

**RT-11 for Beginners**

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# **RT-11 for Beginners**

AA-FR88A-TC

**October 1985**

This manual describes how to use the RT-11 operating system. It is intended for beginners.

**Operating System:** RT-11 Version 5.2

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## Introduction

---

*RT-11 for Beginners* contains enough information for you to do useful work with the RT-11 operating system but does not describe all the RT-11 features and capabilities. This book specifically references the Professional 300 Series and MicroPDP-11 computers, but the information applies to traditional PDP-11 computers as well.

This book assumes that you do not have any experience with computers. You do not have to be a computer programmer to use RT-11.

Chapter 1 provides background information and introduces some general concepts.

Chapter 2 explains how to start the RT-11 computer system and how to use a subset of RT-11 commands to perform common operations. The chapter also explains how to use the keypad editor to create and edit text files.

Chapter 3 provides a quick reference to a subset of RT-11 commands and options.

Chapter 4 lists a subset of RT-11 system messages, a brief explanation about the reason for the message, and suggestions for correcting errors.

The Glossary defines technical terms used in the text.

The Appendix provides a keypad fold-out and lists the keypad keys described in this book.



## What is RT-11? **1**

---

RT-11 is an operating system for PDP-11 computers. The operating system is software and the computer is hardware. Hardware is the equipment — the mechanical and electronic devices that perform physical functions. Software is the collection of instructions, called programs, that tell the computer what to do. Hardware components and software components work together to process data.



The RT-11 computer system requires the following hardware components:

- Central processor
- Memory
- Terminal
- Storage medium

The central processor, or processor, is the control center of the computer. It performs data processing, such as comparing information, calculating a value, printing or displaying information, and storing information.

Memory is a series of storage locations that hold programs and data. Memory holds the program and the data that the central processor is using.

You communicate with the computer through a terminal. Generally, the RT-11 computer system has only one terminal, called "the terminal". The terminal has a keyboard that is like a typewriter keyboard. You type RT-11 commands on the keyboard, and RT-11 responds on the terminal screen by prompting you for commands, displaying information, and sending messages.

A storage medium, such as a diskette or disk, stores the information that RT-11 uses. Diskettes are made of flexible plastic so they are sometimes referred to as floppies. Diskettes are small so they can be stored and transported easily. Disks are larger and can hold more information than diskettes.

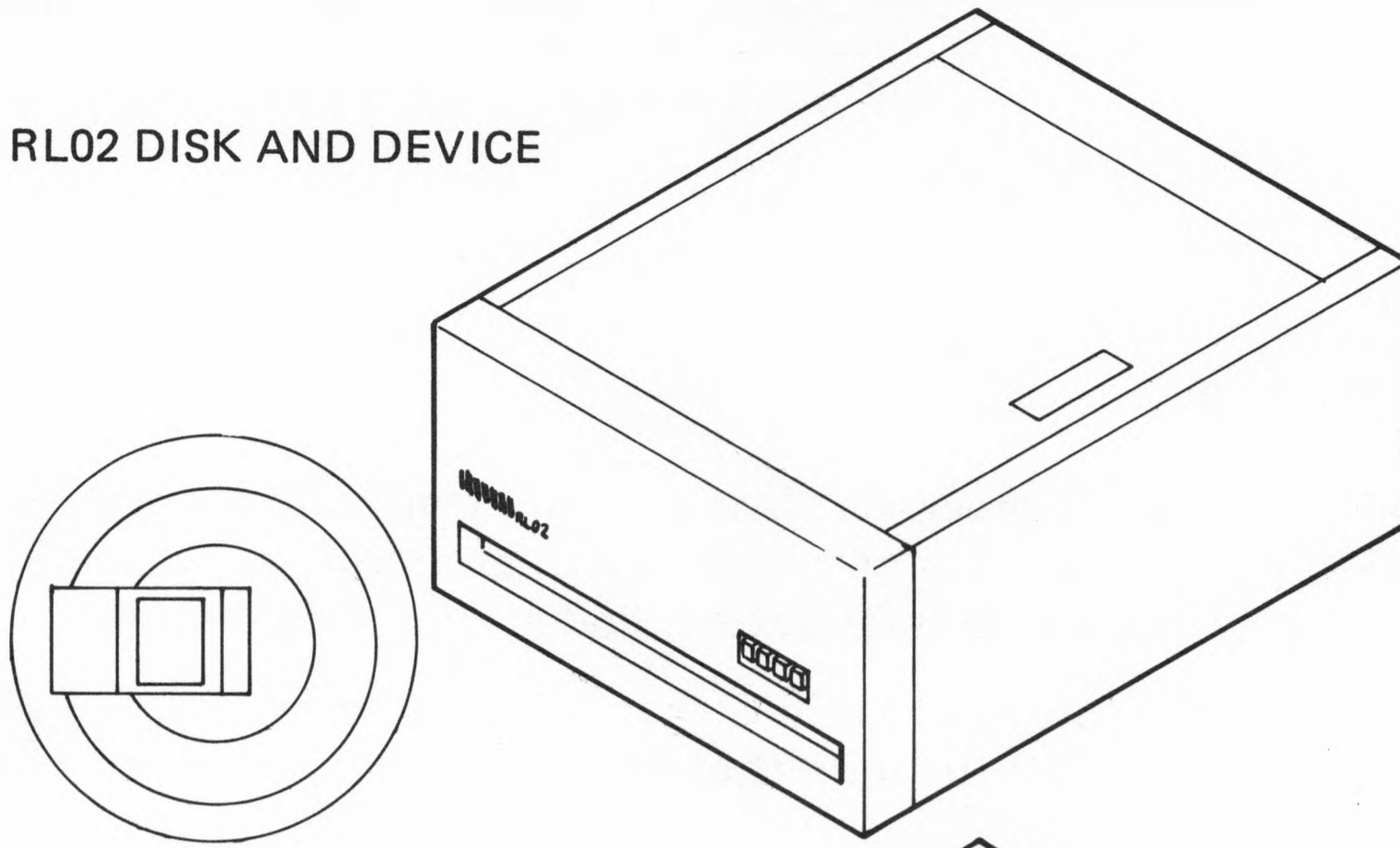
Diskettes and disks are also called volumes, which is a more general term. Volumes store information organized in files similar to the files in a file cabinet. A file can be a program, the data needed by a program, the results of a program, or text.

For RT-11 to access a file on a volume, you must insert the volume into the appropriate device. A device is a hardware unit that provides information to the computer, accepts information from the computer, or both. The following illustration shows some volumes and their corresponding devices.

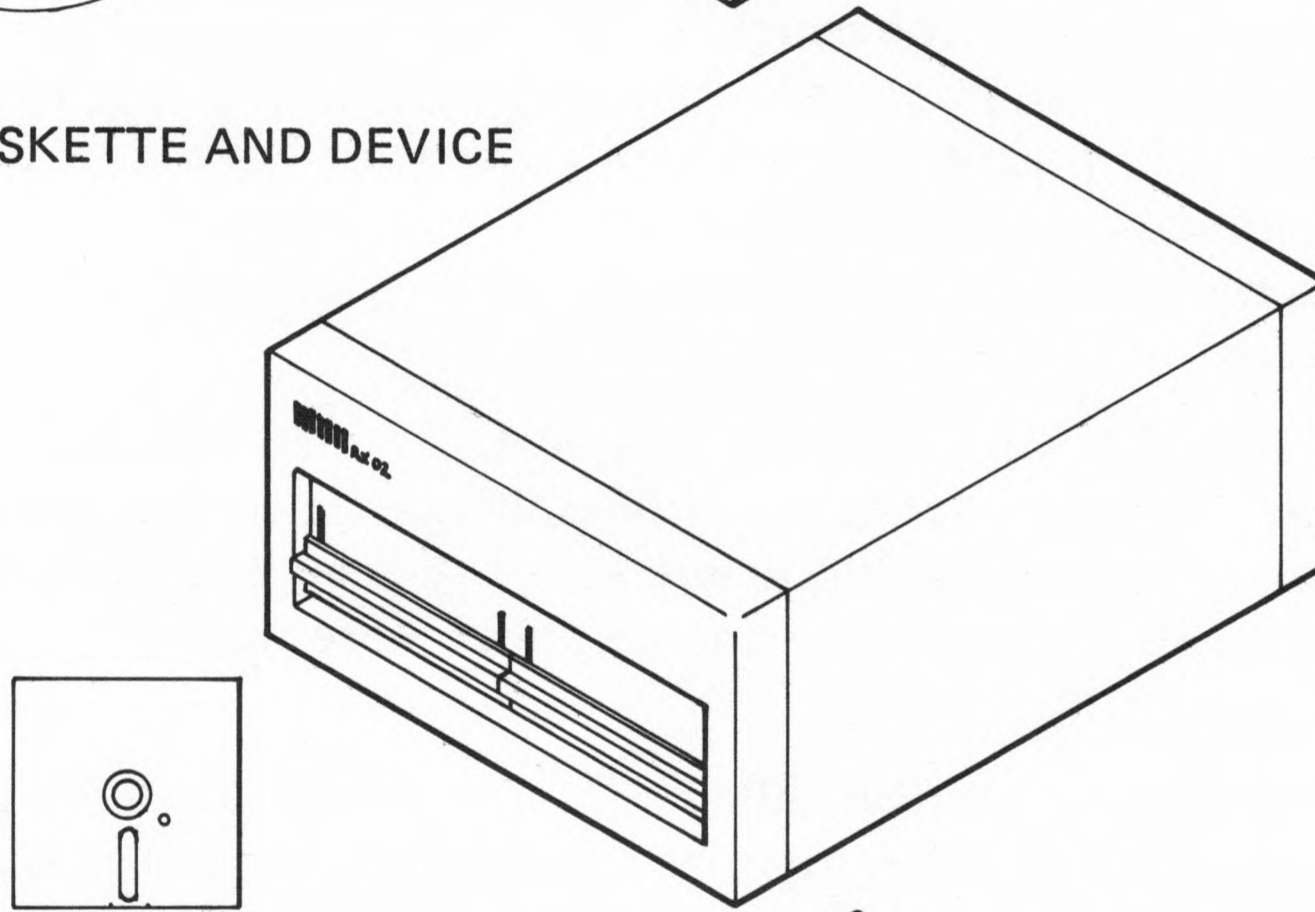
In addition to disk or diskette devices, you may have some other device, such as a printer, connected to your computer.



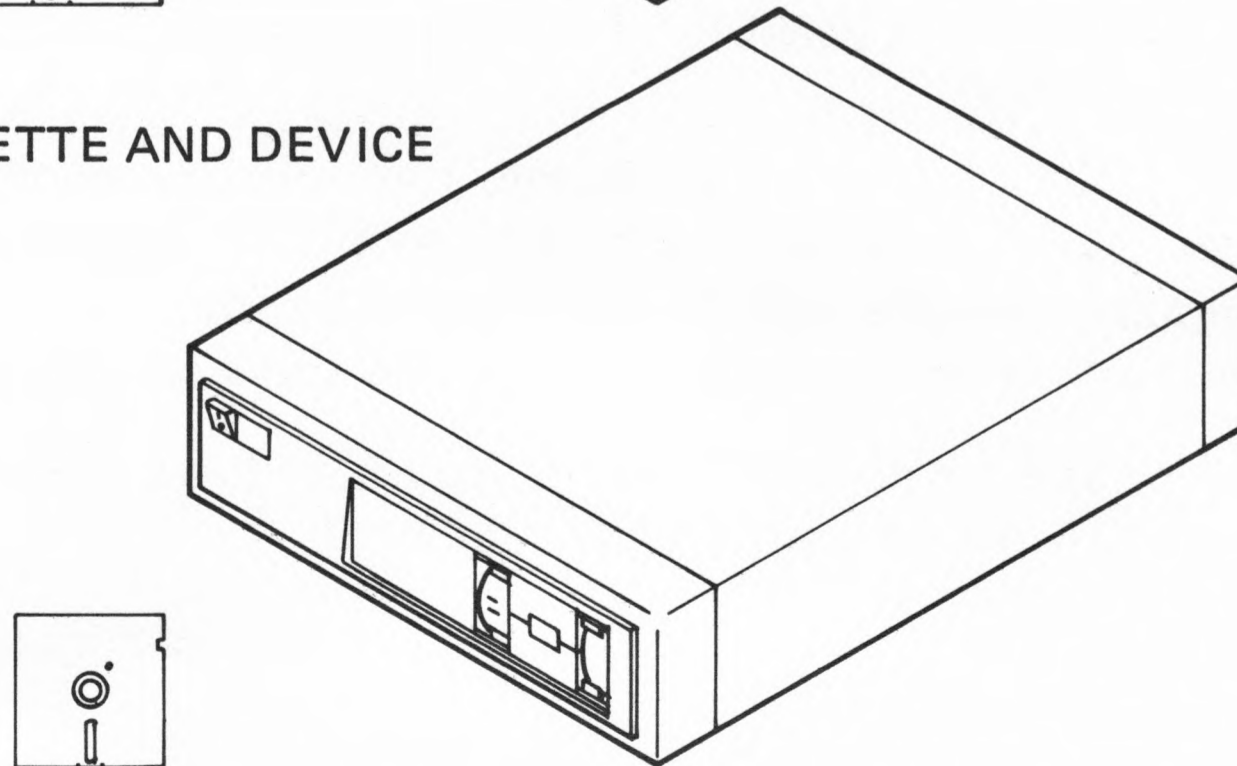
RL02 DISK AND DEVICE



RX02 DISKETTE AND DEVICE



RX50 DISKETTE AND DEVICE





RT-11 system software is an organized set of supplied programs that provide ready-made tools to perform common operations, such as creating or copying files. A program is a set of instructions that the processor executes one step at a time.

RT-11 system software includes the following kinds of programs:

- Monitor programs
- Utility programs
- Device handlers
- Language processors

Monitor programs manage the computer system. These programs control and allocate the services of the rest of the system. The monitor links the hardware, the software, and you. When you communicate with the system, you are requesting some service from the monitor. Such services include starting programs, controlling program execution, and modifying or retrieving system information. RT-11 provides three different monitors: Single Job, Foreground/Background, and Extended Memory.

The Single Job (SJ) monitor, the smallest of the three monitors, can execute only one utility program or user program at a time. The Foreground/Background (FB) monitor includes all the features of the SJ monitor plus other features, and it can accommodate up to eight programs that appear to be running at the same time. The Extended Memory (XM) monitor includes all the features of the FB monitor and allows for larger program space.

You communicate with the monitor by typing RT-11 commands. When you type a command, the monitor performs the operation or passes the command on to the appropriate utility program. Common system operations are performed by utilities. Utilities perform operations such as creating and editing text, copying files, and deleting files. Often, you are not aware of which utility performs an operation.

Device handlers service and control the devices connected to your system. One handler exists for every device that the system supports. The handler contains device-specific information that is called into memory and executed whenever a program needs to access the corresponding device. You do not need to be concerned about device handlers. RT-11 automatically transfers device handlers into memory as they are needed. If you are building a



working system, however, you must be sure that all the device handlers required by your hardware are included in your system software.

Language processors translate programs written in a programming language into instructions that the computer can understand. One language processor exists for every programming language that RT-11 supports. You will not be using language processors until you do computer programming.



## Operations That You Can Perform **2**

---

The sections in this chapter describe operations that you will probably want to perform with RT-11. The sections are organized in the order that you would perform the operations. The operations described in this chapter include:

- Starting RT-11
- Communicating with RT-11
- Finding Out What Is on Your Volume
- Copying Files
- Copying a Working System
- Displaying Files
- Printing Files
- Renaming Files
- Protecting and Unprotecting Files
- Deleting Files
- Squeezing a Volume
- Editing
- Setting Date and Time
- Using the Foreground
- Communicating with Another Computer



- Running Application Programs
- Setting Terminal Characteristics
- Using Indirect Command Files

Read the appropriate section when you want to perform a particular operation or read the chapters in sequential order for a tutorial on RT-11.



