
SAVE "IPL.BA" ENTER
```

For the Tandy 100, 102, or 200 and the 100K disk drive:

```
10 OPEN "COM:88N1DNN" FOR OUTPUT AS#1 ENTER
20 PRINT#1,"S10985157C00AD7EF08B3AS901FE" ENTER
30 LOAD "COM:88N1ENN",R ENTER
SAVE "IPL.BA" ENTER
```

For the NEC PC-8300 or 8201 and the 100K disk drive:

```
10 OPEN "COM:8N81NN" FOR OUTPUT AS*1 ENTER
20 PRINT#1,"S10985157C00AD7EF08B3AS901FE" ENTER
30 LOAD"COM:8N81XN",R ENTER
SAVE "IPL.BA" ENTER
```

If you see an error message preceded by a number, you have made an error in the line indicated by that number. Remain in BASIC and see Having Problems?

3. Exit BASIC and return to the main system menu: press **F8** on a Tandy computer, **SHIFT F5** on the NEC. You should now see **IPL.BA** listed in the menu.

4. Continue with Loading **TSLOAD.CO**, below.

Loading TSLOAD.CO.

You are now going to use IPL.BA, the program you just created, along with BOOT, on the master disk, to load TSLOAD.CO into RAM. If you have problems, refer to Having Problems?, on the next page.

1. Check that the disk drive is connected to the notebook computer. If you have a 100K disk drive, make sure the DIP switches are all on, and the disk drive power is on. If you have a 200K drive make sure that disk drive power is off.

2. Look at the back side of the master disk (the side with the round metal circle in the middle). The write-protect tab in one of the corners should be set to let you see through a small window. With the tab set thus, you cannot write over any of the TS-DOS files.

3. Turn the disk over, and with the label end toward you, insert the disk into the drive. The disk will click into place. Press down on the bar just above the disk to close the drive door.

4. In the main system menu of your computer, check to see that there are at least 6,500 bytes free. Go into BASIC and kill files, if necessary.

5. Place the cursor over **IPL.BA**, and run it by pressing **ENTER**. Then if you have the 200K disk drive turn the disk drive power on. This message now appears:
   ```
   Loading TSLOAD.CO...
   ```

6. After about 10 seconds an OK message will appear.
   Return to the main system menu by pressing **F8** on the Tandy, **SHIFT F5** on the NEC. You should now see **TSLOAD.CO** listed in the menu.

7. When you have successfully completed the previous steps, continue with Loading **DOSXXX.CO** into High Memory if you intend to continue using TS-DOS with your portable disk drive. If you are starting TS-DOS

to operate a PC-compatible disk drive, you have completed the instructions in this section that pertain to you. Now turn to your PC compatible and the BOOSTER-LINK manual.

Note: Once you have loaded **TSLOAD.CO**, you are free to delete **IPL.BA**. It is no longer needed.

Having problems?

If the Now Loading **TSLOAD.CO** message did not appear (step 5) and the system locked up, look into these possible causes:

- the DIP switches on a 100K drive are not all on
- the disk drive was not turned 0'? or off as needed (steps 1 and 5) 4 - - -
- the master disk is not in the disk drive

Begin by freeing up the system: press **SHIFT-BREAK** on any of the Tandy computers, **SHIFT-STOP** on the NEC. You are then in BASIC.

If you discover that you have made one of the errors listed above, correct the situation. Turn the disk drive off then on; return to the main system menu; rerun **IPL.BA** (step 5).

If you cannot locate any of these errors, it is likely that you made an error while entering **IPL.BA**. (You may even have received an error message indicating a problem in one of the lines.) To correct **IPL.BA** follow these steps:

1. Remain in BASIC once you have freed up the system.

2. At the OK prompt, type **LOAD "IPL.BA"** press **ENTER**

3. Type **EDIT**; press **ENTER**. Check the program against the listing in this book. Correct any errors.

4. Leave BASIC (press **F8** on Tandy computers, **SHIFT-F5** on the NEC). Refer to Loading TSLOAD.CO.

If your computer beeps and the access indicator light on the disk drive flashes, this may be the problem: your computer already has a program or a fragment of a program in high memory and thus cannot load **TSLOAD.CO**. To correct the situation go into BASIC and enter the commands below that apply to your computer:

Tandy 100/102:

```
CALL 32454 ENTER
CLEAR 256,MAXRAM ENTER
```

Tandy 200:

```
CALL 39703 ENTER
CLEAR 256,MAXRAM ENTER
```

NEC PC-8201/8300:

