

TM

QWINT SYSTEMS

# USER'S GUIDE

**MSR-741/742**

**International  
Personal  
Communications  
Terminals**

**Publication GDM-12I**



**QWINT INTERNATIONAL TERMINALS USER'S GUIDE (B)**

**INTERNATIONAL MODELS  
MSR 741-C1,-F1  
MSR-742  
PERSONAL COMMUNICATIONS  
TERMINALS**

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Information contained in this manual is applicable to the following Qwint Teleprinter Models:

APPLICABILITY CHART

MODEL	DASH NUMBER	SOFTWARE	
		VERSION	REVISION
MSR-741	C1	5	P
MSR-741	F1	5	P
MSR-742		5	P

This manual applies to all the above terminals with -4 or -16B designations.

You can determine the model, software version, and revision of your teleprinter by executing TEST 4. See Section 2.9 for instructions on use of the TEST mode.

## PREFACE

## Getting Started

CONGRATULATIONS! You have selected a memory teleprinter from Qwint Systems, originators of the world's first compact plain-paper printing terminals.

Let's dive right in. The details will come later.

1. Plug in the line cord. Insert a roll of paper and turn on the power.
2. Press the DIAL/LINE key. Machine goes off line (green LINE lamp off).
3. Press the PROG/STATUS key.
4. The terminal prints out its current set-up status. You'll see the printer in action, and get some idea of the versatility of the machine.

Instant results!

## Prepare a Message

Let's get an idea of how the memory works.

1. Press the SAVE key. The SAVE lamp will go on. Be sure you're off line--green LINE lamp off. Use the DIAL/LINE key if necessary.
2. Type a message on the keyboard, any message. Try the alphabet, or "quick brown fox," or the lyrics to your favorite song.
3. Press the BEGIN key. Now, press the RUN key while holding down the SHIFT key. The terminal will print out your message.

Later you'll learn how to edit messages to delete those embarrassing mistakes before anybody else sees them.

## Send a Message

For this next part to work, you'll need your local technical wizard to configure the terminal, and to connect it to the communications line. Qwint teleprinters can quickly be adapted for time-sharing, electronic mail, electronic mail, telex, TWX, switched network, direct connect, acoustic couplers, and many grades and shades thereof. Somebody who speaks Computerese needs to tell the Qwint terminal how to talk in your system environment. Make sure to show them the Programmer Reference Manual.

PREFACE (Cont'd)

Send a Message (Cont'd)

Once your machine is configured, let's see how easy it is to send a message:

1. Type in your message with the SAVE light ON and the LINE light OFF.
2. Press BEGIN. Then dial--press DIAL/LINE while holding down the SHIFT key.
3. Type the phone number on the keyboard. The terminal dials your number.
4. When the printer says "CONNECTED," enter RUN mode--press RUN while holding down the SHIFT key. Your message is printed and transmitted.

Once you get the hang of it, it's easy, fun....and a very productive way to handle your written messages.

## CHAPTER 1. GENERAL INFORMATION

### 1.1 Introduction

The 741 and 742 series machines are compact plain-paper printing terminals which are designed for international use. These models can be configured to use 10 different international use character sets. All models feature an auto ranging power supply which will accept any input voltage from 93 to 264 VAC, with no switch or jumper settings necessary, other than the setting of the balanced-unbalanced switch.

The 741-series models also include a modem. These modems translate pulses from the terminal into either frequencies (the -F1 modem) or current (the -C1 modem) for use on telephone lines or telex-type networks.

Optional for terminals with F1 modems is the CUP-301 Acoustic Adapter. It is designed to fit many different types of telephone handsets.

The carrying case is optional for all terminals. It holds the terminal, an acoustic coupler, and a paper supply.

### 1.2 User Documentation

User documentation for the International Terminals consists of the following manuals and reference cards:

1. User's Guide (GDM12-I)
2. Programmer Reference Manual (PRM4I)
3. International Installation Manual (IMM4I)
4. Edit Functions Reference Card (SF-87)

Among others, these five documents are shipped with each teleprinter. The User's Guide (this book) and Edit Functions Reference Card provide the information necessary to operate the terminal.

The User's Guide is divided into the following chapters:

- Chapter 1. General Information--Describes the models available in the International Terminal series, and the user documentation.
- Chapter 2. Getting Started--Describes the teleprinter and the procedures required to install paper and to change

CHAPTER 1. GENERAL INFORMATION (Cont'd)

1.2 User Documentation (Cont'd)

ribbon cartridges.

Chapter 3. Keyboard and Indicator Lamps--Shows the location and provides a brief description of each function key and indicator lamp.

Chapter 4. Scratch Pad Memory--Describes the size and organization of the scratch pad memory. Provides more detailed description of the basic and expanded edit functions.

Chapter 5. Programmable Buffers--Shows the location of the programmable buffer keys. Explains how to store into, print, and erase a buffer.

Chapter 6. Communication Control Functions--Provides more detailed descriptions of the communication control functions.

Chapter 7. Sending and Receiving Messages--Explains how to originate and answer calls in all of the terminal's operating modes.

## CHAPTER 2. GETTING STARTED

### 2.1 Introduction

This chapter provides preliminary operating information for the teleprinter: unpacking and installing the machine, installing paper and a ribbon cartridge, and obtaining an identification printout.

### 2.2 Unpacking/Repacking

The teleprinter is packaged in a single cardboard shipping carton. If any shipping or handling damage is found at delivery or during unpacking, notify the carrier immediately.

After inspecting the shipping carton, open it and remove the teleprinter, manuals, supplies, and accessories. Office models are packed as shown in Figure 2-1. The printer is protected during shipment by 2 foam plastic inserts. Portable models are shipped in their carrying case, which is in turn held in the shipping carton by foam plastic inserts. (See Figure 2-2.)

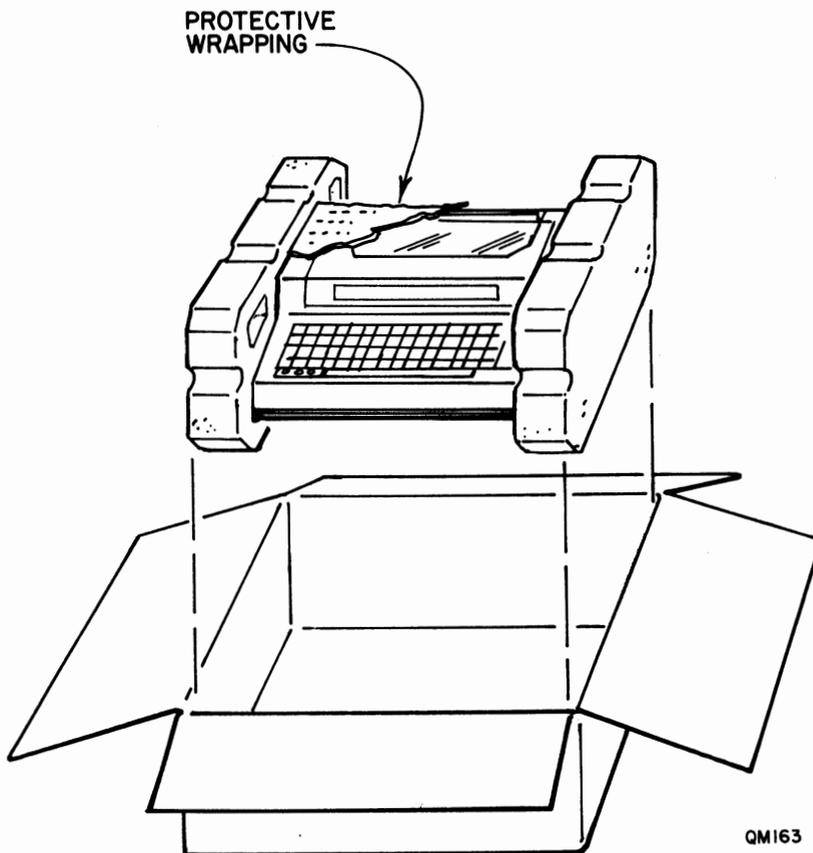


FIGURE 2-1. SHIPPING CARTON

## CHAPTER 2. GETTING STARTED (Cont'd)

### 2.2 Unpacking/Repacking (Cont'd)

Both portable and office models are shipped with user documentation, a roll of paper, and a Model RIB-3 ribbon cartridge, so that they can be set up and operated immediately.

It is generally advisable to retain the shipping carton and packing materials in case it is necessary to return the unit to the factory or to ship it to another location. Figures 2-1 and 2-2 show how to repack the unit.

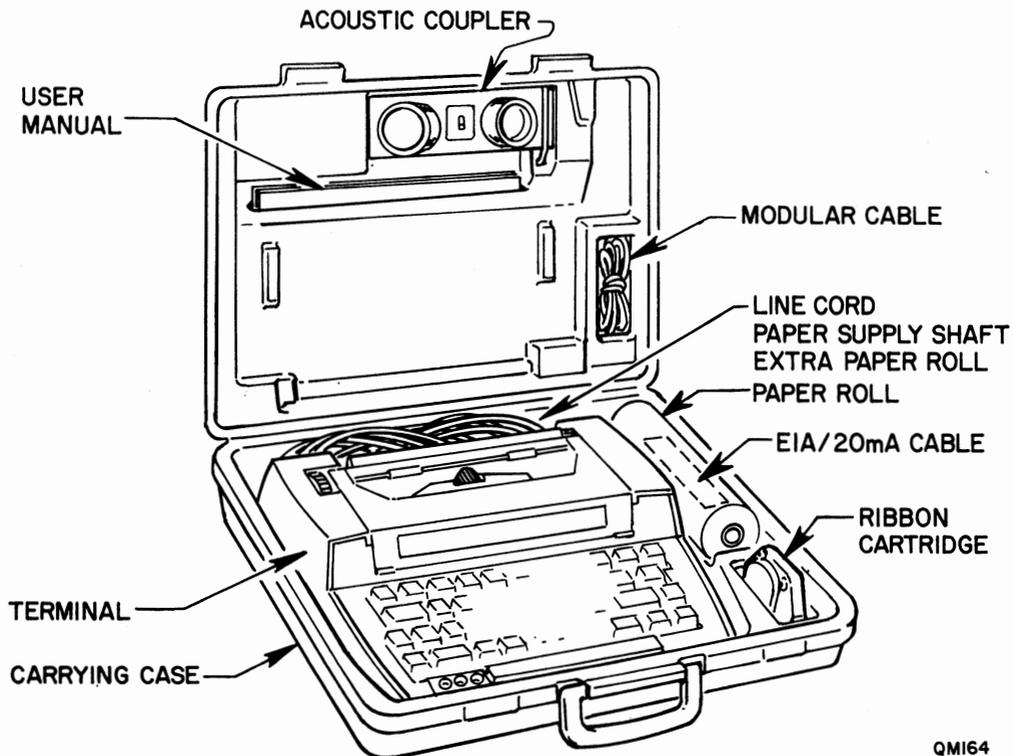


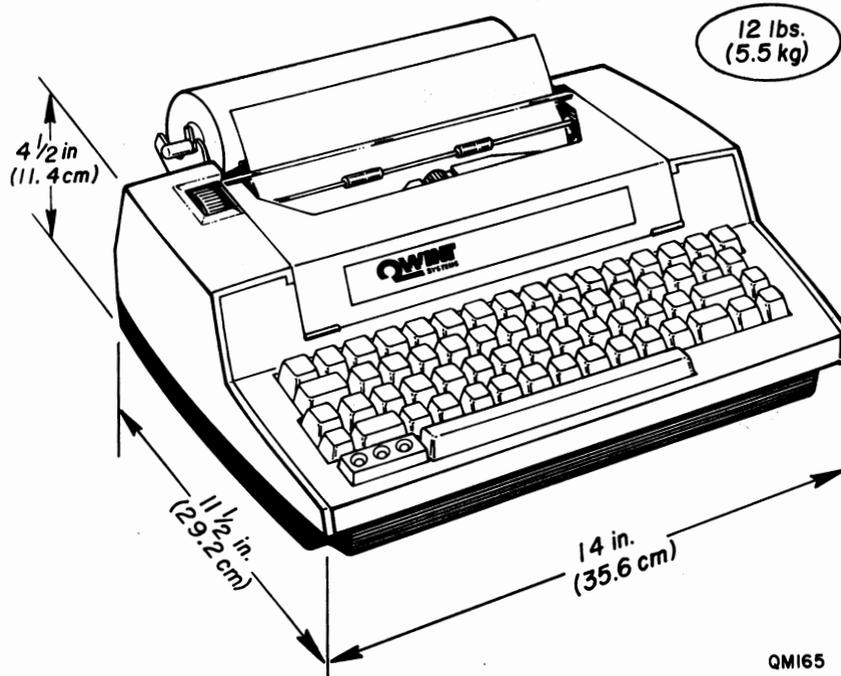
FIGURE 2-2. CARRYING CASE

Figure 2-3 shows the teleprinter dimensions and weight for installation planning. When selecting a location for the unit, allow enough space behind it, so that paper rolls can be changed conveniently.

