sil_ENT 700
electronic data terminals

Model 763/765 Memory Terminals

Operating Instructions

Texas Instruments

silENT 700
PORTABLE MEMORY TERMINAL

TEXAS INSTRUMENTS

Models 763/765 Operating Instructions, TI Part No. 2203664-9701
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CHANGE NOTICES				
Revision Letter	Date	ECN Number	Level	Description
A	4-1-79	449181	D	Change references to alcohol
	4-1-79	436779	D	Update to latest engineering data; correct errors
B	12-1-79	447289	D	Remove data from text; correct errors
	12-1-79	445768	D	Include Character Mapping and DEV Option
C	1-11-80	460080	D	Update Appendix B drawings

Using This Manual

All operators should read the **General Operating Guidelines** to help understand the information in this manual.

- Section I of this manual describes the many features of the Models 763 and 765 memory terminals and how to load paper, apply power, and prepare the terminal for operation.

- Section II provides detailed operating instructions.

- Section III presents sample operating techniques.

- Section IV describes procedures for communicating with other data processing equipment.

- Section V provides maintenance suggestions.

- Section VI provides exercises designed to help you, the operator, learn to use the Models 763/765 memory data terminals.

- The Appendixes contain quick-reference information, keyboard drawings, code tables, printer character sets, and equipment specifications. The inside back cover defines a few terms used in this manual that may be unfamiliar to you.

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┌─────────────────────────────────────┐
│                 NOTE                 │
│                                      │
│  The information in this manual applies │
│  to both U.S. models and international │
│  models  unless  specifically  stated │
│  otherwise.                          │
└─────────────────────────────────────┘
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About The Exercises

The exercises in Section VI are provided to help you, the operator, become familiar with the terminal and its features as quickly as possible. We strongly recommend that you study this manual from the beginning to help you understand the keyboard, indicators, and other features and what they do before you tackle the exercises. When you start performing the exercises (which are designed to be a short operator training course), begin with Exercise 1 and proceed through the remainder in the sequence presented. The exercises are arranged in logical learning progression, so for best results please don't skip around.

Other Manuals

The *Models 763/765 Systems Manual* (TI Manual No. 2203665-9701) supplied with your terminal contains detailed installation instructions, terminal status adjustments, interface timing descriptions, recommended operating options, communications features, prompting operation hints, and typical applications. The *Systems Manual* is intended for advanced operators and systems level terminal users.

A pocket-size *Quick Reference Card* (TI Publication No. 2203666-9701) is also shipped with each terminal to aid Models 763 and 765 operators and systems-level personnel to find basic information at a glance.

The *Models 763 and 765 Maintenance Manual* (TI Manual No. 2200064-9701) may be ordered from your Texas Instruments supplier. The *Maintenance Manual* contains installation and operation instructions, theory of operation, troubleshooting information, parts lists, assembly drawings, and electrical schematics.

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INTRODUCTION

The Texas Instruments *Silent 700* Model 763 memory send/receive data terminal* and the *Model 765 portable memory data terminal* are designed for easy, versatile storage and communication of data. The *memory* in both models is implemented using a revolutionary new electromagnetic *bubble memory device* manufactured by Texas Instruments. The Model 763 is a compact, table-top data terminal designed for office use. The Model 765 is a portable unit furnished with an attache-case-like cover to make it useful wherever a standard telephone and an electrical outlet are available. Both models are capable of *sending and receiving* information over long or short distances with equal ease.

A *memory data terminal*, usually referred to as an *automatic send/receive* (ASR) data terminal, is equipped to store data in its memory (magnetic bubble, magnetic tape, paper tape, diskettes, etc.) from its built-in keyboard or from a communications line (usually a telephone line). The stored data is then available for editing (corrections, changes, deletions, additions to the recorded text), printing, and for transmission to other devices at much higher speeds than manual keyboard typing.

For storage of data, the Models 763/765 use the new Texas Instruments *bubble memory,* which has no moving parts and retains its stored information even with power switched off (called *nonvolatile memory*). The bubble memory offers important advantages over commonly used paper tape, tape cassette, and diskette memories used in other data terminals: Faster access to its stored data, smaller size, less weight, and lower power consumption are only a few advantages of the bubble memory in the Models 763/765 data terminals.

Data Terminal Communications

A data terminal generates *codes.* The Models 763/765 memory data terminals use the American Standard Code for Information Interchange (ASCII), commonly called "as-key", or the equivalent C.C.I.T.T. codes. The codes can be recorded in the 763/765 bubble memory and/or transmitted to, and understood by, other devices. The Models 763/765 terminals also understand, record, and print ASCII or C.C.I.T.T. codes from other devices such as data terminals, computers, video terminals, and data loggers.

The code system consists of various combinations of *ones* and *zeros* corresponding to numbers, alphabet characters, control characters, or symbols. Combinations of *ones* and *zeros* are transmitted and received at very high speeds as *digital signals.* The digital signals are *on* and *off* signals; usually a *one* is an *on* signal, and a *zero* is an *off* signal. For example, the alphabet letter "**U**" is a series of *on off on off on off on* (imagine flipping a light switch on and off) or *1010101.*

How are the digital signals transmitted from one device to another? If the distance is about 15 meters (50 feet) or less, cables are used to interconnect the devices and the devices are referred to as *hard wired* together (directly cabled). For example, when a data terminal is connected to a computer for use as the computer console, it is usually *hard wired* to the computer.

| DATA TERMINAL Generates and understands Digital Signals | CABLE Digital Signals | EXTERNAL DEVICE Understands and generates Digital Signals |
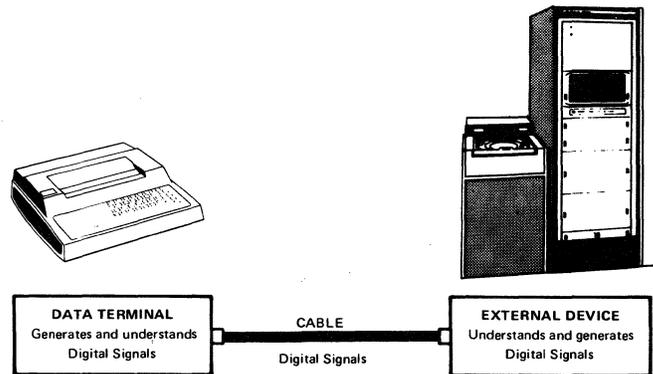
*Trademark of Texas Instruments Incorporated

Longer distances require the use of telephone lines, and the digital signals (ones and zeros) must be converted to *analog signals* (the human voice is an analog signal). The device used to convert digital signals (from and to data terminals) to analog signals (to travel over the telephone lines) is called a *data set* or a *modem* (for *mo*dulator/*demo*dulator). The modem can be built into the data terminal or external to it, and a modem is required at both ends of the telephone lines.
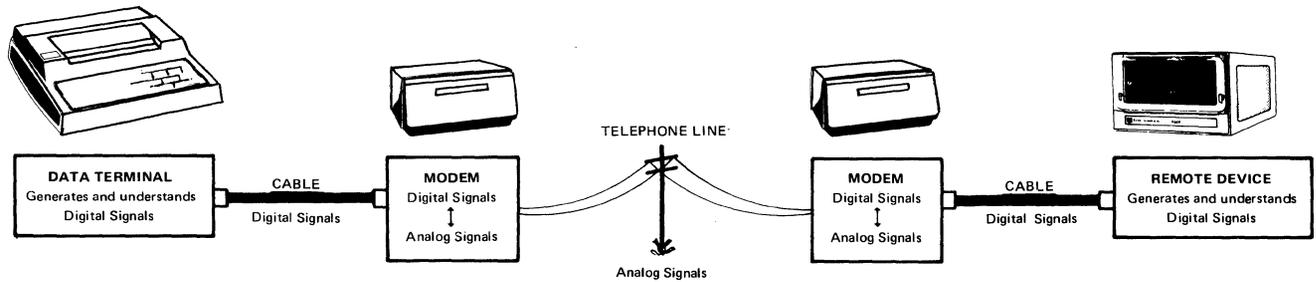
Also available for communicating analog signals over telephone lines is the standard telephone handset. However, the digital signals from the data terminal must be converted to sound signals (called *voice-grade signals*) for transmission over the telephone lines. The device that converts digital signals to sound and vice versa is called an *acoustic coupler* which can be built into the data terminal (as in the Model 765) or external to it.
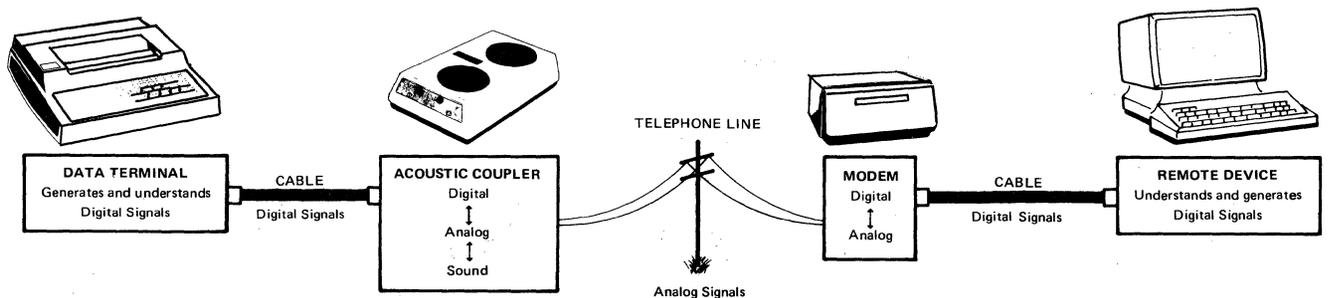
General Operating Guidelines and Notes

1. References in this manual to *data terminal* or *terminal* apply to both Models 763 and 765 unless specifically stated otherwise. The two models differ basically only in their intended use and built-in communications circuits. The Model 765 is designed for portable field use with its integral acoustic coupler mated to a telephone handset. The Model 763 is intended for table-top, hard-wired, nonportable applications.

2. *Press* means momentarily push down the designated keyboard key and release it. *Depress* means push down a key or switch until it locks. *Press and hold* means push down a key and hold it down while performing some other stated action (similar to the SHIFT key on a standard typewriter).

3. *Communications line* or simply *line* refers to the cable or telephone line over which the terminal is "connected" to another device. *On line* means the terminal is set so as to transmit and receive coded data over the communications line. *Off line* (also called *local*) means the terminal is electronically disconnected from the communications line.

4. Press the PAPER ADVance key to advance the paper (the printhead does not move). This key does not generate a code, and its action is neither transmitted nor stored in memory. Press and hold the PAPER ADV key to feed the printing paper out of the terminal.

5. Press the SKIP key to move the printhead to the left margin and advance the paper (equivalent to a standard typewriter carriage return). Or you may press both the LF (line feed) and CR (carriage return) keys to generate the equivalent to a standard typewriter carriage return.

6. Note the operating *CAUTIONS* throughout this manual. Most notably, do not operate the data terminal without printing paper: the platen and printhead could be damaged, voiding the warranty.

7. The Models 763/765 terminals are normally in the *ASR* mode. To enter the COMMAND mode, simply press the CMD key. The terminal will stop whatever it may be doing to await your command, so be careful not to press the CMD key accidentally.

8. The word **record** is used extensively in this manual to define two entirely different terms. **Re'-cord** refers to a contiguous block of data stored in the memory. **Re-cord'** (as in RECORD ON, RECORD OFF, etc.) refers to the act of storing data in memory. Although no accent marks are used in the text to distinguish the meaning of the word, the context in which it is used should signify its intended meaning.

Acoustic Coupler Muffs (Model 765 Only)

Printer Mechanism

Keyboard

Power Switch

Paper Door
Printhead
Platen (Under Paper)
Window and Pinch Roller

Function Keys Label

Operating Mode Indicators
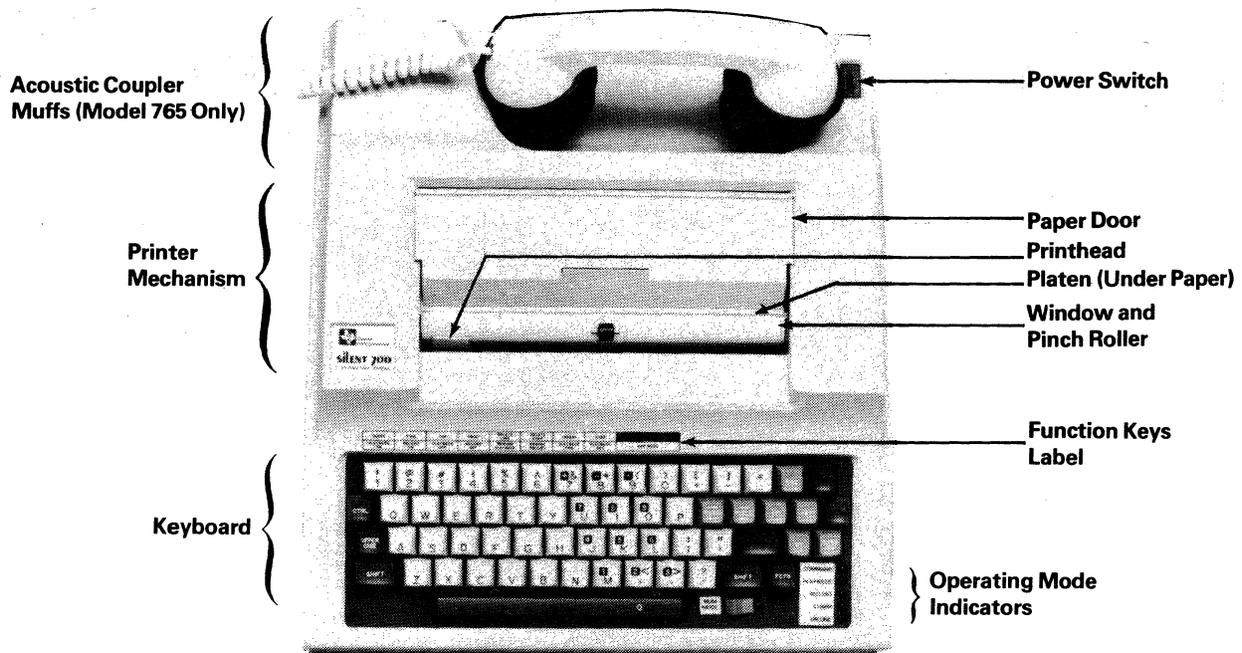
SECTION I

BECOMING FAMILIAR WITH THE TERMINAL

The Models 763/765 memory data terminals are shipped ready to operate, requiring only connection to a communications line and an electrical outlet. Off-line operations (such as storing data in memory for later transmission, entering data in response to prepro- Thus, you can perform most of the instructions listed in this section of the manual without connecting the termi- nal to a communications line. Of course the Model 765 needs only a telephone handset for on-line operation through its acoustic coupler. The Model 763 requires hard-wired connections to its communications line, as described in the *Systems Manual* furnished with your terminal.

Setting Up The Terminal

Setting up the Model 765 terminal for operation is simple. The Model 763 is even simpler, requiring only completion of *step 5* below. If your terminal is already installed and operational, you may proceed to the next topic.

> **NOTE**
>
> Connections to communications lines are described in the *Systems Manual*.

1. Place the Model 765 terminal on a table or stand with the *Silent 700* label on the terminal cover facing up.
2. Unlatch the terminal cover by pushing out and down on the top part of the latch until the bottom part of the latch unhooks from the groove in the terminal base; then swing the bottom part of the latch away from the base while still pressing down on the top part of the latch.
3. Lift the cover straight up and off.
4. Remove the ac power cord from inside the termi- nal cover.

> **CAUTION**
>
> Check the label on the rear of the terminal to determine the correct vol- tage required for your terminal. Ensure that the voltage at the wall outlet matches the terminal voltage rating listed on the label.

5. Plug the three-socket female connector of the power cord into the rear of the terminal, and plug the three-prong male connector into an ac wall outlet of the appropriate voltage.

Power Cord Receptacle

Serial Number and Voltage Label

Connector P2

Connector P1 (Under Flap)
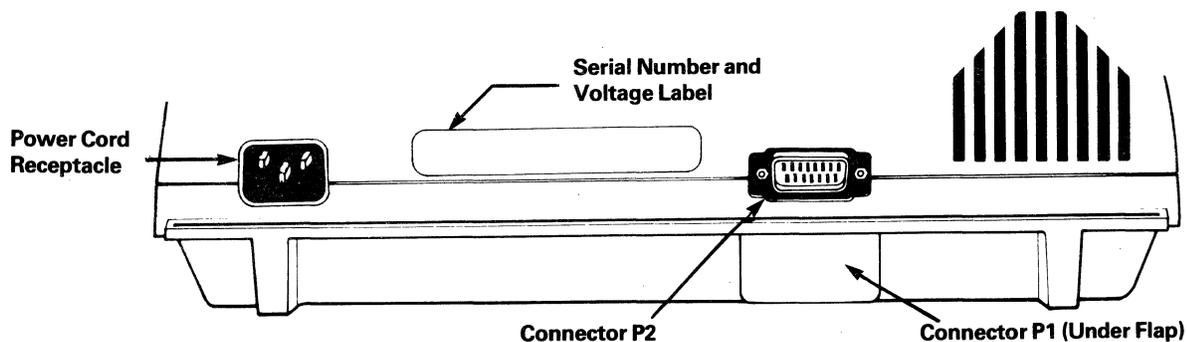
Switching the Terminal On and Off

CAUTIONS

- *Do not* press any printable character keys unless paper is loaded: Damage to the printhead and platen could result, voiding the warranty.
- Take care when first operating the terminal after it has been stored at temperatures exceeding the normal operating range. The terminal is designed to operate between 10 °C and 40 °C (50 °F and 104 °F) and should be allowed to come within this operating range before power is applied. Operation of the terminal outside of this range may cause malfunctions.
- After switching power off, wait at least 15 seconds before switching power on again: Malfunctions may result.

1. Check that the power cord is plugged into the terminal and the wall outlet. Check that paper is loaded (see **Loading Paper**).
2. To switch the terminal ON, set the power switch (located on the top right rear of the terminal) toward the rear of the terminal. The terminal will respond by moving the printhead over to the left margin and typing the message "READY" followed by two characters that indicate the revision number of the terminal internal programming. The word "PROM", followed by a number, also may be printed to indicate the model of the programmable read-only memory (PROM) installed in your terminal.
3. To switch the terminal OFF, set the power switch toward the front of the terminal.

Model 765

Model 763
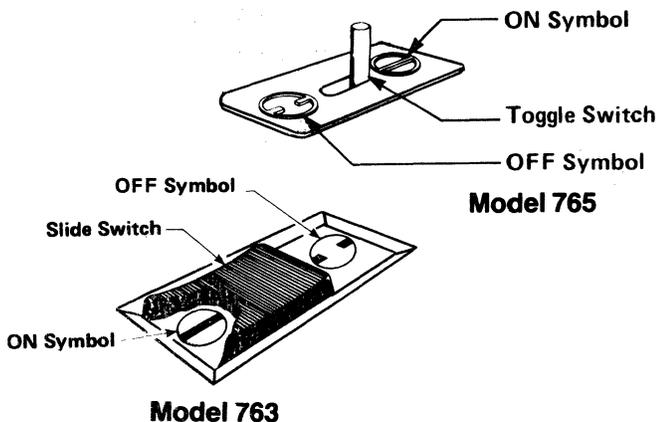
Loading Paper

> **NOTE**
>
> TI-approved thermal printing paper is available from Texas Instruments in single 100-foot rolls, case lots, and pallet lots under TI Part No. 972603.

1. Switch the terminal power ON.
2. Lift the paper door.
3. If only a small amount of paper remains on the paper supply roll, grasp the unused roll and lift it from the paper compartment. Tear the paper halfway between the paper roll and the platen, then remove the roll. If no paper remains on the paper supply core, simply lift out the core.
4. Press and hold the PAPER ADV key to eject any remaining paper from the paper chute.
5. Grasp the new paper roll so that the loose end of the paper is toward you with the end pointed up. You may fold a "vee" in the loose end to aid paper threading.

> **IMPORTANT NOTE**
>
> The warranty and/or service contract on the thermal printhead is subject to nullification if the thermal printing paper used in the terminal does not meet *TI Specification 972603-0001*.

6. Place the paper roll on the paper roll supports so that the loose end is toward the front of the terminal. Check that the roll can rotate freely.
7. Grasp both corners of the loose end of the paper and gently pull up about 6 inches.
8. Feed the paper over the aluminum roller and down through the paper chute until it appears behind the window. The paper will not slide behind the printhead because the printhead is pressed against the platen.
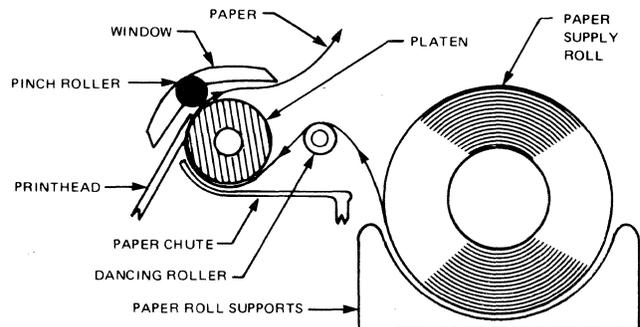
Paper Loading Diagram
(Side View)

9. Press and hold the PAPER ADV key until the paper feeds behind the printhead and under the window.

> **NOTE**
>
> If paper does not feed freely, gently push the paper down the chute and simultaneously press and hold the PAPER ADV key.

10. Tear off the excess paper by pulling it forward and down over the tear off edge of the window.
11. After the paper loading is complete, switch power off, wait 15 seconds, and switch power on again to initialize the electronics.

PAPER ROLL SUPPORTS

PRINTHEAD

ROLLER
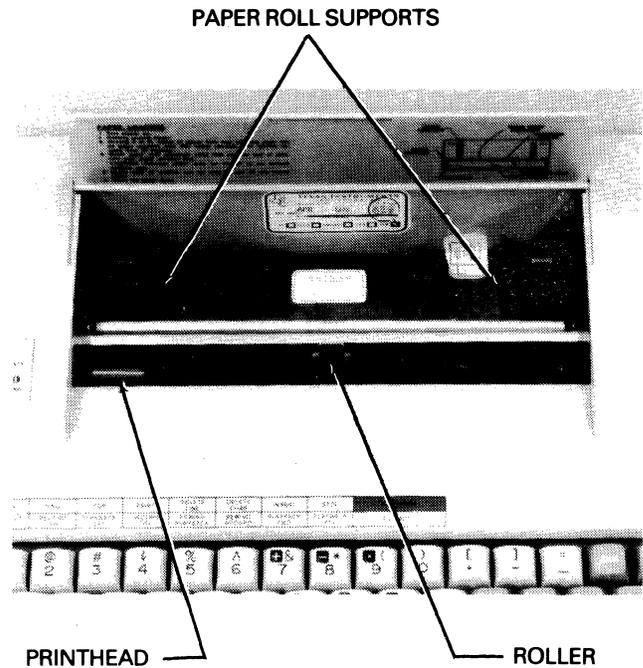
Replacing the Model 765 Outer Cover

Before attaching the outer cover to the Model 765, wind the power cord inside the cover as follows:

1. Detach the male power cord plug from the wall outlet and the female plug from the rear of the terminal.

2. Lay the outer cover, the inside facing you, on a flat surface and attach the power cord to the inside of the cover as shown in the figure.
3. Replace the outer cover over the Model 765 and snap shut the four latches. Make sure the latches are firmly closed before lifting the terminal by the handle: accidental detachment could occur.

Start Here
Press Connector
to Clip and
Wrap Clockwise

(Inside Cover)
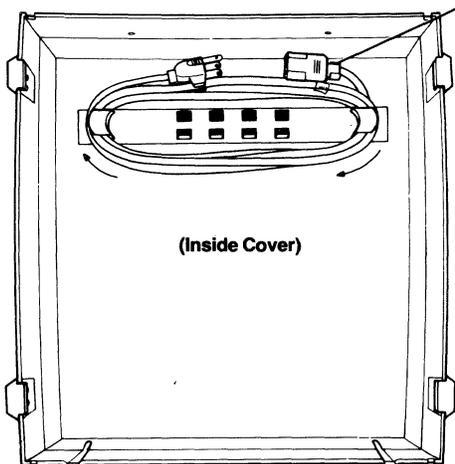
U.S.A. Model 765 Cord Storage

END VIEW
FLAT SIDE UP

(Inside Cover)

Start Here
Place Cord into
Clip and Wrap
Counterclockwise

Cable Clip
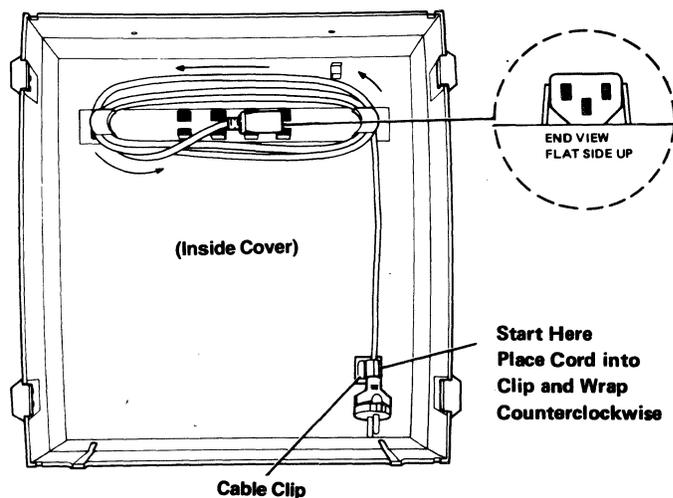
International Model 765 Cord Storage

3

INDEX	FIND	TOP	PRINT	DELETE LINE	DELETE CHAR	INSERT	STOP	EDIT MODE	
PLAYBACK ON	RECORD ON	PLAYBACK OFF	RECORD OFF	REWIND PLAYBACK	REWIND RECORD	PLAYBACK FWD	PLAYBACK REV	ASR MODE	
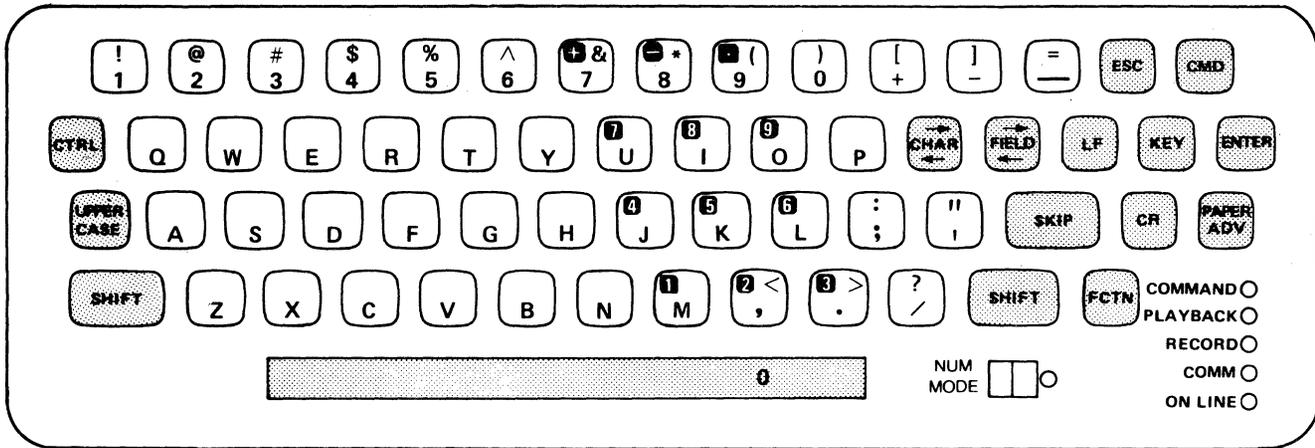
Standard U.S.A. Keyboard (See Appendix B for International Versions)

Keyboard Controls and Indicators

The Models 763/765 keyboard and indicators are similar in function and appearance to a standard electric typewriter keyboard. Some keys are unique to the Models 763/765 and may be new to you. The following discussion of the various terminal controls and indicators is intended as an introduction; detailed instructions for their use are provided in subsequent sections of this manual and in the *Systems Manual.*

CAUTION

Do not press any of the printable character keys until you have loaded printing paper into the terminal: Damage to the printhead and platen could result, and the warranty may be voided. See **Loading Paper** for instructions.
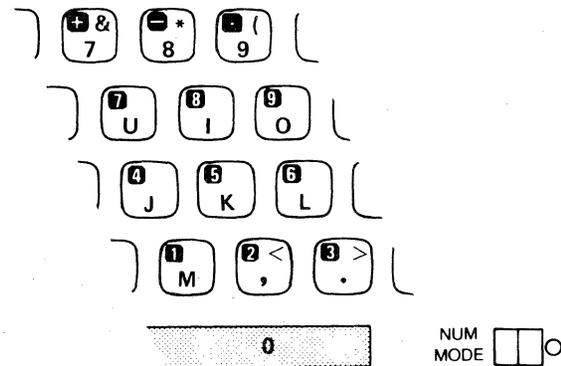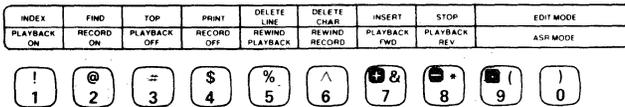
Function Keys

The decal above the keyboard labels the functions which are available for text editing and ASR operations. The *function keys* are activated by pressing and holding the FCTN key and then pressing the appropriate number key. For example, to invoke the FIND function (EDIT mode, top row of decal) press and hold FCTN and press the 2 key.

