HOW TO OPERATE

the 43 teleprinter

BUFFERED KSR
(Full Duplex Batch and Send / Receive)

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

INTRODUCTION

Your Buffered 43 Teleprinter is operationally compatible with existing Basic 43 Teleprinters, 33 and 35-type terminals and time-sharing computers. Buffering permits storing messages prepared off-line for later transmission or simultaneous message preparation while receiving.

PRINTER
KEYBOARD

Buffering also permits batch-type transmission and line speeds higher than the continuous printing rate. Transmission speeds are from 100 to 1800 words per minute over the telephone or private line in full duplex operation. Different speeds can be selected by the attendant to match the remote station.
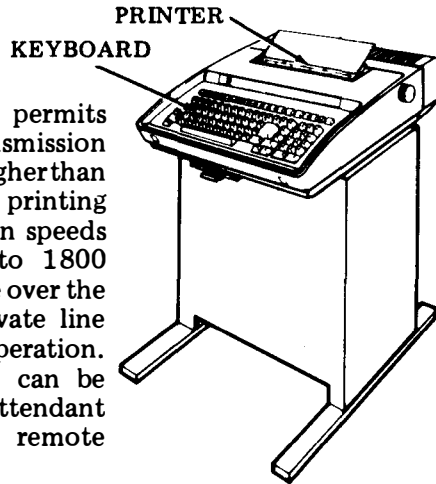
The 43 Teleprinter may be connected to an external communications device (modem) which may be associated with a telephone for connections and for transmission of data. A permanent connection via private line may also be used in these arrangements.

The telephone is used to establish a data call or to answer a call manually or automatically. In some arrangements the Buffered 43 may be connected directly to a computer or remote terminal.

There are two versions of the Buffered 43 Teleprinter, each of which can have several variations, ie, paper type, memory size, options, etc. One version (tabletop) has its controller located at the rear of the terminal and may or may not have a pedestal. The other version (pedestal based) has its controller located in a pedestal.

Instructions in this manual apply to both versions which operate the same except for differences in power turn on, clearing of volatile data on options load and the set of default values. The cable connection is also different. Where there are differences, operation for both versions, tabletop or pedestal based, are described.

1

Included in the Buffered 43 is a 132-column pin-feed or 80-column friction feed matrix printer, memory (nonvolatile and volatile) and keyboard with numeric pad.

Keyboarded data can be sent directly on-line or stored locally in the send buffer of the volatile memory. The stored data (or message) can then be recalled for editing or sent from storage manually or automatically.

If the Keyboard-Printer (KP) is not available (local functions) when the terminal is on-line, received messages are stored in the receive buffer of the volatile memory until the printer is available for printing.
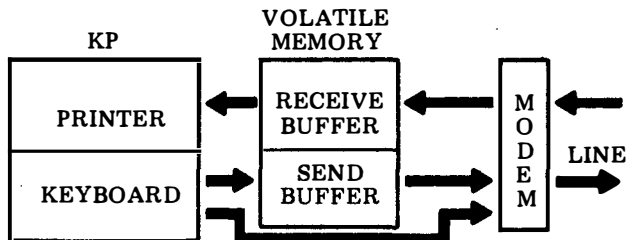
The total amount of data that can be stored in the send and receive buffers is determined by the memory size provided. Memory sizes of 4K or 16K are available in both tabletop and pedestal based versions. In addition, a 20K memory is available in the pedestal based version.

The optional characteristics of the terminal are stored in the nonvolatile memory. These options may be selected and "programmed" by the user or operator. A pull-out "Directory" card, located under the front bottom edge of the keyboard, serves as a record of user programmable options and options not programmable by user on one side. The other side serves as a directory for frequently used telephone numbers and extensions.

A table describing the user programmable options, prompt mnemonics eg. (StrSn) that are used throughout this manual and procedures on how to change these options are given in the OPTIONS section of this manual.

Operator training, in addition to the instructions in this manual, is recommended for operation of the 43 Buffered KSR. (See Teletype Corporation Product Service and Training).

Refer to the TELEPRINTER SUPPLIES AND MAINTENANCE section of this manual for paper and ribbon replacement information.

DIRECTORY CARD
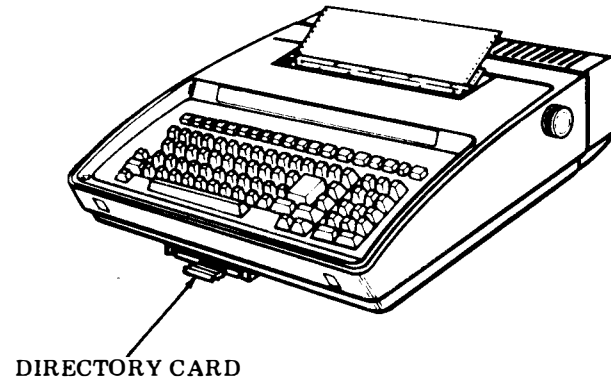
IDENTIFICATION

The pedestal based and tabletop versions of the Buffered 43 Teleprinter may be identified by the cable connector located at the left rear of the teleprinter. The pedestal based version, which has the controller located in the pedestal, requires a 9 pin cable connector. The tabletop version has the controller located in the rear of the terminal and requires a 25 pin cable connector.

43 TELEPRINTER

The 25 pin connector for tabletop version.

The 9 pin connector for pedestal based version.

4
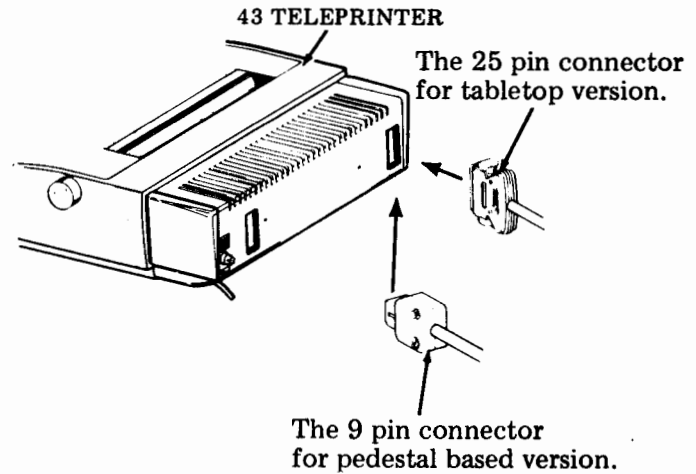
POWER TURN ON (Pedstal Based)

The pedestal based Buffered 43 is not operable unless both power cords are plugged into a source of ac power and the KP is turned on.

Memory Power

Power to the memory is always on when the ac power cord from the pedestal is plugged into a source of ac power.

- Volatile Memory (Data) — Data stored in the memory will be retained indefinitely unless the pedestal power cord is unplugged, power to the pedestal ac outlet is turned off, or any options are changed.

- Nonvolatile Memory (User Programmable Options)— The options will be in the orginal states (values) indicated by an (*) on the "Directory" card, the first time power is applied to the memory. If power is turned off, the state of the options (as user programmed) will be retained for at least 17 days. After 17 days, with power off, the options may revert to their original (default) states or values.

KP Power

With both power cords plugged in, depress the upper half of the KP ON-OFF rocker switch to turn on KP.

KEYBOARD
PRINTER (KP)

SWITCH ON
OFF
FUSE
(Right Rear of KP)

AC POWER CORDS TO 115 V AC OUTLET

Controller in Pedestal
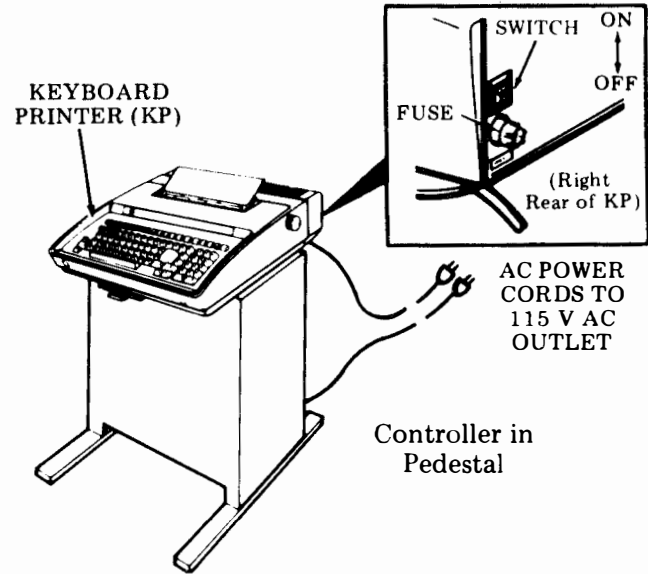
- The TERM READY and KP lamps normally light when all power to your terminal is first turned on. Terminal may come up in the Options Prep mode (LOCAL key flashing) if power to the terminal has been off for more than 17 days. (See options.)

- If only the KP power is turned off, the same lamps that were on will light again when KP power is turned back on.

5

POWER TURN ON (Tabletop)

The tabletop Buffered 43 power switches are located at the right rear of the teleprinter.

Terminal Power

With the power cord plugged in, depress the upper half of the ON-OFF rocker power switch to turn on power to the terminal.

Controller Located
in Rear

● The TERM READY and KP lamps normally light when all power to your terminal is first turn on. Terminal may come up in the Options Prep mode (LOCAL key flashing) if power to the terminal has been off for more than 17 days. (See options.)