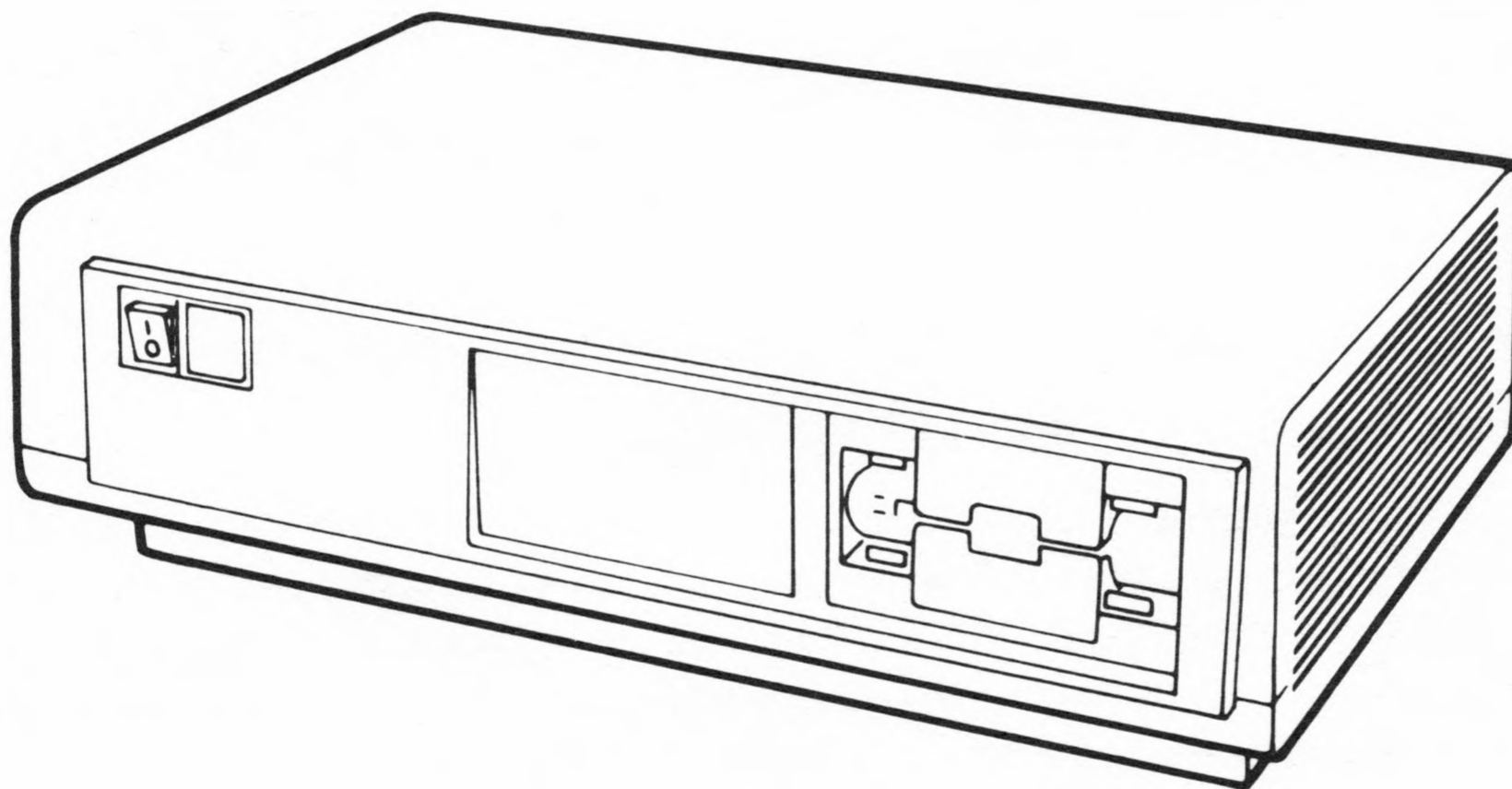
This book assumes that the RT-11 operating system is installed on your computer. If RT-11 is not installed, refer to the *RT-11 Automatic Installation Booklet*.

To start RT-11, follow a procedure called bootstrapping the system. Bootstrapping runs a program called the bootstrap. The bootstrap starts RT-11. The system volume contains the bootstrap and the other programs necessary to start the RT-11 operating system.

The bootstrapping procedure for RT-11 varies, depending upon your computer hardware.

For the Professional 350 and 380 computers, bootstrapping consists of the following steps:

1. Make sure there are no diskettes in either device unit.

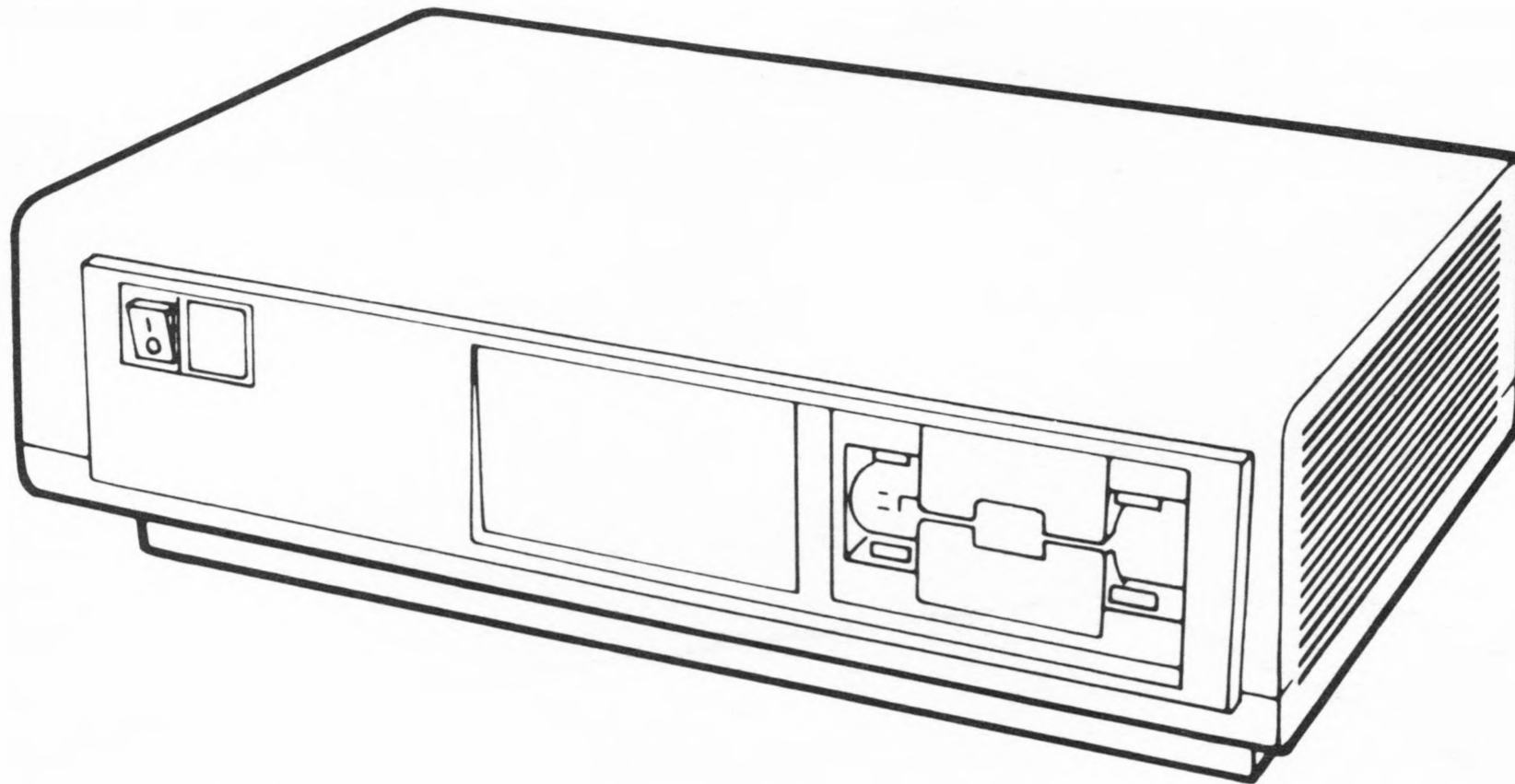


2. Press the power-on 1/0 switch to position 1. The bootstrap starts RT-11. The Professional takes a few seconds to run diagnostic self-tests. When the tests are completed, RT-11 displays an introductory message. Next, the period (.) prompt appears at the left margin of the terminal screen. That prompt, called the monitor prompt, indicates that RT-11 is ready to accept a command.



For the Professional 325, bootstrapping consists of the following steps:

1. Locate device unit 0. A device unit is the hardware that holds a diskette and can read or write information on the diskette.

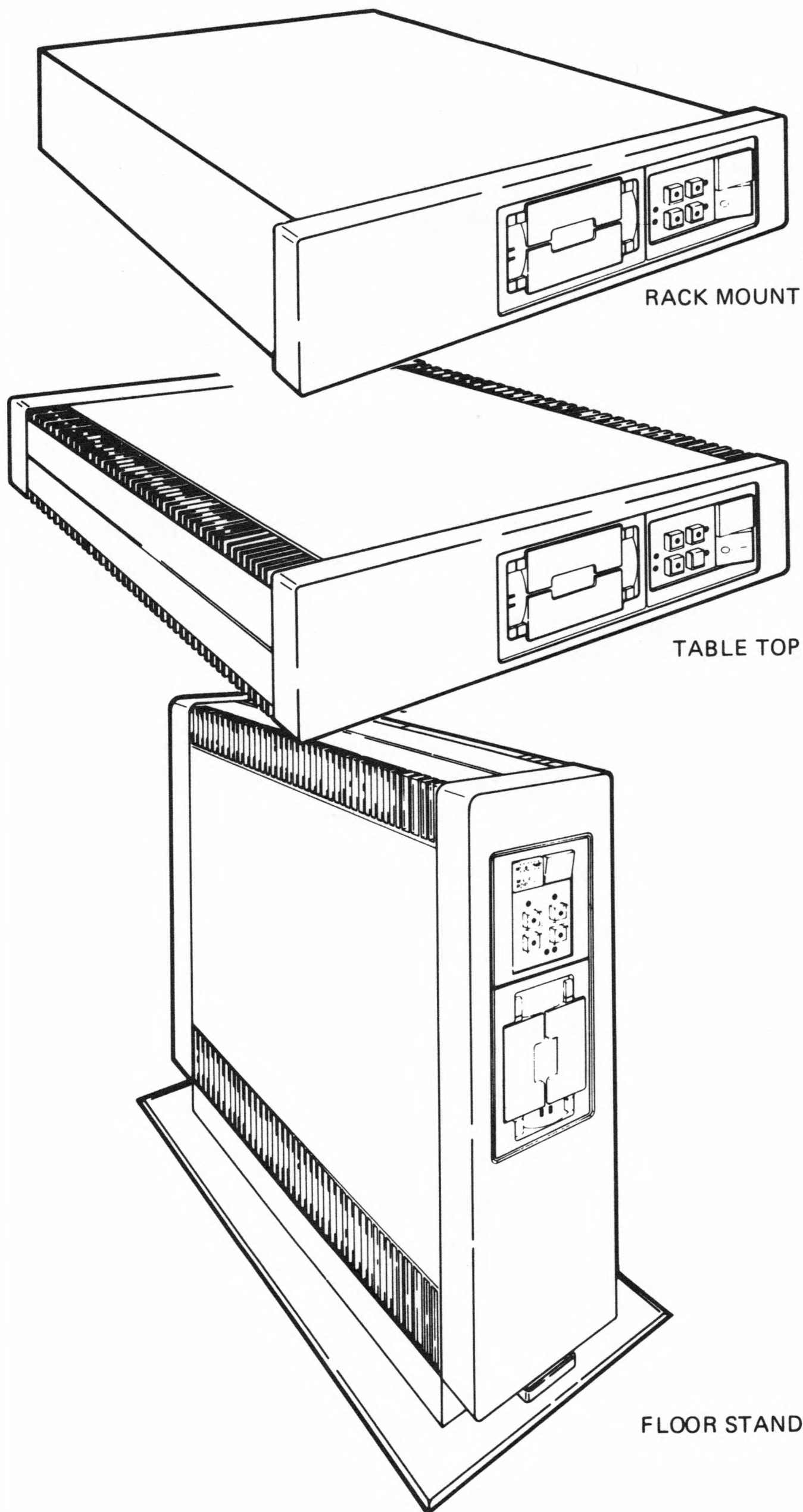


2. Insert the system volume, labeled volume 1, into device unit 0.
3. Close the device unit door.
4. Press the power-on I/O switch to position 1. The bootstrap starts RT-11. The Professional takes a few seconds to run diagnostic self-tests. When the tests are completed, RT-11 displays an introductory message. Next, the period (.) prompt appears at the left margin of the terminal screen. This prompt, called the monitor prompt, indicates that RT-11 is ready to accept a command.

For the MicroPDP-11, bootstrapping consists of the following steps:

1. Make sure there are no diskettes in the device units.





RACK MOUNT

TABLE TOP

FLOOR STAND

2. Press the power-on 1/0 switch to position 1. The Run and DC OK indicators should light up.

The Ready indicator should light up after approximately 30 seconds. If the Ready indicator does not light up, press the Ready switch.

The MicroPDP-11 takes a few seconds to run diagnostic self-tests. The MicroPDP-11 displays diagnostic memory messages on your terminal screen. The bootstrap starts RT-11. RT-11 displays various system messages. Next, the period (.) prompt appears at the left margin of the terminal screen. That prompt, called the monitor prompt, indicates that RT-11 is ready to accept a command.

The examples in this manual work on Professional 350, 380, and MicroPDP-11 computer systems. You need not understand what you are typing. It will be explained in other sections of the manual.

Using the keys on the terminal keyboard, type the information in red print exactly as you see it below. If you make a typing error, press the DELETE key once for each character you want to delete. The DELETE key on a VT100 Series terminal has the word DELETE on it. The DELETE key on a Professional 300 Series terminal has a symbol on it. After you type the information, press the RETURN key, represented in this manual by `(RET)`.

If you are using a Professional 350 or 380 computer, type:

```
• ASSIGN LS: LP: (RET)
• ASSIGN DZO: RX1: (RET)
• ASSIGN DZ1: RX2: (RET)
```

If you are using a MicroPDP-11 computer, type:

```
• ASSIGN LS: LP: (RET)
• ASSIGN DU1: RX1: (RET)
• ASSIGN DU2: RX2: (RET)
```

Once you have started RT-11 and typed the appropriate information on your terminal keyboard, you are ready to perform the other operations described in this chapter.



You use a preestablished set of RT-11 commands to communicate with RT-11. RT-11 commands are instructions that you type on the terminal keyboard. These commands tell RT-11 what to do. This section describes:

- Terminal keyboards
- How to issue RT-11 commands
- File specifications
- How RT-11 responds to commands
- Correcting typing mistakes
- Getting help

### Keyboards

Use the terminal keyboard to type commands or enter information. Keys for alphabetic characters are like keys on a standard typewriter. Additional keypad keys and other special function keys are used for entering information or editing text. The names or symbols for some keyboard keys and the position of some keys vary among different terminals. Figures 1 and 2 show the VT100, VT200, and the Professional 300 Series terminal keyboards.

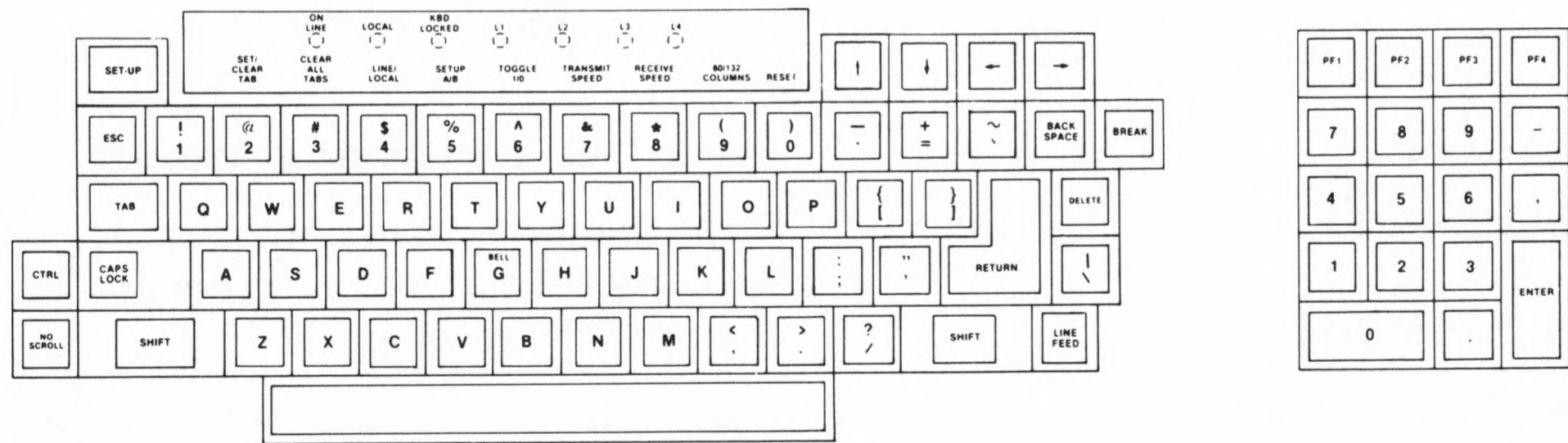
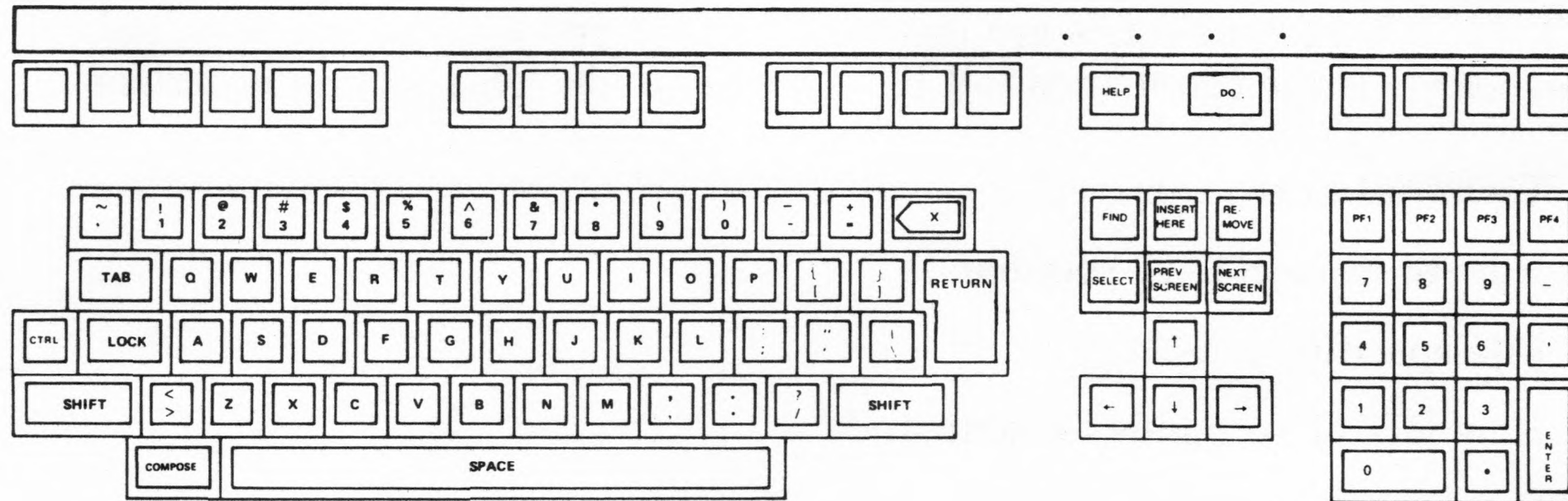


Figure 2-1: VT100 Terminal Keyboard



**Figure 2-2: VT200 and Professional 300 Series Terminal Keyboard**

A description of the special function keys you will use most often follows.