```
EXEC 32358 ENTER
CLEAR 256,62336 ENTER
```

Remain in BASIC and type a **CLEAR** statement. Then return to the main system menu and try again. For the **CLEAR** statement you are to type, consult the label on the back side of your master disk. The statement will appear in this form:

For TSLOAD.C0 — `CLEAR ###,######`

Type CLEAR followed by the numbers on your disk. Press **ENTER** and, exit BASIC, and try loading **TSLOAD.CO** again.

If **?OM Error** appears on the screen, the computer does not have at least 6,500 bytes of free memory. Go into BASIC and kill enough files to meet this requirement. Leave BASIC and refer to Loading **TSLOAD.CO**.

A final caution: keep the portable disk drive away from a desktop computer or monitor; radio waves from either may interfere with communications between the drive and the computer.

If you are still stymied, call us for help at (206) 483-8088.

Loading DOSXXX.CO into High Memory

By loading the TS-DOS operating program, **DOSXXX.CO**, into high memory , you can begin using the program.

1. If you have the 100K disk drive turn the DIP switches on the disk drive to the off position; this is the position for operating TS-DOS. Turn the drive off and on to register the change. Make sure that the master disk is in the drive, the drive is turned on, and the drive and computer are properly connected.

2. In the main system menu of your computer, place the bar cursor over **TSLOAD.CO** and press **ENTER**.

3. In about 7 or 8 seconds, you will see the RAM File Menu of TS-DOS. **DOSXXX.CO** is temporarily loaded into high memory. (It will not appear in the main system menu when you leave TS-DOS.)

   If you are using the Ultimate ROM II or T-Word/Sardine, you may see this message**: Change HIMEM? (Y/N)?** This message tells you that there is another machine-language program in your computer. Press **Y** to remove the program and start TS-DOS. Otherwise, press **N**, save the program, and repeat the above steps.

   If the computer merely beeps it is likely that another program is already loaded in high memory.

4. Remain in the RAM File Menu and turn to the next page for instructions on operating TS-DOS.

Preparing to Use TS-DOS

In this section we will pick up where we left off in Starting TS-DOS for the First Time-in the RAM File Menu of TS-DOS. You now will learn how to...

- format a disk for use with TS-DOS
- copy the TS-DOS operating program into RAM
- copy the TS-DOS operating program from RAM onto the formatted disk
- delete the operating program from RAM

When you complete these operations you can transfer files between your computer and the disk (or disks) you have prepared.

These instructions assume that, like most users, you want to use TS-DOS with the operating program on disk. Most people prefer to place the operating program on each back up disk. Others prefer to use a single working disk that they place into the disk drive each time they start up TS-DOS.

There is yet another way to use TS-DOS: store the operating program in RAM, without copying it to disk. The disadvantage of this approach has to do with the amount of memory required to store and operate the program. If you want to operate TS-DOS from RAM instead of disk, follow the instructions on the next page, Copying DOSXXX.CO to RAM. Then turn to Running TS-DOS from RAM.

Formatting a Disk

1. Look at the RAM File Menu. You will see all the files now in RAM. Among the prompts across the bottom of the screen is Disk. This corresponds to the **F4 key**. Press **F4**, and you will see a list of the files on the master disk. This is the Disk File Menu.

2. Remove the master disk.

3. Take a blank 3 1/2 inch disk and make sure that the write-protect tab covers the window, allowing you to copy information to the disk. Place the blank disk into the disk drive and press the bar into place.

4. Among the prompts now at the bottom of the screen is **Frmt**. Press **F5** to begin the formatting process. This prompt now appears:

   ```
   Insert Disk.  Press "Y" to begin.
   ```

   Press **Y**, and the disk will begin formatting. The small access indicator light on the front of the disk drive will blink as this is happening.

5. When the access indicator light stops blinking the disk is formatted and ready to store and retrieve information. Remove the disk from the drive.

6. Continue with the instructions below.

Copying DOSXXX.CO to RAM

Though you probably won't want to leave it there, you must now load **DOSXXX.**CO into RAM. Once in RAM, **DOSXXX.CO** can then be copied to disk by TS-DOS.

To copy **DOSXXX.CO** into RAM, follow these instructions:

1. Put the master disk back into the drive. To log this disk, press **F6**

2. Among the files listed in the menu is DOSXXX.CO. Reminder: **DOSXXX.CO** is named **DOS100.CO** on the Tandy 100 and 102; **DOS200.CO** on the Tandy 200; and **DOSNEC.CO** on the NEC PC-8201/8300.

3. Move the cursor over whichever version of **DOSXXX.CO** appears on your screen and press **F1** to load the file.

4. In response to the next prompt, **Load as**, press **ENTER** (This accepts the **DOSXXX.CO** name as the name for the file to be saved in RAM.) When the Load as prompt disappears, you have loaded **DOSXXX.CO** into RAM.

   If you are going to operate TS-DOS with **DOSXXX.CO** in RAM rather than on disk, skip to Running TS-DOS from RAM.

5. You are now ready to copy **DOSXXX.CO** to disk. Continue with the instructions below.

Copying DOSXXX.CO to Disk

1. Remove the master disk and replace it with the formatted disk.

2. Move from the Disk File Menu to the RAM File Menu: press **F4**. Among the files listed there you should now see **DOSXXX.CO**.

3. Place the bar cursor over **DOSXXX.CO** and press **F1** to save the file.

4. In response to the prompt Save as, press **ENTER**. As soon as the Save as prompt disappears, **DOSXXX.CO** is saved to the disk.

5. To remove **DOSXXX.CO** from RAM, follow the instructions below.

Deleting DOSXXX.CO from RAM

Now that you have copied the operating program to disk, you no longer need it in RAM, unless you intend to copy it to other disks immediately. Leaving it in RAM consumes valuable memory.

1. In the RAM File Menu, place the cursor over **DOSXXX.CO**.

2. Notice the Kill prompt at the bottom of the screen. Press **F2** to kill the file.

3. In response to the Sure? prompt, press Y to kill the file. (Pressing any other key will leave the file intact.)

4. Leave TS-DOS: press **F8** on the Tandy computer, **SHIFT F5** on the NEC.

5. You are now ready to run TS-DOS from the disk you just prepared. Turn to the next page for instructions.

Running TS-DOS

You are now ready to run TS-DOS from the disk you have prepared. Once again you will see the TS-DOS RAM File Menu. Section 5 of this manual explains the commands you may use in this menu and the Disk File Menu for copying files between your computer and the disk drive.

With the Ultimate ROM II: If you have the Ultimate ROM II, select TS-DOS in the Ultimate ROM II menu and press ENTER. If the **Change HIMEM?** message appears, press **Y**.

With T-Word/Sardine: If you have the T-Word/Sardine ROM chip, select the DOS function in the T-Word file--selection screen: press **F7** on a Tandy, **SHIFT F2** on an NEC. If the **Change HIMEM?** message appears, press **Y**.

Without the Ultimate ROM II or T-Word/Sardine: If you lack both the Ultimate ROM II and T-Word/Sardine, select **TSLOAD.CO** in the main system menu and press **ENTER**. Remember to keep **TSLOAD.CO** in RAM; without it, you will not be able to operate TS-DOS from disk.

If your computer merely beeps when you select **TSLOAD.CO** in the main system menu, see Having Problems?

Running TS-DOS from RAM

As noted earlier, you can operate TS-DOS by storing the operating program — **DOSXXX.CO** — in RAM. You may prefer this setup, particularly if you are going to be away from your disk drive for a time-and still want to use those features of the program that do not require access to the drive.

The chief disadvantage of leaving the operating program in RAM is memory. You must leave at least **11,000 bytes free** in your computer.

To run TS-DOS directly from RAM, select **DOSXXX.CO** in the main system menu and press **ENTER**. Note that you do not need TSLOAD.CO in your computer to start TS-DOS in this way.

If your computer merely beeps when you select **DOSXXX.CO** in the main system menu, enter BASIC and type a CLEAR statement. Then return to the main system menu and try again. For the CLEAR statement you are to type, consult the label on the back side of your master disk. The statement will appear in this form:

```
For DOSXXX.CO — CLEAR ###,######
```

Type **CLEAR** followed by the numbers on your disk. Press **ENTER** and then exit BASIC: press **F8** on the Tandy computers, **SHIFT F5** on the NEC.

Copying the Master Disk

Now that you have TS-DOS running, make it your first task to copy the master TS-DOS disk. Set aside the master and use only the copy whenever possible. If something happens to the copy, make another from the master.

With TS-DOS, you must perform these operations to copy the master disk:

- format a disk
- load into RAM the files on the master disk
- copy the files from RAM to the formatted disk
- delete the files from RAM

These are the same operations outlined in Preparing to Use TS-DOS.

There is one file on the master disk you cannot copy with TS-DOS: **BOOT**. If you are using the Ultimate ROM II or T-Word/Sardine, you will never have need for this file. Even if you are operating TS-DOS without either of these, you will not need this file again as long as you keep either **DOSXXX.CO** or **TSLOAD.CO** in RAM; if you ever delete both of these files, however, you will have to fall back on BOOT, located on the master disk. Keep the master disk in a safe place!

Memory Requirements

To run TS-DOS with the operating program on disk you need about 6,500 bytes of free memory in your notebook computer. (If you are running TS-DOS with the operating program in RAM you will need at least 11,000 bytes.)

There are a few operations — like the TS-DOS Name command — that require a certain amount of free memory in addition to these basic requirements if you are using a 100K drive. The memory requirements for such operations are noted on the pages where those operations are explained.

Section 4: TS-DOS and PC-Compatible Computers

TS-DOS is not limited to operating portable disk drives. It can operate the drives of PC-compatible computers as well. You can thus store files from your Tandy or NEC notebook computer on a PC compatible, eliminating the need for a portable disk drive completely.

To transfer files between a PC and a notebook computer you need another Traveling Software program, BOOSTER-LINK (AKA DeskLink). This program makes one of the drives on your PC compatible act like a portable disk drive.

When you use TS-DOS in combination with BOOSTER-LINK you'll first run BOOSTER-LINK on your PC; like a portable disk drive this computer is then available only for accessing files. You then run TS-DOS on your notebook computer and use that computer to transfer files and perform the other disk-management operations that TS-DOS makes available.

A Word about TS-DOS

Because TS-DOS is available in a variety of forms it may help you to understand a few basics about the operation of the program.

TS-DOS consists of two parts: an operating program and a program that loads the operating program into the high memory of your notebook computer. The manner in which these two programs are used varies from one version of TS-DOS to another.

The TS-DOS ROM Chip

On the TS-DOS ROM chip the operating and loading programs are combined; this chip by itself is sufficient to operate TS-DOS. Only a cable and BOOSTER-LINK are required to complete the connection to a PC.

Other Versions of TS-DOS

In any other version the operating program and the loading program are distinct. To use any of these forms of TS-DOS with BOOSTER-LINK the operating program should reside in the PC-compatible computer, the loading program in the notebook computer.

You received the TS-DOS operating program on the BOOSTER-LINK disk along with the program for BOOSTER-LINK itself. Instructions in the BOOSTER-LINK manual will guide you through the steps for getting these operating programs into your PC.

You received the loading program in one of two possible forms: as a separate file (TSLOAD.CO) to be loaded into your notebook computer from a portable disk drive or as a function built into the software of certain ROM chips. These chips include the Ultimate ROM II and the T-Word/Sardine ROM, including the Sardine Plus ROM Pack.

Starting Your Version of TS-DOS

Before starting BOOSTER-LINK on your PC compatible you should have TS-DOS available to use on your notebook computer. How you go about doing that depends on what you ordered with BOOSTER-LINK. These are the possibilities:

- the TS-DOS ROM chip
- the Ultimate ROM II or the T-Word/Sardine ROM chip
- TS-DOS on a 3 1/2 inch disk for your portable disk drive

Once both TS-DOS and BOOSTER-LINK are running you will find complete instructions for transferring files between your notebook and PC-compatible computers in Sections 5 and 6 of this manual.

Starting the TS-DOS ROM Chip

The instructions for installing the TS-DOS ROM chip and initializing the program are included in Section 2 of this manual. Ignore the instructions for preparing the disk drive and begin on page 2-4. As soon as you have initialized the program, you are ready to start BOOSTER-LINK. Refer to the BOOSTER-LINK manual for complete instructions.

Starting the Ultimate ROM II or T-Word/Sardine

If you just received the Ultimate ROM II or the T-Word/Sardine ROM chip refer to the manual accompanying that product. Install the chip and initialize the programs. Then refer to the BOOSTER-LINK manual for instructions on getting that program started on your PC.

Once BOOSTER-LINK is running, return to the Ultimate ROM II or T-Word/Sardine manual for instructions on starting TS-DOS on your notebook computer. In the Ultimate ROM II, TS-DOS is available in the main program menu by placing the bar cursor over TS-DOS and pressing **ENTER**. In T-Word/Sardine, TS-DOS is available by pressing the function key corresponding to the DOS prompt in the file-selection screen.

If you just received the Sardine Plus ROM Pack follow the instructions in that manual to get the system running. Then refer to the BOOSTER-LINK manual for instructions on getting that program started on your PC. Once BOOSTER-LINK is running, refer to the Sardine manual for instructions on starting TS-DOS on your notebook computer.

Starting TS-DOS by Itself

If you purchased TS-DOS on a 3 1/2 inch disk for your portable disk drive and BOOSTER-LINK on a disk for your PC, the instructions you need to start TS-DOS are contained in Section 3 of this manual. Please note, however, that only certain parts of that section apply to you.

Your first concern is to create a short program in your notebook computer. See Creating **IPL.BA**. Then continue with the instructions Loading **TSLOAD.CO**, to use the **IPL.BA** program to load **TSLOAD.CO** into your notebook computer. (Keep this file in your computer: it is the file that gives you access to your PC.)

Once you have **TSLOAD.CO** loaded, turn to your PC compatible and follow the instructions in the BOOSTER-LINK manual to prepare your PC to operate as a portable disk drive.

When you have BOOSTER-LINK running on your PC move back to your notebook computer, place the bar cursor in the main system menu over **TSLOAD.CO** and press **ENTER**. You should now see the TS-DOS RAM File Menu, explained in Section 5 of this manual.

Note: If your computer merely beeps when you select **TSLOAD.CO** in the main system screen, enter BASIC and type a **CLEAR** statement - Then return to the main system menu and try again. For the **CLEAR** statement you are to type, consult the label on the back side of your master disk. The statement will appear in this form:

```
For TSLOAD.CO – CLEAR ###,######
```

Type **CLEAR** followed by the numbers on your disk. Press **ENTER** and then exit BASIC: press **F8** on the Tandy computers, **SHIFT F5** on the NEC.

Section 5: Introduction to TS-DOS

TS-DOS offers the flexibility of operating from menus or, by means of TEXT and BASIC commands, outside the menus.

There are two file menus-one for files in RAM on your notebook computer, the other for files on disk. In these menus you can perform a variety of file-management operations, much as you would in the main system menu of your notebook computer. To transfer files back and forth between your computer and disk drive, for example, you simply move the bar cursor over a file name and press a function key-no need to type anything.

Also in the file menus you can press certain keys to perform such useful operations as reviewing the contents of files and printing a directory of files on disk or in RAM.

When using the TEXT commands, you are limited to two TS-DOS functions: load and save. Pressing a function key on a Tandy computer loads a file from disk into the RAM file currently displayed on the screen; on the NEC PC 8201/8300 this operation is performed in the main system menu of your computer - Similarly, pressing another function key saves a RAM file to disk.

In BASIC, you can use all the file-management commands either interactively, to achieve an immediate response, or as part of a program you write to use the full capacities of your disk drive.

For information on the use of these TEXT and BASIC commands, see Section 6. The other features of TS-DOS are covered in this section.

The RAM File Menu

Each time you run TS-DOS, the RAM File Menu is the first to appear on your screen:

```
TS-DOS (M100 4.00) (c)87,TSI. #0
CONFIG.DO UR-2      SAMPLE.BA DOS100.CO
-.-       -.-       -.-       -.-
-.-       -.-       -.-       -.-
-.-       -.-       -.-       -.-
-.-       -.-       -.-       -.-
           RAM Free:13313     File:318
Save Kill Name Disk DOS-OFF        Menu
```

The RAM File Menu should have a familiar look, resembling as it does the main system menu of your notebook computer. Most of this menu is occupied by a list the files in RAM.

The significant differences between this menu and the main system menu appear in the top line and the bottom two lines.

Unless you are using a 100K portable disk drive the top line shows information about the disk you are accessing through TS-DOS. If you are connected to a 200K disk drive the right end of the top line shows either **#0** or **1**, indicating the bank currently selected on the disk. If you have BOOSTER-LINK running on your PC compatible, this line displays the name of the directory currently logged on that computer.

The very bottom line of the RAM File Menu shows the prompts for the TS-DOS function-key commands; the line above that is the status line.

The Status Line

The second line from the bottom-the status line-shows this information:

RAM: Tells you that TS-DOS is displaying a menu of RAM files
Free: Tells you the number of bytes free in RAM
File: Displays in reverse video the size (in bytes) of the file selected by the bar cursor

Note that as you press the arrow keys to move the bar cursor from one file name to another, the value for File: changes to reflect the size of the currently selected file.

RAM Function Key Commands

On the bottom line of the RAM file menu are listed the six TS-DOS function key commands available here. On a Tandy computer all six commands appear at once. On the NEC PC-8201/8300, five are listed at the outset; the other appears when **SHIFT** is pressed.

Before using most of the function key commands, press the **UP** or **DOWN** arrow key to move the bar cursor and select a file. Other options, like **Disk** and **DOS-ON/OFF**, do not require you to select a file.

These are the function key commands in this menu:

F1 Save: Copies to disk file **.DO**, **.BA**, or **.CO** RAM file selected by the bar cursor. By pressing ENTER immediately after the Save as: prompt appears, you assign to the file to be saved the name that appears on the RAM File Menu. To save the file with a different name, type up to six characters-without **.DO**, **.BA**, or any other extension-and press **ENTER**. The file is saved once the Save as: prompt disappears.

To quit without completing the Save process, press CTRL-C at the Save as: prompt.

Caution: Do not use the Save command with files that have anything but the **.DO**, **.BA**, or **.CO** extensions — or variations of those like **.CA** (used by Lucid) or **.DP** or **.DC** (used by the TEXT Compression utility of the TS-DOS ROM chip). You cannot save invisible files, files that lack extensions, or files whose extensions do not match the type of file. (Included in the last category is the **WSPECT.DT** file of Write ROM.)

If the name you assign to the file to be saved already exists on disk, this prompt will appear:

```
File exists - A)ppend R)eplace Q)uit.
```

Press **A** to append the RAM file to the end of the disk file. (You cannot use the append feature with any files except **.DO** files.) Press **R** to replace the disk file with the RAM file. Press **Q** to quit the Save command without completing the operation.

Note: With the Append option, you can create a single disk file up to 64K in size. Though you could never load a file of this size directly into your computer, you could print it or view it on screen directly from disk. Or you could use it in combination with other disk software applications like T-Word on the Ultimate ROM II.

F2 Kill: Deletes the RAM file selected by the bar cursor. In response to the **Sure?** prompt, press **Y** to delete the file, any other key to leave it intact.

F3 Name: Renames the file selected by the bar cursor. In response to the New Name: prompt, type a six-character file name and press **ENTER**. (No need to type **.DO**, **.BA**, or any other extension.) If you do not want to rename the file, press **ENTER**.

If you are using a 100K disk drive, the Name command requires an additional 1,300 bytes of free memory over the minimum needed to operate the program.

F4 Disk: Replaces the RAM File Menu with the Disk File Menu - Before pressing **F4**, be sure that your disk drive is connected to your computer and turned on. Otherwise, you will see this prompt: **Disk not in drive**. **Press any key**. Also make sure that the DIP switches on your disk drive are set correctly. See Section 3 for the correct settings.

F5 DOS-ON/OFF: Turns on and off the resident portion of TS-DOS. With this portion resident in RAM, you can operate TS-DOS with both TEXT and BASIC commands. See Section 6 for details.

Tandy **F8**, NEC **SHFT F5 Menu**: Exits TS-DOS and returns to the main system menu of your computer with the disk version of TS-DOS, to the Ultimate ROM II menu with the Ultimate ROM II, or to the T-Word file-selection screen with T-Word/Sardine.

The Disk File Menu

While in the RAM File Menu, press F4 and the Disk File Menu appears:

```
TS-DOS (M100 4.00) (c)87,TSI. #0
DOS100.CO SAMPLE.BA TS-DOS.C0 -.-
-.-       -.-       -.-       -.-
-.-       -.-       -.-       -.-
-.-       -.-       -.-       -.-
-.-       -.-       -.-       -.-
           RAM Free:89600     File:4964
Load Kill Name Ram  Frmt Log Mkdr Menu
```

As the RAM File Menu does for RAM files, the Disk File Menu shows all the files on the disk you are accessing through TS-DOS.

Unless you are using a 100K portable disk drive the top line shows information about the disk you are accessing through TS-DOS. If you are connected to a 200K disk drive the right end of the top line shows either #0 or 1, indicating the bank currently selected on the disk. If you have BOOSTER-LINK running on your PC compatible, this line displays the name of the directory currently logged on that computer.

The very bottom line of the Disk File Menu shows the prompts for the TS-DOS function key commands; the line above that is the status line.

The Status Line

The second line from the bottom of the Disk File Menu-the status line-shows this information:

DISK: Tells you that TS-DOS is displaying a menu of disk files.
Free: Tells you the number of bytes free in the disk.
File: Displays in reverse video the size (in bytes) of the file selected by the bar cursor.

Note that as you press the arrow keys to move the bar cursor from one file name to another, the value for File: changes to reflect the size of the currently selected file.

Disk Function Key Commands

On the bottom line of the Disk File Menu are listed the eight TS-DOS function key commands available here.

Three of the commands — **Kill**, **Name**, and **Menu** — work with disk files exactly as they do with RAM files in the RAM File Menu.

Two of the other commands reverse the operations of their counterparts in the RAM File Menu: Load restores files Saved in the RAM File Menu; and Disk returns to the RAM File Menu.

These are the function key commands in the Disk File Menu:

F1 Load: Copies to RAM the **.DO**, **.BA**, or **.CO** disk file selected by the bar cursor. By pressing **ENTER** immediately after the Load as: prompt appears, you will assign to the file to be loaded the name that appears on the Disk File Menu. To load the file with a different name, type up to six characters-without **.DO**, **.BA**, or any other extension-and press **ENTER**. The file is loaded once the Load as: prompt disappears.

Caution: Do not use the Load command with files that have anything but the **.DO**, **.BA**, or **.CO** extensions — or variations of those like **.CA** (used by Lucid) or **.DP** or **.DC** (used by the TEXT Compression utility of the TS-DOS ROM chip). You cannot load invisible files, files that lack extensions, or files whose extensions do not match the type of file. (Included in the last category is the WSPECT.DT file of Write ROM.)

If the file name you type already exists in RAM, you will be notified. Press **Y** to replace that RAM file with the disk file, **N** to leave the files as they are.

F2 Kill: Deletes the disk file selected by the bar cursor. in response to the **Sure?** prompt, press **Y** to delete the file, any other key to leave it intact.

F3 Name: Renames the file selected by the bar cursor. in response to the **New Name:** prompt, type a six-character file name and press **ENTER** (No need to type **.DO**, **.BA**, or any other extension.) if you do not want to rename the file, press **ENTER**.

On the 100K disk drive the Name command requires an additional 1,300 bytes of free memory over the minimum needed to operate the program.

F4 RAM: Returns to the RAM File Menu.

F5 Frmt: Formats a blank 3 1/2 inch disk for your portable disk drive. Press **Y** to begin formatting; press any other key to return to the disk menu without formatting. This command is available only for the portable disk drives; it is not available for BOOSTER-LINK.

Caution: If you are not sure whether a disk contains data, it is a good practice before formatting to use the Log function key to make this determination. Any data on a disk when you format it will be lost.

Tandy F6, NEC SHFT F1 Log: Causes TS-DOS to activate the disk drive and display the directory of files on the disk now in the drive. Each time you change disks, press **F6** to log that disk before using any of the other commands.

Tandy F7, NEC SHFT F2 Bank or MkDr: With the 200K portable disk drive, alternates between bank 0 and 1 (look in upper right corner of the menu for the current selection); with a PC-compatible computer and BOOSTER-LINK, allows you to create a directory on the PC compatible. (Not available unless you are using either a 200K portable disk drive or BOOSTER-LINK.)

Once you select this command to create a directory on a PC-compatible, move to that computer, which now asks for a name for the new directory. Type a name on the PC and press **ENTER** to create the directory. That name now appears in the upper right corner of this menu on your notebook computer.

Tandy F8 NEC SHFT F5 Menu: Exits TS-DOS and returns to the main system menu of your computer with the disk version of TS-DOS, to the Ultimate ROM II menu with the Ultimate ROM II, or to the T-Word file-selection screen with T-Word/Sardine.

Paging

TS-DOS separates long lists of file names into "pages." When there are more files on disk than can appear at once in the Disk File Menu, you must move from page to page in order to view the files in their entirety. Press these keys to "page" through long lists of files:

SHIFT DOWN-ARROW to move to the next page of files
SHIFT UP-ARROW to move to the previous page of files
CTRL UP-ARROW to move to the first page no matter which page you may be viewing at the moment

Tagging

With tagging you can load, save, or kill several files at once — at a substantial savings in time. You can select certain files for tagging-or you can tag all files. You can remove tags one at a time or all at once.

The tag feature can be used in either the RAM File Menu or the Disk File Menu of TS-DOS. (It is not available with either the TEXT or BASIC commands of TS-DOS.)

In the RAM File Menu, you can tag files to be saved to disk or killed. In the Disk File Menu, you can tag files to be loaded into RAM or killed.

T Tags the name of the file selected by the bar cursor. Pressing **Y** places a < marker just in front of the filename. As soon as you finish tagging, press any of these function keys:

F1 in the RAM File Menu to save those files to disk without changing their names

F1 in the Disk File Menu to load those files into RAM without changing their names

F1 in either the RAM File Menu or the Disk File Menu to kill those files

As soon as you press a function key, the operation begins. It is complete when all of the > markers have disappeared.

To remove a < marker from a file name, place the bar cursor over the name and again press **T**.

G Tags all file names (Global Tag) displayed on the screen. Pressing **G** places the < marker at all of the file names. Once the files are tagged, load, **S** save, or kill them, as desired.

U Removes the tags (Untags) from all file names with the **<** marker.

Note: Any markers you place beside file names in either of the TS-DOS menus will automatically be removed as soon as you leave that menu.

Tagging More Than One Page of Files

You can tag only the files displayed on the screen. if there are more files than can fit on the screen at once you must tag files one screen at a time.

As an example, say that you are looking at the Disk File Menu on your Tandy 200 computer and you have some thirty files on the disk (too many to be displayed on the screen at once). Now you want to load into RAM files from both pages of files. Begin in the first page; tag the files you want loaded and press **F1** to load them. Then press **SHIFT DOWN ARROW** to move to the second page and repeat the tagging and loading operations.

Printing and Other Section Commands

While using the RAM and Disk File Menus, you can...

- print the contents of a DO file in RAM or on disk
- display on your computer screen the contents of a .DO file in RAM or on disk
- print a directory of all your files in RAM or on disk

P Prints the contents of the DO file selected by the bar cursor in the RAM File Menu or the Disk File Menu.

Once the printing has started, press any of these keys:

SPACE to pause the printing and to resume it.

ESC to cancel printing (or press **SHIFT BREAK** on the Tandy 100/102/200, **SHIFT STOP** on the NEC)

L Displays on the computer screen the contents of the DO file the file selected by the bar cursor. The file scrolls upward on the screen. Press **SPACE** to pause-and then resume-the scrolling at any point. Press **ESC** to cancel the operation. Once a file is displayed in its entirely, press any key to return to a TS-DOS menu.

D Prints the directory of files in RAM or on the disk in the disk drive.

Using a printer with compressed print mode, you can print directories small enough to attach to 3 1/2 inch disks.

Compressing TEXT Files

With the TEXT Compression utility on the TS-DOS ROM chip you can compress document (**.DO**) files by as much as 30%. By compressing files you can fit more of them into your computer and onto disks.
When using TEXT Compression, keep these things in mind.

- A document file must be in RAM before you can compress it.
- You may leave a compressed file in RAM or copy it to disk.
- You must expand a compressed file before trying to edit, print, or view it. You may cold start your computer otherwise!
- A compressed file must be in RAM before you can expand it.

Compressing Files: R

1. To begin compressing TEXT files, go to the RAM file menu of TS-DOS.
2. Place the bar cursor over the name of a **.DO** file you want to compress and press **R** (for reduce).
3. In a few seconds the extension of that file will change from **.DO** to either **.DP** or **.DC**. The file is now compressed. Leave it in RAM or copy it to disk.

Whether the extension becomes **.DP** or **.DC** depends on the ratio of uppercase to lowercase letters in the file. Either way, remember that any file names appearing on your screen with a **.DP** or **.DC** extension must be expanded before they can be used.

Expanding Files: R

To expand a compressed file, make sure it is in RAM. Then follow the steps for compressing files, above. In step 3, pressing **R** will change the extension from either **.DP** or **.DC** back to **.DO**. The file is now ready to use.

Section 6: Using TS-DOS with TEXT and BASIC

The Resident Portion of TS-DOS

The small resident portion of TS-DOS is integrated with the TEXT and BASIC programs built into your computer. When this portion is resident in your notebook computer you can perform certain operations without having to call up the TS-DOS menus.

While in TEXT on the Tandy computers, you can copy files to and from disk. On the NEC you can perform the same operations with TEXT files from the main system menu.

If you program in BASIC the resident portion of TS-DOS lets you write new programs — or convert existing programs to use all the capabilities of the portable disk drive.

The resident portion does not give you access to the TS-DOS file menus, but at only 2.7K, it does save memory space. After installing this resident portion in high memory, you can use it with TEXT files and in BASIC without having the TS-DOS loading program (**TSLOAD.CO**) in your computer or the operating program (**DOSxxx.CO**) resident in RAM or accessible on disk.

Conflicts with Other Programs

You should not install the resident portion of TS-DOS while any other program resides in high memory. (If you are using the ROM version of TS-DOS ignore this caution.)

This caution is intended particularly for users of the ROM View-80 program on the Ultimate ROM II chip. Remove TS-DOS from high memory; then use ROM View 80. You may start your computer otherwise.

Installing the Resident Portion

F5 to install the resident portion of TS-DOS, simply press F5 in the RAM File Menu of TS-DOS. The function key prompt will is now installed.

Because this portion of TS-DOS is resident in high memory, you will not see it listed as a file in the main system menu of your computer.

Removing the Resident Portion

The resident portion will stay on until you return to the TS-DOS RAM File Menu and turn it off by pressing **F5**. The function key prompt changes from DOS-ON to DOS-OFF, indicating that the resident portion has been removed.

If you are using the disk version and the TS-DOS RAM File Menu is not available, you must enter BASIC to remove the resident portion.

Tandy 100/102:

```
CALL 32454 ENTER
CLEAR 256,MAXRAM ENTER
```

Tandy 200:

```
CALL 39703 ENTER
CLEAR 256,MAXRAM ENTER
```

NEC PC-8201/8300

```
EXEC 32358 ENTER
CLEAR 256,62336 ENTER
```

TS-DOS TEXT Commands

With the resident portion of TS-DOS installed, you can both load and save TEXT files to and from disk. On the Tandy computers these operations are performed while editing a file in TEXT. On the NEC, they are performed in the main system menu.

Remember that the resident portion of TS-DOS must be installed before you can use it. If it isn't installed, this message will appear after you press **ENTER** to access a disk: Aborted.

Saving Files

Tandy **F3** NEC **F2** Saves a TEXT file to disk. On the Tandy computers, press **F3** while in a TEXT file. On the NEC, select a TEXT file in the main system menu and press **F2**.

On the Tandy 100/102/200, when you press **F3**, this prompt appears: Save to:. Type **0:** (or **1:** for the second bank of a 200K drive) and then up to six characters for the name under which you want the file to be saved on disk — no .DO extension required. Press **ENTER**.

If you press **ENTER** without typing a file name, you will abort the process. (If you see an Aborted message make sure that the write-protect tab on the disk completely covers the window.)

Caution: If you type a file name that already exists on disk, the TEXT file in RAM automatically will overwrite the disk file with that name.

On the NEC PC-8201/8300, when you press **F2** this prompt appears: **SAVE filename.DO as___**. Type **0:** (or **1:** for the second bank of a 200K drive) and then up to six characters for the name under which you want the file to be saved on disk. End the file name with **.DO**. Press **ENTER**.

If you type 0: or 1: without including a name and press **ENTER**, the file selected by the bar cursor will be saved with its current file name.

Caution: If you designate a file name that already exists on disk, the TEXT file in RAM will overwrite the disk file with that name.

In response to the query **Ready?___** , press **Y** or **ENTER** to begin the save process, any other key to abort it.

Loading Files

Tandy **F2** NEC **F1** Loads a file from disk and places it in RAM. On Tandy computers press **F2** while in a TEXT file. On the NEC, press **F1** in the main system menu.

On the Tandy 100/102/200, pressing **F2** places a TEXT file at the end of the currently selected file, regardless of the position of the cursor. When you press **F2**, this prompt appears: Load from:. Type **0:** (or **1:** for the second bank of a 200K drive) and then the file name you wish to load from disk — no **.DO** extension required. Press **ENTER**.

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

On the NEC PC-8201/8300, when you press **F1** in the main system menu, this prompt appears: **Load from___** Type **0:** (or **1:** for the second bank of a 200K drive) and then up to six characters for the name of the file to be loaded. End the file name with **.DO**. Press **ENTER**.

In response to the query **Save as___**, type up to six characters and a .DO extension for the name of the file you want in RAM. (Omit the **0:** or **1:** prefix.)

In response to the query **Ready?___,** press **Y** or **ENTER** to begin the loading process, any other key to abandon the operation.

If the file name you type in response to the Save as prompt already exists in RAM, you will see this message: **Sure?___**. Press **Y** to begin loading over the file in RAM; press any other key to cancel the load command and preserve the contents of the RAM file.

TS-DOS BASIC Commands

Through the resident portion of TS-DOS you can access your portable disk drive with standard BASIC commands. Whenever you use an input or output command, remember to precede the file name with the **0:** or **1:** prefix to designate a disk file instead of the RAM file default.

Note: Only one disk file can be open at a time. Close a disk file before opening another.

In practice, this means that you must separate your disk file read and write commands. Once you have opened a disk file, you cannot use any disk commands other than **CLOSE** or variations of **INPUT** and **PRINT**.

The following is a list of some of the BASIC commands you can use with your portable disk drive. Included with many of the commands are references to lines in the sample BASIC program listed in Appendix C. (This program is stored on the master disk as **SAMPLE.BA**.)

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 RAM or on disk

```
Example:  KILL "0:fiIe.BA"
```

LFILES lists files on a disk and shows amount of free space

```
Example:  LFILES
```

LINE INPUT# reads a string of characters terminated by a carriage return

```
Example:  LINE INPUT#1,A$
```

LOAD loads a BASIC program from the disk into memory

```
Example:  LOAD "0:file.BA"
```

LOADM (Tandy) **BLOAD** (NEC) loads a machine-language program into memory

```
Example:  LOADM"0:file" or BLOAD "0:file"
```

MERGE merges two BASIC programs

```
Example:  MERGE "0:file"
```

NAME renames a file

```
Example:  NAME "0:old" AS "0:new"
```

OPEN opens a file for input or output; OUTPUT, INPUT, APPEND modes are available for use

```
Example: OPEN "0:file FOR OUTPUT AS 1
```

PRINT# prints data to an open file

```
Example:  PRlNT#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 "0:file"
```

RUNM (Tandy) loads and runs a machine-language program

```
Example:  RUNM "0:file"
```

SAVE saves a BASIC program to disk (Include a **.DO** extension to store the program in an ASCII format; omit any extension or use file **.BA** extension to store in binary format)

```
Example: SAVE "0:file.BA"
```

SAVEM (Tandy) **BSAVE** (NEC) saves a machine-language program to disk. Specify start location, end location (length on the NEC), and execution address (optional on the NEC).
Examples:

```
SAVEM"0:file",60000,60900,62000
BSAVE"0:file",60000,901,60000
```

The Sample BASIC Program

SAMPLE.BA is included on your TS-DOS disk mainly to illustrate the use of BASIC commands to access disk and RAM files though you may well find use for this small (4K) program-either as it exists or as you modify it to your needs.

With **SAMPLE.BA** you can store names and addresses in a file on disk or in RAM and then print or list on screen the contents of that file.

The program also shows RAM and disk directories and lets you kill and rename files in RAM or on disk.

Starting SAMPLE.BA

To load **SAMPLE.BA**, place the master disk in your disk drive. Go to the TS-DOS Disk File Menu, place the cursor over **SAMPLE.BA**, and press **F1** to load. Press **ENTER** in response to the Load as: prompt.

Before running **SAMPLE.BA**, you must install the resident portion of TS-DOS. In the TS-DOS Disk File Menu, press **F4** to return to the RAM File Menu; then press **F5** to install the resident portion. Exit TS-DOS and return to the main system menu.

Using SAMPLE.BA

In the main system menu, place the bar cursor over **SAMPLE.BA** and press **ENTER**. This screen then appears:

```
              Main Menu
              =========
(D)irectory           (A)dd record
(S)elect a file       (L)ist report
(R)ename a file       (P)rint report
(K)ill a file         (Q)uit