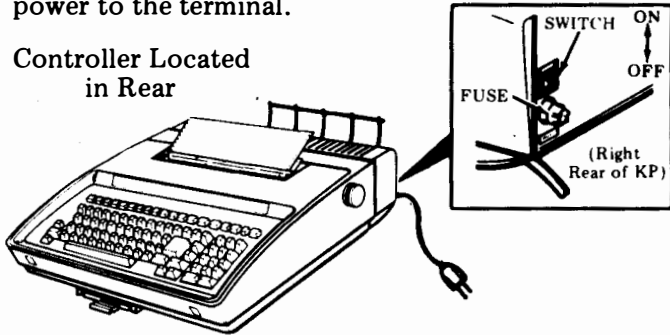## Memory Power

Power to the memory is on when power to the terminal is on.

● Volatile Memory (Data) — Data stored in the memory will be retained indefinitely unless the power cord is unplugged, the switch is turned off or the size of the receive buffer is changed (RBsze).

● Nonvolatile Memory (User Programmable Options)— The options will be in the original states, as indicated by an (*) on the "Directory" card, the first time power is applied to the memory. If power is turned off, the state of the options (as user programmed) will be retained for at least 17 days. After 17 days, with power off, the options may revert to their original (default) states or values.

KEYTOP ARRANGEMENT

The keytop arrangement is divided into three groups according to their purpose or function as shown here. Each group of keys is discussed in the following sections. Reference to this keytop arrangement should be made as required.

The information shown below in the area between the top row of keys and the keyboard is etched in the cover for your convenience and may be used when setting tabs, or margins, or to prepare and load user programmable options. (Depressing the control and the 1 key simultaneously sets horizontal tab.)

CONTROLS AND INDICATORS

KEYBOARD

KEYBOARD EDIT
CLUSTER
AND
NUMERIC PAD

| TERM LOCAL | TERM ON LINE | TERM READY | INTRPT | FULL DUPLEX | ALARM | KP ON-S/R OFF-LCL | REC MSG WTG | | | | BUFFER ENTER | INSERT | STRING ENTER | SND RDY / SEND | NUM PAD | MSG CLEAR |

Etched info between top row and keyboard:

HORZ TAB: SET, CLEAR | RESTORE PRESET TABS | HERE IS | VERT TAB: SET, CLEAR | MARGINS: SET LEFT RIGHT, CLEAR, RELEASE RIGHT | OPTIONS: PREP, LOAD

Keyboard:

ESC	! 1	@ 2	# 3	$ 4	% 5	⌃ 6	& 7	* 8	(9	) 0	— _	] +	BACK SPACE	~ `
TAB	DC1 Q	ETB W	ENQ E	DC2 R	DC4 T	EM Y	NAK U	HT I	SI O	DLE P	[=		RETURN		G S
CAPS LOCK	SOH A	DC3 S	EOT D	ACK F	BEL G	BS H	RS J	VT K	FF L	: ;	,, ,			} {	U S
SHIFT	SUB Z	CAN X	ETX C	SYN V	STX B	SO N	FS M	< ,	> .	? /	SHIFT	LINE FEED	
CTRL											REPT	DEL NUL

Keyboard Edit Cluster and Numeric Pad:

7 PRINT EDBUF	8 ↑	9 PRT/W CTRLS
4 ←	5 HOME	6 →
1 RETRV	2 ↓	3 SRCH
, CHAR DLETE	0	. REPRT REC
RETURN RECALL		— STORE

KEYBOARD

KEYBOARD EDIT
CLUSTER
AND
NUMERIC PAD

CONTROLS AND INDICATORS

This section describes the purpose and operation of most controls and indicators on the 43 Buffered KSR. Nearly all the operating controls are across the top of the keyboard — those on the keyboard are described in the keyboard section.

TERM LOCAL Places terminal in Local mode — Causes disconnect if terminal is on-line. TERM READY lamp turns off. When TERM LOCAL lamp is on and KP lamp is off, local keyboard-printer operation is possible. Lamp flashes when in the Options Preparation mode.

TERM ON LINE Indicator Only — Lamp lights when Data mode is established on-line. If in Term Local mode, depress TERM READY and with Data mode established, lamp will light. Lamp will flash and then go off if on-line connection is lost.

TERM READY Lamp indicates terminal is ready to send or receive but on-line connection is not established. Depress key when in Term Local mode to go on-line.

INTRPT This key is active on-line only. Operation of this feature is system dependent. Depression of this key may cause sending to stop at the remote station. If lamp lights on a received interrupt, keyboard operation will be inhibited on-line until INTRPT key is depressed (lamp extinguishes).

FULL DUPLEX When lamp is off, terminal is operating in Half-Duplex operation (printer copies any send data). Lamp lights indicating Full Duplex operation (only data received on-line will be printed) by depressing key or, if terminal is so optioned, (DUPLX=f) will light at power turn on or following options load.

ALARM Lamp lights due to an alarm condition (ie, low paper, paper-out, cover open. Depress key to reset after clearing alarm condition on some sets.

KP ON-S/R OFF-LCL When lamp is on, terminal is in the S/R (conversational) mode. The keyboard is actively on-line and the printer prints received data. Depression of key turns off lamp, places KP in Local mode even though the terminal may be on-line. If depressed when lamp is not on and REC MSG WTG lamp is on, will cause received message to print.

TERM LOCAL	TERM ON LINE	TERM READY	INTRPT	FULL DUPLEX	ALARM	KP ON-S/R OFF LCL	REC MSG WTG				BUFFER ENTER	INSERT	STRING ENTER	SND RDY SEND	NUM PAD		MSG CLEAR

CONTROLS AND INDICATORS (Cont)

REC MSG WTG — Lamp turns on when receive buffer contains messages waiting to be printed. Depressing key causes printing of messages (KP goes to S/R mode). Depressing KP key when lamp is on will also cause printing. When all messages have been printed, lamp will turn off.

BUFFER ENTER — Depression causes KP to go Local and enter the Edit mode, even though the terminal may be on-line. In the Edit mode, messages can be entered in the edit buffer, corrected as necessary and then stored (see EDIT MODE section). Lamp flashes as a warning when edit/send buffer is nearly full. (EBWrn)

INSERT — Active only in the edit mode otherwise bell rings. Depressing key turns lamp on; when lamp is on, keyboarded characters are inserted in the edit buffer at the current buffer location. Any data following the inserted data will be shifted toward the end of the edit buffer as characters are inserted until the edit buffer is full. Depress key to end insertion mode. See Message Edit.

STRING ENTER — Active only in the Edit mode. Depressing key clears any previously entered string and causes terminal to accept a new string of up to 16 characters (lamp turns on). If more than 16 characters are entered, only the last 16 characters are accepted. The string is used for comparison in Buffer Search or Retrieve modes. Depress key to turn off lamp and exit mode. Mode is also exited when the Search or Retrieve is executed.

SND RDY SEND — Press to send from Send Buffer; press to stop sending. Lamp on if message is waiting to be sent. Lamp flashing if sending. Send until end of Send Buffer, optioned message ending character sent, received X-off or key depressed.

NUM PAD — When lamp is turned on by depressing key, the 14-key cluster at the right side of the keyboard functions primarily as a Numeric Pad. The RETURN key performs the same function as the LgKey option. With the lamp off, the lower designations (edit functions) are active.

Note: With the NUM PAD lamp on, edit functions can be performed by use with the CTRL or SHIFT keys.

In Num Pad mode, RETURN functions as LgKey.

NUM PAD

Remainder of the keyboard is unaffected by NUM PAD mode.

MSG CLEAR — Active only in the Edit or Options Prep mode. Depression causes the contents of the edit buffer to be cleared from the current location in the buffer through the next message-ending character or the end of the edit buffer if no message-ending character is encountered. Also used to clear an option value, if value can be cleared (see User Programmable Option Table).

9

KEYBOARD

The keyboard is active whenever TERM LOCAL, TERM ON LINE OR TERM READY lamps are on.

1. ESC — Depress key momentarily, then the desired key to perform escape sequence functions on-line. See SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES.

2. BACK SPACE — Causes the printing position to move one printing space backward on the same printing line. Writes a backspace character into the edit buffer. Send backspace on-line.

3. TAB — Sends the ASCII HT or writes it in memory depending on terminal mode. The printer carriage will move to the next tab stop. If no tab stops are set, carriage will move to the right boundary of the printer and perform a carriage return-line feed function. See Horizontal Tabulation.

4. DC1 — DC1 and other special control character keys (keys with abbreviations at top or right side of key) when dperessed together with the CTRL key (codes are sent on-line), print or perform special functions.

5. RETURN — Returns printer carriage to the left margin of the current line unless otherwise optioned (LgKey). Character is sent on-line. When the CTRL and RETURN keys are operated together, the carriage is returned and the paper advances one line regardless of how key is optioned. No character is sent on-line.

6. CAPS LOCK — Keyboard produces capital alpha characters when key is locked down. Produces lower case alpha characters when key is released up (affects alpha characters only).


10
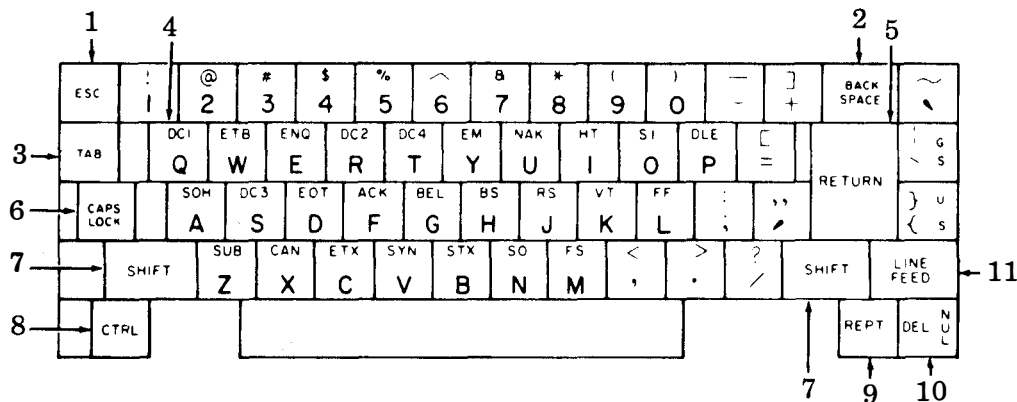
KEYBOARD (Cont)

7. SHIFT — Performs normal shift function (does not release CAPS LOCK mode).

8. CTRL — Depress and hold while selected key is depressed to perform special control function on-line. This key is also used during local operations for setting margins, tabs (see Keyboard-Printer (KP) Operation), options preparation and load and answer-back.