### 2.3 Identification Tag

Figure 2-4 shows the identification tag, which is located on the back panel of the unit. (The actual appearance of this tag may vary depending on the date of manufacture of your unit.) Refer to this model and serial number in correspondence with Qwint Systems or when ordering parts. Additional information on the teleprinter (i.e., the dash number, the software version and revision) are obtained in an identification printout, which is described in Section 2.9 of this manual.

CHAPTER 2. GETTING STARTED (Cont'd)



QM165

FIGURE 2-3. TELEPRINTER DIMENSIONS AND WEIGHT

2.3 Identification Tag (Cont'd)

REMOVAL OR MUTILATION OF THIS TAG MAY  
VOID THE WARRANTY OF THIS TELEPRINTER



QM234

FIGURE 2-4. IDENTIFICATION TAG

## CHAPTER 2. GETTING STARTED (Cont'd)

### 2.4 Power Requirements

The power entry connection is provided via a 3-wire grounded connector at the end of an 8 foot (2.5 m) power cord. This should be connected to a 3-wire grounded socket providing power which meets the following requirements:

#### Teleprinter Power Requirements

Voltage:	93 to 264 VAC
Frequency:	47 to 400 Hz
Configuration:	Balanced or Unbalanced (switch selectable)
Power Drain:	0.6 A maximum at 115 VAC

Teleprinters are supplied with a 3-prong plug suitable for North American 115V connections. For use outside North America, it is necessary to remove the 115V plug and substitute a new plug which is compatible with your local power mains. Units are supplied with the power line balance switch set to the "U" (unbalanced) position for a North American 115V connection. The International Installation Manual provides instructions for adapting the unit to other power line configurations.

Since the teleprinter may operate unattended for long periods of time, it is important to have a reliable source of electrical power. Avoid circuits serving other devices which may cause chronic low-voltage, and circuits with heavy equipment where starting and stopping may result in voltage fluctuations and power-line-transmitted noise. Unstable power line conditions may cause erratic printer operation.

### 2.5 Internal Modems

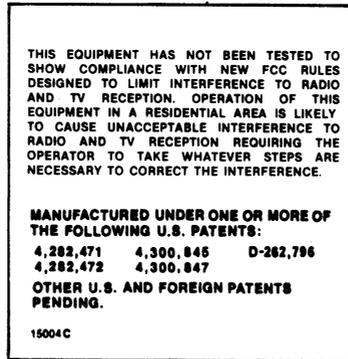
MSR-741 models contain an internal modem, either the -C1 (single current) or the F1 (FSK) modem. The -F1 modem may be used with the Model CUP 301 acoustic adapter or it may be connected directly to the telephone lines via either of the RJ-11 jacks on the teleprinter back panel.

The C1 single current modem connects to private or public current loop networks. It must be programmed for proper operation. See the Programmer Reference Guide for further information. NOTE: Be sure to have the necessary approvals from the telephone company, communications authority, or PTT before connecting to the telephone or telex networks.

CHAPTER 2. GETTING STARTED (Cont'd)

2.6 Radio Frequency Interference

Operation of the teleprinter may cause radio or TV interference in some instances. If such interference is reported to you, make sure that it is remedied immediately. Figure 2-5 shows a warning tag that is attached to the underside of the bottom cover.



QMI68

FIGURE 2-5. RADIO FREQUENCY INTERFERENCE WARNING

2.7 CONTROLS, CONNECTORS, AND FEATURES

The major controls and features of the terminal are shown in Figures 2-6 and 2-7. You should become familiar with them before attempting to use the terminal.

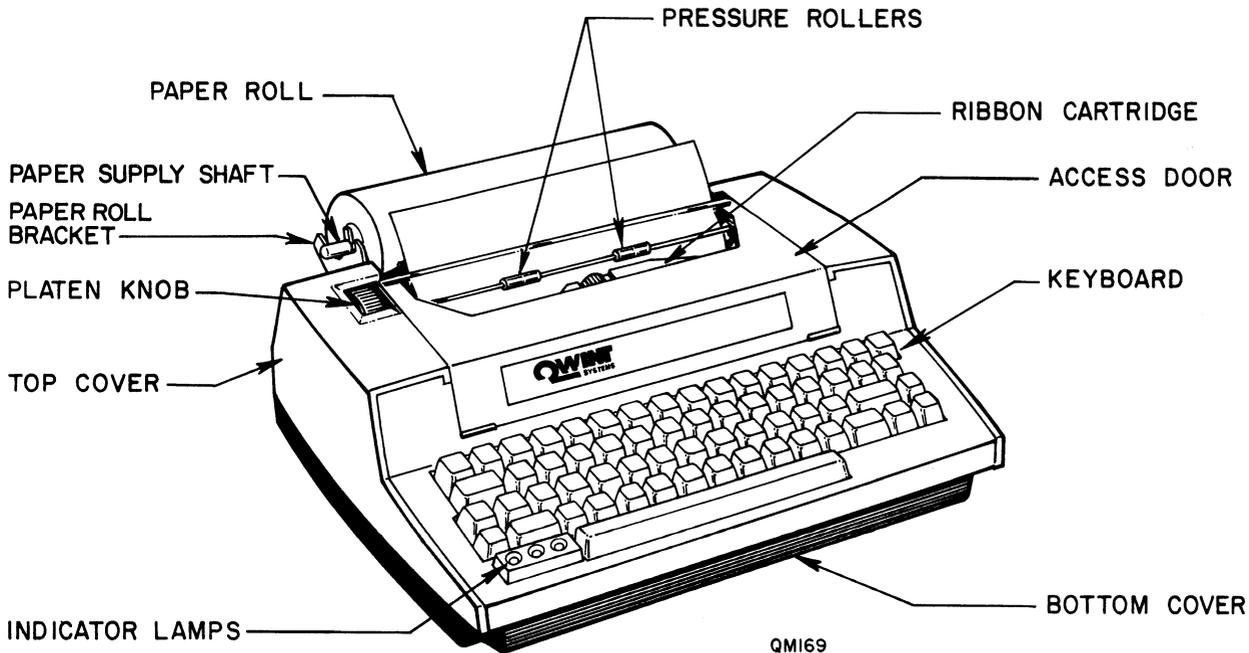


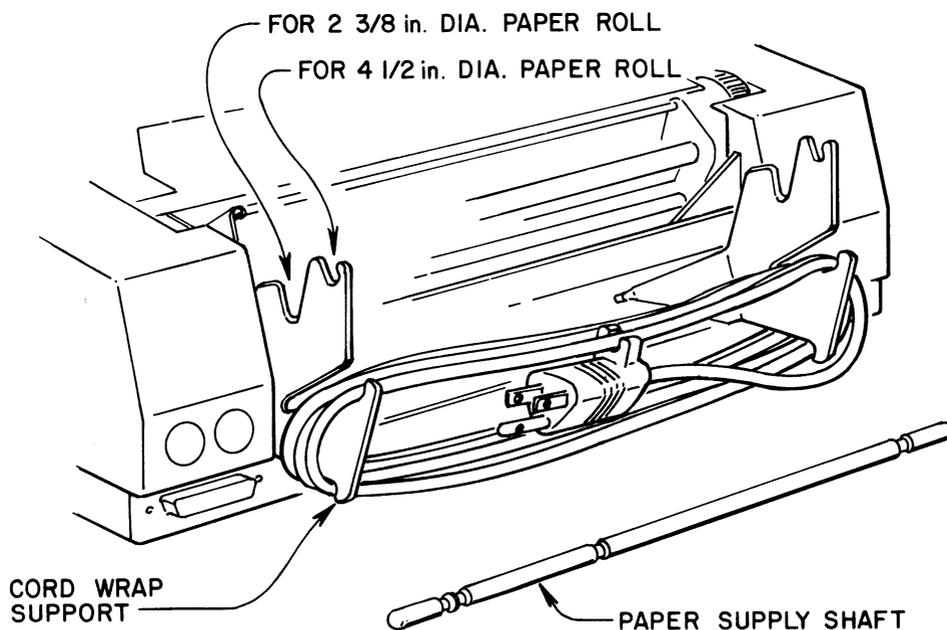
FIGURE 2-6 TERMINAL CONTROLS AND FEATURES--FRONT VIEW

CHAPTER 2. GETTING STARTED (Cont'd)

2.7 CONTROLS, CONNECTORS, AND FEATURES (Cont'd)

Your terminal will be equipped with one of three types of paper roll brackets:

Cord-Wrap (Figure 2-7)--These brackets are found on terminals sold with a carrying case. They provide a storage area for the power cord, while allowing the terminal to fit in its carrying case, if a 2-3/8 inch roll of paper is used. A 4-1/2 inch paper roll will fit on the brackets, but will not fit in the carrying case. These brackets are equipped with one 3/8 inch diameter paper supply shaft.

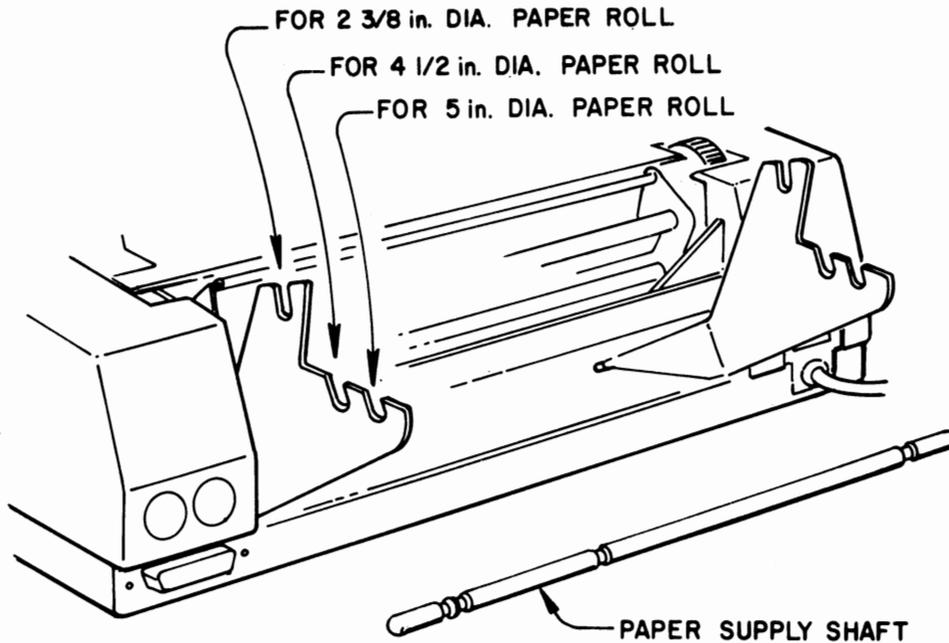


QM170

FIGURE 2-7 CORD-WRAP BRACKETS

Standard Five-Inch (Figure 2-8)--These brackets are intended for use in a desk-top application, as they will not fit in the carrying case. They are shipped with one, 3/8 inch diameter paper supply shaft, and will hold a 2-3/8, 4-1/2, or 5 inch diameter roll of paper. These are the brackets that are shipped with all machines but those sold with carrying cases.

## CHAPTER 2. GETTING STARTED (Cont'd)



QM171

FIGURE 2-8 STANDARD FIVE-INCH BRACKETS

## 2.7 CONTROLS, CONNECTORS, AND FEATURES (Cont'd)

**Low Paper (Figure 2-9)**--This set of brackets is equipped with a mechanical switch (on the left-hand bracket) that trips when the supply of paper runs low. When the paper roll diameter gets below a certain point, the switch trips, signalling the terminal that is running out of paper. When the paper is low, the green LINE LED will flash.

If the terminal is receiving a message when the switch trips, it will continue to print until the message is completed, but will not answer another call until the paper supply is replaced.