All editing functions (decal top row) are active when the terminal is in the EDIT command mode. All ASR functions (decal bottom row) are active when the terminal is in the ASR interactive mode. The decal does not list two additional functions available for use: the PRINTER-ON and PRINTER-OFF functions in the ASR mode are activated using the 9 and 0 keys, respectively, in conjunction with the FCTN key.

NUM MODE (Numeric Keyboard Mode) Switch and Numeric Keypad

The NUM MODE switch located to the right of the space bar activates the numeric keypad (indicated by the small white numbers within the black squares). The numeric keypad layout is similar to a standard 10-key adding machine or electronic calculator. The numeric keypad is primarily intended to facilitate entry of a large quantity of numbers.

When the NUM MODE switch is on, indicated by the red indicator lamp next to the switch, all other keyboard

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keys are inoperative unless the SHIFT key is pressed and held. With the SHIFT key activated, other characters can be generated (e.g., comma and bracket). The keyboard keys active in the NUM MODE are shown in Appendix B. Take care that the NUM MODE is not unintentionally activated, since even commands cannot be entered (unless the SHIFT key is also pressed). Also note that the space bar serves as the zero (0) for the numeric keypad.

Special Purpose Keys

The CHARacter-forward/reverse, FIELD-forward/reverse, ENTER, ESC (escape) and CTRL (control) keys are used in conjunction with the ASR and EDIT modes of terminal operation. The use of these special purpose keys is described in Section II of this manual. The control characters generated in conjunction with the CTRL key are shown in Section IV and Appendix A.
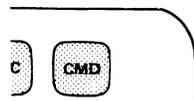
CMD (Command) Key

The 763 and 765 have two modes of operation: *command* and *interactive*. Pressing the orange CMD key on the upper right corner of the keyboard sets the terminal to the *command* mode and causes the COMMAND indicator lamp to light. Pressing the CMD key and then the SKIP key returns the terminal to the *interactive* mode. These modes of operation are described more fully in Section II of this manual.

UPPER CASE Lock Key

The UPPER CASE lock key is very similar to the shift lock on a standard typewriter, with one exception: when the terminal is in UPPER CASE lock, it still requires the use of the SHIFT key to print shifted nonalphabetic characters. For example, even with the UPPER CASE key depressed, the SHIFT key is still required to print the percent (%) symbol. The UPPER CASE lock key remains active until it is pressed again to release it.

SKIP Key

The SKIP key performs the same function as a *carriage return* on a standard typewriter. Pressing the SKIP key causes the paper to advance and the printhead to return to the left margin. When the terminal is ON LINE, the SKIP key also creates an end-of-line (EOL) code which is added to the data being transmitted or recorded. Additional uses of the SKIP key are detailed in Section II of this manual under **EDIT Mode.**

PAPER ADVance Key

The PAPER ADV key will advance the paper one line each time it is pressed. If it is pressed and held, it will cause the paper to advance continuously until it is released. The PAPER ADV key does not generate a code that can be stored in memory or transmitted.

LF (Line Feed) Key

The line feed (LF) key causes the paper to advance one line. The printhead does *not* move. This key generates a code which can be transmitted and/or stored in memory.

CR (Carriage Return) Key

The carriage return (CR) key causes the printhead to move to the left margin. The paper does *not* line feed. This key generates a code which can be transmitted and/or stored in memory.

Programmable KEY

The key labeled KEY causes the terminal to process the single character for which the operator has programmed it. The definition for the KEY may be changed by a simple command entered through the keyboard. Your terminal may already be set for a special function: refer to the *Systems Manual* for details.
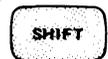
SHIFT Keys

The SHIFT keys perform the same function as the SHIFT key on a standard typewriter. Pressing and holding either SHIFT key, in conjunction with any printable character key, causes printing of the appropriate uppercase alphabet letter or the symbol atop the keycap. For example, pressing the SHIFT and 4 keys will generate the "$" sign.

Repeating Keys

If one of the following keys is pressed and held longer than ½ second, their action or character will continuously repeat until the key is released:

- Space bar
- Underscore (_) key
- Minus/hyphen (-) key
- Period (.) key
- Asterisk (*) key
- CHARacter forward space/backspace key.

Double Space Printing

Off-line double line spacing may be obtained simply by pressing and holding the FCTN (function) key while quickly tapping the PAPER ADVance key. All subsequent lines will be printed double space. To return to single space printing, again press the FCTN and PAPER ADVance keys.

```
                              COMMAND O
                              PLAYBACK O
                              RECORD O
   NUM  ┌──┬──┐               COMM O
   MODE └──┴──┘ O             ON LINE O
```
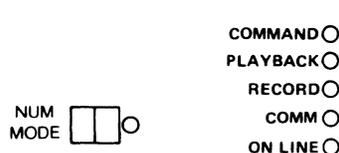
Indicators

The six indicator lamps located on the lower right corner of the keyboard indicate the following when lit:

COMMAND — the terminal is in CMD (command) mode.

PLAYBACK — playback file is transmitting its contents to the line or the printer or both.

RECORD — the record file is active and will accept data from the line or the keyboard for recording.

COMM — the terminal is ready to transmit and receive data over the communications line (acoustic coupler or cable)

ON LINE — the terminal is set to transmit and receive data over the communications line

NUM MODE — located adjacent to the NUM MODE rocker switch, indicates that the numeric keypad keys are active. All other alphanumeric keys are inactive.

The Commands

The Models 763/765 memory terminals accept certain English-text *commands* which enable the operator to modify the operational parameters of the terminal, manipulate data and how it is stored in the terminal memory, and print out the terminal *status display*. Other commands cause the terminal to test itself and automatically execute commands stored in memory.

The commands afford the user the ability to configure the terminal for a wide range of diverse applications. The ability to modify communications parameters enables the terminal to communicate with several different types of networks using the appropriate telecommunications conventions for each.

Interactive Operation

Interactive (on-line) operation describes the ability of the terminal operator to communicate with the terminal itself and, through the terminal, with remote data processing equipment.

Communications procedures may differ from one data terminal installation to another, depending on the type of data processing devices with which the Models 763/765 may be communicating. Therefore, specific step-by-step instructions must be tailored for your communications network. General operating principles applicable to all communications networks employing the 763/765, however, are described in **Section IV, Terminal Communications**.

Model 763
The Model 763 must be connected to a communications line before on-line operations are possible. See the *Systems Manual* for cabling information, and refer to Section IV of this manual for more details.

Model 765
Operation of the Model 765 using its built-in acoustic coupler requires only a standard telephone set and an electrical outlet. Detailed instructions for using the acoustic coupler are contained in Section IV of this manual.

ASR Operation

When the terminal is switched on, it is in the interactive mode which permits ASR (automatic send/receive) operations. The terminal will remain in the interactive mode until the COMMAND mode is entered by pressing the CMD key. The FCTN key, in conjunction with the number keys on the top row of the keyboard, are used to access different ASR functions such as recording data into or playing back data from the memory, along with many other keyboard and communications operations.

KSR Operation

KSR (keyboard send/receive) is also possible in the interactive mode. KSR is the transmission of any keyboard characters via the communications link and printing of any characters received via the communications link. Some communications links may require your terminal to transmit its answer-back memory (ABM) contents before you can commence data transmission (see Section III of this manual), and some links may require use of the "BREAK" to signify that you wish to transmit or receive messages. The ABM contents are triggered by pressing and holding the CTRL key and pressing the 1 key, called *"HERE IS"*. The BREAK signal is generated by pressing and holding the CTRL key and the 2 key. Neither of these keys is labelled as such on your 763/765 keyboard.

The Terminal Memory System

One of the important features of the Models 763/765 is their ability to record into and play back information from the terminal memory. The memory enables you to enter all your information, review it, correct it as required, and then transmit the information to other data processing equipment.

Files

To store information (data) in memory, first it is necessary to establish areas in memory where the data can be stored. These areas of memory are commonly called *files*. The size of the files used in the memory system is determined when the file is created (see below). This means the file can be made larger or smaller, when created, depending on the amount of information to be stored in the file. Just as the memory system is composed of files, the file itself is composed of *records*.

Records

The term *record* is used to describe the basic unit of a file. The records of a file are adjustable in size from 1 to 80 characters long at the time the file is created. The records in separate files may be different lengths, but all records in the same file must be created the same length.

Creating Files

The files used in memory must be created by the operator, and each file has four parameters that must be specified by the operator when creating the file. The four factors are FILE NAME, FILE FORMAT, FILE SIZE, and RECORD SIZE. The following paragraphs describe each parameter in detail.

File Name

Each file in memory is assigned its own name. This name must be used in all future references to the file. This system is very similar to files in an office file cabinet. When a particular file is desired, one looks for it under its name. The name of a file in memory must contain at least *one letter* and no more than *six letters or numbers* total. The file name *must begin with a letter*. No spaces are permitted between characters.

File Format

The format of a file determines how the terminal will fill up the file with the information entered. The two formats are LINE and CONTINUOUS. Each has its own advantages and disadvantages, as the following paragraphs explain.

Line Format. In the LINE format each record in memory contains only *one line of data.* For lines shorter than the operator-designated record length, memory area is reserved between the end of the line of data and the designated end of the record. For example, if the record of a file is designated as 72 characters long (80 characters is the maximum) and the number of characters entered is only 62, the 10 characters of memory space between the end of the line of data (62) and the end of the record (72) would be reserved; that is, not used. Although the LINE format is particularly helpful in preparing and/or editing a data file, it does not provide maximum use of memory: From the above example, 10 characters worth of memory were not used on the single line.

Continuous Format. In CONTINUOUS format each designated record is filled before another record is started. Therefore, each record may contain one or more *lines* of data. If the line from the above example was recorded in a CONTINUOUS-formatted file, after the 62 characters were entered the terminal would use the first 10 characters of the next line to fill up the remaining space in the record. Although this format is more difficult to edit than the LINE format, it makes maximum use of memory. When the data stored in terminal memory is transmitted to a remote device through the communications channel or printed by the terminal printer, it will appear identical, whether recorded in LINE or CONTINUOUS format.

File Size

This, simply, is how large the file will be. The size of the file is measured in lines (records) of text.

Record Size

Record size is a measure of how many characters will be contained in each record of text: The maximum record size is 80 characters.

SECTION II

DETAILED TERMINAL OPERATIONS

This section describes in detail some of the basic terminal operations. Topics discussed include entry and definition of commands, setting terminal configuration parameters, using the ASR functions, and basic text editor operations. For additional details on these operations, see Section I of the *Systems Manual.*

Terminal Commands

The COMMAND mode of the terminal enables you to perform a variety of functions to control the operation and configuration of the terminal. All commands are in English-text form which describes to the terminal the operation you want performed. The syntax (format) and entry instructions for each command are described later in this section.

Syntax diagrams are used in this section to illustrate the format of commands. *Syntax diagrams* are graphs, always flowing from left to right, which represent the syntax rules to be followed while entering commands. An example of a syntax diagram is shown in the following figure.
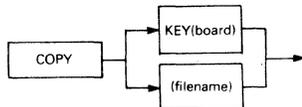
In this figure a portion of the COPY command syntax is illustrated. Following the flow of the diagram from left to right, we see that the COPY command must precede any of the other parameters. Then two alternate paths are available: Each alternative describes a valid syntax option which may be chosen. In this example, the KEY (keyboard) or the FILENAME options may be selected. The diagram then continues to flow, from left to right, to the end of the selected path. In order to simplify the syntax diagrams, the required spaces between command parameters are not illustrated.

Accessing the COMMAND Mode
The COMMAND mode is accessed by pressing the CMD key located at the upper right corner of the keyboard. The terminal signifies its entry into the command mode by sounding an audible tone, printing the command prompt symbol ▶ at the left margin of the page, and lighting the COMMAND indicator lamp in the lower

right area of the keyboard. The COMMAND indicator lamp will remain lit until command mode operations are completed. Once the terminal enters the command mode, it will remain in that mode until the desired command is entered and the command is accomplished by the terminal.

Pressing the CMD key requests the immediate attention of the terminal; care should be exercised in its use, since when you press the CMD key, the terminal will immediately halt any operation in progress, go into the command mode, and await entry of your command.

Entering a Command
The Models 763/765 provide 14 basic commands. All commands can be entered using a single line of text which may be edited during its entry using the CHAR (character backspace) key. The CHAR (forward space) and FIELD (forward) keys are disabled during command entry. Command parameters must be separated by at least one space.

Correction of characters in the command text may be done by using the printhead as a "character pointer". By positioning the pointer below the character to be modified, the correction is made simply by typing the correct character. Thus, the CHAR key is used to position the pointer (printhead) to the location where a change is desired, or the FIELD key may be used to return the pointer to the left margin. Whenever the pointer position is changed, all characters *to the right* of the pointer will be erased from the terminal memory and must be re-ntered.

Once a command is entered, command entry is terminated by pressing the SKIP key which causes the terminal to execute the specified command. Commands may be cancelled at any time during entry by using the CHAR key to discard the previously entered command text and then terminating the command using the SKIP key.

Definition of Commands
As previously mentioned, 14 basic commands are used with the terminal. The 14 commands may be divided into the following five categories:

* File structure display and modification commands, also called *file utilities*

- Communications parameter modification and terminal status display commands
- File editing command
- Terminal diagnostics (self-test) commands
- Automatic command execution.

Table 2-1 lists the commands in each category along with the abbreviations that may be used to enter some commands. Commands may be entered in uppercase or lowercase text.

File Utility Commands

CREATE — The *create file* command allocates a contiguous block of memory for a data file. The data file allocated is identified by the filename you specify.

Syntax:

- The *filename* parameter is a required parameter you must use to assign the name by which a particular file will be identified in all future operations. The filename may consist of up to six characters and must begin with an alphabet letter (A to Z). The filename may contain numbers, but may not contain spaces. Filenames may not be KEY and TO which are reserved words.
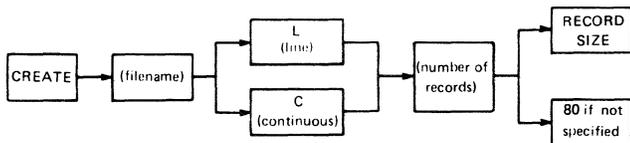
> **NOTE**
>
> When typing the filename, be careful to type the name exactly the same each time, in exactly the same character case (lowercase and capital letters). For example *MYFILE, Myfile,* and *myfile* are three *different* filenames because each is typed using a different character case.

TABLE 3-1. MODEL 763/765 MEMORY TERMINAL COMMANDS AND ABBREVIATIONS

CATEGORY	COMMAND	ABBREVIATION	COMMAND DESCRIPTION
File Utilities	CREATE	CF	Allocates memory space for a data file
	DELETE	(none)	Deletes entire file from the memory catalog
	ERASE	(none)	Erases the contents of a file
	LOCK	(none)	Prevents data in a file from being modified
	FREE	(none)	Releases protection provided by lock command
	COPY	CP	Copies data *from* and *into* a file
	CATALOG	CL	Lists file catalog
Communications Parameter Modification and Terminal Status Display	CHANGE	CG	Modifies communication parameters
	STATUS	ST	Displays communication parameters status
	ONLINE	ON	Places terminal in the ON-LINE mode
	OFFLINE	OFF or OF	Places terminal in the OFF-LINE mode
File Editing	EDIT	ED	Permits modification of file contents
Terminal Diagnostics	TEST	TS	Activates terminal self-test feature
Automatic Command Execution	RUN	(none)	Causes commands stored in a file to be executed

- The third parameter specifies the format in which data is to be stored in the file. The option **L** assigns a *line format* to the file. The option **C** assigns a *continuous format* to the file. See subsection 3.1.6 of this manual for an explanation of *file formats.*

- The *number-of-records* parameter (a positive number) specifies the maximum number of physical records in the file. File size cannot be expanded or reduced once it is created.

- The last parameter, *record size*, specifies the fixed number of characters per record. This parameter is optional and may have a value up to 80 characters per record (including spaces). If no number is typed, 80 will be assumed.

Once the file is created, file parameters may not be modifed. However, using the COPY command it may be possible to transfer the file contents to another file of the desired parameters.

In some cases a *memory compression* may be necessary to obtain sufficient memory to allocate the file. The terminal will automatically compress the memory and will then print the message, ONE MOMENT PLEASE, to notify the operator of a slight time delay to complete the memory compression process. No other operations are possible until the compression is complete and the DONE message is printed. An example of creating a file is shown below:

```
▶ CREATE FILE1 C 12 72
DONE
```

DELETE — The *delete file* command eliminates all contents of the file specified from the bubble memory catalog. Deletion of *locked* files is not possible (see the **LOCK command** below). The data stored in the file will be deleted from memory. The area occupied by the deleted file is available for future allocation.

Syntax:

```
DELETE ──▶ (filename)
```
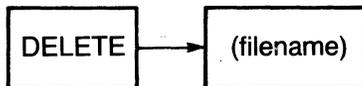
ERASE — The *erase file* command causes erasure of the contents of a file. The data stored in the file will be lost, but the *filename* will remain in the catalog for later use. *Locked* files cannot be erased.

Syntax:

```
ERASE ──▶ (filename)
```

LOCK — The *lock file* command prevents data stored in a file from being erased, deleted, or modified. (Locked files can be eliminated by a *system initialization:* See the description of the TEST command in this section.)

Syntax:

```
LOCK ──▶ (filename)
```
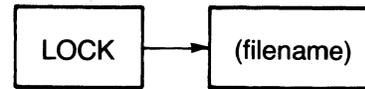
FREE — The *free file* command removes the protection provided by the **LOCK** command.

Syntax:

```
FREE ──▶ (filename)
```
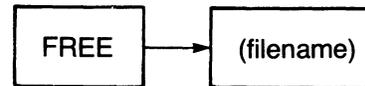
COPY — The *copy* command offers several options for copying data into or out of a file. The COPY command options are described below:
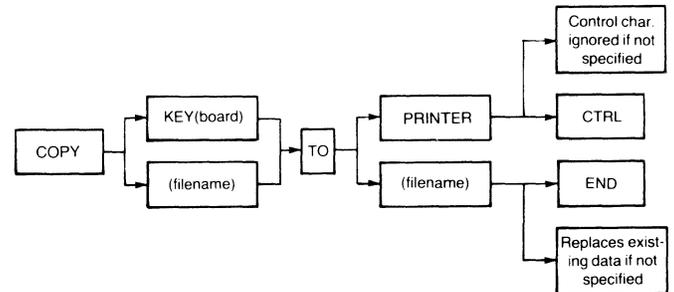

```
NOTE

The COPY KEYboard to (filename)
and COPY (filename) to (filename)
commands will "write over" data in the
second (filename) on a line-for-line
basis. Use the END option to preserve
existing data in the second (filename).
```

- **Copy file to printer** with option to print or execute control characters.

Syntax:

```
COPY [filename] TO PRINTER
COPY [filename] TO PRINTER CTRL
```

The CTRL option causes any control characters in the file to be printed but not executed. If the *CTRL* option is not entered, control characters will be executed. Examples of control characters are LF (line feed) and CR (carriage return).

- **Copy file to file** with an append option.

Syntax:

COPY [filename] TO [filename]
COPY [filename] TO [filename] END

Copying of data between files of different formats is possible, but a format change will occur. Also, whenever copying data from one file to another, any text editor filler characters will be removed from all except the last record in the file. (For an explanation of *filler character* operation in the text editor see **EDIT MODE** description in the *Systems Manual.*) The END option causes the source file (first *filename*) to be appended to the contents of the destination file (second filename). This option should not be used for *continuous*-formatted files if the source and the destination files are the same file.

- **Copying from the keyboard to a file.** This copy command option permits entry of data directly from the keyboard into a file.

Syntax:

COPY KEY TO [filename]
COPY KEY TO [filename] END

The typing of each record must be terminated by pressing the SKIP key. Once all desired data is entered via the keyboard, the COPY operation must be terminated by pressing the ENTER key immediately after pressing the SKIP key. The END option appends the keyboard entry to the end of the destination file.

▶ COPY KEY TO FILE1

▶ COPY KEY TO FILE1 END

CATALOG — The *catalog command* causes the bubble memory file catalog to be displayed on the printer.

Syntax:

```
CATALOG
```

The file catalog information displayed includes the names of all existing files and their corresponding parameters. An .L display following the file TYPE (format) indicates the file is in a LOCKed state.

Once all files are listed along with their corresponding parameters, the amount of memory remaining is listed in terms of 80-character records. The names of the files assigned to the playback and record files also are listed. A typical bubble file catalog display is shown below:

```
▶ CATALOG                    MEMORY CATALOG

        NAME    TYPE    MAXIMUM   CHARS/   COMPLE
                        RECORDS   RECORD   RECORD
        TEMP    LINE       25       80        6
        INDEX2  CONT       24       72        2
        MYFILE  LINE.L      4       30        0
        COPY2   CONT        4       30        2
        FILE1   LINE       12       72        0

        MEMORY AVAIL =    61   80-CHAR LINES
        RECORD FILE:    COPY2
        PLAYBACK FILE:  COLECT
DONE
```

Communications Parameter Display and Modifications Commands

CHANGE — The *change* command, as its name implies, is used to change the terminal configuration parameters stored in bubble memory.

Syntax:

```
CHANGE — (parameter) — TO — (value)
```
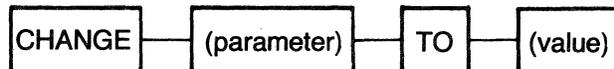
In general, these parameters contain information concerning the terminal communication configuration (e.g., transmission speed) and ASR operations. See the **Terminal Configuration** topic in this section for more details on the CHANGE command.

STATUS — The *status* command causes the terminal configuration parameters to be displayed along with their currently assigned values.

Syntax:

```
STATUS
```

See the **TERMINAL CONFIGURATION** topic in this section for a typical status listing.

ONLINE — The *online* command places the terminal in the ON LINE mode which permits data communications with external devices. The ON LINE lamp also will light.

Syntax:

ONLINE

OFFLINE — The *offline* command places the terminal in the OFF LINE (local) mode in which data communications with external devices is electronically disconnected. The ONLINE lamp will go out.

Syntax:

OFFLINE

EDIT — The *edit* command causes the terminal to enter the EDIT MODE, in which the contents of a specified file may be modified using the EDIT function keys F1 through F8.

Syntax:

EDIT — (filename)
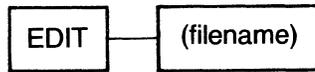
The edit functions available correspond to keys F1 through F8 listed on the top row of the decal above the terminal keyboard. The EDIT function keys are enabled upon entry into the EDIT MODE. For details on the EDIT functions and other editing operations, see the **EDIT Mode** description later in this section. Locked files cannot be edited.

Terminal Diagnostic Command

TEST — The *test* command offers two entries which perform one of the following functions:

(1) A self-test of the basic hardware components, including bubble memory and read only memory (ROM).

(2) System initialization of the file catalog and system configuration parameters.

Syntax:

TEST — Self-test only, if not specified

INIT

- **TEST** — The *test* command activates the terminal self-test feature which verifies the basic terminal hardware components without any external equipment.

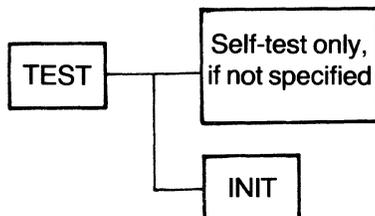Once the *test* command is activated, the terminal will appear to stop until the test is completed. If no errors occur during the test, the terminal will print the message: **DONE.** If an error occurs, a **FAIL** message will be printed, followed by one or more error codes which indicate the internal devices that have failed. The error codes and the corresponding meanings are listed in Table 3.2.

TABLE 2-2. TERMINAL FAIL MESSAGE DEFINITIONS

FAIL — 1	ROM CRC failure (U58)
FAIL — 2	ROM CRC failure (U59)
FAIL — 3	ROM CRC failure (U60)
FAIL — 4	ROM CRC failure (U61)
FAIL — 5	ROM CRC failure (U62)
FAIL — 6	Bubble 0 failure
FAIL — 7	Bubble 1 failure
FAIL — 8	Bubble 2 failure
FAIL — 9	Bubble 3 failure
FAIL — A	Bubble 4 failure
FAIL — B	Bubble 5 failure
FAIL — C	Bubble 6 failure
FAIL — D	Bubble 7 failure

- **TEST INIT** — The *test initialization* command invokes the terminal initialization feature in which the *bubble memory file catalog* and the terminal *configuration parameters* are initialized to their default values. The terminal initialization configures the terminal to the same original values and parameters as shipped from the factory.