9. REPT — This key provides the attendant the ability to cause any key on the keyboard, keyboard edit cluster and numeric pad to repeat by holding the REPT key and the desired key depressed at the same time.

10. DEL NUL — Depression of this key alone generates the ASCII DELETE code sometimes used as a time-fill character. Also obliterates erroneous or unwanted characters. Depression of this key together with the CTRL key generates the ASCII NULL character that may also serve as a time or media-fill character.

11. LINE FEED — Advances the paper one line for each depression. Also programmable for any one ASCII character (SmKey).

KEYBOARD EDIT CLUSTER

These keys along with INSERT, STRING-ENTER and MSG CLEAR function as edit controls when the [BUFFER ENTER] lamp is on and the [NUM PAD] lamp is off. If the [NUM PAD] lamp is on, the CTRL or SHIFT key must be depressed and held down while the desired edit control key is selected. The edit key functions are as follows:
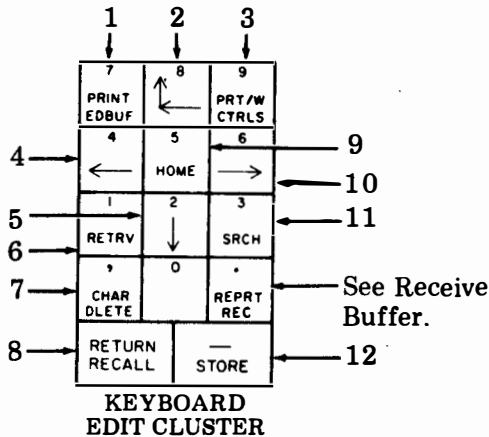
1. PRINT EDBUF — Causes the contents of the edit buffer to be printed or functions to be performed one message at a time from the current buffer location. Depress key again to stop printing message or to print next message.

2. ↰— —The first depression of this key causes the current location to return to the beginning of the current line in the buffer and the printer to carriage return. When operated at the beginning of the line, the current location moves to the beginning of the previous line in the buffer and printer will line feed.

KEYBOARD
EDIT CLUSTER

3. PRT/W CTRLS — Causes the message from the current buffer location to be printed with symbols for control characters (see SPECIAL CONTROL CHARACTERS). Depress key a second time to stop printing or to print next message.

4. ← — The printer carriage and the current buffer location move one character position to the left on the same line. The printer carriage will not move on control characters but location in buffer will be moved back. Movement is limited by all format effectors.

5. ↓ — The current location is moved to the character following the next line feed (ie, beginning of next line). The printer will perform a carriage return-line feed.

6. RETRV — This key executes a search for a group of characters (string) in the data already sent and acknowledged section of the send buffer. See Retrieve a Message to Edit.

7. CHAR DLETE — Causes the character at the current buffer location to be erased. The remaining contents of the edit buffer will move forward one position to fill the void created. The printer will overprint the existing character with a block (■) and move one character to the right.

8. RECALL — Transfers all unsent or sent but unacknowledged messages from the data stored to the edit buffer.

Note: Returning messages to the "data to be sent" section is accomplished one message at a time by use of the STORE key.

9. HOME — Returns the current edit buffer location to the beginning of the edit buffer (edit home). The printer performs a carriage return-line feed.

10. → — Causes the printer carriage to move within a message one character to the right, printing a character from the edit buffer or performing the function at the current buffer location.

11. SRCH — Executes a search in the edit buffer for up to a 16-character string from the current buffer location to the end of the edit buffer for the string. See Message Search in the Edit Buffer.

12. STORE — Transfers the contents of the edit buffer to the data stored but not sent buffer one message at a time. Data stored is from home location to the first message-ending character. If no message-ending characters have been entered, the entire contents of the edit buffer is stored.
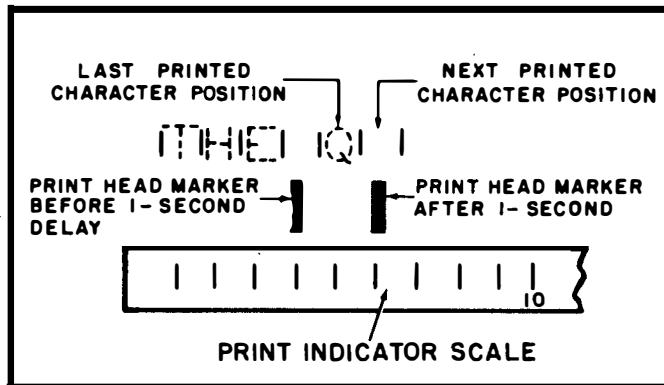
Note: If a key is depressed and the function cannot be performed, an alarm bell will ring.

KEYBOARD-PRINTER (KP) OPERATION

To operate your KP locally off-line or on-line, the ⬚ lamp must be off. At this time messages can be typed, margins changed, tabs set or paper loaded even though your terminal may be on-line. You can now type messages on your keyboard as you would on an ordinary typewriter.

Print Head Marker

The next printing location of the print head and the position for setting tabs and margins is indicated by the silver print head marker after a 1-second delay. The print head moves back when printing resumes. The print head marker is also used to indicate the current location in the edit buffer.

LAST PRINTED CHARACTER POSITION   NEXT PRINTED CHARACTER POSITION

PRINT HEAD MARKER BEFORE I- SECOND DELAY

PRINT HEAD MARKER AFTER I- SECOND

PRINT INDICATOR SCALE

Left- and Right-Hand Margins

When power is turned on, the left- and right-hand margins are reset to the boundary values set in the user option memory (LfBdy and RtBdy). Different values can be temporarily set by moving print head (use spacebar) to desired position and depressing the CTRL key together with the indicated key. See SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES.

- CTRL 7 — Sets left margin.
- CTRL 8 — Sets right margin.
- CTRL 9 — Clears left and right margins.
- CTRL 0 — Releases right margin.

MARGINS			
SET LEFT	SET RIGHT	CLEAR	RELEASE RIGHT
8	*	(	.)
7	8	9	0

Note: The bell sounds when a character is printed 8 columns before and at the right margin. Printing is suppressed at the right margin.

Horizontal Tabulation*

To utilize horizontal tabulation, tab stops must be set. Tab stops can be set at any desired location between the left and right margins. It may be necessary to first clear existing tabs if they are unwanted, then position the print head (use spacebar) to desired position and enter the horizontal tab. This can be accomplished by depressing the CTRL key together with the indicated key. See SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES.

- CTRL 1 — Sets a tab stop.
- CTRL 2 — Clears all tab stops.
- CTRL 3 — Restores preset tab
        stops (see Note).

HORZ TAB		RESTORE PRESET TABS
SET	CLEAR	
! 1	@ 2	# 3

Note: Preset tab stops may be stored in the user option memory; depressing CTRL 3 restores tab stops to the preset values.

Vertical Tabulation and Form Feed*

Vertical tabs can be set to any line position from the top of the form to the currently set form length.

VERT TAB	
SET	CLEAR
% 5	⌃ 6

*Response to horizontal and vertical tabs may be disabled in the user option memory (see OPTIONS HTon? and VTon?). Form feed commands may be disabled by setting the user option FmLgt to 000. All horizontal and vertical tab stops set on terminal when options prep mode is entered will be stored when options are loaded. Previously stored tabs may be changed, if not restored before entering options prep mode for any reason.

To Set Vertical Tabs:

- Depress CTRL 6 to clear all existing vertical tabs (if desired).

- Depress CTRL L (form feed).

- Manually (use platen knob) position top of form to print position.

- Use [ ] to advance form to the first vertical tab position desired.

- Depress CTRL 5 to set tab.

- Continue using [ ] to advance form and CTRL 5 to set tabs until all vertical tabs are set.
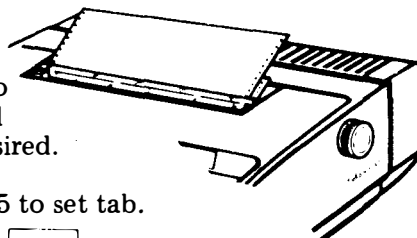
Note 1: A vertical tab will be executed and sent on-line by depressing CTRL K (vertical tab).

Note 2: If there is no vertical tab between the current line position and the end of the form, the printer will advance the paper to the beginning of the next form and perform a carriage return.

15

Bell

The bell sounds when characters are entered seven characters before and at the right margin, ie, margin at 80, bell at 73 and 80. Also sounds at left margin when attempting to backspace and when an interrupt is received. Bell sounds when functions cannot be performed, ie, depressing Edit Control keys

when not in Buffer Enter mode, depressing [CHAR DLETE] with no characters to delete, etc.

SPECIAL CONTROL CHARACTERS

Control characters are generated from the buffered 43 keyboard to the edit buffer by use of the CTRL key, and at the same time, a control character key. Although some of these characters are functional in the buffered 43, others are used only in other systems.

Graphics such as return (←), line feed (≡), delete (≡) and the characters shown as printed characters in the chart, are the characters printed when in buffer enter mode and PRT/W CTRLS key is depressed or in options prep mode.

Note: The symbol ■ is always printed when the substitute character is received on-line or when entered from the keyboard. The ASCII control character S_B is printed when entered from the keyboard in the user programmable options and when the edit buffer is printed with controls.

