HEWLETT PACKARD

HP 125 OWNER'S MANUAL

HP 125 Business Assistant

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HEWLETT PACKARD

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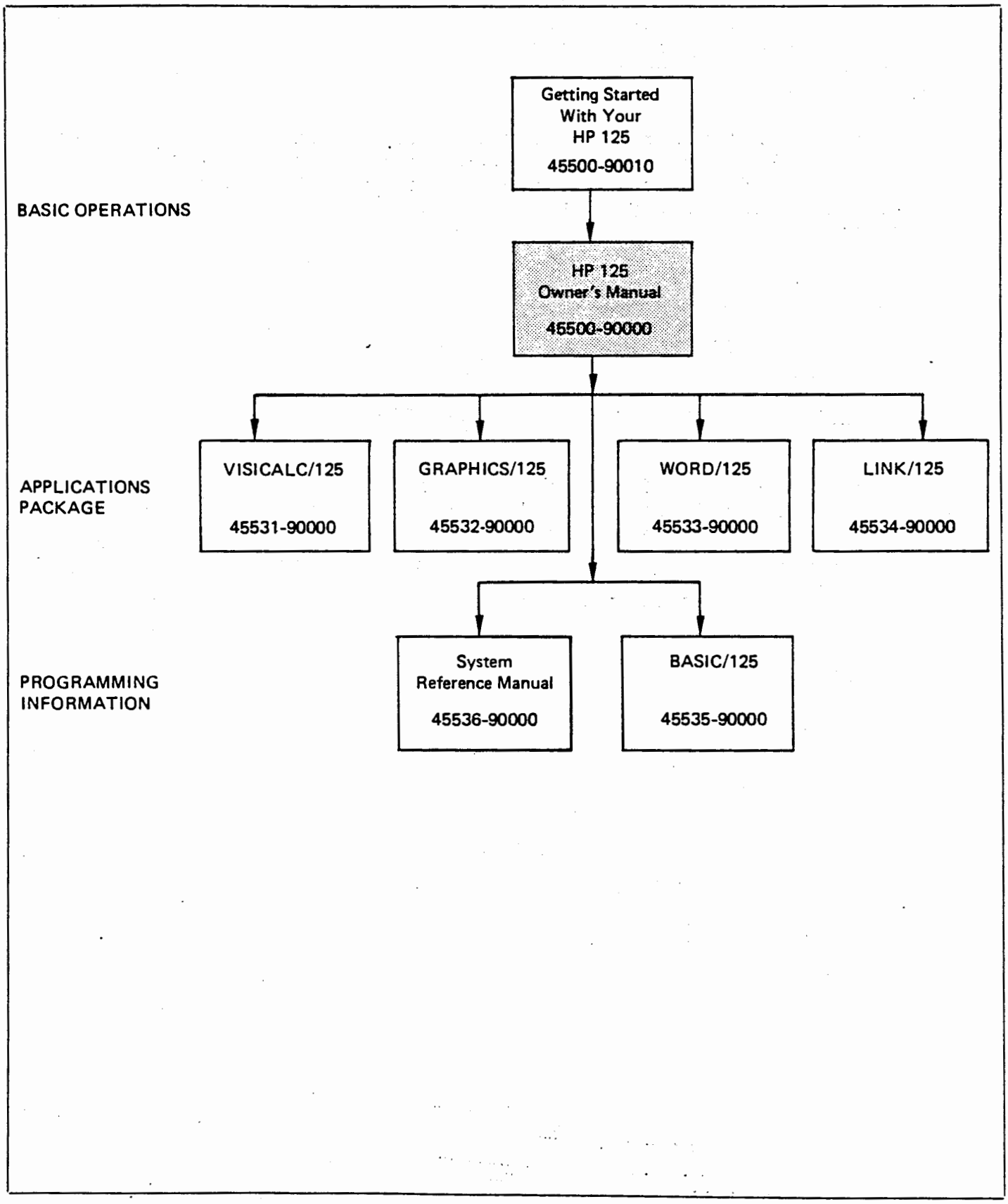
Manual Plan



Preface

This manual introduces you to the general operation of the HP 125. It covers system startup; use of the keyboard: each of the major modes of operation, the printers, system configuration, maintenance, and what to do when things go wrong.

We suggest that you read fairly carefully through the first three chapters, skim the rest of the book, and return to individual sections for detailed reading as necessary. That will ensure that you begin using your system quickly, but with an adequate foundation.

For further information on HP application packages for the HP 125, refer to the application manuals:

VISICALC®/125 part no.	45531-90000
GRAPHICS/125	45532-90000
WORD/125	45533-90000
LINK/125	45534-90000
BASIC/125	45535-90000

Information on HP 125 system installation and setup is contained in the "Getting Started with Your HP 125" Manual. Before attempting to use the system, you should carefully complete the installation procedure described in that manual.

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CHAPTER 1

INTRODUCING THE HP 125

The HP 125 Business Assistant is an advanced Personal Office Computer that is designed to help you be more effective in a wide range of daily tasks. With its powerful local processing capability, the system can help solve business planning problems, produce professional-quality documents, organize information for effective analysis through business graphics, and help you communicate ideas clearly and effectively in written form and for group presentations.

In addition to these local information processing functions, the HP 125 can also serve as your link to a world of information outside your own office. As an advanced computer terminal, the system can access outside data base services for information as varied as news summaries, stock and bond prices, and airline schedules. And these same capabilities, when applied to your company's own mainframe computer or computer network, can offer you access to corporate information that can help you do your job better.

We're confident the HP 125 will be a highly useful Business Assistant for you; one whose value to you will increase through time.

HP 125 System Components

The HP 125 system is composed of a number of separate components, which together make up the entire "system". Figure 1-1 shows a typical HP 125 configuration, and identifies the key system

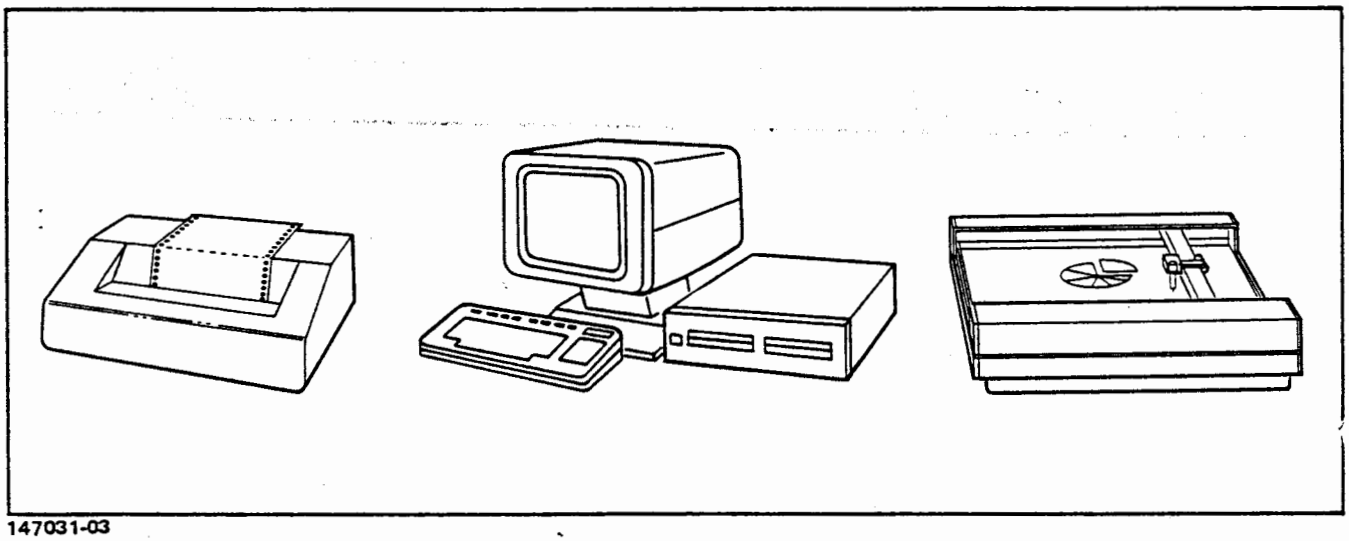

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Figure 1-1. Typical HP 125 Configuration

Each of the components in Figure 1-1 plays a key role in the overall functioning of the HP 125 system:

- The System Processor is the central component. It houses the twin microcomputers that control your interaction with the system and provide the system's processing power. The System Processor also includes the display screen and keyboard through which you communicate with the HP 125.

- The Disc Drives are used to store and retrieve data. The standard disc drive on an HP 125 can contain either of the following: two flexible discs, or one flexible disc packaged with one fixed disc.

  The disc drive containing two flexible discs usually has the left hand drive as "drive A", and the right hand drive as "drive B". Additional disc drives may be added to the HP 125; these disc drives are also designated by letter -- "C", "D", "E", etc.

  The disc drive combining one flexible disc drive with one fixed disc drive determines its drive name by the address setting. When the flexible disc address is set to "0", and the fixed disc drive is set to "2", the flexible disc drive is refered to as "drive A" and the fixed disc drive (which is equal to four 8" drives) is refered to as "drives E, F, G, H". When the fixed disc drive is set to "0" and the flexible disc is set to "2", the fixed disc drive is refered to as "drives A, B, C, D" and the flexible disc drive is refered to as "drive E".

- The Internal Printer is an optional HP 125 feature. If present in your system, it is packaged in the top of the System Processor case. It can be used to print output from HP 125 applications, to copy the screen display, and in many other ways.

- the External Printer is another optional HP 125 feature. Several different printers are available, to meet your needs for personal printing, higher-speed printing, letter-quality printing, etc.

- The Plotter is an optional HP 125 feature for producing multi-color, hardcopy graphics output from the HP 125.

HP 125 Software Products

The HP 125 system operates under the control of a local "operating system" called CP/M®. CP/M supervises the execution of various applications on the system, it manages the information stored on your flexible discs, and it controls the HP 125 printers and plotters. CP/M (which stands for "Control Program for Microcomputers") is an industry-standard, field-proven operating system which is in use on several hundred thousand microcomputer systems today.

Hewlett-Packard supplies a variety of applications packages for the HP 125 that help you perform specific tasks with the system. Each application is available as a separately-packaged option: (See Table 1-1).

CP/M® is a registered trademark of Digital Research, Inc.

Table 1-1. Applications Packages.

• VISICALC/125	Allows you to solve many problems that are commonly solved with a calculator, such as calculating sales projections, budgets, income taxes, financial ratios, etc. It allows a user to quickly and easily manipulate rows and columns of data on the display screen.
• GRAPHICS/125	Creates charts and graphs, formats text, and plots that text and graphics, in color, on paper or on transparent overhead slides.

• WORD/125	Allows you to prepare and manipulate text ranging from memos, contracts, proposals, reports, and other documents requiring multiple drafts.
• LINK/125	Allows you to transfer files to and from the HP 125 system and HP 3000 system, and to extract data from an IMAGE/3000 data base for use on the HP 125.

The CP/M operating system and the HP applications packages are stored on an HP 125 Work Disc, which you will use in the daily operation of the system. A System Disc containing CP/M is supplied with the HP 125 System Processor. You have already used this disc as part of the system setup procedure (outlined in the "Getting Started With Your HP 125" manual). If you purchased additional HP applications with your system, you have already "installed" these applications onto a work disc as part of system installation.

Note

If you have not installed your HP 125 system hardware and applications software using the procedures outlined in the "Getting Started with Your HP 125" manual, you may wish to do so now. Complete installation instructions are found in that manual, and are not repeated in this document.

HP 125 Operating Modes

The HP 125 is a very powerful and versatile system, which can operate in three very different ways:

- As a STAND-ALONE OFFICE COMPUTER SYSTEM, the HP 125 runs HP applications packages (WORD/125, VISICALC/125, etc.) and other applications. In this mode, the HP 125 operates under the control of its local operating system, CP/M. This mode is called "Local Op Sys Mode."

- As an ADVANCED TERMINAL, the HP 125 operates as a high-capability computer terminal, connected to a remote host computer system. This allows you to access outside data base services (for news, stock prices, airline schedules, etc.), or tie into your company's data processing systems. In this mode, the HP 125 operates under the control of the remote

host system. This mode is called "Remote Mode." The HP 125 can also communicate to a remote host system while running in "Local Op Sys Mode" via an application program such as LINK/125.

- As a STANDALONE "ELECTRONIC TYPEWRITER", the HP 125 keyboard, display and printers can be used to enter, edit and print data. This mode can also be used to prepare data for use in one of the other two HP 125 modes. This mode is called "Local Mode."

Each of these modes, and the capabilities that it provides is described in detail in this manual.

HP 125 Startup Procedure

After you have set up your system and installed your software applications as instructed in the "Getting Started With Your HP 125" manual, you are ready to begin working with the system. The "Getting Started" manual provides a detailed, step-by-step HP 125 power-on procedure, which you should follow closely the first time you turn on the system. The startup procedure is repeated below, in abbreviated form, for reference.

1. Power on each of the HP 125 peripherals (discs, printers, plotters).

2. Insert your System Disc into disc drive "A". (Label side up, with the disc label positioned along the edge facing you.)

3. Power-on the System Processor.

4. The system will automatically run a "self-test" for about 15 seconds to verify proper operation. The CP/M operating system will then be loaded from the System Disc into the System Processor if "Local Op Sys Mode" was previously selected. A copyright notice will appear for a second, followed by the HP 125 Welcome Menu, shown in Figure 1-2.

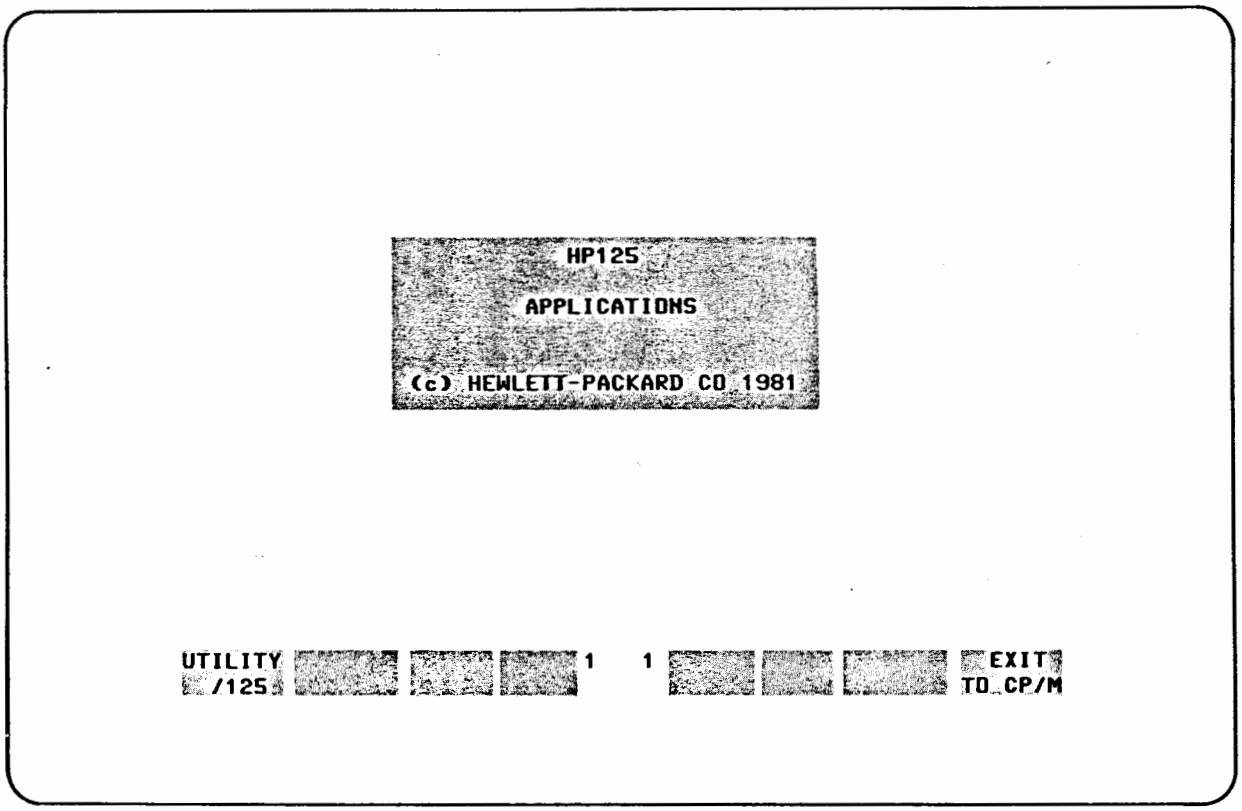

Figure 1-2. Welcome Menu

The HP software applications which are installed on your System Disc are shown in the rectangular labels along the bottom of the screen. There is also a rectangle labelled "EXIT TO CP/M". These rectangles are the labels for the eight special functions keys, [f1] to [f8], located at the top of the keyboard. (Direct interaction with the CP/M operating system via the "EXIT TO CP/M" function key is explained in detail in Chapter 4.)

CHAPTER 2

THE HP 125 KEYBOARD

All of your interaction with the HP125 is accomplished through the keyboard and display screen. A number of special keys have been included on the keyboard that make the system powerful and easy-to-use, whether it is operated as a stand-alone computer or as a terminal. This chapter describes the keyboard in general, and the use of most of the special keys in detail. Explanation of a few special keys is reserved for later chapters.

The keyboard is a separate unit that is linked to the display portion of the System Processor by a flexible cable. It is divided into seven groups of keys, as shown in Figure 2-1. The general function of each of these groups is listed in Table 2-1.

The functions described here may be changed by certain Application programs. See the appropriate Application Manual for further information.

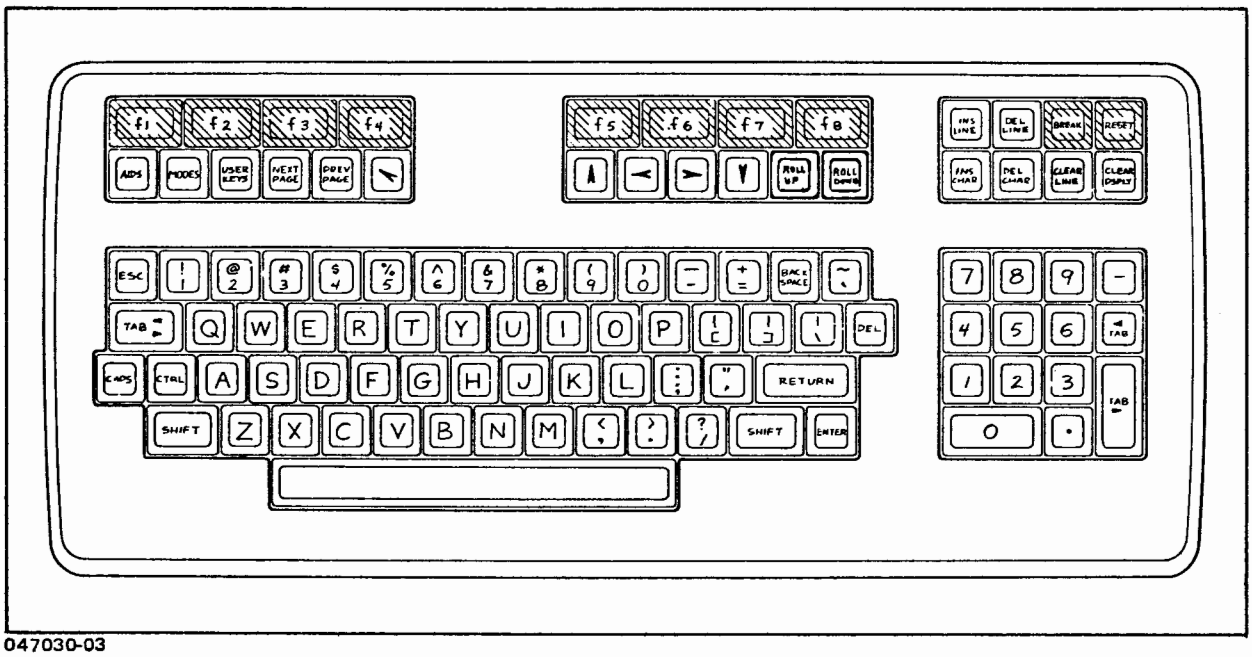

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Figure 2-1. The HP125 Keyboard

Table 2-1. Key Groups

GROUP	DESCRIPTION
Character Set	A standard typewriter keyboard, used for entering data, text, commands, etc.
Numeric Pad	A calculator-type numeric keypad, used to enter most numerical data.
Display/Cursor	Ten keys used to control the display screen and to move the cursor on the screen.
Edit Control	Six keys used to edit characters as they appear on the HP 125 display.
Terminal Control	Keys used to initialize the System Processor or interrupt various HP 125 operations.
Function Keys	Eight keys labeled [f1] through [f8] that perform a wide variety of functions. The

	function of each key is shown through a label displayed on the HP 125 screen which can change to suit your needs. These keys are described in detail in Chapter 3.
Function Control	These keys (labeled [AIDS], [MODES], and [USER KEYS]) are used to select one of three families of functions for the function keys listed above. Like the function keys, they are described in Chapter 3.

Entering Data at the Keyboard

The alphabetic, numeric, and symbol keys of the character set group are used to enter data, text, and commands. Several of the keys in this group have special functions, as described in Table 2-2.

Table 2-2. Character Set Keys.

KEY	FUNCTION
[SHIFT]	Selects upper case (or shifted) characters; also is used to add a function to some other keys.
[BACK SPACE]	Backspace key. As on a typewriter, this key moves the cursor one position to the left; it also deletes the previous character..
[RETURN]	"Carriage Return" key. Returns the cursor to the left hand margin on the display in the same manner as on a typewriter. In most cases, the cursor will also move to the beginning of the next line. ([RETURN] has a slightly different function in Modify Mode; see Chapter 3 for details.)

[TAB ⟩]
[SHIFT] [TAB ⟩]
[TAB >]
[TAB <]

There are three Tab keys available. The primary Tab key ([TAB ⟩]), at the left side of the keyboard, can be used to tab either left or right. When [TAB ⟩] is pressed, the cursor moves forward to the next tab to the right. When the [SHIFT] and [TAB ⟩] keys are pressed simultaneously, the cursor moves backward to the next tab stop to the left. [TAB >] and [TAB <] keys are located in the numeric pad group, and only move in the indicated direction.

[CAPS]

Selects all capital alphabetic letters, in the same manner as on a typewriter. Does not affect number or special symbol keys. This key acts as a toggle switch; that is, it changes the case from lower to upper case selection and vice versa. The shift key can be used to reverse the case orientation on an individual character basis.

[ESC]

This is a "special key" used to extend the operating functions of the system. Used with other keys, it generates special control codes for various operations. (See the System Reference Manual for details.) Some application programs may use this key to escape from certain operations.

[CTRL]

This is another "special key", which can be pressed simultaneously with other keys to generate special "control codes". It can also be used in conjunction with the [SHIFT] key. Be sure to hold down the [CTRL] key as you would a [SHIFT] key while pressing the other key.

[DEL]

This is a "special key", which generates a special "deletion character". It also is used for special deletion functions by HP 125 applications.

[ENTER]

In Local Mode, the [ENTER] key can be used to produce a copy of all data in display memory on a printer. If there is no printer, the cursor will home up and the following message will appear on the bottom of the screen:

```
NO print device          Press RETURN to clear
```

When the system is set for Remote Mode or Local Op Sys Mode, the [ENTER] key transfers a line of data from the display to the host computer (Remote Mode) or the local system (Local Op Sys Mode). The [ENTER] key also locks the keyboard until the resultant data transfer is complete. Normally, the [RETURN] key is used to send data to the host system. For further information on transferring data, refer to Chapter 7, Using the System Printers.

The HP 125 Display

The HP 125 system features a large "display memory" that can store much more information that can be displayed on the screen at one time. The display memory allows you to store 120 lines of data, or enough to fill five screens. The screen is used to look at one block or "page" of characters at a time. Each page is made up of 24 lines of data (see Figure 2-2). All of your interaction with the HP 125 appears on the HP 125 display screen. Data that you enter through the HP 125 keyboard is usually displayed on the screen as you type it, and display information generated by CP/M or remote host computer also appears on the screen. The screen itself is organized into 26 rows of 80 character positions. The first 24 rows are used for general-purpose display. The 25th and 26th rows label the eight function keys on the system with descriptive labels that indicate their function. These two rows are also used to report errors.