These brackets are shipped with two paper supply shafts: the 3/8 inch diameter shaft and a shaft with one inch diameter doughnuts at each end. These doughnuts allow the shaft to support 4-1/2 inch paper rolls at the proper height, so it will activate the Low Paper brackets, since the 2-3/8 inch roll still has a smaller core. This core leaves a greater portion of unused paper on the roll after the switch trips.

You may wish to use the 2-3/8 inch paper roll, as it will fit inside the carrying case. To close the case, lift the roll out of the brackets, and roll it forward, to clear the case top.

CHAPTER 2. GETTING STARTED (Cont'd)

2.7 CONTROLS, CONNECTORS, AND FEATURES (Cont'd)

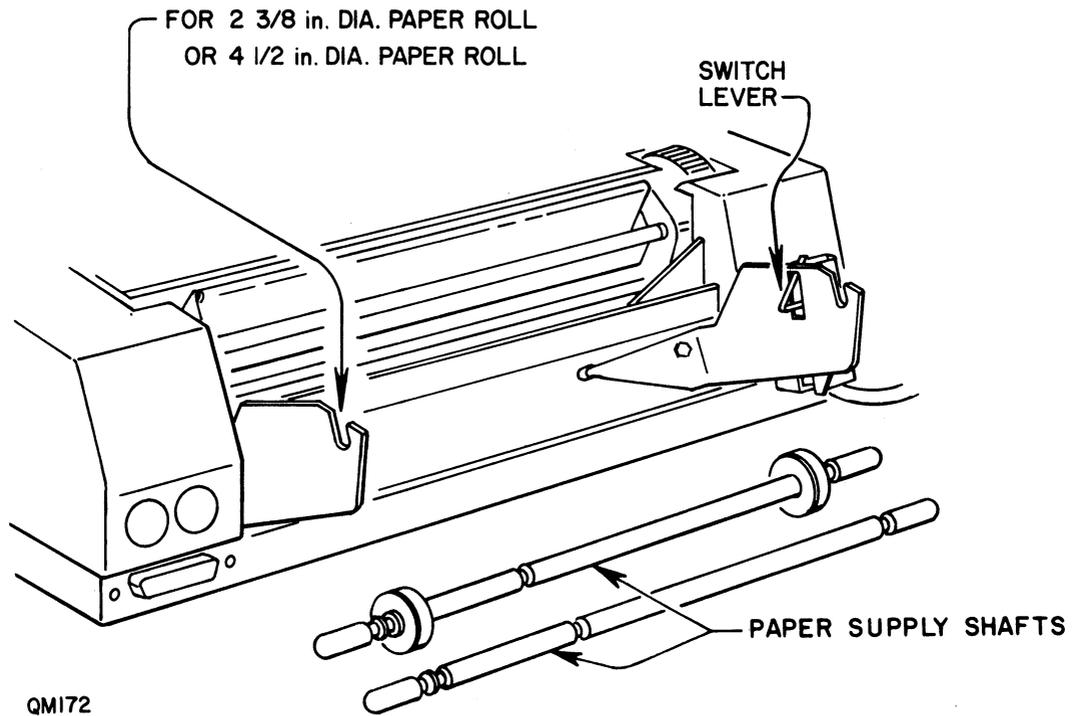


FIGURE 2-9 LOW PAPER BRACKETS

## CHAPTER 2. GETTING STARTED (Cont'd)

## 2.8 PAPER SELECTION AND INSTALLATION

## Types of Paper Used with Qwint Terminals

Qwint terminals are designed primarily to use continuous form paper, either rolled or fan-folded, though individual sheets may be used, if desired.

Most applications can be satisfied by continuous form paper. Rolls come in three sizes: 2-3/8 inch, 4-1/2 inch, and 5 inch diameter rolls (Figure 2-8). Roll paper is stocked by many office supply stores, by Qwint distributors, and by Qwint. Refer to "Supplies, Accessories, and Service", SF35, for more information. Each Qwint Terminal is shipped with a 2-3/8 inch roll of paper.

Some Qwint terminals are equipped with an option called Top of Page/Paper Out (TPPO). When used with the proper type of paper, this option will allow the terminal to friction-feed the paper to the top of the page when it receives an ASCII FF character. The Programmer Reference Manual outlines the procedure used to set the terminal for this type of operation. The paper required for this option is shown in Figure 2-11, and the location of the TPPO sensor is shown in Figure 2-12.

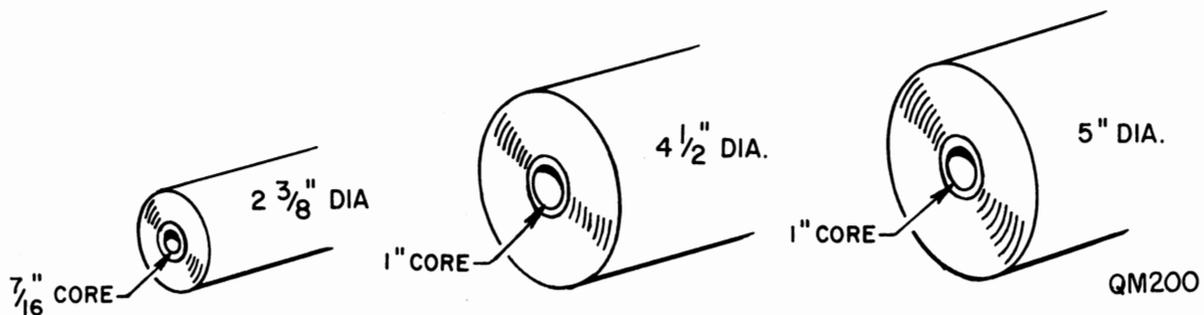
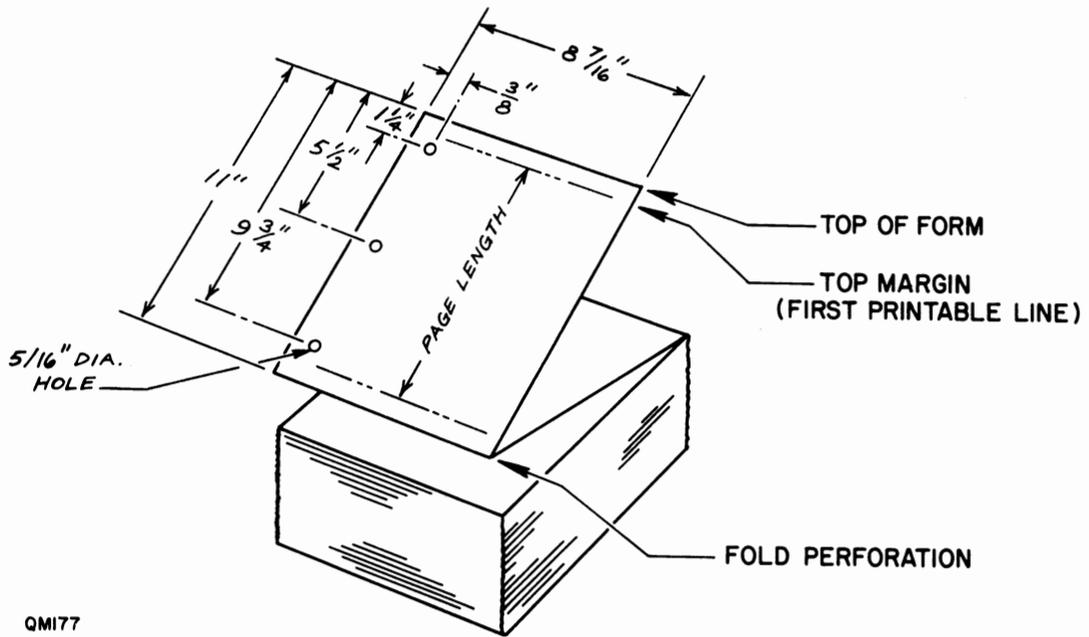


FIGURE 2-10 PAPER ROLL SIZE

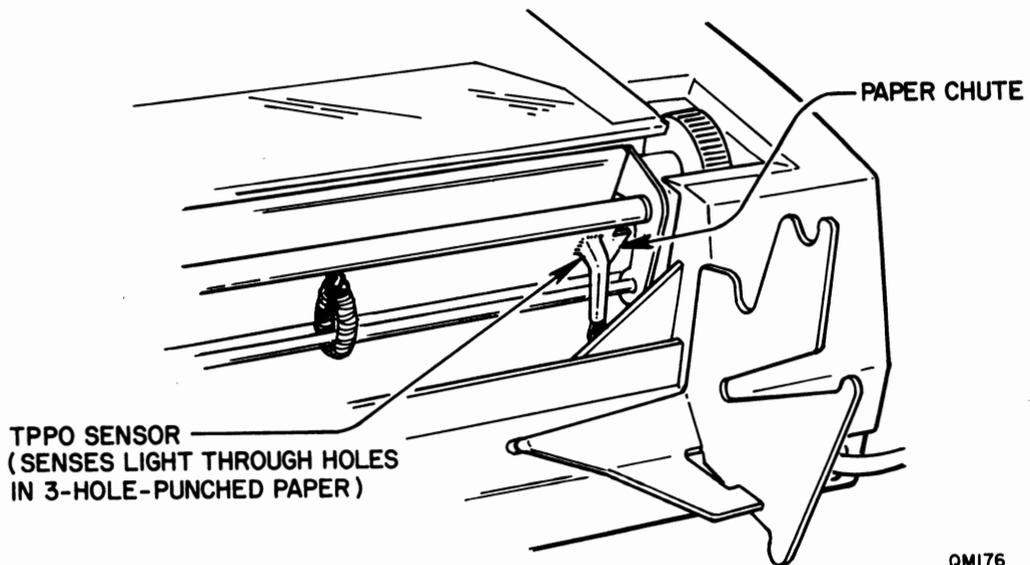
CHAPTER 2. GETTING STARTED (Cont'd)



QM177

FIGURE 2-11 CONTINUOUS FORM 3-HOLE PAPER

2.8 PAPER SELECTION AND INSTALLATION (Cont'd)



QM176

FIGURE 2-12 TPPO SENSOR

## CHAPTER 2. GETTING STARTED (Cont'd)

## 2.8 PAPER SELECTION AND INSTALLATION (Cont'd)

## Installing Paper

Single-sheet paper is loaded into the terminal in the same way you would load it into a typewriter. Remember that the pressure rollers (Figure 2-11) must be down (contacting the platen) for the friction-feed to work properly.

To install roll paper into the terminal:

1. Insert the paper supply shaft into the paper roll.

NOTE: If you are using a 5-inch roll, remove the protective metal plugs from the cardboard core, and insert the paper supply shaft equipped with the 1-inch doughnuts at each end. Otherwise, use the 3/8-inch diameter shaft.

2. Holding the paper roll so that it feeds from the bottom (Figure 2-13), place the shaft into the brackets.
3. Lift the hinged access door and the pressure rollers.
4. Insert the paper between the paper idler shaft and platen, while turning the platen knob.
5. When the paper appears in front of the platen, pull it up and lower the pressure rollers over it.
6. Close the access door.

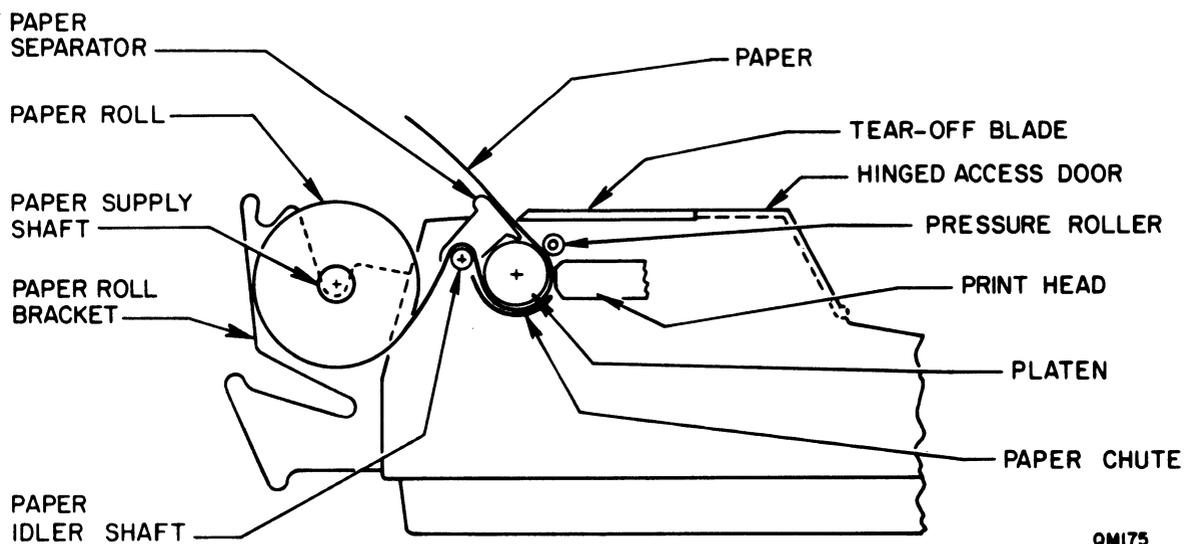


FIGURE 2-13 PAPER FLOW (TERMINAL CROSS SECTION)

## CHAPTER 2. GETTING STARTED (Cont'd)

### 2.9 INSTALLING RIBBON CARTRIDGES

There are two types of ribbon cartridges:

- RIB-1 -- which is rated for 1.5 million characters
- RIB-3 -- which is rated for 10 million characters

These cartridges are identified by the sticker on their top surfaces. A sealed RIB-3 cartridge is included with each terminal.