16

Keytop	Definition	Printed Character
DC1	Device Control 1	
ETB	End of Transmission Block	
ENQ	Enquiry	
DC2	Device Control 2	
DC4	Device Control 4	
EM	End of Media	
NAK	Negative Acknowledge	
HT	Horizontal Tab	
SI	Shift-In	
DLE	Data Link Escape	
GS	Group Separator	
SOH	Start of Heading	
DC3	Device Control 3	
EOT	End of Transmission	
ACK	Acknowledge	
BEL	Bell	
BS	Backspace	
RS	Record Separator	
VT	Vertical Tab	
FF	Form Feed	
US	Unit Separator	
SUB	Substitute Character	♀ or ■ *
CAN	Cancel	
ETX	End of Text	
SYN	Synchronous Idle	
STX	Start of Text	
SO	Shift-Out	
FS	File Separator	
NUL	Null	

*See Note.

TELEPRINTER SUPPLIES AND MAINTENANCE

Ribbon

Only cartridges with ribbon designated for use with 43 Teleprinters should be used. The Teletype part number is 430035.

The cartridge with ribbon can be ordered from Teletype Corporation, 5555 Touhy Avenue, Skokie, IL 60077.

The ribbon should be replaced whenever it becomes frayed or print density becomes light. After the first few ribbons, replacement ribbons should produce 5 million or more legible characters of printing.

Sprocket Feed Paper

Paper for the 43 Sprocket Feed Teleprinter must be 12 inch sprocket feed, with folds or horizontal perforations located midway between sprocket holes and standard sprocket hole size and spacing. This paper is single-ply with 8-1/2 inch folds to provide 11 inch x 8-1/2 inch copy when the 1/2 inch wide sprocket hole strip is removed at the edge serrations. (Characters are printed to within 7/8 inch of the left and right paper edge before the strips are removed.)

Similar replacement paper may be obtained from the supplier listed on the original paper box or from other suppliers listed below or in the telephone book yellow pages.

Wallace Business Forms Inc.	Duplex Products Co.
444 W. Grand Ave.	228 W. Page
Chicago, IL 60610	Sycamore, IL 60178
Cat. No. E-6879	Cat. No. 1-1280-15P

Other types of sprocket feed paper with different form lengths, lighter weight, no edge serrations or additional copies, etc, may also be used. Multicopy forms consisting of the original and 2 copies of 12 pound basic paper (using 8 pound basic carbon paper) produce clear copy. Acceptable copy may also be obtained on variations of multicopy forms using different weight paper or carbonless paper, however these should be tried before ordering large quantities. Crimped multiple part forms are not recommended and stapled forms are not allowed. Consult your paper supplier for specific needs to assure complete satisfaction.

Friction Feed Paper

Paper for the 43 Friction Feed Teleprinter should be standard 8-1/2 inches wide, single-ply, furnished in 5 inch maximum diameter rolls with a 1 inch diameter spindle hole.

Installing Paper (Sprocket Feed)

• Install paper as shown after centering the print head and removing the unused paper. It is not necessary to disconnect an on-line call, open the cover or turn off power. However, to avoid loss of data, paper should not be replaced without requesting the remote terminal to stop sending.

Note: Paper may be fed directly from the supply box or if the paper holder is used, a limited stack of forms may be placed in the holder.

1 Pull the paper-out sensing lever towards you until it latches. Lift rear edge of paper separator and tilt forward.
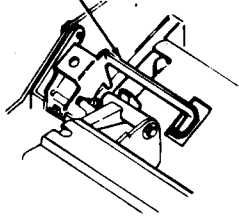
2 Fold back first sheet, if desired, and route paper behind the paper separator. Line up sprocket holes on leading edge of both sides of paper with sprocket pins. Insert under rear side of platen. Release paper separator.

3 Advance paper to paper guide using platen knob.

PAPER SEPARATOR

4 Lift paper guide (plastic bar) thereby unlatching the paper-out sensing lever.

PLATEN

REAR TEARING EDGE

PAPER GUIDE (Plastic Bar)

5 Advance paper under the paper guide then close guide. Paper may be fed to desired position using CTRL RETURN keys. (With power off the platen will be free rolling and CTRL RETURN is inoperative.)

(Rear View of KP)

6 Depress [ALARM] key to extinguish ALARM indicator if not off.

18
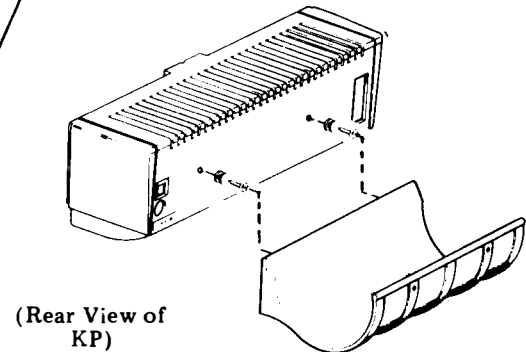
Installing Paper (Friction Feed)

● Install paper as shown after removing the unused paper from the printer. It is not necessary to turn off power or open the cover when replacing the paper but to avoid loss of data, paper should be replaced after the remote terminal stops sending.

(4) Adapters (if present) on new paper rolls, should be removed. The adapter can be used to cut and remove the outer layer of paper.

ADAPTER

(5) Insert paper spindle into paper roll.

PAPER SPINDLE

(3) Remove and retain paper spindle from tube of the used paper roll.

(2) Push back on the paper release to enable paper feeding.

(1) To remove unused paper or to straighten paper, pull forward on the paper release.

PAPER RELEASE

PAPER ROLLER

PAPER ROLL SUPPORT

RESET

(6) Place paper roll with spindle into the cradle of the paper roll support. Paper should unwind from the front of the paper roll and pass over the paper roller as shown.

(9) Depress to reset if **ALARM** lamp on the operator console does not turn off.

(7) Lift paper separator and insert paper between paper guides and down behind the platen. Release paper separator.

PAPER TRAY

PAPER SEPARATOR

PLATEN KNOB

PRESSURE ROLLER

PAPER GUIDE
(Plastic Bar)

(8) Lift paper guide and continue pushing paper down until paper engages the pressure roller. Advance paper using platen knob or line feed from keyboard. Feed paper under the paper guide then lower the paper guide.

19

To Install Ribbon

Refer to Ribbon Installation under printer cover.

(1) Center print head and open cover. Alarm lamp lights.

(7) Position print head against ribbon, with thumb on top of the print head push the print head toward the platen, then move locking handle fully to the rear.

(5) Pull on cartridge to the right and pass ribbon between print head and rollers (see Routing Diagram below).

430035 CARTRIDGE WITH RIBBON

(4) Place new ribbon around the outside of rollers.

(3) Pull print head locking lever back (towards keyboard) as far as it will go.

(2) Remove and discard cartridge with used ribbon by grasping and lifting the cartridge. This applies only when changing a ribbon.

(8) Using thumb, push locking lever toward platen until it snaps into place.

(6) Place ribbon cartridge on the right-hand bracket and allow magnet to pull cartridge down into place. Make sure it is down.

(9) Close cover.

(10) Depress ALARM key to extinguish (on some sets).

COVER RELEASE (2 Places)

RIBBON ROUTING

ROLLERS

ROLLERS

RIBBON CARTRIDGE

Note: Make sure ribbon is fully on all four rollers before closing cover.

Routing Diagram

20

MEMORY AND DATA BUFFERS

There are two types of memory in the terminal — nonvolatile and volatile. See the directory card for a record of the total memory size provided.

The nonvolatile memory stores the user programmable options that provide many of the operational characteristics of your terminal. About 600 characters of memory space are used for this purpose.

The volatile memory is divided into Send and Receive data buffers. The size of the receive buffer is a user programmable option (RBsze). The remaining memory space is the send buffer size ie, total memory, minus 600, minus (RBsze) = send buffer size.

Note: In order to copy the entire contents of the send buffer locally (half-duplex operation), the receive buffer size should typically be at least equal to the send buffer size.

Send Buffer

The send buffer is divided into three sections: Edit, Data Stored But Not Sent and Data Already Sent.

Data is not treated as sent until the message is acknowledged either by receiving a StrSn character or depressing the [SND RDY / SEND] Key.
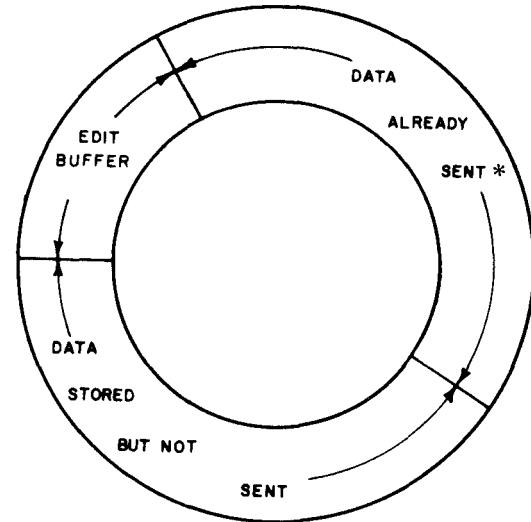
Send Buffer Organization

The Edit Buffer accepts data from the keyboard. The edited data, when stored in the Data Stored But Not Sent section, is the source of the send data. After having been sent and acknowledged, messages remain in the Data Already Sent section until the space is needed for composing new messages or until intentionally cleared by entering the Options Prep Mode.

Receive Buffer

The receive buffer accepts all received data from the line and holds it until the printer is available. After printing, the data remains in the buffer until the space is needed for newly received data. The old data may be recalled for reprinting as long as it is in the receive buffer.

The receive buffer is also organized in a circular manner divided into two sections, Data Not Yet Printed and Data Already Printed.