CAUTION
Invoking the TEST INIT command will remove **ALL** files from bubble memory, even if LOCKed.

Once the TEST INIT option is activated, the terminal will respond by printing the message **OK ?(Y/ N)** to which you must respond with a **Y** or **N**. An **N** (no) will terminate the initialization with no action. A **Y** (yes) response will cause the initialization to occur.

The *bubble memory catalog* initialization will set up the *file catalog* with no files created, even if some of the files in the catalog were locked. For a list of the default system configuration parameters

created during initialization, see Section I of the *Systems Manual*. The *default* parameters are the original settings configured at the factory.

Automatic Command Execution

Automatic command execution refers to the ability of the terminal to execute commands which have been previously stored in a file. This capability is achieved by use of the RUN command.

Syntax:

```
┌─────────┐      ┌────────────┐
│  RUN    │─────▶│ (filename) │
└─────────┘      └────────────┘
```
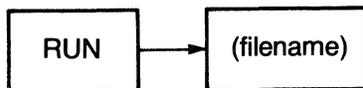
The RUN command causes commands (such as those described above in this section) and other ASR functions to be executed from a memory file. For details on the commands and functions usable with the RUN command, see Section IV of the *Systems Manual*.

Terminal Configuration

Terminal configuration refers to the state of a number of operating conditions, called *terminal configuration parameters*, which dictate the behavior of the terminal during data communications and ASR operations. The terminal configuration parameters are stored in the bubble memory and are intialized at the factory to a set of *default values* (permanently programmed initial values). To accommodate a variety of applications, each of which may require different terminal configurations, the terminal provides means to modify the configuration parameters. Using those means a user can define the terminal configuration that best suits a particular applications. Means also are provided to list the configuration parameters and their corresponding, currently assigned values. Parameters are stored in nonvolatile memory, ensuring that the parameters will remain in the defined state even if terminal power is switched off.

The values assigned to specific configuration parameters may be modified using the *change* command. As previously mentioned, these configuration parameters control the operation of data communications and ASR operations.

Syntax:

```
┌────────┐   ┌─────────────┐   ┌────┐   ┌─────────┐
│CHANGE  │───│ (parameter) │───│ TO │───│ (value) │
└────────┘   └─────────────┘   └────┘   └─────────┘
```
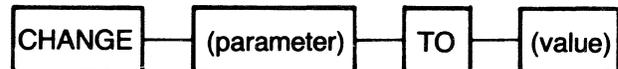
Table 2-3 lists the parameters which may be modified via the *change* command, along with corresponding entry abbreviations and values. The following two examples illustrate changing the values corresponding to the *playback file* and the *transmit-EOL*.

Example 1 — Changing the playback file.

CHANGE PLAYBACK TO ORDERS

(*ORDERS* is the name of an existing file)

Example 2 — Changing the *transmit-EOL* definition:

CHANGE XMTEOL TO DC3
CHANGE XMTEOL TO "4"

For a detailed description of each parameter and the corresponding possible values, see Sections I and II of the *Systems Manual*.

TABLE 2-3. TERMINAL CONFIGURATION PARAMETERS

PARAMETER	ENTRY	ABBREVIATION	ACCEPTABLE VALUES
*Record file	RECORD	REC	filename
*Playback file	PLAYBACK	PLAY	filename
Auto ABM	AUTOABM		ON or OFF
ABM print	ABMPRT		ON or OFF
EOT disconnect	EOTDIS		ON or OFF
Extended device control	EDC		ON or OFF
*Programmable Key	KEY		"single character"†
DC3	DC3		ON or OFF
DC1.3	DC1.3		ON or OFF
DC2.4	DC2.4		ON or OFF
Buffer	BUFFER		ON or OFF
*Transmit EOL	XMTEOL		NL, CRLF, DC3 or "single character"†
*Receive EOL	RCVEOL		NL, CRLF or "single character"†
Transmission speed	SPEED		110,200,300,600,1200 2400,4800 or 9600 (baud)‡
Parity	PARITY		EVEN, ODD or MARK
Parity Check	PCHECK		ON or OFF
Duplex	DUPLEX		HALF, FULL, or HALFRC
Comm. Interface	INTERFACE	PORT	INTERNAL (INT) or EIA
Answer-back memory	ABM		"up to 34 characters"†

*If no value is entered, the parameter is not defined.
†Must be entered enclosed within double quotation marks (" ")
‡Actual throughput is limited to a maximum 240 characters per second.

The *status* command provides a listing of the current status of each terminal configuration parameter.

Syntax:

    STATUS

The *status* command also may be used to verify that a configuration parameter(s) was successfully changed via a previous *change* command. Following is a typical terminal status listing.

```
► STATUS
LINE MODE:       EIA/ 1200 BAUD/ EVEN PARITY/ HALF DUPLEX/
OPTIONS ON:      PCHECK/ BUFFER/ EDC/ DC3/ DC1.3/ DC2.4/
OPTIONS OFF:     ABMPRT/ AUTOABM/ EOTDIS/
ABM: SECURE
RECORD FILE:     TEMP
PLAYBACK FILE:   COLECT
TRANSMIT EOL:    DC3
RECEIVE EOL:     CRLF
KEY:             ↵
DONE
```

ASR Mode Functions

When the terminal is in the ASR mode, the function keys F1 through F0 control the designated PLAYBACK and RECORD files. Only one file at a time can be designated the PLAYBACK file and only one file can be designated the RECORD file. A CHANGE command is used to designate one of the files in memory to be the PLAYBACK and/or RECORD file. For example, to designate a file by the name of *DATA-1* the PLAYBACK file, the procedure is as follows:

1. Press the CMD key to place the terminal in the COMMAND mode.
2. Type **CHANGE PLAYBACK TO DATA-1.**
3. Press the SKIP key to execute the command.

Once the three steps are completed, all functions labeled *PLAYBACK* (F1, F3, F5, F7, and F8) take action on the DATA-1 file. The same is true with the file designated the *RECORD* file. Files that are designated *PLAYBACK* and *RECORD* can be either the same files or different files.

ASR function keys are activated by pressing and holding the FCTN key on the lower right corner of the keyboard and then pressing the appropriate number key along the top row of the keyboard. For example, to activate the REWIND PLAYBACK function, press and hold the FCTN key and press the 5 key.

The following ASR functions control the PLAYBACK and RECORD files.

3.2.3.1   ASR MODE Function Keys.

F1 — Playback On.* The PLAYBACK file will output its contents to the terminal printer and/or the communications line, depending on the terminal parameters previously set (use the STATUS command to check). The PLAYBACK file will continue to output whatever is stored in it until either the terminal detects the *end of the text* or the PLAYBACK OFF (F3) function is activated. As a tape recorder will begin to play back from the point where the tape was last stopped, the PLAYBACK ON function begins outputting the contents of the file at the record and character last addressed.

F2 — Record On. The file designated as the RECORD file will accept data from the keyboard and/or the communications line. If the file has been formatted in LINE format, the terminal will store a line of data in a memory

record each time the SKIP key is pressed. If the RECORD file is in CONTINUOUS format, the data will be stored in a memory record every time the designated record length is filled. The RECORD ON function remains on until the file is filled, the RECORD OFF function (see F4) is detected, or the COMMAND mode is entered.

F3 — Playback Off. The PLAYBACK file will stop after one more character is processed.

F4 — Record Off. The RECORD file will stop.

F5 — Rewind Playback. The PLAYBACK file will return to the beginning of the file. If the PLAYBACK and RECORD files have the same filename, whenever the designated PLAYBACK file current record is moved forward or backward, the RECORD file also is affected. For example, if DATA-1 is both the PLAYBACK and RECORD file and the REWIND PLAYBACK function is used, the RECORD as well as the PLAYBACK file will be rewound. If the files had different file names, the REWIND PLAYBACK would not affect the RECORD file.

F6 — Rewind Record. The RECORD file will return to the first record of the file and if the PLAYBACK and RECORD files are the same, F6 will also rewind the PLAYBACK file.

F7 — Playback Forward. The remainder of the current memory record will be printed. If the PLAYBACK file is already at the end of a record, the next record will be printed. If the next record is the end of the text, nothing will be printed.

F8 — Playback Reverse. The PLAYBACK file will return to the beginning of the current record. If it is already at the beginning of a record, the PLAYBACK file will go to the beginning of the previous record.

> **NOTE**
>
> The following two functions do not appear on the label above the keyboard.

F9 — Printer On. The terminal printer will be switched on. This function is automatically active either when the COMMAND mode is entered or when power to the terminal is switched on.

F0 — Printer Off. The terminal printer will be switched off. The primary use of this function is during communications when you do not want to have a copy of the data being transmitted or received.

---

*When the terminal is off line, the ENTER key also may be used to perform the playback-on function.

Special Keys

The special keys affecting the ASR mode are CHAR and FIELD. These keys may be used in both the COMMAND and ASR modes with slightly different results. The following discussion concerns itself with the special keys when operating in the off-line ASR mode with RECORD ON.

CHAR Key — The CHAR key is a dual function key used to move the printhead (and the memory pointer) one character forward or backward. When the CHAR key is pressed, the printhead will move to the left (or backspace) one character. If the key is held pressed, the printhead will continue moving to the left until it is released. The back-character function is referred to as an "intelligent" backspace because the printhead will move backward over blank spaces, but it will perform a line-feed before it backspaces over the first non-blank character position it encounters. This has the effect of positioning the printhead directly *under* printed character(s) to be corrected, or to simply backspace the printhead over blank spaces which are to be filled with data from the keyboard.

The CHAR key is useful in correcting errors in entered data when the terminal is in the ASR and COMMAND modes. To correct an error on the current line of data being entered, press the CHAR key until it is at the desired location for error correction. The correct information may then be entered from the keyboard. The new data will replace the old data in the memory.

The CHAR key, pressed in conjunction with the SHIFT key, is useful for moving the printhead (and the character pointer) to the right after making a correction to entered data. If the CHAR key (and SHIFT) is held pressed, the printhead will continue moving to the right until the keys are released. Note that for multiple-character forward spacing, the SHIFT key need be held only for the first character-forward.

When CHAR (character-forward) is activated, characters will be printed as they are "passed over". If a character-forward is attempted at the end of a record, the audible tone will sound and the printhead will remain in its current position. Any number of combinations of forward-character and back-character operations are permissible in any particular record. When operating on a LINE-formatted file, the CHAR key is usable only with the present record. when used with files recorded in CONTINUOUS format, the CHAR key is operable over the entire range of the file, without regard to logical or physical record boundaries.

FIELD Key — The other special key applicable to the ASR and COMMAND modes is the FIELD key. In the ASR mode this key should more accurately be considered as a record forward/back function. Its direction, like the CHAR key, is determined by the use of the SHIFT key. That is, the FIELD key by itself will move to the beginning of the current record being entered. When the FIELD key is pressed along with the SHIFT key, the printhead (and the record pointer) will move to the right, or forward, to the last character of the current record. Like the SHIFTed CHAR key, a SHIFTed FIELD key will cause all characters "passed over" to be printed.

When corrections are to be made toward the beginning of a record, the FIELD key is often faster than multiple CHAR keys. Likewise, once a correction is made and entry is to continue at the *end* of the data already entered, the SHIFTed FIELD key is useful in "passing over" all data between the current printhead position and the last character previously entered.

It should be noted that the FIELD key refers to complete records. When responding to prompts from a PLAYBACK or RUN file, the entire record will be affected, not just the current response to a prompt from the PLAYBACK file. The *Systems Manual* describes methods of utilizing the FIELD key in conjunction with prompt/response operations in the ASR mode.

3.2.4 POINTER CONTROL. Two *"pointers"* maintained by the Model 763/765 firmware may be of interest to the operator. These pointers are the PLAYBACK and the RECORD pointers. The purpose of these two pointers is to "remember" the current file position of the two files designated PLAYBACK and RECORD.

The *playback pointer* will reset to point to the beginning of the file designated PLAYBACK whenever an ASR function-5 (rewind playback) is performed. The *playback pointer* will be decremented by one record whenever an ASR function-8 (playback reverse) is performed if the pointer is at the beginning of a record. If the pointer is at any other location, it will be moved to the beginning of the current record. The *playback pointer* will be incremented by one record when an ASR function 7 (playback forward) is performed when the pointer is at the beginning of a record. If it is at any other location, the pointer will move to the end of the current record. The pointer also will advance by one record whenever a complete record is read from the playback file. This can be caused by an ASR function 1 (playback

on) and the subsequent processing (in the case of a LINE-format file) of an end-of-line character. In the case of a CONTINUOUS format file, the pointer will advance one record for each complete physical record processed.

The *record pointer** operates in a manner similar to the *playback pointer*, except that it operates on the file currently designated the RECORD file. The pointer is reset to the beginning of a file when an ASR function 6 (rewind record) is performed. It is advanced one record in the case of a "line format" file whenever an end-of-line character is recorded; and in the case of a "continuous format" file, when a complete physical record is entered.

The two pointers are normally maintained independently of each other. In the special case when the same file is designated to be both the RECORD and PLAYBACK files, the two pointers are maintained always equal to each other. That is, in this special case, a function 6 (rewind record) will result in both the *record* and *playback* pointers being reset to the beginning of the file. Similarly, an incrementing or decrementing of either pointer will cause the other pointer to change identically.

When new RECORD or PLAYBACK files are assigned using the CHANGE command, the corresponding file should be rewound (F5, F6) to guarantee the position of the pointer.

---

*re-cord' as in storing data: not to be confused with *re'-cord*, used herein to define a line of data (also called a *physical record*).

EDIT Mode

The EDIT mode is the terminal mode which enables the operator to edit the contents of an existing file. Any file may be edited if it is not LOCKed. Editing of files is done on a *record* basis which means the contents of the file may be edited one record at a time.

As previously mentioned, entry into the *EDIT mode* is accomplished using the EDIT [filename] command in which the name of the file to be edited is specified. Upon entry into the EDIT mode, the functions shown on the top section of the decal above the keyboard are active. The labeled functions correspond to the function keys (1 through 8 keys).

Editing function keys are activated by pressing and holding the FCTN key on the lower right corner of the keyboard and then pressing one of the number keys, 1 through 8. For example, to activate the PRINT (F4) function in the EDIT mode, press and hold the FCTN key and press the number 4 key.

Once the terminal is in the EDIT mode, editing is accomplished by using one of the **"record locating"** function keys (F1 through F4) to locate the record in which modifications are desired. Functions that may be used to locate records to be edited include INDEX (F1), FIND (F2), TOP (F3), and PRINT (F4). These functions cannot be used on empty files; an error message or an audible tone will result. Detailed use of each of these functions is described later in this section.

Once the record requiring editing is found, the record will be printed by the terminal and editing can be performed within that record using the CHAR and FIELD keys and the DELETE CHARACTER (F6) and INSERT (F7) functions. Deletion of records may be accomplished by use of the DELETE LINE (F5) function. When all editing of the record is accomplished, pressing any of the **"record locating"** function keys (F1 — F4) will cause the edited record to be returned to its corresponding place in memory, and the selected "record locating" function will be performed.

Upon entry into the EDIT mode, if the file to be edited is not empty, the editor will automatically activate the INDEX function (F1). If the file to be edited is empty, an **ETX** message will be printed, indicating that that point is the end of the text. The terminal then will await the entry of a function to perform. The only functions permitted during editing of an *empty* file are the INSERT function (F7) and the STOP function (F8).

The following paragraphs describe operation of each editing function.

3.2.5.1 EDIT MODE Function Keys.

The operation and terminal responses associated with each function key are described in this section. For additional details concerning the editing functions, see Section I of the *Systems Manual.*

F1 — INDEX Function. The INDEX function provides access to records during file editing. Records are accessed relative to a record pointer which "points" to the record in the file which was accessed. Upon entry into the EDIT mode, the record pointer will point immediately *above* the first record in the file.

Activating the INDEX function causes the terminal to perform a carriage return, followed by a line feed and printing of the INDEX prompt symbol ➔ . A signed (+ or −) number from 0 to 999 may then be typed to specify the location of the desired record relative to the record currently pointed to. If no sign (+ or −) is specified, the teminal assumes the number is positive. The entered number may be corrected using the CHAR key.

Once the desired number is entered, the entry is terminated by pressing the SKIP key. The terminal will then add (subtract if a negative sign was entered) the number to (from) the current record location and go to the new record location. When the requested location is reached, the terminal will print the record, making it available for editing.

For example, if the current location is the tenth record in a file, typing a −6 will cause the INDEX function to relocate the record "pointer" to the fourth record in the file.

If the SKIP key is pressed before a number is entered, a 1 is assumed by the terminal. As a result, the terminal will then point to the *next* record in the file. Typing a zero will keep the pointer at the current record location. Activating any of the other "record locating" function keys (F1 — F4), or the INSERT function key, will terminate the INDEX function and will initiate the new function.

In summary:

- A signed number followed by pressing the SKIP key will move the editing record pointer that number of records and direction (+ or −). For example, if you want to review the text six records before the current record in the file, type a −6. If no number is entered, a +1 is assumed.

- All files in memory start at record 0 and data starts at record 1. This means that record 0 is not used to store data, but simply is a record which comes before the first data record in the file. The concept of record 0 is necessary to insert data before the first record in the file.

- The editing record pointer cannot go to a negative record location (i.e., before the first record in the file). For example, if the record pointer is located at the fifth record in the file and you enter −6, the record pointer would not "go negative", but would point to 0, just before the first record of the file.

- If the number entered causes the pointer to move to a record beyond the last record in the file, an ETX (end of text) symbol will be printed and the record pointer will point to the last existing record in the file.

F2 — FIND Function. The FIND function is used to locate a memory record which contains a defined character string (a group of characters). Upon activating F2, the terminal will print the FIND prompt symbol (❖) in the left margin. A character string of up to 30 characters may then be typed. While typing the character string, the CHAR and FIELD keys may be used to make corrections.

After entry of the character string, press the SKIP key. The terminal then will forward space once and print the FIND symbol and begin a search for the character string in the file contents. The search will start at the *current record location plus one record.* When the desired record is located, the terminal will print the record and the record pointer will point to this record. The record then is available for editing.

If the defined character string is not found before the end of the text is reached, the terminal will print an **ETX**, indicating the end of the text, and the record pointer will point to the last record in the file.

Multiple searches for the same text (that is, searching for the same character string in more than one record) may be accomplished by activating F2 and then using the FIELD key (SHIFT and FIELD) which will cause the most recently defined character string to be reprinted. Pressing the SKIP key at this point will cause the terminal to begin the search for that string.

Some general rules for using the FIND function are

- Unless you are sure the character string you want is located between the *current record plus one record* and the end of the file, you should return

the record pointer to the beginning of the file by using the TOP (F3) function.

- Control characters may be specified as part of the character string to be searched for.
- Pressing another "record locating" function (F1 — F4), the INSERT function (F7), or the STOP function (F8) while entering the search character string will cause the FIND function to terminate and the selected function to activate.

F3 — Top. The TOP function is used to return the file pointer to the first record location (line 1). The contents of the first record in the file will be printed and available for editing.

F4 — Print. The PRINT function will cause the terminal to begin printing each record, starting with the current record +1. The terminal will continue to print the contents of the file until either the end of the file is reached or one of the function keys is pressed, at which time the current record will be printed and the function requested will be initiated. If the PRINT function is used to stop the printing, the printhead will remain at the end of the record being printed. The record is then available for editing.

F5 — Delete Line(s). The DELETE LINE(s) function will cause the printer to do a line feed and a carriage return and print a DELETE LINE prompt symbol ⫯ . Then enter the number of lines to be deleted starting with the current record. A number from 1 through 999 can be entered. If the wrong number is entered, it can be corrected before the SKIP key is pressed by using the CHAR key. After the specified number of records are deleted, all records after the last deleted record then will be moved up to fill the now empty memory space. The index pointer will be placed at the first record following the deleted set of records. This is now the current record and it will be printed and is available for editing. Some rules to note:

- Entering a zero or no number will terminate the function, cause the current record to be printed, and the printhead will stop at the end of the record. The record is then available for editing.
- If the deleted records are at the end of the text, an ETX message will be printed and the record pointer will move to the last record in the file.

> **NOTE**
>
> Large deletions require a few seconds for the terminal to compress the records at a rate of approximately five 80-character records per second. The

> keyboard will not respond (except the CMD key) while this operation is in progress.

- Attempting to invoke the DELETE function on an empty file will cause the ✦✦✦ ? ✦✦✦ error message.

F6 — Delete Character(s). After a record has been located and is available for editing, the DELETE CHARACTER function (F6) can be used. The character above where the printhead is positioned will be deleted. The terminal will signal the deletion by printing the DELETE CHARACTER symbol underneath the character deleted ▓ . Both the CHAR and FIELD keys may be used to position the printhead under the character to be deleted.

Deletion of a character from *LINE*-formatted files simply causes characters to the right of the deleted character to be shifted to the left by one position to fill the void left by the deleted character. As a result the end-of-record marker is also moved one position to the left by the shifted characters.

In *CONTINUOUS*-formatted files the record is right filled with a filler character after the characters in the record have been shifted one position to the left. The example below depicts a character deletion in a *CONTINUOUS*-formatted file and the corresponding record after a character deletion is completed.

Original record to be edited:

```
THIS IS THE FIRST LINE OF THIS SHORT XFILE.
```

Character deletion being made:

```
THIS IS THE FIRST LINE OF THIS SHORT XFILE.
                                          ▓
```

Record after character deletion completed:

Filler Character

```
THIS IS THE FIRST LINE OF THIS SHORT FILE.⊂
```

When using the DELETE CHARACTER function followed by a CHAR or FIELD operation in the record, the following rules apply:

- In all cases the record will be reprinted.
- If the CHAR key is used, the terminal will print the first character after the deletion.
- If the CHAR key is used, the printhead will return to the last character before the deletion.

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- If the FIELD→ key is used, the printhead will remain at the end of the record.
- If the ←FIELD key is used, the printhead will return to the beginning of the record.

F7 — Insert Function. The INSERT function may be used to insert data within a record and/or to insert entire records of data in a file. In the first use, after the record has been located for editing, the printhead should be moved to the point in the record where the insertion is desired using the CHAR→ and ←FIELD keys. Activation of the INSERT function will cause the open insert symbol ⊽ to be printed, followed by a line feed indicating the location in the record where the insertion begins. Any existing characters at or to the right of the printhead will be "saved" at this time until the insertion is terminated. Upon termination of the insert operation, the saved characters will be appended to the end of the final record inserted.

While entering the text to be inserted, the CHAR→ and ←FIELD keys may be used to make corrections, but only within the text being inserted. Modifications to the contents of the remainder of the record are not possible at this point. Also, terminating an insertion within a record must be done carefully since some means of termination cause inserted characters to the right of the printhead to be discarded. The following example shows an insertion within a record:
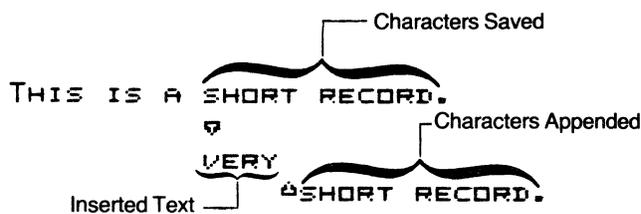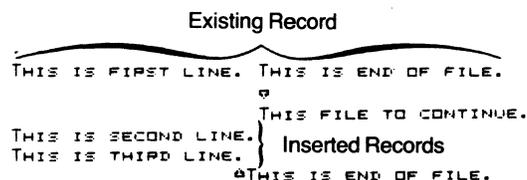

Final text:

THIS IS A VERY SHORT RECORD.

When inserting text within an existing record, additional records may be inserted by use of the ENTER key during insertion. The SKIP key may be used instead of the ENTER for termination of a record only in *LINE*-formatted files; in *CONTINUOUS*-formatted files, pressing the SKIP key while editing a record will cause an *end of line symbol* (▧) to be stored in the record. Pressing the ENTER key will terminate editing of the current record, and its contents will be returned to memory. The terminal then will perform a carriage return and line feed and will open a new record to be inserted following the record just closed. Additional records may be inserted

following each other by pressing the ENTER key at the end of each inserted record. Note that use of the ENTER key (and the SKIP key in LINE-formatted files) will cause inserted characters in the record to the right of the printhead to be discarded.

Once all desired records are inserted, the INSERT function may be terminated by pressing any of the "record locating" function keys (F1 — F4) or by pressing the DELETE LINE function key (F5). Upon termination of the INSERT operation, the CLOSE INSERT symbol (⊿) will be printed. The characters saved (if any) at the start of the INSERT operation then will be appended to the contents of the last record inserted. If the appended text, plus the contents of the last record, exceed the designated record length, an additional record will be added following the last record inserted. The added record will contain only that part of the appended character string which overflowed the previous record. The following examples shows an insertion of several records.

A few guidelines for using the INSERT function should be observed:

- Deletion of characters (F6) is not possible during the INSERT function; attempts to delete characters will cause the audible tone to sound, signifying an invalid operation.
- During insertion of a record, the audible tone will sound when the printhead reaches 10 characters before the end of the designated record length to warn that the maximum record length is approaching.
- When an insertion is done on an existing record, characters to the right of the printhead will be saved upon activation of the INSERT function. These characters will be appended to the last record inserted when the INSERT function is terminated. If the saved characters then exceed the maximum record length, an additional record will be inserted automatically to accommodate the saved characters. If no additional record space is available in the file, the additional characters will

be lost, and error code ***69*** will be printed. All appended characters will be printed by the terminal.

• When inserting records, if no more empty records are available in the file, the INSERT operation will be terminated automatically and the INDEX function will be activated.

• An attempt to insert records into a file with no empty records available will cause printing of the ••• ? ••• error message.

• When less than 10 available records remain in a file, the audible tone will sound each time a new record is opened for insertion.

• INSERT functions are not possible if the terminal is already performing an insert operation; in other words, "nested" insertions are not permitted.

• The CHAR and FIELD keys can be used to correct insertions within a record before the INSERT function is terminated.

• The ENTER and SKIP keys may be used to insert multiple records, but the SKIP key may be used only for inserting into a *LINE*-formatted file. Pressing these keys will close the record currently inserted and open a new record for data insertion.

• Whenever you want to insert records in the middle of a file (i.e., between two existing records), the following sequence should be followed:

a. Locate the record just before the point where the insertion is desired.

b. Once the record is located and printed, with the printhead at the end of the record, invoke the INSERT function (F7) and press the ENTER key. This will close the current record and will open a new record for insertion. If the record is completely full of characters, pressing the ENTER key is not necessary since the terminal will automatically open a new record for the insertion.

c. Continue to type data on the keyboard and press the ENTER key at the end of each inserted record.

d. Once all desired records are inserted, terminate the INSERT operation by pressing one of the "record locating" function keys (F1 through F4).