To replace the ribbon cartridge:

1. Wait a few minutes for the printhead to cool, especially if the terminal had recently been printing.
2. Open the access door.
3. Grasp the carrier (with the printhead and ribbon cartridge mounted on it), and move it to the middle of the terminal.
4. Spread the spring clips that secure the cartridge to the carrier (Figure 2-14), and lift the old cartridge out.
5. Place the new cartridge into the carrier, making sure the spring clip secures it. Check to see that the ribbon is properly positioned between the printhead and platen.
6. Close the access door.

The print intensity is adjustable while programming the terminal status (refer to the Programmer Reference Manual). Make sure your old cartridge really needs replacement by checking the print intensity setting before installing a new cartridge.

Qwint terminals have a feature called LCV (Last Character Visibility). This feature causes the carrier (and ribbon cartridge) to move to the right during a pause in typing, allowing you to see the typed copy. After the carrier moves to the right, the blue LCV pointer (Figure 2-15) indicates the position of the next printed or spacing character. The length of time the carrier waits before moving to the right is programmable. Refer to the Programmer Reference Manual to learn how to set the time limit.

CHAPTER 2. GETTING STARTED (Cont'd)

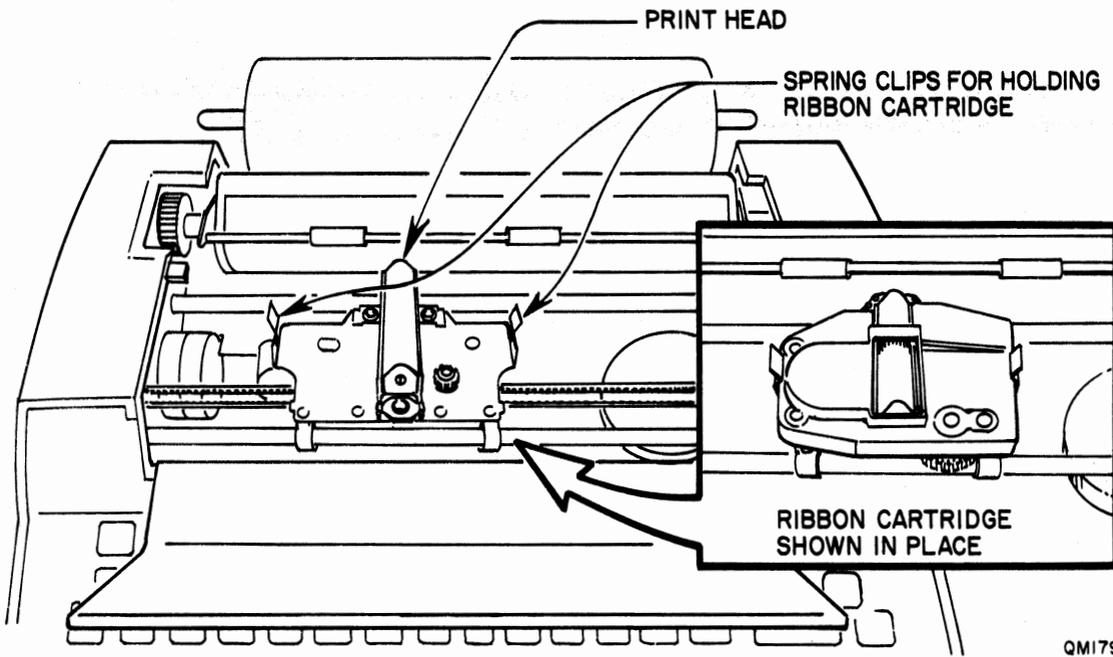


FIGURE 2-14 RIBBON CARTRIDGE INSTALLATION

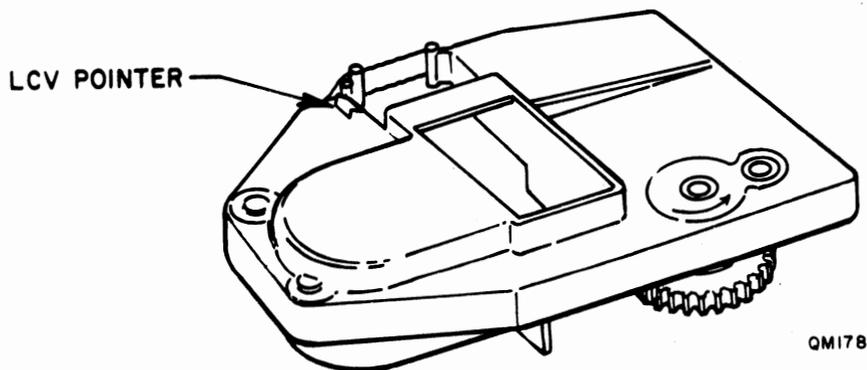


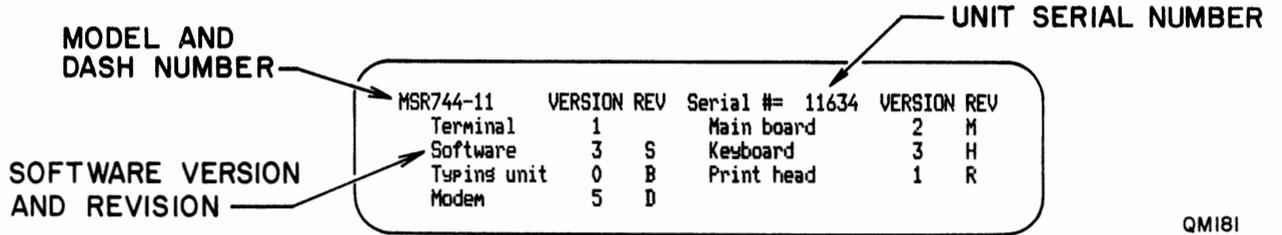
FIGURE 2-15 LCV POINTER

2.10 TERMINAL IDENTIFICATION

The best way to positively identify your terminal model, and its software version and revision, is to perform a status dump, also called a TEST 4. You will get a printout listing the settings of all the programmed options. At the end of the printout will be the terminal identification information (Figure 2-16).

CHAPTER 2. GETTING STARTED (Cont'd)

2.10 TERMINAL IDENTIFICATION (Cont'd)



QM181

FIGURE 2-16 TERMINAL IDENTIFICATION PRINTOUT

To generate a TEST 4:

1. Plug in the terminal (if you have not already done so), and place the POWER switch in the ON position.
2. Press the TEST key.
3. At this point, the terminal will print  
TEST?
4. Press 4, followed by NEW LINE.
5. A continuous printout of the terminal status will begin. At the end of each report, the terminal identification information shown in Figure 2-14 will appear.
6. To stop the printout, enter CTRL+TST again.

CHAPTER 3. KEYBOARD AND INDICATOR LAMPS

3.1 Introduction

The U.S. keyboard configuration is shown in Figure 3-1. The layout of the keyboard is nearly identical to a standard office typewriter. Alphabetic, numeric, and common punctuation keys, as well as the space bar, are all in their familiar positions. (Other national keyboards are shown in Appendix A.)



QM141

FIGURE 3-1. U.S. KEYBOARD LAYOUT

The keyboard switches are scanned electronically at high speed. Keystrokes are stored in memory, so the machine keeps up with the fastest typist. The keyboard permits two-key rollover, meaning that two keys may be overlapped slightly, by a fast typist, without error.

All alpha, numeric, and symbol keys repeat after being held down for one second. The following also repeat: SPACE (space bar), BACK SPACE, CR (carriage return), LF (line feed), NL (NEW LINE), and BELL. The repetition rate is approximately 15 times a second, or slower if the machine is ON-LINE and connected to slower connecting equipment.

CHAPTER 3. KEYBOARD AND INDICATOR LAMPS (CONT'D)

3.2 Typing Function Keys

Figure 3-2 shows the location of the typing function keys. The following paragraphs describe the function of each of the keys.



FIGURE 3-2. TYPING FUNCTION KEYS

Key

Name and Function

SHIFT

SHIFT. As on a typewriter, there are two SHIFT keys, one at each side of the keyboard. With a numeric or symbol key, SHIFT produces the alternate printing symbol that is shown at the top of that key.

CR  
LF

LF. Causes a line feed, that is, the platen rotates one line vertically. When used with the SHIFT key, CR (carriage return) occurs, that is, the carriage returns to its far-left position.

FIGS  
LTRS

FIGS/LTRS. Although the terminal will automatically shift from the Letters mode to the Figures mode whenever required by the key pressed, you may use this key to shift manually, if you wish. When pressed, this key inserts a Letters character into the data stream. When pressed at the same time as the SHIFT key, a Figures character is sent.

LF  
NEW LINE

NEW LINE. Generates a character code (or sequence) which is normally intended to advance to the next line. Typically this code sequence includes the two characters CR (carriage return, move the print head to the left margin) and LF (line feed, move the platen one space vertically). The specific code or sequence produced by the NEW LINE key is programmable to meet the requirements of the connecting equipment.

CHAPTER 3. KEYBOARD AND INDICATOR LAMPS (CONT'D)

3.3 Communication Control Keys

Figure 3-3 shows the location of the major communication control keys. The following paragraphs briefly describe the function of these keys. (See Chapter 6 of this manual for more complete descriptions of these keys.)



QM141

FIGURE 3-3. COMMUNICATION CONTROL KEYS

Key	Name and Function
	<b>LINE.</b> Controls whether or not the terminal is ON-LINE. The ON-LINE state means that the terminal is prepared to communicate via the modem or CCITT V.24 interface port. When the machine is ON-LINE, the LINE lamp on the front panel will glow bright green.
	<b>BREAK.</b> When pressed, this key causes the Transmit Data (TD) lead to go into the Space condition for an extended period of time. There is no Baudot character for Break, but holding the TD lead in the space condition is recognized as a means used to stop data transmission. The terminal will stop transmission of data, and lock the keyboard, upon receipt of Break.
	<b>HERE IS.</b> Transmits this machine's answerback code, a programmable character sequence which identifies this terminal.
	Transmits a code which requests the connecting equipment to send its answerback code, so that you can assure proper connection. Sometimes called WHO ARE YOU?

CHAPTER 3. KEYBOARD AND INDICATOR LAMPS (CONT'D)

3.4 Set-up Keys

Figure 3-4 shows the location of the set-up keys. The following paragraphs briefly describe the function of the keys. (See the Programmer Reference Manual for complete descriptions of these keys.)