Moving the Cursor

The five cursor keys on the keyboard are used to move the cursor manually on the screen. Table 2-3 describes the function of each of these keys. At any time while you are interacting with the system, one of the character positions on the screen will contain the cursor, represented by a blinking underscore mark. The cursor is like the typing element on an electric typewriter. It indicates the position on the screen where the next character that you enter (or the next character that the system displays)

will appear. The position of the cursor is also indicated for you by two numbers that appear in the center of the bottom line on the display screen. The first of these numbers (on the left) shows the row in which the cursor is located; the second number (on the right) shows the column. Rows are numbered 1 through 120; columns 1 through 80.

Table 2-3. Cursor Key Functions

KEY	FUNCTION
[^] UP ARROW	Moves the cursor one line up each time the key is pressed. If the key is held down, the cursor moves up until either the key is released or the top line of the screen (or of display memory -- see the next section) is reached.
[v] DOWN ARROW	Moves the cursor one line down each time the key is pressed. If the key is held down, the cursor moves down until either the key is released or the last line on the screen (or of display memory -- see the next section) is reached.
[<] LEFT ARROW	Moves the cursor one character position to the left each time the key is pressed. If the key is held down, the cursor moves left one position at a time until either the key is released or the first character position of the screen is reached.
[>] RIGHT ARROW	Moves the cursor one character position to the right each time the key is pressed. If the key is held down, the cursor moves right one position at a time until either the key is released or the last character position of the screen is reached.
[⌜] HOME ARROW	Homes the cursor up, i.e., moves the cursor to the left margin of the top line of the screen; rolls the text in display memory down so that the first line in display memory appears in the top line of the screen -- see next section.
[SHIFT] [⌜] HOME ARROW	Creates a blank line as the last line in display memory and homes the cursor down to the left margin of the new line. If the last line in display memory is not on the screen, the text will be rolled up until that line is on the bottom of the screen. If all lines in display memory are used, the first line will be deleted to create a new blank line at the end of memory.

Controlling What Appears on the Screen

When the screen has been filled (24 lines of data have been entered), the top line "rolls off" the top of the screen and is retained in display memory. As you type an additional line, the display will roll up to make room for the new line. This continues until the display memory is filled. At that point, if you enter another line, the top line in display memory will be lost, to make room for the new line (see figure 2-2).

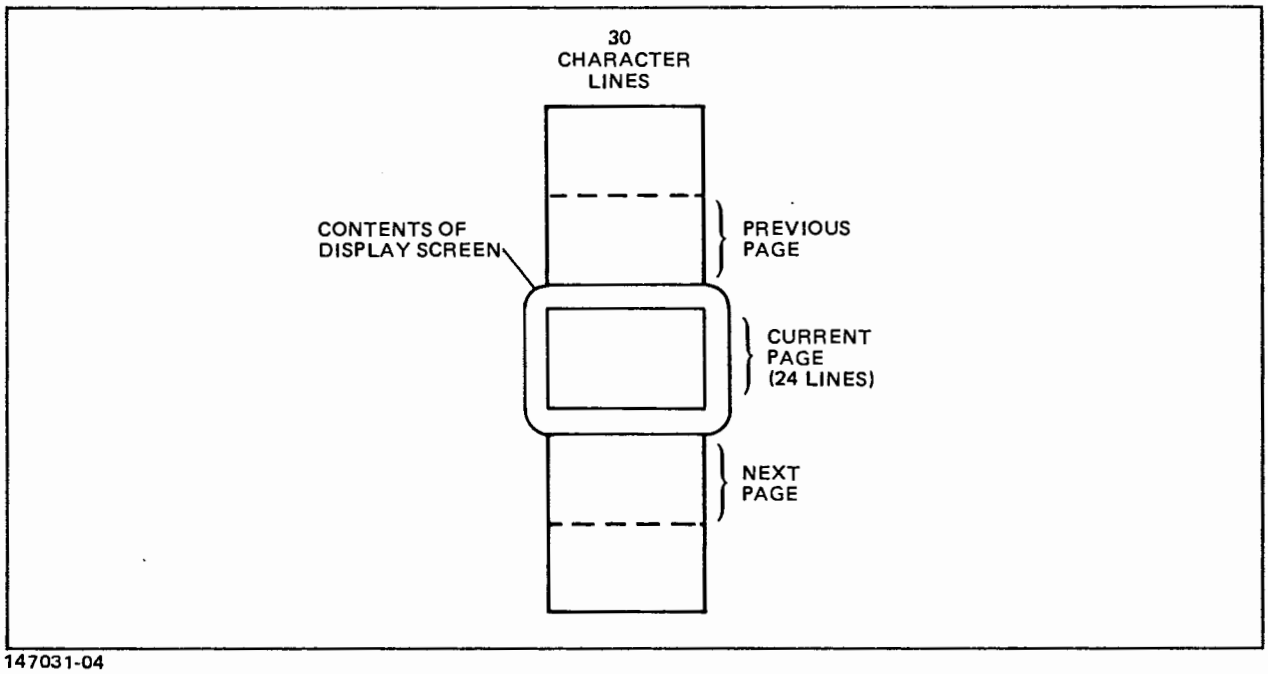

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Figure 2-2. Page Locations in Memory

The ROLL and PAGE keys are used to control the portion of display memory that appears on the screen. The function of these keys is shown diagrammatically in Figure 2-3, and explained in Table 2-4.

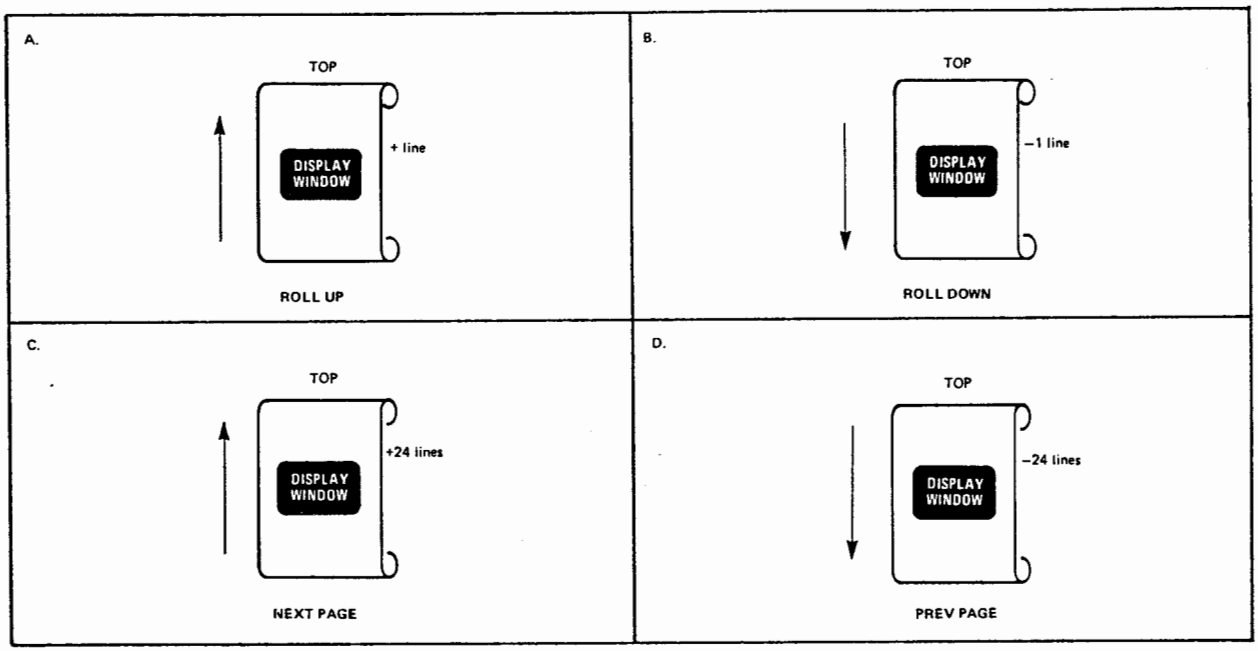

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Figure 2-3. Roll and Page Key Operations

Table 2-4. Roll and Page Key Functions

KEY	FUNCTION
[ROLL] [DOWN]	The contents of display memory roll down one line each time the key is pressed. The bottom line rolls off the screen, the remaining data rolls down one line on the screen, and a new line of data rolls from display memory into the top line of the screen. If the key is held down, the text continues to roll down until the key is released or until the first line of data in display memory appears in the top row of the screen. At that time, the rolling action stops.
[ROLL] [UP]	The contents of display memory roll up one row each time the key is pressed. The top line rolls off the screen, the remaining data rolls up one line on the screen, and a new line of data rolls from display memory into the bottom line of the screen. If the key is held down, the text continues to roll upward until the key is released or until the final line of data in memory appears in the bottom line of the screen. At that time, the rolling action stops.

[NEXT] [PAGE]	The contents of display memory roll up so that the next or last "page" (24 lines) of data replaces the current page on the screen. If the key is held down, the operation is repeated until the key is released or the final line in display memory appears at the top of the screen.
[PREV] [PAGE]	The contents of display memory roll down so that the previous or first page of data replaces the current page on the screen. If the key is held down, the operation is repeated until the key is released or the first line in display memory appears on the screen.

Editing Data on the Screen

Data in the HP 125 display memory can be edited on the screen simply by typing over the old data. However, the system provides you with a group of special keys that make such editing even more convenient. These keys allow you to insert or delete characters, insert or delete lines, or delete all or part of the data in display memory.

The function of each Edit Control key is described in Table 2-5

Note

The editing keys in Table 2-5 edit the contents of display memory only. In Local Op Sys mode, their effects are not sensed by the operating system during command entry, for example. In Remote Mode, most host computers will also ignore their effects, treating them as local editing functions. You might, for example, use the keys to clear a place on your screen and enter data in the middle of display memory. The data will display on your screen in the appropriate place, but the computer will normally ignore this "insertion" of data, and treat the characters you type, character-by-character, as your input.

Table 2-5. Edit Control Keys.

KEYS	FUNCTION
[INS LINE]	A blank line is inserted preceding the line in which the cursor is located. The line in which the cursor is located, and subsequent lines are pushed down one line. The cursor is positioned at the first character position of the new (blank) line. When display memory is full and the cursor is at line 1 on the screen, inserting a line deletes a line from the bottom of display memory to make room for the line being inserted. When memory is full and the cursor is at any other line on the screen, a line is deleted from the top of display memory to make room for the new line.
[DEL LINE]	The line containing the cursor is deleted from display memory, and all subsequent lines are rolled up one line. If the key is held down, the system continues to delete lines until the key is released or until there are no more lines following in display memory.
[INS CHAR]	Characters are inserted into a line without over-writing existing characters. Each time a character is inserted, the cursor and all characters from the cursor through the right margin move one column to the right. Characters that are forced over the right margin are lost. Pressing the [INS CHAR] key once begins the character insertion process, and the letters "IC" appears at the bottom center of the screen to indicate that text is being inserted. Pressing the key again terminates character insertion and removes the letters "IC" from the bottom of the screen.

[DEL CHAR]	The character at the cursor position is deleted. The cursor remains stationary and all characters between the cursor and the right margin move left one character position. If the key is held down, the system continues to delete characters until either the key is released or there are no non-blank characters between the cursor position and the right margin.
[CLEAR DSPLY]	All characters are deleted from the cursor position through the end of display memory.
[CLEAR LINE]	All characters are deleted from the cursor position through the end of the current line.

Note

To clear the entire display memory, press the [⌐] key, followed by the [CLEAR DSPLY] key.

Resetting the Terminal

Terminal Control keys are used to reset the computer system and temporarily interrupt the transfer of data from one device to another. These keys are described in Table 2-6.

Table 2-6. Terminal Control Keys.

KEYS	FUNCTION
[RESET]	Causes a "soft reset" which results in the following: • Enables input from the keyboard (if the keyboard was disabled). • Clears some error conditions and removes the error message display (if present) from the bottom of the screen. Some error messages may prompt you to press the [RETURN] key to continue. Even if you press the [RESET] key to clear the message, the error condition may still exist and you must still press the [RETURN] key to continue with your work.

- Disables display functions mode (if enabled -- see Chapter 3).
- Halts any data communication transfers currently in progress, and reinitializes both HP 125 data communication ports according to the appropriate power-on configuration parameters.
- Resets the internal printer, if present.
- Halts any device operations currently in progress.

[CTRL] [SHIFT] [RESET]

Causes a "hard reset" by holding down the [CTRL] and [SHIFT] keys and pressing the [RESET] key. This performs the "soft reset" functions and also results in the following:

- Clears all of the terminal memory.
- Resets certain operating modes and parameters, such as the caps mode, report mode, metric mode, left/right margins and insert character function.
- Clears the CP/M memory
- Attempts to load the HP 125 operating system (CP/M), if the system is in "Local Op Sys" mode, and an operating system is located on disc drive A.

[BREAK]

Interrupts the data transfer operations on the data communications ports or to the screen from CP/M.

Selecting Special Functions

The Function Key group consists of eight keys labeled [f1] through [f8]. These keys allow you to select the functions shown in the labels along the bottom of the screen. The functions assigned to these labels and keys are changed using the [AIDS], [MODES] and [USER KEYS] keys.

Many of the functions needed for routine data entry and normally initiated by the keyboard keys are incorporated into the function keys on the System Processor. Chapter 3 describes the function keys in detail. Chapter 8 provides instructions for creating your own function key definitions, to serve your specific needs.

Controlling the Function Keys

The Function Control keys consist of the [AIDS], [MODES] and [USER KEYS] keys. These keys are used to select one of three separate families of definitions for the function keys. These keys are also discussed in Chapter 3.

CHAPTER 3

FUNCTION KEYS

Some of the most powerful features of your HP125 system are provided by the three function control and eight associated function keys. The function keys are the [AIDS], [MODES] and [USER KEYS] keys. The [f1] through [f8] keys are the corresponding function keys. Using the function control keys, you can perform the following:

[MODES] Key

- select the mode in which your system will be operated
- verify the proper operation of the terminal portion of the HP 125
- load the CP/M (local) operating system
- select display functions or auto linefeed

[AIDS] Key

- control the system printers
- set margins and tab stops
- verify proper operation of various system components

- load the CP/M (local) Operating System
- specify character enhancements for data in display memory
- configure the system

[USER KEYS] Key

- display and enable the user-defined function keys
- define the function keys

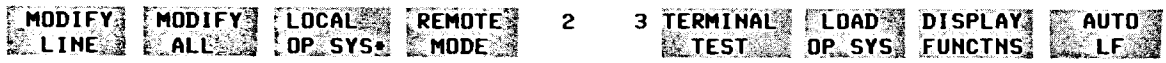
Each of these control functions is briefly explained in this chapter, and covered in detail in the chapters that follow.

Upper and Lower Case Labels for Function Keys

Some titles in the function key labels are written in upper case letters, and others in lower case letters. Those written in lower case letters are used only to access a new set of function key labels. Pressing one of these keys brings a new set of key labels to the screen, for further selection. Function key labels written in upper case letters execute the function described by the label immediately when the key is pressed.

The [MODES] Key

When the [MODES] key is pressed, the Modes set of function key labels is displayed.



Except for the Terminal Test function key, the functions provided by these keys activate or deactivate the major HP 125 system modes. Table 3-1 describes the function of each key.

Table 3-1. [MODES] Function Keys.

LABEL	FUNCTION
MODIFY LINE *	Selects Modify Mode, which allows you to edit a line of data. (See below)
MODIFY ALL *	Selects Modify Mode, like MODIFY LINE, except that you remain in Modify Mode until it is explicitly turned off. (See below)
LOCAL OP SYS *	Places the HP 125 in Local Op Sys mode. (See below)
REMOTE MODE *	Places the HP 125 in Remote mode. Note: Place the HP 125 in Local Mode by turning off both the LOCAL OP SYS and REMOTE MODE function keys. (See below)
TERMINAL TEST	Enables a test of the system's terminal operations. On completion of the test, a test pattern is displayed on the screen. (See Chapter 11.)
LOAD OP SYS	Loads the CP/M Operating system from disc (drive A) into memory, and begins operation if Local Op Sys mode is selected. (See Chapter 4.)
DISPLAY FUNCTNS *	Causes control characters or escape sequences to be displayed symbolically on the screen rather than being executed by the System Processor. The action normally produced by any keyboard control key (such as [ROLL UP], [INS LINE], etc.) is not performed, and the control symbol(s) for that key is displayed instead.
AUTO LF *	Enables Automatic Linefeed, which generates a linefeed automatically each time the [RETURN] or [ENTER] key is pressed. This function is useful in Local Mode, for generating "carriage return/-linefeed" combination with the [RETURN] key. AUTO LF should NOT be used in Local Op Sys mode, and should not be used with most host computers under REMOTE MODE.

Note: Whenever any of the HP 125 modes are active, an asterisk is present in the corresponding displayed function key label. The labels marked with an asterisk have a toggling action; i.e. if the mode controlled by the label is inactive, it can be activated by pressing the corresponding function key. If it is active, it can be deactivated by pressing the function key.

Modes of Operation

You can select from among the HP 125 modes of operation by using some of the Modes function keys: Modify Mode, Local Op Sys Mode, Remote Mode, and Local Mode. These modes are explained below.

Modify Modes for Editing

In the last chapter, you were introduced to the edit control keys on the HP 125 keyboard, which are used for inserting and deleting data in display memory. Recall that these keys edit only the contents of display memory, and that, in general use, they are not always effective in Remote or Local Op Sys Modes.

The HP 125's Modify Mode capability lets you use these edit control keys to edit the data in the display memory, and then transmit an entire, edited line of data to CP/M or to the remote host system. Modify Mode thus brings the natural, easy-to-use editing features of Local Mode to the other two modes. A detailed explanation of Modify Modes is found in Chapter 6.

LOCAL OP SYS Mode

When you press the LOCAL OP SYS function key, which turns on the "*" in the function key label, your HP 125 is set to operate as a locally-controlled, self-contained office computer. In this mode, you can execute the HP-supplied applications software, run other programs or perform local housekeeping chores on the system, etc. Operation of the system in this mode is under the control of the CP/M operating system. Pressing the Local Op Sys function key when the "*" is shown in the function key label will clear the "*" and return the system to LOCAL MODE. (For details on Local Op Sys operation, see Chapter 4.)

REMOTE Mode

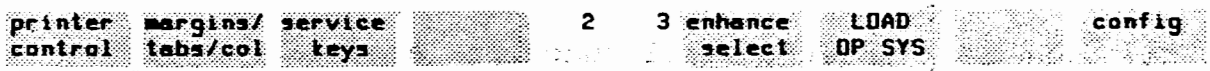
When you press the REMOTE MODE function key, which turns on the "*" in the function key label, the HP 125 becomes a high-capability terminal, communicating with an external "host computer system". Control of HP 125 operation in this mode rests with the host computer and the HP 125 System Processor. Communication with the host computer takes place over one of the two HP 125 data communication ports, as selected in the Configuration Menu (see Chapter 9). Pressing the REMOTE MODE function key when the "*" is shown on the function key label, clears the "*", and returns the system to LOCAL MODE. For details on Remote Mode, see Chapter 5.

LOCAL Mode

When neither Local Op Sys nor Remote Mode is selected, the HP 125 will operate in Local Mode. In this mode, the HP 125 keyboard and display act as a stand alone "electronic typewriter". They cannot use the local HP 125 computer capabilities, or a host system. This mode is selected by pressing the function key (LOCAL OP SYS or REMOTE MODE) that has the "*" shown on the function key label. For details on Local Mode operation, see Chapter 5.

The [AIDS] Key

There are several sets of predefined HP 125 typing and operating aids which are accessed by pressing the [AIDS] key. When the [AIDS] key is pressed, the set of function key labels shown below is displayed.



These labels are used to access other sets of labels except for the LOAD OP SYS function key.

They operate immediately when the corresponding function key (top row) is pressed.

Table 3-2 describes the functions of each key. (N.B. lower case signifies this

Table 3-2. Aids Set of Functions.

LABEL FOR FUNCTION KEY	FUNCTION RESULTING ON PRESSING FUNCTION
* printer control	Displays the first of two sets of labels for transferring data to the HP 125 printer(s). The second set of printer labels (printer modes) are accessed from the first set (see Table 3-3).
margin/ tabs/col	Displays a set of labels which enable control of margins, tabs and selection of the starting column for transmission of data. (See Table 3-5.)
service keys	Displays a set of labels which are used to activate the various HP 125 self-tests. (See Table 3-6.)
enhance select	Displays the three labels which allow you to add or remove display enhancements from text in display memory. (See Table 3-7.)
LOAD OP SYS	Loads the CP/M Operating system from disc (drive A) into memory, and begins operation if Local Op Sys mode is selected. (See Chapter 4.)
config	Displays the configuration menu allowing different HP 125 configuration options. Examples of these options include keyboard click enable/-disable, CP/M output device selection, data communications configuration, etc. (See Chapter 9 and Appendix A).

* Controlling the Printers

Two sets of printer control functions are available through the [AIDS] key. These functions allow you to copy data from display memory to the HP 125 printer(s), and to use the HP 125 printer logging feature to create a printed record of your interaction with the system. Tables 3-3 and 3-4 briefly describe the function assigned to each key in the two sets. For more details on printing, see Chapter 7.

Table 3-3. Printer Control Functions.

LABEL	FUNCTION
printer modes	Displays the Printer Modes set of labels. (See Table 3-4.)
ADVANCE LINE	Causes the selected printer(s) to advance one line, creating a blank line on the paper.
ADVANCE PAGE	Causes the selected printer(s) to skip to the top of the next page.
COPY ALL	Copies the contents of display memory to the selected printer(s), starting with the line in which the cursor is positioned.
COPY PAGE	Copies all lines that are displayed on the screen to the selected printer(s), starting with the line in which the cursor is positioned.
COPY LINE	Copies the line in which the cursor is positioned to the selected printer(s).

Table 3-4. Printer Modes Functions.

LABEL (See text)	FUNCTION AND OPERATION ENABLED WHEN ASTERISK IS SHOWN
printer control	Displays the Printer Control set of labels. (See Table 3-3.)
PORT 2 PRINTER *	Selects the printer attached to Data Comm port 2 to receive printed output. for printing.
HP-IB PRINTER *	Selects the printer attached via HP-IB to receive printed output. (An outlet via HP-IB system through a rear port.)
INT PRINTER *	Selects the internal printer to receive printed output. (Only labeled if option 050 internal printer present.)
LOG BOTTOM *	Sets (or resets) the printer logging on, logging from the bottom of display memory. The LOG TOP and LOG BOTTOM are mutually exclusive.
LOG TOP *	Sets (or resets) the printer logging on, logging from the top of display memory. The LOG TOP and LOG BOTTOM labels are mutually exclusive.
REPORT PRINT *	Sets (or resets) the internal printer for printing 11-inch pages rather than continuous printing. Report format is a three-line top margin, 60 lines of text, and a three-line bottom margin with a small tic mark to indicate the end of one page and the start of a new one. REPORT PRINT and METRIC PRINT are mutually exclusive. (Only labeled if option 050 internal printer is present.)
METRIC PRINT *	Sets (or resets) the internal printer for printing pages, rather than continuous printing. Metric format is a three-line top margin, 64 lines of text, and a three-line bottom margin with a small tic mark to indicate the end of one page and the beginning of a new one. PRINT and METRIC PRINT are mutually exclusive. (Only labeled if option 050 is present.)

Note: The labels marked with an asterisk have a toggling action. If the mode controlled by the label is inactive, it can be activated by pressing the function key. If it is active, it can be deactivated by pressing the function key. When the mode is active, an asterisk is displayed in the function key label.

Setting Margins and Tabs

Margins and tabs on the HP 125 can be set through the [AIDS] function keys by selecting the margin/tabs/col function key ([f2]). The START COLUMN function key is included with the choices of margins and tabs, but it has a very different function.

More complete information on margins and tabs can be found in Chapter 6.

Table 3-5 lists the function of each of the margin/tabs/col function keys.

Table 3-5. Margin/Tabs/Col Functions.

LABEL	FUNCTION
START COLUMN	Specifies the column in which the cursor is located as the starting column for data communications transfers. (This column can also be set via the Configuration Menu -- see Chapter 9.).
SET TAB	Sets a tab in the column in which the cursor is located.
CLEAR TAB	Clears the tab set in the column in which the cursor is located.
CLR ALL TABS	Clears all tabs which were previously set.
LEFT MARGIN	Sets the left margin at the current position of the cursor.
RIGHT MARGIN	Sets the right margin at the current position of the cursor.
CLR ALL MARGINS	Clears the left and right margin settings. The left margin is reset at column 1 and right margin is reset at column 80.