• To insert records at the *beginning* of a file (i.e., above the first record), the following sequence is recommended:

a. Position the record pointer (printhead) *before* the first record in the file by performing a TOP (F3) function followed by an INDEX −1 (type −1 after the INDEX prompt). The record pointer now points above the first record in the file. It may also be accomplished by performing an INDEX −999 (type −**999** after the INDEX prompt).

b. Begin insertion of records by invoking the INSERT function (F7). Terminate each inserted record using the ENTER key.

c. Terminate the INSERT operation by invoking one of the *record locating* functions (F1 through F4).

• After the text is inserted, any function except F7 or F6 will terminate the INSERT function and will activate the selected function. For example, if F1 is selected, the INDEX function will be activated upon termination of the INSERT operation.

• Pressing the CMD key or loss of power during an INSERT operation will cause an abnormal exit of the EDIT mode and could result in partial loss of inserted data.

F8 — Stop. This function terminates the EDIT mode and returns the terminal to the ASR mode. Note that pressing the CMD key anytime while in the EDIT mode will cause the terminal to terminate the EDIT mode abnormally, and is not recommended.

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Editing A Record

Once a record is located by using one of the *record locating* functions (F1 through F4), the record will be printed by the terminal, and the printhead will remain at the end of the record. The record then may be edited using the following guidelines:

- The CHAR and FIELD keys may be used to position the printhead below the character(s) to be modified. Then you may "overstrike" existing characters, or you may add characters to the existing contents of the record as long as the designated maximum record length is not exceeded.
- The DELETE CHARACTER function (F6) may be used to delete characters within the record.
- The INSERT function may be used to insert characters in the record.
- The ENTER key may be used to delete all characters to the right of the printhead, close the current record, and access the next record in the file. (The SKIP key will perform the same function, but only on *LINE*-formatted files.) Using the ENTER key you can step through an entire file, record by record, since pressing the ENTER key also will cause the next record in the file to be printed and made available for editing.
- When editing *CONTINUOUS*-formatted files, the SKIP key will generate a special *end-of-line* (EOL) symbol ⬚ in the record (This symbol is used as a line delimiter within the record.)
- Invoking any "record-locating" function (F1 through F4) while editing a record will terminate access to that record, store that record in memory, and activate the selected function.

Terminating An Editing Session

Terminating an editing session must be accomplished by invoking the STOP function (F8) which causes all pending editing operations to finish and returns the terminal to the ASR mode. An editing session should never be terminated by pressing the CMD key: inserted or deleted data may be seriously altered. Terminating an editing session purges *CONTINUOUS*-formatted files of filler characters by shifting data so as to replace the purged filler-character space in memory. A message, **ONE MOMENT PLEASE**, will be printed to signify this operation.

SECTION III

TYPICAL OPERATING TECHNIQUES

This section discusses and presents examples of various operating techniques likely to be encountered in applications using the Models 763/765 terminals. The situations discussed include creating a file, storing data in a file, creating the answer-back memory sequence, listing a file, and copying files. In some cases several techniques are illustrated for accomplishing the same tasks.

Section VI of this manual contains exercises designed for the operator to gain "hands on" experience. Situations presented in this section are expanded upon in the exercises. If you have difficulty comprehending the following text, working the exercises presented in Section VI may help.

Creating A File

Before creating a new file, you may find it wise to use the CATALOG command (press the CMD key, type **CATALOG**, and press the SKIP key). You can then ensure that sufficient memory is available and that you do not duplicate a filename. You may have to DELETE an existing, unused file to free memory space for a new file. To create a new file you must specify: (1) filename, (2) type (*line* or *continuous*), (3) maximum records per file, and (4) characters per record. Proceed as follows to create a new file:

1. *Press the CMD key* to enter the command mode.

2. *Type* **CREATE** *and press the space bar.*

3. *Type (*your filename*) using up to six characters and press the space bar. The first character must be an alphabet letter.*

4. *Type the letter* **L** *or* **C** (choose *line* or *continuous* record format) *and press the space bar.*

5. *Type a numeral(s) representing your choice for the maximum number of records in the file, and press the space bar.*

6. *Type a numeral(s) from* **1** *to* **80**, *representing your choice for the maximum characters per record.*

7. *Press the SKIP key.* The terminal will signal creation of the file by printing DONE.

```
▶ CREATE COPY2 C 4 80
DONE
```

General Rules For Creating A File
When creating a file, recall the following guidelines:

- Maximum number of files in memory is 16
- Filenames cannot exceed six characters
- Filenames cannot start with a number, but numbers may be included
- Filenames cannot have spaces
- Filenames cannot be KEY or TO
- Maximum length of a record is 80 characters
- Maximum records in a file depends on memory available — use the CATALOG command to determine records remaining.

Storing Data From the Keyboard

The Models 763/765 data terminals provide three ways to store data into a file from the keyboard:

- Using the RECORD function in ASR mode.
- Using the INSERT function in EDIT mode.
- Using the COPY KEY TO (filename) command.

RECORD Function

The RECORD function enables the terminal to store data into a file either from the keyboard or from the communications line. The following instructions describe data entry from the keyboard; recording data received over the communications line is explained in Section III of the *Systems Manual*. To store data into a file called *filename* herein (substitute your name for the file) using the RECORD function in the ASR mode:

1. *Press the CMD key and type*

   CHANGE RECORD TO (filename).

2. *Press the SKIP key.*

3. *Press and hold the FCTN key and press the 6 key to invoke the F6 (REWIND RECORD) function. F6 causes the data to be stored at the beginning of the file.*

4. *Press and hold the FCTN key and press the 2 key to invoke the F2 (RECORD ON) function. F2 permits recording of data.*

5. Type the data you want stored, pressing the SKIP key at the end of each line of text. The CHAR and FIELD keys can be used to make changes to the text.

6. To terminate data storage, *press and hold the FCTN key and press 4 to invoke the F4 (RECORD OFF) function.*

INSERT Function

Another way to store data in a file from the keyboard is the INSERT function of the EDIT mode. When using this method, keep in mind the guidelines listed under **F7 — INSERT**, in the EDIT mode presented in Section II of this manual.

1. *To enter the EDIT mode press the CMD key and type*

   EDIT (filename)

2. *Press the SKIP key.*

3. Press and hold the FCTN key and press the 7 key to invoke the F7 (INSERT) function.

4. Type the data you want stored, pressing the ENTER key at the end of each line of text.

5. To terminate storage of data, *press and hold the FCTN key and press the 8 key to invoke the F8 (STOP) function. F8 terminates the EDIT mode and resets the terminal to the ASR mode.*

COPY Command

The third method to store data into a file from the keyboard is to use the COPY command. Data will be stored at the beginning of the file.

1. *Press the CMD key and type*

   COPY KEY TO (filename)

2. *Press the SKIP key.*

NOTE
Any data in the (filename) above will be "written over"; i.e., the new data will replace the old data line for line.

3. Type the data you want stored; *press the SKIP key at the end of each line of text.*

4. To terminate storage of data, *press the ENTER key immediately after the last SKIP key.*

Optional COPY (END) Command. This variation of the COPY command causes data entered from the keyboard to be appended to the end of an existing file, thus preserving the data originally recorded in the existing file.

1. *Press the CMD key and type*

   COPY KEY TO (filename) END

2. *Press the SKIP key.*

3. *Type the data you want stored; press the SKIP key at the end of each line of text.*

4. To terminate storage of data, *press the ENTER key immediately after the final SKIP key.*

Printing a File

The Models 763/765 data terminals provide three ways to print a file:

- COPY from a file to the printer
- PRINT function of the EDIT mode
- PLAYBACK function of the ASR mode.

The three variations offer different printing options; hence it is important to choose the one most suited to your application.

COPY From File to Printer

The COPY command will cause any file to be printed, and the file to be printed need not be the PLAYBACK or RECORD file. The COPY command provides an option to print control characters to list a file with the control characters printed first:

1. *Press the CMD key and type*

    COPY (filename) TO PRINTER
    OR
    COPY (filename) TO PRINTER CTRL

2. *Press the SKIP key.*

PRINT Function of the EDIT Mode

The second way to print a file is using the PRINT function of the EDIT mode. In the EDIT mode control characters are always printed. In order to list a file in this mode:

1. *Press the CMD key and type*

    EDIT (filename)

2. *Press the SKIP key.*

3. *Press and hold the FCTN key and press the 4 key to invoke the F4 (PRINT) function.* The terminal will print the contents of the designated file.

4. After the file is printed, terminate the EDIT mode by using the F8 (STOP) function.

PLAYBACK Function of the ASR Mode

The third way to print a file is using the PLAYBACK function of the ASR mode. In this mode control characters will not be printed. Printing a file in this mode is done as follows:

1. *Press the CMD key and type*

    CHANGE PLAYBACK TO (filename).

2. *Press the SKIP key.*

3. *Press and hold the FCTN key and press the 5 key to invoke the F5 (REWIND PLAYBACK) function.*

4. At this point it is important to check the ONLINE indicator. If the terminal is ONLINE, use the OFFLINE command to set the terminal offline to prevent accidental transmission of the data over the communications line.

5. *Press and hold the FCTN key and press the 1 key to invoke the F1 (PLAYBACK ON) function.* The file will be printed without control characters.

Copying Files

Two basic methods are available to copy the data contained in one file into another. (*Copy* means to transfer data from one place in memory to another.) One way is to utilize the COPY command; the other is to use the ASR mode. The former method offers the added capability of copying the contents of a file to the end of the same file, facilitating data duplication. The latter method allows the data to be printed as it is being copied.

Whichever method is used, a file of either LINE or CONTINUOUS format may be copied to a file of either format. The advantages and disadvantages of the two formats are discussed under **File Format** in Section I of this manual.

Using the COPY Command

The COPY command, described above under **Printing a File**, also may be used to copy the contents of one file to another (or to the end of itself). To copy one file to another:

1. Press the CMD key and type

   COPY (filename1) TO (filename2)

   Filename1 is the name of the source file from which data is to be transferred. *Filename2* is the name of the destination file into which data is to be recorded. (In this case the two files are not the same.)

2. Press the SKIP key.

If you want to duplicate all data in a file by making a second copy of the data immediately following the first COPY command, the END option should be included, typing the command as follows:

   COPY (filename1) TO (filename2) END

It should be noted that when both the source and destination file is the same, the file should not be a *CONTINUOUS*-formatted file. An attempt to write portions of a *CONTINUOUS* file in this manner may result in reordering of data.

---

*The ASR mode functions 9 (printer on) and 0 (printer off) are **not** labeled on the decal above the keyboard.

Using the ASR Function Keys

The contents of one file may also be copied into another by use of the ASR function keys. The following steps describe this technique:

1. *Press the CMD key and type*

   CHANGE PLAYBACK TO (filename1)

   This assigns the *playback* function to the source file.

2. *Press the SKIP key.*

3. *Press the CMD key and type*

   CHANGE RECORD TO (filename2)

   This assigns the *record* function to the desired destination file.

4. *Press the SKIP key.*

5. "Rewind" both the *playback* and *record* files by pressing and holding the FCTN key and then press both the 5 key and the 6 key. This "rewinds" the *record* and *playback* files to their beginning.

6. If you do **not** want a printed copy of the data, *press and hold FCTN and press the 0 key (printer off).**

7. *Press and hold the FCTN key and press both the 2 key (record on) and then the 1 key (playback on). Both the PLAYBACK and RECORD indicator lamps will light.*

When the PLAYBACK indicator lamp goes out, the copy operation is complete.

8. To terminate the copy operation, *press and hold the FCTN key and press the 4 key* (record off).

Erasing a File

You may need to erase the contents of an existing file to delete data you no longer need stored in that file. You must then decide which file to erase and proceed as follows.

> **NOTE**
>
> Your previously designated filename and file size and record size parameters will remain unchanged when you ERASE a file.

1. *Press the CMD key and type*

   ERASE (filename)

2. *Press the SKIP key.*

Unlocking a Locked File

If the file you want to erase is locked [an **.L** will appear after the type file (*line* or *cont*) in the TYPE column of the CATALOG printout], you must first use the FREE command to unlock the file befor you attempt the ERASE command. To unlock a file:

1. *Press the CMD key and type*

   FREE (filename)

2. *Press the SKIP key.* The locked file will be "unlocked" and available for erasure (or editing).

Deleting a File

If you want to remove an entire file from the terminal memory, including the filename and all parameters, you must use the DELETE command. No trace of the file will remain in the CATALOG or in terminal memory, and the memory space will become available for entry of new files.

1. *Press the CMD key and type*

   DELETE (filename)

2. *Press the SKIP key.* The entire file will be deleted from memory.

> **NOTE**
>
> If the file you want to delete is locked, observe the instructions under **Unlocking a Locked File** above.

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Answer-Back Memory

The answer-back memory (ABM) message is a string of up to 34 characters intended to identify, in many cases, your terminal as unique from all other terminals within a telecommunications network. The ABM can be triggered to transmit to a remote device in any of three ways:

- By inputting the HERE IS (CTRL and 1 keys) on your terminal.
- By the remote device transmitting the control character ENQ to your terminal.
- When the EIA interface of your terminal is active and the AUTOABM option is set to ON (using the CHANGE command), the ABM message is automatically transmitted 1.5 seconds after the external modem connected to your terminal receives a call.

Creating the ABM Message

The CHANGE command is used to create and store an ABM message. For example, if the desired ABM sequence is:

SMITH/123456

after pressing the CMD key to enter the COMMAND mode, type

▶ CHANGE ABM TO "SMITH/123456"

and press the SKIP key.

Note that the ABM message must be enclosed in double quotation marks (" "). If your message requires quotation marks as a part of the ABM message (e.g., the desired ABM is **SET"F"**), the sequence would be entered as:

▶ CHANGE ABM TO "SET ""F"""

Securing The ABM

Your communications network may require making the ABM message secure; i.e., prohibit the local operator access to the ABM stored within the terminal. To do this, simply press the space bar and type the letter **S** after the closing quotation mark. If the example above is to be entered as a secure ABM message, enter it as follows:

▶ CHANGE ABM TO "SMITH/123456" S

A secured ABM message will not be printed by your terminal at any time. The STATUS command can be used to verify that the ABM message is indeed changed. Once the terminal parameters are changed, they will remain in that state even when power is switched off.

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SECTION IV

TERMINAL COMMUNICATIONS

The communications systems of the Models 763/765 terminals enables the terminals to exchange data with a variety of other data communications equipment. This section provides information needed by the operator to use the terminal with other communications devices.

The Model 765 has a built-in acoustic coupler which uses the handset of an ordinary telephone to establish a communications line. The acoustic coupler converts the terminal digital signals into audible tones. The audible tones, much like a voice, travel over the telephone lines to a device that converts the tones back into digital signals that can be used by a remote device. The acoustic coupler, which contains a modem, is built into the rear deck of the Model 765.

The Model 763 is capable of operating in several communications configurations, each of which is described in this section. The primary use of the Model 763 is in hard-wired and external-modem configurations. The Model 765 is also capable of several communications configurations, but its primary use is as a portable memory terminal using its built-in acoustic coupler as the means of communications.

When a modem (also called a *data set*) is used with either terminal, a modem is necessary at both ends of the telephone lines. Several types of modems are available on the commercial market, and it is very important that the same types of modems are used at both ends. If the modem is external to the terminal, the modem is hard wired to the terminal and to the telephone lines, but the terminal or modem is not considered to be hard wired to the remote device since a telephone line separates them.

Both the Models 763 and 765 terminals can store up to 20,000 characters in their standard configuration. Memory can be expanded to 80,000 characters. This means it is possible to type, correct, and store all information into the data terminal before you transmit it to a remote device, instead of transmitting data at the speed you type, errors and all. The Models 763 and 765 can also store data received *from* a remote device.

Since communications procedures differ from one installation to another, the following instructions are limited to the location and operation of the Models 763 and

765 communications functions. Specific sequences of operations to make the terminal exchange data with a remote device are not listed because the necessary procedures depend on the type of equipment to which the terminal is connected, as well as the characteristics of the remote device with which it is communicating.

Using the Terminal Communications Features

The Model 763/765 terminal operating parameters (constants or values) can be easily and quickly changed to meet a variety of communication requirements. Parameters may be checked and selected by the use of the STATUS and CHANGE commands. The STATUS command causes the terminal to print a listing of the current parameters of the terminal. The CHANGE command enables you to change any of the parameters. CHANGE command entries are listed in Table 4-1.

Terminal Status
Press the CMD key, type the word STATUS, and press the SKIP key. The terminal will print out a status listing, as shown below, to provide you the current status of the terminal parameters. (The STATUS command is *not* transmitted over the communications line when the terminal is ON LINE.)

Changing Terminal Parameters
An example of how to change terminal parameters using the CHANGE command is provided in the following situation. More detailed parameter information is contained in the *Models 763/765 Systems Manual* furnished with your terminal.

Example:
You have received a Model 765 terminal for use in the field. Before using the built-in acoustic coupler you check the terminal configuration with the STATUS command. The following listing is printed by your terminal:

```
▶ STATUS
LINE MODE:      EIA/ 1200 BAUD/ EVEN PARITY/ HALF DUPLEX/
OPTIONS ON:     PCHECK/ BUFFER/ EDC/ DC3/ DC1.3/ DC2.4/
OPTIONS OFF:    ABMPRT/ AUTOABM/ EOTDIS/
ABM: SECURE
RECORD FILE:    TEMP
PLAYBACK FILE:  COLECT
TRANSMIT EOL:   DC3
RECEIVE EOL:    CRLF
KEY:            ↴.
DONE
```

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Notice that two of the parameters need to be changed so that the acoustic coupler can be used for data transmission. The *speed* (baud rate) is set for 1200, but the maximum that can be used with an acoustic coupler is 300 baud. The other parameter that must be changed is INTERFACE, which must be changed from EIA (external) to INTERNAL (refer to Table 4-1).

To change the *speed* from 1200 baud to 300 baud, you must use the CHANGE command. Set the terminal to the COMMAND mode and type:

▶ CHANGE SPEED TO 300

Press the SKIP key. The terminal will acknowledge that the parameter change is complete by printing the word DONE.

To change the INTERFACE from EIA to INTERNAL, use the same procedure. Referring to the table you would find that the parameter name is INTERFACE and

TABLE 4-1. CHANGE COMMAND ENTRIES

Parameter Name	Entry
ABMPRT	ON, OFF
AUTOABM	ON, OFF
EOTDIS	ON, OFF
RECORD*	(filename)
PLAYBACK*	(filename)
EDC	ON, OFF
KEY*	A single character enclosed in double quotation marks ("x")
DC3	ON, OFF
DC1.3	ON, OFF
DC2.4	ON, OFF
BUFFER	ON, OFF
TRANSMIT EOL*	NL, CRLF, DC3 or a single character enclosed in double quotation marks ("x")
RECEIVE EOL*	NL, CRLF or a single character enclosed in double quotation marks ("x")
SPEED (baud)	110, 200, 300, 600, 1200, 2400, 4800†, 9600†
PARITY	EVEN, ODD, MARK
PCHECK	ON, OFF
DUPLEX	FULL, HALF, HALFRC
INTERFACE	INTERNAL, EIA
ABM*	Up to 34 ASCII characters enclosed in double quotes. A single imbedded double quote is represented by two consecutive double quotes (" "x" "). If an S follows the closing quote, separated by a space, the ABM is considered secure and will not be printed.

*No entry will yield no definition.
†Actual throughput is limited to 240 characters per second.

the parameter entry is INTERNAL. Set the terminal to the command mode and type:

▶ CHANGE INTERFACE TO INTERNAL

and press the SKIP key to complete the change.

Model 765 Operation with an Acoustic Coupler

This section describes operation of the Model 765 terminal with its built-in acoustic coupler. All that is required for communications is a standard telephone line and an electrical outlet to provide power to the Model 765.

Terminal Setup

1. Set the terminal on a table located close to a standard telephone and an ac electrical outlet of the appropriate voltage (check the label on the rear of your terminal).

2. Remove the outer cover (as described in Section I).

3. Remove the power cord from inside the cover. Plug the female connector into the rear of the terminal and plug the male connector into the ac electrical outlet.

4. Open the paper door and check that the terminal is loaded with a sufficient supply of thermal printing paper.

5. Switch terminal power ON.

6. Check that the ON LINE indicator in the lower right corner of the keyboard is lit. If it is lit, skip to step 8 below.

7. If the ON LINE indicator is not lit, set the terminal to the COMMAND mode by pressing the CMD key.

8. Type ONLINE and press the SKIP key: The ON LINE indicator should now light.

9. Check the terminal parameters to ensure that they meet your system requirements. The parameters can be checked by using the STATUS command described earlier in this section.

> **NOTE**
>
> STATUS, CATALOG, and other commands are **not** transmitted, even if the terminal in ON LINE.

10. If any parameters are incorrect, correct them using the CHANGE command as described on page 14.

> **NOTE**
>
> When using the built-in acoustic coupler, the terminal must be in INTERNAL configuration and not EIA (external), and SPEED must be 300 baud or less.

Operation

11. Pick up the telephone handset and dial the appropriate number; an audible high frequency signal (data tone) can be heard after the call is answered.

12. As soon as you hear the data tone, firmly insert the telephone handset into the acoustic coupler muffs so that the cord is to the left of the terminal as shown in the figure. The Model 765 will transmit a data tone to the remote equipment.

> **NOTE**
>
> It is very important to insert the handset into the muffs so that the outer lip of each muff mates with the grooves of the handset, or until the removable caps on the handset are completely surrounded by the inside circumference of the muffs. [Also wrap the straps (if so equipped) around the handset and secure the straps.]

13. Begin communications according to your system procedures.

> **NOTE**
>
> Your system may require transmission of your terminal answer-back memory (ABM) message before data can be communicated. This is done by pressing and holding the **CTRL** (control) key and then pressing the **1** key which generates HERE IS.

14. Ensure that communications between your terminal and the remote equipment remain in progress by noting that the COMM indicator lamp in the lower right corner of the keyboard remains lit. If the COMM indicator lamp goes out, communications have been lost and you must return to step 11 to re-establish the connection.

15. When you have finished, terminate communications according to your system procedure; set the terminal off line (*press* CMD, type OFFLINE, and press SKIP); remove the telephone handset from the acoustic coupler and replace the handset in its cradle.

CORD

INSERT HANDSET INTO MUFFS UNTIL MUFF OUTER LIP ENGAGES GROOVE OR UNTIL HANDSET EARPIECE AND MOUTHPIECE ARE COMPLETELY INSERTED AROUND THEIR ENTIRE CIRCUMFERENCE.

SPEAKER

MICROPHONE

TRANSMIT MUFF

RECEIVE MUFF
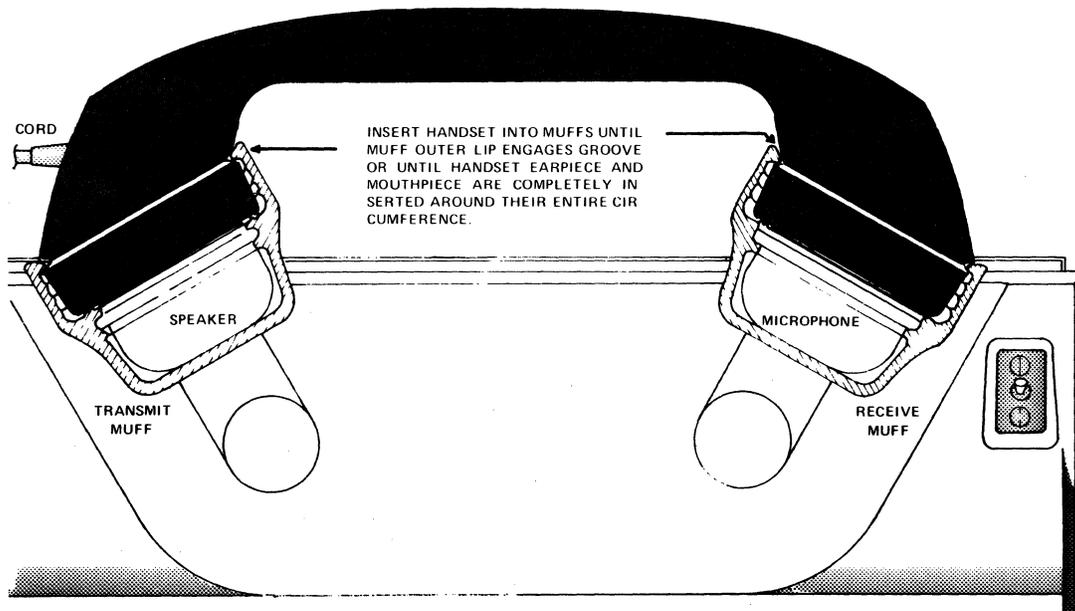
Model 763 or 765 Operation with a Data Set

Either the Model 763 or 765 terminal can be used with an external data set (modem). Two different EIA data set cable assemblies are available to connect the 763 or 765 to several types of data sets. The optional 103/202/212 cable assembly (TI Part No. 2200051) connects either terminal to the following types of Bell System data sets (or equivalent): 103A, 103J, 202C, 202S, and 212A. The 113 data set cable assembly (TI Part No. 2200055) connects either terminal to a Bell System type-113A data set (or equivalent).

The type of data set used in your system will determine which cable assembly to use. Both the above cables connect to the terminal at P1, the bottom connector under the hinged flap at the rear of the terminal.

Terminal Setup

1. If the terminal is not already connected to the data set, ensure that it is connected with the correct cable for the data set used in your system. Install the cable as follows:
   a. Grasp the cable connector marked P1, and insert it into the data terminal BOTTOM connector (under the removable cover) at the rear of the case.
   b. With a small screwdriver tighten the locking screws at both sides of the connector.
   c. Install the connector at the opposite end of the cable into your data set (consult the instructions furnished with your data set for details). Tighten the locking screws.

P2   P1 (UNDER FLAP)
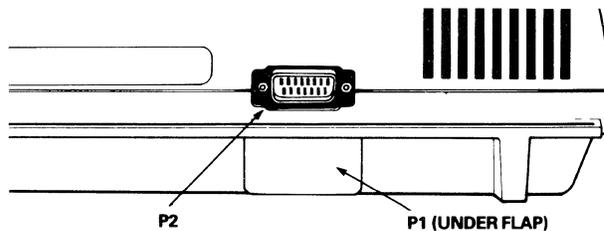
2. Open the door and ensure the terminal is loaded with a sufficient supply of thermal printing paper.

3. Switch the terminal ON.

4. After the terminal prints out a READY message, press the CMD key to enter the COMMAND mode.

5. Type STATUS and press the SKIP key to have the terminal print its current parameters.

6. Check the parameters and ensure that the INTERFACE is EIA (external) and that the baud rate is correct for your system application. If any of the parameters are incorrect, type the correct parameters using the CHANGE command.

7. Set the terminal to ONLINE (if it is OFFLINE) by pressing the CMD key, type ONLINE and press the SKIP key. The ONLINE indicator should light.

8. Set all controls on the external data set according to your system requirements.

> **NOTE**
>
> For instructions on operating the data set, refer to the directions provided with the data set used in your system.

9. When the connection is complete (the COMM indicator will light), you may begin communications according to your system procedures.

> **NOTE**
>
> If the COMM indicator goes out, communications have been lost and you must set up the data set again.