The capacity of the receive buffer depends on the value entered in the user option memory (RBSze).

To recall a message from the receive buffer for reprinting, the terminal must be off-line, and ⬚ TERM ON LINE ⬚ not lit.

To reprint a received message:

- If lit, depress ⬚ KP ON-S/R OFF-LCL ⬚ to turn it off.
- Depress ⬚ TERM LOCAL ⬚ if not on.
- Depress ⬚ REPRT REC ⬚ key. ⬚ REC MSG WTG ⬚ may flash while recalling the message then stay lit.
- Depress ⬚ REPRT REC ⬚ for each message in the receive buffer you wish to reprint, waiting each time for the ⬚ REC MSG WTG ⬚ key to light steadily.
- Depress ⬚ REC MSG WTG ⬚ and all messages will print.

Receive Buffer Organization

22

EDIT MODE

Note: You will notice in certain instances that some of the edit controls (Store, Search, Retrieve, Character Delete, Reprint Receive, Insert) do not respond instantaneously. The response time is typically longer when there are many characters in the Edit Buffer. You should wait until the terminal finishes its current operation before depressing any other keys or controls.

Your terminal is placed in the Edit mode by depressing the [BUFFER ENTER] key. If in S/R mode, the KP will go Local. This will be indicated by the [KP ON-S/R OFF-LCL] lamp turning off.

While in the Edit mode, simultaneous batch-sending or receiving or both can take place without interrupting the message preparation.

Before proceeding, become acquainted with the Edit Control keys (INSERT, STRING ENTER, MSG CLEAR and KEYBOARD EDIT CLUSTER) and keyboard operation. Review the instructions of this part and proceed as follows:

Message Preparation and Store

☐ If forms are used, with KP off (LCL) depress CTRL-L. This will assure first printing line of form. Set tabs if necessary and depress CTRL-L once again.

- Depress [BUFFER ENTER] , Lamp lights. Printer carriage return-line feeds.

- Type message and end with designated message-end character (MsEnd).
- Depress [STORE] , [SND RCV SEND] lamp lights.

The message is now stored and is ready to be sent on-line or can be recalled for editing.

Message Edit

☐ If a message to be edited is stored and not sent or was sent but not acknowledged, proceed as follows:

- Depress [BUFFER ENTER] if not on.
- Depress [   ] .
- Depress [PRINT EDBUF] for each message you wish to edit.

Example: ("FOX" omitted from message.)

`THE QUICK BROWN JUMPED OVER THE LAZY DOG`

(UNEDITED MESSAGE)

- Position printer carriage (ie, use edit controls ↑, ←, ↓, →, etc) at character "J".
- Depress [INSERT] , lamp lights.
- Type in the word "FOX", then a space.

`THE QUICK BROWN BOXPED OVER THE LAZY DOG`

Message Edit (Cont)

- Depress [INSERT], lamp turns off.
- Depress [5 HOME] , then [7 PRINT EDBUF] . The printer carriage

return-line feeds and the edited message is printed.

```
THE QUICK BROWN FOX JUMPED OVER THE LAZY
              (EDITED MESSAGE)
```

To delete a portion of a message
(ie, one or more lines)

The Quick . . . . .Dog's Back

Delete

Overwrite last character (K) with MsEnd character.
Position printhead over first character (T) and
depress [MSG CLEAR] Key.

Retrieve a Message to Edit

To retrieve a message that was previously sent and
acknowledged for re-editing or retransmission,
proceed as follows:

- Depress [BUFFER ENTER] if not on.
- Depress [STRING ENTER], lamp turns on.

- Type a string of characters in the message being
  retrieved, the last 16 of which will be used to
  retrieve the information.

Example:

```
BROWN FOX JUMPED
```

- Depress [RETRY] . The [STRING ENTER] lamp turns off.

If the string is not found, the printer carriage return-
line feeds, "CANNOT FIND" is printed and the edit
pointer remains at its former position.

When the string is found, the following occurs:

1. Printer carriage return-line feeds.

2. The message containing the string is appended
   to the edit buffer by copying the message.

3. The line containing the string is printed.

4. The current buffer location is positioned on the
   character following the string.

The message can now be re-edited and stored for
retransmission.

Message Search in the Edit Buffer

- Depress [BUFFER ENTER] if not on.
- Depress [5 HOME].
- Depress [STRING ENTER], lamp turns on.

Type a string of characters in the message being searched, the last 16 of which will be used to search for the message.

Example:

**BROWN FOX JUMPED**

- Depress [3 SRCH].

When the string is found, the line containing the string is printed.

If after searching to the last character entered in the edit buffer the string cannot be found, "CAN-NOT FIND" is printed followed by a carriage return-line feed.

Note: The string typed is always retained until a new-string is entered. To "Walk Through" the edit buffer for an often repeated string, simply depress the [3 SRCH] key for the same string.

Print Edit Buffer

A printed copy of the edit buffer can be obtained with or without special symbols for each control character.

- Depress [BUFFER ENTER] if not on.
- Depress [5 HOME].
- Depress [7 PRINT EDBUF] for each message you want to print

without control characters.
- Depress [9 PRT/W CTRLS] for each message you wish to print

with control character symbols.
- A second depression of either the [9 PRT/W CTRLS] or [7 PRINT EDBUF] will stop printing.

ESTABLISHING COMMUNICATIONS WITH DISTANT TERMINALS

Establishing connection and transferring to the Data mode is basically under the control of the directly connected communications device (modem) and its associated telephone over the switched-network or, without a telephone over private lines. In some arrangements terminals are directly connected to the distant terminal or computer. Use of these external devices should be specified locally since many variations are possible, ie, pushbuttons on modem or on phone, exclusion keys, etc.

The procedures as shown below, that normally apply to operation of the controls of the terminal, should be followed:

☐ Before transferring a telephone call to the Data mode (call originated or answered)
  • Place terminal in a standby condition:
    1. Turn on ac power.
    2. Clear any alarm condition (paper-out, low paper, or cover open).
    3. Depress TERM READY key (if not lit). Key should light.
☐ Transfer to Data mode
  • The TERM ON LINE key lights under control of the external device or distant station:
    1. Data can be sent or received on-line only when the TERM ON LINE key is lit.
    2. On some arrangements the TERM ON LINE key may always be lit.
☐ To disconnect a telephone call in DATA mode.
  • Calls may be disconnected as follows:
    1. A disconnect code (Dscnt) is received.
    2. The TERM LOCAL key is depressed. (TERM LOCAL key will light.)
    3. The receive buffer is overflowed.
   4. Other log-off procedures.

SEND ON-LINE

Sending on-line from your buffered 43 is accomplished in either of two communication modes, S/R (Conversational) or Send (Batch).

In Full Duplex S/R, the KP is actively on-line sending from the keyboard while the printer prints received data. In Half-Duplex S/R, only alternate two-way communication (ie, either sending or receiving) should be attempted to avoid interspersing of characters.

In Send mode, data is transmitted from the send buffer either from an attendant command or upon receipt of a start sending code (StrSn) as programmed in the user option memory. In the Send mode, the keyboard is disabled on-line.

S/R Send From Keyboard

- Depress ⬛ if not on.
- Depress ⬛ if not on.
- If required, select half- or full duplex operation.

☐ To Originate a Call

- Establish on-line connection in the usual manner.

- When the distant terminal answers, request Data mode. If the distant terminal called is on automatic-answer, it will respond with a high-pitched answer tone.

- When answer tone is heard, enter the Data mode on the external communications device.

- The ⬛ lamp lights and the ⬛ lamp turns off. The terminal is now on-line and ready to communicate.

- Simply type message on the keyboard. In full duplex operation, the sender will not print the sent message but may be receiving copy simultaneously while sending.

- Terminate call in the usual manner.

Batch-Send From Buffer

- Prepare message(s) and store (see Edit Mode).
- Depress ⬚ if not on.

☐ To Originate a Call and Manually Send

- Establish on-line connection in the usual manner.

- Request Data mode with distant terminal.

  If the distant terminal called is on automatic-answer, the terminal will respond with a high-pitched answer tone.

- When answer tone is heard, enter the Data mode on the external communications device.

  The ⬚ lamp lights and ⬚ lamp turns off. The terminal is now on-line and ready to communicate.

- Depress the ⬚ (lighted) for each message to be sent.
  The ⬚ lamp will flash during each message sent

  and turn off when all stored messages are sent or at StpSn in message being sent.

- Terminate call in the usual manner.

Controlled Send

Receipt of a Start Sending code (StrSn), will cause messages stored in send buffer to be sent when terminal is provided with automatic-answer (Modem Option).

- Prepare message(s) to be sent and stored.

- Depress ⬚ if not on.

When terminal is called, the following occurs:

1. Telephone rings and is automatically answered.

2. An answer-back message may be sent (see Terminal Option Listing ABaa) when call is answered.

3. A message is sent upon receipt of start sending code (StrSn).

4. Transmission may stop upon receipt or sending of stop sending code (StpSn).

5. If send buffer is empty, terminal will send a negative response upon receipt of (StrSn) code (up to 6 characters).

28

RECEIVE ON-LINE

Receiving on-line is possible whether the KP is available or not. As a message is received, the ⬜lamp

turns on and the printer, if available, copies the received message (S/R Receive). If the KP is in use for some local operation, the received message will be stored in the terminal's receive buffer. To get a copy of the received message, the lighted ⬜ must be

depressed. Printing will continue until all messages are printed or printing is stopped by going to KP Local.

Variations during receive on-line operation are as follows:

- As the end of the receive buffer capacity is reached, a timed break or an X-OFF signal, as selected in the option user memory (StpSn), is sent.

- The terminal will not automatically answer with a low receive buffer condition as selected in the option user memory (RBLow).