Testing System Components

The functions provided by key [f3], labeled service keys, involve various tests that can be performed on the system components to verify proper operation. Table 3-6 briefly describes each of these system self-tests. A complete description of the HP 125's self-test capabilities can be found in Chapter 11.

Table 3-6. Service Functions.

LABEL	FUNCTION PERFORMED WHEN THE KEY IS PRESSED
POWER ON TEST	Manually initiates the power-on test (the same test that is automatically performed when power is applied to the system).
TERMINAL TEST	Initiates a test of the overall system terminal operation.
IDENTIFY ROMS	Displays a list of the ROMs installed in the system.
DATACOMM TEST	Initiates a test of the data communications circuitry. (Note that an error will be indicated if test connectors are not installed.)
INT PRT TEST	Initiates a test of the internal printer. (This key only appears labeled if the option 050 internal printer is present.)

Using Display Enhancements

The HP 125 system normally displays information on the screen in a white-on-black format. Portions of the display that are of particular importance or significance (e.g. error messages or operations instructions) may be enhanced using one of the HP 125's display enhancements. Available enhancements include: inverse video (black-on-white), half-bright, underlined, and blinking text, and all combinations of enhancements. Table 3-7 shows the function keys used to add and remove character enhancements. For more details, see Chapter 6.

Table 3-7. Enhance Select Functions

LABEL	FUNCTION
REMOVE CHAR ENH	Removes the currently selected display enhancements (specified in the Configuration menu) from the character above the cursor. The cursor is advanced to the next character.
ENHANCE CHAR	Adds the currently selected display enhancement (specified in the Terminal Configuration menu) to the character above the cursor. The cursor is advanced to the next character.
ENHANCE LINE	Adds the currently selected display enhancement (specified in the Configuration menu) to all characters from the cursor position to the end of the line.

Note: Each enhancement is active for the entire line, therefore, all enhanced characters on a given line must have the same enhancement.

The [USER KEYS] Key

The [USER KEYS] key is used to access the user-defined function keys. See Chapter 8 for a description of the use of this set of keys.

CHAPTER 4

THE LOCAL OPERATING SYSTEM (CP/M)

When you use the HP125 as a stand-alone computer system, you will be using the local operating system, known as CP/M (Control Program for Microcomputers).

CP/M allows access to four kinds of software:

(1) HP-supplied applications, such as WORD/125,

(2) other programs stored on the disc currently in the disc drive,

(3) system commands, used to manage files on the discs, and

(4) system utilities, used to format and copy discs, and to perform other similar tasks.

This chapter describes the CP/M system commands and CP/M system utilities in detail, and gives brief instructions for accessing application and user-written programs. For more information on accessing these other programs, consult the manual for the specific application in which you are interested.

Running HP Software Applications

When the Welcome Menu is displayed, as described earlier in this manual and in the "Getting Started" manual, the names of the software applications installed on your system disc appear as labels for the function keys ([f1] to [f8]). To access one of these applications, press the key corresponding to the application you wish to use. The application will be loaded from the disc, and assumes control of the HP 125.

Before you exit from an HP software application, be certain that the system disc is loaded from disc drive A. After exiting the application, the CP/M operating system will again take control of the HP 125 and display the Welcome Menu for another selection.

Accessing CP/M from the Welcome Menu

To access CP/M from the Welcome Menu, press the function key labeled EXIT TO CP/M. The CP/M prompt (A>) will appear on the screen. When you see this prompt, followed by the cursor, you know that CP/M is waiting for a command to be issued.

Running Other Programs from CP/M

Programs that are not HP-supplied applications (e.g., userwritten programs or programs from a software supplier) are not accessed from the Welcome Menu; they must be accessed from CP/M. To run a program, just type its filename (see the following discussion on ESTABLISHING AND REFERENCING FILES) in response to the prompt (A>). For example, to run a program named FORECAST which is on disc drive A, type FORECAST, then press the [RETURN] key in response to the CP/M prompt (A>):

```
A>FORECAST
```

To run a program from a disc other than the current disc, type the discname:filename. For example, to run FORECAST from disc drive B:

```
A>B:FORECAST
```

All commands, except the six that are built-in (described below), cause the system to look for a file with the same name as the command with filetype .COM. If the file does not exist, CP/M prints out the command you typed, followed by a question mark, and reprints the prompt. "A>" below.

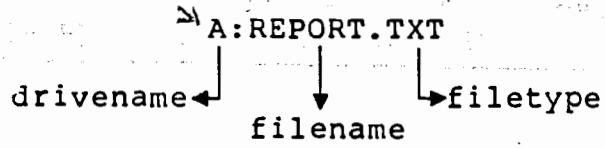
```
A>PLINX
PLINX?
A>
```

Establishing and Referencing Files

CP/M organizes the information on your discs as a collection of "files", analogous to the file folders that you are familiar with in daily office use. Each program, word processing document, graph, financial worksheet, or any other item is stored on a disc in a file. Each file is identified by a unique file name that is assigned when the file is first created on the disc. CP/M maintains a "catalog" of the file names for all files currently stored on each disc. You might think of this directory as like a telephone directory -- it lists the files by name and contains information that helps CP/M locate and manage the files on the disc.

File References

Each file reference consists of three parts, as shown in the example below:



The first part, drivename, is an optional one character code that identifies the disc drive (A through H) in which the disc containing the file resides. It is followed by a colon. If the drivename is not specified, the current disc drive (see discussion below on Current Drive) is assumed. Tables 4-1a thru 4-1c show how the disc drives are named.

Table 4-1a. 82901M/9895A Disc Drive Names

Disc Drive Unit	Left-Hand Drive	Right-Hand Drive
First Master Disc Unit (HP-IB Address 0)	" A:"	" B:"
Slave Disc Unit attached to First Master Disc Unit	" C:"	" D:"
Second Master Disc Unit (HP-IB Address 2)	" E:"	" F:"
Slave Disc Unit attached to second Master Disc Unit	" G:"	" H:"

Table 4-1b. 9134A Disc Drive Names.*

Disc Drive Unit	Drive
First Disc Unit (HP-IB Address Ø)	" A: " - " D: "
Second Disc Unit (HP-IB Address 2)	" E: " - " H: "

Not currently applicable in REP System

Table 4-1c. 9135A Disc Drive Names.

Disc Drive Unit	Left-Hand Drive	Right-Hand Drive
Load from Fixed Disc	"A:" - "D:" (HP-IB Address Ø)	"E:" (HP-IB Address 2)
Load from Flexible Disc	"E:" - "H:" (HP-IB Address 2)	"A:" (HP-IB Address Ø)

* These are the disc drive units employing a 'Hard' disc permanently in drive system - with a 'floppy' disc drive.

The second part of the file reference, filename, is the name assigned by the person who created the file. A Filename can consist of up to 8 characters; all characters are allowed except the special characters < > . , ; : = ? * [and]. Lower case letters are all shifted up when entering CP/M commands.

The third part, filetype, specifies the type of information contained in the file. Filetype is optional (i.e. it may be left blank). If a filetype is used, it must be separated from the filename by a period. The filetype can consist of up to 3 characters, with the same restrictions on special characters as on filename. Some filetypes are used to specify the attributes of the files. A few of the more common special filetypes are shown in Table 4-2.

Table 4-2. Some Special Filetypes

FILETYPE	WHAT THE FILE CONTAINS
COM	An application or user-written program that can be accessed by entering its file name as a CP/M command.
VC	A Visicalc®/125 worksheet.
BAR,PIE,LIN,SLD	A GRAPH/125 bar chart, pie chart, line chart or slide menu file.
HEP	A WORD/125 help file which contains a description of some of the WORD/125 commands.
BAK	A WORD/125 back up file.
$$$	A temporary file.

The Current Disc Drive

Frequently, your activity on the HP 125 will center around the files on one particular disc drive. As a convenience, CP/M lets you designate that disc drive as the "current" drive. When referencing files on that disc drive, you may leave off the drivename portion of the file reference. If no drivename is specified, CP/M simply assumes you are referencing the current flexible disc.

The standard CP/M prompt, in fact, is made up of the current drive's name, followed by the ">" symbol. Thus, the prompt:

```
A>
```

shows that drive A is the current disc drive. When CP/M is loaded or reloaded drive A will be accessed for the system information. Upon *power-up or †hard reset the current disc drive will always become disc drive A. (The left-hand drive. B is the right hand drive on the AEP system.)

*when just switched on
† See P.

You can change to a different current disc drive by simply typing that drivename, followed by a colon, in response to the CP/M prompt. For example:

```
A>B:
```

sets the current disc drive to B. The command:

```
B>G:
```

again resets the current disc drive to G. If there is such a drive. A and B are currently the only ones on the AEP system.

System Commands for File Management

Normally, you will normally access files through the HP applications software. That is, WORD/125, GRAPHICS/125, or VISICALC/125 will ask you for the name of the file when you want to store or retrieve data on the disc.

The CP/M operating system also has six built-in commands which can be used to manipulate files. Table 4-3 describes the function of each of these commands.

Table 4-3. System Commands

COMMAND	FUNCTION
DIR	The DIRectory command displays a list of the names of the files present on a disc. (Files of all kinds.)
ERA	The ERAse command removes a file from a disc.
REN	The REName command changes the name of a file.
SAVE	Stores a memory image to a disc file.
USER	Defines a user identification number.
TYPE	The TYPE command reads out and displays the contents of a disc file on the display screen.

See below, pp. for the use of these commands.

"Wild Card" Characters Used in File References/Commands

See 4.3 and below

Two special characters can be used when specifying any part of the* file reference for the system commands. These characters, called "wild cards", allow you to specify more than one file that is to be affected by a single ~~reference~~. of file reference

The first wild card character is an asterisk (*). It is used to indicate that all files (or all qualified files) are to be affected by the command. Usually the * is used in only one part of the file reference, thus qualifying certain filenames or filetypes. For example, the command

```
A>DIR *.COM
```

will display the directory for all files with filetype COM on the current disc drive (A in this case). Similarly, the command

```
A>DIR B:*.COM
```

will display the directory for all files with filetype COM that are on disc drive B. In the same manner, the command

```
A>DIR PROFIT.*
```

will display the directory for all files with the file name PROFIT on disc drive A, regardless of the filetype.

*The file reference is of the form

drive name : Report . File type
↑ 1 letter ↑ variable. 0-3 letters ↑

The other wild card character is a question mark (?). It is used to indicate that any character is acceptable in the exact position occupied by the question mark (?). Thus, the command

B>DIR W?.COM

will display the directory entries for files on disc drive B with two-character file names that begin with the letter W and that have the filetype COM and the file W.COM (if it exists).

The wild card characters can be combined in the same command. For example, the command

A>DIR W???.*

will display all files on disc drive A with four-, three-, two-, or one-character file names that begin with the letter W, regardless of the filetype.

The next four pages contain a detailed description of the six commands.

DIRectory Command

Displays a list of file names (of files that are recorded (are present) on a disc.

SYNTAX: (of the command - the form of the command)

DIR drivename:filename.filetype

(drivename: one letter A or B; filename: 1 to 8 letters; filetype: 0 to 3 letters)

EXAMPLES: To list all the file names on the disc in disc drive A, type:

A>DIR [RETURN]

To list the file names on the disc in disc drive B, type:

A>DIR B: [RETURN]

Output (on the screen resulting) from the DIRectory command is a multi-column list of file names, such as the one shown below. Note that for each file, the file name, and file type (if present) are listed. (used)

A colon separates the columns of file names in the listing. that is displayed when the command is executed.

```
SALES       BAR : QUOTA      PIE  : FORECAST PIE
$ALES       PIE : FORECAST   TXT  : MEMO1
MEMO2           : MODEL      VC   : SLSFCST  VC
WORKSHEET   VC  :                 :
```

vice versa.

To list all files with a filetype of "PIE", type:

A>DIR *.PIE

This displays all files whose type is specified as PIE.

ERAse Command

Executing this commands
Removes a file, from the disc. designated.

SYNTAX: the named form of command
ERA drivename:filename.filetype
A or B up to 8 letters up to 3 letters

NOTES: When a file is removed from the disc, the space that it occupied is available for re-use. Remember that when a file is removed, it is gone forever. Be sure you will not need that file again before you erase it.

EXAMPLES: To remove the file named ABC from the current disc, type: which is

A>ERA ABC [RETURN]

To remove the file named XYZ.TXT on the disc in disc drive B, type:

A>ERA B:XYZ.TXT [RETURN]

To remove all files on the current disc, type:

A>ERA *.* [RETURN]

NB Do not use on drive A with system disc in place. (ok if tab over slot in disc)

Since this a rather catastrophic action, the system asks you to verify that you really want to erase everything on the disc:

```
ALL (Y/N)?
```

Type "Y" and press the [RETURN] key to go ahead with the erasure, type "N" and press the [RETURN] key to cancel the command.

RENname Command

Changes the name of a file.

SYNTAX: (form of instruction)

```
REN drivename:newfilename.filetype=
    drivename:oldfilename.filetype
```

NOTES:

Once you execute the REN command, the old file name will be replaced by the new file name. The file contents will not be changed in any way.

You cannot 'rename' a file from one disc to another disc.

EXAMPLES:

To rename a file on the disc in disc drive A that is named "FRONT.TXT" to "BACK.TXT", type:

```
A>REN BACK.TXT=FRONT.TXT      [RETURN]
```

To perform the same renaming operation on the disc in disc drive B, type:

Select Disc B →

```
A>B:
B>REN BACK.TXT=FRONT.TXT [RETURN]
                or
A>REN B:BACK.TXT=B:FRONT.TXT    [RETURN]
```

SAVE Command

NOTES: Saves one or more 128 byte blocks of the local computer memory to a disc.

This command is used by programmers for saving certain portions of the local computer memory on flexible disc. For a full explanation of this command, see the System Reference Manual.

USER Command

NOTES: Defines a user file number identification.

This command is part of the standard CP/M operating system for use in other hardware environments. For a full explanation of this command, see the System Reference Manual.

TYPE Command

Displays the contents of a disc file on the currently selected display device (usually the display screen).

SYNTAX: TYPE drivename:filename.filetype

NOTES: The TYPE command can be used to view any file that has been created; it prints the file as it is actually stored on the disc.

EXAMPLES: To display the file NAM.TXT stored on the disc in disc drive B, type:

A>TYPE B:NAM.TXT [RETURN]

Note: Some types of files (such as .COM files which contain application programs) do not contain printable data. Displaying these files with the TYPE command will produce an unintelligible screen display.

CP/M Control Characters

Certain special functions under CP/M can be activated using "control characters". Examples include editing a CP/M command line, temporarily halting system printout, etc. Table 4-4 lists these control characters and their functions. (A control character on the keyboard is typed by holding down the [CTRL] key simultaneously with another key.) These conventions are followed by many CP/M programs. Due to the powerful terminal features of the HP 125 most of the control codes are not needed by the user.

Table 4-4. CP/M Control Characters.

CHARACTER	FUNCTION
CTRL-C	Stops any CP/M program or utility currently executing and reloads the CP/M operating system.
CTRL-E	Allows you to type a longer command line than the display screen's line length. The cursor goes to the next line, but the line is not transmitted until the [RETURN] key is pressed.
CTRL-H	Erases the previous character typed from memory and the screen. It is the same as the [BACK SPACE] key.
CTRL-J	Causes the cursor to move to the next line (a linefeed). The command is terminated and control is returned to CP/M. This is the same as the [RETURN] key.
CTRL-M	Causes the cursor to move to the beginning of the command line (a carriage return). The command is terminated and control is returned to CP/M. This is the same as the [RETURN] key.
CTRL-P	Copies future data typed and displayed on the screen to the currently assigned list device (printer); the data is sent to both the list device and the display screen. If CTRL-P is pressed again, the data will not be copied to the list device.

Table 4-4. CP/M Control Characters (Continued)

CTRL-R	retypes the current command line, as it appears in memory, on a clean line.
CTRL-S	Stops the display screen output temporarily. By pressing CTRL-S again, the program will continue to execute and output.
CTRL-U	Erases the current command line from memory. The cursor moves to the next line, and a pound sign (#) is displayed to indicate a new command can be entered.
CTRL-X	Backspaces the cursor to the beginning of the command line, which deletes the line.
CTRL-Z	Terminates the insert (input) operations used in the PIP Utility.

Stopping a Program Under CP/M

You can generally stop a CP/M utility while it is running by typing CTRL-C control character. CTRL-C will halt program execution, and reload the CP/M operating system. Some programs, however, 'lock out' the effect of CTRL-C. Refer to the manual for each application program to verify how to exit that program. Some utilities, such as DIR or TYPE can be terminated by pressing virtually any key, such as the spacebar.

If a CP/M program is generating output on the display screen, you can usually temporarily halt its output to view the information by typing the CTRL-S key. Typing CTRL-S the first time will halt the program and its output. Typing CTRL-S will resume program execution and output.

CP/M Printer Echo Feature

You can cause all data typed and displayed on the screen to also appear on the CP/M General List Device (normally a printer) by typing the CTRL-P key sequence. After you type CTRL-P the first time, all future data typed and displayed is "echoed" to the printer. Typing CTRL-P a second time will stop the echoing operation. Some application programs disable this function while executing.

Editing CP/M Command Lines

Some CP/M commands can become quite lengthy, especially when multiple file names or command options are used in a single line. Several CP/M control characters are available to edit these long commands. The simplest form of command editing is to backspace (using the [BACK SPACE] key) and retype the characters in error. Typing CTRL-H will also backspace one character each time it is typed.

If your command line becomes hard to understand on the screen because of extensive editing, typing CTRL-R will retype the command line, including all edits to that point, on a clean line. If the command line becomes too unwieldy to edit, and it would be easier to start over again from the beginning of the command, the CTRL-U and CTRL-X characters allow you to start over again on a clean line.

If your command line exceeds 80 characters or the right margin, typing CTRL-E as you approach the right screen margin will move the cursor to the beginning of the next line on the screen. CTRL-E only moves the cursor on the screen so that you can see the command clearly; it does not transmit the command line. The line is transmitted when the [RETURN] key is pressed. CTRL-E does not add a space. CTRL-E is usually not required due to the terminal's automatic line wrap-around feature.

Two additional control characters are included for compatibility with other versions of CP/M, although they will seldom be used on the HP 125. Typing CTRL-J terminates a command line with a line-feed character only. Typing CTRL-M terminates a command line with a carriage return. Generally, you would terminate a command line by simply using the [RETURN] key.

System Utilities for Disc Management

There are four system utilities that run with CP/M that help you manage and manipulate your discs, as shown in Table 4-5.

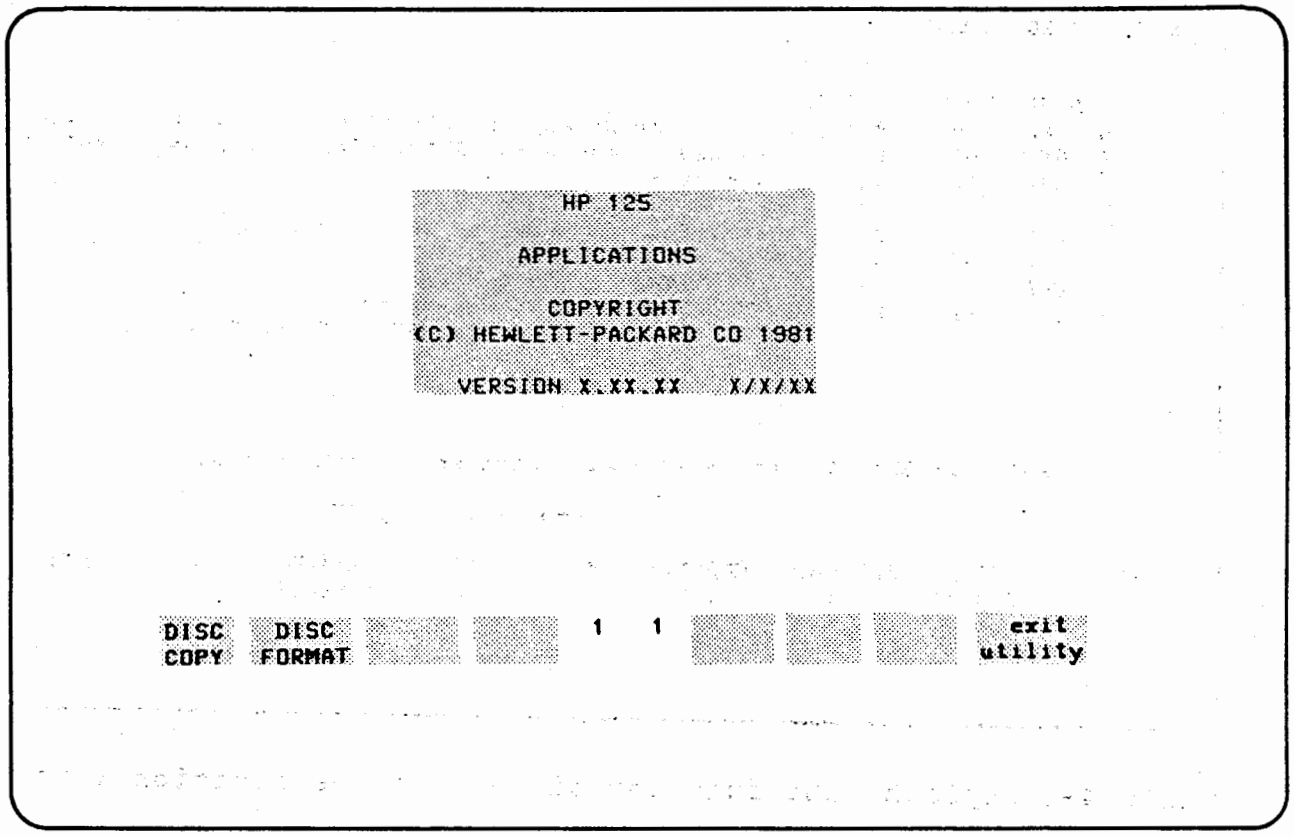
Table 4-5. CP/M System Utilities

UTILITY	WHAT IT DOES
DISC FORMAT	Prepares the disc for use by the HP 125 system.
DISC COPY	Copies the contents of one disc onto another disc of the same size.
PIP	Copies individual files from one file to another, or from the disc to another peripheral.
STAT	Displays status information about a disc and its files; it also changes device assignments.

Formatting a Disc

Before using a disc to store data or program information, the disc must be "formatted" for use by the HP125 system. The Disc Format utility performs the formatting. The formatting process checks each disc track (like the tracks on a phonograph record) for defects and then establishes a directory where file names and other information will be stored.

The Disc Format utility is accessed through the Welcome Menu or by typing in FORMAT and pressing the [RETURN] key as a CPM command. You will notice that key [f1] on the menu is labeled UTILITY/125. Press the [f1] key to load the standard utilities that come with your system. When the utilities are loaded, your screen will look like this:



If you want to format a disc, press the [f2] key to invoke the Disc Format utility program. The following menu and function keys are displayed:

```
HP 125 DISC FORMAT                                        Ver. 1.00  A2130

                IBM  ~~05~~ 04

      DISC  TYPE  STAGGER
  A   OFF   HP    04          Turn ON appropriate discs. Set type and stagger
  B   ON    HP    04        as needed and press START  Program to begin selected
  C   OFF   HP    04        operation.
  D   OFF   HP    04
  E   OFF   HP    04        INIT Program requires selecting:
  F   OFF   HP    04
  G   OFF   HP    04             TYPE    - HP or IBM
  H   OFF   HP    04             STAGGER - 1 through 10
                                            Optimum STAGGER for 8" discs is 06 ~~08~~

        WARNING: Selected Program is attempted on all 'ON' Discs.

                                        Program:  INIT

 USER   NEXT    PREVIOUS  RESTORE   4   8  START   CHANGE          EXIT
 INFO   CHOICE  CHOICE    MENU              PROGRAM PROGRAM
```

Table 4-6 explains the function of each of the function keys.

Table 4-6. DISC FORMAT Function Keys

LABEL	FUNCTION
USER INFO	Prints further instructions on disc formatting.
NEXT CHOICE	Cycles forward through all the choices for the current field in the menu.
PREVIOUS CHOICE	Cycles backward through all the choices for the current field in the menu.
RESTORE MENU	Re-displays the Disc Format Menu on the screen.
START PROGRAM	Starts the DISC FORMAT operation.
CHANGE PROGRAM	Moves to the next program option.
EXIT	Ends the DISC FORMAT utility and returns to the Welcome Menu.
STOP CURRENT	Interrupts the DISC FORMAT program, and aborts the formatting operation on the disc drive currently being formatted. Formatting of the disc in the next selected drive will continue.
STOP ALL	Aborts the current formatting operation.
CONTINUE	Continues the DISC FORMAT program after it has been stopped.