10. Your system may require transmission of your terminal answer-back memory (ABM) message before data is communicated. To send the ABM message press and hold the CTRL (control) key and then press the 1 key (HERE IS).

11. When you are finished, terminate communications according to your system procedures.

Model 763 Operation with the Internal Modem (U.S. Models Only)

This section describes operation of the Model 763 terminal with the optional internal modem. The CDT 1000A coupler cable assembly (TI Part No. 2200052) must be used with the optional internal modem. This cable allows connection of the Model 763 to a CDT 1000A-type data coupler which must be used with the Model 763 optional internal modem.

Terminal Setup

1. If the terminal is not already connected to the data coupler, ensure that it is connected with the CDT 1000A coupler cable assembly.

2. Open the paper door and check that the terminal is loaded with a sufficient supply of thermal printing paper.

3. Switch the terminal ON.

4. After the terminal prints out the READY message, press the CMD key to enter the COMMAND mode.

5. Type STATUS and press the SKIP key to have the terminal print out its current parameters.

6. Check the parameters and ensure that INTERFACE is INTERNAL and SPEED does not exceed 300 baud. If other parameters do not meet your system requirements, use the CHANGE command to correct them.

7. If the terminal is OFFLINE, switch it to ONLINE using the COMMAND mode.

NOTE

Your system may require transmission of your terminal answer-back memory (ABM) message before data can be communicated. To send the ABM message press and hold the **CTRL** (control) key and then press the **1** key (HERE IS).

---

8. When the connection is complete the COMM indicator lamp will light. Begin operation according to your system procedures.

NOTE

If the COMM indicator lamp goes out, communications have been lost: Repeat step 7 to restore communications.

---

9. When you have finished, terminate communications according to your system procedures.

Model 763 Operation in a dc Current Loop

To operate the Model 763 in a dc current loop (20 mA) interface, the current loop cable assembly (TI Part No. 2200053) must be used. The terminal setup for dc current loop operation is the same as for an internal modem (see above). Operation is determined by your system procedures.

NOTE

Current is **not** generated by the Model 763, which is a passive current control device, not an active current generating device.

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Control Characters

Many communications procedures used with data terminals require use of *control characters*. The Models 763/765 terminals are capable of generating all standard ASCII and C.C.I.T.T. control characters. The control characters are made by pressing and holding the CTRL (control) key in the upper left side of the keyboard and then pressing the key that corresponds to the desired function. The control character key assignments of the keyboard are shown below.

CONTROL CHARACTERS

The following characters are generated/printed by the terminal when the CTRL key is pressed and held.

*The **LF** key is omitted from the Germany, Sweden/Finland, and Denmark/Norway keyboards; and the CHAR and FIELD keys are each moved to the right one key.

CONTROL CHARACTERS
(From USA Standards Institute Publication X3.4—1968)

ACK	acknowledge	EM	end of medium	NAK	negative acknowledge
BEL	bell	ENQ	enquiry	NUL	null
BS	backspace	EOT	end of transmission	RS	record separator
CAN	cancel	ESC	escape (used for EDC)	SI	shift in
CR	carriage return	ETB	end of transmission block	SO	shift out
DC1	playback ON	ETX	end of text	SOH	start of heading
DC2	record ON	FF	form feed	STX	start of text
DC3	playback OFF	FS	file separator	SUB	substitute
DC4	record OFF	GS	group separator	SYN	synchronous idle
*DEL	delete	HT	horizontal tabulation	US	unit separator
DLE	data link escape	LF	line feed	VT	vertical tabulation

*not strictly a control character

SECTION V

CLEANING AND ADJUSTING THE TERMINAL

Cleaning the Printhead

The printhead should be cleaned each time a fresh roll of thermal paper is loaded into the terminal. Clean more often if the printed image begins to fade because of residue accumulating on the printhead. Proceed as follows:

1. Remove all thermal paper from the paper chute (refer to **Loading Paper** in Section I).

2. Using 95 percent denatured ethyl alcohol, wet a 50 mm (2-in.) wide strip across a sheet of good quality bond paper. Quickly insert the sheet down the paper chute and under the printhead. Press PAPER ADVance to feed the bond paper.

WET WITH DENATURED ALCOHOL

50 mm STRIP
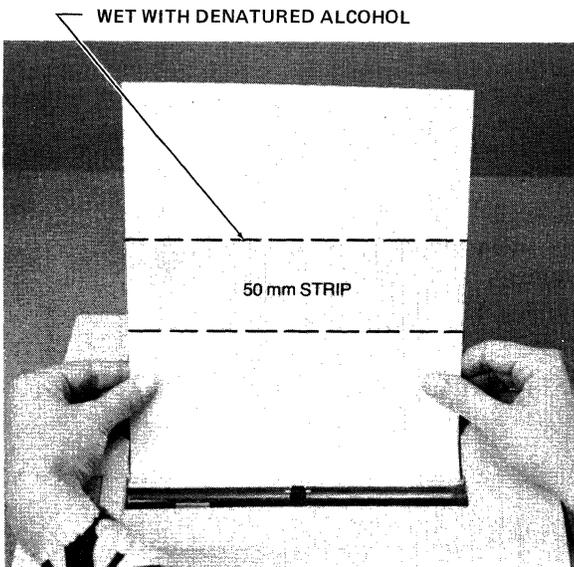
3. Print five lines on the bond paper across the 50 mm (2 in.) strip wetted with alcohol. Then advance the paper to a dry area and print two more lines.

> **NOTE**
>
> The printhead will not print a visible image on the bond paper.

Cleaning the Case

Use a soft, damp cloth or sponge and any nonabrasive household-type detergent to clean the exterior surfaces of the terminal. Take care not to spill liquids on any electrical components; short-circuits could result.

Adjusting the Print Contrast

You will probably never have to adjust the printing contrast since it is preset at the factory for optimum clarity. But if the contrast has been changed and you want a darker or lighter image, adjust it as follows:

1. For *darker* print insert a small slot-type screwdriver into the hole marked CONTRAST located on the right side of the terminal; then rotate the screwdriver clockwise (toward *D*) while printing characters from the keyboard, until the printed image is dark enough.

> **NOTE**
>
> If the print blurs, you've rotated the screwdriver too far. If so, adjust it to a lighter print.

2. For *lighter* print rotate the screwdriver counterclockwise (toward *L*) while printing characters from the keyboard, until the printed image is most legible.

Adjusting the Transmit Level (U.S. Models Only)

The transmit level is factory-calibrated for optimum performance with most U.S. telephone systems. However, because of the conditions of some telephone handsets and since line losses occur in some areas, it may be necessary to increase or decrease the transmit level to compensate for unusual conditions. Adjust the transmit level for optimum performance by inserting a small screwdriver into the hole marked TRANSMIT LEVEL on the left side of the case; rotate *clockwise* to improve log-on, or rotate *counterclockwise* to reduce data errors.

> **NOTE**
>
> In some nations, adjusting the transmit level is illegal. Check local regulations.

SECTION VI

OPERATOR EXERCISES

Introduction

This section provides exercises for you to perform to help become more familiar with terminal operation. The eleven major exercises will have you performing all basic terminal functions. Each exercise is designed to help you become proficient in the use of the Model 763/765 terminals in the shortest possible time. Complete the exercises sequentially for best results; i.e., start with Exercise 1, then 2, 3, 4 . . . etc. The exercises are structured in the following format:

- A brief explanation of the exercise to be performed
- The steps to be performed are printed in *italic letters*. When something is to be typed from the terminal keyboard, it is printed in **boldface type**.
- A discussion of what response can be expected from the terminal and an explanation of the responses are printed in normal type.
- General rules set apart from the exercises provide guidelines for operation of a particular mode or function.

Sample Exercise A:
Press the CMD key, type the word **STATUS**, *and press the SKIP key.* The terminal will print the current terminal parameters.

In the above example you are asked to type a word indicated by the boldface type "**STATUS**".

Sample Exercise B:
Press the CMD key, type **CREATE MYFILE L 4 80,** *and press the SKIP key.* The terminal will print a DONE message.

In sample exercise B, a group of words is requested. Unless otherwise noted, it makes no difference if you type uppercase or lowercase letters, except for the filenames, which must be typed the same style always, since several filenames can be created from the same word: For example, *myfile, Myfile,* and *MYFILE* are three different filenames created from the same characters. The spaces between the words must be included, or the terminal will respond with an error code.

Error Codes
Sometimes while doing the exercises, mistakes are made; the terminal will inform you of these errors by printing an error code. An *error code* is a two-digit number between three asterisks ***77***. When the terminal prints an error code, recheck your work for any obvious errors. If you cannot determine the error, look in Appendix A or on your *Quick Reference Card* for the list of error codes. For some errors the terminal will type out a message stating the problem.

Exercise 1. Using the Memory Catalog

The first exercise involves use of the memory catalog. The catalog lists all current files in memory along with characteristics of the files and how much of the file has been used. In addition, the catalog also lists which files have been designated the *record* and *playback* files and how much memory remains for use in creating files.

1. *Set the terminal to the COMMAND mode by pressing the orange CMD key in the upper right corner of the keyboard.* The terminal will perform a line feed (the paper will advance one line), a carriage return (the printhead will return to the left margin), print a command prompt symbol,
   , sound an audible tone, and light the COMMAND indicator in the lower right corner of the keyboard.

2. *Type the command* **CATALOG** *and press the SKIP key.* The word *catalog* commands the terminal to print the memory catalog. The SKIP key instructs the terminal to execute the command typed in. If you make a mistake typing the command message, press the SKIP key anyway, the terminal will print an error code and then you can start again at step 1.

EXAMPLE:

The catalog printout is divided into eight areas: File-names are listed under the NAME column. The format of the file is listed under the TYPE column. The letter **L** after the format indicates that the file is locked. *Locked files* are discussed in Exercise 2.

The maximum number of records the file can contain is listed under the MAXIMUM RECORDS column. The maximum number of characters each record can contain is listed under the CHARS/RECORD column. The number of records already filled in a file is listed under the COMPLETE RECORDS column.

Another value listed is the amount of MEMORY AVAILABLE for use in the creation of files: This figure represents the number of 80-character records not committed to files. It does *not* include the number of *file records* that have not been filled. The RECORD FILE and PLAYBACK file headings list which file has been designated the *record* and *playback* files.

Exercise 2 describes how to correct keyboard errors. Before proceeding to the next exercise, check your CATALOG listing for a file in memory named MYFILE or COPY2. Both files are used with the exercises in this section. If these files exist, both must be deleted before Exercise 2 can be accomplished because two files

```
▶ CATALOG                    MEMORY CATALOG

            NAME     TYPE    MAXIMUM   CHARS/   COMPLETE
                             RECORDS   RECORD   RECORDS
            TEMP     LINE       25       80         6
            INDEX2   CONT       24       72         2
            MYFILE   LINE.L      4       80         0
            COPY2    CONT        4       80         2
            FILE1    LINE       12       72         0

            MEMORY AVAIL =    61  80-CHAR LINES
            RECORD FILE:     COPY2
            PLAYBACK FILE:   COLECT
    DONE
```

Examine the CATALOG your terminal prints out. The example above may not be representative of the catalog in your terminal. If a CATALOG EMPTY message is printed, proceed to the next exercise.

cannot have the same name. If you do not wish to delete the existing files, it is possible to do the following exercise by using the same file name but in lowercase letters. For example, *MYFILE, Myfile,* and *myfile* are three different file names.

Exercise 2. Creating a File

Before information (data) can be stored in memory, a file must be created in which to store it. This exercise explains how to create a file and, at the same time, demonstrates some error-correcting techniques.

1. *Press the CMD key.*

2. *Purposely type the word* **CREATES** (which is incorrect) *and press the space bar.*

NOTE

If an error is made while typing the command word, there is a way to correct the error before pressing the SKIP key. To demonstrate this feature, the command word *CREATES* you just typed is incorrect: the correct command is *CREATE*. Correct this command with the CHAR key, as described in the box below.

Correcting a Typing Error

a. *Press the CHAR key one time.* The terminal will backspace the printhead one character.

b. *Press the CHAR key again.* This time the terminal will perform a line feed and a backspace. The terminal did not do a line feed the first time the key was depressed because the CHAR function detected that the previous character was a space (a nonprintable character). The CHAR function will not line feed until it reaches a printable character. The upper left corner of the printhead should now be under the letter **S** of the word **CREATES**. To delete the **S** simply press the space bar one time. This will replace the letter **S** with a space in the memory. Even though the letter **S** is not erased from the paper, it has been eliminated from the terminal memory. When typing commands, remember that the remainder of the line to the right of the printhead must be retyped after correcting an error because those characters have been "erased".

---

3. *Type the word* **MYFILE** *and press the space bar.* This is the name of the file you are creating. The word *MYFILE* is not on the same line as *CREATES* because of the previous correction, but this has no effect on the file creation message.

4. *Type in the letter* **L** *and press the space bar.* The letter *L* instructs the terminal that the file will be in the LINE format. If you want the file to be in the CONTINUOUS format, type a **C** in place of the L.

5. *Type the number* **4** *and press the space bar.* This number instructs the terminal to limit the file to four records (lines) of data.

6. *Type in the number* **80**. This last figure instructs the terminal to allow each record to contain up to 80 characters (80 is the maximum possible).

7. *Press the SKIP key.* This instructs the terminal to execute the commands you typed. When the terminal has created the file, it will type the message DONE.

```
▶ CREATES
                 MYFILE L 4 80
  DONE
```

You have now created a *line*-formatted file which you have named MYFILE. The file can contain a maximum of four records (lines) of 80 characters each.

Exercise 3. Changing the Record File

In this exercise you will change the RECORD file to MYFILE so that data can be recorded into it.

1. *Press the CMD key.*

2. *Type in the word* **CHANGE** *and press the space bar.* The command *CHANGE* instructs the terminal that the function described in the next word is to be changed.

3. *Type the word* **RECORD** *and press the space bar.* This specifies that the RECORD file is to be changed.

4. *Type the word* **TO** *and press the space bar.*

5. *Type the word* **MYFILE**. This last word specifies that the RECORD file is to be changed to MYFILE. This completes the CHANGE format required, which is: CHANGE RECORD TO (filename).

6. *Press the SKIP key.* This will cause the terminal to execute the command.

        ▶ CHANGE RECORD TO MYFILE
        DONE

Exercise 4. Changing the Playback File

In this exercise you will change the PLAYBACK file to MYFILE so data can be played back.

1. *Press the CMD key.*

2. *Type* **CHANGE PLAYBACK TO MYFILE**. This is the same as Exercise 3 except for the command word *PLAYBACK*.

3. *Press the SKIP key.* This will cause the terminal to execute the command.

        ▶ CHANGE PLAYBACK TO MYFILE
        DONE

Up to now you have created a file and changed the terminal RECORD and PLAYBACK files to the newly created file named *MYFILE*. To verify that the files have been changed, use the CATALOG command (Exercise 1) and check the catalog listing. You will use both the RECORD and PLAYBACK files in the following exercises.

Exercise 5. Recording Data into a File

Data can be stored in a file that has been designated a RECORD file by using the ASR function keys described in Section III.

The **terminal functions** are produced by pressing and holding the FCTN key and pressing the number key. For example, the function F2 *(RECORD ON)* is activated by pressing and holding the FCTN key, pressing the number 2 key, and then releasing both keys.

---

1. *Press F6 (REWIND RECORD).* This function ensures that the RECORD file is at the beginning record. The printer will perform a line feed and a carriage return.

2. *Press F2 (RECORD ON).* The terminal will light the RECORD indicator on the lower right corner of the keyboard. The terminal will now store into MYFILE whatever is typed on the keyboard. The data will be entered, one record at a time, until you press the SKIP key to indicate the end of a line. Then the text can be corrected, if necessary, using the CHAR and FIELD keys.

3. *Type the following text using the SKIP key for line feed and carriage return:*

```
THIS IS A VERY SHORT STORY.
IT ONLY CONSISTS OF FOUR LINES.
THIS LINE IS TO BE DELETED.
THIS IS THE VERY LAST LINE.
+++  77  +++
```

NOTE

When you press the SKIP key after the last record is typed, the terminal will respond by printing an error code:

+++ 77 +++

Observe that the RECORD indicator lamp is extinguished. The "77" error code informs you that no more space remains in the file. When you pressed the SKIP key, the terminal tried to go to the next line of the file, but since only four records (lines) were designated in Exercise 2, the error code was printed and the RECORD function was terminated. The normal method of terminating a RECORD ON function is to use the F4 (RECORD OFF) function which would have switched off the RECORD indicator lamp without printing the error code.

The four lines of text typed in step 3 are now stored in memory, and will remain in memory until you erase, delete, or edit them. Even if the terminal is switched off, the four lines will remain in memory.

Exercise 6. Playing Back a File

In this exercise you will use the designated terminal PLAYBACK file to verify that the text you typed is stored in MYFILE.

1. *Switch the terminal OFF. Wait 15 seconds, then switch the terminal ON again.* As you proceed through the remainder of this exercise, you will be able to verify that removing the power did not affect any of the files and settings (parameters) of the terminal.

2. *Press F5 (REWIND PLAYBACK).* The F5 function returns the PLAYBACK file pointer to the beginning of the file. (The *pointer* is the terminal's way to "know where it is.")

3. *Press F1 (PLAYBACK ON).* The F1 function causes the contents of the PLAYBACK file, which in the case of this exercise is MYFILE, to be printed on the terminal printer.

4. *Press F1 (PLAYBACK ON) again.* This time the contents will *not* be printed because the file pointer has moved to the end of the file. To print the contents again the file would have to be "rewound" with the F5 function (REWIND PLAYBACK).

5. *Press F8 (PLAYBACK REV) three times.* The F8 function causes the playback file to "rewind" three records (lines).

6. *Press F1 (PLAYBACK ON).* The printer will now print the contents of MYFILE, starting with the *second* line of the text.

Up to now you have created a file and recorded data in it. The next exercise practices editing the data you have recorded into the file.

Exercise 7. Editing a File

This exercise uses all available editing functions to change the data stored in the file.

1. *Press the CMD key.*

2. *Type* **EDIT MYFILE** *and press the SKIP key.* The terminal will print the index symbol ➜ below the command. The terminal is now in the *EDIT mode*, and the function keys are now defined by the top row of the label above the keyboard.

3. *Press F4 (PRINT).* The contents of MYFILE will be printed. An "ETX" will be printed after the last line of text is printed to indicate that the *end of text* has been reached.

4. *Press F3 (TOP).* This function is similar to the REWIND PLAYBACK function in the ASR mode. It will cause the record pointer to return to the starting record, and the first line will be printed.

5. *Press F2 (FIND).* The terminal will print the FIND symbol ❖ . The FIND function enables you to define a "string" (group) of characters up to a maximum of 30 characters for the terminal to locate.

+---------------------------------------+
| **NOTE** |
| |
| The FIND function searches from the |
| current record +1 to the end of the |
| file. It will not search from the |
| starting record to the current record.|
+---------------------------------------+

6. *Type* **FOUR** *and press the SKIP key.* The terminal will indicate that it is searching for the defined word (FOUR) by printing the FIND symbol ❖ after the defined word. The second line of the text is printed because the word "FOUR" was found in it. Your entire text should look like this:

```
➤ EDIT MYFILE
➜
THIS IS A VERY SHORT STORY.
IT ONLY CONSISTS OF FOUR LINES.
THIS LINE IS TO BE DELETED.
THIS IS THE VERY LAST LINE.
ETX
➜
THIS IS A VERY SHORT STORY.
❖ FOUR ❖
IT ONLY CONSISTS OF FOUR LINES.
```

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NOTE

If you make an error while entering your character string, you can make corrections by using the CHAR or FIELD key *before* pressing the SKIP key.

---

7. *Press and hold the CHAR key until the upper left corner of the printhead is under the "F" of the word "FOUR".*

NOTE

If the CHAR key is pressed and held for longer than ½ second, it automatically repeats until released. Other keys that operate in the same manner are the space bar, underscore (_), minus (−), period (.), and asterisk (*).

---

8. *Type the words* **THREE LINES** *and press the SKIP key.* You are using the character overstrike feature to change the words "FOUR LINES." to "THREE LINES." Pressing the SKIP key instructs the terminal to enter the line as corrected into memory and to print the next line of text.

9. *Press F5 (delete line).* The terminal will print a DELETE LINE prompt symbol ⌧ . This function instructs the terminal to delete the current record from the file.

10. *Type the number* **1** *and press the SKIP key.* The number indicates how many lines are to be deleted, beginning with the current record. Since the number entered was a "1", only the current record will be deleted. While the specified number of records are being deleted, the terminal will print the new current record.

```
IT ONLY CONSISTS OF FOUR LINES.
                     THREE LINES.
THIS LINE IS TO BE DELETED.
⌧ 1
THIS IS THE VERY LAST LINE.
```

NOTE

The number of lines to be deleted can be corrected using the CHAR key *before* pressing the SKIP key. Entering a zero or no number at all will terminate the function, and the current record will be printed and be available for editing.

Using the CHAR and FIELD Keys

A few points about the CHAR and FIELD keys are worth remembering:

- Pressing the CHAR (backspace) key will cause the printhead to backspace until it reaches a printed character, at which time the terminal will line feed one time. Holding it pressed will cause continuous backspacing.
- The FIELD (reverse) key will cause a line feed, and the printhead will return to the beginning of the record.
- The CHAR key (SHIFT and CHAR key) will cause the terminal to print the contents of the current record one character at a time. When the printhead reaches the end of the data in a record, it will stop and pressing the SHIFTed CHAR key will cause an audible tone and no printhead movement will occur.
- The FIELD key (SHIFT and FIELD key) will cause the terminal to print the remainder of the contents of the current record.

11. *Use the CHAR key to position the printhead under the letter "V" of the word "VERY".*

12. *Press F6 (DELETE CHARacter) five times.* You can simply press and hold the FCTN key and a delete character symbol ▓ will be printed each time the number 6 key is pressed. This symbol indicates that the character above it has been deleted. Five deletions are required for the four letters of the word "VERY" and the space following it.

13. *Press the SHIFT and FIELD keys.* The terminal will line feed, print the corrected record, and the printhead will remain at the end of the record.

14. *Press the CHAR key once.* This will place the printhead under the period in the text.

15. *Press the space bar* (to strikeover the period) *and type in* **OF THE STORY**. The record will now contain the phrase you have just entered.

16. *Press the SKIP key.* This will instruct the terminal that you have completed editing the record. The terminal will print "ETX" to indicate the end of the text. The INDEX symbol → will be printed below the ETX message:

```
THIS IS THE VERY LAST LINE.
             ▧▧▧▧▧
THIS IS THE LAST LINE.
                        OF THE STORY.
ETX
�→
```

17. *Type −1 and press the SKIP key.* The "−1" (minus one) instructs the terminal that you require the record before the current record. The terminal will print the selected record, and it is now available for editing.

18. *Press the FIELD key.* This causes the printer to line feed and move the printhead under the first character in the record.

19. *Press the CHAR (SHIFT and CHAR key) three times.* This moves the printhead forward. Notice that as the printhead moves forward, contents of the record will be printed one character at a time, each time the SHIFTed CHAR key is pressed.

20. *Press F6 (DELETE CHARacter) five times to delete the word "ONLY" and the space following.*

> **NOTE**
>
> When using the DELETE CHARacter function (F6), followed by the CHAR or FIELD keys, remember from the box above that the following rules apply:
> - If the SHIFTed CHAR key is used, the printhead will move to the first character remaining after the deleted material.
> - If the CHAR key is used, the printhead will return to the last character remaining before the deleted material.
> - If the SHIFTed FIELD key is used, the printhead will move to the end of the text.
> - If the FIELD key is used, the printhead will return to the beginning of the record.
>
> In all cases the record will be reprinted.

21. *Press the SHIFTed CHAR key.* The terminal will print the corrected record and position the printhead under the first letter of the word *consists*.

22. *Using the SHIFTed CHAR key, move the printhead under the space before the first letter of the word "THREE".*

23. *Press F7 (INSERT).* The terminal will print the INSERT prompt symbol

24. *Press the space bar and then type the word* **ONLY**:

```
�→ −1
IT ONLY CONSISTS OF THREE LINES.
IT ▧▧▧▧▧
IT CONSISTS OF THREE LINES.
      CONSISTS OF▽
                    ONLY
                      △ THREE LINES.
```

25. *Press F3 (TOP).* This terminates the insertion function and causes the inverted INSERT prompt symbol to be printed, indicating the end of the insertion. The first line is then printed.

> **NOTE**
>
> Invoking any function except F6 or F7 will terminate the INSERT function.

26. *Press F4 (PRINT).* The edited text will now be printed.

```
      CONSISTS OF▽
                    ONLY
                      △ THREE LINES.
THIS IS A VERY SHORT STORY.
IT CONSISTS OF ONLY THREE LINES.
THIS IS THE LAST LINE OF THE STORY.
ETX
�→
DONE
```

27. *Press F8 (STOP).* The terminal will terminate the EDIT mode and enter the ASR mode.

Exercise 8. Copying From File to File

Many times it is necessary to copy (print out) data from a file to the printer, to copy (move) data from one file to another file, or to store data into a file directly from the keyboard. The COPY command enables you to copy data from the keyboard into a file, even if that file is not the designated *RECORD* file. The contents of a file can be printed out on the terminal printer using the COPY command.

The contents of one file can be copied (moved) into another file using the COPY command: This is a great advantage because the files do not have to be in the same format (*continuous* or *line*). This enables you to create and edit a file in the LINE format and copy it into another file in the CONTINUOUS format. The following exercise will help you become acquainted with the many uses of the COPY command.

To copy data into another file, it is necessary first to create another file into which the data can be stored.

1. *Press the CMD key.*

2. *Type* **CREATE COPY2 C 4 80** *and press the SKIP key.* This command creates a file in the continuous format with a capacity of four records, each record 80 characters in length.

3. *Press the CMD key.*

4. *Type* **COPY MYFILE TO COPY2** *and press the SKIP key.* This causes the terminal to copy (record) the contents of MYFILE into the new file labeled COPY2. The data stored in MYFILE remains unchanged.

5. *Press the CMD key.*

6. *Type* **CATALOG** *and press the SKIP key.* The catalog will show that the COPY2 file has had data copied into it. Because of the difference in formats, there will be one less record in the COPY2 file than in MYFILE: The *continuous* format used for COPY2 file uses memory space more efficiently.

7. *Press the CMD key.*

8. *Type* **COPY COPY2 TO PRINTER** *and press the SKIP key.* This will verify that the contents of MYFILE were copied into the COPY2 file. Notice that the contents were printed even though the COPY2 is not the designated *playback* file because the COPY command will print the contents of any file in the memory catalog.

9. *Press the CMD key.*

10. *Type* **COPY MYFILE TO PRINTER** *and press the SKIP key.* The contents of MYFILE will be printed, showing that the COPY command does not alter the contents of files that are copied.

Exercise 9. Comparing Continuous and Line Format Files

This brief exercise illustrates the major differences between data stored in *continuous* and *line* formats when printed in the edit mode.