- An X-ON character may be sent to inform the sender to restart sending when the buffer is not low (RBntl).

- All data designated for reprinting must be printed before newly received data can be printed.

S/R Receive to Printer

- Depress ⬜ if not on.

- Depress ⬜ .

- If required, select half- or full duplex operation.

- When telephone rings, answer call in the usual manner.

- Upon request by distant terminal, select Data mode on the external communications device. The ⬜ lamp lights and the ⬜ lamp turns off. the terminal is now on-line and ready to print received message.

- Call may terminate by receipt of message-end character or manually by distant terminal.

Receive to Buffer

- Depress [KP ON-S/R OFF-LCL] to turn off lamp if on.
- Depress [TERM READY] .

- When telephone rings, answer call in the usual manner.

- Upon request by the distant terminal, select Data mode (unless call is automatically answered) on the external communications device.

  The [TERM ON LINE] lamp lights and the [TERM READY] lamp turns off. The terminal is now on-line and message is being received in buffer (indicated by [REC MSG WTG] turning

  on). Answer-back may be sent prior to beginning of message. At this time you may do local functions (ie, editing, storing, replacing paper, etc).

- Call may terminate by receipt of Dscnt character or manually by distant terminal.

- Depress [KP ON-S/R OFF-LCL] or [REC MSG WTG] (lighted) for message copy.

Automatic-Answer

Modem used must be provided with automatic-answer feature; if it does, proceed as follows:

- Check paper supply.
- Depress [KP ON-S/R OFF-LCL] if not on.
- Depress [TERM READY]

No further action is necessary. When called, the terminal automatically answers and goes to the Data mode. The [TERM ON LINE] lamp lights and the [TERM READY] lamp turns off.

Message is printed and stored in buffer (answer-back may be sent at beginning of message).

30

SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES

Only the following ESC characters are functional in the buffered 43. They are performed when sending or receiving the character immediately following the escape character (ESC key).

Use of these or other escape sequences on-line may be system dependent.

ESC 1 (CTRL 1) — Sets horizontal tab stop at current printer column position.

ESC 2 (CTRL 2) — Clears all horizontal tab stops stored in the volatile memory.

ESC 5 (CTRL 5) — Sets vertical tab stop at current printer line position.

ESC 6 (CTRL 6) — Clears all vertical tab stops stored in the volatile memory.

ESC H — Prepares terminal to resend last message.

ESC 1 (lower case L) (CTRL 7) — Sets left margin.

ESC x (CTRL 9) — Clears left margin. CTRL 9 also clears right margin.

ESC y (CTRL 3) — Restores terminal to the preset horizontal and vertical tab values.

Note: The escape sequence will be sent on-line or entered in the edit buffer when the control character (if shown in parentheses) is operated locally. Right margin set (CTRL 8) and right margin release (CTRL 0) are local functions only and are not entered in the edit buffer.

ANSWER-BACK

The Answer-Back feature is a user programmable option. When entered (ABmsg), the message of up to 20 characters can be sent manually or automatically.

The Answer-Back may be sent automatically:

• In response to receipt of the ASCII character ENQ (Enquiry).

• Upon answering an on-line call (ABaa).

The Answer-Back can be generated manually by:

• Depressing CTRL 4. If the terminal is on-line, the answer-back is transmitted. If the terminal is in the Term Local mode and KP off, the Answer-Back will be printed locally.

OPTIONS (Nonvolatile Memory)

A record of how your terminal is optioned is shown on the option's side of the Directory Card provided. The options are listed under two categories, options not programmable by user and user programmable options. To change any of the programmable options, you must place the terminal in the Option Preparation mode. This mode can be entered only when the TERM LOCAL and KP lamps are on. No other terminal functions can be performed during this Option Preparation mode and if pedestal based, where the controller is located in the pedestal, all data in the volatile memory may be lost.

Note: All tab stops that have been set will also be stored when options are loaded. To avoid undesired change of tabs, restore preset tabs before entering Options Prep mode.

To Enter Option Preparation Mode

- Depress [TERM LOCAL] and [KP ON-S/R OFF-LCL] if not on.

- Depress CTRL - (minus). (OPTIONS PREP) [TERM LOCAL] lamp flashes.

The first prompt mnemonic in the option list is printed together with its current value. (See Option Table).

Example:

RECORD OF USER PROGRAMMABLE OPTIONS
(REFER TO -OR TO OPERATE MANUAL)

PRINTED
Mnemonic   Value

Always follows value.

USER OPTION RECORD (1200)

Speed=1200

Always preceeds value.
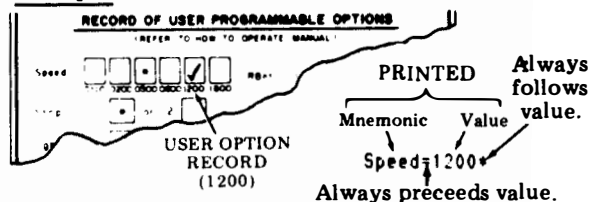
- If no change is to be made in an option, depress [↓] (next line) for the next listed option.

By depressing the next line key, the option list can be stepped through making changes only in those options desired. For fast stepping, also hold REPT key depressed.

To Change an Option

- Enter Option Preparation mode (volatile data will be lost at this time on pedestal based sets only. On tabletop sets data will be lost only if this RBsze value is changed).

- Step through option list using [↓] key until desired option and value is printed.

The printer carriage will stop in a position ready to accept a new value for the option.

- Type in new value for the desired option change.

Example:

Speed=1200*0300 — OPTION CHANGE (0300)

- If while typing the new value an error is made, the entry must be aborted and retyped. To do this, depress the [↑] key (previous line) and retype correct value. If a value on a previous option is to be changed, depress the [HOME] key and step through the list to the desired option.

32

Example: PREVIOUS LINE KEY
                DEPRESSED

Speed=1200*300Speed=3000*0300

INCORRECT VALUE ENTRY   CORRECT
  (No Leading 0)   VALUE ENTRY
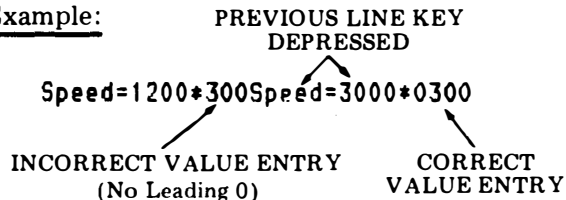
- If the current value has a greater number of characters than the new value to be entered, enter the new value, then depress the [MSG CLEAR] key. The following options can be completely cleared: LgKey, SmKey, MsEnd, StpSn, StrSn, NegRs, Dscnt or ABmsg.

Example: Current Value

ABmsg = CHICAGO*MIAMI

Enter new value, then depress [MSG CLEAR] key to clear the G and O (the excess characters) from the message.

- If it is desired to abort all the currently modified values, depress the [TERM LOCAL] key.

All options are returned to the values they were assigned prior to entering the Option Preparation mode. You must re-enter mode if any changes are to be made.

To Store New Option List or Preset Tabs

It is not necessary to step through all the options but only those up to the last one that is desired to be changed. The option list is arranged so that seldom changed characteristics (ie, answer-back message, parity, etc) are near the end of the list while such options as speed, automatic line feed and format effectors are near the beginning. Proceed as follows.

- Clear, then set desired horizontal and/or vertical tabs.

- Enter Option Preparation mode.

- Step through list using [↓] key at the same time making the appropriate value changes. If only tabs are being preset, omit this step.

Note: The value entered for the option must be restricted to the selection in table shown on Pages 34 and 35.

- Depress CRTL + (plus) to store options (OPTIONS LOAD) when satisfied that the option list is as desired or to store tabs that are currently set.

The new option list and preset tabs are loaded into the nonvolatile memory and the printer carriage return-line feeds. The TERM LOCAL lamp turns off, the TERM READY and KP lamps light.

Note: The Option Preparation mode may be aborted without losing any tabs or changing any options by simply depressing the flashing TERM LOCAL key instead of OPTIONS LOAD.

Mark the "Directory Card" option listing to reflect changes made.

33

User Programmable Option Table

Prompt Mnemonic	Printed Default Value	Option	Entry
Speed =	0300 *	Speed, Baud (Baud = wpm except 100 wpm. See StopU)	4 numerals (0110, 0200, 0300, 0600, 1200, 1800)
StopU =	1 *	Units in stop element (2 units are required for 100 wpm operation)	1 — unit stop 2 — double unit stop
LgKey =	← *	Codes for large key (RETURN)	1, 2, or 3 ASCII characters or can be cleared
SmKey =	■ *	Codes for small key (LINE FEED)	1 ASCII character or can be cleared
LfBdy =	000 *	Left boundary (Column number 1 less than leftmost character)	3 numerals (131 Max) Sprocket Feed (079 Max) Friction Feed
RtBdy =	080 *	Right boundary (Column Number of rightmost character after which auto CR-LF can occur)	3 numerals (132 Max) Sprocket Feed (080 Max) Friction Feed *Caution:* On friction feed teleprinters, never enter a value for RtBdy greater than 080.
FmLgt =	000 *	Form Length	3 numerals (132 Max)
HTon? =	n *	Horiz Tab Enable	y / n
VTon? =	n *	Vert Tab Enable	y / n
PtNL? =	n *	Printer respond with New Line to Line Feed	y / n
DbLF? =	n *	Double Line Feed	y / n
RBSze =	02000 *	Receive Buffer Size	5 numerals, (typ. 1/2 avail. buffer) (Max 600 characters less than memory size, min is 00002)
RBufW =	100 *	Receive Buffer remaining when send full warning	3 numerals (must be less than RBSze)
RBLow =	500 *	Receive Buffer remaining when don't auto answer	3 numerals (must be less than RBSze must be larger then RBufW)