Now you are ready to begin formatting the disc. Just follow the steps listed below:

1. If you are formatting a flexible disc, insert the disc you want formatted into the appropriate disc drive with the label on top; otherwise proceed to step #2.

2. Make the necessary changes on the menu so that the following information is reflected:

   (a) the disc drive(s) holding the disc(s) to be formatted is turned ON;

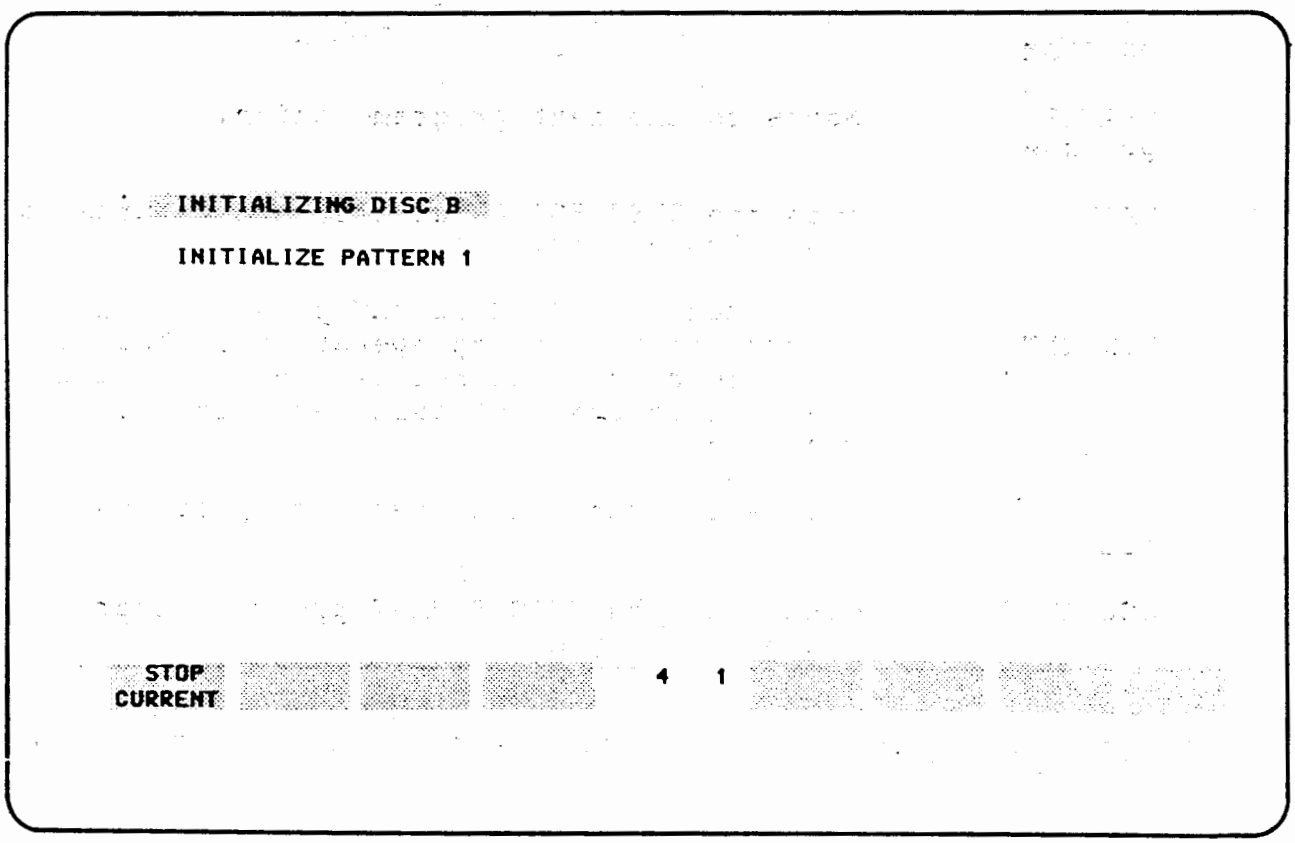
   (b) the type of disc (HP or IBM) is noted for each drive

(c) the appropriate stagger is specified. (Stagger is the number of sectors separating one logical sector from the next on the disc drive; suggested values are 6 for 8" discs, 4 for 5-1/4" discs.)

Physical one

To make the necessary changes on the menu, use the TAB key or the cursor keys to move to the field you want to change, then press the function keys labeled NEXT CHOICE or PREVIOUS CHOICE until the value you want in the field is displayed.

3. Press the function key labeled START PROGRAM ([f5]) to start the DISC FORMAT program. The screen will look like this while the disc is being formatted if the disc was blank:



Note

If there is no disc in one of the drives set ON, the following message will appear on the screen:

INITIALIZING DISC

DRIVE or DISC NOT AVAILABLE

If you start to format a disc that has already been formatted, the program will stop and display the following message:

Disc Type: HP - Double Sided

(or)

Disc Type: IBM - Single Sided

Select Function to continue__

STOP CURRENT | STOP ALL | 4 | 30 CONTINUE | EXIT

Your options are: (1) to continue to run the program and reformat the disc; (2) to stop formatting the current disc and proceed to the next disc; or (3) to stop the entire formatting operation.

If you choose CONTINUE, the disc will be reformatted.

Note

Reformatting a disc that has already been formatted will erase <u>all</u> information, programs and data stored on the disc. Be <u>certain</u> there is no useful data remaining on a disc before responding with the CONTINUE function key.

If you choose STOP CURRENT, the message

OPERATION ABORTED - DISC X

is displayed (where X is the current disc drive). The program then tries to format the next disc selected in the menu if more than one has "ON" indicated.

If you choose STOP ALL, the same message is displayed, and the following functions are available:

RESTORE MENU	to return to the Disc Format Menu
START PROGRAM	to continue with the formatting
EXIT	to return to the Welcome Menu

Backing up your Discs

Discs do "wear out" after continuous use, and should be discarded if they show signs of wear or begin to produce disc errors. Therefore, it is {very} important that you make duplicate (or backup) copies of your operating system and important files, in case something happens to your original discs. It is a good idea to keep at least two versions of each disc that contains critical programs or data. Your original HP supplied system and Application Discs should be stored as back-ups.

To backup your operating system and/or the files on a disc, you must first format the new disc, as described in the previous section.

Note

The DISC COPY program will allow you to back up a disc only if both discs are the same size and same format. However, it will allow you to copy the operating system from 5 1/4" flexible disc (or 8" flexible disc) to a fixed disc drive or vice versa, if the disc is in HP format.

To copy a disc onto another (formatted) disc, with the Welcome Menu on the screen, follow these steps:

1. Press the key labeled UTILITY/125.
2. Press the [f1] key to initiate the DISC COPY program, and the Disc Copy Menu will be displayed as shown below, along with the function keys described in Table 4-7. Alternately, the command COPY [RETURN] may be entered in response to the CP/M prompt.
3. Make any necessary changes in the menu by pressing the appropriate function key, then press key [f5] to start copying.

4. Insert the source and destination discs when requested to do so, then press [f5] (PROCEED W/ COPY or PROCEED W/ VERIFY). If you need to make additional changes in the menu options, you must return to the Disc Copy Menu by selecting the key labeled "main menu".

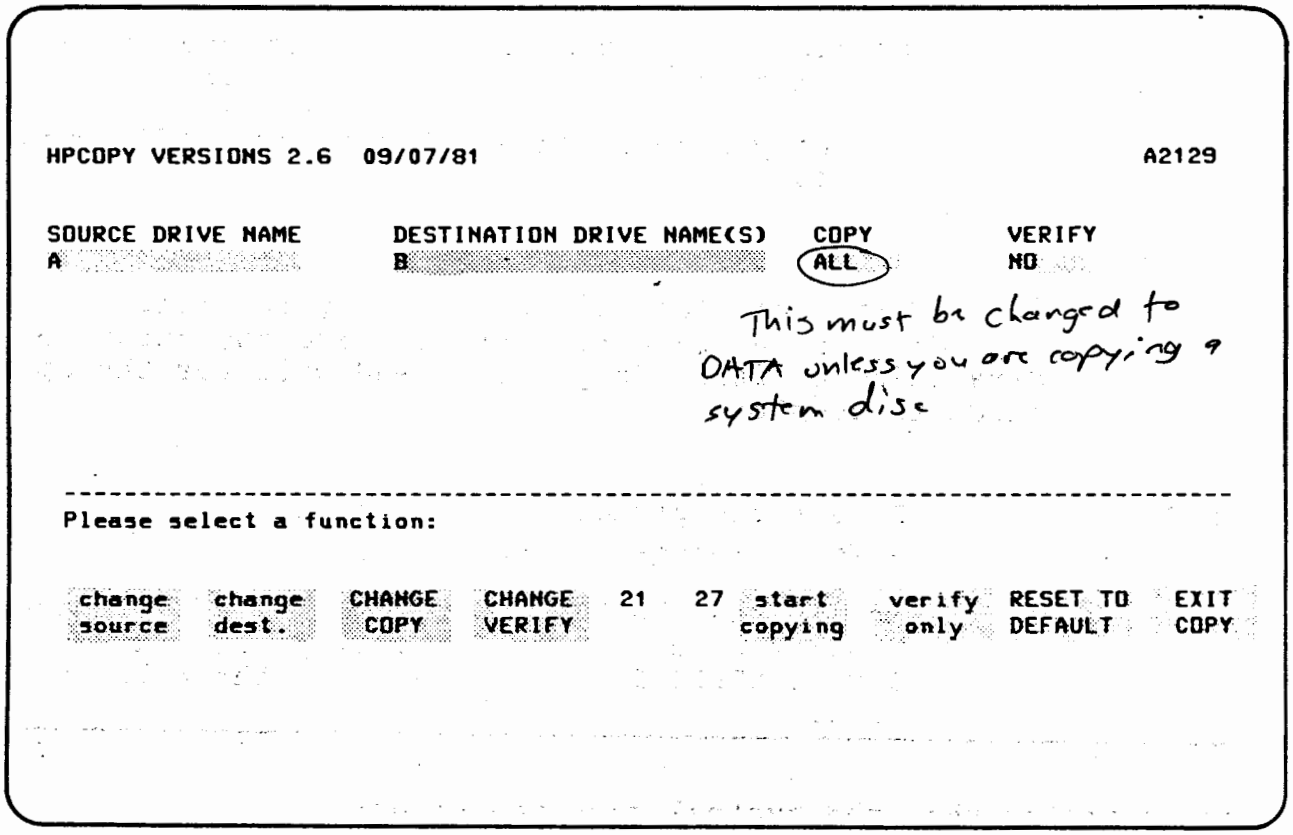


Table 4-7. Copy Functions

LABEL	FUNCTION
change source	Asks for the new source drive name.
change dest.	Asks for the new destination drive name. Multiple destinations can be specified at one time by entering more than one disc drive name, separated by commas; e.g., B,C,D. In this case the information is duplicated on each flexible disc, one after the other.
CHANGE COPY	Cycles through the three copy options: ALL, SYSTEM, and DATA. ALL copies both the operating system and data files ; SYSTEM copies just the operating system; and DATA copies just the data files.

Table 4-7. Copy Functions (Continued)

LABEL	FUNCTION
CHANGE VERIFY	Changes the verify option (YES or NO). If the verify option is YES, the data copied onto the destination disc will be compared with the same data on the source disc, to verify proper copying.
start copying	Starts copying the file(s) and/or operating system as specified by the copy option.
verify only	Allows you to compare files on two different discs.
	Note Copying and Verification can take several minutes depending on the size of your disc and the amount of data being copied. Be patient, and wait for the operation to complete.
RESET TO DEFAULT	Resets the parameters in the menu to their default values.
EXIT	Terminates the DISC COPY program. Clears the display screen, displays the message "HPDISC COPY COMPLETED", and returns to the Welcome Menu.

Some examples show the typical copy sequences:

The examples assume that a copy from drive A to drive B is being done. If you proceed with the copy, the message "Reading directory in progress" is displayed on the screen. Once the directory has been read, the message

Copy in progress from drive A to drive B

is displayed. Finally, when the copy is complete, the message "FUNCTION COMPLETE" is added to the above message.

If a blank disc or no disc is in one of the specified drives, the message

"X DRIVE OR DISC NOT AVAILABLE "

will be displayed, where x is the disc drive causing the error.

Note

Hewlett-Packard application programs are protected to prevent accidental erasure. Because of this, COPY will not copy HP applications programs. Any data will, however be copied.

To obtain a backup copy of these applications, the master disc must be used to install a copy onto a work disc.

If you have specified that you want to verify the files you are copying, the following message is displayed at this time:

Verify in progress from drive A to drive B

Once the disc is verified, the message "FUNCTION COMPLETE" is added to the above message. If the discs are not the same, the message "VERIFY FAILED" will be added to the message, instead.

The following functions are available after the copy and/or verify are complete:

main menu	to return to the Disc Copy Menu to make changes needed for the next copy
PROCEED W/COPY	to copy another disc with the same menu options
or	
PROCEED W/VERIFY	to verify another disc with the same menu options
EXIT COPY	to terminate the DISC COPY program and return to the Welcome Menu.

The only functions available during a copy or verify are the STOP function key, which interrupts the current operation, and the EXIT COPY function key, which terminates the DISC COPY program and returns to the Welcome Menu.

If you press the STOP function key during the copy or verify operation, the following functions are available:

CONTINUE	to continue the current operation
CONFIRM STOP	to terminate the current operation and then return to the Disc Copy menu or exit from the DISC COPY program.
EXIT COPY	to terminate the COPY program and return to the Welcome Menu.

PIP File Copy Utility

PIP (Peripheral Interchange Program) is a standard CP/M utility program separate from UTILITY/125 that is used to copy individual files from one flexible disc to another, combine files, and copy files to or from other peripheral devices such as the printer.

PIP can be executed as a single system command or it can be run as a program. If it is run as a program, PIP takes control over the HP 125, accepting successive PIP commands until you indicate that you want to leave PIP by pressing the [RETURN] key in response to the PIP prompt (*).

The HP 125 System Reference Manual has further details on PIP than those presented here.

Using PIP as a Command

When PIP is entered as a single line command, the syntax is as follows:

```
PIP newfilename=oldfilename1 [mod],oldfile name2,...
```

where the parameters are:

newfilename The name to be assigned to the new file(s). This can include device: filename.filetype where any part can be defaulted to the old file name by not including it in the newfilename. This can also be a device as described below under COPYING TO DEVICES.

oldfilename The file(s) which are to be copied. If "*" or "?" is used in the file name then more than one file may be indicated.

More than one oldfilename can be specified, separated by commas, in order to combine files into the newfilename file. This can also be a device as described under COPYING TO DEVICES.

mod — The name of the PIP parameter that modifies the copy operation. [Optional]. Refer to the HP 125 System Reference Manual for further details.

When you are entering the command line, the total line length cannot exceed 255 characters. However, you can force a physical carriage return for lines that do exceed 80 characters by pressing the [CTRL] key and typing "E" simultaneously. This is not necessary if cursor wrap-around is enabled.

Using PIP as a Program

To execute the PIP utility as a program, enter the command PIP and press the [RETURN] key. PIP responds with an asterisk (*) prompt. Enter the same parameters to specify each PIP copy operation in exactly the same form as described above. You get back to CP/M from PIP by responding with the [RETURN] key when the prompt (*) is displayed. *

COPYING A FILE. A particular file can be copied to another disc or to the same disc (if you change the file name). When you copy a file, the original file is not altered in any way. It remains in the previous location after executing PIP.

* This wont work— get the * prompt — but drive continues & returns to the WELCOME menu from selected disc. So not usable as pgm ---?
(A.01.20 Version of op. system.)

To copy a file named BARB.LIS from disc drive A to disc drive B without changing the name, enter:

```
A>PIP B:BARB.LIS=A:BARB.LIS        [RETURN]
A>
              or
A>PIP B:=A:BARB.LIS                [RETURN]
```

To copy a file named BARB.LIS from disc drive A to disc drive B and change the name to BLUE.NAM, enter:

```
A>PIP      [RETURN]
*B:BLUE.NAM=A:BARB.LIS     [RETURN]
*      [RETURN]

A>
              or
A>PIP B:BLUE.NAM=A:BARB.LIS    [RETURN]
```

COPYING SEVERAL FILES. To simplify the copying of several files, PIP will allow you to use the two wild card characters described earlier.

Assuming that disc drive B contains the following files:

```
FILEA.NAM
FILEB.NAM
FILEC.NAM
BARB.LIS
GRADE.TXT
NEXT.NAM
```

To copy the three files (FILEA.NAM, FILEB.NAM and FILEC.NAM) from disc drive B to disc drive A, enter:

```
A>PIP A:=B:FILE?.NAM      [RETURN]
A>
```

to copy all files on drive B with filetype NAM to drive A, enter:

```
A>PIP A:=B:*.NAM      [RETURN]
A>
```

To copy all files from disc drive A to disc drive B, enter:

```
A>PIP B:=A:*.*      [RETURN]
A>
```

COMBINING FILES. To combine more than one old file into a single new file, the new file name is written as before, and the old file names are entered serially, separated by commas. Each old file is processed separately, so it is possible for each to be on a separate disc. The new file is constructed from the old files in the order you entered them in the command.

To combine files ZAP.ASM, ZAPR.ASM and ZAPPER.ASM from drive B into a new file (NEW.ASM) on the same disc, enter:

```
A>PIP B:NEW.ASM=B:ZAP.ASM,B:ZAPR.ASM,B:ZAPPER.ASM
A>
```

To combine file BETA.BAS from drive B with ALPHA.BAK from drive A and BRAD.LOW from the (C) disc into a new file NEW.BOB on disc drive B, enter:

```
C>PIP B:NEW.BOB=B:BETA.BAS,A:ALPHA.BAK,BRAD.LOW
C>
```

Make sure PIP.COM exists on drive "C". If PIP.COM is not a file on drive C, the system will respond with PIP? and then return control to the CP/M prompt.

COPYING TO DEVICES. PIP allows you to copy files to and from physical and logical devices that are attached to your system. To copy a file to/from a particular device, you must reference either the physical or logical device name. The physical device name is the actual name of the device attached to your system; the logical device name is the name you assign to a particular device on your system. CP/M recognizes the following logical device command names:

CON:	The system display screen and keyboard (Input/Output device).
RDR:	An input device which reads data into the system, such as a remote terminal.
PUN:	An output device which writes data, such as a printer connected to a remote terminal.
LST:	This is an output listing device, typically a printer.

and the following physical device names:

TTY:	General List Device
UL1:	HP-IB Printer Device
CRT:	Internal Printer
LPT:	Serial Printer

To copy the file BARB.LIS from disc drive B to the display screen, enter:

```
A>PIP CON:=B:BARB.LIS
A>
```

STAT Disc Status Utility Program

STAT is another utility program that is separate from UTILITY/125. It is used to display general statistical information about file storage.

To execute STAT, simply enter a single line showing the command name (STAT) and the command line as follows:

STAT drivename:filename.type { $S / $R/O / $R/W }

where the parameters are as follows:

drivename	The name of the disc drive A, B, etc.) . Whenever the drive name is omitted, the current drive is used.
filename	The name of the file.
type	The type of file.
$S	Causes the "Size" field to be displayed.
$R/O	Places the file or set of files in a read-only status until changed.
$R/W	Places the files in a permanent read/write status.

Note that other parameters can be included with the command. These are explained in the System Reference Manual.

STATUS OF A PARTICULAR DISC DRIVE. The status of a disc drive is requested by entering the command "A>STAT X" where X is the disc name for the desired disc. A message will be displayed that looks like this:

BYTES REMAINING ON X: 48K

Space on the disc is measured in "Kbytes" (thousands of characters). A 5-1/4 inch flexible disc can hold up to 264 Kbytes (248 Kbytes are in the data file area). An 8 inch flexible disc can hold about 1,125 Kbytes (1,104 Kbytes are in the data file area). A fixed disc can hold up to 4,500 Kbytes (4,416 Kbytes are in the data file area).

STATUS OF A PARTICULAR SET OF FILES. When the status of a set of files is requested, the files are listed in alphabetical order, with storage requirements for each file, as in the example below.

REC BYTS EX D:FILENAME.TYP

where the meaning of the various column are:

RECS	is the number of 128-byte records allocated to the file.
BYTS	is the number of kilobytes (K) allocated to the file.
EX	is the number of extensions (pieces) to the file.
D	is the disc drive name containing the file.
FILENAME	is the file name (up to eight characters).
TYP	is the type of file (up to three characters).

EXAMPLES

To display the storage remaining on all active drives, enter:

A>STAT [RETURN]

To display the status of the file named LST on disc drive B, enter:

A>STAT B:LST [RETURN]

To place the file named BRAD.DOC in a read-only status,enter:

A>STAT BRAD.DOC $R/O [RETURN]

To list the disc drive characteristics for all currently active drives, enter:

A>STAT DSK: [RETURN]

To list the status of all files on a disc drive, enter:

A>STAT *.* [RETURN]

Two more CP/M utilities included with the system disc that came with your HP 125 are SUBMIT and XSUB. These programs may be used by commercially available programs or by knowledgeable CP/M programmers. A full explanation of each command is in the "System Reference" manual.

USING THE HP 125 AS A TERMINAL

The HP125 is a very versatile system. Not only is it a powerful personal office computer, but it can also be treated as an interactive terminal. As a terminal, it can be operated in one of two operating modes: Local Mode or Remote Mode. These modes are selected through use of the [MODES] key.

Local Mode allows you to operate the system as a stand-alone "electronic typewriter". To select the Local Mode, press the [MODES] key to display the Modes labels, then disable both Remote Mode and Local Op Sys Mode. When they are disabled, the labels for these keys will not contain an asterisk.

Remote Mode allows your HP 125 to communicate as a computer terminal with another computer system, commonly referred to as the "host" system. To select Remote Mode, press the [MODES] key to display the Modes labels; then, if no asterisk is present in the REMOTE label, press the [REMOTE MODE] function key to select this mode.

Local Mode

By using your system in Local Mode, you are treating it as a stand-alone electronic typewriter, using the keyboard, display screen and display memory {only}. One of the potential HP 125 applications in this mode is data entry, where data is entered using the keyboard. The data can be sent to the local or remote computer, printed out on a printer, or both(refer to Chapter 7). For example, select Local Mode and enter the following name and date anywhere on the screen:

Brad Booth September 1981

If you make an error or wish to change an entry you have made (while in Local Mode only), you can use any of the cursor or editing keys discussed in Chapter 2 to make the correction. For example, to add the middle initial "D" to the name in the previous example, move the cursor under the "B" in Booth, press the [INS CHAR] key, and type "D." and a space. Press the [INS CHAR] key again to "turn off" the insertion mode.

REMOTE Mode

By using your system in Remote Mode, you have the capability of connecting the "terminal portion" of the HP 125 system to another computer system. This connection can be wired directly, or it can be made by telephone with the aid of a modem.

If a modem is used, it may be necessary to:

- Turn on the modem.
- Check modem speed and parity settings.
- Dial a telephone number.

The baud rate and parity settings on the modem shall be the same as those set for the HP 125. These settings can be observed by displaying the Data Comm sections of the Configuration Menu (see Chapter 9).

Note

> You will find that there are several ways of preparing your System Processor for use while in Remote Mode: You must select the necessary equipment and cables, and then physically connect the System Processor to the computer (or modem).

No special action is required to send or receive data between the computer and the display screen. When the terminal is in Remote Mode, data is normally displayed on the screen as it is received.

When data is transmitted from the display to the remote computer, the first column of each line to be transmitted is determined by the column set as the Start Column in the Configuration Menu (see Chapter 9). Normally, this is column 1.

The terminal portion of your HP 125 can also be used to automatically reroute data from the remote host computer to the internal printer, to an external device, or both. You can choose to log data as it is entered from either the top or bottom of display memory (see Chapter 7).

CHAPTER 6

ADDITIONAL EDITING FEATURES

The HP 125 features an extensive set of editing capabilities which are accessed directly through keys on the keyboard. These capabilities (for cursor movement, display control, text insertion/deletion, etc.) were described in the discussion of the keyboard in Chapter 2. In addition, there are several editing features of the HP 125 that are accessed via function keys. These include margin and tab setting, display of enhanced text on the screen, and the "modify mode" that permits effective use of the HP 125 local editing capabilities while in Local Op Sys or Remote Mode.