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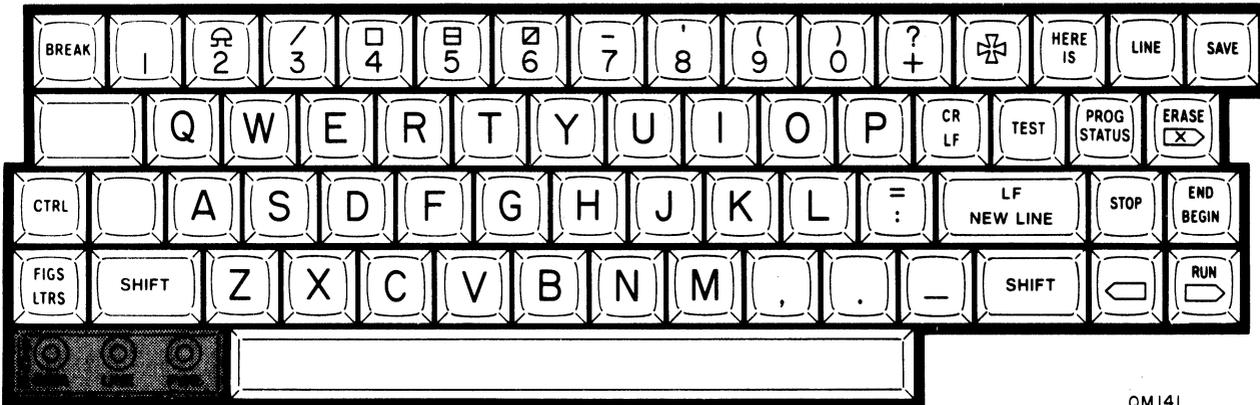
FIGURE 3-3. SET-UP KEYS

Key	Name and Function
<div style="border: 1px solid black; padding: 2px; display: inline-block;">                     PROG STATUS                 </div>	<b>STATUS.</b> Prints the current STATUS of the machine. When operated with the SHIFT key, prompts the user to PROGRAM the machine.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">                     TEST                 </div>	<b>TEST.</b> Allows the user to perform a diagnostic TEST, or to select a specific communications mode. Refer to the Programmer Reference Guide for more information.

CHAPTER 3. KEYBOARD AND INDICATOR LAMPS (CONT'D)

3.5 Indicator Lamps

Figure 3-5 shows the location of the indicator lamps. The following paragraphs explain the steady and flashing states of these lamps.



QM141

FIGURE 3-5. INDICATOR LAMPS

Lamp	Name and Function
---	-----
	<p><b>POWER.</b> Red lamp lights in a steady state when unit power is on.</p> <p>The POWER lamp has no flashing states.</p>
	<p><b>SAVE DATA.</b> The DATA lamp flashes to indicate incoming data, or the detection of an error during power-on diagnostics.</p> <p>The number of flashes per group indicates the probable source of trouble. Groups of flashes are separated by a single flash of the LINE lamp. The diagnostic error codes are shown in Table 3-1.</p>

TABLE 3-1. DIAGNOSTIC ERROR CODES

FLASHES	MEANING
1	PROM has a bad checksum
5	RAM is faulty

NOTE: Do not attempt to make repairs. Contact your distributor or Qwint Systems Field Service Department.

CHAPTER 3. KEYBOARD AND INDICATOR LAMPS (CONT'D)

3.5 Indicator Lamps (Cont'd)



LINE. Green lamp which lights in a steady state when the terminal is ON-LINE and ready to communicate via the CCITT V.24 port or modem interface.

Flashing of the LINE lamp means that one of the following conditions is true:

- 1) LINE lamp is being used as a separator in a diagnostic error sequence. (Single flash)
- 2) The low paper limit has been reached (on machines that are equipped with this option). "Low Paper" prevents the machine from answering a new call. (2 Flashes per second)
- 3) A paper out condition has been detected (on machines that are equipped with a TPFO option). "Paper Out" disconnects a call in progress and/or prevents the machine from answering a new call. (1 Flash per second)

When the paper is replaced, the LINE lamp flash more rapidly to indicate that the operator has 20 seconds to complete the replacement before normal terminal operation resumes. (4 Flashes per second).

- 4) The operator has requested a PSEUDO-LOCAL mode. The LINE lamp flash until the operator exits this mode. (1 Flash per second)

3.6 Characters Generated by CCITT #2 (Baudot) Keyboard

The CCITT #2 (Baudot) keyboard layout, and the various communication and function codes shown on the keys, conform to the CCITT #2 (Baudot) character set. This code is used in a variety of communication protocols, including Telex.

Terminals equipped with CCITT #2 (Baudot) keyboards may be configured to use the CCITT #5 data code, often called ASCII code. This code is used in some electronic mail applications, and in operations where the terminal connects directly to a nearby host computer.

You may choose to use CCITT #5 (ASCII) code while programming a new status into the terminal (refer to Chapter 2, Section 2.3 "Programming New Status: PRG Key".)

NOTE: There is not a direct Baudot equivalent for all ASCII characters. Some Baudot characters will be automatically replaced with the equivalent ASCII characters.

## CHAPTER 4. SCRATCH PAD MEMORY

## 4.1 Introduction

The terminal has an internal scratch pad memory. Its main purpose is to allow you to enter a message when not on line; print it out; correct any errors; go on line; and send the corrected message to the connecting equipment, at full transmission speed. Incoming messages can also be stored in the memory. (See Figure 4-1.)

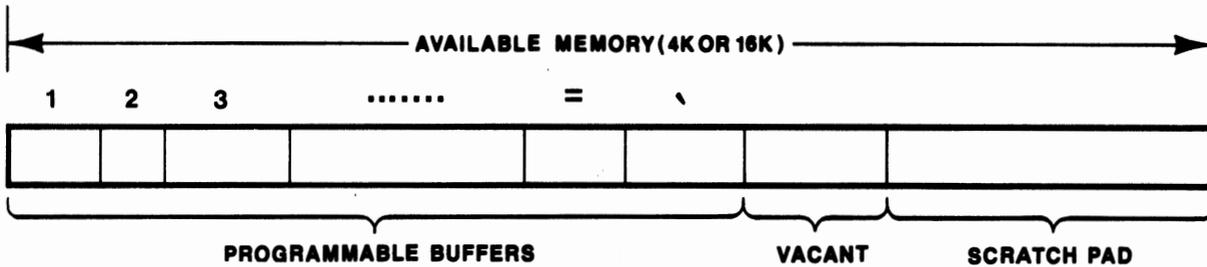


FIGURE 4-1. MEMORY STRUCTURE

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The total capacity of the teleprinter memory is allocated dynamically among the scratch pad and the 13 programmable buffers. Any memory which is not used is left vacant. There is no individual size restraint on the scratch pad or any one of the programmable buffers; they all make flexible use of the same memory space. The memory available for scratch pad use is either 4K or 16K (depending on machine dash number), minus whatever is used by the programmable buffers.

When the terminal is OFF-LINE:

"128 CHAR LEFT" is printed out to indicate memory is almost full.  
"MEMORY FULL" is printed out when a character is received in SAVE mode and memory is filled.

When the terminal is ON-LINE:

Memory is taken out of SAVE mode when a character is received and memory is filled.

Information stored in memory will be erased when you turn the machine off, unless it is a -16B model, with the battery-backed memory option.

## 4.2 Basic Edit Functions

The basic edit keys are used to operate on data in the scratch pad memory. All International Terminals have these functions available. Figure 4-2 shows the location of the basic edit keys and the SAVE lamp. The following paragraphs describe the functions of each of the keys.

CHAPTER 4. SCRATCH PAD MEMORY (Cont'd)



QM141

FIGURE 4-2. BASIC EDIT KEYS

4.2 Basic Edit Functions (Cont'd)

Key

Name and Function



**SAVE.** Operation of the SAVE key toggles the SAVE lamp, where the ON position causes the scratch pad memory to record any data from the keyboard or the communication line.

You must be in SAVE mode to change or erase the scratch pad memory. You need not be in SAVE mode, however, to print out the contents of the scratch pad. When you leave SAVE mode, the information stays in the scratch pad.



**ADVANCE POINTER.** Pressing the ==> key causes the terminal to print one character from its scratch pad memory. If the terminal is on line, the character is transmitted to the connecting equipment. Holding this key down for more than one second will cause it to repeat.



**RUN.** The terminal enters RUN mode when this key is pressed together with the SHIFT key. The scratch pad memory transmits continuously at the speed of the printer, or connecting equipment, whichever is slower. RUN mode is terminated whenever:

- 1) The ==> or RUN key is operated again.
- 2) The LINE key is operated.
- 3) Any of the following control characters

## CHAPTER 4. SCRATCH PAD MEMORY (Cont'd)

## 4.2 Basic Edit Functions (Cont'd)

is read from memory: DC3, ENQ, ETB, ETX,  
or EOT. (ASCII only)



**BACKSPACE POINTER.** The <== key causes the memory pointer to backspace one printing or spacing character. CR (carriage return) and LF (line feed) characters are skipped. When backspacing to a previous line, the entire line is printed. This key repeats if held down for a second or longer. The operator cannot backspace from the beginning of memory.

The terminal must be OFF-LINE and in SAVE mode for this key to function.



**DELETE CHARACTER.** Pressing the =X=> key deletes the next character from the scratch pad memory. The bell rings to indicate each erasure.

The terminal must be OFF-LINE and in the SAVE mode for this key to function.



**ERASE.** The ERASE function works from any point in the scratch pad. Characters are erased from the current cursor position, to the end of the scratch pad.

When the memory pointer is at the beginning of memory, pressing this key together with the SHIFT key erases the entire scratch pad. The terminal prints "INFORMATION ERASED."



**BEGIN.** This is a dual-function key. Used alone it actuates the BEGIN command. The memory pointer moves to the beginning of the scratch pad memory. The terminal prints "BEGINNING OF INFORMATION."



**END.** Pressing this key at the same time as the SHIFT key actuates the END command. The memory pointer moves to the end of the scratch pad. The terminal prints "END OF INFORMATION."

CHAPTER 4. SCRATCH PAD MEMORY (Cont'd)

4.3 Expanded Edit Functions

The -16B models of the International Terminals provide additional editing functions. The terminal must be OFF-LINE and in SAVE mode for these functions to operate. To select an edit command, first type BEGIN while holding down the CTRL (control) key. Then type the one-letter abbreviation for the command.

For example, to select HELP, type <CTRL+BEGIN> <H>. The terminal responds by printing the rest of the command. When no arguments are required, as in the case of HELP (H), the terminal immediately performs the command.

If you cannot remember the expanded edit commands (or do not have a copy of them), use the "Help" command. The teleprinter will type out the expanded edit commands for you. (See Figure 4-3.)

```
LOCATE string
      Move the memory pointer to the string.

CHANGE /string1/string2
      Move memory pointer to string1 then change to string2.
      / is any character entered and is defined as delimiter.

DELETE string
      Delete all characters from memory pointer to the string.

AGAIN
      Repeat last command if locate or change.

NEXT
      If last instruction was change then unchange and change next
      occurrence of string1.

ERROR
      Wrong instruction, return to original pointer.
```

FIGURE 4-3. OUTPUT FROM HELP COMMAND

Some commands also require an argument, so the terminal types a space and waits for you to type the character string to complete the command. When character string arguments are required, they are terminated by a delimiter, or by the NEW LINE key.

Name	Function
HELP	h"elp"

## CHAPTER 4. SCRATCH PAD MEMORY (Cont'd)

## 4.3 Expanded Edit Functions (Cont'd)

The terminal prints its command directory.

LOCATE   l"ocate" abc

The memory pointer moves forward looking for the next string "abc" (in this example). When it is found, the line it is on is printed, and the carrier cursor is placed at the beginning of the character sequence.

If the editor reaches the end of the scratch pad without finding the string, it starts at the beginning again and continues until it either locates the string, or reaches the present cursor position again. If the string is not found in scratch pad memory, the message "NOT FOUND" is printed, and the initial memory pointer position is retained.

CHANGE   c"hange"/abc/wxyz

The memory pointer moves forward looking for the next occurrence of the "string1" character sequence. When it is found, "string1" is changed to "string2"; the line it is on is printed; and the carrier cursor is placed at the beginning of the character sequence. The delimiter character, which separates the two strings within the command, is defined as the character typed after the C. In the example shown the '/' is used for the delimiter, but really any character may be used which does not occur within either character string.

AGAIN   a"gain"

The editor performs the last command again. AGAIN functions only if the last command was a LOCATE or CHANGE.

NEXT   n"ext"

If the last command was LOCATE, the editor moves to the next occurrence of the string (same action as AGAIN). If the last command was CHANGE, the editor first restores the string just changed, at the present cursor position, to its original state; then it moves to the next occurrence and changes that string instead.

DELETE   d"elete" abc

CHAPTER 4. SCRATCH PAD MEMORY (Cont'd)

4.3 Expanded Edit Functions (Cont'd)

The editor deletes all data from the present cursor position to the string "abc" (in the example). The deletion includes the character at the present cursor position, but not any of the characters in the string.

ERROR CTRL END  
BEGIN e"rroR"

The editor ignores the last command and returns to the previous cursor position.

Figure 4-4 shows how the expanded edit functions are used to edit text.