1. *Press the CMD key.*

2. *Type* **EDIT COPY2** *and press the SKIP key.*

3. *Press F4 (PRINT).* Notice that most of the text fits on one line and part of another line, instead of three separate lines. To assist you in editing *continuous*-formatted files, the end of each line of text is indicated by the end-of-line (EOL) symbol ▨ . The EOL symbol is generated each time the SKIP key is pressed as an aid while the terminal is in the EDIT mode. In Exercise 8 you observed that when a *continuous* file is printed, it appears identical to the original *line*-formatted MYFILE. A good reminder is that both types of file formats appear identical when they are printed in the ASR mode or transmitted over the communications line. The only time the format in this exercise is seen is when the file is being edited.

4. *Press F8 (STOP).*

Exercise 10. An Alternate Method of Storing Data in a File

Up to this point, to store data in a file it has been necessary to use the *RECORD* file and the ASR RECORD ON function or an EDIT mode function. The COPY command enables you to store data directly from the keyboard into a file without a RECORD file. The following exercise is a way to store and play back from MYFILE using the COPY command.

1. *Press the CMD key.*

2. *Type* **COPY KEY TO MYFILE** *and press the SKIP key.* This command instructs the terminal to store data entered from the keyboard into the file labeled MYFILE. The terminal responds by leaving the COMMAND indicator lit and performing a line feed and carriage return. Data now typed on the keyboard will be entered into MYFILE. Any data previously recorded in MYFILE will be "written over."

3. *Type in your name and address. Use the SKIP key as a carriage return and type your company name and address on the second line.*

4. *Press the SKIP key* (to return to the beginning of the next line) *and press the ENTER key.* The ENTER key terminates recording.

5. *Press the CMD key.*

6. *Type* **COPY MYFILE TO PRINTER**. The data you entered in step 3, plus any records not "written over" in MYFILE, will be printed. Notice that with the COPY command, it is not necessary to rewind the file before recording or playing back because the COPY command rewinds automatically. Also note that the COPY command does not allow you to start recording data in a file at any record other than the first record of the file unless the END option is used with the COPY command (the END option is discussed in Section III of this manual).

```
▶ EDIT COPY2
→
THIS IS A VERY SHORT STORY.▨IT CONSISTS OF ONLY THREE LINES.▨THIS IS THE LAST LI
NE OF THE STORY.▨
ETX
→
```

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Exercise 11. Locking, Freeing, Erasing, and Deleting Files

After a file has been used to store data, it may become necessary to remove the data from the file so that new data can be stored in it. By using an ERASE command the terminal removes the data recorded in file without altering the file name or parameters. The file can be eliminated entirely by using the DELETE command which removes the filename, parameters, and any data stored in it.

To prevent the accidental erasure or deletion of a file, a LOCK command will prevent a designated file from being erased, edited, or deleted. A locked file may be released by using the FREE command.

This exercise will help you become better acquainted with these functions.

1. *Press the CMD key.*

2. *Type* **ERASE MYFILE** *and press the SKIP key.* This instructs the terminal to erase only the data stored in MYFILE. The name and parameters remain. You can use the CATALOG command to verify that MYFILE now contains a 0 (zero) in the COMPLETE RECORDS column.

3. *Press the CMD key.*

4. *Type* **DELETE MYFILE** *and press the SKIP key.* The terminal will delete MYFILE from the memory catalog.

5. *Press the CMD key.*

6. *Type* **LOCK COPY2** *and press the SKIP key.* The terminal will lock the file labeled COPY2. To verify this, use the CATALOG command and note that the COPY2 file has the letter ".L" appended to indicate *locked*. Also observe that the previously deleted MYFILE is no longer listed in the catalog.

7. *Press the CMD key.*

8. *Type* **DELETE COPY2** *and press the SKIP key.* The terminal will print an error code ***84*** (attempting to write in a locked file); no further action will occur.

   An attempt to EDIT or ERASE the locked file also will produce the same error response from the terminal, and no action will occur.

9. *Press the CMD key.*

10. *Type* **FREE COPY2** *and press the SKIP key.* The COPY2 file is now unlocked and can be deleted, erased, or edited.

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APPENDIX A

QUICK REFERENCE GUIDE

SHORT FORM FOR COMMANDS AND PARAMETERS

COMMAND/ PARAMETER	SHORT FORM	DESCRIPTION
CATALOG	CL	Print the memory file catalog
CHANGE	CG	Change a terminal configuration parameter
COPY	CP	Copy data
CREATE	CF	Create and define a memory file
DELETE	none	Delete a memory file
EDIT	ED	Edit a memory file
ERASE	none	Erase a memory file
FREE	none	Release file protection
INTERFACE	PORT	Used with CHANGE command
INTERNAL	INT	Used with CHANGE command
LOCK	none	Protect a file against being erased, or written into
OFFLINE	OF or OFF	Place the terminal off line
ONLINE	ON	Place the terminal on line
PLAYBACK	PLAY	Used with CHANGE command
RECORD	REC	Used with CHANGE command
RUN	none	Executes commands from a file
STATUS	ST	Print all current terminal configuration parameters
TEST	TS	Execute a ROM resident terminal test

COMMAND SYNTAX

COMMAND	SHORT FORM	SYNTAX*
CATALOG	CL	CATALOG
CHANGE	CG	CHANGE <parameter> TO <parameter>
COPY	CP	COPY <parameter> TO <parameter> (END or CTRL)
CREATE	CF	CREATE <filename> <L or C> <No. of rec.> (record length)
DELETE	none	DELETE <filename>
EDIT	ED	EDIT <filename>
ERASE	none	ERASE <filename>
FREE	none	FREE <filename>
OFFLINE	OF or OFF	OFFLINE
ONLINE	ON	ONLINE
RUN	none	RUN <filename>
STATUS	ST	STATUS
TEST	TS	TEST

*Press the CMD key to enter *command mode;* press the SKIP key after entering the entire command.

CHANGE COMMANDS

CHANGE (or CG) — To change the following parameters:

*RECORD file:	CHANGE RECORD TO [filename]
*PLAYBACK file:	CHANGE PLAYBACK TO [filename]
AUTOABM:	CHANGE AUTOABM TO [ON or OFF]
ABMPRT:	CHANGE ABMPRT TO [ON or OFF]
EOTDIS:	CHANGE EOTDIS TO [ON or OFF]
EDC:	CHANGE EDC TO [ON or OFF]
*KEY:	CHANGE KEY TO ["single ASCII character"]
DC3:	CHANGE DC3 TO [ON or OFF]
DC1.3:	CHANGE DC1.3 TO [ON or OFF]
DC2.4:	CHANGE DC2.4 TO [ON or OFF]
BUFFER:	CHANGE BUFFER TO [ON or OFF]
*TRANSMIT EOL:	CHANGE XMTEOL TO [NL, CRLF, DC3, or "single character"]
*RECEIVE EOL:	CHANGE RCVEOL TO [NL, CRLF, or "single character"]
SPEED:	CHANGE SPEED TO (110, 200, 300, 600, 1200, 2400, 4800, 9600]
PARITY:	CHANGE PARITY TO [EVEN, ODD or MARK]
PARITY CHECK:	CHANGE PCHECK TO [ON or OFF]
DUPLEX:	CHANGE DUPLEX TO [FULL, HALF or HALFRC]
INTERFACE:	CHANGE INTERFACE TO [INTERNAL or EIA]
*ABM:	CHANGE ABM TO ["up to 34 characters"] [S if ABM is to be secured]

---

*No Entry Yields No Definition

SPECIAL RUN COMMAND FUNCTIONS

#n (where n = 0 through 9) causes execution of any ASR function.

To terminate ASR mode and return to execution of the command file:

(1) **DC3 ESC** from PLAYBACK file (**EDC** and **DC3** must be **ON**).

(2) Press **FCTN** and **ESC** keys simultaneously.

(3) Receipt of **ESC** < over communications line.

(4) #**ESC** at the end of the ASR function record.

NOTE: The # symbol will appear as a £ symbol on U.K. units.

SPECIAL FUNCTIONS

Double Space — Press FCTN and PAPER ADVance for double-space printing. Press FCTN and PAPER ADVance again to return to single-space printing.

Disable Printer — Press FCTN and 0 (zero) keys (ASR mode).

Enable Printer — Press FCTN and 9 keys (ASR mode).

Repeating Characters — Space bar, – (minus), * (asterisk), _ (underline), . (period), CHAR and FIELD keys will repeat as long as held depressed.

Horizontal Tab — Record HT and column number to cause horizontal tabbing; for example, HT20 will cause fast printhead slewing to column 20. Horizontal tabbing available only during OFFLINE operation.

EDIT FUNCTION KEYS

F1 — INDEX   Symbol ➔
Allows movement through file defined by a signed number that represents direction (+ or −) and number of records to be moved.

F2 — FIND   Symbol ❖
Finds a user defined character string of up to 30 characters. Search for character string is from current record to end of file.

F3 — TOP (No Symbol)
Returns records pointer to the "top" and prints first record of the file.

F4 — PRINT (No Symbol)
Prints contents of file starting from the current record until end-of-file is reached or another edit function is detected.

F5 — DELETE LINE(S)   Symbol ☷
Deletes the number of records, including the current record, specified by the number following the prompt symbol.

F6 — DELETE CHARACTER(S)   Symbol ▦
Deletes characters under printhead in current record each time the F6 function is depressed.

F7 — INSERT   Symbols   Open Insert ▽   Close Insert △
The insertion of new text begins at the point F7 is depressed and ends when any other edit function is pressed (except F6 or F7).

F8 — STOP (No Symbol)
Causes the terminal to exit the EDIT mode and enter the ASR mode.

EDC SEQUENCES FOR PROMPTING

The following two-character control sequences must be recorded in the playback file to obtain the listed action:

DC3 DC3 — causes PLAYBACK file to "rewind" and switch OFF

DC3 DC1 — causes PLAYBACK file to "rewind" and resume playback operation

DC3 DLE — causes DC3 to be processed without stopping playback (needed to record a DC3 character from the PLAYBACK file without switching playback off).

DC3 ESC — terminates ASR mode and returns execution to COMMAND file

ASR FUNCTION KEYS

F1/DC1* — PLAYBACK ON
    Outputs contents of the PLAYBACK file to printer and/or communications channels.

NOTE

    The ENTER key may be used, *in the off-line mode only,* to activate PLAYBACK ON.

F2/DC2* — RECORD ON
    RECORD file is activated and data from keyboard and/or communications channel is recorded.

F3/DC3* — PLAYBACK OFF
    Stops the PLAYBACK file from outputting its contents after one more character is printed.

F4/DC4* — RECORD OFF
    Stops the RECORD file from recording data.

F5 — REWIND PLAYBACK
    Returns the PLAYBACK file pointer to the first record of the file.

F6 — REWIND RECORD
    Returns the RECORD file pointer to the first record of the file.

F7 — PLAYBACK FWD
    Prints the contents of the current record and advances the current record pointer of the PLAYBACK file by one record.

F8 — PLAYBACK REV
    Returns the current record pointer of the PLAYBACK file to the previous record.

F9 — PRINTER ON
    Turns the terminal printer on.

F0 — PRINTER OFF
    Turns the terminal printer off.

---

*ADC functions are only active from a file or the communications channel.

ERROR CODES

Code	Meaning
05	No bubble memory available.
06	Terminal hardware failure.
08	Attempted to transmit when a receive-only condition exists or communication is not enabled.
14	Attempted creation of a file with a record length greater than 80 characters.
21	Invalid syntax for CREATE command.
22	An invalid parameter was entered; e.g., a letter in place of a number.
24	Attempted to create a file whose name already exists in the catalog.
25	Invalid source entry when using a COPY command; e.g., in command, COPY PRINTER TO data23, PRINTER is not a valid source.
27	File not found.
30	The structure of the COPY command is not correct.
33	Attempted to use a file already in use.
34	Attempted to delete, erase, lock, or free an undefined file.
37	Abnormal TEST command abort
44	Catalog full, the maximum number of files (16) already exists in the catalog.
53	File undefined.
54	Attempted to create a file that was larger than available memory space.
64	Attempted to create a file of zero or negative size.
69	Attempted to enter too many characters into a record.
73	Attempted to write more characters in a file than were allowed by the CREATE command.
77	Record file is full. Record pointer is at the end of the file (rewind is required if data is to be written in the record file).
83	Attempted to read past the end-of-file.
84	Attempted to write into a locked file.
88	Attempted to do an ASR function to a file that has been defined as RECORD or PLAYBACK but does not exist.
93	Attempted to create a file with an invalid or reserved name (e.g., file name did not begin with an alphabetic character or was named KEY or TO).
94	Attempted creation of a file of invalid type (i.e., not C or L format).
96	Abnormal editor abort.
99	Attempted to execute from a continuous-format file
BSn(l)	Bubble memory synchronization being attempted by the terminal. The number of the bubble memory module is represented by n. If the l is printed, the bubble module is inaccessible due to lost mask.
BRnm	One of the three mask pages needed regeneration. The bubble memory module number is represented by n and the page number is represented by m.
E132	Default parameters have been installed, possible loss of data.
E176	Bubble memory space has decreased, possible data loss.
E214	Bubble memory system inoperative.

ESC FUNCTIONS

ESC 0 — *Command mode.* Command follows the digit 0 and is executed by receive-EOL sequence.

ESC1 — *Transmit Status.* Six hexadecimal-ASCII characters representing terminal status are transmitted, followed by the transmit-EOL sequence. The first two characters are the status of last executed command; the two characters can be

Char 1	Char 2	Meaning
0	0	Command successfully executed.
N	N	Two hexadecimal numbers for an error code, if an error occurred.
F	F	An error with no error code has occurred.

The next four characters represent status information in **binary form** transmitted by the terminal in **hex-ASCII** representation. The meaning of a logic ONE in each position is of the binary representation is as follows:

Third Character
- (MSB) Bit 1 — Playback is assigned to an existing file.
- Bit 2 — Record is assigned to an existing file.
- Bit 3 — The playback and record files are the same file.
- (LSB) Bit 4 — The playback file is a line format file (a logic zero indicates a continuous-format file).

Fourth Character
- (MSB) Bit 1 — The record file is a line file (a logic zero indicates a continuous file).
- Bit 2 — The record file is LOCKED.
- Bit 3 — The printer has been switched off by a PRINTER-OFF command.
- (LSB) Bit 4 — DC2.4 is on.

Fifth Character
- (MSB) Bit 1 — DC1.3 is on.
- Bit 2 — DC3 is on.
- Bit 3 — EDC is on.
- (LSB) Bit 4 — Buffer is on.

Sixth Character (see EXAMPLE) ➤
- (MSB) Bit 1 — EOTDIS is on.
- Bit 2 — AUTOABM is on.
- Bit 3 — ABMPRT is on.
- (LSB) Bit 4 — PCHECK is on.

> **EXAMPLE**
>
> If the terminal transmits the characters
>
> **00FC21**
>
> the third through sixth characters converted to binary are
>
> 0 0 F C 2 1
>
> Last command executed successfully —
> equals binary 0001
> equals binary 0010
> equals binary 1100
> equals binary 1111
>
> Thus, the sixth character (1 = binary 0001) would be interpreted:
> bit 1 = **0** — EOT disconnect is OFF.
> bit 2 = **0** — Auto ABM is OFF.
> bit 3 = **0** — ABM print is OFF.
> bit 4 = **1** — Parity check is ON.

Hex ASCII Character	Binary Equivalent
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

ESC 2 — Playback file record forward.
ESC 3 — Playback file record reverse.
ESC 4 — Rewind playback file.
ESC 5 — Rewind record file.
ESC 6 — ADC ON — switches on DC1.3, DC2.4 and DC3.
ESC 7 — ADC OFF — switches off DC1.3, DC2.4, and DC3.
ESC 8 — Printer ON.
ESC 9 — Printer OFF — the printer will remain off until:
- 1) A PRINTER ON command is encountered.
- 2) The COMMAND mode is entered.
- 3) Power is cycled on and off.

ESC : — Lock out keyboard.
ESC ; — Free keyboard.
ESC < — Return to RUN command file.
ESC ESC — Causes terminal to process a single ESC character (needed to record single ESC when EDC is on).

CONTROL CHARACTERS

The following characters are generated/printed by the terminal when the CTRL key is pressed and held.

*The **LF** key is omitted from the Germany, Sweden/Finland, and Denmark/Norway keyboards; and the CHAR and FIELD keys are each moved to the right one key.

CONTROL CHARACTERS
(From USA Standards Institute Publication X3.4—1968)

ACK	acknowledge	EM	end of medium	NAK	negative acknowledge
BEL	bell	ENQ	enquiry	NUL	null
BS	backspace	EOT	end of transmission	RS	record separator
CAN	cancel	ESC	escape (used for EDC)	SI	shift in
CR	carriage return	ETB	end of transmission block	SO	shift out
DC1	playback ON	ETX	end of text	SOH	start of heading
DC2	record ON	FF	form feed	STX	start of text
DC3	playback OFF	FS	file separator	SUB	substitute
DC4	record OFF	GS	group separator	SYN	synchronous idle
*DEL	delete	HT	horizontal tabulation	US	unit separator
DLE	data link escape	LF	line feed	VT	vertical tabulation

*not strictly a control character

The following ASCII control characters are printed by the terminal.

NUL SOH STX ETX EOT ENQ ACK BEL BS HT LF VT FF CR SO SI

DLE DC1 DC2 DC3 DC4 NAK SYN ETB CAN EM SUB ESC FS GS RS US DEL

APPENDIX B

KEYBOARD LAYOUT AND SYMBOLIZATION

All Keyboards

The following key assignments are common to all national keyboards.

| HERE IS 1 | BREAK 2 | NUL 3 | 4 | 5 | 6 | 7 | \| 8 | ` 9 | ~ 0 | GS + | DEL − | \ | ESC | CMD |

| CTRL | DC1 Q | ETB W | ENQ E | DC2 R | DC4 T | EM Y | NAK U | HT I | SI O | DLE P | CHAR ← | FIELD ← | LF | KEY | ENTER |

| | SOH A | DC3 S | EOT D | ACK F | BEL G | BS H | LF J | VT K | FF L | { : | } „ | SKIP | CR | PAPER ADV |

| | SUB Z | CAN X | ETX C | SYN V | STX B | SO N | CR M | FS , | RS . | US / | | | COMMAND ○ PLAYBACK ○ |

SPACE   NUM MODE ○   RECORD ○   COMM ○   ON LINE ○
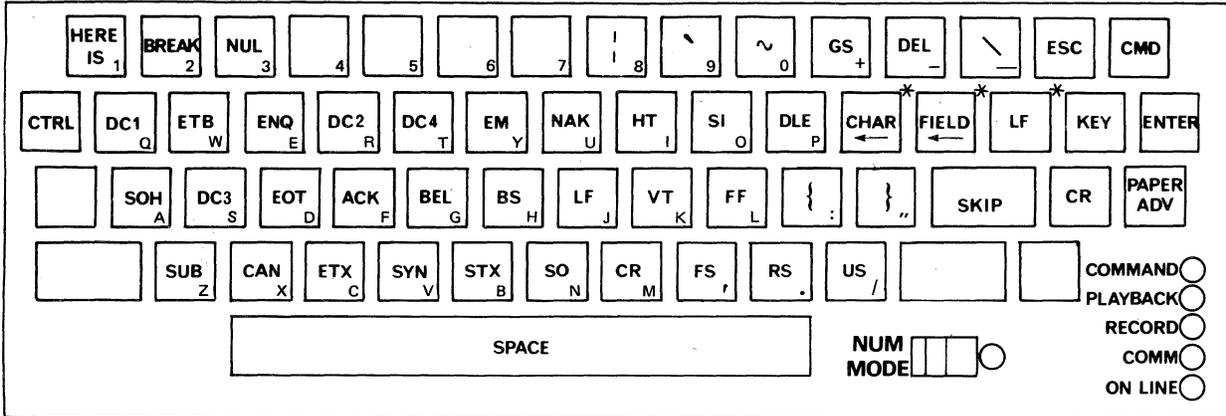
CTRL (Control) Key Pressed (Note: France keys differ from above)

| | | | | | ⊞ | ⊟ | ⊡ | | | | | | ESC | CMD |

| | | | | | | 7 | 8 | 9 | | CHAR ← | FIELD ← | LF | KEY | ENTER |

| | | | | | | 4 | 5 | 6 | | SKIP | CR | PAPER ADV |

| | | | | | | 1 | 2 | 3 | | COMMAND ○ PLAYBACK ○ |

0   NUM MODE ●   RECORD ○   COMM ○   ON LINE ○
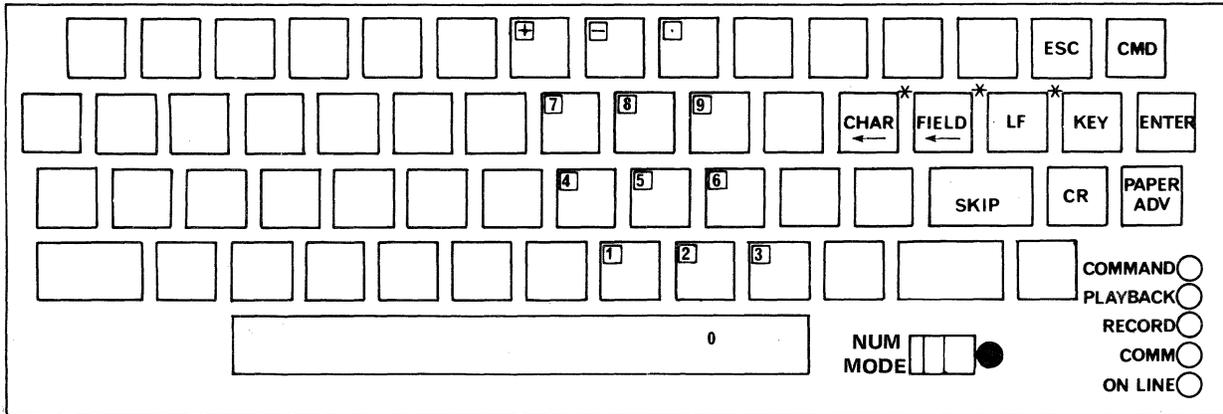
NUM (Numeric) MODE Switch Selected, SHIFT Key Not Pressed

| ! | @ | # | $ | % | ^ | & | * | (|) | [|] | = | ESC | CMD |

| Q | W | E | R | T | Y | U | I | O | P | CHAR → | FIELD → | LF | KEY | ENTER |

| A | S | D | F | G | H | J | K | L | : | " | SKIP | CR | PAPER ADV |

| SHIFT | Z | X | C | V | B | N | M | , | . | / | SHIFT | COMMAND ○ PLAYBACK ○ |

SPACE   NUM MODE ●   RECORD ○   COMM ○   ON LINE ○
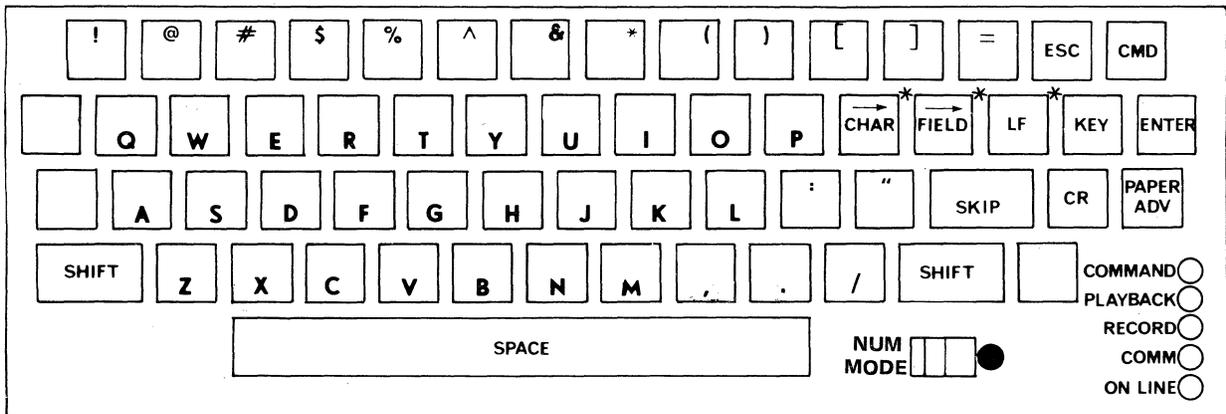
NUM MODE selected and SHIFT Key Pressed.

NOTE
Various national characters differ from the above drawing, but the corresponding keys are active.

*The **LF** key is omitted from the Germany, Sweden/Finland, and Denmark/Norway keyboards; and the CHAR and FIELD keys are each moved to the right one key.
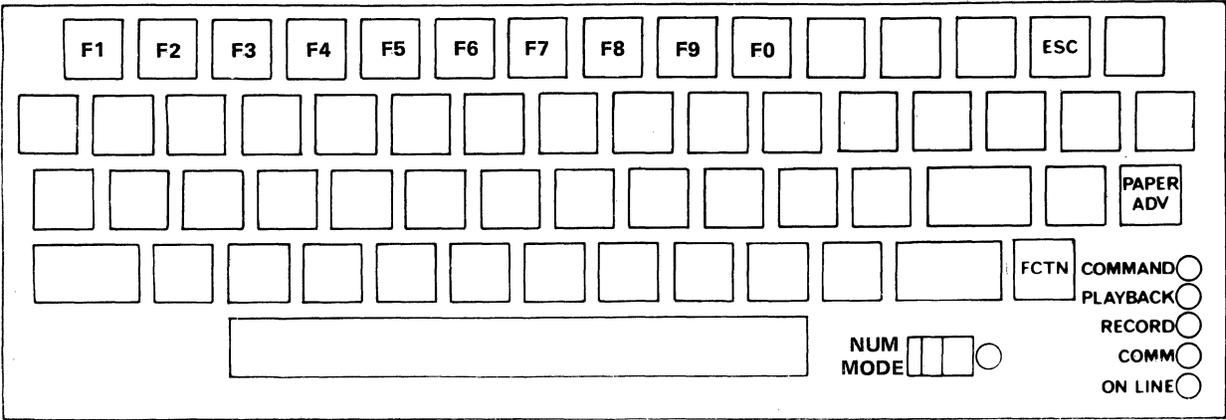
FCTN (Function) Key Pressed

U.S.A. Keyboards
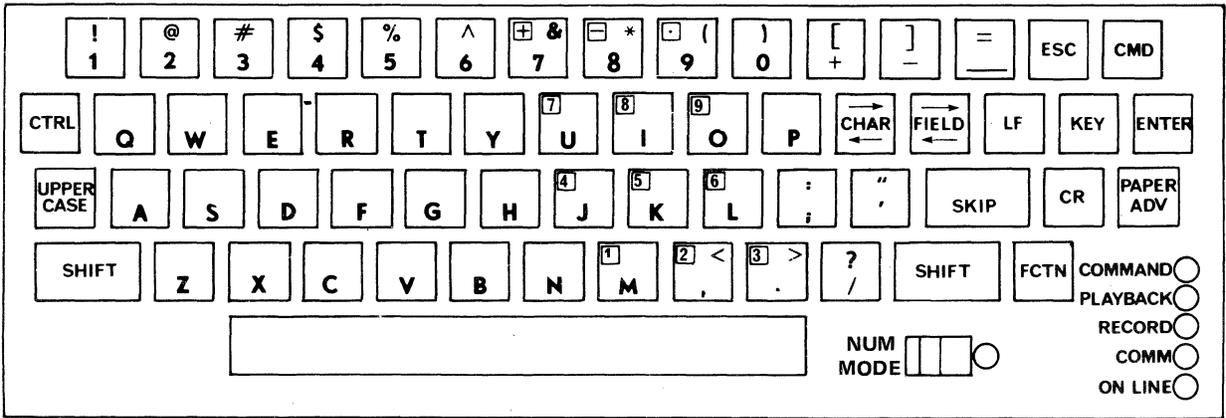
U.S.A. Keyboard Layout and Symbolization
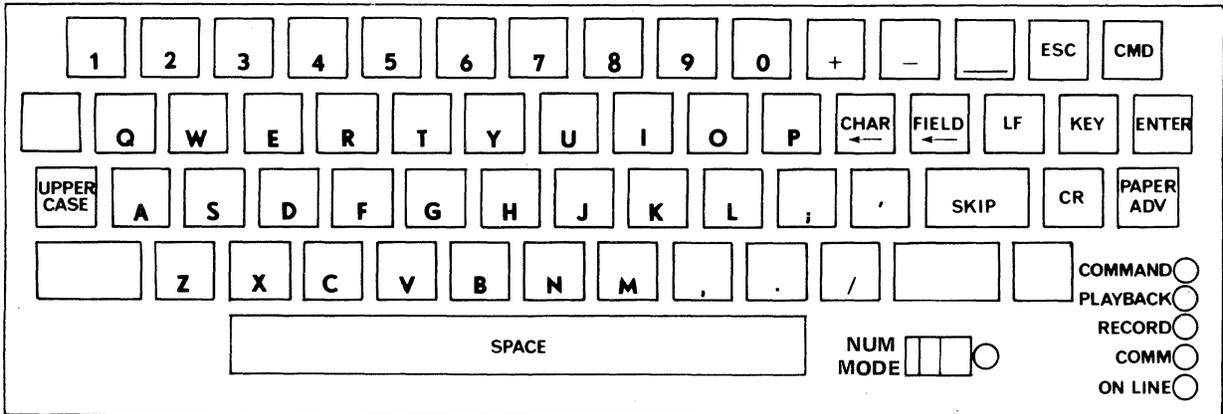
U.S.A. Keyboard, FCTN, CTRL and SHIFT keys not pressed and NUM MODE not selected.
UPPER CASE selected: A through Z are uppercase.
UPPER CASE not selected: A through Z are lowercase.