         File: Not Selected
```

The eight options are listed in two columns. The first letter of each option is enclosed in parentheses. To select an option, press the letter in parentheses — as an upper — or lowercase letter.

Example: Press **D** or **d to select (D)irectory**. This prompt then appears: **(R)am or (D)isk**. Press **R** for the directory of RAM files, **D for the directory of disk files**. Press any key to return to the main menu.

Note this message at the bottom of the main menu: File: Not Selected. You must select a file before renaming or killing files, adding records, or listing or printing reports.

To select a file, press **S**. This prompt then appears:

File name: [.....]

Type the file name in upper- or lowercase and press ENTER. (Whether you include the DO file is up to you.) The name you type should be that of an existing file unless you intend to open a new file and immediately begin to enter name and address records with the (A)dd record option.

The next prompt gives you the chance to designate the location of the file: (R)am or (D)isk. Press the appropriate key and you are returned to the main menu.

With the (**A)dd** record option, you can add records to a name and address file. Having pressed A, type the person's first name and press **ENTER**. Type the last name, press **ENTER**, and continue through street address, city, state, and ZIP code.

Once a record is complete, you have the chance to review its contents and tell the program whether the information you have entered is correct. Press Y to let it stand and to move to the next record. If you press N, you have the chance to re-enter the entire record.

To stop entering records, press **0** and **ENTER** in the first name field.

Press L to list on your screen the contents of your name and address file; press P to print the file. Note that these two options can be used only with files you have created using the **(A)dd** record option of this program.

With the **(R)ename** option, you will be asked to enter a new file name. Then you must designate whether the file is in RAM or on disk. Pressing R for a file now on disk, for example, will produce an error message and abort the program.

Press K to kill the selected file. Then press **Y** to complete the process, **N** to leave the file intact.

Press 0 to leave the program and return to the main system menu.

Appendix A: Error Messages

While Using the T5-D05 File Menus or the TEXT commands

Aborted - you tried to use the TS-DOS TEXT commands without installing the resident portion through the RAM File Menu.

Communication Error - the DIP switches on the Tandy Portable Disk Drive may not all be turned off. The disk may be damaged or the disk drive may not be functioning properly.

Directory Full - whether in RAM or on disk, you have used up all of the file slots and cannot enter a new file without deleting an existing file.

Disk Full - the disk has no more memory space, or, using the append option, you tried to create a file larger than 64K.

Disk not in Drive - there is no disk in the disk drive.

Drive not Ready - your disk drive is not turned on, or it is not connected to your computer.

Drive Trouble - your disk drive has an internal operating problem.

File Empty - the file you are trying to copy or rename is empty. It must have at least one character.

File Exists - when renaming a file, you have designated as the new name a name that already exists in RAM or on disk.

Printer not Ready - the printer is not turned on or it is not connected to the computer.

RAM Full - your computer has no more memory space.

Write Protect - if copying to a disk or renaming a file on disk, make sure that the write-protect tab covers the hole.

While Programming in BASIC

Note: The errors listed below have special meaning with TS-DOS. For a complete list of error messages, consult your BASIC manual.

#5 FC Function call error:
The resident portion of TS-DOS may not be turned on. Check the RAM File Menu and press **F5** if the prompt for that key reads **DOS-OFF**. This message may also appear when you try to load a machine-language program into high memory or rename a file as one that already exists.

#7 OM Out of memory error:
There is not enough free memory in your computer for the file you want to load from disk. Or, if you are renaming a file, you have not left the 1,300 bytes free necessary to perform this operation.

#1810 [Tandy] #2410 [NEC] Input/output error:
There may be a variety of causes. Check your disk drive and see that it is turned on and connected to your computer. On the Tandy Portable Disk Drive, make sure that the DIP switches are all turned off. Make sure that there is a formatted disk in the drive and its write-protect tab covers the small window beneath it.

#26 UE Undefined error:
The file you are trying to copy is empty. TS-DOS cannot copy files unless they contain at least one character.

#52 FF File not found:
The file you have designated does not exist on the disk

#54 EF In put past end of file:
With your INPUT commands, you are trying to read something not included in the file.

#55 NM Bad file name:
The file name you have specified may not meet the requirements of your computer. Or in renaming a file, you have not included an extension.

#57 FL Disk limit error:
There is no more free memory on the disk, or you have used up all the file slots.

Appendix B: Removing the ROM Chip

Once you have installed and initialized the TS-DOS chip, you are not committed to having the TS-DOS program in your computer forever. Because the TS-DOS file, which accesses the program, takes up only about 50 bytes of memory, it is unlikely you will want to remove it except to replace the TS-DOS chip with another.

Before removing the TS-DOS chip, first make sure that TS-DOS is turned off and then remove the TS-DOS program by killing the TS-DOS file.

Turning TS-DOS Off

1. In the main system menu place the cursor over **TS-DOS** and press **ENTER**.
2. Look at the **F5** function key prompt. It should read **DOS-OFF**. If it does, exit TS-DOS (step 3, below). If it **reads DOS-ON**, press **F5**.
3. Exit to the main system menu: press **F8** (Tandy) or **SHIFT F5** (NEC).

Removing the Program

Enter BASIC and kill the TS-DOS file.

1. In the main system menu place the cursor over BASIC, and press **ENTER**.
2. Type **KILL "TS-DOS"** and press **ENTER**
3. Return to the main system menu: press **F8** on the Tandy computers, **SHIFT F5** on the NEC.

Removing the Chip

Once you have killed the TS-DOS file, turn the computer off, remove the cover from the ROM expansion compartment, and gently pry the chip free.

Replacing the Chip

Each time you replace the TS-DOS chip in your computer, you must follow the installation and initializing steps outlined in Section 2.

Failure to re-initialize and re-install the chip each time you replace it in your computer may cause your computer to cold start and lose all the contents of its memory.

Appendix C: Sample TS-DOS BASIC Program

A Guide to SAMPLE. BA

Outlined below are the major routines of the SAMPLE.BA program, explained in Section 6. The numbers refer to the lines in which the routines appear in the program.

```
Main program                        15-220
(D)irectory option                1500-1540
(S)elect a file option            2000-2060
(R)ename a file option            2500-2580
(K)ilI a file option              3000-3040
(A)dd record option               3500-3830
(L)ist record option              4000-4070
(P)rint report option             4500-4600
(R)am or (D)isk prompt            8000-8060
Optional entry of DO extension    8050-8060
Select a file first prompt        8500-8520
Centering text on screen          9000-9020
Get character routine             9500-9520
Get string input routine         10000-20530

10 'SAMPLE TS-DOS PROGRAM
15 CLEAR 256:SCREEN,0
20 BS$=CHR$(8):DE$=CHR$(128):CR$=CHR$(13)
30 CH$="D"+"S"+"R"+"K"+"A"+"L"+"P"
40 VK$=BS$+DE$+CR$
50 NU$="":DT$="."
60 HT$="(Hit any key to continue)"
70 RD$="(R)am or (D)isk"
80 MG$="Not Selected"
90 ER$="Select a file first"
100 FN$="File name: [........]"
105 ':::[ Main program starts here ]:::
110 CLS
120 A$="Main Menu":GOSUB 9000:PRINT
130 A$="==== ====":GOSUB 9000:PRINT
140 PRINT " (D)irectory";TAB(25);"(A)dd record"
150 PRINT " (S)elect a file";TAB(25);"(L)ist report"
160 PRINT " (R)ename a file";TAB(25);"(P)rint report"
170 PRINT " (K)ill a file";TAB(25);"(Q)uit"
```