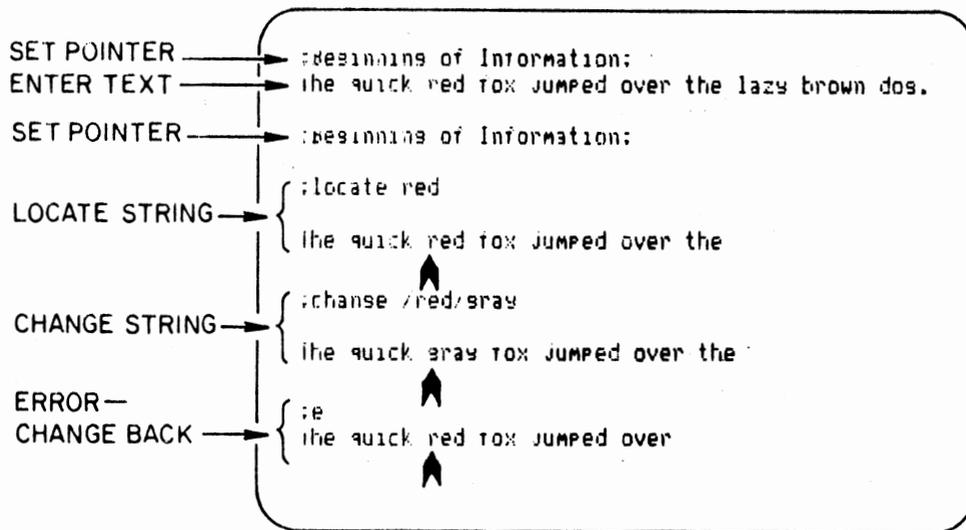


FIGURE 4-4. USING THE EXPANDED EDIT FUNCTIONS

CHAPTER 5. PROGRAMMABLE BUFFERS

5.1 Introduction

The terminal has 13 programmable buffers which share memory with the scratch pad. The programmable buffers are used to store one or more characters, or words, or a whole message. The programmable buffers are addressed by 13 of the keys on the top row of the keyboard. Figure 5-1 shows the location of the programmable buffer keys.



FIGURE 5-1. PROGRAMMABLE BUFFER KEYS

Characters can be loaded into the programmable buffers from the scratch pad or from the communications line. The contents of a programmable buffer can later be moved back into the scratch pad, or transmitted out of the memory--to the printer or out the interface port.

CHAPTER 5. PROGRAMMABLE BUFFERS (Cont'd)

5.2 Programmable Buffer Functions

Table 5-1 shows the effect of the LINE lamp and SAVE lamp on the three types of buffer operations. Make sure the teleprinter is in the proper state before you execute a buffer command.

TABLE 5-1. EFFECT OF TELEPRINTER STATE ON BUFFER OPERATIONS

Operation	Teleprinter State	
	LINE Lamp	SAVE Lamp
Load a Buffer	On - Error	-----
	Off - Required setting	On - No effect Off - No effect
Print a Buffer	On - Transmits message*	On - No effect Off - No effect
	Off - See next column	On - Local copy and stored in scratch Off - Local copy only
Erase a Buffer	On - Error	-----
	Off - Required setting	On - No effect Off - No effect

\*Local copy on half-duplex/No local copy on full-duplex.

Storing From Scratch Pad to Programmable Buffer

To store a message into a programmable buffer from the keyboard, you must first enter the message into the scratch pad:

1. Prepare a message in the scratch pad memory. Position the memory pointer at the beginning of the message.
2. Set the terminal to OFF-LINE.
3. While holding down both the SHIFT and CTRL keys, press the SAVE key. Still holding down <SHIFT+CTRL>, press the desired programmable key. The terminal will print "INFORMATION SAVED."

## CHAPTER 5. PROGRAMMABLE BUFFERS (Cont'd)

## Storing From Scratch Pad to Programmable Buffer (Cont'd)

4. When storing into a programmable buffer you do not necessarily have to store the entire scratch pad. If the current position within the scratch pad is not the beginning, you will save only the portion from the pointer, to the end.
5. Storing from the scratch pad, into a programmable buffer, does not remove the information from the scratch pad. Unless you then change or erase it while in SAVE mode, the information remains in the scratch pad.

## Printing a Programmable Buffer

To print a message previously stored in a programmable buffer:

1. While holding down both the SHIFT and CTRL keys, type the programmable buffer key.
2. The contents of the programmable buffer will be printed. If the terminal is ON-LINE, characters will be transmitted.
3. The terminal does NOT have to be in SAVE mode to print a message from a programmable buffer. If the terminal is not in SAVE mode, you can use this feature to send a previously edited message to connecting equipment, without disturbing the new message you're working on in the scratch pad.
4. If you print a programmable buffer message when the terminal is OFF-LINE in SAVE mode, the programmable buffer characters will be stored into the scratch pad, starting at the point where you left the memory pointer within the scratch pad. You can use this feature to include a phrase at several locations in a longer message you are editing. Use several programmable buffers to cut and paste a final document electronically.

## Erasing a Programmable Buffer

A buffer is erased by storing zero characters into it.

To erase a message previously stored in a programmable buffer:

1. Set the terminal to OFF-LINE.
2. Move to the end of the scratch pad by pressing the END key while holding down the SHIFT key.
3. While holding down both the SHIFT and CTRL keys, press the SAVE key. Still holding down <SHIFT+CTRL>, press the programmable key to be erased. The terminal will print "EMPTY FILE SAVED." The programmable buffer is now empty.

## CHAPTER 5. PROGRAMMABLE BUFFERS (Cont'd)

### Erasing a Programmable Buffer (Cont'd)

4. By first moving to the end of the scratch pad, you have stored zero characters without disturbing other characters in the scratch pad. When the scratch pad is empty to start with, then you can skip the END key step (step 2).

#### Points to Remember:

1. Storing from the scratch pad, into a programmable buffer, does not itself erase the scratch pad.
2. A programmable buffer does not have to be erased before information is stored in it. At the end of the store operation, it will contain only the new information.
3. Printing from a programmable buffer, when in SAVE mode, copies the message into the scratch pad.
4. When you store a message in a programmable buffer, and you do not erase the scratch pad; stay in SAVE mode; and immediately print out the same programmable buffer, your scratch pad will contain two copies of the information saved.

### 5.3 Remote Programming

Connecting equipment can communicate directly with the MSR-741/742 programmable buffers. This is a powerful feature in electronic mail and message forwarding systems. Messages are controlled by selected escape sequences. (See the Programmer Reference Manual for further information.)

CHAPTER 6. COMMUNICATION CONTROL FUNCTIONS

6.1 Introduction

Figure 6-1 shows the location of the most important communication control functions and the ON-LINE lamp. The following paragraphs describe each of the functions.

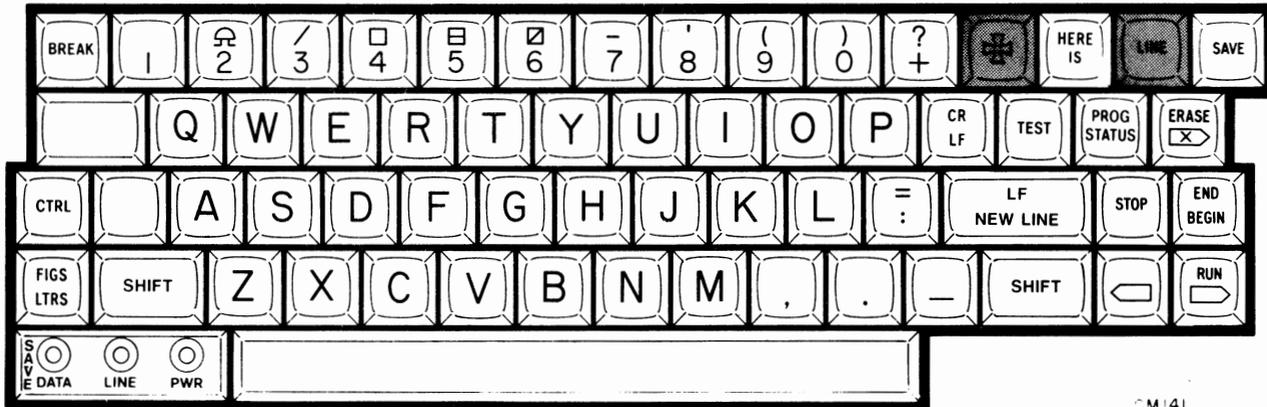


FIGURE 6-1. COMMUNICATION CONTROL KEYS

6.2 Descriptions of the Functions

Key/Function	Description
	Switches unit on and off-line. Green LINE indicator lights when the unit is ON-LINE.
	WHO ARE YOU. Transmits a code which requests the connecting equipment to send its answerback code, so that you can assure proper connection. Sometimes called WRU.

NOTE: The dialing functions MANUAL DIAL, TRY AGAIN, OFF-HOOK, and AUTO DIAL apply to MSR-741/742 models with internal -C1 or -F1 modems only.

**MANUAL DIAL**           "Phone:"9;1;312-879-2792     

The DIAL function allows you to dial a phone number using the numeric keys on the terminal keyboard. First make sure the terminal is OFF-LINE. Then select the DIAL function by pressing the DIAL/LINE key while holding down the SHIFT key.

The terminal prints "PHONE:." Type the phone number using the numeric key row on the keyboard. Enter a space or NEW LINE when the number is complete.

CHAPTER 6. COMMUNICATION CONTROL FUNCTIONS (Cont'd)

6.2 Descriptions of the Functions (Cont'd)

The terminal will accept and print the hyphen often included in phone numbers (e.g. 634-6700), though it will not be dialed. Use a semi-colon (;) to insert a two-second pause. This pause is useful for example in offices where you must first dial "9" to get an outside line. Use several semi-colons if necessary.

In a DDD connection, you should hear the dial tone and the clicking dial-up sequence on the terminal's internal speaker. Then you should hear the ringing sound (ringback) at the distant phone. When the data modem at the other end answers, tones will be heard briefly as communications begin.

The terminal prints "CONNECTED" and you can now transmit your message. You may either type a new message at the keyboard, or transmit from memory using the blue keys. If the terminal does not receive an answer from a compatible modem within 40 seconds, it hangs up and prints "NO REPLY."

TRY  
AGAIN

"Phone:"

Use the equal sign (=) to dial the same number again. Go off line. Type DIAL/LINE while holding down the SHIFT key. Then press the equal sign (=) key.

OFF  
HOOK

"Phone:"

Takes internal modem OFF-HOOK, and dials zero digits. Used to make call progress tones audible in DDD applications.

AUTO  
DIAL

This function dials the phone number previously stored in the terminal's memory. First make sure the terminal is off line. Then press the DIAL/LINE key while holding down the CTRL (control) key.

The terminal dials the stored phone number automatically. This feature is especially useful in timesharing and electronic mail applications where you frequently dial the same number to connect to the system.

The phone number is stored in memory using the PRG (program) key. It can be changed whenever desired. You may include hyphens (-) for spacing (634-6700) and semi-colons to provide two-second pauses (9;634-6700) as when dialing from the keyboard.

## CHAPTER 6. COMMUNICATION CONTROL FUNCTIONS (Cont'd)

## 6.2 Descriptions of the Functions (Cont'd)

AUTO           When the terminal is connected directly to the line,  
ANSWER         it can automatically answer an incoming call.

If you are ON-LINE and sending a message, someone trying to send a message to you will receive a busy signal, as with an ordinary voice telephone call.

When configuring the terminal for direct connect to DDD, you can program whether or not you wish the terminal to be captured by an incoming call. You may also select how many times the line must ring (0-10 times) before the terminal is captured.

When an incoming call captures the terminal, the terminal beeps three times per ring as a signal to the operator. If the machine is in SAVE mode, the cursor is moved to the end of the scratch pad to allow you to resume editing when you regain control. The incoming message is then printed.

## CHAPTER 7. SENDING AND RECEIVING MESSAGES

### 7.1 Introduction

The Qwint teleprinter can be configured in a variety of ways to send and receive messages. The general types of configurations are as follows:

1. Direct connection to a nearby computer.
2. Direct connection to an external modem.
3. Direct (or acoustic coupler) connection to the DDD (Direct Distance Dialing) telephone network.
4. Connection to a Telex network or other type of single current loop.

The teleprinter must be placed in the proper configuration through use of the Test Mode (see the Programmer Reference Manual), and in certain cases some additional options must be selected.

### 7.2 Direct Connection to a Nearby Computer

In this application, the Qwint teleprinter operates as a hard copy data terminal, whose operating characteristics are determined by the host computer. Communication with the host is by means of V.24 signalling. Distance between the Qwint and the host computer should usually not be more than 50 cable feet (15 cable meters).