*The **LF** key is omitted from the Germany, Sweden/Finland, and Denmark/Norway keyboards; and the CHAR and FIELD keys are each moved to the right one key.
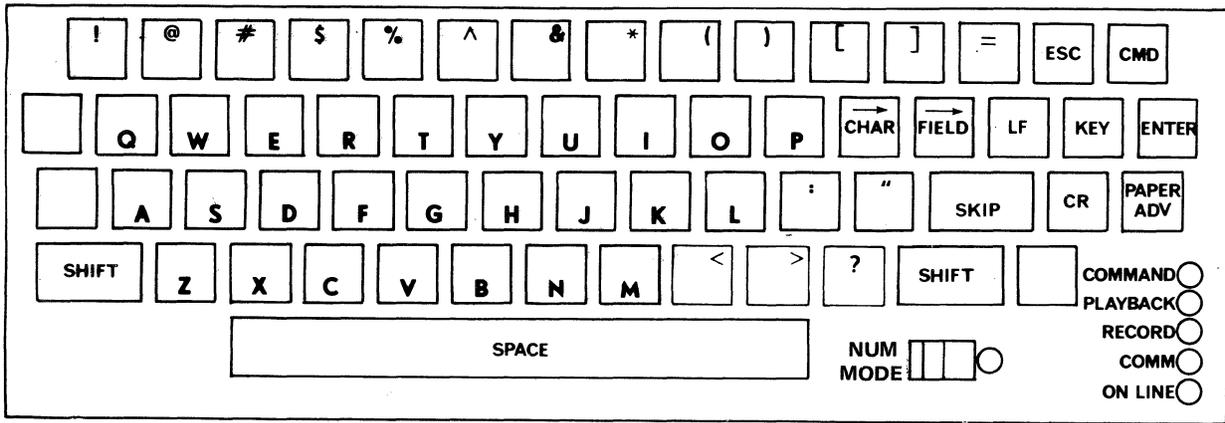
U.S.A. Keyboard, SHIFT key pressed and NUM MODE not selected
(Independent of UPPER CASE lock) A through Z are uppercase.

United Kingdom Keyboard
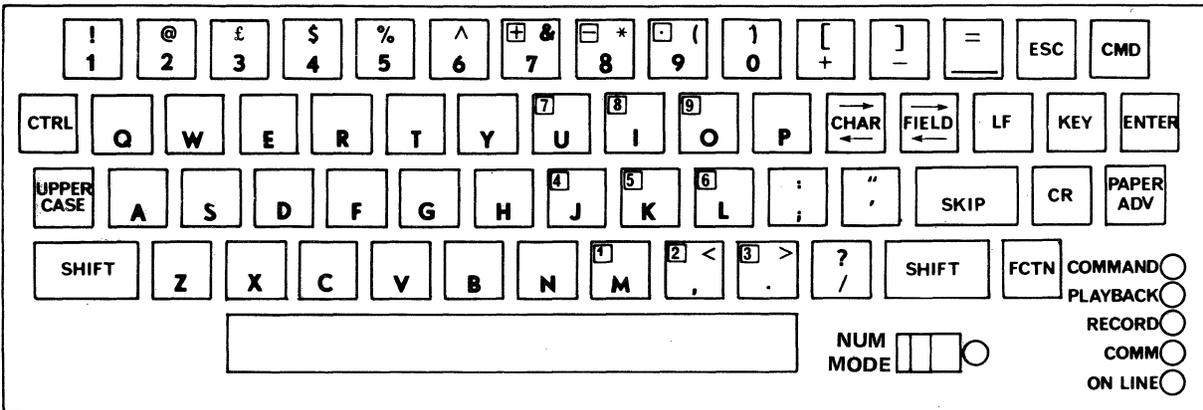
United Kingdom Keyboard Layout and Symbolization
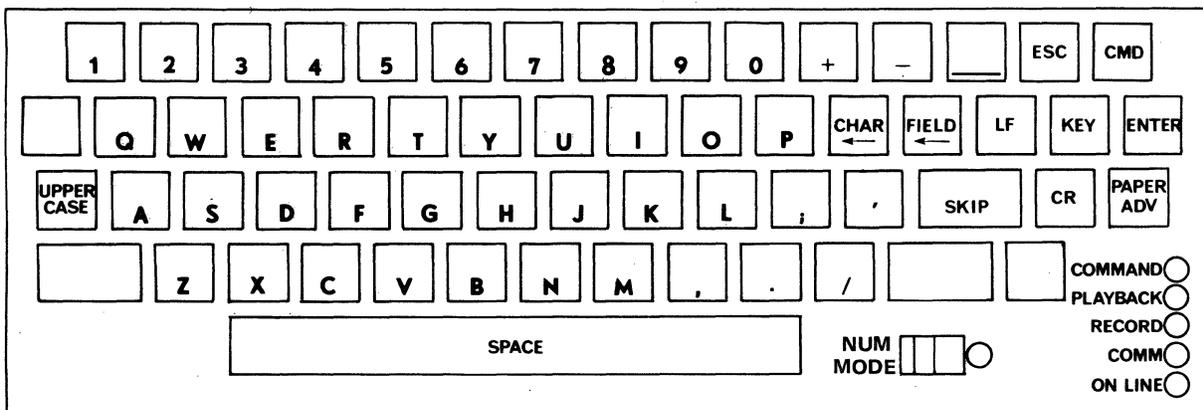
United Kingdom Keyboard, FCTN, CTRL and SHIFT not pressed and
NUM MODE not selected.
UPPER CASE selected: A through Z are uppercase.
UPPER CASE not selected: A through Z are lowercase.
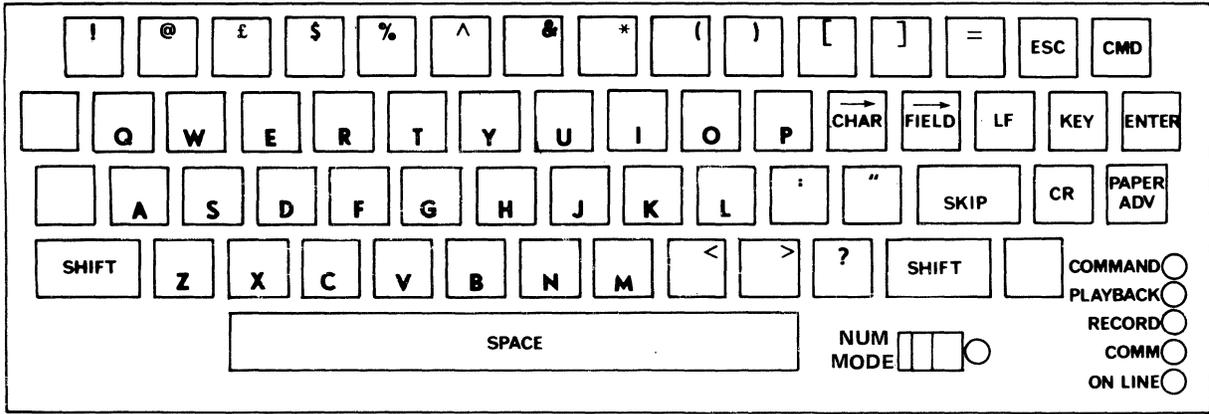
United Kingdom Keyboard, SHIFT key pressed and FCTN and CTRL keys not pressed. (Independent of UPPER CASE lock) A through Z are uppercase.
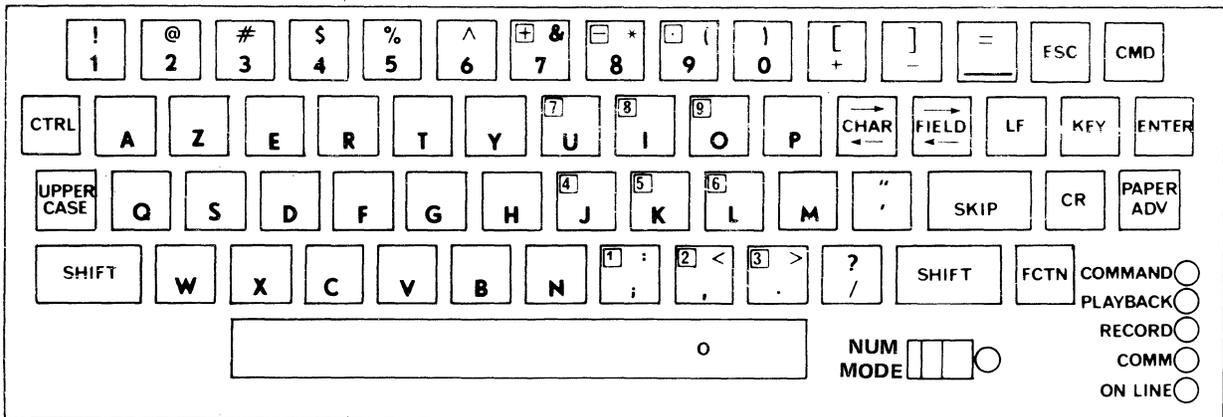
France Keyboard

France Keyboard Layout and Symbolization
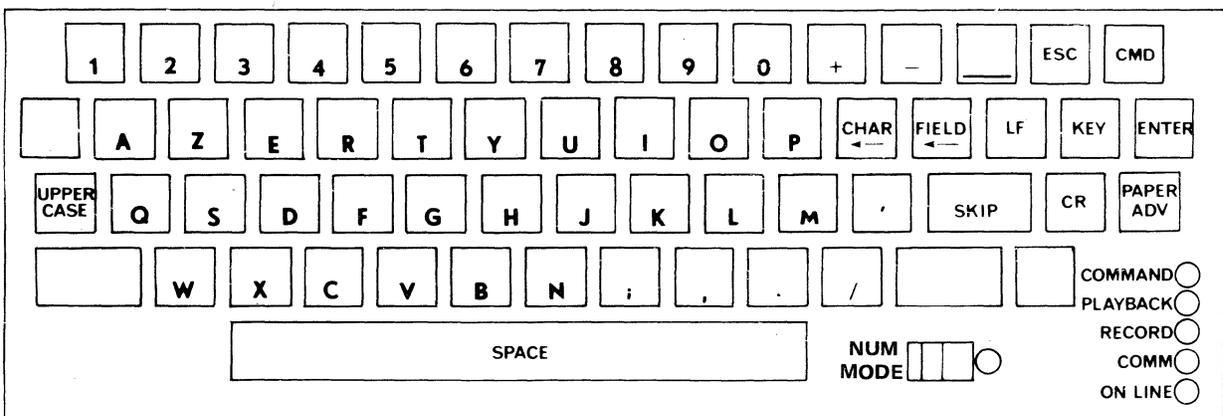
**France Keyboard, FCTN, CTRL and SHIFT not pressed and NUM MODE not selected.
UPPER CASE not selected: A through Z are lowercase.
UPPER CASE selected: A through Z are uppercase.**
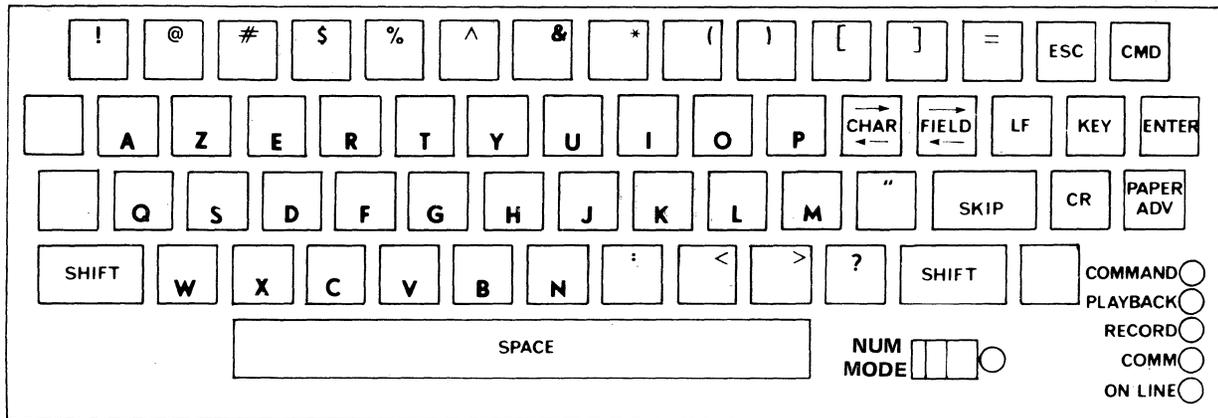
France Keyboard, SHIFT key pressed and FCTN and CTRL keys not pressed. (Independent of UPPER CASE Lock) A through Z are uppercase.

Germany Keyboard
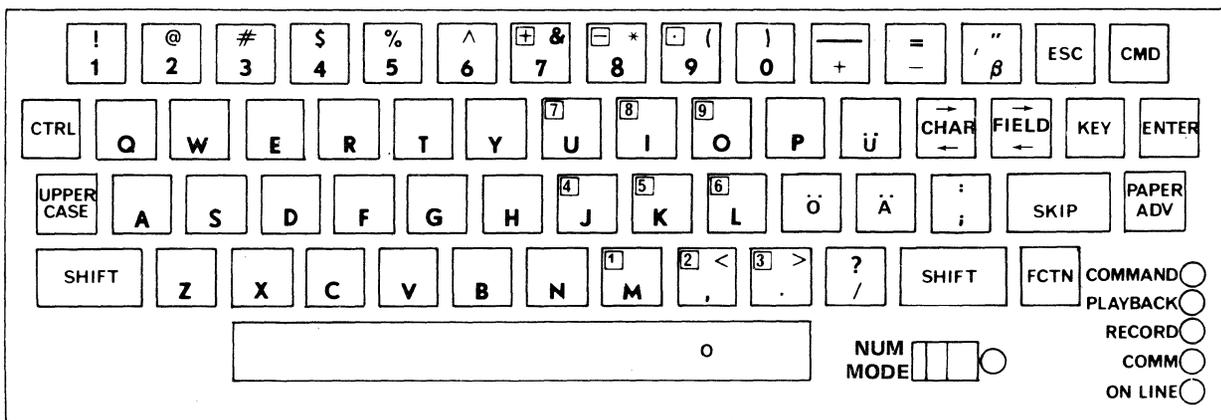
Germany Keyboard Layout and Symbolization
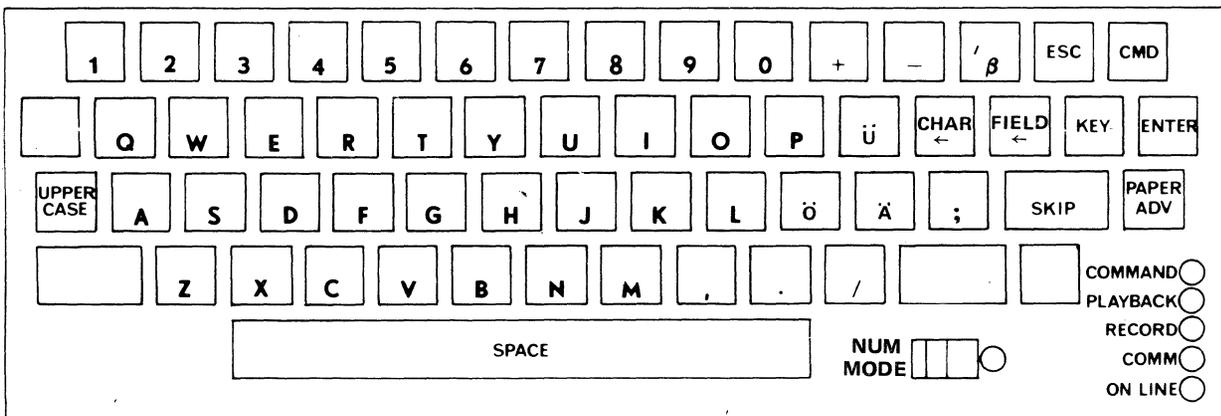
Germany Keyboard, FCTN, CTRL and SHIFT not pressed and NUM MODE not selected. UPPER CASE not selected: A through Z, Ä, Ö, Ü are lowercase, UPPER CASE selected: A through Z, Ä, Ö, Ü are uppercase.
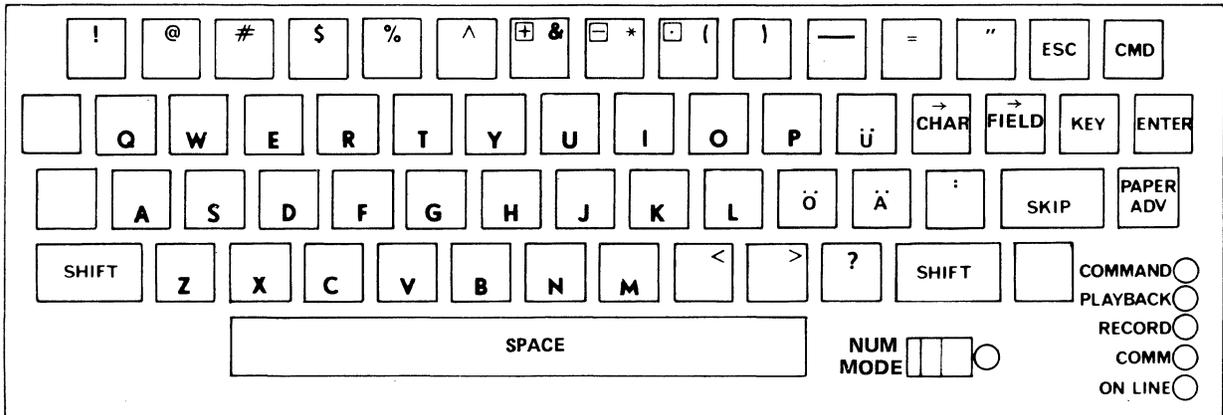
**Germany Keyboard, SHIFT key pressed and FCTN and CTRL keys not pressed.
(Independent of UPPER CASE lock) A through Z, Ä, Ö, Ü are uppercase.**

Sweden/Finland Keyboard
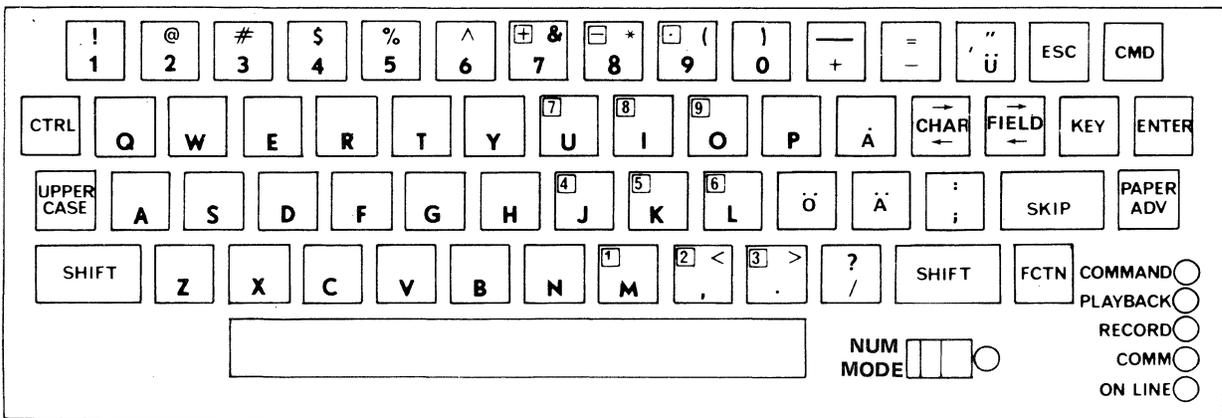
Sweden/Finland Keyboard Layout and Symbolization
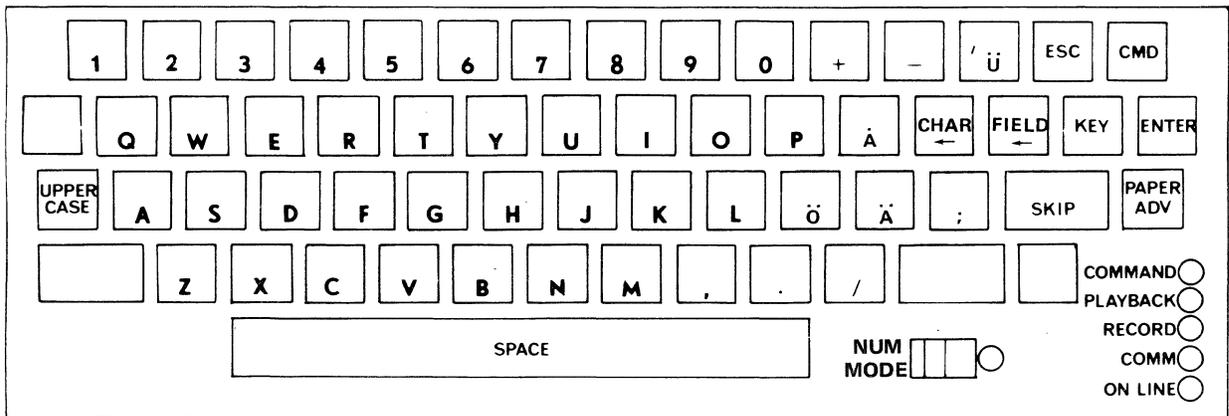
**Sweden/Finland Keyboard, FCTN, CTRL and SHIFT not pressed and
NUM MODE not selected.
UPPER CASE not selected: A through Z, Å, Ö, Ä, are lowercase;
UPPER CASE selected: A through Z, Å, Ö, Ä are uppercase.**
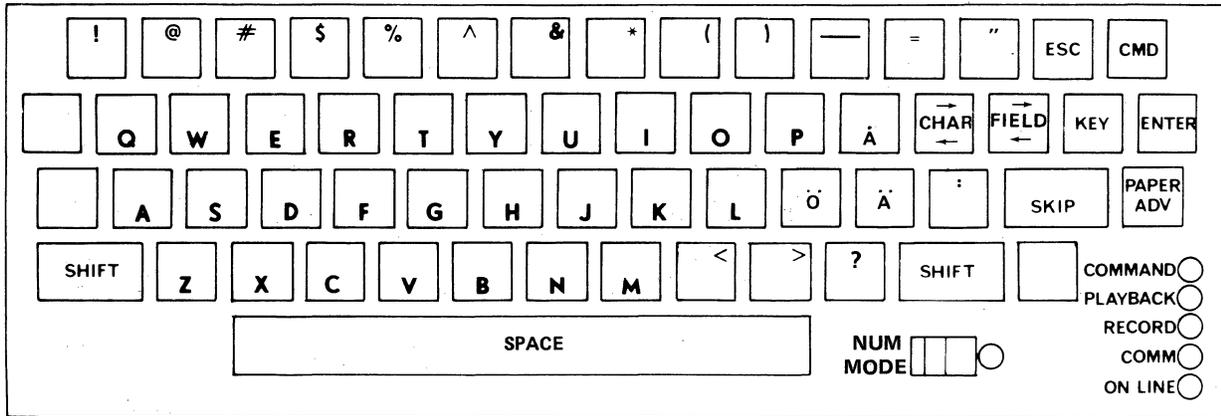
Sweden/Finland Keyboard, SHIFT key pressed and FCTN and CTRL keys not pressed. (Independent of UPPER CASE lock) A through Z, Å, Ö, Ä are uppercase.