```
180 PRINT
190 IF FD$="" OR FD$=".DO" THEN FD$=MG$
200 A$="File: "+FD$:GOSUB 9000
210 GOSUB 9500
220 IF C$="Q" THEN MENU
230 ON INSTR(CH$,C$)+1GOSUB1000,1500,2000,2500,3000,3500,4000,4500
240 CLOSE#1:GOTO 110
250 :::::[ END OF MAIN PROGRAM ]:::::
260 :::::[ SUBROUTINES BEGIN HERE ]::
1000 BEEP:BEEP:RETURN 'hit a wrong key return to 240
1499 'Directory Routine
1500 CLS:GOSUB 8000
1510 CLS
1520 IF C$="R" THEN FILES ELSE LFILES
1530 PRINT:PRINT:A$=HT$:GOSUB 9000
1540 GOSUB 9500:RETURN
1999 'File selection routine
2000 CLS:PRINT:PRINT:A$=FN$:GOSUB 9000
2010 FOR I=1 TO 9:PRINT BS$;:NEXT I
2020 GOSUB 10000:IF IS$="" THEN 2055
2022 CLS
2030 GOSUB 8000
2040 IF LEN(IS$)> 2 THEN GOSUB 8050 ELSE IS$=IS$+".DO"
2050 IF C$="D" THEN IS$="0:"+IS$
2055 FD$=IS$
2060 RETURN
2499 'Rename a file routine
2500 CLS:PRINT:PRINT
2510 IF FD$=MG$ THEN GOTO 8500
2520 A$="Enter New file name: [........]":GOSUB 9000
2530 FOR I=1 TO 9:PRINT BS$;:NEXT I
2540 GOSUB 10000
2550 IF LEN(IS$)>2 THEN GOSUB 8050 ELSE IS$=IS$+".DO"
2560 GOSUB 8000
2570 IF C$="D" THEN IS$="0:"+IS$
2580 NAME FD$ AS IS$:FD$=IS$:RETURN
2999 'Kill file routine
3000 CLS:IF FD$=MG$ THEN GOTO 8500
3010 PRINT:PRINT:A$="OK to delete"+FD$+" (Y/N)":GOSUB 9000:GOSUB 9500
3020 IF C$<>"Y" THEN GOTO 3040
3030 KILL FD$:FD$=""
3040 RETURN
3499 'Add Record Routine
3500 IF FD$=MG$ THEN GOTO 8500
3510 CLS
3520 A$="ENTER NEW MEMBER":GOSUB 9000
3530 PRINT
3540 PRINT"Enter first name"
3550 PRINT"(or 0 to quit) [..............]";
3560 FOR I=1 TO 16:PRINTBS$;:NEXT I
3570 GOSUB 10000:F$=IS$
```

```
3575 IF F$="0" THEN RETURN
3580 PRINT"Last Name      [..................]";
3600 FOR I=1 TO 21:PRINTBS$;:NEXT I
3610 GOSUB 10000:L$=IS$
3620 PRINT"Address        [..................]";
3630 FOR I=1 TO 21:PRINTBS$;:NEXTI
3640 GOSUB 10000:S$=IS$
3650 PRINT"City           [..................]";
3660 FOR I=1 TO 21:PRINTBS$;:NEXTI
3670 GOSUB 10000:Y$=IS$
3680 PRINT"State          [..]";BS$;BS$;BS$;
3690 GOSUB 10000:E$=IS$
3700 PRINT"Zip Code       [.....]";
3710 FOR I=1 TO 6:PRINTBS$;:NEXTI
3720 GOSUB 10000: Z$=IS$
3730 CLS:PRINT
3740 PRINT"First Name: "+F$
3750 PRINT"Last  Name: "+L$
3760 PRINT"Address:    "+S$
3770 PRINT"City, St:   "+Y$+", "+E$
3780 PRINT"Zip Code:   "+Z$
3785 PRINT:PRINT"  Is this correct (Y/N)?"
3790 GOSUB 9500
3800 IF C$="N" GOTO 3510
3810 OPENFD$FORAPPENDAS1
3820 PRINT#1,F$;",";L$;",";S$;",";Y$;",";E$;",";Z$
3830 CLOSE#1:GOTO 3510
3999 'List report routine
4000 IF FD$=MG$ THEN GOTO 8500
4010 OPENFD$FORINPUTAS1
4020 INPUT#1,F$,L$,S$,Y$,E$,Z$
4030 CLS:PRINT F$;" ";L$
4040 PRINT S$:PRINT Y$:PRINT E$:PRINT Z$
4045 PRINT:PRINT:A$=HT$:GOSUB 9000:GOSUB 9500
4050 IF EOF(1) THEN GOTO 4070
4060 GOTO 4020
4070 CLOSE#1:RETURN
4499 'Print report routine
4500 IF FD$=MG$ THEN GOTO 8500
4510 CLS:PRINT:PRINT:A$="Hit any key to begin printing":GOSUB 9000:GOSUB
9500
4520 OPENFD$FORINPUTAS1
4530 INPUT#1,F$,L$,S$,Y$,E$,Z$
4540 LPRINTF$;" ";L$
4550 LPRINTS$
4560 LPRINTY$;", ";E$;" ";Z$
4570 LPRINT
4580 IF EOF(1) THEN GOTO 4600
4590 GOTO 4530
4600 CLOSE#1:RETURN
7999 'Ram or Disk prompt routine
```

```
8000 CLS:PRINT:PRINT:A$=RD$:GOSUB 9000
8010 GOSUB 9500:RETURN
8020 'Is there an extension if not add .DO
8050 IF MID$(IS$,LEN(IS$)-2,1)<>"." THEN IS$=IS$+".DO"
8060 RETURN
8499 'Select file first prompt routine
8500 CLS:PRINT:PRINT:A$=ER$:GOSUB 9000
8510 PRINT:PRINT:A$=HT$:GOSUB 9500
8520 RETURN
8999 'Center text routine
9000 I=(40-LEN(A$))/2
9010 PRINTTAB(I);A$;
9020 RETURN
9499 'Get Character routine
9500 C$=INKEY$:IF C$="" THEN GOTO 9500
9505 'Line 9510 checks to see if character is
9506 'uppercase, if not then make it uppercase
9510 IF C$>"Z" THEN C$=CHR$(ASC(C$)-32)
9520 RETURN
9999 'Get String input routine
10000 IF WS$=NU$ THEN GOSUB 10500
10030 IS$=WS$
10040 WS$=NU$
10050 RETURN
10500 IC$=INKEY$:IF IC$="" THEN 10500
10510 ON INSTR(VK$,IC$)+1 GOTO 10540,20000,20000,20500
10530 'Line 10540 checks for a printable character
10540 IF IC$ < " " OR IC$ > "z" THEN GOTO 10500
10544 'If character is not uppercase change it to uppercase
10545 IF IC$>"Z" THEN IC$=CHR$(ASC(IC$)-32)
10550 B$=B$+IC$
10560 PRINT IC$;
10570 GOTO 10500
19999 'backspace routine
20000 IF LEN(B$) < 1 THEN GOTO 10500
20010 B$=MID$(B$,1,(LEN(B$)-1))
20020 PRINT BS$;DT$;BS$;
20030 GOTO 10500
20499 'Carriage return routine
20500 WS$=B$
20510 B$=NU$
20520 PRINT
20530 RETURN
```

Appendix D: RAM Recovery with the TS-DOS ROM

TS-DOS ROMs have a built in cold start file recovery routine.

Upon losing your files to a cold start, and if you have a TS-DOS ROM installed in your machine, issue the following command in BASIC.

```
Model 100/102:  call 63013,0
Model 200:  call 921,146
```

In both cases, in a few moments you will be returned to the menu with a file called **RECOVR.DO** wherein you will find your **.DO** file contents -- use cut and past to separate.