**CTRL/C CTRL/C**

Stops a running program and returns the RT-11 prompt (.). Type this double control command by holding down the CTRL key while pressing the C key twice.

**CTRL/U**

Cancels the current command line. Hold down the CTRL key while pressing the U key. Press RETURN to display the monitor prompt.

**DELETE**

Deletes the last character typed.

**NO SCROLL**

or

**HOLD SCREEN**

Stops the display from moving, or scrolling, off the screen. Press the key again to resume scrolling.

**KEYPAD KEYS**

Used to enter or modify text or data when the keypad editor program is running. The Editing section of this chapter explains how to use the keypad keys.



CAPS LOCK

or  
LOCK

Locks the shift key so all letters are typed in uppercase. Press the key again to unlock the shift key.

RETURN

Tells RT-11 to execute the command you just typed; also performs a carriage return.

SHIFT

Allows you to select numeric or special characters and uppercase or lowercase alphabetic characters.

### Commands

RT-11 commands are English or English-like words that instruct RT-11 to perform specific operations. Commands appear in **boldface** in the text.

**TYPE**, **PRINT**, and **RUN** are examples of RT-11 commands.

The RT-11 prompt character (**.**), called the monitor prompt, appears at the left margin whenever RT-11 is ready to accept a command.

A blinking symbol, called the cursor, indicates where the character you type will appear. The cursor may be a blinking rectangle or a blinking underline, depending on how your terminal is set. The cursor moves to the right each time you type a character.

.⌘

When you type an RT-11 command, you must supply certain information in the correct format. Exact spacing and punctuation are important. If you omit a required part of a command, RT-11 prompts you for more information or displays a system message.

After typing a command, press the RETURN key to execute the command. The **(RET)** symbol in command examples means that you press RETURN at that point.

If you change your mind about entering a command, type CTRL/U (hold down the CTRL key and type the letter U) to cancel the command. Then press RETURN to display the monitor prompt.

## File Specifications

Most RT-11 commands act on files. When you type a command to act on a file, you must supply a file specification, or filespec. A filespec consists of three parts:

1. Device Name of the device that contains the file.
2. File Name assigned by the person who created the file.
3. Type Designation that indicates what type of information is in the file.

A filespec has the following format:

device:file.type

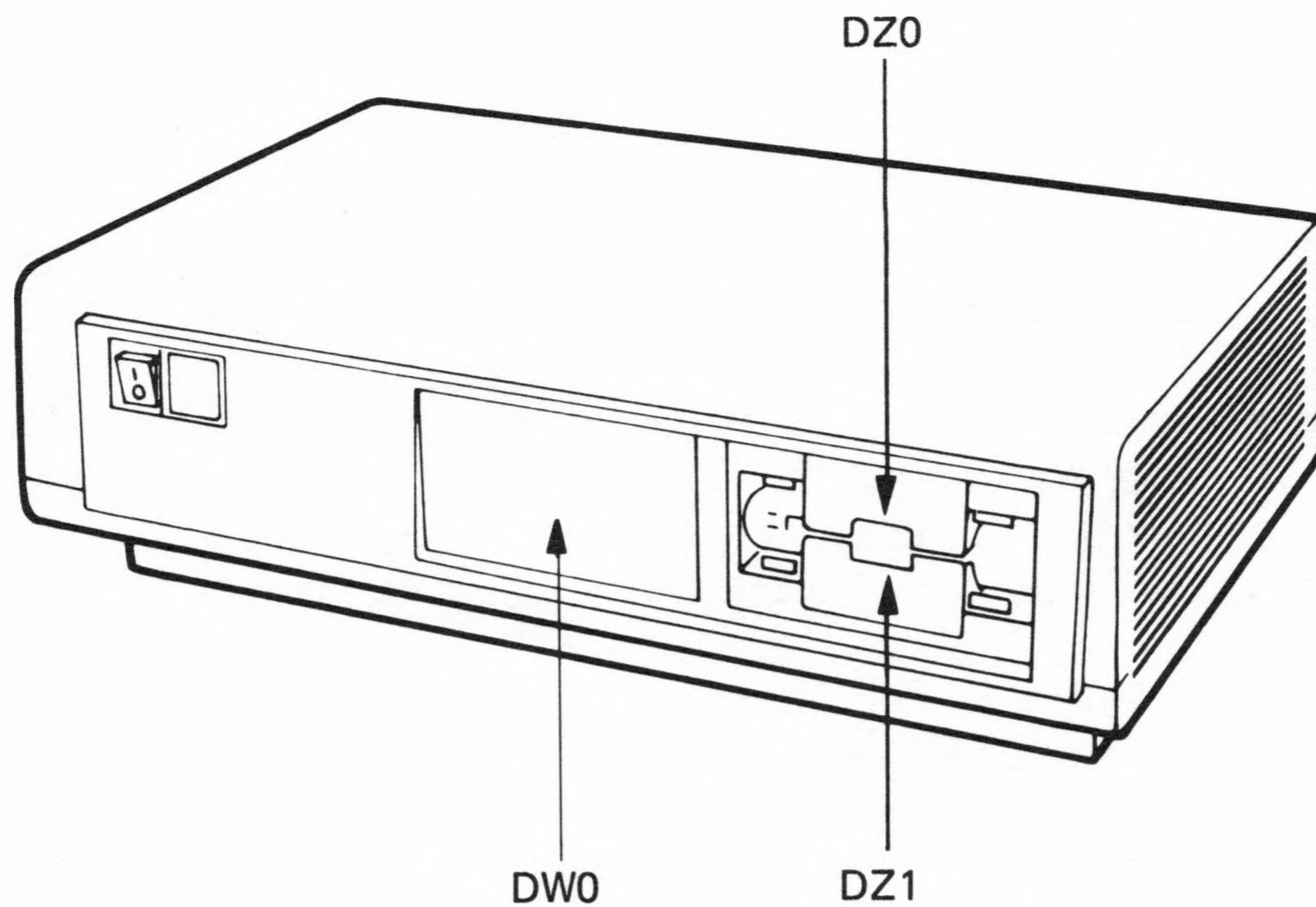
The device is followed by a colon, and the file is separated from the type by a period. For example, the following filespec refers to the file called MYFILE.TXT stored on the volume in device RX1:

RX1:MYFILE.TXT  
↑        ↑        ↓  
device    file    type

**Device Names** — Each RT-11 device is identified by a device name. Device names are the first part of a filespec. The device name specifies where information can be found or where it should be sent.

A device name consists of a 2-letter name and unit number. For example, the Professional 350 Series computers have three devices, called DW0, DZ0, and DZ1. DW and DZ are the names of the devices, and the number specifies the device unit.





**Figure 2-3: Professional 350 Device Units**

Some device names and the corresponding hardware are listed in the following table. The letter n is used as a variable to indicate the unit number. When you use a device name, use the appropriate unit number to access the unit of the device that contains your files.

<b>Device Name</b>	<b>Hardware</b>
DLn:	RL01/02 Disk
DMn:	RK06/07 Disk
DUn:	RC25/RD51/52 Disk, RX50 Diskettes
DWn:	Professional 300 Series RD50/51/52 Disk
DXn:	RX01 Diskette

DYn:	RX02 Diskette
DZn:	Professional 300 Series RX50 Diskettes
LPn:	Line Printer
LSn:	Serial Printer

The device names listed in the table are defined in the system software. However, you can change any of those name assignments temporarily. Since RT-11 users may have any combination of the devices listed in the previous table, you are instructed to assign the names RX1: and RX2: to your devices. Once you change the device name assignments, the examples are the same for everyone using this manual. Refer to the section Assigning Logical Names for more information on changing device names.

**File Names and Types** — The file name and type identify a particular file. Whenever you create a file, you give it a file name and type. The file name can be six alphanumeric characters or fewer, and the file type can be three alphanumeric characters or fewer. Categorize your files according to type, using the file names to distinguish between individual files. For example, you might use the file type TXT to identify the text files:

```
MYFILE.TXT
  FORM.TXT
MEMO1.TXT
```

### Command Format

The general syntax for an RT-11 command is:

command/option filespec

**command** Represents an RT-11 command. Other sections in this book describe how to use some of the RT-11 commands.

**/option** Represents one or more qualifiers that make a command more specific. Include one or more options or omit options, as you choose.

**filespec** Represents device:file.type.



In the following example of the **PRINT** command, the **/COPIES** option is used to print two copies of the file **MYFILE.TXT** on the volume in device **RX1**:

```
.PRINT/COPIES:2 RX1:MYFILE.TXT (RET)
```

command option filespec

Some commands require two filespecs: an input filespec and an output filespec. The input filespec represents the file needed for the computer operation. The output filespec represents the file created as a result of the operation. The command syntax for such a command is:

**COMMAND/option** input-filespec output-filespec

The **COPY** command uses both an input and output filespec. In the following example, the input file **INFIL.TXT** is on the volume in device **RX1**. A copy of the file, **OUTFIL.TXT**, is created on the volume in device **RX2**:

```
.COPY RX1:INFIL.TXT RX2:OUTFIL.TXT (RET)
```

command input-filespec output-filespec

Some RT-11 commands accept wildcards. A wildcard is an asterisk (\*) used in place of the file name or file type in a filespec. Wildcards are useful if you want to specify certain files without typing each file name and type. For example, the following command prints all the files on the volume in device **RX1** that have the file type **TXT**, regardless of their file names:

```
.PRINT RX1:*.TXT (RET)
```

The next example prints all the files on the volume in device **RX2** that have the file name **EXAMP**, regardless of their file types.

```
.PRINT RX2:EXAMP.* (RET)
```

## Responses

RT-11 responds to a command in one of several ways. It can display a prompt, a message, or both. This section explains what to type in response to a prompt and what to do if you receive a message.

**Prompts** — The RT-11 monitor prompt is a period (.) at the left margin of the screen. The prompt tells you that RT-11 is ready to accept a command. Type a command directly after the monitor prompt.

If you omit a necessary part of a command, RT-11 prompts for more information or displays a system message. For example, if you type the **PRINT** command without specifying which file you want to print, RT-11 prompts you for the filespec.

```
.PRINT (RET)
Files?
```

You must respond to a prompt that asks for more information for RT-11 to continue. If you do not want to continue with the command, type CTRL/C and then press RETURN.

If you type a command incorrectly, or if RT-11 is unable to perform the operation, you may get a system message. The next section explains what to do if you get a system message.

**System Messages** — When RT-11 detects an error, it displays a system message that describes the condition. RT-11 responds to an error condition based on the following severity levels:

Information (I)

Warning (W)

Error (E)

Fatal/Severe (F)

Unconditional Abort (U)

The messages have prefixes that indicate which component of the RT-11 operating system generated the message and the severity of the error. For example, if you made an error in typing a file specification, or a file specification does not appear in a command line where one is expected, the keyboard monitor (KMON) generates the following fatal (F) system message:

```
?KMON-F-Error in file spec
```

When a system message appears on your terminal, look up the message in the System Messages section of this manual for more information.

### Correcting Typing Mistakes

If you make a typing mistake while giving an RT-11 command, press the DELETE key once for each character you want to delete. The DELETE key on a VT100 Series terminal has the word DELETE on it. The DELETE key on Professional 300 Series terminal has a symbol on it. DELETE erases the



character to the left of the cursor, and the cursor takes the character's place. In the following example, the **PRINT** command is typed incorrectly:

```
. PRINT
```

By pressing the **DELETE** key twice, you move the cursor to the left, erasing two characters:

```
. PRI
```

Now you are ready to type **PRINT** correctly.

You can delete characters until you reach the left margin but you cannot delete the monitor prompt (.).

### Getting Help

You might want information about an RT-11 command before you use it. Chapter 3 provides an alphabetical reference to the subset of commands covered in this book. However, RT-11 also provides a **HELP** facility. It provides information about all RT-11 commands.

Type **HELP \*** for a list of all the **HELP** topics and a brief description of each topic. Each **HELP** topic is an RT-11 command.

If you are using a small system, help may not be available.

To get help on a particular command, type **HELP** followed by the topic and press **RETURN**.

Subtopics explain how to type the command, list options that can be used with the command, and provide one or more examples.

For example, if you type **HELP TIME**, the following information appears on your screen:

```
TIME                Sets or displays the system time
SYNTAX              TIME[ hh:mm:ss ]
SEMANTICS           In the TIME command, hh represents the hour
                    (1-23), mm represents the minute (0-59), and ss
                    represents the second (0-59). The system as-
                    sumes 00 for an omitted field.
```

## Communicating With RT-11

---

OPTIONS

None

EXAMPLES

TIME 11:15

If you need more detailed command information than this book or the HELP facility provides, refer to Chapter 4 of the *RT-11 System User's Guide*.



If you want information about the files on a volume, read the volume directory. A directory is a catalog of files.

A standard directory lists the file names and types and the date each file was created. A standard directory also lists the size of each file, measured in blocks. Each block can hold 512 characters. The directory summary tells you how many files are on the volume, the total number of blocks the files occupy, and the number of free blocks available for use.

To see a directory of your files, use the **DIRECTORY** command in the following format:

**DIRECTORY**/option device

device                      Represents the device holding the volume for which you want directory information.

The following example of the **DIRECTORY** command shows a standard directory listing of the volume in device RX1:

```
.DIRECTORY RX1: (RET)
4-JAN-85

MEMO1 .TXT   2   13-Feb-85  MEMOS .BAK   3   13-Feb-85
MEMO2 .TXT   1   10-Feb-85  ACCNT .TXT  12   10-Jan-85
STATUS.RPT  3P  30-Jan-85
 5 Files, 21 Blocks
765 Free blocks
```

The suffix "P" next to the number of blocks indicates that the file is protected from deletion. See the Protecting and Unprotecting Files section of this manual.

The **DIRECTORY** command has options that allow you to organize the information displayed, select specific files to be listed, and find volume information. Use the **/BRIEF** option to see an abbreviated directory that lists only file names and types. The following example shows an abbreviated directory of the volume in device RX1:

```
.DIRECTORY/BRIEF RX1: (RET)
4-Jan-85

MEMO1 .TXT   MEMO2 .TXT   MEMOS .BAK   ACCNT .TXT   STATUS.RPT
 5 Files, 21 Blocks
765 Free blocks
```

You can also get directory information for only certain files on a volume. Specify the device name followed by the file name and type.

## Finding Out What Is On Your Volume

---

The following example shows a standard directory of the file MEMO1.TXT on the volume in device RX1:

```
. DIRECTORY RX1:MEMO1.TXT (RET)
4-JAN-85

MEMO1 .TXT      2    13-Feb-85
```

You can also use a wildcard in a filespec instead of the file name or type. The following example shows a brief directory of files that have the file type .TXT:

```
. DIRECTORY/BRIEF RX1:*.TXT (RET)
4-Jan-85

MEMO1 .TXT      MEMO2 .TXT      ACCNT .TXT
3 Files, 15 Blocks
765 Free blocks
```

You might want a directory of the unused areas on a volume. After many files have been added to a volume and some have been deleted, the free space or unused area might become fragmented. There might be plenty of free space on a volume, but a large file will not fit in any one of the spaces. When the free space becomes too fragmented, you might receive the following system message:

```
?PIP-F-Output file full DEVICE:FILE.TYPE
```

Use the **/FREE** option to see a listing of free space.

The following example shows a directory of free space on the volume in device RX1:

```
. DIRECTORY/FREE RX1: (RET)
14-Jan-85

<  UNUSED  >      11  <  UNUSED  >      2
<  UNUSED  >      26  <  UNUSED  >      32
<  UNUSED  >       1  <  UNUSED  >      25
<  UNUSED  >       6  <  UNUSED  >      65

0 Files, 0 Blocks
168 Free Blocks
```

You can use the **SQUEEZE** command to consolidate the free space on a volume. Refer to the section Squeezing a Volume for information about using the **SQUEEZE** command.