Setting Margins and Tabs

You can simplify data entry in many cases by setting margins and tabs. First, press the [AIDS] key, then press the margin/tab/col function key. Table 6-1 shows the margin tabs function keys. Key [f1] (START COLUMN) is not included since it does not concern margins or tabs; it is discussed later in this chapter.

Table 6-1. Margin/Tabs/Col Functions

SET TAB	Sets a tab in the column in which the cursor is located.
CLEAR TAB	Clears the tab from the column in which the cursor is located.
CLEAR ALL TABS	Clears all tabs which were previously set.
LEFT MARGIN	Sets the left margin at the current position of the cursor.
RIGHT MARGIN	Sets the right margin at the current position of the cursor.
CLR ALL MARGINS	Clears the left and right margins, and resets the left margin at column 1 and the right margin at column 80.

SETTING TABS. To set a tab, move the cursor to the desired column and press the SET TAB function key.

USING TABS. Once the tab positions have been set, you can use the [TAB <] and [TAB >] keys in the same manner that you would on a typewriter. You can tab backwards to the previous tab position by using the backtab key in the numeric keypad, or by pressing the [TAB<] key at the left of the keyboard while holding down the [SHIFT] key. When you are at the first tab position in a line and you backtab, the cursor moves to the last tab position in the previous line. Once the cursor has reached the first tab position in the first line of display memory, no further back-tabbing movement is made. The CP/M operating system, many utilities and CP/M programs automatically set the tabs every 8 characters for forward tabs.

CLEARING TABS. You can clear individual tabs by moving the cursor to the tab position and pressing the CLEAR TAB function key. All of the tab stops can be cleared at once by pressing the CLR ALL TABS function key. (Notice that there is always a tab at the left margin; it cannot be removed.)

SETTING MARGINS. You can set the left margin by moving the cursor to the desired margin, then pressing the LEFT MARGIN function key.

The System Processor will beep when you are eight characters from the right margin. When the right margin is reached, the cursor will move to the left margin of the next line.

The left margin cannot exceed the right margin. An invalid margin setting will not be accepted and will cause the System Processor to beep.

EXAMPLE

> Set the margins for 40 columns centered on the screen. With the margin/tab/col labels displayed, move the cursor to column 20 and press the LEFT MARGIN function key. Then move the cursor to column 59 and press the RIGHT MARGIN function key.
>
> Place the cursor back at column 20 by pressing the [RETURN] key and begin typing.

CLEARING MARGINS. An individual margin can be cleared by merely setting a new margin. Both margins can be cleared simultaneously by pressing the CLR ALL MARGINS function key.

Adding Display Enhancements

Four display enhancements are available on the HP 125 to use to enhance the data in display memory while in Local Mode:

- Inverse Video (I)
- Underline (U)
- Blink Video (B)
- Half Bright (H)

These display enhancements can be enabled individually or in any combination, such as U, UIB, HU, HUIB, etc. The combination is set by modifying the Configuration Menu (see Chapter 9). The ability to add or remove enhancements can be accessed by pressing the AIDS key, followed by enhance select [f6] function key. The following set of function keys are made available at this point:

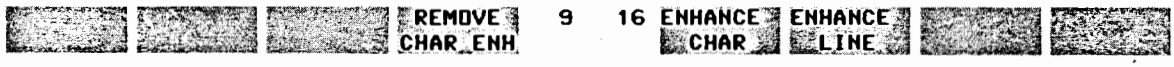


Table 6-2 describes each of these function keys.

Table 6-2. Enhancement Functions

LABEL	FUNCTION
REMOVE CHAR ENH	Removes the currently selected display enhancement from the character above the cursor. The cursor is advanced to the next character.
ENHANCE CHAR	Enhances the character above the cursor with the currently selected display enhancement.
ENHANCE LINE	Enhances all characters from the cursor position to the end of the line with the currently selected display enhancement.

Note: You can change the currently selected enhancement by modifying the enhancement field in the Configuration Menu. However, only one enhancement selection can be used in each line; it cannot be changed in the middle of the line.

For example, to define columns 10 to 15 of line 5 to be underlined and inverse video, you would perform the following steps:

1. Press the [MODES] key and assure that the HP 125 is in Local mode.

2. Press the [AIDS] key to display the primary set of function keys, then press the config function key to display the Configuration Menu.

3. Use the [TAB] key to move the cursor to the Enhancement field.

4. Press the NEXT CHOICE function key to cycle through the enhancement selections until UI (for Underlined and Inverse video is displayed.

5. Press the [AIDS] key again, then press the enhance select function key.

6. Position the cursor at column 10 in line 5.

7. Press the ENHANCE CHAR function key, beginning at the cursor position and continuing through column 15.

8. Type the word COMPUTER, beginning in column 9 of line 5. It should appear as shown below.

```
1    1
0    5

C■■■■■R
```

Modify Modes for Editing

The key-controlled HP 125 editing functions (cursor movement, insertion, deletion, etc.) and the function key editing functions operate on the data contained in display memory. In Local Mode, the editing keys thus have their full desired effect, they modify the contents of display memory, which is the objective of Local Mode editing. However, in Remote Mode or Local Op Sys Mode, the editing features affect only the contents of display memory -- that is, they modify the appearance of the data on the screen, but the computer (the host or local HP 125) "sees" only the characters you type, in the order that you type them.

An example will illustrate this effect. Place the HP 125 in Local Op Sys Mode, and get the CP/M "A>" prompt on the screen. Using the cursor control keys, type the letter "D", move the cursor one additional space to the right, type the letter "R", move the cursor back two spaces to the left, and finally type the letter "I". Your screen will display the letters "DIR" based on your use of the HP 125 editing keys, but you actually typed the characters in the order "DRI". Press the [RETURN] key and see what happens. CP/M received the characters exactly in the order you typed them -- D,R,I -- and did not understand your command, even though on the screen, it appears to be a perfectly fine "DIR" command.

To bring the benefits of the HP 125's editing functions to Remote Mode and Local Op Sys mode operation, the HP 125 has a "Modify Mode" for editing. The operation of Modify Mode is relatively straightforward. When it is activated, character-by-character transmission of your keystrokes to the host system or local HP 125 is temporarily suspended. Instead, you may use all of the HP 125's editing keys to edit the contents of display memory. When you press the [RETURN] key, the line in which the cursor is located is transmitted at once as though you had typed the changes very fast. Modify Mode thus allows you to use the HP 125's full local editing power, and then process the edited results as your input.

Note that, when using either of the two MODIFY modes when in REMOTE mode, the host system may need to provide special control sequences. Refer to Appendix A for information on configuring the HP 125 for the proper handshaking.

To enter Modify Mode, press the [MODES] key, and press the MODIFY LINE function key. An asterisk will appear in the label to indicate that modify mode is in effect. Now edit the contents of display memory. When your editing is complete, position the cursor in the line of the display that you wish to use as your input, and press the [RETURN] key. The line is transmitted when you press the [RETURN] key. Notice that you automatically exit Modify Mode as soon as you press the [RETURN] key -- the asterisk in the function key label disappears to indicate normal editing mode.

If you will be using MODIFY MODE to edit and transmit several lines in succession, enter Modify Mode by pressing the MODIFY ALL function key instead of MODIFY LINE. Again, an asterisk will appear in the label, and you can edit text and press the [RETURN] key to transmit the edited results. But the HP 125 remains in Modify Mode after you press the [RETURN] key, and you can continue editing and pressing the [RETURN] key without having to re-enter Modify Mode. To exit Modify Mode, you must press the MODIFY ALL function key again. The asterisk in the label will disappear to indicate a return to normal editing mode.

The data transmitted under Modify Mode does not necessarily begin with the first character of the line. In many cases a pointer exists which starts transmission at some other column to the right of the first, thus possibly moving only some of the characters printed on a line.

The point is the "start of text" pointer (if there is one), or it is the "start column" if no "start of text" pointer exists. Every line in display memory initially does NOT have a "start of text" pointer. A line only acquires a "start of text" pointer under the following conditions:

- The line which you are editing is at the bottom of display memory (last line).

- A character has been typed from the keyboard (not by the computer) on the line. This character must be alphanumeric, a space, a backspace, or a control character. (The cursor control keys have no effect.) The "start of text" pointer then points to the column number of the first character typed.

If no "start of text" pointer exists for a line then the configuration "start column" is used to indicate from which column to start the transmission. To manually set the "start column" indicator, press the [AIDS] key, and then press the margin/tab/col function key. The START COLUMN key will then be displayed. Move the cursor to the column which is to be the start column and then press the START COLUMN function key. To determine what the current "start column" value is, press the [AIDS] key, and then press the config function key. The "start column" may also be changed by positioning the cursor in the Start Column field on the configuration page and using the NEXT CHOICE and PREVIOUS CHOICE function keys.

CHAPTER 7

USING THE SYSTEM PRINTERS

Printed output from the HP 125 can come from a variety of sources, for example, a copy of the screen display, output from HP 125 applications, or output from a remote computer.

This chapter explains how to initiate printing from each of the major system modes; Local Mode, Local Op Sys Mode (Application Programs and CP/M), and Remote Mode. Slightly different features are available depending on which of these modes is in effect at the time you print. (It is also possible to specify printing programmatically, as explained in the System Reference Manual.)

Printer Identification

The HP 125 identifies the printer(s) on the system by the way in which they are attached. There are three possibilities:

- INTERNAL PRINTER: This printer is built into the System Processor, and is referred to as "INT PRINTER"

- HP-IB PRINTER: A printer that attaches to the System Processor via an HP-IB cable is referred to as "HP-IB PRINTER"

- PORT2 PRINTER: A printer that attaches to the System Processor via an RS-232 cable (usually connected to Data Comm Port #2) is referred to as "PORT2 PRINTER"

If you are unsure of the type of attachment for an external printer, trace the cable from the printer to the HP-IB or PORT2 connector on the back of the System Processor.

Printing in LOCAL Mode

With Local Mode access you can print data from display memory with a few easy steps. This method also works from Remote Mode or Local Op Sys Mode and can be set whenever the [AIDS] function keys are accessible.

- Select a Printer
- Set Page Format for Internal Printer (if present)
- Specify the portion of display memory that is to be printed.
- Select printer top or bottom logging.

Each step is explained below.

Selecting a Printer

The first thing you have to do is select the printer to be used. (In actual operation, you will probably print routinely to one printer, and will leave that printer enabled all of the time.) To select a printer, you must display the printer modes function keys. Press the [AIDS] key, then the printer control function key, and finally the printer modes function key. The printer modes function keys look like this:

printer control	PORT2 PRINTER	HPIB PRINTER	INT PRINTER	103	3	LOG BOTTOM	LOG TOP	REPORT PRINT	METRIC PRINT

INT PRINTER, METRIC PRINT, and REPORT PRINT will appear only if an internal printer is present.

When you initiate printing in Local Mode, the data will be printed on any printer that is enabled at that time. A printer is enabled if an asterisk appears in the function key label for that printer. Thus, more than one printer can be enabled at any one time.

If the printer you want to use is enabled, and the printers you don't want are not enabled, no action is needed. If that is not the case, press the key(s) for the printer(s) you want to enable. An asterisk will appear in each's label. Now press the key(s) for the printer(s) you want to disable. The asterisk will disappear from each's label.

For a printer attached via PORT2, it is also necessary to configure the printer using the config screen. See Appendix A for details.

Setting the Page Format (Internal Printer Only)

The paper in the internal printer is a continuous roll, with no page boundaries indicated. The default page size/format for printing to the internal printer is continuous printing; i.e., there will be no blank space left for page breaks or top and bottom margins. If you want the data printed in "pages", so that the paper can be cut to place in a binder or for whatever reason, you must specify whether the page format is to be REPORT or METRIC.

The REPORT PRINT function key is pressed to specify REPORT format, used most often in the United States. The page size for this format is 66 lines, with three blank lines left at the top and bottom of the page for margins. That means that 60 lines of data are printed on each page. A small "tic mark" is made on the left side of the page to indicate where the paper should be cut to form the page.

The METRIC PRINT function key is pressed to specify METRIC format, used in many European companies. The page size for this format is 70 lines, with three blank lines left at the top and bottom of the page for margins. That means 64 lines of data are actually printed on each page. A tic mark is made on the left side of the page, as in REPORT format, to indicate the page break.

Once a page format is selected, it remains active until explicitly changed. Therefore, in most cases, you would set it once to the format you use, and not change it.

Specifying What is to be Copied

In Local Mode, you can choose to print a single line, a page or part of a page, more than one page, or the entire contents of the HP 125's display memory. You specify what is to be printed by positioning the cursor and pressing one of the COPY keys from the printer control set of function keys.

To print a single line from the screen, move the cursor to the line you wish to print, then press the COPY LINE function key.

To print the data currently displayed on the screen, starting with the current cursor position, press the COPY PAGE function key. To print all the data currently on the screen, move the cursor to the first character in the top row, then press the COPY PAGE function key.

To print all data in HP 125 display memory from the current cursor row through the end of display memory, press the COPY ALL function key. To print the entire contents of memory, home the cursor and then press the COPY ALL function key.

Besides specifying what part of the display memory is to be printed, pressing any of the COPY keys actually initiates the printing operation.

Leaving Blank Lines on Printer Output

You can leave blank lines on printer output using the ADVANCE LINE and ADVANCE PAGE function keys. Pressing the ADVANCE LINE function key will cause the printer to put one blank line on the page. Pressing the ADVANCE PAGE function key will cause the printer to advance to the top of the next page. (The internal printer will advance to the top of the next page if the REPORT PRINT or METRIC PRINT function key is set on. Otherwise, the internal printer will advance a single line in response to the ADVANCE PAGE function key.)

Printer Logging

The HP 125 printer logging feature allows you to automatically generate a printed record (or "log") of your interaction with the host computer. Data keyed at the keyboard, or transmitted to the HP 125 by the host computer, can be logged, line by line, to any HP 125 printer. The printer for logging is selected in the same way as was previously described for Local Mode operation.

Two printer logging options are available: "bottom logging" and "top logging". In bottom logging, each line of data you type and each line of data sent from the host computer is logged as it is typed or received. The lines of data also appear as the bottom line on the display -- hence the name bottom logging. To start bottom logging, press the LOG BOTTOM function key from the "printer modes" keys. An asterisk will appear in the key label, and logging will begin.

Note that when data is being logged from the bottom of display memory, the data already on the screen when you begin is not printed. If you wish to print this data use the [↵] key and COPY ALL function key.

In top logging, data is logged to the printer as it is about to be lost "off the top" of the HP 125's display memory. Recall that the display memory is larger than the screen (about 120 lines of text), and that new data appearing on the bottom of the screen causes the "oldest" data to "roll off the top" of display memory. It is this data that is logged in top logging. To start top logging, press the LOG TOP function key from the printer modes keys. An asterisk will appear in the key label, and logging will begin when display memory is filled.

Note that when data is being logged from the top of display memory and you stop entering data or communicating with the host system, the data remaining in display memory is not logged. Use the COPY ALL or COPY PAGE function key if you need to print that portion of display memory.

Printing in REMOTE Mode

When using your HP 125 in Remote Mode (i.e. connected to another host computer), you can print the contents of display memory by following the same procedure specified for Local Mode. However, an additional option is available if the terminal receives an escape sequence specifying output directly to a device such as a printer. Refer to the "System Reference Manual" for details. Some remote application programs may override or turn off certain printer control options (such as bottom logging) when they are invoked.

Printing in LOCAL OP SYS Mode

While operating under CP/M control, you can print the contents of display memory using the same procedure described for Local and Remote modes. Printer logging can also be enabled while in the CP/M environment, through the function keys previously described. In addition, CP/M has its own "printer echo" capability. And, of course, applications programs (such as Visicalc/125 or Word/125) can provide printed output of their results on any HP 125 printer. Some local application programs may override or turn off certain printer control options (such as bottom logging) when they are invoked.

Selecting a Printer

The printer control function keys are used to select the printer used for copying data from display memory or printer logging, exactly as they are used in Local or Remote modes. Output from the CP/M built-in printer echo feature, or output from applications programs can be printed on the HP 125 'General List Device', or to any specific printer. This General List Device can be set for any printer(s) on your system through the Configuration Menu. See Chapter 9 for information on how to set up the General List Device. Information to properly set the General List Device was also provided as part of the installation instructions when you first installed your printer. The CP/M utility STAT provides yet another method for selecting a printer. See the "System Reference Manual" for details.

CP/M Printer Echo

You can print a copy of all messages sent from CP/M or an application program to the screen, along with all data entered, by setting the CP/M printer echo on. When the echo is on, any character sent to the screen is automatically printed to the CP/M General List Device.

To set printer echo on, press the [CTRL] key (as you would a [SHIFT] key) followed by P. Press the same keys to turn off printer echo.

Printing from a Software Application

When you want to print data from a software application (such as Visicalc/125 or Word/125), you access the printer through a set of function keys and/or commands that are built into the application. For further information on printing data from a particular software application, refer to the application manual for the application being used.

CHAPTER 8

DEFINING FUNCTION KEYS

Function keys are one of the most powerful features of the HP 125. Through labels presented on the bottom two rows of the display, the function keys offer simple, push button choices to guide you through most HP 125 operations. As you have already seen in previous chapters, the [AIDS] key brings a set of typing and operational aids to the function keys. The [MODES] key brings a second set of labels, concerned with editing and operational modes of the system.

Pressing the [USER KEYS] key brings a third set of labels to the screen. Applications programs executing on your HP 125 or on a remote computer can use these "user-defined" keys to provide their own push button choices. The Welcome Menu and WORD/125 display screen are examples of this use of function keys.

You can also use the HP 125's function keys as typing and operational aids, defined manually by you from the keyboard. You can set the keys to print commands, perform editing operations, etc.

This chapter shows you how to define the eight keys from the keyboard. (For instructions on defining the keys from a program, consult the System Reference Manual.)

To define your own function key the following three things must be decided:

- the contents, or definition, of the key (that is, "what happens" when you press it);
- whether the key contents are to be executed locally, treated as normal keyboard input, or transmitted to local CPU or a remote computer;
- the label that will be displayed at the bottom of the screen for the key.

You provide this information by entering a special Key Definition mode, then filling in fields on a menu. The procedure is explained in detail on the next few pages.

Key Definition Mode

To begin defining the function keys, press the [SHIFT] and USER KEYS] keys simultaneously. The User Keys Menu then appears on the screen (Figure 8-1).

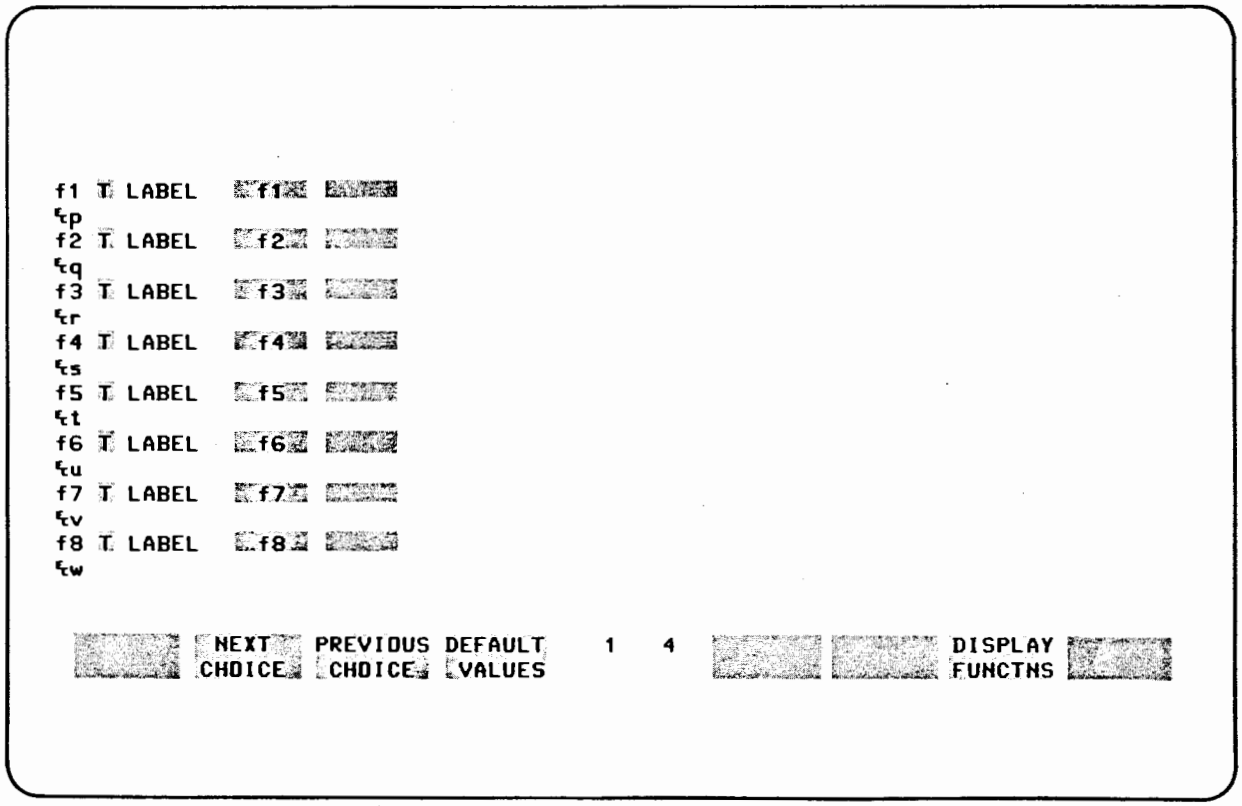


Figure 8-1. User Keys Menu

The menu contains the three fields that are to be filled in for each key:

- attribute field
- label field
- key definition field

Entering the Attribute

The attribute field is a one-character field that contains three possible values:

L	indicates that the key definition is to be executed locally. The definition operates in the terminal portion of the HP 125, but is not transmitted to the "system" portion or to a remote computer.
T	indicates that the key definition is to be transmitted as a block to the "system" portion of the HP 125, or to a remote computer and not displayed on the screen locally.
N	indicates that the key definition is to be treated as normal keyboard input; in local mode, the key contents are executed locally, whereas in remote mode, the key contents are transmitted to the remote computer. When the system is in remote mode and local echo is ON, the key content is transmitted to the remote computer and executed locally.

Enter the desired attribute in this field by using the NEXT CHOICE or PREVIOUS CHOICE function keys to cycle through the three possible values until the desired value is displayed.

Entering the Key Label

The key label is entered in two parts: the first part is the top line of the label, and the second part is the bottom line. Each part can be up to 8 characters long.

Entering the Key Definition

The key definition field is the entire line immediately below the attribute and label fields for the specific key. It stores the character string that is displayed, executed, and/or transmitted when the function key is pressed.

The key definition consists of a string of up to 80 characters or control codes (such as carriage return or line feed). In addition to alphanumeric and control characters, the key definition may contain explicit escape sequences. The DISPLAY FUNCTIONS key is used in this case to generate the escape sequence in the key definition field. See the System Reference Manual for an explanation of escape sequences.

Available Function Keys

While in key definition mode, four function keys are available. NEXT CHOICE and PREVIOUS CHOICE have already been explained. The other two keys and their functions are:

DEFAULT VALUES	Displays and sets the default values for the type, label, and character string for all keys as shown in Figure 8-1.
DISPLAY FUNCTNS	Alternately enables and disables Display Functions mode. When disabled (the default state), the keyboard control or cursor control keys perform their normal functions immediately (e.g., the [<] moves the cursor to the left). When DISPLAY FUNCTNS function key is enabled, an asterisk is present in the label. In this mode, the action normally produced by any keyboard control or cursor control key is entered as one or more "escape character(s) in the string rather than being performed. For instance, with DISPLAY FUNCTIONS on you can define a User function key to cause the screen to be cleared by pressing [⌐] and [CLEAR DISPLY] function key when defining the key definition.

Leaving Definition Mode

When you are finished defining the desired keys, press [AIDS], [MODES], or [USER KEYS] keys to exit this menu. From this time on, until the User Keys are re-defined, whenever you press the [USER KEYS] key, the defined user key labels are displayed across the bottom of the screen and your [f1] through [f8] user key definitions are enabled.

EXAMPLE

For example, to assign a company name and address to User key [f1] to appear as follows:

```
LEWISTON Corporation
18 Barbarella Rd.
Sunnyvale, CA
```

1. Press the [MODES] key and check whether an asterisk is present in the AUTO LF label. If not, press the associated function key to add the asterisk.

2. Press the [SHIFT] and [USER KEYS] key simultaneously. The user key definition menu will be displayed.

3. Locate the cursor under the Attribute field for f1 and press the NEXT CHOICE function key until an "L" appears in the field. This indicates the character string is for use in the HP 125 "terminal portion" only.