Prompt Mnemonic	Printed Default Value	Option	Entry
FlWrn	= BRK *	Notification sent when Receive Buffer Full	XOF — X-OFF (StpSn) char. BRK — Break (timed interrupt) Entry Upper Case
RBntl	= n *	Send X-ON when Receive Buffer Not Low	y / n (Lower Case)
EBWrn	= 132 *	Edit Buffer remaining when full warning	3 numerals
ABaa?	= n *	Answer-Back upon answering?	y / n (Lower Case)
MsEnd	= E_X * †	Ending character for messages	4 Max Control chars. or can be cleared (must include Dscnt character)
StpSn	= D_3 * †	Stop code for Send or Receive (X-OFF)	1 Control char. or can be cleared
StrSn	= D_1 * †	Start Sending code (X-ON)	1 Control char. or can be cleared
NegRs	= N_K * †	Negative response to Start Send code	Up to 6 ASCII chars. or can be cleared
Dscnt	= E_T * †	Received character causing disconnect	1 Control char. (Must be one of MsEnd characters or cleared).
DLEr?	= n *	Data Link Escape required prior to disconnect char?	y / n (Lower Case)
PrTyp	= E *	Parity Type	O — Odd, E — Even M — Mark, S — Space (Upper Case)
RcPar	= n *	Receive Parity (Error on O or E)	y / n (Lower Case)
DS212	= n *	212 Data Set	y / n (Lower Case)
HsStp	= 1 *	212 Data Set units in stop element at 1200 (DS212=y)	1 — unit stop 2 — double unit stop
Duplx	= h *	Half- or Full Duplex	h/f (Lower Case) (State of teleprinter on power on sequence or exiting Options Prep mode only)
ABmsg	= *	Answer-Back Message	Up to 20 ASCII characters or can be cleared

†Tabletop sets, with controller mounted in rear of the teleprinter, have no default values printed in front of the
* for the mnemonics indicated.

WHEN TROUBLE OCCURS

Trouble that is encountered with the terminal should be reported as locally specified. A number to be called in case of trouble may be entered on the "Directory" card by the installer.

If it can be determined that the trouble is in the remote equipment, the attendant at the location in trouble should follow local procedures for that area.

Before reporting a trouble, the attendant or local supervisor should:

☐ First
   Check the following.

* Make sure that all terminal ac power cords are properly seated in power outlets.

* Is the power switch turned on?

* Are attendants experiencing the same trouble on other terminals?

☐ Second
   Answer each one of the following questions. Any "No" response to a question can indicate a source of trouble within the terminal.

* Are any control indicators on?
  (Power available, cords plugged in and cover closed.)

* Is red power supply lamp on?
  The red lamp can be seen through air vent slot (6th slot from left) of the bustle.
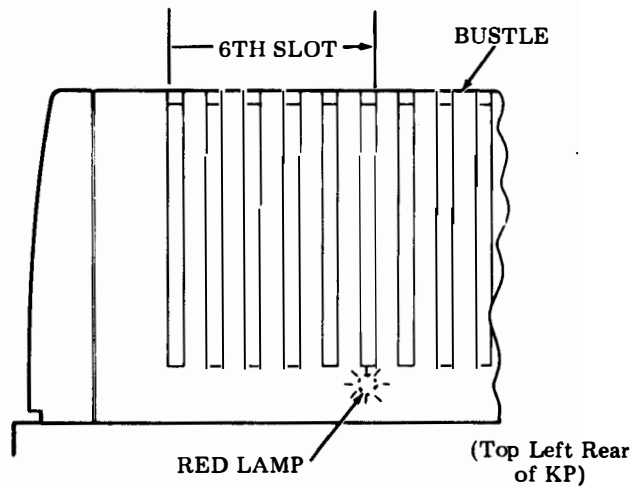
* Can any characters be locally generated from the keyboard to the printer?

* Can certain control indicators be made to light? (See Keyboard Test.)

36

Can data be stored and sent (data received by remote terminal)?

• Can data be received and printed?

□ Third
Report any "No" response to the questions when making a trouble call.

Keyboard Test

Local analysis of the keyboard can be performed easily by depressing certain keys causing certain lamps on the keyboard to light and extinguish. By doing so the attendant can provide information so that the keyboard electronics can be analyzed, thus assisting in trouble analysis.

With keyboard in the CAPS LOCK mode, proceed as follows:

• Depress LINE FEED and QUOTES keys simultaneously with more force than is required in normal operation.

The TST indicator will light and remain lit indicating Test mode.

TEST INDICATOR
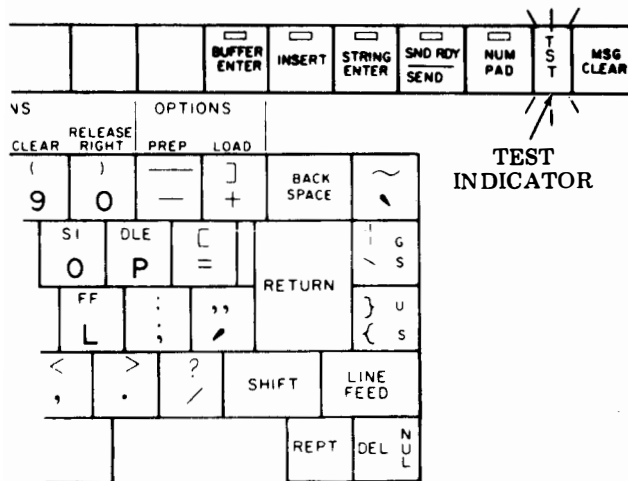
Note: If any lamps flash when Test mode is entered, simply depress the LINE FEED and P keys simultaneously to extinguish lamps. Re-enter Test mode by depressing LINE FEED and QUOTES keys.

• Depress the following keys while observing lamps for proper indication.

Depress key (or keys):	Indicator Key	Lamp Condition
A	TERM LOCAL	ON
CTRL & A	TERM LOCAL	OFF
SHIFT PAD 7	TERM LOCAL	FLASH ON
CTRL & 1	TERM LOCAL	FLASH OFF
C	TERM ON LINE	ON
CTRL & C	TERM ON LINE	OFF
SHIFT PAD 9	TERM ON LINE	FLASH ON
CTRL & 3	TERM ON LINE	FLASH OFF
D	TERM READY	ON
CTRL & D	TERM READY	OFF
SHIFT PAD 4	TERM READY	FLASH ON
CTRL & 4	TERM READY	FLASH OFF
G	INTRPT	ON
CTRL & G	INTRPT	OFF
CTRL & RETURN	INTRPT	FLASH ON
CTRL & 7	INTRPT	FLASH OFF
F	FULL DUPLEX	ON
CTRL & F	FULL DUPLEX	OFF
SHIFT PAD 6	FULL DUPLEX	FLASH ON
CTRL & 6	FULL DUPLEX	FLASH OFF
E	ALARM	ON
CTRL & E	ALARM	OFF
SHIFT PAD 5	ALARM	FLASH ON
CTRL & 5	ALARM	FLASH OFF
B	KP	ON
CTRL & B	KP	OFF
SHIFT PAD 8	KP	FLASH ON
CTRL & 2	KP	FLASH OFF
J	REC MSG WTG	ON
LINE FEED	REC MSG WTG	OFF
MSG CLEAR	REC MSG WTG	FLASH ON
CTRL & LINE FEED	REC MSG WTG	FLASH OFF

Depress key (or keys):	Indicator Key	Lamp Condition
K	BUFFER ENTER	ON
CTRL & K	BUFFER ENTER	OFF
SHIFT PAD 3	BUFFER ENTER	FLASH ON
CTRL & K	BUFFER ENTER	FLASH OFF
I	INSERT	ON
CTRL & I	INSERT	OFF
SHIFT PAD 2	INSERT	FLASH ON
CTRL & 9	INSERT	FLASH OFF
H	STRING ENTER	ON
CTRL & H	STRING ENTER	OFF
SHIFT PAD 1	STRING ENTER	FLASH ON
CTRL & 8	STRING ENTER	FLASH OFF
SHIFT & 2	SND RDY	ON
CTRL & NUL	SND RDY	OFF
TAB	SND RDY	FLASH ON
CTRL & 0 (ZERO)	SND RDY	FLASH OFF
O (ALPHA)	NUM PAD	ON
CTRL & O	NUM PAD	OFF
SHIFT PAD RETURN	NUM PAD	FLASH ON
CTRL & O	NUM PAD	FLASH OFF

(Test Ended)

- Depress LINE FEED and P keys simultaneously with additional force to clear Test mode.

TST indicator will extinguish and bell rings indicating Test mode has cleared.

Note 1: If lamps responded correctly in Test mode, the trouble is probably not in the keyboard.

Note 2: If any lamp failed to respond correctly, report failure when making a trouble call.

On the following page is a list of Teletype Corporation Product Service locations which provide maintenance service and repair on all Teletype Corporation products. For more information call toll free (US 800-323-4226) (IL 800-942-4192) 7:00 A.M. — 4:00 P.M. CST.

In addition, Teletype Corporation provides Customer Technical Training at its headquarters at 5555 W. Touhy Avenue, Skokie, IL in the northwest suburban area of Chicago. The training covers the installation, maintenance and repair of all Teletype Corporation products. Operator advisor (instructor) training is also available for this product. Arrangements can also be made for training to be conducted at customer-selected field sites.