Typical applications include:

1. Electronic mail
2. DDD
3. Calculations
4. Word Processing
5. Inventory Control
6. Data base management

### 7.3 Connection to Telephone Network (MSR-741-F1 only)

The Qwint teleprinter can be connected to the switched telephone network in four different ways:

1. Direct connection to the RJ-11 plug--Qwint replaces telephone.
2. Direct connection to telephone handset--Handset plug is connected directly to Qwint.
3. Acoustic coupler--Telephone handset is placed in Qwint acoustic coupler (optional).

CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

7.3 Connection to Telephone Network (MSR-741-F1 only) (Cont'd)

4. Direct connection to an external modem.

NOTE: Be sure to have the necessary approvals from the telephone company, communications authority, or PTT before directly connecting to the telephone network.

All MSR-741 models contain an internal modem. The -F1 modem can be connected directly to the phone lines through to either of the RJ-11 connectors on the back panel of the unit. The modem can also connect to a Qwint Model CUP-301 acoustic coupler through the 25-pin "D" connector, which is also located on the teleprinter back panel.

Call progress tones are a helpful feature of the Qwint teleprinter's internal -F1 direct-connect modem. When the modem is OFF-HOOK, a small speaker, located inside the unit, provides an audible indication of the activity on the telephone line while a call is being placed.

If the call is dialed from the teleprinter, the modem will go OFF-HOOK automatically during the dialing sequence. If the call is dialed from the telephone connected to the Qwint, execute a <SHIFT+DIAL/LINE> followed by a NEW LINE (or SPACE) command. (This function takes the modem OFF-HOOK and dials zero digits.) If the call is not completed in 40 seconds, the modem will go ON-HOOK (i.e., hang up) automatically.

As the call progresses, the following tones are audible:

1. Dial tone
2. Dial pulses (or push button tones)
3. Connection (or busy signal, wrong number, etc.)
4. Beginning of communication

The tones are present on both direct electrical connection to the phone line and through the acoustic coupler. Operating instructions in this chapter make frequent use of call progress tones. When you develop procedures for using the terminal in DDD applications, make sure to use the call progress tones. They can make your use of the terminal easier, faster, and more accurate.

The teleprinter is configured for DDD time share applications by executing a TEST 7 function. (See the Programmer Reference Manual for details on the test functions.) Depending on the particular DDD application, certain other options may have to be set up as well. They are as follows:

## CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

## 7.3 Connection to Telephone Network (MSR-741-F1 only) (Cont'd)

1. Number of rings to capture
2. Six CPS (Character Per Second) transmission (DDD connection to Telex or International Record Carrier)

## 7.3.1 Direct Connection to DDD Line

Remove the RJ-11 plug from the phone and insert it in the Qwint. See Figure 7-1.

NOTE: There are two RJ-11 jacks located on the back panel of the teleprinter. These two jacks are electrically equivalent. The phone plugs may be inserted into either jack.

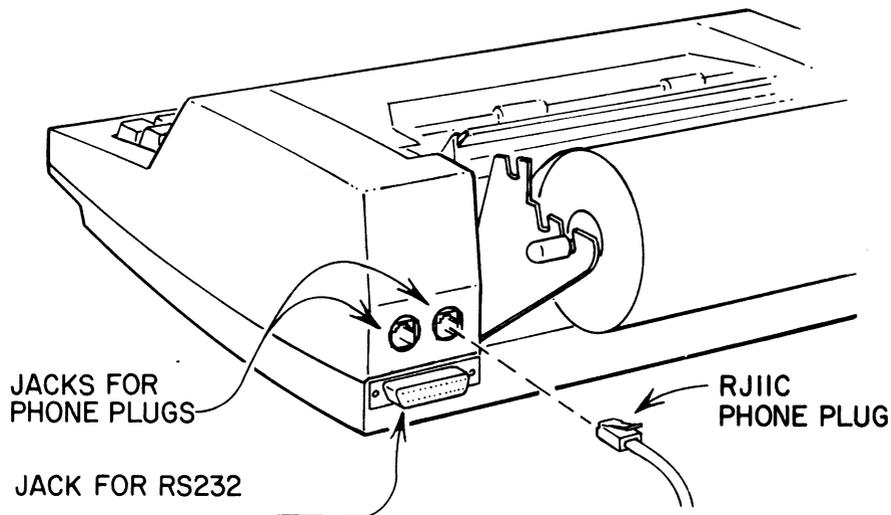


FIGURE 7-1. INSERTING AN RJ-11 PHONE PLUG

To originate a call:

1. Place the unit OFF-LINE. (The green LINE lamp should be out.)
2. Dial number from teleprinter using the Manual Dial, Auto Dial, or Try Again function.
3. Call progress tones--Dial tone, Dialing pulses (or tones), connection, and modem recognition should be audible.
4. Terminal will go ON-LINE and print "CONNECTED" (or print NO REPLY).

CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

7.3 Connection to Telephone Network (MSR-741-F1 only) (Cont'd)

5. Proceed with transmission.
6. Place unit OFF-LINE to terminate call.

To answer a call:

1. Leave unit plugged in with power switch ON.
2. If unit is left ON-LINE, calls will be answered immediately. If unit is left OFF-LINE, calls will be answered after a programmable capture delay. The teleprinter provides a ring indicator (of three beeps per ring) during capture. (See Table 7-1.)

TABLE 7-1. ANSWER TIME VS. TELEPRINTER STATE  
FOR THE DDD CONFIGURATION

Teleprinter State		Answer
Line	Hook	Time
ON	ON	immediate
ON	OFF	busy* (no answer)
OFF	ON	prog.capture
OFF	OFF	busy** (no answer)

\* Call in progress.

\*\* Dialing in progress.

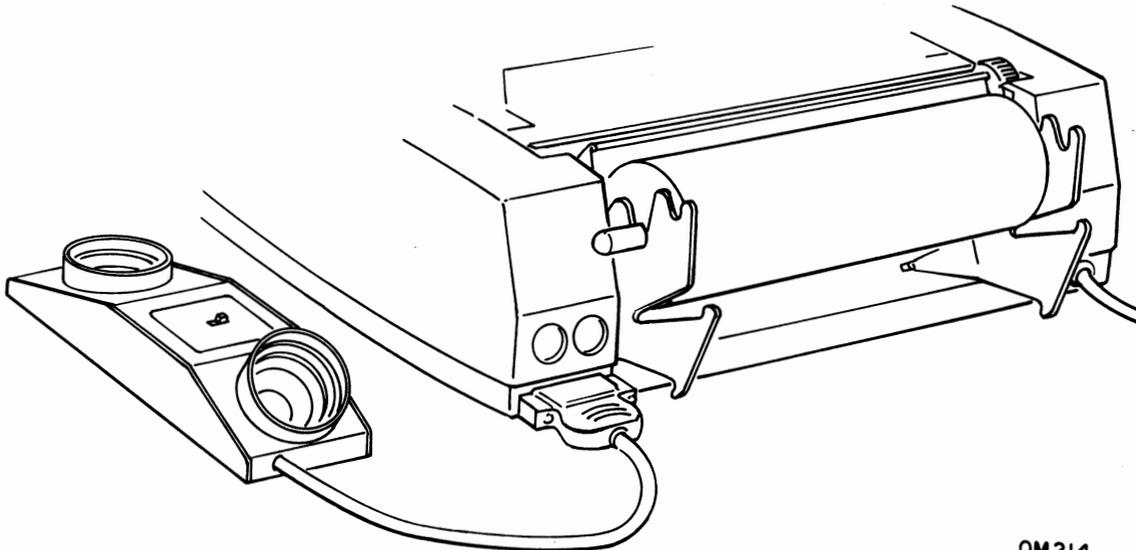
## CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

## 7.3 Connection to Telephone Network (MSR-741-F1 only) (Cont'd)

## 7.3.2 Acoustic Coupler Connection to DDD (F1 Modem only)

Before using the Acoustic Coupler, make sure the telephone handset fits into its rubber cups. Orient the handset as shown in Figure 7-4. If adjustments are necessary, see the Installation Manual for precautions and instructions in adjusting the cups.

The Acoustic Coupler should be plugged into the 25-pin "D" connector, as shown in Figure 7-3. No connections should be made to the RJ-11 jacks.



QM214

FIGURE 7-3. CONNECTING THE ACOUSTIC COUPLER

(OPTIONAL)

To originate a data call:

1. Place the switch on the acoustic coupler in the ORIGINATE position.
2. Place the telephone handset in the acoustic cups, as shown in Figure 7-4.
3. Take the teleprinter modem ON-LINE by pressing the DIAL/LINE key.
4. The dial tone should be audible as a call progress tone.

CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

7.3 Connection to Telephone Network (MSR-741-F1 only) (Cont'd)

5. Dial the number using the telephone set dial. (Dialing from the teleprinter is not possible in this configuration.)
6. When the call is answered by a compatible modem, the teleprinter will print connected.
7. When the call is completed, remove the handset and hang it up, and take the teleprinter OFF-LINE.

To answer a data call:

1. The telephone handset must be in the cradle, so that the telephone will not appear busy to incoming calls.
2. The teleprinter should be set to ON-LINE, and the switch on the acoustic coupler should be in the ANSWER position.
3. When the phone rings, remove the handset and place it in the acoustic cups in the proper orientation.
4. The connection is complete and the incoming message should proceed in a normal manner.

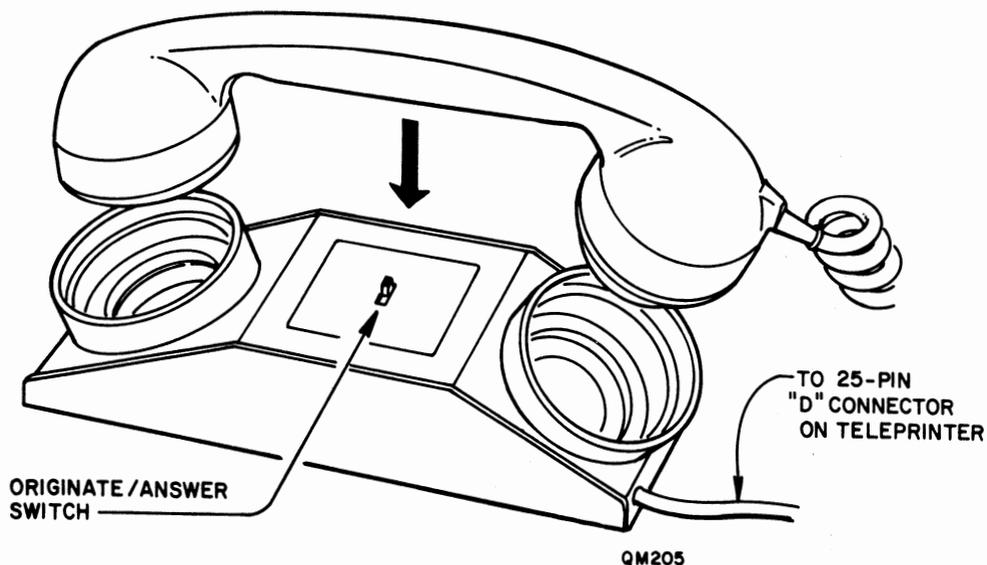


FIGURE 7-4. INSERTING THE HANDSET IN THE ACOUSTIC COUPLER

Figure 7-5 shows a typical DDD time share test message. Similar messages are available at no cost in most major metropolitan areas. Find the telephone number and log on procedure of one in your area, and use it for practice.



CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

7.4 Single Current Modem (Cont'd)

The terminal and modem are shipped with a wiring harness, as shown in Figure 7-7. The proper connections for both two- and four-wire operation are shown in Table 7-8. Note that pin 4 is negative in the idle state when the terminal is operating in telex mode.

NOTE

When used in certain 4-wire applications, resistor R36 on the modem board itself must be removed to ensure proper operation. Contact Qwint Field Service if you have any questions.

The specifications for the -C1 modem are listed in Appendix B.