4. Move the cursor to the label fields and type in your choice of label (such as "NAME") for the function key label.

5. Press the [RETURN] key to move the cursor to the left margin of the Key Definition (character string) field.

6. Press the DISPLAY FUNCTNS function key to add an asterisk in the DISPLAY FUNCTNS label. (This enables you to include the Return key within the definition.)

   Note that since the AUTO LF function key is selected a line feed is added following each [RETURN] when the function key is pressed in User mode.

7. Type LEWISTON Corporation [RETURN] 18 Barbarella Rd. [RETURN] Sunnyvale, CA [RETURN].

8. Press the DISPLAY FUNCTNS function key to remove the asterisk from the label. (This turns off Display Functions mode.)

9. Press the [MODES] key and then the AUTO LF function key to remove the asterisk.

10. Press the [USER KEYS] key; note that your label has replaced the "f1" label. Press the function key with your label on it. The data you typed into the function line on the User Keys menu should appear on the screen.

CHAPTER 9

CONFIGURING YOUR SYSTEM

The HP 125 is a very flexible system with many different configuration options. For example, you can choose to enable or disable the audible "click" that the HP 125 generates when a key is pressed, set the data communication speed for passing information to a remote system or printer, and set many other options.

Your HP 125 system/terminal configuration is changed by modifying a Configuration Menu displayed on the screen (see Figure 9-1). The options you select are automatically stored by the system, and remain in effect until you change them through the menu.

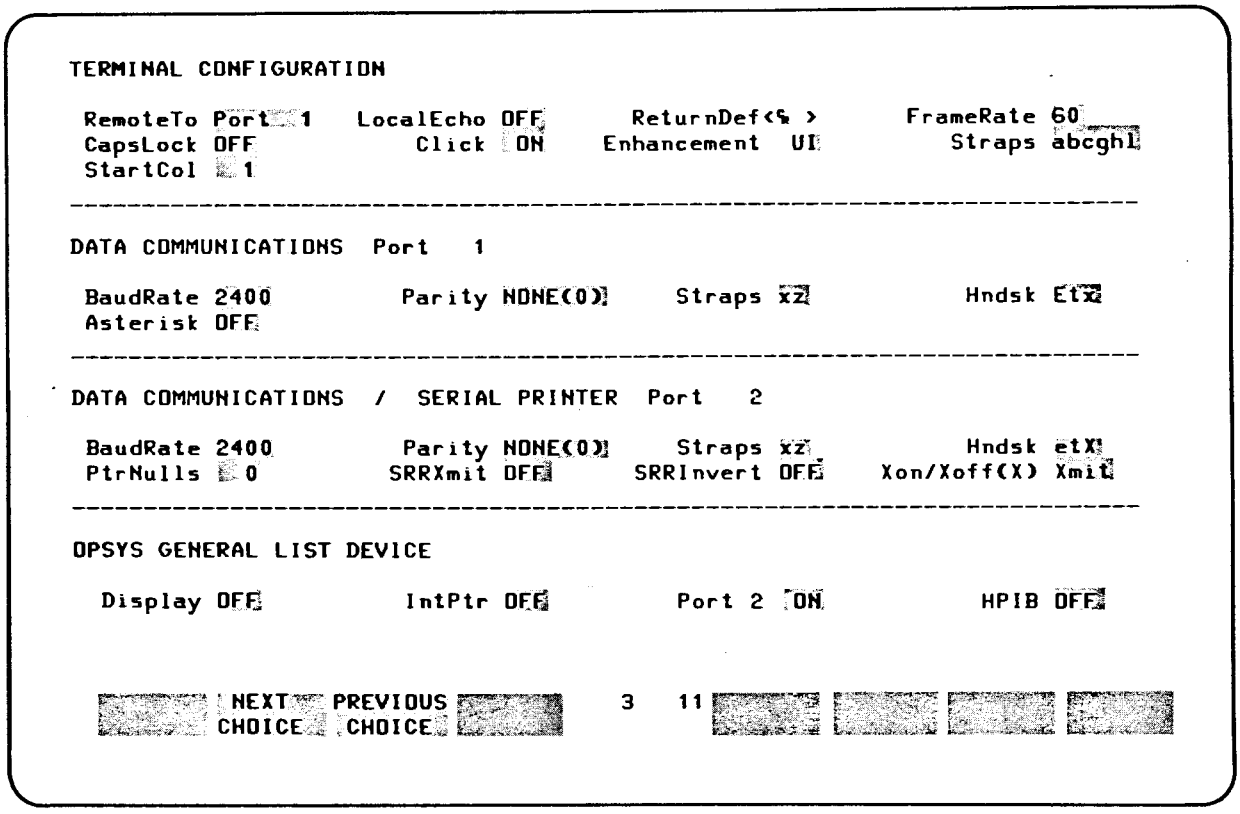


Figure 9-1. Configuration Menu

There are four sections to the menu displayed on your screen:

1. Terminal Configuration Section. This section, at the top of the menu, sets certain default settings for the terminal, such as the state of the [CAPS] key, whether the keyboard will click, etc.

2. Two Data Communication Sections. These sections, in the middle of the menu, assign the speed (baud rate), parity value, and other parameters for the data communications port (Port #1) and the printer port (Port #2). See Appendix A for details on these two sections.

3. Opsys General List Device Section. This section, at the bottom of the menu, lists devices that are used when a program sends data to the General List Device under CP/M control.

   The first and last sections of the menu configuration control specify features that you may want to change from time to time. These are described completely in this section. The two data communication sections will usually be set once for proper operation with a host computer and/or serial printer,

and then remain unchanged. The wide range of options in these sections permit attachment of the HP 125 to many different systems and printers.

This chapter covers those features which are often changed (the first and last sections). Configuration of specific supported HP devices is described in the "Getting Started" manual. A complete description of the data communication specification fields appears in Appendix A of this manual.

How to Display the Menu

To display the menu, follow these steps:

- If the Welcome Menu is displayed press the EXIT TO CP/M function key ([f8]). This will enter the operating system from the Welcome Menu.
- Press the [AIDS] key to display the primary set of function key labels.
- Press the "config" function key to display the menu with its current values. Table 9-1 lists the function key labels displayed along the bottom of the screen; they allow you to change a selection on the menu. (To exit the Configuration Menu press the [AIDS], [MODES], or [USER KEYS] keys.)

Table 9-1. Configuration Function Key Labels

Label	Function
NEXT CHOICE	Cycles forward through all the possible values within a field in the menu.
PREVIOUS CHOICE	Cycles backward through all the possible values within a field in the menu.

How to Change a Selection on the Menu

To change a selection on the menu, perform the following steps:

- Move the cursor to the character position to be changed. This can be done with the [TAB] keys or the cursor control keys. The [TAB] keys move the cursor from field to field. In fields where more than one option is available (such as straps), use the cursor control keys to access each option.

- For fields displayed in inverse video, use the NEXT CHOICE or PREVIOUS CHOICE function keys to cycle through the choices until the desired value is displayed.
- For other fields, enter the desired value from the keyboard.
- Once you have made all the changes, return to normal operation by pressing the [AIDS], [MODES], or [USER KEYS] keys.

The meanings of the various fields in the terminal configuration and general list device sections of the configuration menu are described in Tables 9-2 and 9-3.

Refer to Appendix A for details on Data Communication PORT 1 and Data Communication PORT 2 configurations.

Table 9-2. Terminal Configuration Menu Fields

Field	Function
Remote To	This field specifies which data communication port is assigned to a remote host computer system. Pressing the REMOTE MODE function key switches the HP 125 into terminal operation using the port selected here. Values: Port 1 Port 2 Default: Port 1
Local Echo	This field specifies whether or not the terminal should display characters as they are typed when in Remote or Local Op Sys mode. ON = Characters entered at the keyboard are displayed on the screen and transmitted to the computer (local HP 125 processor or remote host system). OFF= Characters entered at the keyboard are transmitted to the computer only. They only appear on the screen if the computer "echoes" them back to the terminal. Default: OFF

Table 9-2. Terminal Configuration Menu Fields (cont)

ReturnDef	This field specifies the definition of the [RETURN] key. The definition may consist of up to two characters (a trailing blank is not recognized). Default: <CR >
FrameRate	This field specifies the power line frequency (50 or 60 Hz). The screen refresh rate is then synchronized to the specified frequency. If this field is set to the wrong value, the images on the screen may pulsate visibly. Values: 50 (for 50 Hz power source) 60 (for 60 Hz power source) Default: 60
CapsLock	This field allows selection of upper-case characters only. ON = All alphabetic keys (a-z) are generated in upper-case regardless of the [SHIFT] keys and the sense of the [CAPS] key. The numeric keys are unaffected. The {, }, and | keys generate the codes for [,], and \, respectively. The key for generating ` is disabled. OFF= The system generates the full upper and lower-case 128-character set ASCII codes). Default: OFF
Click	The system is capable of producing an audible "click" as each key is pressed. This field specifies whether that feature is enabled or disabled. Values: ON (click enabled) OFF (click disabled) Default: ON

Table 9-2. Terminal Configuration Menu Fields (cont)

Enhancement	This field specifies which HP 125 display enhancement will be used when the Enhancement select function keys are used. Enhancements may be used separately or in any configuration such as U, HU, B, IB. Values: I (Inverse video) U (Underline) B (Blinking) H (Half bright) ... and all combinations Default: U (Underline)
Straps	This field specifies the strap settings available to control the terminal display and data transfer characteristics. Each is represented on the display by an alphabetic character (a, b, c, g, h and 1). A strap is enabled or disabled by changing the state of the displayed character from lowercase to uppercase or vice versa. For more information on these straps, refer to Appendix A. Values: a (escape sequence transmission) b (space overwrite (SPOW) latch) c (cursor end-of-line wrap-around) g (Block transfer handshake) h (Inhibit DC2) 1 (Inhibit self-test) Default: abcgh1
StartCol	This field determines at which column the system begins transmitting text. This setting is used in Modify Line or Modify All mode. Values: 1-8Ø Default: 1

Table 9-3. OpSys General List Device Menu Fields

Field	Function
Display	This field specifies whether or not output from an application program to the Op Sys General List Device will be displayed on the display screen. Values: ON (display enabled) OFF (display disabled) Default: OFF
IntPtr	This field specifies whether or not output from an application program to the Op Sys General List Device will be displayed on the internal printer if one exists. Values: ON OFF Default: OFF (ON for option Ø5Ø)
Port 2	This field specifies whether or not output from an application program to the Op Sys General List Device will be printed on the printer attached to data comm port #2. Values: ON OFF Default: ON (OFF for option Ø5Ø)
HPIB	This field specifies whether or not output from application programs to the Op Sys General List Device will be printed on the printer attached to the HPIB. Values: ON OFF Default: OFF

Note: Although output is normally routed to only one destination, any combination of these list devices can be active at the same time.

CHAPTER 10

MAINTAINING YOUR SYSTEM

Your HP 125 system is designed to provide years of reliable, trouble-free operation. By following a few recommendations about how to maintain and care for your HP 125 system, you help ensure long, dependable system performance. The following parts of the system must be given regular care, as described in this chapter:

- Display Screen and Keyboard
- Disc Drive and Flexible Disc
- Thermal Printer (if present)
- Dot Matrix and Daisywheel Printers (if present)
- Plotters (if present)

Cleaning the Screen and Keyboard

The display screen and the keyboard should be cleaned regularly to remove dust and grease. Lightly dust the entire unit using a damp, lint-free cloth or paper towel. The cloth or paper towel should be damp enough to pick up any dust, but should not be wet. Avoid wiping dust or lint into the key area of the keyboard. Greasy smudges and fingerprints can be removed using most conventional spray cleaners. Avoid spraying between the keys.

DO NOT use petroleum-based cleaners (such as lighter fluid) or cleaners containing benzene, trichlorethylene, ammonia, dilute ammonia, or acetone as these chemicals could damage the system's plastic surfaces.

Caring for the Disc Drive and Flexible Disc

The disc drive is a mechanical device with motors and moving parts, therefore it requires somewhat different care than the System Processor. Rough handling of the disc drive, such as dropping the disc drive or dropping objects on it, can cause malfunction. The disc drive or its media should not be placed near a magnetic source.

The flexible discs that are used with your system have a magnetic coating, and are sealed in square black plastic covers. The cover protects the flexible disc, helps keep it clean, and allows it to spin freely in the disc drive. The cover should never be removed, or tampered with in any way. To ensure your flexible discs remain in good operating condition, here are a few Do's and Don'ts.

DO

Return disc to storage envelope when not in use.

This is the single most important thing to remember about handling your disc because it prolongs disc life by protecting it from dust and scratches. Between uses, discs should be stored upright in a dust free container.

Remove disc from drive when not in use.

Remove the disc completely from the drive when access is not needed for an extended period of time. The disc continues to rotate as long as it is in a drive which is turned on, even if it is not accessed. This rotation will eventually wear the disc out over long periods of time.

Operate your system in a clean environment.

Airborne contaminates and particles accidently dropped onto the disc will cause your disc to wear out prematurely and may cause unreliable data storage and retrieval operations. Some of the most common contaminates are DUST, SMOKE, ASHES, ERASER CRUMBS, and BREAD CRUMBS. Chemical vapors may also cause premature wearout.

Maintain proper temperature and humidity.

The proper operating range is 10 degrees C (50 degrees F) to 40 degrees C (104 degrees F) and 20% to 80% relative humidity. While temperature is usually easy to control, it may be necessary to make special provisions to keep the humidity in the proper range. Although the disc will continue to operate outside the normal humidity range, it will wear out more quickly and will have a high error rate.

Backup discs frequently.

There is always a chance of losing data when mass storage devices are accessed. There are many causes in any computer system - a programming bug, operator error, power failure, or hardware failure. In the case of flexible discs, another mode is possible - media failure from contamination or wearout. Your only protection against data loss is frequent backup of your files.

Replace discs frequently.

Although discs are designed to provide several million revolutions of useful life, they will eventually wear out. The life of a disc is VERY dependent on how much it is used. A disc used sparingly (less than 20 minutes a day) should last over a year. A disc that is used heavily (more than 2 hours a day) should not be expected to last more than 3 months. To be safe, you should copy your data to a new disc and discard the old disc every 3 months for a heavily used disc or at least once a year, even for lightly used discs.

Avoid magnetic fields.

Since the data is stored as a pattern of magnetic fields on the disc, it can be erased by an external magnetic field. Avoid placing a disc near power transformers, magnets or large disc memories. Additionally, while HP goes to great lengths to confine the magnetic fields produced by it's CRT deflection shields (so well that some of our disc drives are mounted in the same cabinet as the display) CRT's with magnetic deflection systems have been known to wipe out discs, and it is a good idea to avoid placing discs on top of CRT's.

Use a felt tip pen to label your disc.

Use a soft felt tip pen to label your disc, and be careful to write only in the label area. Avoid the exposed media while labeling the disc. If possible, write on the large labels provided BEFORE applying them to the disc.

DON'T

Do not touch the surface of the disc.

The thickness of a fingerprint is enough to lift the head off the disc and cause errors. The oils in a fingerprint will also collect dust which can cause a disc to wear out sooner than it normally would.

Do not bend or fold the disc.

The disc is flexible, but will not operate if it is creased. Using ball point pens, rubber bands, paper clips, etc. can crease the disc.

Do not try to clean a disc.

The inside surface of the disc jacket is covered with a special material that cleans the disc as it rotates. Any other method of cleaning may cause solvent damage to the media or scratch the disc, causing loss of data. If a disc becomes dirty or scratched, immediately transfer the data to a new disc and dispose of the old disc.

Caring for the Internal Printer

The optional internal printer on your HP 125 uses thermal printing paper manufactured specifically for use in the HP 125 and Hewlett-Packard terminals. You can purchase the paper through your local HP Sales and Service Office by requesting the following part numbers:

1 Box (24 rolls) Thermal Paper (blue) - Part no. 9270-0638

or

1 Box (24 tolls) Thermal Paper (black) - Part no. 9270-0656

CAUTION

It is recommended that you always use the HP thermal paper in your internal printer. Use of non-HP paper can shorten the life of the print head and might also affect print quality. Also, during warranty or if you have an HP Service Contract, the contract is not valid if you use any paper other than the two types listed above.

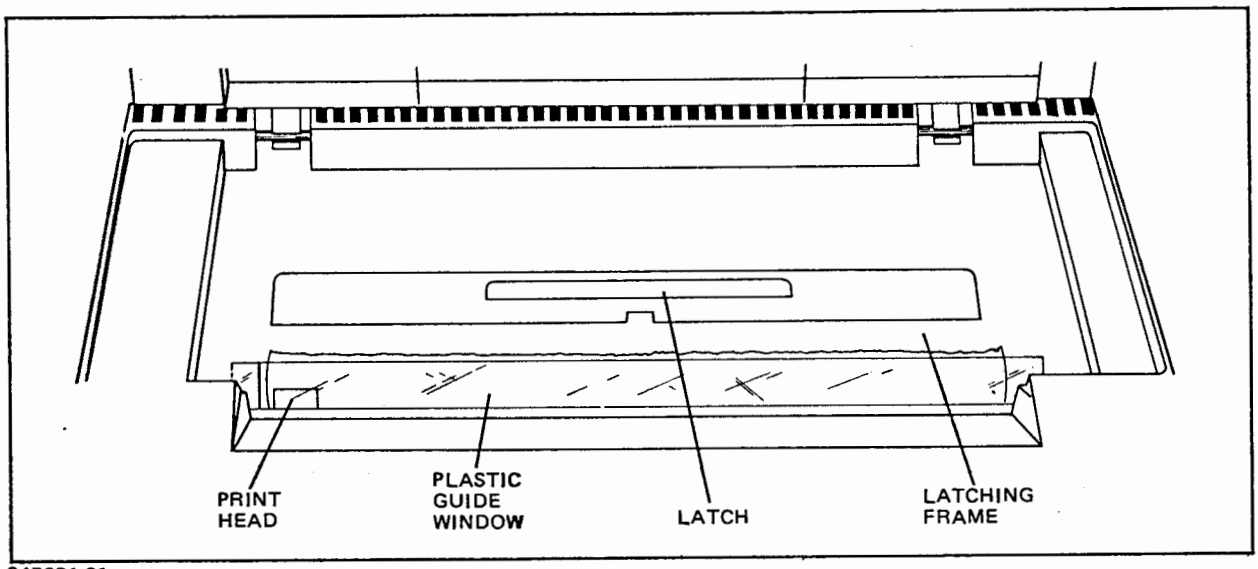
Loading Paper Into the Thermal Printer

To load a roll of thermal paper into the printer, complete the following steps:

- Lift the top cover of the printer mechanism (refer to Figure 10-2). The illustration embossed on the underside of the cover shows the correct paper position and flow.
- Press the latch toward the front of the System Processor to release the latching frame. Lift the hinged latching frame to its forward position.
- Remove any paper remaining in the printer.
- Grasp the center of the paper core and lift forward and upward along the guide slots to remove the core and the metal rod that holds it in place.
- Be sure all paper dust is carefully removed from the roller.
- Remove the rod from the old core and insert the rod through the core of a new roll of paper.
- HP Thermal Paper is coated with print material on one side and must be inserted into the printer correctly to produce the print image. The paper must feed toward the front of the System Processor from the underside of the paper roll (see the embossed illustration on the top cover).
- Place the ends of the rod into the guide slots on either side of the print mechanism and press downward and then toward the back of the System Processor until the rod snaps into place.
- Feed the leading edge of the paper through the latching frame (between the latching frame and the clear plastic guide window).

CAUTION

The print head (refer to Figure 10-2) is relatively fragile and susceptible to damage; be careful not to contact it while loading paper.



047031-01

Figure 1Ø-2. Printer Mechanism.

- Lower the latching frame without locking it into place.
- Align the sides of the paper with the guide lines embossed on each side of the guide window.
- Each new roll of HP Thermal paper has a glue spot near the leading edge of the roll that holds the paper roll intact during shipment. The print head must not come in contact with this glue spot. Feed approximately 12 inches of paper through the latching frame so that the glue spot is beyond (outside) the print head and guide window.
- Press the latch down until it locks into place with an audible click. If the latch is not locked, a printer error will be displayed at the bottom of the screen when a printer operation is attempted or when the "power-on" test is run.
- Tear off the excess paper using the edge of the guide window as a cutting edge.
- Close the top cover securely and press the [RETURN] key.

Note

If subsequent printer operations produce no image on the paper, the paper has probably been installed with the wrong side facing the print head. An image can be printed only on one side of the HP Thermal Paper.

Caring for the Dot Matrix Printer

The HP 2631B or HP 82905B Dot Matrix printers provide a choice of higher-speed and lower-speed output for your HP 125. The dot matrix printer forms characters by printing a pattern of inked dots. The dot matrix printer uses fan-folded/pin-fed paper.

To care for your dot matrix printer, refer to the 2631B Operator's manual or the 82905B Operator's manual.

Caring for the Daisywheel Printer

The HP 2601A Daisywheel printer provides you with "typewriter quality" output and a variety of standard features such as proportional spacing, auto justification, page formatting and stylized printing.

To care for your daisywheel printer, refer to the 2601A Operator's manual.

Caring for the Plotter

The HP 9872C and HP 7225B Plotters are used to produce fast, quality graphic plots from your HP 125. The plotter produces quality graphics not only on standard paper but also on other media, such as overhead transparencies.

To care for your plotter, refer to the 9872C Operator's manual or the 7225B Operator's manual.

CHAPTER 11

WHEN THINGS GO WRONG

This chapter provides information on what to do when "something goes wrong" with your HP 125, and can help you determine if you have made an error, or if there may be a malfunction in your system. It is divided into two sections. The first discusses the error messages that may appear on the system's screen while you are attempting to perform operations through the keyboard. The second discusses the various self-tests that are incorporated into the HP 125, and the messages they may display.

What is the Problem?

While using your HP 125, you may be confronted with any one of the problems listed below:

- MESSAGE DISPLAYED ON SCREEN WHEN POWER TURNED ON

  Various failure conditions are indicated with a message at the bottom of the screen when the power is turned on. Find the appropriate message and its meaning listed in Table 11-1 and 11-2.

- HAVING DIFFICULTY READING SCREEN

  This problem should not affect the operation of your system (aside from the fact that you can't read the screen). All other parts of your system should operate correctly. By using

the adjustments on the top of the System Processor and the adjustment tool which was shipped with the system, you may be able to adjust the screen, otherwise, contact your Service Representative.

- HAVING DISC OR OTHER PERIPHERAL PROBLEMS

  Press the [AIDS] key, followed by the service keys function key [f3] and then the TERMINAL TEST function key (f5). The complete character set should be printed in several lines. Check for the printed pattern. If it appears to be all right, the difficulty may be in the configuration of your printer or other options. Recheck the chapter of the "Getting Started With Your HP 125" manual that describes peripheral installation. If you are still having problems contact your Service Representative (refer to the appropriate message in Table 11-1 and 11-2).

- HAVING DATA COMMUNICATIONS / SERIAL PRINTER PROBLEMS

  First, ensure that your Data Comm / Serial Printer configuration is correct for your device; then check to see that the Data Communication cable(s) are connected to the rear panel securely. If you are still having problems, contact your Service Representative.

- HAVING KEYBOARD PROBLEMS

  If the screen display appears but the keyboard does not function, there are several areas you should check for. Refer to Appendix B In the "Getting Started With Your HP 125" for details.

Once you have determined what the problems are, there are two lists of error messages that should help to solve your problems.

The system generates two kinds of error messages:

- Terminal error messages
- CP/M error messages

The terminal error messages occur when you make an error while using the system as a terminal; CP/M error messages occur while operating under the local operating system (CP/M). The messages appear on line 25 and 26 on the screen, replacing the function key labels. To clear an error message and restore the labels, press the [RETURN] key, if directed, otherwise, press the [RESET] key.

Terminal error messages and their meanings are listed in Table 11-1. CP/M error messages and their meaning are listed in Table 11-2.

Table 11-1. Terminal Error Messages.