Denmark/Norway Keyboard
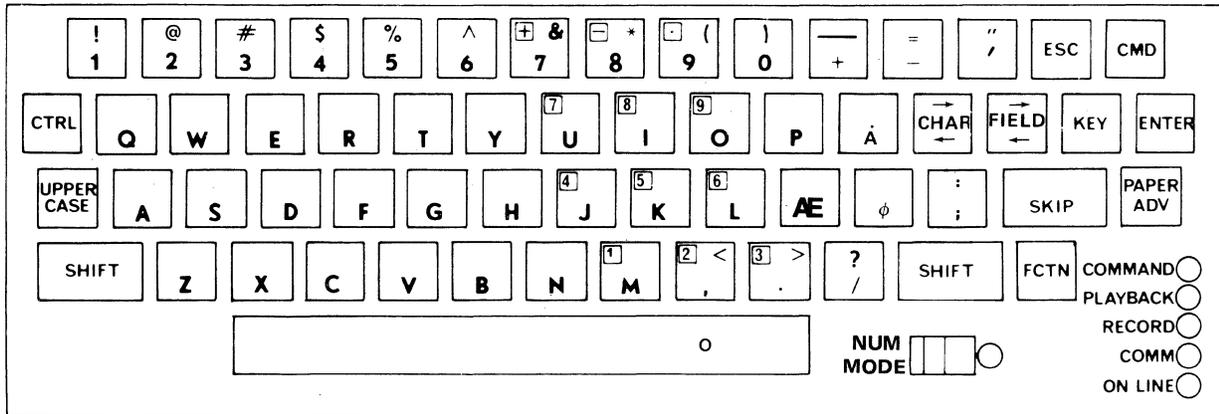
Denmark/Norway Keyboard Layout and Symbolization
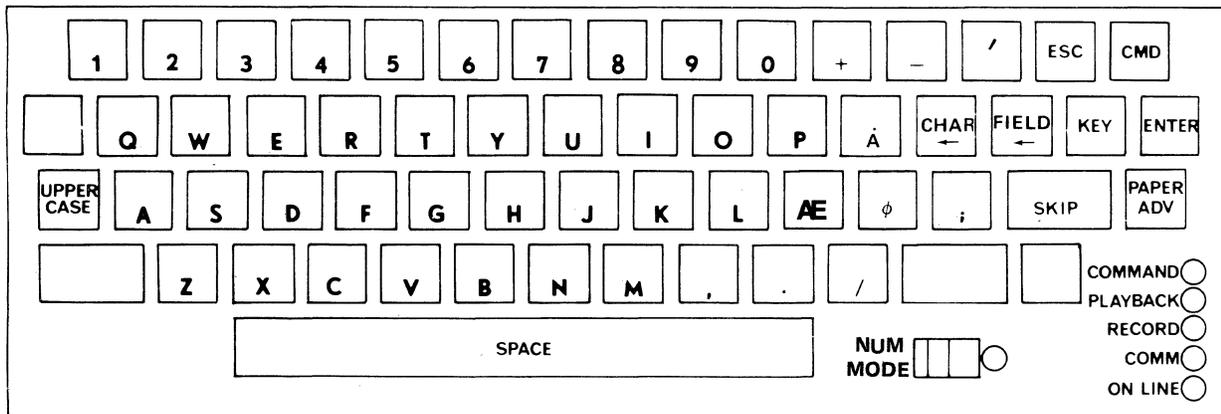
Denmark/Norway Keyboard, FCTN, CTRL and SHIFT not pressed and NUM MODE not selected.
UPPER CASE not selected: A through Z,Æ,∅, Å are lowercase.
UPPER CASE selected: A through Z,Æ,∅, Å are uppercase.
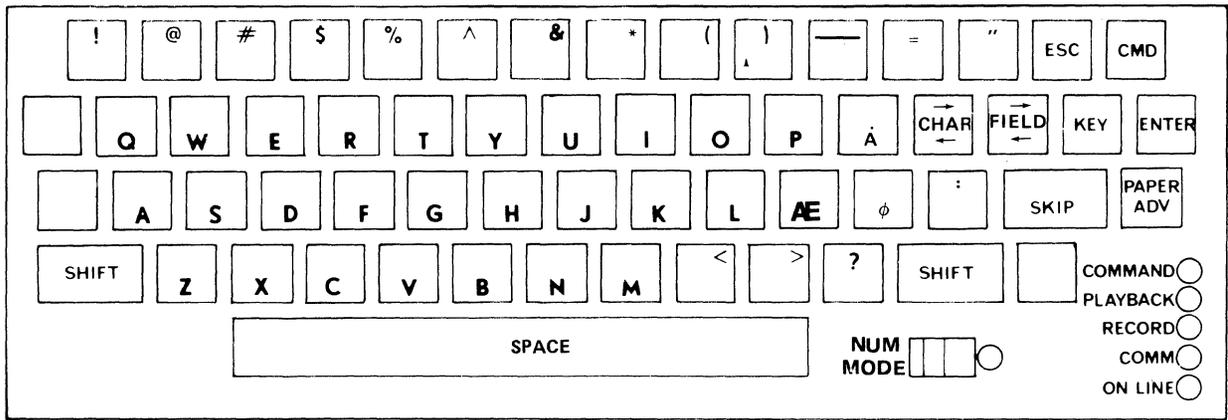
Denmark/Norway Keyboard, SHIFT key pressed and FCTN and CTRL keys not pressed (Independent of UPPER CASE lock); A through Z are uppercase.

CODE SYSTEM AND CHARACTER SET

U.S.A. and France Units
(See Notes for Other Nations)

8 7 6 5 / 4 3 2 1	0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
0 0 0 0	NUL	DLE	SP	0	@	P	`	p
0 0 0 1	SOH	DC1	!	1	A	Q	a	q
0 0 1 0	STX	DC2	"	2	B	R	b	r
0 0 1 1	ETX	DC3	# [1]	3	C	S	c	s
0 1 0 0	EOT	DC4	$	4	D	T	d	t
0 1 0 1	ENQ	NAK	%	5	E	U	e	u
0 1 1 0	ACK	SYN	&	6	F	V	f	v
0 1 1 1	BEL	ETB	'	7	G	W	g	w
1 0 0 0	BS	CAN	(	8	H	X	h	x
1 0 0 1	HT	EM	)	9	I	Y	i	y
1 0 1 0	LF	SUB	*	:	J	Z	j	z
1 0 1 1	VT	ESC	+	;	K	[[2]	k	{ [5]
1 1 0 0	FF	FS	,	<	L	\ [3]	l	| [6]
1 1 0 1	CR	GS	-	=	M	] [4]	m	} [7]
1 1 1 0	SO	RS	.	>	N	^	n	~ [8]
1 1 1 1	SI	US	/	?	O	_	o	DEL

☐ Printable Characters   ▤ ASR Control Codes

▥ Printer Control Characters   ▦ Extended Line Control

▨ Codes Generated and Transmitted by the terminal

NOTES

[1] £ on U.K. units
[2] Ä on Germany and Sweden/Finland units; Æ on Denmark/Norway units
[3] Ö on Germany and Sweden/Finland units; Ø on Denmark/Norway units
[4] Ü on Germany and Sweden/Finland units; Å on Denmark/Norway units
[5] ä on Germany and Sweden/Finland units; æ on Denmark/Norway units
[6] ö on Germany and Sweden/Finland units; φ on Denmark/Norway units
[7] ü on Germany and Sweden/Finland units; å on Denmark/Norway units
[8] β on Germany units

APPENDIX D

SPECIFICATIONS

The following specifications apply to both Models 763 and 765 and to both the discrete and nondiscrete bubble memory versions of the terminal.

PRINTER

Method: Nonimpact, electrically heated, 5 × 7 dot matrix thermal printhead, prints on thermographic paper.

Character Set: 95 printable characters in normal mode with an additional 33 ASCII or C.C.I.T.T. control characters printed in edit mode.

Character Size: 2.6 mm × 2 mm (0.105 in. × 0.080 in.)

Line Length: 203.2 mm (8 in.); 2.54 mm character spacing (10 characters per inch); 80 characters per line.

Line Spacing: 4.23 mm (6 lines per inch).

Printing Rate: Up to 30 characters per second.

Paper: TI thermographic printing paper, Part No. 972603, 216 mm (8-½ in.) × 30.5 m (100 ft.); last 3 m (10 ft.) color coded.

Platen: Friction-feed.

Carriage Return and Line Feed: Automatic at column 81; no code is transmitted. The 81st character received is buffered and printed on the next line.

KEYBOARD

Code: ASCII, C.C.I.T.T.; 128 codes generated.

ENVIRONMENT

Temperature: Operating: 10°C to 40°C (50°F to 104°F); Storage: −30°C to 70°C (−22°F to 158°F) without paper; −30°C to 40°C (−22°F to 104°F) including paper.

Magnetic Field: Maximum permissible magnetic field at the bubble memory shield in any direction is 40 oersteds (Oe).

Humidity: Operating: 10% to 90% (no condensation); Storage: 10% to 95% (no condensation).

Shock: Operating: 0 G; Storage: 40 G for 18 msec half sine wave.

Vibration: Operating: 0.5 G, 10 to 50 Hz; Storage: 1.5 G, 30 minutes, 20 Hz.

POWER REQUIREMENTS

Voltage: 90-132 Vrms or 184-264 Vrms.

Frequency: 47-63 Hz.

Power: 150 watts maximum.

PHYSICAL

Size: Width: 391 mm (15.4 in.); Depth: 406 mm (16.0 in.); Height: 139 mm (5.5 in.); Weight: 7.7 kg (17 pounds) including paper.

DATA TRANSMISSION

Method: Asynchronous, serial-by-bit, serial-by-character.

Code: ASCII, C.C.I.T.T.; seven-level, 11 bits per character including parity, start, and two stop bits at 10 characters per second (110 baud); 10 bits per character, including one stop bit at speeds above 10 characters per second.

Mode: Operator-selectable full duplex, half duplex, or half duplex with reverse channel.

Parity: Operator-selectable odd, even, or mark parity; Operator-selectable parity checking.

Received Data Buffering: Character buffering on received data, permitting true 30 characters per second operation (no filler characters required after CR or LF).

Transmitted Data Buffering: Operator-selectable line buffering on data to be transmitted, permitting corrections prior to transmission.

Interface: Operator-selectable; Integral originate-only acoustic coupler or EIA RS-232-C interface with Model 765; dc current loop or EIA interface with Model 763; Integral originate-mode modem or EIA interface with Model 763 when ordered with optional modem (U.S. models only).

Baud Rates: Operator-selectable 110, 200, or 300 baud on internal interface, or up to 9600 baud on EIA interface; throughput limited to 2400 baud.

INTEGRAL ACOUSTIC COUPLER
(Model 765 only)

Compatibility: Bell System 103/113 data sets (or equivalent) or C.C.I.T.T. V. 21.

Mode: Originate only.

Modulation: Frequency shift keying (FSK).

Transmit Carrier Frequencies: ASCII Mark: 1270 Hz; Space: 1070 Hz; C.C.I.T.T. Mark: 980 Hz; Space 1180 Hz.

Receive Carrier Frequencies: ASCII Mark: 2225 Hz; Space 2025 Hz; C.C.I.T.T. Mark: 1650 Hz; Space 1850 Hz.

Transmit Level: Adjustable only on U.S. models from −20 dBm to 0 dBm.

Receiver Sensitivity: −38 dBm with full duplex and 300 baud operation; −45 dBm with half duplex and 300 baud operation.

EIA INTERFACE (Optional Both Models)

Optional Auxiliary EIA Interface Kit: Interfaces the terminal to an external device such as a modem. Interface cable is a minimum 1.8 m (6 feet) long terminated with a 25-pin male connector (Cannon DB25P or equivalent).

Signal Levels: Serial interface signal levels are defined by *EIA Standard RS-232-C* as follows:

	−25 to −3 Vdc	−3 to +3 Vdc	+3 to +25 Vdc
Data Signal	Marking	Not Defined	Space
Timing or Control Function	Off	Not Defined	On

dc CURRENT LOOP SERIAL DATA INTERFACE
(Model 763 Only)

Maximum Current: 60 milliamps (transmit or receive).

Nominal Current: 20 milliamps.

Maximum Voltage Drop: 3 V (receive and 1.5 V (transmit) while marking.

Maximum Transmit Voltage: 50 V while spacing.

Maximum Transmit Rate: 300 baud.

Major Assemblies

The major assemblies and their associated part numbers for the Models 763/765 are shown in Figure 8-1.

APPENDIX E

PRINTER CHARACTER SET

The following ASCII characters are printed by the Models 763/765 terminal printer.

		CONTROL CHARACTERS				UPPERCASE		LOWERCASE		NATIONAL CHARACTERS
BITS	b_7	0	0	0	0	1	1	1	1	
	b_6	0	0	0	0	0	0	1	1	
	b_5	0	0	1	1	0	1	0	1	
b_4 b_3 b_2 b_1		0	1	2	3	4	5	6	7	

Row labels (left, $b_4 b_3 b_2 b_1$):
0 0 0 0 — NUL / DLE / Space
0 0 0 1 — SOH / (DC1)
0 0 1 0 — STX / (DC2)
0 0 1 1 — ETX / (DC3)
0 1 0 0 — (EOT) / DC4
0 1 0 1 — ENQ / NAK
0 1 1 0 — ACK / SYN
0 1 1 1 — BEL / ETB
1 0 0 0 — BS / CAN
1 0 0 1 — HT / EM
1 0 1 0 — LF / SUB
1 0 1 1 — VT / ESC
1 1 0 0 — FF / FS
1 1 0 1 — CR / GS
1 1 1 0 — SO / RS
1 1 1 1 — SI / US / DEL

National Characters notes:
1 — United Kingdom Character
2 — German Characters
2 — Sweden/Finland Characters
2 — Norway/Denmark Characters
3 — German Characters
3 — Sweden/Finland Characters
3 — Norway/Denmark Characters
4 — German Characters
4 — Sweden/Finland Characters
4 — Norway/Denmark Characters
5 — German Character
5 — Sweden/Finland Character
5 — (German)
6 — (Sweden/Finland)
6 — (Norway/Denmark)
7 — (German)
8 — (Sweden/Finland)

*CONTROL CHARACTER

A0001079

E-1

APPENDIX F

Character Mapping Feature
for the
*Silent 700** Models 763/765 Memory Terminals

These instructions assume familiarity with operation of the Model 763 or 765 memory terminal and assume adequate knowledge of RUN files and other programming features of the terminal.

Character Mapping is a method to permit real-time substitution of certain characters received or transmitted by the Models 763/765 memory terminals. The primary use of character mapping is found in time-sharing systems, particularly TSO, in which ASCII control characters often have special functions which differ from the standard ASCII definitions.

Using character mapping, these characters can be set to correspond to other ASCII characters as required; or characters can be ignored entirely. The full 128-character ASCII set can be mapped on a one-to-one basis for both received and transmitted data.

With the character mapping feature installed and when power is applied to the terminal, the following message is printed:

```
READY  *B
PROM M1
```

Figure 1 diagrams the concept of character mapping. When character **Y** is received over the communications line, **Y** is translated to the character **A**. The *DC3* control character is eliminated from the received data stream.

On the other hand when a *DC3* is generated by the terminal, it is converted to a *CR* before transmission over the communications line; and any *NUL* characters generated by the terminal are not transmitted.

The character mapping firmware is stored in two, programmable read-only memory (PROM) devices located on the bottom PC board. This feature can be switched ON or OFF by using the CHANGE command.

Operation
The character mapping option first requires creating a *line* formatted file named MAP to store all characters being mapped:

To store characters in the MAP file, use this format.

$$:X;C_1C_2;C_3C_4;R;C_5C_5;C_6C_7$$

where a "**:X**" signifies that the character mapping pairs following it apply to transmitted data and an "**:R**" signifies that the character mapping pairs following it apply to received data.

Pairs must be separated by a "**;**" (semicolon). C_1 (character one) changes to C_2 (character two); C_3 changes to C_4, etc.

If a character is mapped to itself in the MAP file (e.g., **C_5C_5**), the character is ignored when processed

Figure 1. Character Mapping Simplified Diagram

through the file. Hence, if C_1C_1 is mapped for received data (:R;C_1C_1), a C_1 is ignored by the terminal when received. Similarly, if C_1C_1 is mapped for transmitted data (:X;C_1C_1), C_1 will **not** be transmitted by the terminal over the communications line.

The MAP option status must be ON to enable the character mapping feature, and the BUFFER option should be OFF while the MAP option status is ON (see **Errors**).

Throughput Considerations

Although the entire ASCII set can be mapped for both transmitted and received data, throughput is reduced with each mapped character. For example, if only one character is mapped, the worst-case delay is 40 microseconds; for 100 characters, the worst-case delay is 3.5 milliseconds (the average delay is 1 to 2 milliseconds).

At 300 baud and 1200 baud, normal character mapping will not impair terminal performance; however, only characters requiring mapping should be in the file MAP.

Errors

Two types of errors occur during character mapping operations for which the terminal prints out either ***A0*** or ***A1 ****

1. The error code ***A0*** indicates a format or syntax error in the file MAP. Validation of the file MAP or checking for errors within the file occurs when the terminal exits the COMMAND mode. Using RECORD ON (FCTN 2) to enter data into the file MAP and then RECORD OFF (FCTN 4) does not validate the file.

2. The eroor code ***A1***) is a **warning** to the operator that the transmit BUFFER option is ON, which is not permitted if the map option is ON. The terminal will automatically disable the buffer if ON, but will not remove the listing from the options ON line of the status report.

Applications

Character mapping is particularly useful in TSO applications or other systems where ASCII characters control or special functions contradict their usage in the Model 763/765 terminal. The user must know what characters the system requires the terminal to send for various control and special functions (e.g., termination of each line of data). A simple procedure using the Model 763 or 765 terminal helps determine which characters need to be mapped for data transmitted by the system to the terminal.

1. Create a temporary *line* formatted data file and CHANGE that file to RECORD to store all characters that will be sent by the host system to the terminal.

2. The status of the terminal should be set with the EDC option OFF and the MAP option OFF.

3. Establish communications with the host system up to, but not including, the transfer of data from the terminal to the host system.

4. REWIND RECORD (FCTN 6) and switch RECORD ON (FCTN 2).

5. Transmit data to the host system using the terminal keyboard as usually done with your system.

6. After a few lines of data are sent, terminate communications with the host system.

7. Switch RECORD OFF (FCTN 4).

8. Examine the characters recorded by the terminal using the COPY (temporary file) TO PRINTER CTRL command. Which characters require mapping is determined from the printout as explained below.

Example

Figure 2, Part 1 is a sample terminal printout of a conversational session with a host system. It shows how a character mapping file may be defined by examining the differing character definitions between the host and the Model 763/765. In the example, the 00010, 00020, 00030 are line prompts sent by the host; all other characters were transmitted by the terminal operator to the host system. Figure 2, Part 2 is an editor printout of the data recorded. Note that a *line feed*, a *DC1*, and *DC3* also were sent by the host.

Anticipating that data from a playback file will be sent (which requires a *DC1* for playback-on and observing the host system must receive data one line at a time with its own prompting for each new line, it becomes ap-
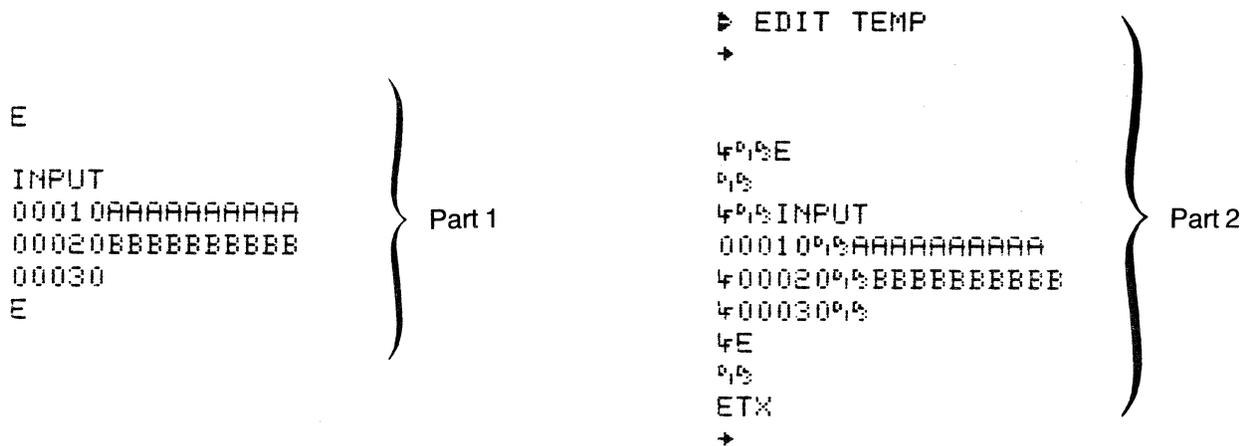
Figure 2. Example Application

parent that the *DC3* should be eliminated from the received data stream. However, since this system operates in half duplex, it is necessary to eliminate the *DC1* from the received data stream and map the *DC3* to a *DC1* so that the Model 763/765 will not switch on its playback file *before* the host transmits its last character.

The TRANSMIT EOL status of the terminal must be set to **DC3**, which will cause the terminal to switch off its playback at the end of each line and transmit the control character sequence *DC3 NUL*. Since the host expects control character *CR* as the line termination character, the *DC3* character should be eliminated from the transmitted data stream, and the *NUL* character should be mapped to a *CR* for transmission.

To implement the above example, the user sets up the character mapping file by creating a file named MAP:

```
▶ CF MAP L 1 18
  DONE
```

Then record into the MAP file, mapping definitions using either the COPY command or the EDIT command as follows:

```
▶ CP KEY TO MAP
  :R;ᵒ¡ᵒ¡;ᵇᵒ¡:X;ᵇᵇ;ᵘᵇ
```

OR

```
▶ EDIT MAP
  ETX
  ▽
  :R;ᵒ¡ᵒ¡;ᵇᵒ¡:X;ᵇᵇ;ᵘᵇ
                    ⌂
  DONE
```

Figure 3 is a printout of the correct terminal status for this mapping example: Note from the printout that the MAP option is ON, BUFFER is an option OFF, and EDC is an option ON.

```
▶ ST
LINE MODE:       INTERNAL/ 300 BAUD/ EVEN PARITY/ HALF DUPLEX/
OPTIONS ON:      EDC/ DC3/ DC1.3/
OPTIONS OFF:     PCHECK/ ABMPRT/ AUTOABM/ EOTDIS/ BUFFER/ DC2.4/
ABM:
RECORD FILE:     TEMP
PLAYBACK FILE:   TEMP
TRANSMIT EOL:    DC3
RECEIVE EOL:     CRLF
KEY:
MAP OPTION:      ON
DONE
```

Figure 3. Example Status Report

763/765 Data Entry and Validation (DEV) Option (#2263366-9701)

References:

1. Model 763/765 Memory Data Terminal Characteristics Guide (#TI-346C-25M-7/78)

2. Models 763/765 Memory Terminals Operating Instructions (#2203664-9701)

3. Models 763/765 Memory Terminals Systems Manual (#2203665-9701)

4. Models 763/765 Memory Terminals TIBOL Programmer's Guide (#2263354-9701)

5. Models 763/765 Memory Terminals Quick Reference Card (#220366-9701)

6. TIBOL Programmer's Reference CARD (#2263367-9701)

Introduction

This describes the Data Entry and Validation Option (DEV) available in the Models 763/765 Bubble Memory Terminals. This discussion concerns itself with how the terminal is affected by the option.

The DEV option enables the terminal to execute a TIBOL (Texas Instruments Bubble Operating Language) program. This expanded capability allows tailored application with data validation and arithmetic functions.

The ability to verify the type, size, and range of the data input, via application programs, allows the user to capture corrected data for transmission to a host computer system. These features are in addition to the standard features of the 763/765 and do not affect the terminal's original functionality.

With the DEV option, the terminal executes programs created on a separate development system rather than the terminal keyboard. The program object is downloaded into the terminal, where it is accessible to either the operator or a RUN file. All application programs can be downloaded into a single file and thus maximize the terminal's 16 file capability. A detailed description of a development system and the TIBOL language may be found in the 763/765 MEMORY TERMINALS - TIBOL PROGRAMMER'S GUIDE (#2263354-9701).

● PROGRAM EXECUTION

EX-The *EXECUTE* command allows a program to be transferred (loaded) from the file in the bubble memory into the user program area and execution initiated.
SYNTAX:

▶ EX FILE1.PROG1

There are three conventional sources from which a TIBOL programs may be invoked.

RUN FILE

KEYBOARD (COMMAND MODE)

TIBOL PROGRAM

From a RUN file, an EX may be issued as a standard command. The EX may also be issued from the keyboard using the COMMAND mode. One TIBOL program can execute another via the *Execute* instruction (EXC).

● SPECIAL PURPOSE KEYS
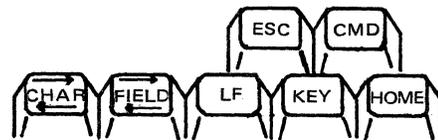
During program execution, the FIELD reverse and HOME keys recovery from a keyboard input error condition. An input error condition is indicated by an audible tone and a flashing COMMAND indicator lamp. These special purpose keys are application dependent and are described in the 763/765 MEMORY TERMINALS - TIBOL PROGRAMMER'S GUIDE (#2263354-9701).

- **CMD (COMMAND) KEY**

The 763/765 has two modes of operation: command and interactive.

- During program execution the CMD key is normally disabled.

- **TERMINAL DIAGNOSTICS**

The Test command described in Section 2 of the 763/765 OPERATING INSTRUCTION MANUAL provides a self test of the basic hardware components, including bubble memory and ROM (read-only memory). In addition to the terminal fail message definitions for the 763/765, supplemental messages may be printed as defined in the following:

Message	Meaning
FAIL-E	EPROM 1 FAILURE (U63)
FAIL-F	EPROM 2 FAILURE (U64)
FAIL-G	PROM 1 FAILURE (U65)
FAIL-H	PROM 2 FAILURE (U66)
FAIL-I	RAM FAILURE (U53, U57)

INDEX

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DEFINITIONS

ASCII — an eight-level (7 bits + parity) code from the American Standard Code for Information Interchange.

ASR — automatic send/receive.

analog — the representation of numerical quantities by means of nondigital *variables*; e.g., translation, rotation, voltage, or resistance. (Contrast with *digital*).

baud — a unit of data transmission speed equal to the number of code elements (bits) per second.

bit — an abbreviation for binary **digit**; the smallest unit of information in a binary system of notation.

C.C.I.T.T. — the International Telephone and Telegraph Consultative Committee.

character — one symbol of a set of elementary symbols, such as a letter of the alphabet; a character is made up of a group of seven bits (ASCII and C.C.I.T.T. code).

code — a system of symbols (bits) for representing data (characters).

data — a general term for any type of information.

data set — (same as **modem**) a device which performs modulation/demodulation and control functions to enable data transmission/reception over telephone lines between two data processing devices.

default values — a set of base values or original values to which the terminal "defaults" under certain conditions.

digital — the representation of numerical quantities by means of *discrete integer numbers*. It is possible to express in digital form all information stored, transferred, or processed by dual-state condition; e.g., on-off, open-closed, and true-false.

duplex — describes two operations, such as transmitting and receiving; full duplex means simultaneous transmission and reception; half duplex means transmission or reception, but not both at the same time.

file — a collection of related records (see *record*) stored in memory; limited to 16 in the Models 763/765.

KSR — keyboard send/receive.

line, communications — describes cables, telephone lines, etc. over which data is transmitted to, and received from, the terminal. Also referred to as the "line".

local — see *off-line.*

modem — same as data set (acronym for **mod**ulator/**dem**odulator).

nonvolatile memory — a recording medium which retains information when power is off.

off-line (local) — describes equipment or devices which are not connected to the communications line.

on-line — describes equipment or devices which are connected to the communications line.

re′-cord (noun) — words, characters, and numerals stored as a group; limited to 80 characters in the Models 763/765

re-cord′ (verb) — to store information in a memory device; the 763/765 uses an electromagnetic BUBBLE memory.

signal — event, phenomenon, or electrical quantity that conveys information from one point to another.

syntax — the format, or rules, in which instructions (commands) must be presented to the terminal or other data processing equipment.

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