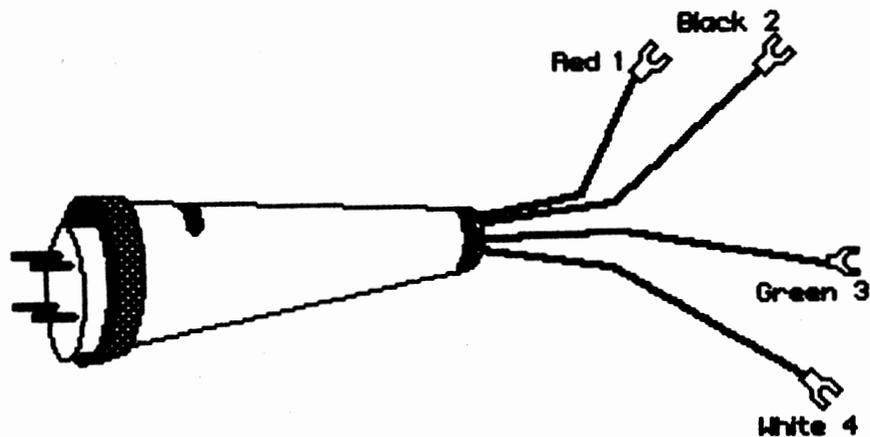


Figure 7-7 Modem Wiring Harness

Once properly programmed, the C1 modem will allow access to private networks and to Telex systems.

CHAPTER 7. SENDING AND RECEIVING MESSAGES (Cont'd)

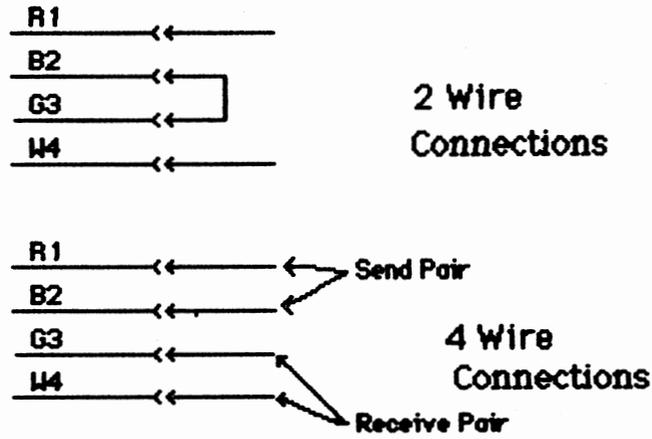
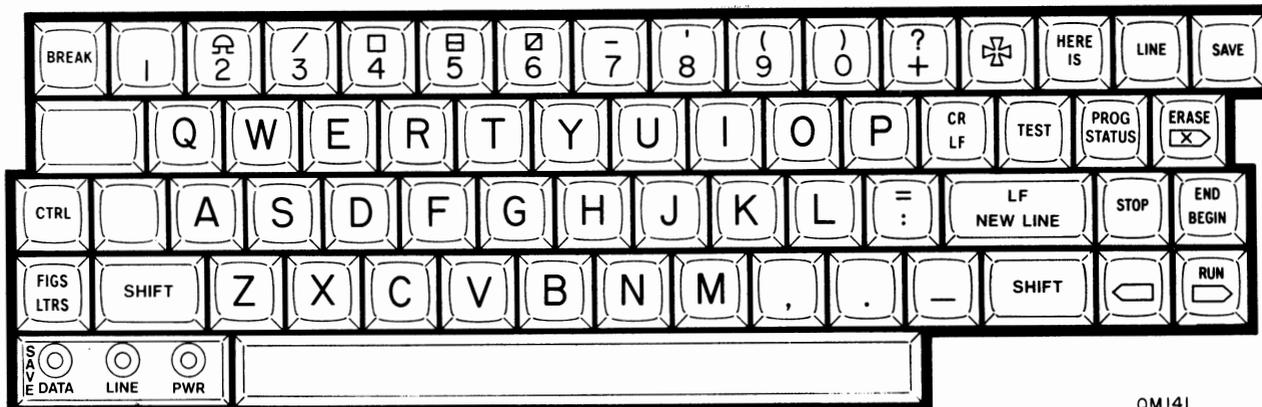


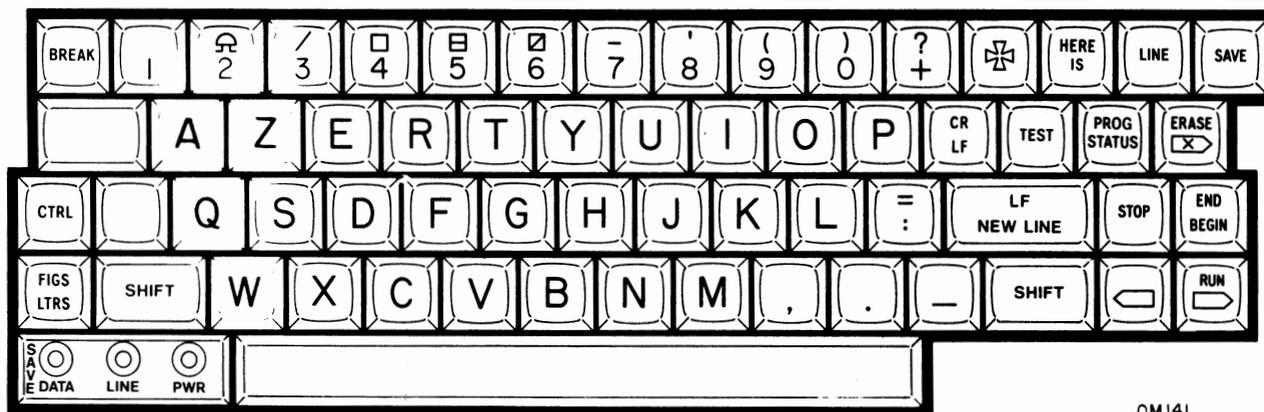
Table 7-8 Wiring Connections For -C1 Modem

APPENDIX A. KEYBOARD LAYOUTS



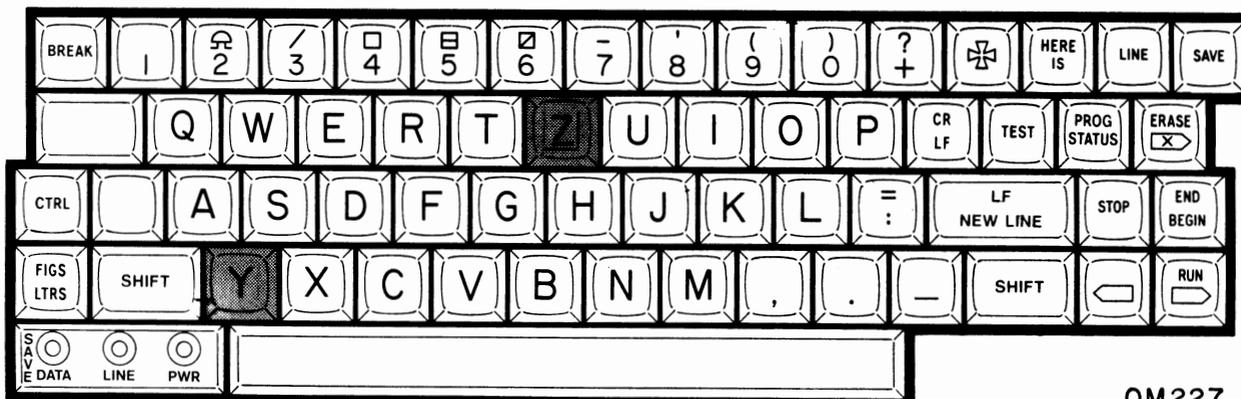
QM141

FIGURE A-1. UNIVERSAL CCITT #2 (BAUDOT)



QM141

FIGURE A-2. FRENCH "AZERTY" KEYBOARD



QM227

FIGURE A-3. GERMAN "QWERTZ" KEYBOARD

## APPENDIX B. TECHNICAL SPECIFICATIONS

## TERMINAL FEATURES

## Diagnostics

Internal

Remote-Controlled

Z80 Microprocessor

## Power Supply

Voltage: 93 to 264 VAC

Frequency: 47 to 400 Hz

Configuration: Balanced or Unbalanced (switch selectable)

Power Drain: 0.6 A maximum at 115 VAC

## Attractive and Compact

Size 14 inches (35.6 cm) wide

12 inches (29.2 cm) deep

4-1/2 inches (11.4 cm) high

Weight 12 pounds (5.5 kg)

Injection molded enclosure

## Nonvolatile Configuration

Programmed from Keyboard

Remotely Configured

## COMMUNICATIONS

110/150/300/600/1200 Baud (Internal modems to 300 baud)

Character Pacing provided

Break/Keyboard lock

CTS/SRTS (Invertible)

DC3/DC1 (ASCII)

RS232 (CCITT V24)

Internal Modem (MSR-741 ONLY)

Selectable Disconnect

None

EOT (ASCII)

FDX/HDX

Print Control

DC4/DC2 (ASCII)

## MODEM FEATURES (MSR-741 ONLY)

## F1 Modem

Compatibility

Bell 103

Bell 113

CCITT V.21

Operating Modes

Originate

Auto Answer

Built in dialer

Keyboard dial

Automatic Single key dialing

Speaker for call progress tones

APPENDIX B. TECHNICAL SPECIFICATIONS (Cont'd)

Phone Line: Unconditioned voice grade  
Receive Sensitivity: ON  $>/-43\text{dBm}$ , OFF  $</-48\text{dBm}$  (typical)  
Transmit Power Level:  $-10\text{dBm}$   
RJ11C Permissive Data Jack  
USOC Data Jacks that include  
Tip and Ring, eg; RJ41S, RJ45S  
Disconnect Characteristics  
Call Abort (22 sec)  
Long Space (1.5 sec)  
Loss of Carrier (17 sec)  
Configuration Options  
Disconnect - EOT

Single Current Modem (C1 Modem)  
Idle line current up to  $\pm 10$  ma.  
Signal current up to  $\pm 60$  ma.  
Ripple current 30% of nominal signalling current max.  
Open loop voltage 160 VDC max (line-to-line)  
Power dissipation 1.6 W max. (idle line at 10 ma.)  
Receive distortion 6% max at 300 bps  
Transmit distortion 5% max at 300 bps

INTERFACE CONFIGURATION

2 Wire  
Half Duplex (Telex protocol)  
Full Duplex (point-to-point)

4 Wire  
Half Duplex (point-to-point)  
Full Duplex (point-to-point)

SURGE PROTECTION

1500 volts (10 microsecond by 160 microsecond decay  
to 50% peak value)

ANSWERBACK

20 Characters, installer programmable

KEYBOARD

62 Key Keyboard  
Generates Baudot (and ASCII) characters  
International use character substitutions for various  
countries (installer programmable)  
CAPS LOCK Mode

## APPENDIX B. TECHNICAL SPECIFICATIONS (Cont'd)

Parity Selectable (ASCII)  
Even, Odd, Marking, Spacing

## PRINTER

Character-at-a-Time  
256 Character Print Buffer  
COLLINEAR 7\* Print Head  
Unique, compact design  
Straight-line print wires  
Direct needle action  
30 CPS Throughput Assured  
No fill characters necessary  
Print Speed  
55 CPS @ 10 cpi  
80 CPS @ 15 cpi  
Logic seeking of correct left  
margin of each line  
Step Motor Carrier Drive  
Direct Motor Feedback\*  
Column Position Control  
Prints Baudot or Upper/Lower case ASCII  
14 Character Densities  
From 5.0 characters/inch  
To 20.0 characters/inch  
1,2, or 3-copy Printing  
Graphics Mode (ASCII Accessible Only)  
120 dots/inch horizontal  
60 dots/inch vertical  
Back Space  
Operator adjustable left & right margins  
Step Motor Line Feed Drive  
Forward & Reverse Half Line Feed  
2,3,4,6,8, or 12 Lines/inch  
Friction Feed Paper  
Ribbon Cartridge  
1.5 million characters  
10M characters with re-inker standard  
Last Printed Character Visible  
User-Programmable Delay  
Message Separation Selectable

## MEMORY

Capacity  
16,384 chars (-16B models)  
4,096 chars (-2 models)  
13 Programmable Keys  
Keyboard Edit Keys  
Save

APPENDIX B. TECHNICAL SPECIFICATIONS (Cont'd)

Erase char/Erase all  
To begin Mem/To end Mem  
Back one char  
Fwd one char/Run fwd  
Expanded Edit Commands (-16B models)  
Help  
Locate  
Change  
Again  
Next  
Delete  
Error  
Transmission from Memory  
Stop on transmission of the following ASCII characters:  
DC3  
ETB  
ETX  
ENQ  
CR (optional)  
Restart on reception of the following ASCII characters:  
DC1  
ACK  
LF (optional)

**A Little, Smarter Way**

**To Communicate...**