The **COPY** command copies one or more files. Use **COPY** to copy files to other places on the same volume or to another volume. **COPY** instructs the system to duplicate the input file and gives the new file the output file name and type you specify.

Use the following command format to copy a file:

**COPY**/option input-filespec output-filespec

input-filespec

Specifies the device and the file name and type of the file you want to copy.

output-filespec

Specifies the device and the file name and type of the file to which the file is copied. Only specify one file when you use input and output filespecs.

If a file of the same name and type already exists on the specified volume, the file you create will replace the existing file.

You can use the **COPY** command with options to perform specific copy operations, such as:

- Copying files on the same volume
- Copying files from one volume to another
- Copying system files
- Copying many files from one volume to another
- Combining files

Those operations are explained in the following sections.

### Files on the Same Volume

To copy a file to another place on the same volume, specify the device name and the file name and type of the input file. Then specify the device name and a different file name or type for the output file, since the new file will be on the same volume.

## Copying Files

---

In the following example, the file THIS.TXT on the volume in device RX1 is copied to a new file called THAT.TXT on the same volume:

```
.COPY RX1:THIS.TXT RX1:THAT.TXT
```

### Files from One Volume to Another

To copy one or more files to another volume, specify the device name and the file name and type of the input file you want to copy. Then specify the device name and the file name and type of the output file. Since the files will be on different volumes, you can use the original name or change the name of the new file.

In the following example, the file MYFILE.TXT is copied from the volume in device RX1 to the volume in device RX2.

```
.COPY RX1:MYFILE.TXT RX2:MYFILE.TXT (RET)
```

### System Files

Files containing programs that are components of the RT-11 operating system are called system files. System files have the file type SYS. RT-11 has a special way of handling system files. Use the **/SYSTEM** option to copy system files if you use wildcards instead of input file types.

In the following example, all the files on the volume in device RX1 are copied to the volume in device RX2, including the system files:

```
.COPY/SYSTEM RX1:*. * RX2: (RET)
```

If you use wildcards instead of input file types but you omit the **/SYSTEM** option, system files are not copied, and the following message is displayed:

```
?PIP-W-No .SYS action
```

That message is informational and no action is required.

In the next example, the system file LP.SYS is copied from the volume in device RX1 to the volume in device RX2. The **/SYSTEM** option is not necessary, because the command explicitly gives the name of the file and does not use wildcards.

```
.COPY RX1:LP.SYS RX2:LP.SYS (RET)
```



## Copying Many Files from One Volume to Another

A convenient way to copy several files from one volume to another is to use wildcards with the **/QUERY** option. Using wildcards saves you from having to type each filespec. **/QUERY** causes RT-11 to request confirmation before copying each file. RT-11 displays the name of each file. If you type a *Y* in response to the query, RT-11 copies the file. If you type *N*, RT-11 ignores the file and goes to the next file. In this way you can select the files to copy.

In the following example, you are queried about all the files on the volume in device RX1 with the file type TXT. All the files are copied except MYFILE.TXT.

```
.COPY/QUERY RX1:*.TXT RX2:*. * (RET)
  Files copied:
RX1:MEMO1.TXT          to RX2:MEMO1.TXT      ?  Y
RX1:MEMO2.TXT          to RX2:MEMO2.TXT      ?  Y
RX1:MEMO3.TXT          to RX2:MEMO3.TXT      ?  Y
RX1:MYFILE.TXT         to RX2:MYFILE.TXT     ?  N
RX1:FILE1.TXT          to RX2:FILE1.TXT      ?  Y
RX1:FILE2.TXT          to RX2:FILE2.TXT      ?  Y
RX1:FILE3.TXT          to RX2:FILE3.TXT      ?  Y
```

## Combining Files

To copy several files on the input volume to a single file on the output volume, use the **/CONCATENATE** option. You can specify as many as six input files. Use commas to separate the filespecs.

Use the **/CONCATENATE** option to copy several files on the input volume to a single file on the output volume. Use commas to separate the files. You can specify as many as six input files.

In the following example, the files MEMO1.TXT and MEMO2.TXT on the volume in device RX1 are copied to the new file called MEMOS.TXT.

```
.COPY/CONCATENATE RX1:MEMO1.TXT,RX1:MEMO2.TXT RX1:MEMOS.TXT (RET)
```

In the following example, the input files MEMO1.TXT and MEMO2.TXT are copied from the volume in device RX1 to the output file MEMOS.TXT on the volume in device RX2:

```
.COPY/CONCATENATE RX1:MEMO1.TXT,RX1:MEMO2.TXT RX2:MEMOS.TXT (RET)
```

### Small Device Systems: Special Problems and Solutions

If your system has only two device units you may not have enough units available to perform some copy operations. For example, RT-11 must be running for you to copy a file, but you may not have enough device units if:

- The system volume does not contain the file you want to copy.
- The system is not the volume to which you want to copy the file.
- You want to use only one device unit for a copy operation.

The **/WAIT** option is useful for such copy operations. **/WAIT** instructs RT-11 to start the copy process. RT-11 pauses while you temporarily remove the system volume and insert the volume on which you want to perform the copy operation. When the files have been copied, you are instructed to replace the system volume.

In the following example, the RT-11 system volume is in device RX1 when the **COPY** command is typed:

```
. COPY/WAIT RX1:MYFILE.TXT RX2:MYFILE.TXT  
Mount input volume in RX1:; Continue?
```

RT-11 pauses for you to remove the system volume from RX1 and replace it with the volume containing MYFILE.TXT. Then type **Y** in response to the *Continue?* prompt and press RETURN. To cancel the command, type **N** in response to the prompt.

```
Mount output volume in RX2:; Continue?
```

Place the volume to which you want to copy MYFILE.TXT in RX2. Type **Y** in response to the *Continue?* prompt and press RETURN. MYFILE.TXT is copied from the volume in device RX1 to the volume in device RX2.

```
Mount system volume in RX1:; Continue?
```

Replace the volume in RX1 with the system volume. Type **Y** in response to the *Continue?* prompt and press RETURN.



The most sensible way to protect information is to make copies of important volumes and store the copies in a safe place. You should always keep a backup copy of your RT-11 system software, or working system. If an error occurs that corrupts your copy of the system, or if you accidentally delete some important information, you can generate another copy and start again.

To make a backup copy of the working system, you need to:

- Determine how many blank volumes you need.
- Initialize the blank volumes and cover any bad blocks.
- Copy the files from your working system to the blank volumes.
- Store your working system in a safe place.

### **Determining How Many Blank Volumes You Need**

To make a backup copy of your working system, you need blank diskettes. If your working system is on RX01, RX02, or RX50 diskettes, you will need the equivalent number of blank diskettes.

### **Initializing a Volume**

Before you use a new disk or diskette, it must be initialized. Initializing erases any information on a volume and creates a directory. You can also initialize any volume that contains files that are no longer needed and use that volume again.

To initialize a volume, insert it in an available drive unit and type the **INITIALIZE** command. It is a good idea to use the **/BADBLOCKS** option. Sometimes volumes have unusable or bad blocks, or they develop bad blocks as a result of use and age. **/BADBLOCKS** causes the system to scan the volume, locate any bad blocks, and report back to you. For each bad block detected, the system creates a file called **FILE.BAD** to cover it. RT-11 will not use any bad blocks during routine operations.

Use the following command format to initialize each volume and scan for bad blocks:

**INITIALIZE/BADBLOCKS** device:

The **INITIALIZE** command erases all the files on a volume; therefore, the system gives you an opportunity to verify the command. Make sure you are initializing your blank or used volume and not your system volume. Then type *Y* in response to the *Are you sure?* prompt to start the operation. Type *N* to abort the operation and to return to the monitor prompt (.). The following example initializes the volume in device RX2 and scans for bad blocks:

```
.INITIALIZE/BADBLOCKS RX2: (RET)
RX2:/Initialize; Are you sure?Y (RET)
?DUP-I-No bad blocks detected RX2:
.
```

If you accidentally initialize a storage volume, use the **INITIALIZE/RESTORE** command in the following format immediately after using the **INITIALIZE** command to restore the information on the volume. For example:

```
.INITIALIZE/RESTORE DK0: (RET)
```

If you accidentally initialize your system volume, restart RT-11, using your backup copy of the system volume and then use the **INITIALIZE/RESTORE** command.

### Making a Backup Copy of an Entire Volume

Use the **COPY** command with the **/MULTIVOLUME** and **/SYSTEM** options to copy all the files from an input volume to one or more output volumes.

Use the following command format:

**COPY/MULTIVOLUME/SYSTEM** input-device output-device

input-device	Represents the name of the device holding the volume you want to copy.
output-device	Represents the name of the device holding the backup volume.



In the following example, all files on the volume in RX1 are copied to the volume in RX2, including the system files:

```
.COPY/MULTIVOLUME/SYSTEM RX1:*. * RX2:*. * (RET)
Files copied:
RX1:DUP.SAV      to  RX2:DUP.SAV
RX1:DIR.SAV      to  RX2:DIR.SAV
RX1:EDIT.SAV     to  RX2:EDIT.SAV
RX1:KED.SAV      to  RX2:KED.SAV
RX1:SYSLIB.OBJ   to  RX2:SYSLIB.OBJ
RX1:SWAP.SYS     to  RX2:SWAP.SYS
RX1:RT11XM.SYS  to  RX2:RT11XM.SYS
RX1:DUX.SYS      to  RX2:DUX.SYS
RX1:DZX.SYS      to  RX2:DZX.SYS
RX1:DWX.SYS      to  RX2:DWX.SYS
RX1:NLX.SYS      to  RX2:NLX.SYS
RX1:PIX.SYS      to  RX2:PIX.SYS
RX1:DDX.SYS      to  RX2:DDX.SYS
```

If you are making a backup copy of the system volume, type the **COPY** command again. This time use the **/BOOT** option to copy the bootstrap program to the location called the boot blocks at the beginning of the backup volume. The output device is the same as the input device, since you are copying the bootstrap program to another location on the same volume.

In the following example, the **/BOOT** option is used to install the bootstrap program on the backup copy:

```
.COPY/BOOT RX2:RT11XM.SYS RX2: (RET)
```

The device is specified twice to copy the bootstrap program in the file **RT11XM.SYS** on the volume in device **RX2** to the boot blocks on the same volume.

To read a file or display the contents of a file on your screen, use the **TYPE** command in the following format:

**TYPE** filespec

filespec                      Represents the device name, the file name, and the type of file you want to display.

If you are displaying a file that contains more than 24 lines of information, the file scrolls off the screen. The contents of the file appear at the bottom of the screen and eventually disappear off the top as if the file were on a scroll being unrolled at the bottom and rolled at the top.

Press the **NO SCROLL** or **HOLD SCREEN** key if the information scrolls too fast. Press the key a second time to start the information scrolling again.

In the following example, the file **EXAMP.TXT** in device **RX2** is displayed on the screen:

```
.TYPE RX2:EXAMP.TXT (RET)
```

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?
```



If you have a printer connected to your computer system, you can print a file on paper. A file printed by a printer is called a hard-copy listing.

You may have a serial printer that prints one character at a time or a line printer that prints one line of text at a time. MicroPDP-11 and Professional 300 Series computer systems include serial printers. Check to see if you have a line printer or a serial printer before you begin printing files for the first time.

If you have a serial printer, type the following **ASSIGN** command before you use the **PRINT** command for the first time:

```
.ASSIGN LS: LP: (RET)
```

The assignment is temporary, so you must use the **ASSIGN** command each time you start RT-11. You may find it helpful to include this command in your startup file. (See the Using the Startup Files section of this manual.)

If you have a line printer, use the **PRINT** command to get a hard-copy listing of a file.

**PRINT/option filespec**

filespec	Represents the device name, the file name, and the type of file you want to print.
----------	--

You can specify up to six files. If you specify more than one file, separate the files with commas.

There are several options for specific print operations, such as:

- Printing more than one copy of a file
- Printing files created on a certain date
- Causing RT-11 to ask for confirmation before printing a file

Use the **/COPIES:n** option to print more than one copy of a file. The letter **n** represents the number of copies you want to print.

In the following example, three copies of the file **REPORT.TXT** on the volume in device **RX2** are printed on the printer:

```
.PRINT/COPIES:3 RX2:REPORT.TXT (RET)
```

Use the **/DATE:dd:mmm:yy** option to print files created on a certain date.

## Printing Files

---

dd:mmm:yy represents the day, month, and year.

dd is a decimal number in the range 1 to 31.

mmm is the first three letters in the name of the month.

yy is the last two digits of the year.

The following example prints the files on the volume in RX2 having the file type TXT that were created on July 2, 1985:

```
.PRINT/DATE:02:JUL:85 RX2:*.TXT (RET)
```

Use the **/QUERY** option to cause RT-11 to request confirmation before printing a file. **/QUERY** is useful when you use a wildcard in a filespec so you can select the files to be printed. RT-11 displays the name of each file. If you type **Y** in response to the query, RT-11 prints the file. If you type **N**, RT-11 ignores the file and goes on to the next file.

In the following example, the files FILE1.TXT and FILE2.TXT are printed on the serial printer:

```
.PRINT/QUERY RX2:*.TXT (RET)
Files copied:
RX2:FILE1.TXT    to LP:?  Y
RX2:FILE2.TXT    to LP:?  Y
RX2:MYFILE.TXT   to LP:?  N
```



You may want to change the name of a file to better describe the contents of that file. You may also want to store several versions of the same file. You can change the names of the files to distinguish between the different versions.

To change the file name or type of an existing file, use the **RENAME** command in the following format:

**RENAME** input-filespec output-filespec

input-filespec

Represents the device name and the file name and type of the file you want to rename.

output-filespec

Represents the device name and the new file name and type.

Since the file you rename must remain on the same volume, the input device name and the output device name must be the same.

In the following example, the file **WRONG.TXT** is renamed to **RIGHT.TXT**:

```
.RENAME RX1:WRONG.TXT RX1:RIGHT.TXT (RET)
```

To protect important files so they are not accidentally deleted, use the **PROTECT** command. When you protect a file, it cannot be deleted until the protection is removed by using the **UNPROTECT** command.

If a file is protected, a *P* appears next to the block size number in the directory listing.

To protect a file, use the following command format:

**PROTECT**/option filespec

filespec                      Represents the device name and file name and type of the file you want to protect.

In the following example, the file STATUS.RPT on the volume in device RX2 is protected from deletion:

```
.PROTECT RX2:STATUS.RPT (RET)
```

You can specify up to six files. If you specify more than one file, separate the filespecs with commas.

The **/QUERY** option is useful if you want to protect many but not all the files on a volume. If you use wildcards in the filespec, you can select the files to protect. RT-11 displays the name of each file. If you type *Y* in response to the query, RT-11 protects the file. If you type *N*, RT-11 ignores the file and goes on to the next file.

In the following example, FILE1.TXT and FILE3.TXT are protected from deletion:

```
.PROTECT/QUERY RX2:*.TXT (RET)
  Files protected:
RX2:FILE1.TXT  ?  Y
RX2:FILE2.TXT  ?  N
RX2:FILE3.TXT  ?  Y
RX2:FILE4.TXT  ?  N
```

To remove the protection from a file, use the **UNPROTECT** command. You can delete a file once the protection has been removed. **UNPROTECT** has the same format as the **PROTECT** command.

In the following example, the files FILE1.TXT and FILE3.TXT on the volume in device RX2 are unprotected:

```
.UNPROTECT RX2:FILE1.TXT,RX2:FILE3.TXT (RET)
```



To erase files that you no longer need, use the **DELETE** command. The space the file occupied on the volume then becomes available for use.

Use the following command format:

**DELETE**/option filespec

filespec Represents the device name, file name, and type of file you want to delete.

Specify up to six files for each command. If you specify more than one file, separate the filespecs with commas.

In the following example, the files FILE2.TXT and FILE4.TXT are deleted from the volume in device RX2:

```
. DELETE RX2:FILE2.TXT,RX2:FILE4.TXT (RET)
```

If you use wildcards in a filespec, RT-11 requests confirmation before it deletes a file.

In the following example, the files MYFILE.OLD and STATUS.OLD are deleted from the volume in device RX2:

```
. DELETE RX2:*.OLD (RET)
Files deleted:
MYFILE.OLD      ?   Y
MEMOS.OLD       ?   N
STATUS.OLD      ?   Y
```

RT-11 has a special way of handling system (SYS) files so that they cannot be deleted by accident. You must use the **/SYSTEM** option to delete system files if you use a wildcard in a filespec. If you use wildcards and omit the **/SYSTEM** option, the system files are not deleted, and the following system message is displayed:

```
?PIP-W-No .SYS action
```

This is an informational message that requires no corrective action.

In the following example, the file CR.SYS is deleted from the volume in device RX1:

```
. DELETE/SYSTEM RX1:CR.* (RET)
Files deleted:
RX1:CR.SYS      ?   Y
RX1:CR.MAC      ?   Y
```

## Deleting Files

---

To delete a protected file, you must first remove the protection from the file by using the **UNPROTECT** command (see the Protecting and Unprotecting Files section of this manual).



At some point, you may run out of room to expand or add more files to your volume. If you run out of room on a volume, RT-11 displays a system message that tells you the device is full or that it is unable to open the output file. Sometimes there is still plenty of free space, or unused areas on the volume, but as you create and delete files, the free space becomes fragmented. For example, suppose you create two files, FILE1.TXT and FILE2.TXT. If you delete FILE1.TXT, that space becomes free space. Eventually, after many files are added and deleted, free space is scattered about the volume. A large file will not fit on the volume because no single area of free space is large enough to accommodate the file. Use the **DIRECTORY** command with the **/FREE** option to see how much free space is on a volume. When free space becomes too fragmented, use the **SQUEEZE** command to consolidate all the free space into a single area on a volume.

You should not squeeze a volume while a foreground job is running. (See the Using the Foreground section of this manual.)

### NOTE

**If a computer error or a power failure occurs during the squeeze operation, the contents of the volume will be lost. It is a good idea to make a backup copy of the volume before using the SQUEEZE command. (See the Making a Backup Copy of an Entire Volume section of this manual.)**

In the following example, the volume in device RX2 is squeezed. The system always requests a confirmation before squeezing a volume. Type *Y* in response to the *Are you sure?* prompt. Type *N* to cancel the command.