MESSAGE	WHAT IT MEANS
*Default configs used	The configuration set-up was lost. The system does not "remember" any changes you may have made to the default settings. All other parts of the system should operate correctly. If the message occurs repeatedly, contact your Service Representative.
*Device routing pending	An application program has specified a "device mapping" for its input/output operation. Certain terminal operations (e.g., configuration changes) are not allowed while this mapping is being used.
*Disc did not identify at address zero	The disc drive power was not turned on, the cable linking the disc drive and system is loose or disconnected, or there is a fault with your system or disc drives. Also, make sure that the disc from which you expect the operating system to be loaded is set to HP-IB address zero (0), as described in the "Getting Started with your HP 125" manual. If the problem persists, contact your Service Representative.
*Internal printer error	The internal printer is unable to print. Two possible causes are 1) the paper latch is not closed properly, or 2) the printer is out of paper. Otherwise the internal printer is malfunctioning and you should contact your Service Representative.
*No "TO" device	A Printer logging or print operation tried to use a printer which CP/M has previously reserved, or vice versa, or no device was selected from the printer control function keys.
*Nonexistent printer	An attempt was made to select a printer for output that is not configured into your system. Change the printer configuration using the Configuration Menu.

*Portl error nnnnnn	Failure response to DataComm Test function key. This result occurs if no test hood or cable is attached. The Data Comm Test function key is for use by service personnel.
*Port2 error nnnnnn	Failure response to DataComm Test function key. This result occurs if no test hood or cable is attached. The Data Comm Test function key is for use by service personnel.
Press RETURN to clear	Occurs whenever a warning or error message is displayed.
*Printer(s) busy	A logging or print operation tried to use a printer which CP/M has previously reserved or vice versa.
*Self-test inhibited	The Terminal test, Power-on test, Internal Printer test or Datacomm test are inhibited when the Inihibit Self-test strap (L) is is set to uppercase in the Configuration Menu.
*Test failed	The Terminal test or Power-on test failed.
*Power-on test failed nnnn	Power-on test failure. See pages 11-8 11-9 for an explanation of the errors.
*This function LOCKED	The configuration is locked and an attempt was made to change it, or the [REMOTE MODE] or [LOCAL OP SYS] function keys were pressed while an unusual device mapping exists.

Table 11-2. CP/M Error Messages.

MESSAGE	WHAT IT MEANS
**OPSYS warmboot error.	This error message should only occur if the system tries to partially reload ("warmboot") an operating system that is of a different size than that which is currently in memory. After pressing the [RETURN] key, the HP 125 will "coldboot" the entire operating system from the disc in drive A. Check to see that you have the correct version of the operating system.
**Sector read/write error on drive x.	The system is unable to read or write to the disc specified (A to H). The disc is either 1) worn out, 2) not formatted, or 3) scrambled by a magnet. After pressing the [RETURN] key to warmboot, make sure that the disc is formatted and correctly placed in the drive. If you can read any part of it, attempt to copy as much as possible to another disc, using COPY or PIP. Regardless of the success of the attempted copy, the disc should be considered faulty and discarded. If a number of discs seem to fail over a short period of time, and they are not old, contact your Service Representative.
**Disc select on drive x failed.	The system cannot find the disc specified. The disc door is open, there is no disc in the drive, or you asked for a disc drive outside the range of A to H.
**Write to R/O disc error on drive x.	An attempt was made to "write" to a disc that has "read only" status. The first time a disc drive is accessed (with DIR, STAT, retc.) after a disc reset, some information about the directory is copied into memory. If you change the disc (and its contents are not IDENTICAL to the old one) without a reset (e.g., with a "warmboot"), then the next time you access the drive, CP/M "protects" the

data on the disc by placing it in a "read-only" status. Many application programs take care of this problem for you, but the standard CP/M utilties do not.

**Write to R/O file error on drive x.

An attempt was made to write to a file that has been placed in a "read-only" status. This status indicates that the file cannot be updated or deleted unless it is "reset" to "read-write" (using a utility like STAT).

**Write to write-protected disc error in drive x.

An attempt was made to write to a disc that was physically protected from update. On 5 1/4" discs, the tab is covered, and on 8" discs, the tab is open.

**DISC RETRY #n (Seek error on drive x).
**DISC RETRY #n (Read error on drive x).
**DISC RETRY #n (Write error on drive x).

If the HP 125 cannot seek, read, or write a disc sector correctly, it automatically retries up to 10 more times. As it retries, the attempts are logged in this message for your information.

**Retry #n succeeded. Check disc in drive x for excessive wear.

If any of the three types of retries described above are successful, the operating system displays this message, and the currently running program continues. Some programs may sense that this problem occured, and prompt you to "press [RETURN] to continue", giving you a chance to check that the disc is ok. Other programs and utilties will simply continue to completion.

**No OPSYS on disc in A:

This message is displayed when the HP 125 cannot access an operating system on the disc in the A drive. There may be no operating system on the disc in drive A, the door may be open, or there may be no disc in the drive. The system needs to access the operating system before loading some application programs, or exiting most programs to return to CP/M. To

fix the problem, place a disc with an operating system on it into drive A and press the [CTRL], [SHIFT] and [RESET] keys.

**Free OP SYS list device General printer.
**Free OP SYS list device Internal printer.
**Free OP SYS list device Port #2 printer.
**Free OP SYS list device HPIB printer.

If there is a conflict between the local CPU and the terminal over which part of the system has control of a printer, this message may be displayed. Make sure that any previous use of a printer is finished.

**Worn disc in drive x.

It appears to the HP 125 that the disc has worn out. Try to copy the contents of the disc to another one. In any case you should consider the disc as having failed. If a number of discs seem to fail over a short period of time, and they are not old, contact your Service Representative.

**Disc parity error.

A hardware error occurred while accessing the disc. If the condition persists, contact your Service Representative.

System Self-Tests

The HP 125 includes the following five types of system self-tests:

- Power-On test
- Terminal test
- Data Comm Test
- Identify ROMs
- Internal Printer Test

Power-on Test

The power-on test is performed automatically whenever you turn on the system's power. It may also be executed manually by pressing the [AIDS] key followed by the service keys function key and then the POWER ON TEST function key. The power-on test normally takes 15 seconds to complete -- about the time it takes for the screen to warm up. During those 15 seconds, the system self-tests the electronic components that are critical to proper system operation, including the following integrated circuits ("chips"):

1. The two microprocessors
2. The five read-only memories (ROMs)
3. Non-volatile (configuration) memory (CMOS RAM)
4. Display memories (RAMs)
5. The operating system memories (RAMs)
6. Display electronics
7. The keyboard controller
8. The HP-IB controller
9. Internal printer electonics (if present)
10. Data Communication controllers
11. The interface between microprocessors

The system also tests the path from the System Processor to the disc drives through a "disc identify" test during the power-on test. Successful completion of the power-on test thus provides a very high degree of confidence that your system hardware is functioning properly.

One of three things may happen depending upon the results of the power-on test:

1. The test passes. Fifteen seconds after power is turned on, the display appears and the System Processor is ready for use.

2. The test fails. From 25 seconds to one minute after power is turned on, the display appears with the message

   Power-on test failed nnnn

   where nnnn has the following meaning.

0001 0002 0008	The System Processor is malfunctioning in some manner and may be unreliable.
0004 1000 8000	The System Processor should function as a remote terminal in all respects, however the local operating system is malfunctioning and may not be reliable.

0100 0200 0400 0800	The operating system may not load or run correctly.
0010	The keyboard may not be functioning correctly.
0020	The configuration memory is malfunctioning and may not retain configuration settings. The System Processor may be unreliable.
0040	The data communications and/or serial printer interface is malfunctioning. Data communications and/or serial printer use may be unreliable.
0080	The internal printer is malfunctioning and may not be reliable.
2000 4000	The HP-IB interface is malfunctioing and the HP-IB peripheral operations may be unreliable.

Note: If any of these power-on test failure messages is displayed contact your Service Representative.

3. The test fails. The display never appears or reappears but is visibly malfunctioning because the display electronics are faulty. Contact your Service Representative.

Terminal Test

This test verifies proper operation of the "terminal" portion of your HP 125. It does the following:

1. Verifies the integrity of all firmware ROM chips.

2. Tests the CP/M processor (non-destructively).

3. Non-destructively verifies the integrity of all configuration, display, and operating system memories.

4. Tests the keyboard/printer controller chip.

5. Tests the internal printer (if present). Note that this test does not produce any printed output; it produces a blank line.

6. Displays the test pattern shown in Figure 11-1.

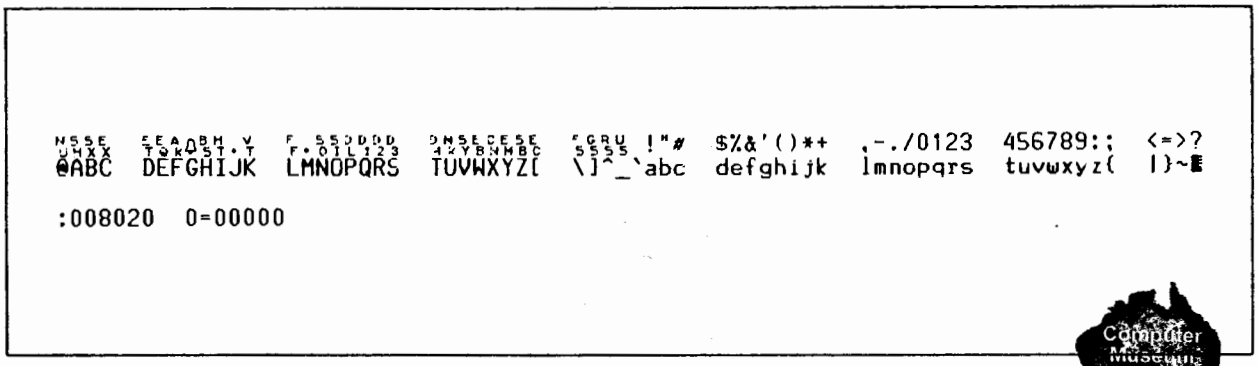


Figure 11-1. Terminal test Pattern

To initiate the Terminal test, press the [AIDS] key followed by the service keys and TERMINAL TEST function keys.

If the test failed, the following message is displayed across the bottom of the screen:

TEST FAILED

If no TEST FAILED message is displayed but the test pattern on the screen is malformed, a problem with the display electronics is suggested. Adjustment is necessary through the top of the System Processor using the tool provided by the system.

Data Comm Test

The Data Comm test verifies proper operation of the data communication ports that connect the HP 125 to other systems or serial printers. The test is actually a set of tests that requires the presence of a test hood, a cable with a test hood, or a modem with local and/or remote data loopback capability.

If either a test hood or a cable with a test hood is present, the following tests are performed:

1. A control line test.

2. A data comm controller chip test.

3. A data loopback test.

To execute the Data Comm test, press the [AIDS] key followed by the service keys and DATA COMM TEST function keys.

All three tests are performed on both data comm ports. The baud rate and parity tests are performed at the settings specified by the Baud Rate and Parity configuration parameters currently stored in the Configuration Menu.

The screen is blank until the test is finished or until an error condition occurs.

Note that the Data Comm test temporarily disables the HP 125's interrupt system. Data received over the port while the test is in progress may be lost.

If an error occurs, one of the following messages (whichever is appropriate) is displayed:

PORT 1 ERROR nnnnnn (or) PORT 2 ERROR nnnnnn

The "nnnnnn" in the error message is a six digit hexadecimal number. The number 8ØØ2AA will be displayed if no cable or hood is connected. If either message is displayed and a test hood is connected to the port indicating the error, you should call your Service Representative and inform him/her what message was generated.

Printer Test

The Printer test, which is available only if the optional internal printer is present, exercises all the features of the internal printer to verify that it is functioning properly. To initiate this test, press the [AIDS] key followed by the service keys and INT PRT TEST function keys.

If the printer is functioning properly, it generates the test pattern shown in Figure 11-2.

```
 @ABC  DEFGHIJK  LMNOPQRS  TUVWXYZ[  \]^_`abc  defghijk  lmnopqrs  tuvwxyz{  |}~■
 @ABC  DEFGHIJK  LMNOPQRS  TUVWXYZ[  \]^_`abc  defghijk  lmnopqrs  tuvwxyz{  |}~■
```

Figure 11-2. Internal Printer Self Test Output

Note that if your system does NOT include the internal printer, the [f8] key in the service keys set of function keys will be blank and pressing that key will have no effect.

If an error condition occurs, the following message is displayed:

Internal printer error

To clear the message, press the [RETURN] key. Note that the error condition may be either of the following, in which case you could correct it yourself:

1. Out of paper.

2. The metal latch (under the plastic printer lid) is not pressed down securely.

There may also be a problem with the print mechanism itself.

Identify ROMs

This test generates a descriptive list of all ROM chips installed in the system. To identify the ROMs, press the [AIDS] key followed by the service keys and IDENTIFY ROMS function keys.

A descriptive list similar to the one shown is Figure 11-3 is displayed.

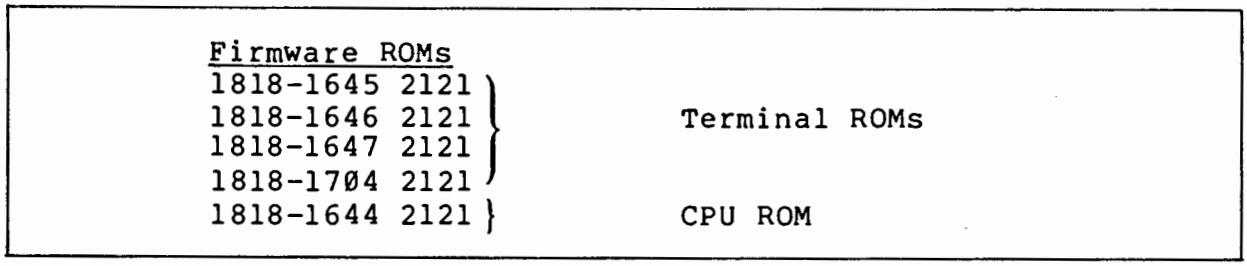


Figure 11-3. ROM Identification Listing

The information displayed is used by the Service Representatives to determine the revision level and date of the ROM's. He/she may request that you perform the test and report the results by telephone to aid in diagnosis.

APPENDIX A

HP 125 DATA COMMUNICATION CONFIGURATION

This appendix describes the data communication (data comm) parameters that can be set on the HP 125, for attaching external RS-232 devices and remote computer systems to the HP 125. Specific instructions for attaching HP devices are contained in the "Getting Started With Your HP 125" manual. The information contained in Table A-1 is fairly technical, and will typically be used by a person experienced with data processing or with information provided within other Configuration Menu fields. For information on accessing the Configuration Menu, see Chapter 9.

Table A-1 describes each of the two data communication configuration fields. The remainder of this Appendix describes the data communication protocols available through the settings in the fields.

The HP 125 is able to connect to almost any external RS-232 device or remote computer using asynchronous RS-232 protocol. In order to connect an external RS-232 device or remote computer to the HP 125 it is necessary to first understand the protocol needs of the external device or computer. Once the needs are determined, the HP 125 can be configured using the data communications configuration menu to match that protocol.

Table A-1. Data Comm Configuration Menu Fields

FIELD	FUNCTION
BaudRate	This field specifies the speed at which the data transmission is to take place over the specified data comm port (in bits per second). Values: 110 1800 150 2400 300 3600 600 4800 1200 9600 Default: 2400
Parity	This field specifies what type of parity generation and checking you wish used with each data character transmitted. The Z strap determines if parity is checked on received data. Values: NONE(Ø) (Eighth bit is a zero on transmitted data; on received data, eighth bit is ignored) NONE(1) (Eighth bit is a one on Transmitted data; on received data, eighth bit is ignored) EVEN (Even parity generated on transmitted data; eighth bit = parity result) ODD (Odd parity generated on transmitted data; eighth bit = parity result) Default: NONE(Ø)
Straps	This field specifies the additional strap selections associated with data transfer. Each strap is represented on the display by an alphabetic character (x and z). A strap is enabled or disabled by changing the state of the displayed character. This is done by selecting the strap and changing it from uppercase to lowercase or vice versa. For more information on these straps, refer to the description following these tables. Values: x (Data speed select) z (Parity check) Default: xz

Table A-1. Data Comm Configuration Menu Fields (cont.)

FIELD	FUNCTION
Hndsk	This field specifies what type of communications "handshake" is to be used. Each type of handshake is represented by a single alphabetic character (e,t, and x). You enable or disable the type of handshake by changing the state of the displayed character from lowercase to uppercase, or vice versa. For further information, refer to the discussion on handshaking following these tables. Values: e (ENQ/ACK handshake) t (Transmit handshake) x (XON/XOFF) Default: Etx (ENQ/ACK handshake)
Asterisk	The HP 125 can optionally display a "transmit indicator" -- an asterisk at the bottom of the screen that indicates when the HP 125 is connected to a remote system over an active datacomm line. This field specifies whether the transmit indicator should be enabled or disabled and, if enabled, which RS-232C control line it should reflect. When the asterisk is present, the transmit indicator is on; when the asterisk is missing, the transmit indicator is off. (This feature applies to Port #1 only.) Values: OFF - disables the transmit indicator. CS - specifies the transmit indicator should reflect the state of the RS-232C Clear to Send (CS) control line (asterisk=HI; no asterisk=LO). DM - specifies the transmit indicator should reflect the state of the RS-232C Data Mode (DM) or Data Set Ready (CC) control line (asterisk=HI; no asterisk=LO). Default: OFF

Table A-1. Data Comm Configuration Menu Fields (cont.)

FIELD	FUNCTION
PtrNulls	Some printers require that "null characters" be transmitted after certain control functions (e.g. carriage return), to allow the printer time to complete the operation. This field specifies the number of ASCII null codes (Ø-99) to be transmitted to an external printer after each ASCII control code. Under normal operation, the HP 26Ø1A does NOT require this field to be greater than zero. Values: Ø-99 Default: Ø
SRRXmit	This field specifies whether or not a -12V on the RS-232C Secondary Receiver Ready (SRR) or Secondary Carrier Detect (SCF) control line is required for transmitting data. This mechanism is primarily used in conjunction with printers which must be able to control the transmission of data from other devices. Values: ON (required) OFF (not required) Default: OFF
SRRINVERT	This field applies only when the SRRXSMIT field is required. SSRInvert defines whether -12V or +12V is a "true" state of the line. When both the SRRXMIT and SRRInvert fields are enabled, the RS-232C Secondary Receiver Ready (SRR) or Secondary carrier Detect (SCF) control line is inverted from -12V to +12V. Values: ON (+12V) OFF (-12V) Default: OFF
Xon/Xoff(X)	This field defines the Xon/Xoff handshake protocol to be used for receive pacing (communicating with a computer) or transmit pacing (communicating with a printer). Applies to port 2 when port 2 Xon/Xoff handshaking is selected.

Strap Configuration

The strapping configured for your system allows the following conditions when you specifiy lowercase or uppercase alphabetic values.

STRAP	ENABLED	DISABLED	DEFAULT
Escape (esc) Transmission	A	a	Disabled
Space Overwrite (SPOW) Latch	B	b	Disabled
Wraparound Cursor, End-of-Line	c	C	Enabled
Short Transfer Trigger Handshake	g	G*	Enabled
Long Transfer Warning Handshake	h	H	Enabled
Data Speed Select	X	x	Disabled
Parity Check	z	Z	Enabled
Inhibit Self Test	L	l	Disabled

* Although the Short Transfer Trigger Handshake is disabled, transfer conditions become dependent on the state of the Long Transfer Warning Handshake strap. For more information, refer to the description for these straps (g,h) below.

When configuration menus are displayed, you can use the [TAB] key to position the cursor to the straps fields. Then use the cursor left [<] or cursor right [>] keys to move the cursor to a position beneath the character representing the strap you want to change.

Escape (esc) Transmission (a-strap): When this strap is enabled, any keyboard-generated escape sequence (cursor movements, etc.) are passed through to the host system and not executed. When disabled the keyboard-generated escape sequence is executed locally and no information is given to the host system.

Space Overwrite (SPOW) Latch (b-strap): This strap controls whether the space bar produces spaces or skips over characters, when typing over existing text. When the strap is enabled, the SPOW latch can be turned on by the [RETURN] key turned off by the HOME UP key, a Linefeed, or [TAB>] key. When the SPOW latch is on, the space bar causes the cursor to move to the right along the current line without overwriting existing characters. When the SPOW latch is off, the space bar causes an overwrite of blank (space) characters as the cursor moves along the current line.

When this strap is disabled (the defaulted state), the SPOW latch is not accessible.

Wraparound Cursor, End-of-Line (c-strap): When enabled (the defaulted state), this strap causes the cursor to wraparound to the beginning of the next line on the display whenever column 80 or the right margin of any line is passed. The System Processor generates a Return and a Linefeed character to accomplish this.

When this strap is disabled, no Return or Linefeed is generated at the end of a line. The cursor remains in, and overwrites column 80 or the right margin.

Short Transfer Trigger Handshake and Long Transfer Warning Handshake (g h-straps): The HP 125 provides three kinds of data transfer operations; Long Transfer in Line Mode, Long Transfer in Character Mode, and Short Transfer.

Long Transfer, Line Mode	A data transfer operation initiated via the [RETURN] key or [ENTER] key while one of the HP 125's Modify modes are on.
Long Transfer, Character Mode	A data transfer operation initiated via the [ENTER] key while the HP 125's Modify modes are off.
Short Transfer	A data transfer operation involving: • Cursor Sensing • Terminal Status • f1 through f8 functions • Response to an "Esc &" sequence

The transfer mode affects the type of handshake used. The complete DC1/DC2 handshake protocol consists of a "trigger" signal (DC1) sent from the host computer to inform the HP 125 that a data transfer is possible. In response, the system sends a "warning" signal (DC2) to the host computer indicating that the data to be transferred is ready. The host computer sends another trigger signal (DC1) to enable the transfer. Figure A-1 illustrates the handshake protocol.

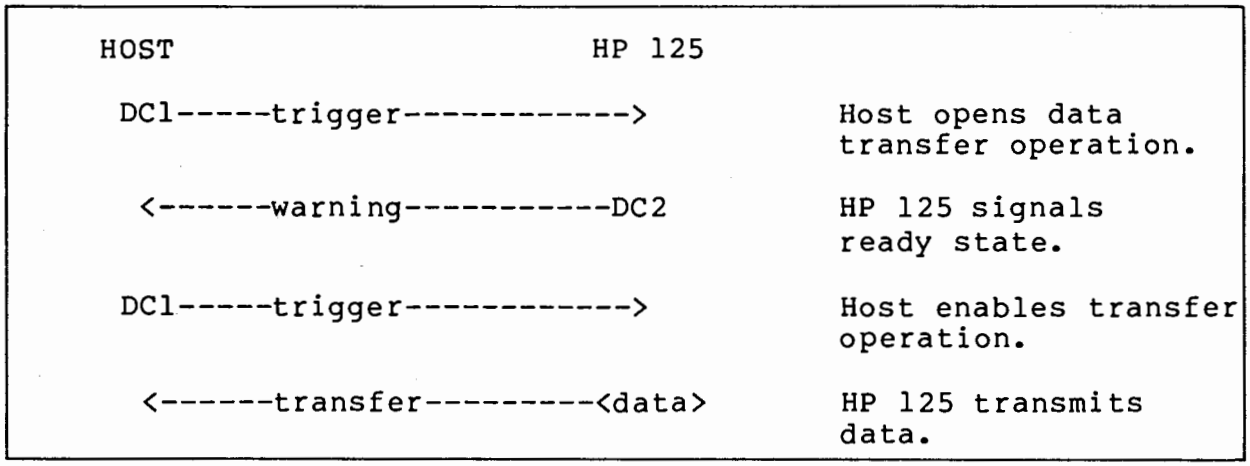


Figure A-1. DC1/DC2 Handshake Protocol

Depending on the state of the g and h straps, one of three subsets of the handshake protocol shown in figure A-2 is used by the terminal, as follows:

TYPE 1 (No Handshake)

HOST	HP125	
<--------transfer---------<data>		Terminal transmits data.

TYPE 2 (DC1 Trigger Handshake)

HOST	HP 125	
DC1------trigger------------>		Host enables transfer operation.
<-------transfer----------<data>		HP 125 transmits data.

TYPE 3 (DC1/DC2/DC1 Warning Handshake)

HOST	HP 125	
DC1-----trigger------------->		Host opens data transfer operation.
<-------warning------------DC2		HP 125 signals ready state.
DC1-----trigger------------->		Host enables transfe operation.
<-------transfer----------<data>		HP 125 transmits data.

The effect of the various g and h strap states is shown in Table A-2.

Table A-2. DC1/DC2 Handshake Protocol Strapping Effects

	Transfer Category		
Strap State	Long (Line Mode)	Short	Long (Char Mode)
g,h default	TYPE 3	TYPE 2	TYPE 1
g,H	TYPE 1	TYPE 2	TYPE 1
G,h	TYPE 3	TYPE 3	TYPE 3
G,H	TYPE 1	TYPE 1	TYPE 1

Data Speed Select (x-strap) When this strap is enabled, the data speed signal is set high (CH=on). When disabled (the defaulted state), the data speed signal is set to low (CH=off).