For information about class schedules, enrollment, tuition, on-site training or any special training needs, please contact:

```
Customer Technical Training Center
         Teletype Corporation
        5555 W. Touhy Avenue
         Skokie, Illinois 60077
      Telephone (312) 982-3940
              TLX 25-4051
           TWX 901-223-3611
```

SERVICE CENTERS

ALABAMA	BIRMINGHAM	230 OXMOOR CIRCLE, SUITE 1113, HOMEWOOD, AL 35209	(205) 942-2574
ARIZONA	PHOENIX	2113 S. 48TH ST., SUITE 104, TEMPE, AZ 85282	(602) 894-9891
	TUCSON	2015 N. FORBES BLVD., SUITE 106, TUCSON, AZ 85705	(602) 623-6419
CALIFORNIA	▲ LOS ANGELES	5445 SHEILA, CITY OF COMMERCE, CA 90040	(213) 724-5051
	OAKLAND	7305 EDGEWATER, SUITE C, OAKLAND, CA 94621	(415) 569-9610
	ORANGE COUNTY	11552 KNOTT AVE.. SUITE 9. GARDEN GROVE, CA 92641	(714) 891-2628
	SACRAMENTO	4221 NORTHGATE BLVD., SACRAMENTO, CA 95834	(916) 924-1933
	SAN DIEGO	7283 ENGINEER RD., SUITE B, SAN DIEGO, CA 92111	(714) 565-4375
	SAN JOSE	3285 KIFER RD., SANTA CLARA, CA 95051	(408) 737-7575
	VENTURA COUNTY	2696 LAVERY COURT, SUITE 1, NEWBURY PARK, CA 91320	(805) 498-9655
COLORADO	COLORADO SPRINGS	905 GARDEN OF THE GODS RD., SUITE B, COLORADO SPRINGS, CO 80907	(303) 593-1222
	▲ DENVER	7100 BROADWAY, BUILDING 3-J, DENVER, CO 80221	(303) 429-9555
CONNECTICUT	HARTFORD	RT. 66 & 147, MIDDLEFIELD, CT 06455	(203) 349-1320
DIST. OF COLUMBIA	▲ LORTON, VA	NORTHERN VA INDUSTRIAL, 9022 TELEGRAPH RD., LORTON, VA 22079	(703) 550-7507
FLORIDA	FT. LAUDERDALE	6858 N. W. 20TH AVE., FT. LAUDERDALE, FL 33309	(305) 974-4660
	JACKSONVILLE	9951 ATLANTIC BLVD., SUITE 424, JACKSONVILLE, FL 32211	(904) 721-1847
	MIAMI	1515 NW 167TH ST., SUITE 137, MIAMI, FL 33169	(305) 944-1829
	ORLANDO	102 LIVE OAKS BLVD., CASSELBERRY, FL 32707	(305) 834-3818
	TAMPA	5474 JETPORT INDUSTRIAL BLVD., TAMPA, FL 33614	(813) 885-7413
GEORGIA	▲ ATLANTA	2520 PARK CENTRAL BLVD., DECATUR, GA 30035	(404) 981-7267
ILLINOIS	▲ CHICAGO NORTH	2330 EASTERN AVE., ELK GROVE VILLAGE, IL 60007	(312) 766-2595
	▲ CHICAGO SOUTH	2900 21ST AVE., BROADVIEW, IL 60153	(312) 345-7920
INDIANA	INDIANAPOLIS	6240 LAS PAS TRAIL, INDIANAPOLIS, IN 46268	(317) 297-4149
IOWA	DES MOINES	8345 UNIVERSITY BLVD., DESMOINES, IA 50311	(515) 223-8444
KANSAS	KANSAS CITY	6339 W. 110TH ST., OVERLAND PARK, KS 66211	(913) 383-3370
LOUISIANA	NEW ORLEANS	5636 JEFFERSON HWY., NEW ORLEANS, LA 70123	(504) 733-4823
MARYLAND	BALTIMORE	8980 ROUTE 10B, OAKLAND RIDGE IND. CNTR., COLUMBIA, MD 21045	(301) 796-1166
MASSACHUSETTS	BOSTON	131 FLANDERS RD., P. O. BOX 566, WESTBORO, MA 01581	(617) 366-8881
MICHIGAN	DETROIT	12916 FARMINGTON RD., LIVONIA, MI 48154	(313) 525-5356
	KALAMAZOO	126 E. KILGORE RD., KALAMAZOO, MI 49001	(616) 344-1944
	LANSING	3202 S. PENNSYLVANIA AVE., LANSING, MI 48910	(517) 394-6250
MINNESOTA	DULUTH	HWY 61 & CANOSIA RD., ESKO, MN 55733	(218) 879-1225
	MINNEAPOLIS	8824 SEVENTH AVE., NO., GOLDEN VALLEY, MN 55427	(612) 546-0808
MISSISSIPPI	JACKSON	137 TURN-POWE PLAZA, PEARL, MS 39208	(601) 932-1273
MISSOURI	KANSAS CITY	6339 W. 110TH ST., OVERLAND PARK, KS 66211	(913) 383-3370
	ST. LOUIS	11766 W. LINE INDUSTRIAL DR., ST LOUIS, MO 63141	(314) 567-5910
NEBRASKA	OMAHA	13415 "B" STREET, OMAHA, NE 68144	(402) 330-3606
NEW HAMPSHIRE	MANCHESTER		(603) 668-5911
NEW JERSEY	▲ FAIRFIELD	90 CLINTON ROAD, FAIRFIELD, NJ 07006	(201) 575-8240
	EDISON	1245 ROUTE 1, EDISON, NJ 08817	(201) 494-8288
NEW MEXICO	ALBUQUERQUE	2820 BROADBENT PKWY., N.E., ALBUQUERQUE, NM 87107	(505) 345-1854
NEW YORK	ALBANY	4 NORMANSKILL BLVD., ELSMERE, NY 12054	(518) 439-7622
	BUFFALO	1505 CLEVELAND DR., CHEEKTOWAGA, NY 14225	(716) 634-7233
	LONG ISLAND	195 PARK AVENUE, BETHPAGE, NY 11714	(516) 822-3533
	MANHATTAN	42 BROADWAY, SUITE E 1633, NEW YORK, NY 10004	(212) 344-3527
	ROCHESTER	115 METRO PARK, ROCHESTER, NY 14623	(716) 475-1740
	SYRACUSE	5 ADLER DR., EAST SYRACUSE, NY 13057	(315) 463-4666

NORTH CAROLINA	CHARLOTTE	8920 YORK ROAD, CHARLOTTE. NC 28210	(704) 588-3297
	DURHAM	500 E. WILLIAMS ST., APEX, NC 27502	(919) 362-4469
	GREENSBORO	727 E. MOUNTAIN ST., KERNERSVILLE, NC 27284	(919) 996-4934
OHIO	CINCINNATI	9909-C SPRINGFIELD PIKE, CINCINNATI, OH 45215	(513) 772-6906
	CLEVELAND	5325 NAIMAN PKWY., SUITE F, SOLON OH 44139	(216) 248-0288
	COLUMBUS	6969 WORTHINGTON, GALENA RD., WORTHINGTON. OH 43085	(614) 436-2065
	TOLEDO	1000 S. REYNOLDS RD., SUITE 1, TOLEDO, OH 43615	(419) 381-9900
OKLAHOMA	OKLAHOMA CITY	1000 CORNELL PKWY., SUITE 700, OKLAHOMA CITY, OK 73108	(405) 947-0969
	TULSA	2002 S. 114TH EAST AVE., TULSA, OK 74128	(918) 437-2010
OREGON	PORTLAND	7950 S. W. CIRRUS DR., BEAVERTON, OR 97005	(503) 641-9575
PENNSYLVANIA	HARRISBURG	3651 MARKET ST., CAMP HILL, PA 17011	(717) 737-0405
	PHILADELPHIA	103 ROCK ROAD, HORSHAM, PA 19044	(215) 674-2181
	PITTSBURGH	6149 SALTSBURG ROAD, VERONA, PA 15147	(412) 795-6114
TENNESSEE	MEMPHIS	2005 NONCONNAH BLVD., SUITE 9, MEMPHIS, TN 38132	(901) 346-8840
	NASHVILLE	220 GREAT CIRCLE RD., SUITE 134, NASHVILLE, TN 37228	(615) 254-0546
TEXAS	▲ DALLAS	222 N. STORY RD., SUITE 126, IRVING, TX 75061	(214) 254-4189
	HOUSTON	4400 S. WAYSIDE, SUITE 105, HOUSTON, TX 77087	(713) 641-3295
	SAN ANTONIO	8807 TRADEWAY, SAN ANTONIO, TX 78217	(512) 824-5553
UTAH	SALT LAKE CITY	3650 W. 2100 SOUTH, SALT LAKE CITY, UT 84120	(801) 972-6332
VIRGINIA	LORTON (DC AREA)	NORTHERN VA INDUSTRIAL PARK, 9022 TELEGRAPH RD., LORTON, VA 22079	(703) 550-7507
	RICHMOND	8427 GLAZEBROOK AVE., RICHMOND, VA 23228	(804) 262-4062
WASHINGTON	SEATTLE	635 STRANDER BLVD., KOLL COMMERCE CENTER, SEATTLE, WA 98188	(206) 575-4515
WISCONSIN	APPLETON	324 W. WISCONSIN AVE., SUITE 3, APPLETON, WI 54911	(414) 731-1494
	EAU CLAIRE	1806 WARDEN ST., EAU CLAIRE, WI 54701	(715) 832-4431
	MADISON	3680 KINSMAN BLVD., MADISON, WI 53704	(608) 249-5999
	MILWAUKEE	448 W. RAWSON AVE., OAK CREEK, WI 53154	(414) 764-6500
	WAUSAU	120 E. STEWART AVE., WAUSAU, WI 54401	(715) 845-8688
CANADA	▲ TORONTO	31 KLONDIKE DR., WESTON, ONTARIO, CANADA M9L 1S1	(416) 745-9474

▲ REGIONAL OFFICES