```
.SQUEEZE RX2: (RET)
RX2:/Squeeze; Are you sure?  Y
```

The keypad editor is an interactive text editor. You can use the keypad editor to create and modify text files. A text file might be a memo, a report, a table of information, or the source file of a program you write.

This section describes how to use the keypad editor to perform a subset of editing operations. The editing operations include:

- Starting an editing session

  - Creating a file

  - Editing an existing file

- Ending an editing session

- Inserting text

- Moving around in a file

- Deleting text

- Finding words

- Moving a segment of text

This section presents enough features to help you do useful work. At some point, you may want to study the *PDP-11 Keypad Editor User's Guide*, which describes all the keypad editing features.

Before you read this section, unfold the keypad fold-out at the back of this book so the keypad layout will be visible while you read.

### Starting an Editing Session

To start an editing session, use the **EDIT** command to invoke the keypad editor (KED). This section describes how to use the **EDIT** command when you are:

- Creating a File

- Editing an Existing File

**Creating a File** — To create a new file, use the **EDIT** command with the **/CREATE** option followed by the the device name and the file name and type of the file you want to create.



## Editing

---

In the following example, the file MYFILE.TXT is created on the volume in device RX2:

```
EDIT/CREATE RX2:MYFILE.TXT
```

If you try to create a new file and omit the **/CREATE** option, KED displays the message:

```
?KED-W-File not found - Create it (Y,N)?
```

If you want to create the new file, type *Y* in response to the *Continue (Y, N)?* prompt. If not, cancel the command by typing *N*.

If you specify the name of a file that already exists, KED displays the message:

```
?KED-W-Output file exists - Continue (Y,N)?
```

If you want to replace the existing file with the file you are creating, type *Y* in response to the *Continue (Y, N)?* prompt. If not, cancel the command by typing *N*. When KED opens a file, the terminal screen shows the contents of the file. Since you are creating a new file, the screen is blank, except for the end-of-file symbol `⌘` that marks the bottom of the file. Enter some characters by typing on the keyboard.

The cursor shows where the next character you type will be inserted or where the next editing function will be performed. When you reach the end of a line or want to start typing characters on the next line, press **RETURN**.

**Editing an Existing File** — To edit an existing file, use the **EDIT** command and specify the device name and the file name and type of the file you want to edit. The keypad editor (KED) opens the file and displays the contents of the file or part of the file on your screen. You can insert, delete, or move text in the file.

In this example, KED opens the file EXAMP.TXT and displays it on the screen.

```
.EDIT RX2:EXAMP.TXT (RET)
  To be or not to be - that is the question;
  Whether 'tis nobler in the mind to suffer
  The slings and arrows of outrageous fortune,
  Or take arms against a sea of troubles,
  And by opposing end them?
  ⌘
```

## Ending an Editing Session

When you have finished creating or editing a file and you want to end the editing session, use the EXIT or QUIT command to close the file.

If you are creating a new file, EXIT makes your new file permanent. If you are editing an existing file, EXIT saves any changes or additions in the output file. The original file is also saved, unchanged, as a backup file. The backup file has the same file name and the file type BAK.

To EXIT a file, press the GOLD key and then the COMMAND key.

The keypad editor temporarily erases the top two lines of your screen and displays the *Command:* prompt. Type *EXIT* in response to the prompt, then press the ENTER key on the keypad.

```

(GOLD) (COMMAND)
Command : EXIT (ENTER)
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
.
```

The keypad editor closes the file and returns the monitor prompt (.).

If you accidentally press RETURN after typing the EXIT command instead of pressing the ENTER key, the following characters will appear on your terminal screen:

```
Command : EXIT (CTRL/F)
```

Press the DELETE key twice to delete the characters and then press ENTER.

## Inserting Text

Use the alphanumeric and special character keys on the keyboard to type text in a file. Whatever you type becomes part of the file. The text appears on the screen as you type, and the surrounding text moves, if necessary, to accommodate the new text.

If some of the text disappears off the edge of the screen, move the cursor to the right margin and press RETURN. The missing text will move to the next line.

To insert a blank line, press RETURN.



You may want to move the cursor to insert text in another place in the file. The next section tells you how to move the cursor.

### Moving Around in a File

You can move the cursor up, down, to the left, and to the right by using the arrow keys. You can also move the cursor forward or backward one word or line at a time.

**Arrow Keys** — The ← and → keys move the cursor one character to the left or right, respectively. Similarly, the ↑ and ↓ keys move the cursor up or down one line.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
⌘
```

Pressing the right arrow key six times moves the cursor six character positions to the right.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
⌘
```

Pressing the down arrow key twice moves the cursor down two lines.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
⌘
```

**By Word** — Press the ADVANCE key and then the WORD key to move the cursor to the beginning of the next word.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
⌘
```

Press the BACKUP key and then the WORD key to move the cursor to the beginning of the previous word.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

Once you set the direction with the ADVANCE or BACKUP key, you can press the WORD key several times to continue moving the cursor in that direction. If the direction is set to BACKUP, pressing the WORD key three times moves the cursor backward three words.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

**By Line** — Press the ADVANCE key and then the BLINE key to move the cursor to the beginning of the next line.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

Press the BACKUP key and then the BLINE key to move the cursor to the beginning of the previous line.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

Once you set the direction with ADVANCE or BACKUP, press the BLINE key several times to move the cursor several lines in that direction. If the direction is set to ADVANCE, pressing BLINE twice moves the cursor forward two lines.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
```



```
The slings and arrows of outrageous fortune ,
Or take arms against a sea of troubles ,
And by opposing end them?
⌘
```

**To the Top of a File** — Press the GOLD key and then press the TOP key to move the cursor to the top of the file.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune ,
Or take arms against a sea of troubles ,
And by opposing end them?
⌘
```

**To the Bottom of a File** — Press the GOLD key and then press the BOTTOM key to move the cursor to the bottom of the file. The end-of-file symbol ⌘ marks the end of the file.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune ,
Or take arms against a sea of troubles
And by opposing end them?
⌘
```

### Deleting and Undeleting Text

You can delete or undelete a single character, a word, or an entire line while you are creating or editing a file.

**Characters** — To delete a character to the left of the cursor, press the DELETE key. To delete a character to the right of the cursor, press the DELCHAR key on the keypad. To restore the character you just deleted, press GOLD and UNDELCHAR on the keypad.

For example, if you move the cursor to the "s" at the beginning of the word "suffer":

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune ,
Or take arms against a sea of troubles ,
And by opposing end them?
⌘
```

If you press DELCHAR, you erase the character underlined or highlighted by the cursor. If you press GOLD and UNDELCHAR, the "s" is undeleted.

**Words** — Press the DELWORD key to delete a word to the right of the cursor, including the character the cursor is on.

For example, to delete the word "'tis", move the cursor to the first character in the word:

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

Then press the DELWORD key.

```
To be or not to be - that is the question;
Whether nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

If you press GOLD and UNDELWORD, the word "'tis" is restored.

**Lines** — To delete an entire line of text, move the cursor to the beginning of the line and press the DELLINE key.

For example, to delete the second line of text, move the cursor to the beginning of the line:

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

Then press the DELLINE key.

```
To be or not to be - that is the question;
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
*
```

By pressing GOLD and UNDELLINE, you can restore the deleted line.



### Finding Words

To locate a particular word or group of words, press the GOLD key and then press the FIND key. The keypad editor temporarily erases the top two lines on your screen and prompts you for a model. A model is the word or group of words you want to find. Type the model in response to the *Model:* prompt. Then set the direction of the search by pressing either the ADVANCE or BACKUP key. If you press ADVANCE, the keypad editor searches from the current cursor position to the bottom of the file. If you press BACKUP, the keypad editor searches to the top of the file. For example, to find the word FORTUNE, press the GOLD key and then press the FIND key. When the *Model:* prompt appears, type FORTUNE in response to the prompt. Then press the ADVANCE key.

```
(GOLD) (FIND)
Model: FORTUNE (ADVANCE)
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
❖
```

KED searches forward from the current cursor position and stops at the first occurrence of the model.

```
To be or not to be - that is the question;
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or take arms against a sea of troubles,
And by opposing end them?
❖
```

If the model is not found, KED signals you by beeping. KED leaves the cursor at the top or bottom of the file, depending on the direction of the search.

To search for another occurrence of the same word or words, press the FIND NEXT key. To continue the search in the opposite direction, press either ADVANCE or BACKUP and then press FIND NEXT.

### Moving a Segment of Text

You can move segments of text while creating or editing a file. Moving text is like using scissors and paste to cut out a segment of text and paste it elsewhere in the file.

The first step is to select the text to be moved. Move the cursor to the beginning of the text and press the the SELECT key.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
*
```

Then move the cursor to the end of the segment. That creates a SELECT range. As you move the cursor, the select range is highlighted on the screen.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
*
```

To cancel a select range you are creating, press the GOLD key and then press the RESET key.

The next step is to cut out the text in the select range. Press the CUT key; the text in the select range disappears.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
  
And by opposing end them?  
*
```

Press the the GOLD key and then press the PASTE key. The text in the select range reappears at the cursor position.

```
To be or not to be - that is the question;  
Whether 'tis nobler in the mind to suffer  
The slings and arrows of outrageous fortune,  
Or take arms against a sea of troubles,  
And by opposing end them?  
*
```



Entering the date and time of day helps you identify when system operations were performed.

Use the **SETUP DATE** and **SETUP TIME** commands to set the date and time.

### Date

When you set the date, RT-11 assigns the date to any files that you create.

To set the date, type the **SETUP DATE** command in the following format:

**SETUP DATE:dd:mmm:yy**

- |     |  |
|-----|--|
| dd  | represents the day of the month numerically.                 |
| mmm | represents the first three letters in the name of the month. |
| yy  | represents the last two digits of the year.                  |

In the following example, the date is set to June 29, 1985:

```
.SETUP DATE:29:JUN:85 (RET)
```

Specifying a new date overrides the previous date.

If you are using a PDP-11 computer, the clock stops when the system is turned off. You must reenter the current date whenever you start the system. The Professional 300 Series computer clock has a battery that keeps the clock running when the system is turned off.

To check the date while you are using the system, type the **DATE** command and press RETURN.

```
.DATE (RET)  
29-JUN-85
```

## Setting Date And Time

---

### Time

Set the time by typing the **SETUP TIME** command in 24-hour notation in the following format:

**SETUP TIME:hh:mm:ss**

hh	represents hours.
mm	represents minutes.
ss	represents seconds.

In the following example, the time is set to 3:01 p.m:

```
. SETUP TIME:15:01:00 (RET)
```

If you are using a PDP-11 computer, the clock stops when the system is turned off. You must reenter the current time whenever you start the system. The Professional 300 Series computer clock has a battery backup and keeps running when the system is turned off.

To check the time, type:

```
. TIME (RET)  
15:01:02
```



The foreground/background (FB) and extended memory (XM) monitors let two programs run concurrently. One program is called a foreground job and the other, a background job. RT-11 gives priority to the foreground job. The foreground job runs until it no longer needs the system resources, then relinquishes control to the background job. Then the background job runs until the foreground job needs the system again. The two programs appear to be running at the same time.

For example, you can run an editing session in the background to write a memo. At the same time you can run a another editing session in the foreground to read (or write) another memo. The following sequence of commands create a memo, using KEX in the foreground while the background is used to run another editing session to inspect a price list:

```
. LOAD DK: (RET)
. FRUN SY:KEX, SAV (RET)
.
F>
*MEMO, LST/C (RET)
B>
. EDIT PRICE, LST/I (RET)
```

The price list appears, running in the background:

MFG	MODEL	STOCK	COST	PRICE	CODE
AMER	300S	3	9995	14000	JH
AMER	400S	5	12995	16500	MB
AMER	500S	3	20100	28000	MB
AMER	26-MS	6	13500	20895	MS
EAST	KD	5	16900	24500	MB
EAST	HD	8	9950	18895	MS
EAST	JD	0	34000	38999	ZD
FJOR	MS23	3	17000	21090	ZD
FJOR	MS33	9	19600	24900	MS
FJOR	MS43	4	26500	30995	PL
SIMEK	107	4	47000	60000	MS
SIMEK	109	3	13000	16900	PL
SIMEK	111	2	8500	11900	PS
SEAW	TJ23	4	17000	22500	PS
SEAW	MS39	4	26300	31200	MS
SEAW	RE39	5	18500	24595	PL

## Using The Foreground

---

After you have read the price list, you can switch to the foreground job to continue writing the memo. Type CTRL/F to switch from the background job to the foreground job and CTRL/W (to repaint the screen). For example:

F>

DATE: 29 September 1985  
TO: Yachts Unlimited Sales Staff  
FROM: Joe Zysote  
SUBJ: Changes in Price List

The price changes for the MS RIG yachts listed below will be effective on October 1, 1985.

MANUFACTURER	MODEL	OLD PRICE	NEW PRICE
AMERICAN	26-MS	\$18,895	\$20,895
EASTWARD	H0	\$15,900	\$19,900
FJORD	MS 33	\$23,100	\$24,900
SIMEK	107	\$54,000	\$60,000
SEAWORTH	MS 39	\$28,500	\$31,200

※

To switch from the foreground to the background to read the price list again, type CTRL/B and CTRL/W. You can move from the foreground job to the background job and back as many times as you like. When you are finished running the editing program in the foreground, exit the editing session in the foreground to save your file. Then type CTRL/C to finish the job in the foreground and return to the background. Then type **UNLOAD KEX** to unload the foreground job and thus reclaim memory for background use.



You may find it helpful to use logical names for the devices you are using. Logical names are like nicknames. You can assign logical names like IN and OUT that are easy to remember rather than abstract device names. Logical names are used in the same way device names are used in command lines. Like device names, logical names can be from one to three characters long, followed by a colon.

At the beginning of this manual you were instructed to assign the logical names RX1 and RX2 to your devices. Once the assignments were made, all the examples in this manual work on Professional 350, 380, and MicroPDP-11 computers, regardless of the actual device names.

To assign a logical name to a device, use the **ASSIGN** command in the following format:

```
ASSIGN device logical-name:
```

You can assign one logical name for each **ASSIGN** command.

In the following example, the the logical names IN and OUT are assigned to the devices DZ1 and DZ2 respectively:

```
.ASSIGN DZ1:      IN:      (RET)
.ASSIGN DZ2:      OUT:      (RET)
```

The next example shows the **COPY** command, using logical names in the input and output filespecs.

```
.COPY IN:MYFILE.TXT OUT:MYFILE.TXT (RET)
```

If you do not want to type device names every time you specify a filespec, you can assign the default logical name to the device you are using.

When you start RT-11, the logical name DK is assigned to the device that contains the system volume. DK is the default logical name. If you assign DK to another device, file references without a device name are directed to that device.

For example, when RT-11 is installed on a Professional 350 computer system, the fixed disk contains the RT-11 operating system. The logical name DK is assigned to the fixed disk. If you assign the DK to the device DZ0, commands are directed to that device, unless you specify a different one.

## Assigning Logical Names

---

In the following example, DK is assigned to DZ0. DZ0 then becomes the default device:

```
. ASSIGN DZ0: DK: (RET)
```

Once the assignment is made, commands are directed to DZ0, unless you specify a different device.

In the next example, the file called FILE1.TXT is copied to FILE2.TXT on the volume in the default device DZ0.