Parity (Z-strap) Parity is a way the HP 125 and a host computer can verify that your data was transferred correctly. Parity refers to a "vertical redundancy check" bit that is added as the high bit of each byte as it is transmitted and checked for the correct value as it is received over the data communications line.

When the Parity strap is enabled (the default state), a parity check for even or odd parity is performed by the terminal on the received data.

When this strap is disabled, no parity check is performed.

Note that parity is never checked for received data if the HP 125 is configured for either zero or ones parity.

Inhibit Self-Test (L-strap) When this strap is disabled, the Power-On Test, OpSys Test, Data Comm Test, Integral Printer Test, and Manufacturing Test are enabled.

When enabled , the Power-On Test, OpSys Test, Data Comm Test, Internal Printer Test, and Terminal Test are not accessible from the keyboard. Any attempt to initiate these tests results in an error message; to clear the message, press [RETURN].

Handshake Configuration

The handshaking configured for your system allows the following conditions when you specify lowercase or uppercase alphabetic characters:

HANDSHAKE	ENABLED	DISABLED	DEFAULT
ENQ/ACK Handshake	E	e	Enabled
Transmit Handshake	T	t	Disabled
XON/XOFF	X	x	Disabled

When configuration menus are displayed, you use the cursor left [<] or cursor right [>] keys to move the cursor to a position beneath the character (e,t,x) to be changed.

ENQ/ACK Handshake. This type of handshake may be used to ensure that the HP 125 has an empty buffer before the host computer transmits more data. When this strap is enabled (the defaulted state), an acknowledge signal (ACK) is transmitted by the HP 125 each time an enquiry signal (ENQ) is encountered from the host computer. Any data contained in the buffer is processed before the ACK signal is transmitted.

When this strap is disabled, any enquiry signal (ENQ) encountered from the host computer is treated as a normal data character. No acknowledge signal (ACK) is generated.

Transmit Handshake. When this handshake type is enabled, the host computer or printer can transmit a "busy" signal across the Clear to Send (CB for RS-232C or 106 for CCITT V.24) control line to temporarily stop the transmission of data from the terminal.

When this handshake type is disabled (the defaulted state), data transmission continues uninterrupted by the computer.

XON/XOFF. This handshake protocol allows the HP 125 to signal the host computer to stop sending data and, subsequently, to resume sending data as the input buffer fills and empties.

When this strap is enabled, the input buffer fills to within approximately 40 bytes of its capacity. At this point, the terminal sends a Transmit Off signal (XOFF) to cause the host computer to stop transmitting data. When the buffer has emptied below a quarter of its capacity, the terminal sends a Transmit On signal (XON) which causes the host computer to resume data transmission. This process is repeated until the current data transfer operation is completed. When disabled (the defaulted state), no XON/XOFF handshake occurs.

Note that the XON signal is represented by a DC1 (ctrl-Q) character transmission. The XOFF signal is represented by a DC3 (ctrl-S) character transmission.

APPENDIX B

HP 125 SYSTEM DISC CHRONICLE

Operating System Revision A.01.20

With the release of Operating System Version A.Ø1.2Ø, the HP 9134 and 9135 Storage Devices are supported for use with your HP 125. Both devices contain a 4.4 Megabyte disc which appears as four separate 9895 8" flexible discs to the operating system. A certain portion of each logical 8" disc on an HP 9134/35 is reserved. This reserved area (known as spare tracks) is used if the regular storage area has a small fault (which can result in inaccurate data).

To be consistent in the implementation of the HP 9134/35 and 9895 drives on the HP125, the A.Ø1.2Ø Operating System makes use of cylinders 2 through 74 for data storage (with cylinders 75 and 76 used for sparing). The previous version of the Operating System (A.Ø1.Ø1) had cylinders 2 through 76 available for data storage.

Therefore, if you meet the following criteria:

1) You own an HP 9895A Flexible Disc Drive.

2) You are converting from Operating System Version A.Ø1.Ø1 to A.Ø1.2Ø

then you need to check all of your 8" flexible discs used with Version A.Ø1.Ø1 of the operating system to determine if files exist on cylinders 75 and 76.

With Version A.Ø1.2Ø, you will not be able to copy the file(s) in the last two cylinders with the DISC COPY utility program (you will still be able to read and write to these files). Therefore, any files found in cylinders 75 and 76 should be transferred.

To aid you in checking your discs, a program named SPARECHK is included on the A.Ø1.2Ø System disc. Use the following procedure to check your 8" flexible discs.

1) Insert a copy of the new System Disc (Version A.Ø1.2Ø) into Drive A of the 9895A and press the LOAD OP SYS function key.

2) Press the EXIT TO CP/M function key.

3) Insert the flexible disc to be checked into Drive B and type in the following command:

A>ERA B:*.$$$ [RETURN]

This command will erase all unnecessary temporary files from your disc.

4) Run the SPARECHK program by typing the following command:

A>SPARECHK [RETURN]

The screen displays three paragraphs describing the SPARECHK program. The program will then report whether or not there are files in cylinders 75 and 76. If no files are found, the message:

Disc OK. No conversion needed

is displayed. If files exist in the reserve area, the message:

Disc needs conversion. Files found on the last two cylinders.

is displayed along with the file names found on the last two cylinders. Be sure to record the names of the files displayed on the screen.

Repeat this procedure for all of your 8" flexible discs. If SPARECHK reports that all of your discs are OK and no conversion is needed, you can stop here; no problems will occur when you use these discs with Version A.Ø1.2Ø.

If the SPARECHK program reports that a disc (or discs) requires conversion, proceed to the next section which describes the transfer procedure.

Transfer Procedures

How you perform the transfer procedure is dependent on:

1) the type of file(s) found in the last two cylinders,

2) your preference as to where you would like these files to reside.

The file(s) in question is either a data file or an application file. A data filename appears as all upper-case characters (e.g. DATA). An application filename appears as lower-case characters (e.g. applic). Data files are typically transferred with the PIP Utility (described in Chapter 4). You cannot use PIP with an application file. In addition, you would probably not want to transfer a single application file, since it may be linked to other application files; therefore, the best strategy for transferring an application is to re-install the entire application on another disc (described in the "Getting Started" manual).

Now that you know the attributes of the file(s) to be transferred, your next step is to determine what disc to transfer the file to. Generally, you have three choices.

1) You can transfer a file to the new system disc.

2) You can transfer the file back to the disc it was on before.

3) You can transfer the file to any other disc (either one that already exists or a freshly-formatted flexible disc).

When you have determined the file type (either application or data) and have decided where you want the file to reside, you may proceed with the actual transfer.

Transferring Application Files

If any file identified by SPARECHK is an application file, you should re-install all the applications onto a new disc, following the procedure described in the "Getting Started" manual.

Transferring Data Files

Data files are transferred with the PIP utility program. Insert a copy of the system disc containing Version A.Ø1.2Ø into Drive A. and the disc containing files to be transferred into Drive B. Then, repeat the following sequence of steps for all files identified by the SPARECHK program.

1) Press the EXIT TO CP/M function key in the Welcome Menu.

2) Transfer a file identified by the SPARECHK program to the system disc by typing:

A>PIP A:=B:filename [RETURN]

3) Even if no error messages associated with PIP appear, you can ensure that the file has been successfully transferred to the system disc by typing in the following CP/M command:

A>DIR A:filename [RETURN]

If the file is present on the system disc, proceed to the next step. Otherwise repeat Step 2.

4) Erase the file that was transferred from the disc in Drive B by typing the following (note that the write enable tab must be present for this command to execute successfully):

A>ERA B:filename [RETURN]

5) Repeat Steps 1 through 4 until all files on Drive B identified by the SPARECHK program are successfully transferred.

6) If you have chosen the system disc as the final destination of the file(s) in question, you may stop here. If you wish to have the file(s) reside on another disc (either the original or a new disc), continue on.

7) Insert the final destination disc you have chosen into Drive B:

8) Transfer the file(s) from the disc in Drive A to the disc in Drive B with PIP by typing the following:

A>PIP B:=A:filename [RETURN]

9) If the transfer is unsuccessful because of a lack of space on the destination disc (indicated by the error message "DISK WRITE ERROR: =A:filename"), you should first erase the $$$ temporary file by typing the following command:

A>ERA B:*.$$$ [RETURN]

Then you can either ERAse files on the destination disc that you no longer require, or insert another flexible disc into drive B. In either case, repeat step 8. If the transfer completed successfully, continue on:

10) Even if no error messages associated with PIP appear, you can ensure that the file has been successfully transferred by typing in the following CP/M command:

A>DIR B:filename [RETURN]

11) You may now erase the files on the disc in Drive A by typing the following command:

A>ERA A:filename

APPENDIX C

KEYBOARDS AND CHARACTER SETS

National Keyboards

Figures C-1 through C-6 show the various national keyboards which are available on the HP 125 system as options Ø01 through Ø06.

The French keyboard (option Ø03), when delivered, is physically arranged in the AZERTY layout as shown in figure C-3.

If you order the German keyboard (option Ø04) or the Spanish keyboard (option Ø06), the error messages and function key labels on the screen are translated to the German or Spanish language.

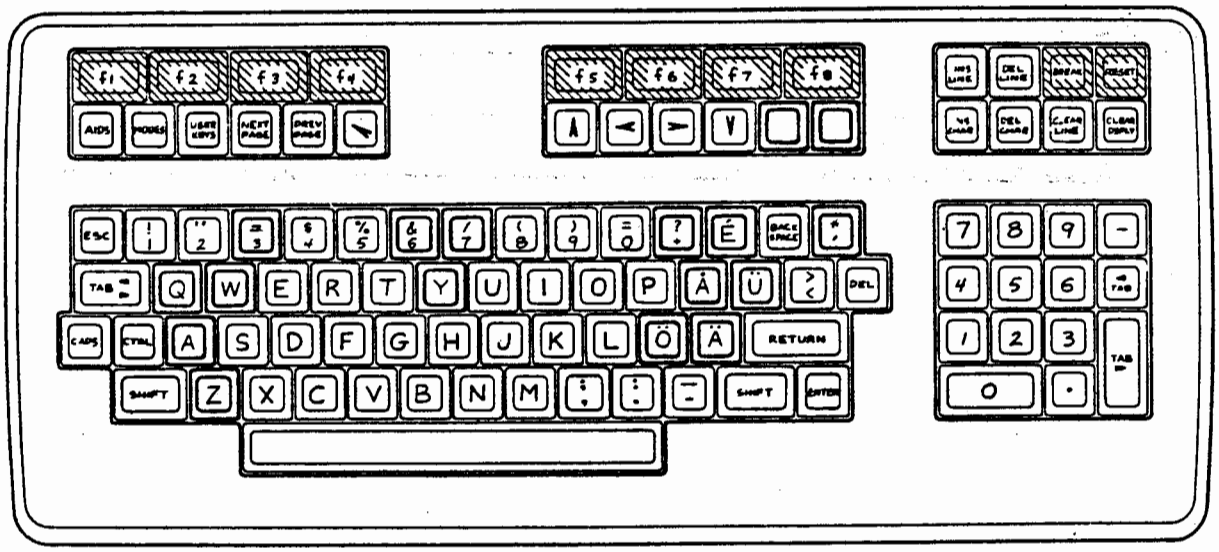


Figure C-1. Swedish/Finnish Keyboard (Option ØØ1)

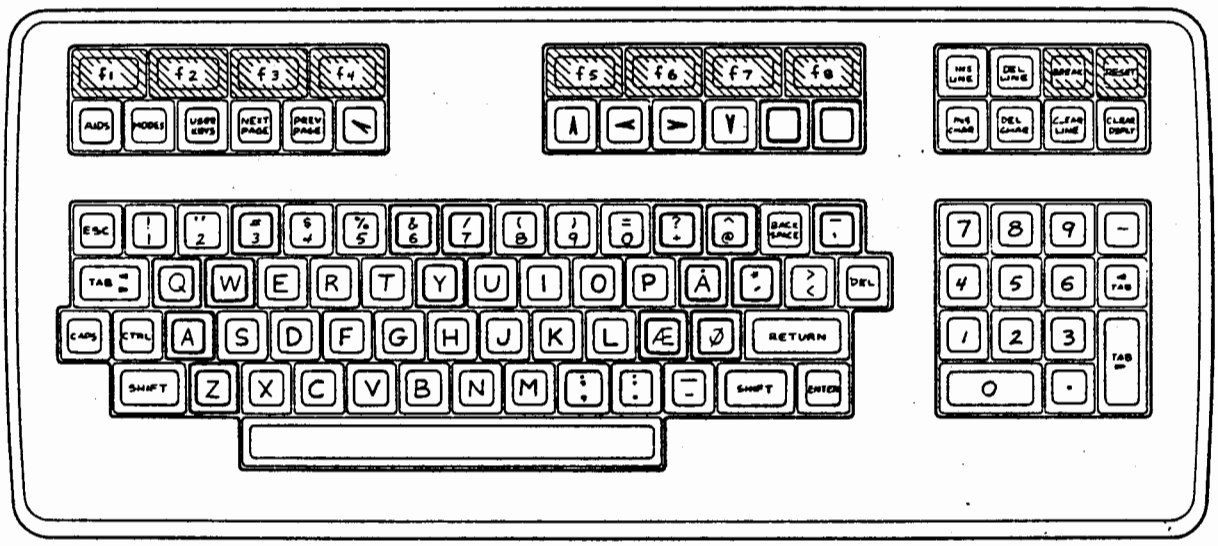


Figure C-2. Danish/Norwegian Keyboard (Option ØØ2)

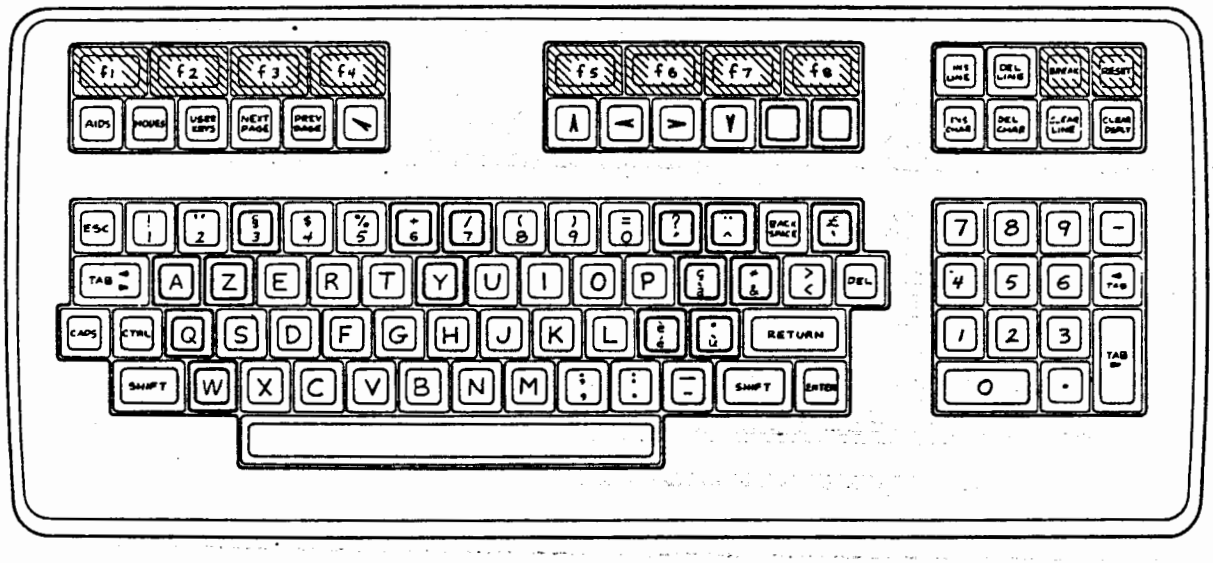


Figure C-3. French Keyboard (Option ØØ3)

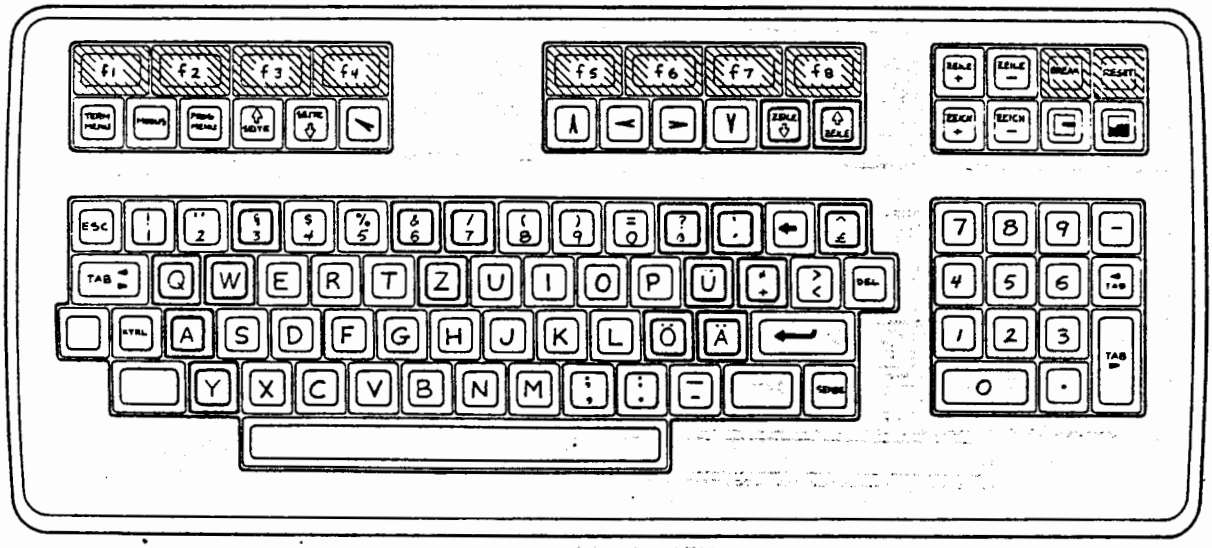


Figure C-4. German Keyboard (Option ØØ4)

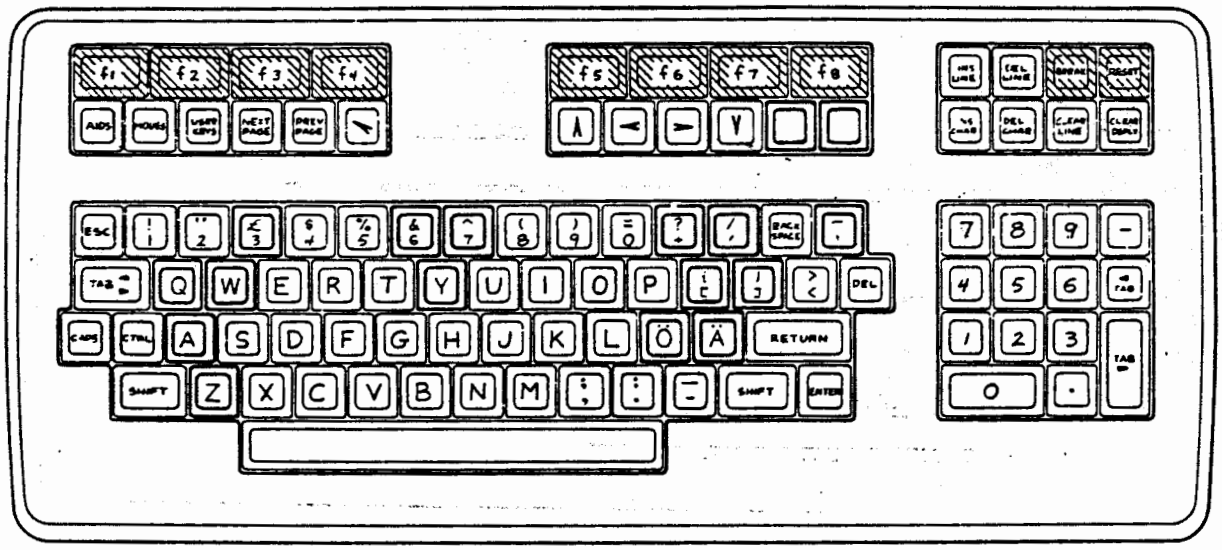


Figure C-5. United Kingdom Keyboard (Option 005)

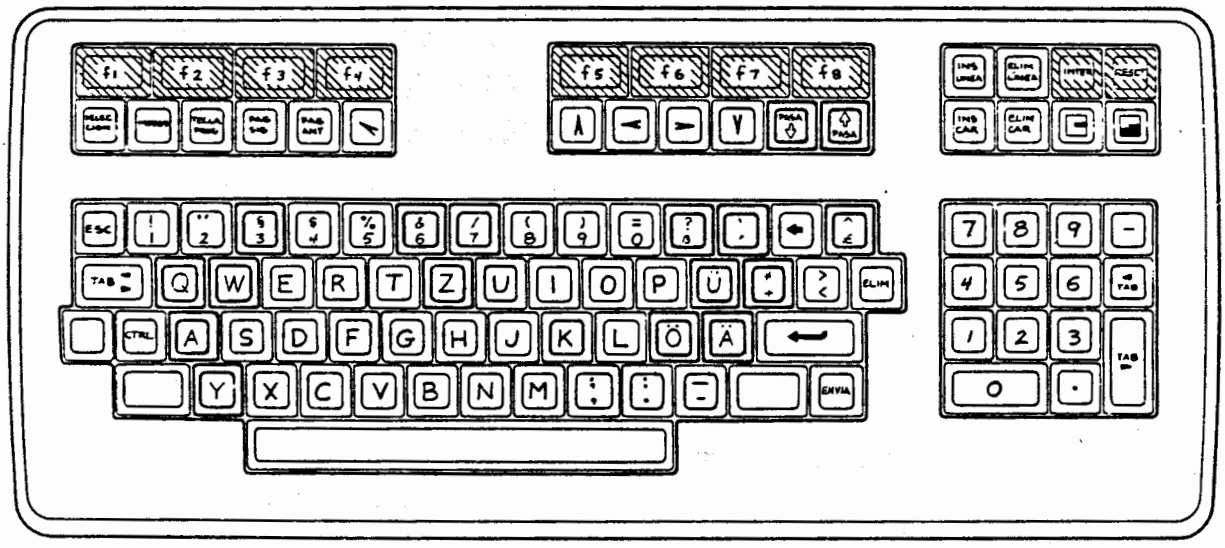


Figure C-6. Spanish Keyboard (Option 006)

ISO/ASCII Character Set

The standard ISO/ASCII character set, as shown in Table C-1, is used on the HP 125 system.

When you order one of the national keyboard options, the correct character set ROMs are installed along with the keyboard.

Table C-1. Standard ISO/ASCII Character Codes.

BIT 7 6 5 / 4 3 2 1	CONTROL (CNTL) CHARACTERS 0 0 0	CONTROL (CNTL) CHARACTERS 0 0 1	DISPLAYABLE CHARACTERS 0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
0000	@ 0 N_U NUL	P 16 DLE	SP	0	@	P	`	p
0001	A 1 S_H SOH	Q 17 D_1 DC1	!	1	A	Q	a	q
0010	B 2 S_X STX	R 18 D_2 DC2	"	2	B	R	b	r
0011	C 3 E_X ETX	S 19 D_3 DC3	#	3	C	S	c	s
0100	D 4 E_T EOT	T 20 D_4 DC4	$	4	D	T	d	t
0101	E 5 E_Q ENQ	U 21 N_K NAK	%	5	E	U	e	u
0110	F 6 A_K ACK	V 22 S_Y SYN	&	6	F	V	f	v
0111	G 7 BEL	W 23 E_B ETB	'	7	G	W	g	w
1000	H 8 B_S BS	X 24 C_N CAN	(	8	H	X	h	x
1001	I 9 H_T HT	Y 25 E_M EM	)	9	I	Y	i	y
1010	J 10 L_F LF	Z 26 S_B SUB	*	:	J	Z	j	z
1011	K 11 V_T VT	[27 E_C ESC	+	;	K	[	k	{
1100	L 12 F_F FF	\ 28 F_S FS	,	<	L	\	l	|
1101	M 13 C_R CR	] 29 G_S GS	-	=	M	]	m	}
1110	N 14 S_O SO	^ 30 R_S RS	.	>	N	^	n	~
1111	O 15 S_I SI	_ 31 U_S US	/	?	O	_	o	DEL

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