```
. COPY FILE1.TXT FILE2.TXT (RET)
```

Logical name assignments are temporary. If you want a logical name assignment to remain in effect, you must reassign it each time you start RT-11.

You may want to include a logical name assignment in your start-up command file. That way the logical name is automatically assigned to the specified device as you start RT-11.



Your RT-11 computer system can be connected to another computer system, commonly referred to as the host system or the host. If your system is connected to a host system, you can use the virtual terminal communication program, VTCOM, to communicate with the other computer. In this way you can get information or use resources available on the host system while you are running RT-11. For example, you might need a printed copy of files you have created on your diskettes. You can transfer the files to the host computer to print them on a high-speed line printer. Or, you might want to transfer a file to the host computer so you can send copies of the file to other people by using the host's electronic mail system.

To use communications effectively, you need to understand how to:

- Use VTCOM
- Transfer files to the host system
- Transfer files from the host system

### Using VTCOM

To use the Virtual Terminal Communication program (VTCOM), you must perform four steps:

1. Load the handler.
2. Start the VTCOM program.
3. Establish the connection to the host system.
4. Use VTCOM commands.

**Step 1: Load the Handler** — Before you can start the VTCOM program, you must load certain software components into memory. Depending on which computer system you are using, you must load either the XC or XL device handler into memory. The device handler controls the hardware that performs the data input and output.

If you are using a Professional 300 Series computer, load the XC handler. Type the the following command to load the XC handler:

```
.LOAD XC (RET)
```

## Communicating with Another Computer

---

If you are using a PDP-11 or a PDT-11/150 computer, load the XL handler. Type the following command to load the XL handler:

```
.LOAD XL (RET)
```

**Step 2: Starting the VTCOM Program** — If you are running RT-11 under the FB monitor, type the following command to start the VTCOM program:

```
.FRUN SY:VTCOM (RET)
```

If you are running RT-11 under the XM monitor, type:

```
.FRUN SY:VTCOM.SAV (RET)
```

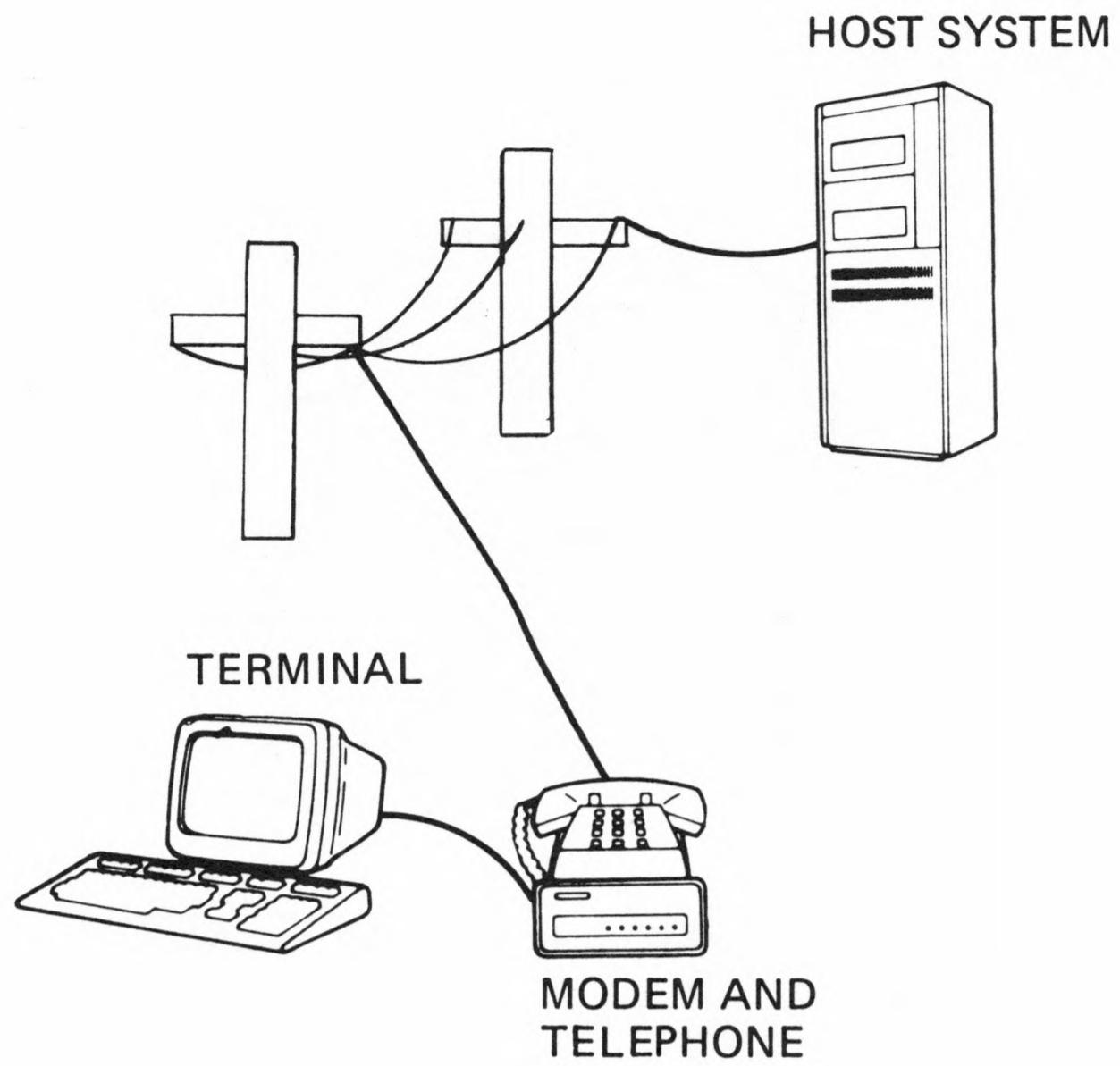
Once VTCOM is running, the next step is to complete the connection to the host system. Then use VTCOM commands to communicate with the host.

**Step 3: Establishing the Connection to the Host System** — Your RT-11 computer system can be connected to a nearby system with a communication line or to a more distant host with a modem and telephone lines.

If you are connected to a nearby host with a communication line, the connection is complete when you start the VTCOM program.

If you are connected with a modem and telephone lines, you complete the connection by dialing the number for the host system. The modem converts the electrical impulses generated by your computer to audio tones and transmits those tones over the telephone lines. Conversely, the modem converts audio tones to electrical impulses that your computer can understand.





Both computers must be able to understand the same type of signals. The speed of signals they will be sending and receiving must be the same. If you are using a DIGITAL DF03 modem, you can control the speed setting with a pushbutton on the front panel.



To communicate with a host system, using a DIGITAL DF03 modem, perform the following steps:

1. Set the ANL,ST, RDL, and DTL pushbuttons to the OUT position.
2. Set the HS pushbutton to the appropriate speed for the host system.  
IN = high speed (1200 baud)  
OUT = low speed (300 baud)
3. Set the DATA/TALK pushbutton to the IN position.
4. Lift the telephone receiver and listen for a dial tone.
5. Dial the number of the host computer.
6. When you hear the audio tone, set the DATA/TALK pushbutton to the OUT position.
7. Hang up the telephone receiver.

The DSR and CAR lights should be on, and the HS light should be on if the modem is set to high-speed.



8. Once the connection is complete, you can use the VTCOM commands described in the next section to log on to the host system or to transfer files and data between RT-11 and the host.

If you log on to the host system, make sure you log off before you break the telephone connection. To break the telephone connection, set the DATA/TALK pushbutton to the IN position. The DSR and CAR lights should go out; the DTR light should remain lit.

**Step 4: Using VTCOM Commands** — Once the connection to the host system is established, you can communicate with the host, using the VTCOM program.

To use VTCOM commands, type CTRL/F. The system responds with:

F >

Use the procedure for logging on to your host system. Login procedures vary among operating systems.

Once you have logged on to the host system, you can switch back and forth between RT-11 and the host. If you are using the host system and want to switch to RT-11, type CTRL/B; RT-11 switches to the system running in the background. When the B > prompt appears, press RETURN, and the RT-11 monitor prompt (.) appears. If you are using the RT-11 system and you want to switch to the host, type CTRL/F.

If you type CTRL/P, the VTCOM prompt appears:

TT:VTCOM >

If you press RETURN, a list of VTCOM commands appears on your screen similar to the list that follows.

VTCOM commands are listed in the following table:

#### **VTCOM Commands**

BR[EAK]	Transmit a BREAK to the Host.
CLE[AR]	Restart terminal display.
CLO[SELOG]	Close the log file.
CO[NTINUE]	Return to terminal mode.
CT[RL/P]	Send a CTRL/P to the Host.
DI[AL]	Have the modem dial a number.

EX[IT]	Terminate this program.
FA[ST]	No delay between characters during SENDs.
HA[NGUP]	Hang up the phone (drop connection).
HE[LP]	Type this help message.
L[OG]	Resume logging.
NOL[OG]	Suspend logging.
OP[ENLOG]	Open a file and begin logging Host output.
PA[USE]	Exit program, leave handler running.
RE[SET]	Terminate any file transfer.
SEL[ECT]	Select connection to a port of the mini-exchange.
SEN[D]	Transmit a file to the Host as if it were typed.
SH[OW]	Show status.
SL[OW]	Delay between characters during SENDs.
^x	Send control character "x" to Host.

Typing *CONT* at the *TT:VTCOM>* prompt takes you back to the host system.

### Transferring Files to Host System

To transfer a text file from your RT-11 system to the host, you must first establish the link to the host. Then log on to the host system and perform the following steps:

1. Type the command for your host system to send terminal input to a file and press RETURN. The command for sending terminal output to a file varies among operating systems. For example, if your host system is RT-11 or VMS, the command is:

**.COPY TT: filespec**

filespec     Represents the file specification as defined by the host system.

2. Type CTRL/P and then type **SEND** in response to the VTCOM prompt.

```
TT:VTCOM>SEND (RET)
```



3. VTCOM prompts you for the name of the file you want to send. Type the filespec for the file you want to send to the host. For example:

```
TT:VTCOM>Send File named? EXAMP.TXT (RET)
```

As VTCOM transfers the file, it is displayed on your screen.

4. When the entire file has been displayed, type CTRL/Z to close the file.

### Example

```
.LOAD XC (RET)
.FRUN SY:VTCOM (RET)
.
F>
(Log on to host system)
.COPY TT: EXAMP.TXT
(CTRL/P)
TT:VTCOM>SEND (RET)
TT:VTCOM>Send File named? EXAMP.TXT (RET)
                                EXAMP.TXT
```

This is the text file, EXAMP.TXT. When these two lines have been displayed, type CTRL/Z to close the file.

```
^Z
```

### Transferring Files from Host System

To transfer a text file from the host to your RT-11 system, you must first establish the connection to the host. Then log on to the host system and perform the following steps:

1. Use the **TYPE** command and specify the filespec of the file you want to transfer. Do **NOT** press RETURN.

#### **TYPE** filespec

filespec      Represents the file specification as defined by the host system.

2. Type CTRL/P. VTCOM responds with the VTCOM prompt.

```
TT:VTCOM>
```

3. Type the **OPENLOG** command in response to the VTCOM prompt and press RETURN.

```
TT:VTCOM>OPENLOG (RET)
```

4. VTCOM prompts you for the name of the output file. Type the filespec of the file to which you want the file sent.

```
TT:VTCOM>Log File name? filespec (RET)
```

5. Press RETURN again. As VTCOM transfers the file, it is displayed on your screen.
6. When the entire file has been displayed, you must close the file. Type CTRL/P. RT-11 responds with the VTCOM prompt.

```
TT:VTCOM>
```

7. Type the **CLOSELOG** command in response to the VTCOM prompt to close the file and press RETURN.

```
TT:VTCOM>CLOSELOG (RET)
```

The file on your RT-11 system will contain an extra line at the beginning of the file and the host's system prompt at the end of the file. Use **KED** to edit the new file and to delete the extra characters.

### Example

```
$TYPE MYFILE.TXT
```

```
(CTRL/P)
```

```
TT:VTCOM>OPENLOG (RET)
```

```
TT:VTCOMLOG FILE NAME? DZO:MYFILE.TXT (RET)
```

```
(RET)
```

```
MYFILE.TXT
```

```
This is the text file, MYFILE.TXT. When these four lines have been displayed, type CTRL/P. Then type CLOSELOG in response to the VTCOM prompt and press RETURN to close the file.
```

```
(CTRL/P)
```

```
VTCOM>CLOSELOG (RET)
```



## RUNNING APPLICATION PROGRAMS

Applications are programs that you can purchase separately to use with RT-11. Application programs include general accounting, word processing, communications, spread sheet analysis, programming languages, and calendar programs that are designed by DIGITAL and by independent vendors. Some application programs are more specific, such as marketing, purchasing, inventory management, manufacturing, and logistics programs. Specialized application packages serve businesses such as law, medicine, dentistry, real estate, or municipal administration.

Each application program has instructions that explain what command starts the program. The command is usually `RUN program-name`, `FRUN program-name`, or a similar command.

This chapter provides examples of application programs to show you what an application can do. Your software does not include these application programs.

A calendar application schedules appointments.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

April

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

May

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

June

Appointments for Wednesday, May 2, 1984  
\* No appointments scheduled \*

15:57:09

## HOW DO I GET AN APPLICATION PROGRAM?

---

You can purchase applications such as the calendar, spreadsheet, and graphics programs described in this section through your local DIGITAL sales office or through an independent software house.

To help keep you up to date on what application programs are available for the PDP-11, DIGITAL publishes the *PDP-11 Software Source Book*. The source book describes more than 2000 application programs, many of which run on the RT-11 operating system. If you want to order the source book, contact your local DIGITAL sales office, or write to:

DIGITAL EQUIPMENT CORPORATION  
Printing & Circulation Services  
444 Whitney Street  
Northboro, Massachusetts 01532



## SETTING TERMINAL CHARACTERISTICS

---

RT-11 allows you to set various terminal characteristics. Some of the characteristics you can set include the following:

- Screen background (dark or light)
- Screen width
- Tab stops
- Word wraparound

Those features let you tailor your terminal to fit your preference.

Use **SETUP** commands to set terminal characteristics. The terminal characteristics are temporary. If you want a terminal characteristic to remain in effect, you must set it each time you start RT-11 or include the **SETUP** command in your startup file.

The most commonly used **SETUP** commands are described in this section.

**SETUP DARK**  
**SETUP LIGHT**

Displays light characters on a dark background. Displays dark characters on a light background.

**SETUP WRAP**  
**SETUP NOWRAP**

Moves characters typed beyond the right margin to the beginning of the next line. **WRAP** is useful because you do not have to press RETURN each time you reach the right margin. When you set **NOWRAP**, characters typed beyond the left margin are not displayed. **NOWRAP** is useful when you are creating tables or typing columns of text.

**SETUP 132COLUMNS**  
**SETUP 80COLUMNS**

Sets the terminal screen to 132 or 80 characters wide. **132COLUMNS** is useful for displaying wide tables. You can use **132COLUMNS** only when running under the XM monitor on Professional 300 Series computers.

**SETUP HELP**

Lists the **SETUP** commands and provides a brief description of each command.



## SETTING TRANSMIT AND RECEIVE SPEED

---

If you want to use a device, such as a modem or a printer, the transmit and receive speed of the device handler must match the modem speed or the printer speed.

If you want to use a modem, use the **SET XC SPEED = n** command to set XC handler transmit and receive speed on a Professional 300 Series computer. Use the **SET XL SPEED = n** command to set the XL handler transmit and receive speed on a MicroPDP-11 computer. The XC or XL speed must match the modem speed.

Substitute any of the following speeds for the variable n:

50	1200
75	1800
110	2000
134	2400
150	3600
200	4800
300	9600
600	19200

If you want to use a serial printer, use the **SET LS SPEED = n** command to set the LS handler transmit and receive speeds. The LS speed must match the printer speed. Substitute any of the speeds listed above for the variable n.

If you find that you frequently use a series of commands to perform certain operations, you may want to use indirect command files. An indirect command file is composed of RT-11 commands. You can run an indirect command file instead of typing the commands.

RT-11 executes the commands in consecutive order. Any series of commands that you type frequently can be put in an indirect command file.

The kinds of operations you would want to perform using an indirect command file are those that do not require that you provide any additional information while RT-11 executes the file.

For example, you may want to put the series of commands that set your terminal characteristics in an indirect command file.

### Creating an Indirect Command File

To create an indirect command file, use the keypad editor to create the file as you would create a text file. Give the file any name you wish and the file type COM. Type an RT-11 command then press RETURN. There is no limit to the number of commands you include in an indirect command file, but each command must start on a new line.

In the following example, the commands for setting terminal characteristics are included in the indirect command file TERM.COM:

```
.EDIT/KED/CREATE DZO:TERM.COM (RET)
SETUP DARK
SETUP SMOOTH
SETUP WRAP
SETUP BOLD

Command: EXIT (RET)
```

### Executing an Indirect Command File

An indirect command file can run only as a background job. To start an indirect command file running, type an at sign (@). RT-11 processes the commands in the file in consecutive order.

Each command is displayed on the terminal screen as it is processed. The following example shows the commands displayed as TERM.COM executes:

```
.SETUP DARK
.SETUP WRAP
```



## Using Indirect Command Files

---

```
.SETUP SMOOTH
```

To stop the execution of an indirect command file, type two CTRL/Cs.

If RT-11 encounters an error while processing the commands in the indirect file, it displays a system message and stops the execution of the file.

### Using the Startup Files

RT-11 provides special indirect command files called startup files that are executed when you start RT-11. The files include commands that set terminal characteristics, load devices, and start the VTCOM program.

By editing a startup file, you can choose which commands will be executed each time you start your system.

If you are running under the XM monitor, type the following command to edit the startup file STARTX.COM:

```
.EDIT/KEX STARTX.COM (RET)
```

If you are running under the FB monitor, type this command to edit the startup file STARTF.COM:

```
.EDIT/KED STARTF.COM (RET)
```

RT-11 displays the startup file on your screen. You will notice that many of the commands in the file are preceded by an exclamation point (!). Those commands are ignored until you remove the exclamation point.

The following example shows part of the startup file STARTX.COM:

```
! Start the communications program on a Pro 300.  
!  
!SRUN SY:VTCOM.SAV/PAUSE  
!LOAD XC=VTCOM  
!RESUME VTCOM
```

Move the cursor to the command or to the first command in a series of commands that you want executed. Then delete the exclamation point and move the cursor to the next command you want executed if there is one. If the command is not preceded by an exclamation point, then someone has already edited the file.

When you are finished editing, press the GOLD keypad key and then the COMMAND keypad key. Then type EXIT in response to the Command: prompt and press RETURN to close the file.

## Reference to Commands **3**

---

This chapter provides a quick reference to a subset of RT-11 commands. These are some of the most frequently used commands that perform common system operations. The commands are presented in alphabetical order.

The description of each command includes:

**Purpose**      A brief explanation of what the command does

**Format**      The required way to type the command

**Comments**   Explanations and suggestions for use

**Example**     A typical example of the way the command is used

For a complete reference to RT-11 commands, refer to the *RT-11 Commands* manual.



## Purpose

**COPY** makes a duplicate of a file or files on the same volume or on another volume.

## Format

**COPY**/option input-filespec output-filespec

input-filespec      Represents the device name followed by a colon, the file name and type of the file you want to copy.

output-filespec    Represents the device name followed by a colon, the file name, and type of the new file.

## Comments

Use the **COPY** command options to perform more specific copy operations.

## Options

**/BOOT**      Copies the bootstrap to the beginning of the system volume. That makes the volume a bootable volume that can start RT-11.

**/CONCATENATE**      Copies several files to a single file. You can specify as many as six input files but only one output file. Separate input filespecs with commas.

**/DEVICE**      Makes a duplicate copy of an entire volume without changing the location of the files. This is convenient because the bootstrap blocks also remain unchanged. Type *Y* in response to the *Are you sure?* prompt. Any response that does not begin with *Y* cancels the command.

Initialize a new volume and scan for bad blocks, using the **INITIALIZE/BADBLOCKS** command before you use the **COPY/DEVICE** command.

**/MULTIVOLUME**      Copies files from an input volume to one or more output volumes. **/MULTIVOLUME** is useful when you are copying files from a Professional 300 Series or MicroPDP-11 fixed disk to RX50 diskettes.

**/QUERY**      Causes RT-11 to request confirmation before copying a file. **/QUERY** is useful when you use a wildcard in a filespec so you can be sure which files are copied. RT-11 displays the name of each file. If you type *Y* in response to the query, RT-11 copies the file. If you type *N*, RT-11 ignores the file and goes to the next file.

**/SYSTEM** Use this option if you want to copy system (.SYS) files when you use wildcards instead of specific input file types. If you use wildcards and omit this option, any system files are not copied.

**/WAIT** Instructs RT-11 to copy the file or files specified but waits for you to insert the appropriate volume. **/WAIT** is useful if you want to copy files between two volumes, neither of which is the system volume, or if you want to use only one drive unit for the copy operation.

When the *Continue?* prompt appears, remove the system volume and insert the appropriate volume in its place. Type *Y* in response to the prompt and press RETURN. Typing *N* cancels the command.

### Examples

The following example copies the bootstrap to the boot blocks on the volume in device RX2:

```
.COPY/BOOT RX2:RT11XM.SYS RX2: (RET)
```

The following example copies the files on the volume in device RX1 to the volume in device RX2:

```
.COPY/DEVICE RX1: RX2: (RET)
RX1:/COPY; Are you sure? Y
```

The following example copies three of the four .MEM files on the volume in device RX1 to the volume in device RX2:

```
.COPY/QUERY RX1:*.MEM RX2: (RET)
Files copied:
RX1:FILE1.MEM    TO RX2:FILE1.MEM    ?    Y
RX1:FILE2.MEM    TO RX2:FILE2.MEM    ?    Y
RX1:FILE3.MEM    TO RX2:FILE3.MEM    ?    N
RX1:FILE4.MEM    TO RX2:FILE4.MEM    ?    Y
```

The following example copies RT11FB.SYS from the volume in device RX1 to the volume in device RX2:

```
.COPY/SYSTEM RX1:RT11FB.* RX2: (RET)
```

The following example copies MYFILE.TXT from the storage volume in device RX1 to the storage volume in device RX2:

```
.COPY/WAIT RX1:MYFILE.TXT RX2:MYFILE.TXT (RET)
Mount input volume in RX1:; Continue?    Y
Mount output volume in RX2:; Continue?    Y
Mount system volume in RX2:; Continue?    Y
```



**Purpose**

**DELETE** erases specified files and releases the storage space the files occupy.

**Format**

**DELETE**/option filespec

filespec        Represents the device name and the file name and type of the files you want to delete.

**Comments**

You can specify up to six files for each command for deletion. Separate filespecs with commas.

If you use a wildcard in a filespec, RT-11 automatically requests confirmation before it deletes a file. Type *Y* and press RETURN in response to the query. If you type *N*, RT-11 ignores the file and goes to the next file if there is one.

To delete a protected file, first remove the protection by using the **UNPROTECT** command.

**Options**

**/QUERY**        Causes RT-11 to request confirmation before it deletes each file. RT-11 automatically includes that option when you use a wildcard in a filespec.

Type *Y* and press RETURN in response to the query. Typing *N* cancels the command.

**/SYSTEM**       Deletes system files if you use a wildcard instead of the file type (SYS). If you omit this option, the system files are not deleted.

**Examples**

In the following example, only FILE2.TXT is deleted:

```
.DELETE/QUERY RX1:*.TXT (RET)
Files deleted:
RX1:FILE1.TXT            ?   N
RX1:FILE2.TXT            ?   Y
RX1:FILE3.TXT            ?   N
```

## Delete

---

In the following example, all files with the name CR are deleted, including CR.SYS:

```
.DELETE/SYSTEM RX1:CR.* (RET)
```



## Purpose

**DIRECTORY** lists information about files on a volume, such as file names, file types, creation dates, number of blocks in a file, and number of blocks in unused areas.

## Format

**DIRECTORY**/option filespec

filespec      Represents the device name and the file name and type.

## Comments

To obtain a directory of an entire volume, specify the device name and the drive unit where the volume resides.

To obtain a directory of specific files on a volume, use a full filespec. You can specify as many as six files explicitly. If you want information about more than six files, use wildcards in the filespecs.

Use options to specify different types of directory listings.

## Options

**/BRIEF**      Lists only file names and file types.

**/DATE:mm:dd:yy**      Lists file names and file types of files with the specified creation dates.

**/FREE**      Lists the free space or unused areas and the number of blocks in each unused area.

**/PROTECTION**      Lists the files that are protected from deletion.

## Examples

```
.DIRECTORY/BRIEF RX2: (RET)
 19-Mar-85
FILE1 .TXT  FILE2 .TXT  FILE3 .TXT
MYFILE.TXT  MEMO  .TMP  STATUS.RPT
MYPROG.BAS  MAR10 .MEM
 8 Files, 244 Blocks
 242 Free blocks
```

## Directory

---

.DIRECTORY/DATE:10:MAR:85 RX2: (RET)

19-Mar-85  
FILE1 .TXT 25 10-Mar-85 FILE2 .TXT 42 10-Mar-85  
MAR10 .MEM 9 10-MAR-85  
3 Files, 76 Blocks  
410 Free  
blocks

.DIRECTORY/FREE RX2: (RET)

19-Mar-85  
< UNUSED > 11 < UNUSED > 2  
< UNUSED > 26 < UNUSED > 32  
< UNUSED > 1 < UNUSED > 25  
< UNUSED > 6 < UNUSED > 65  
0 Files, 0 Blocks  
168 Free Blocks

.DIRECTORY/PROTECTION RX2: (RET)

19-Mar-85  
FILE1 .TXT 100P 10-Mar-85 FILE2 .TXT 25P 12-Mar-85  
FILE3 .TXT 10P 10-Mar-85 MYFILE.TXT 5P 9-Mar-85  
NEWFIL.RPT 32P 8-Mar-85 OLDFIL.RPT 32P 7-Mar-85



**Purpose**

**EDIT** invokes the keypad editor. You can then use editing commands to prepare a text file.

**Format**

**EDIT/option filespec**

**filespec** Represents the device name and the file name and type of the file you want to edit.

**Options**

**/CREATE** Creates a new file with the name you specify.

**Examples**

```
EDIT MYFILE.TXT
```

```
EDIT/CREATE NEWFILE.TXT
```

**Purpose**

**FRUN** runs a foreground job.

**Format**

**FRUN** filespec

filespec      Represents the device name and the file name and type of the program you want to run.

**Comments**

The **FRUN** command is valid for the FB and XM monitors only. You can run only one foreground job at a time. If a foreground job is already running when you issue the **FRUN** command, RT-11 responds with a system message.

**Example**

The following example runs the virtual communication utility, VTCOM, as a foreground job:

```
FRUN VTCOM
```



## Purpose

Typing **HELP** \* lists the RT-11 commands for which **HELP** is available and briefly describes each command.

**HELP** and a topic lists information about an RT-11 command including its format, options, (if any), and an example. The example that follows shows the **HELP** text for the **ASSIGN** command.

## Format

**HELP** topic subtopic

- topic            Represents an RT-11 command.
- subtopic        Represents one of the following categories within a topic:
- SYNTAX, SEMANTICS, OPTIONS, and EXAMPLES.
  - SEMANTICS
  - OPTIONS
  - EXAMPLES

## Comments

If you type **HELP** and press RETURN, RT-11 lists information on the **HELP** command.

## Examples

HELP ASSIGN

ASSIGN            Associates a logical device name with a physical device

    SYNTAX

    ASSIGN physical-device-name logical-device-name

    SEMANTICS

    Physical-device-name is the RT-11 standard permanent name FOR the device. Logical-device-name is one to three alphanumeric characters long with no intervening spaces or tabs. The physical name and logical name must be separated by a space.

    OPTIONS

    None

EXAMPLES

ASSIGN RK1: DK:

ASSIGN LS: LP:



## Purpose

INITIALIZE clears a volume directory.

## Format

**INITIALIZE**/*option* device-name:

device-name      The device name of the device holding the volume you want to initialize.

## Comments

A new volume must be initialized before you use it.

RT-11 requests confirmation before initializing a volume. Type *Y* in response to the *Are you sure?* prompt. Typing *N* in response to the prompt cancels the command.

## Options

**/BADBLOCKS**      Scans the volume for bad blocks. If RT-11 finds a bad block, it creates a file called FILE.BAD to cover the block. The system will not attempt to use any FILE.BAD files during routine operations.

## Example

```
. INITIALIZE/BADBLOCKS RX2: (RET)
RX2:/Initialize; Are you sure?  Y
Volume contains protected files; Are you sure?  Y
?DUP-I-No bad blocks detected RX2:
```

## Purpose

PRINT types the contents of a file on a line printer.

## Format

**PRINT/option filespec**

**filespec** Represents the device name and the file name and type of the file or files you want to print.

## Comments

You can specify up to six files at a time. Separate filespecs with commas.

You can also use wildcards in a filespec.

## Options

**/COPIES:n** Prints more than one copy of a file. You can specify up to 32 copies.

**/DATE:mm:dd:yy** Prints files with the specified creation date. If no date is specified, RT-11 uses the current system date.

**/QUERY** Causes RT-11 to request confirmation before printing any files. This option is useful if you use wildcards in the filespecs. Type *Y* and press RETURN in response to the query. RT-11 interprets any response beginning with a character other than *Y* as NO and cancels the command.

## Examples

The following example prints three copies of the file MYFILE.TXT.

```
.PRINT/COPIES:3 RX2:MYFILE.TXT (RET)
```

The following example prints all files of type TXT created on May 19, 1985:

```
.PRINT/DATE:19:MAY:85 RX2:*.TXT (RET)
```

The following example prints the files FILE1.TXT and FILE2.TXT:

```
.PRINT/QUERY RX2:*.TXT (RET)
Files copied:
RX2:FILE1.TXT to LP:? Y
RX2:FILE2.TXT to LP:? Y
RX2:MYFILE.TXT to LP:? N
```



**Purpose**

**PROTECT** guards important files so they cannot be deleted.

**Format**

**PROTECT**/option filespecs

filespecs        Represents the device name and the file name and type of the file or files you want to protect.

**Comments**

You can specify up to six files. Separate filespecs with commas. You can also use wildcards in a filespec.

Protected files cannot be deleted until you remove the protection by using the **UNPROTECT** command.

**Options**

**/QUERY**        Causes RT-11 to request confirmation before protecting any files. This option is useful if you use a wildcard in a filespec. Type *Y* and press **RETURN** in response to the query. Typing *N* cancels the command.

**/SYSTEM**       Protects system files if you use a wildcard in the filespec. If you use wildcards and omit the **/SYSTEM** option, any system files are not protected.

**Examples**

```
.PROTECT/QUERY RX2:*,* (RET)
Files Protected:
RX2:FILE1.TXT          ?  Y
RX2:FILE2.TXT          ?  Y
RX2:FILE3.TXT          ?  N
```

The following example protects the files on the volume in device RX2 that have the file name MM, including MM.SYS:

```
.PROTECT/SYSTEM RX2:MM.* (RET)
Files Protected:
RX2:MM.MAC
RX2:MM.OBJ
RX2:MM.SAV
RX2:MM.SYS
```

**Purpose**

**RENAME** assigns a new name to an existing file.

**Format**

**RENAME** input-filespec output-filespec

**input-filespec** Represents the device name and the file name and type of the file to be renamed.

**output-filespec** Represents the device name followed by a colon and the new file name and/or file type.

**Comments**

The device name must be the same for the input filespec and the output filespec.

If a file exists with the same file name and type that you specify in the output filespec, RT-11 deletes the existing file.

**Example**

```
.RENAME RX21:MYFILE.TXT RX2:MYFILE.BAK (RET)
```



**Purpose**

**SETUP** specifies terminal, printer, and system clock characteristics.

**Format**

**SETUP** destination mode

destination        Represents TERMINAL, PRINTER, or CLOCK.

mode               Represents characteristics of destination type.

**Comments**

Refer to the Setting Terminal Characteristics section of this manual for a list of terminal **SETUP** modes.

**Example**

The following example sets the terminal to display dark characters on a light background or reverses text and background colors on a Professional 300 Series color video terminal:

```
.SETUP LIGHT (RET)
```

### Purpose

**SETUP DATE** sets the system date.

### Format

**SETUP DATE:dd:mmm:yy**

dd:mmm:yy represents the day, month, and year.

dd is a decimal number from 1 to 31.

mmm is the first three characters of the name of the month.

yy is the last two digits of the year.

### Comments

Setting the date assigns the date to files created on that day. If RT-11 is running on a computer other than a Professional 300 Series, the date must be set each time you start the system.

To check the date, type **DATE** and press RETURN.

### Examples

```
. SETUP DATE:19:MAY:85 (RET)
```

```
. DATE (RET)  
19-May-85
```



## Purpose

**SHOW** prints information about your RT-11 system on the terminal screen. **SHOW** includes information about your hardware configuration, the monitor, memory, device names, logical device name assignments, terminal characteristics, and so on.

## Format

**SHOW** option

## Comments

Type **HELP SHOW** for a complete listing of all the **SHOW** options.

If you type **SHOW** without specifying an option, **SHOW** displays your system's device assignments.

## Options

**CONFIGURATION** Displays information about the monitor, the hardware configuration, the total amount of memory on the system, and any special features in effect. This option is useful if you need to know which monitor is running.

## Example

```
.SHOW CONFIGURATION (RET)

RT-11XM V05.02
Booted from DWO: RT-11XM
22 bit addressing is on
Foreground job(s) are loaded

USR is set SWAP
EXIT is set SWAP
KMON is set NOIND
TT is set NOQUIET
ERROR is set ERROR
SL is set OFF
EDIT is set KEX
KMON nesting depth is 3
Global .SCCA flag is disabled

PC325, PC350 Processor, ID=000000089259
512KB of Memory
FP11 Hardware Floating Point Unit
Extended Instruction Set (EIS)
Memory Management Unit
60 Cycle System Clock (PC300 emulation)
```

## Show

---

Device I/O time-out support  
System job support  
FPU support



## Purpose

**SQUEEZE** consolidates all free space or unused areas into a single area on a volume.

## Format

**SQUEEZE** device-name:

device-name      Represents the device name of the device that holds the volume you want to squeeze.

## Comments

RT-11 requests confirmation before squeezing a volume. Type *Y* and press **RETURN** in response to the query. Typing *N* in response to the prompt cancels the command.

You should not squeeze a volume that a running foreground job is using.

**SQUEEZE** does not move files called **FILE.BAD**, thus preventing you from using bad blocks on a volume.

## Example

```
.SQUEEZE DZ1: (RET)
DZ1:/Squeeze; Are you sure? Y
```

**Purpose**

**TIME** shows the time of day.

**Format**

**TIME**

hh:mm:ss      Represents the hour, minutes, and seconds in 24-hour notation.

**Comments**

To check the time while you are using the system, type **TIME** and press **RETURN**.

**Example**

```
.TIME (RET)  
09:38:17  
.
```



## Purpose

**TYPE** displays the contents of one or more files on the terminal screen.

## Format

### **TYPE** filespecs

filespecs      Represents the device name and the file name and type of the file or files you want to display.

## Comments

You can specify up to six files. Separate filespecs with commas. You can also use wildcards in a filespec.

When **TYPE** displays a file, the lines of text move or scroll across the terminal screen. To stop the text from scrolling, press **HOLD SCREEN** (PC300 Series terminals) or **NO SCROLL** (VT100 Series terminal). Pressing the key again resumes scrolling. Type **CTRL/C CTRL/C** if you wish to stop reading the file and return the period prompt (.).

## Example

.TYPE DY1:ACCNT.DAT (RET)

Current sales	\$912,500
Current inventory level	215,000
Cost of sales	654,000
Inventory carrying costs (10%)	21,500
Inventory shrinkage expense	10,750
Average daily cost of sales (654,000/365)	1,792
Number of days inventory on hand (\$215,000/\$1,792) =	120

**Purpose**

**UNPROTECT** removes a file's protected status so you can delete the file.

**Format**

**UNPROTECT** filespecs

filespecs      Represents the device name and the file name and type of the file or files you want to unprotect.

**Comments**

You can specify up to six files for each command. Separate filespecs with commas. You can also use wildcards in a filespec.

Use the **DIRECTORY** command with the **/PROTECTION** option to determine which files on a volume are protected.

**Example**

In the following example, the files MONTH.RPT and STATUS.RPT are unprotected.

```
.UNPROTECT DZ1:*.RPT (RET)
Files unprotected:
DZ1:MONTH.RPT
DZ1:STATUS.RPT
```



## System Messages **4**

---

This chapter lists some of the system messages you might receive while using RT-11. Often, system messages result from typing mistakes or syntax errors. Check first to make sure the command is typed correctly. If the command is typed properly, check to see if the system message is listed here. If the message is not here, refer to the *RT-11 System Message Manual*.

An RT-11 message has a prefix that includes the name of the RT-11 program that issued the message followed by a code that indicates the severity of the error. RT-11 responds to an error condition based on the following severity levels:

Information (I)

Warning (W)

Fatal/Severe (F)

Unconditional Abort (U)

For example, if you make an error in typing the **DIRECTORY** command, the following FATAL system message appears on your screen:

```
?DIR-F-Invalid command
```

You need not be concerned with the prefixes but more importantly with the message text. You can look up the message listed in alphabetical order under the message text.



**Bad blocks detected**

Bad blocks were detected during the bad block scan initiated by the **DIRECTORY/BADBLOCKS** or **INITIALIZE/BADBLOCKS** command. You can use a volume that has bad blocks but you should make a backup copy and discard a volume that has many bad blocks.

**Can't squeeze SY: while foreground loaded**

A foreground or a system job was loaded when a **SQUEEZE** command was issued for the system volume. Stop any foreground or system jobs or wait until the jobs are completed and then unload them. Issue the command again.

**Device full device:file.type**

Not enough room exists on the device to create the specified output file. Use **SQUEEZE** to consolidate the volume or use a different volume for the operation. See the Squeezing a Volume section of this manual for information on how to consolidate a volume.

**Device not found**

The device specified in the command was not found. Make sure the specified device is installed. Type the command again. If you specified device unit O, make sure you did not accidentally type the number zero (0) instead of the letter (O).

**Duplicate option**

A command option was specified more than once in a command line. Correct the command.

**Error in file spec**

The filespec is incorrect or does not appear in the command line where one is expected. Check to be sure the device:file.type format is used and type the command again.

**File not found**

A file specified was not found on the volume. Check the file specification.

**File not found – Create it? (Y, N)**

A file specified was not found on the volume. If you want to create a file with the specified name, type *Y* in response.

### **File or input device not found**

Either the input file was not on the volume specified, the device was not installed, or the handler was not on the system disk. Use the **DIRECTORY** command to check the file names on the system volume. If the input file's device handler is on the system volume, use the **SHOW** command to list the installed devices. If the appropriate device is not installed, install it, using the **INSTALL** command.

### **File protected**

An attempt was made to delete a protected file. If you actually intended to delete the file, unprotect the file, using the **UNPROTECT** command, and then delete the file.

### **Insufficient memory**

Not enough memory is available to complete the requested operation. Use the **UNLOAD** command to unload any device handlers that you are not currently using or use the **UNLOAD** command to unload the foreground job if it is not currently running.

### **Input file missing**

The command does not have an input filespec. Check the command format and type the command again.

### **Invalid command**

The command entered is invalid. Check for a typing error in the command line. Check the format of the command line. Check to make sure you used a valid option. Make sure the specified device is valid. Correct the command line or type the command again.

### **Invalid date**

The format used in the **SETUP DATE** command is invalid. Check for a typing error.

### **Invalid device device**

The specified device is not installed. Check for a typing error in the command line. If you specified device unit 0, make sure you have not accidentally typed the letter O instead of the number 0.

Use the **INSTALL** command to install the device.



**Invalid directory**

The volume in the specified device does not contain a valid RT-11 directory structure. Initialize the volume before using it for the first time.

**Invalid option**

An invalid option was used in the command line. Check for a typing error. See Reference to Commands for a list of valid options.

**Invalid output filename**

The output file name is invalid. Check for a typing error. Check to be sure the output file name was specified in the correct format.

**Invalid time**

The **TIME** command is incorrect. Check for a typing error in the command. Make sure you use the **TIME** hh:mm:ss format.

**No boot on volume**

The bootstrap was not copied to the bootblocks of the volume. Use the **COPY/BOOT** command to copy the bootstrap.

**No file**

No file was named where one was expected. Check for a typing error in the command. Check the format of the command and try typing the command again with the correct filespec.

**No room for file device:file.type**

Not enough room is available on the volume to create the file.

**Operation not completed**

The **\WAIT** option was aborted because the response to the mount message began with an *N* or was a CTRL/C. The message informs you that the operation has been aborted. The response to the mount message must begin with a *Y* for the **\WAIT** option to continue.

**Output file exists – Continue (Y,N)?**

The output file specified is the same as an existing file on the output volume. To delete the existing file and create a new one with the same name, type *Y* and press RETURN. To preserve the existing file and return to the RT-11 system prompt, type *N* and press RETURN.

### **Output file exists device:file.type**

A **CREATE** command specified a file name that already exists on the output volume. The file was not created. Delete the file that exists on the volume or type the command again, this time using a different file name.

### **Protected file already exists**

An attempt was made to create a file with a name already assigned to an existing protected file. Use the **UNPROTECT** command to unprotect the existing file or use a different filespec for the new file.

### **Too many files**

Too many files were specified in the command line. Look up the command in the Reference to Commands for restrictions on filespecs.

### **Unable to open input file**

The file could not be opened for one of the following reasons:

- The volume does not contain the file.
- The volume has not been initialized.
- The input device is not installed.

Check the filespec. Also check to be sure the correct volume and the input device is specified.

### **Unable to open output file**

The output file could not be opened for one of the following reasons:

- The device is write-locked.
- The volume is not initialized.
- The volume does not have sufficient free space for the output file.
- The output file exists and is protected.

Make sure the output volume is properly installed and initialized. If the volume is too full, use another volume. If the output file exists and is protected, use a different filespec.



## Glossary

---

Application	A program that uses the operating system to run but is not part of that system. Examples include games, business management programs, graphics programs, and other programs.
Background	A program that runs when a foreground program is not using system resources.
Bad block	Blocks on a storage volume that are not usable, because of some physical damage or flaw. The <b>INITIALIZE/BADBLOCKS</b> command finds bad blocks and calls them <b>FILE.BAD</b> . You can use disks or diskettes that have bad blocks, but you should make a back up copy and discard a volume that has many bad blocks.
Boot blocks	Storage area on a volume reserved for the bootstrap program.
Bootstrap	A program that starts the operating system.
Block	The basic unit for storing information on a volume. In most cases, a block in a text file contains about 80 words of text.
Central processor	The hardware that does the computing. Computing can be calculating, routing of input and output, or executing tasks.

Command	An instruction to the software to perform a predefined operation.
Console terminal	A keyboard terminal that you use to type commands to control the computer system.
Cursor	A reference point on the terminal screen that shows where the next entry will appear. The cursor can be a blinking block or a blinking underline character.
Device	Any peripheral hardware connected to the processor having to do with input, output, or storage of information rather than the processing of information. Devices include terminals, printers, fixed disks, and diskette drives.
Device name	A unique name that identifies each device on a system. The name consists of a 2-letter device code and a unit number if there is one. For example, the device names for the Professional 350 diskette drive units are DZ0 and DZ1.
Directory	A catalog of files on a volume. The directory includes the name, type, creation date, and number of blocks for each file.
Drive unit	The hardware that holds a volume and performs the read/write operations.
Editor	A program for creating and altering text files. KED, KEX, and EDT are editors.
File	The information stored on a volume is organized into units called files. A file can contain a memo, a single program, or a collection of related data.
File specification	The name that identifies a particular file. A complete file specification has three parts: the device name, the file name, and the file type. The syntax for a file specification follows:  device:file.type



	device: The device name can be either a physical or logical name that designates a particular device.
	file: The file name can be six alphanumeric characters or less.
	type: The file type can be three alphanumeric characters or less. The file type indicates the kind of information contained in the file.
Foreground job	The high-priority program.
Hardware	The mechanical devices and the electronics that perform physical functions. The terminal, computer, drive units, and printer are all hardware.
Indirect command file	A file containing a list of RT-11 commands. When instructed to process an indirect command file, RT-11 interprets and processes each command sequentially.
Initialize	Before RT-11 can access a new storage volume, you must initialize the volume. Initializing a volume produces a particular file-structured format in preparation for use by the operating system.
Input	Information supplied to RT-11 for processing.
Line printer	A device that prints files a line at a time. Use the <b>PRINT</b> command to send files to a line printer.
Listing	A printed copy of a file generated by a hard-copy terminal or printer.
Mass-storage device	A device, such as a disk or diskette, where data and programs are stored.
Memory	A series of storage locations from which the central processor gets data.
Monitor	The master program that controls system operations. Terminal screens are also sometimes referred to as monitors.

Monitor command	An instruction or command issued directly to a monitor.
Monitor command mode	The operating system is ready to accept commands when in monitor command mode – indicated by a period at the left margin.
Operating system	A set of computer programs that work together to process data.
Operation	The act specified by a single command.
Option	An alternative associated with a command. Option syntax is a slash character (/) followed by the option name.
Output	Processed data.
Peripheral device	See Device.
Program	A set of instructions or statements that perform a task.
Prompt	A sign that the system is ready to accept input from you. The RT-11 monitor prompt is a period (.).
Scroll	When more than a screen of information is displayed, it scrolls off the screen. Information appears at the bottom of the screen and eventually disappears off the top as if it were on a scroll that is being unrolled at the bottom and rolled at the top.
Serial printer	A device that prints files one character at a time. Use the <b>PRINT</b> command to send files to a serial printer.
Software	The programs that control a computer system. The system software can be divided into four main categories: monitors, device handlers, utilities, and language processors.



Startup file	An indirect command file that is automatically processed when you start RT-11. The startup files STARTX.COM and STARTF.COM are provided to run under the XM and foreground/background monitors respectively.
Storage volume	(See Volume.)
Terminal	A hardware device that sends input to the system and receives output from the system. Most RT-11 systems have video terminals. Terminal input usually comes from a typewriter-like keyboard. Output appears on the video screen. Hard-copy terminals use paper instead of a video screen.
Volume	The medium on which information is stored. Diskettes, disks, and magnetic tape are examples of different types of volumes.
Wildcard	An asterisk (*) used to replace parts of a file specification included in a command.
Working system	Software components that make up the RT-11 operating system.



## KEYPAD EDITOR KEYS

Most of the keys have a standard and an alternate function. Use the standard functions (the upper of the two functions) by pressing the key. Pressing the GOLD key first causes the editor to perform the alternate function.

The COMMAND and ENTER functions allow you to use editing commands while you are editing a file.

**COMMAND** Allows you to type editing commands while editing a file. Press ENTER to execute the command.

**ENTER** Causes the editor to execute the command typed, using the COMMAND function.

**PASTE** Puts the contents of the paste buffer on the screen beginning at the current cursor position.

**RESET** Cancels the previous GOLD sequence or select area.

**SELECT** Defines the area that you can delete or move. Press SELECT to mark the beginning of the text string, then move the cursor forward or backward to the other end of the string, and press CUT.

**TOP** Moves the cursor to the top of the file.

**BOTTOM** Moves the cursor to the bottom of the file indicated by the [EOB] symbol.

**CUT** Moves the contents of the select area to the paste buffer.

**DELLINE** Deletes the line to the right of the cursor and stores it in the line buffer.

**DELWORD** Deletes the word to the right of the cursor and stores it in the word buffer.

**DELCHAR** Deletes the character to the right of the cursor and stores it in the character buffer.

**ADVANCE** Sets the cursor direction forward. When you press ADVANCE, the cursor movement remains forward until you press BACK-UP.

**BACKUP** Sets the cursor direction backward. When you press BACKUP, the cursor movement remains backward until you press ADVANCE.

ADVANCE and BACKUP set the direction of the cursor. You can move the cursor by units of text, such as words, lines, or paragraphs. The following functions are affected by ADVANCE and BACKUP.

**FIND** Locates a specified string of characters.

**FINDNEXT** Searches for the next occurrence of the string of characters specified by the FIND function.

**LINE** Moves the cursor forward to the beginning of the next line or backward to the beginning of the current line.

**PAGE** Moves the cursor to the top of the next page or previous page.

**WORD** Moves the cursor to the beginning of the next word or previous word.

To use the lower function on a key, press the PF1 key (the GOLD function) first and then the function key.

GOLD PF1		HELP PF2		FINDNEXT PF3		UNDELLINE PF4	
PAGE		SECTION		APPEND		DELWORD	
COMMAND		FILL		REPLACE		UNDELWORD	
ADVANCE		BACKUP		CUT		DELCHAR	
BOTTOM		TOP		PASTE		UNDELCHAR	
WORD		EOL		CHAR		ENTER	
CHNGCASE		DELEOL		SPECINS			
LINE		OPENLINE		SELECT		SUBSTITUTE	
				RESET			

Note: The letters, numbers and characters in the lower right corner of the keys are what actually appear on the keys.



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## DOCUMENTATION QUESTIONNAIRE

Your answers to the following questions will help us evaluate and improve *RT-11 for Beginners*. Please read and become familiar with the manual before answering the following questions.

Please check the categories that most nearly describe you:

Type of user:

- Application user
- FORTRAN programmer
- PASCAL programmer
- BASIC programmer
- Assembly language programmer
- Other \_\_\_\_\_

Experience level:

- More than 5 years
- 2 to 5 years
- Less than 2 years
- Student

1. How have you used this manual? (check all that apply)

- By reading it from page 1.
- By using it as a reference.
- By turning to the index first.
- By turning to the table of contents first.
- By leafing through it and reading what interests me.
- Other \_\_\_\_\_

2. On a scale of 1 to 5, 1 being very useful and 5 being confusing, please rate the parts of the manual (circle a number or check the blank if appropriate).

Ch.1	What is RT-11?	1	2	3	4	5	<input type="checkbox"/>	did not read
Ch.2	Operations You Can Perform	1	2	3	4	5	<input type="checkbox"/>	did not read
Ch.3	Reference to Commands	1	2	3	4	5	<input type="checkbox"/>	did not read
Ch.4	Error Messages	1	2	3	4	5	<input type="checkbox"/>	did not read
	Glossary	1	2	3	4	5	<input type="checkbox"/>	did not read
	Appendix Keypad Fold-out	1	2	3	4	5	<input type="checkbox"/>	did not read

3. On a scale of 1 to 5, 1 being very easy and 5 being very difficult, how easy is it to understand the manual? 1 2 3 4 5

4. The manual contains (check all that apply):

- too much technical information.
- an adequate amount of technical information.
- too little technical information.
- too many visual aids.
- an adequate number of visual aids.
- too few visual aids.

5. I plan to use this manual again for reference.  yes  no

6. I used the section on EDITING to learn how to edit text with RT-11.  
— yes — no

7. Please suggest ways in which we can improve the manual:

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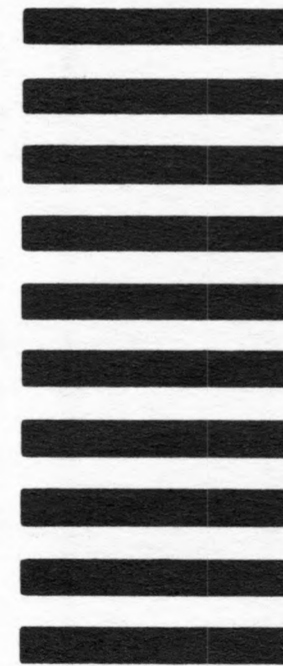


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