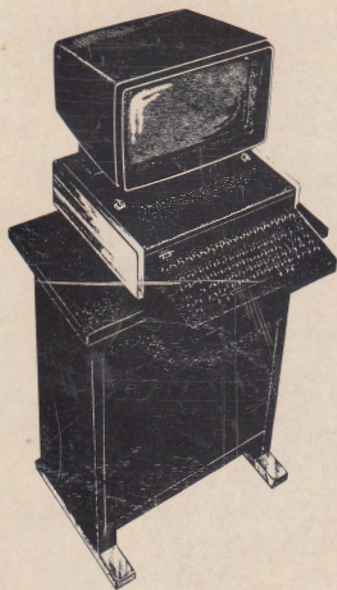




How to operate...



Asynchronous

dataspeed[®] 40

Keyboard - Display

The following is a brief breakdown of present DATASPEED 40 terminal families. You will note that a numerical suffix has been added to DATASPEED 40 to designate each family. As each new family is introduced, the next number will be used to form the designator, and an appropriate name will be assigned.

- | | |
|----------------|---|
| DATASPEED 40/1 | Asynchronous Data Terminals for Switched Network Applications
(How to Operate 999-300-121) |
| DATASPEED 40/2 | Asynchronous Data Terminals for Switched Network Teletypewriter
Compatible Applications
(How to Operate 999-300-121) |
| DATASPEED 40/3 | Asynchronous Data Terminals for Multipoint Private Line
Applications Using 9140 Station Controller
(How to Operate 999-300-121) |
| DATASPEED 40/4 | Synchronous Data Terminals for Multipoint Private Line Applications*
(How to Operate 999-300-123) |

*Major distinguishing characteristics are synchronous transmission, clustering and compatibility with other stations via a central processing unit (computer using bisynchronous line control procedures).

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A pocket located at the back cover of this manual is provided for any additional attendant instructions. Check this pocket to see if your printer has been modified in any way that would require additional operating instructions.

1. INTRODUCTION

The Asynchronous DATASPEED 40 Keyboard Display (KD) provides the facilities for data preparation and transmission of prepared data on the switched network and private-line systems. The line code used is ASCII (American National Standard Code for Information Interchange).

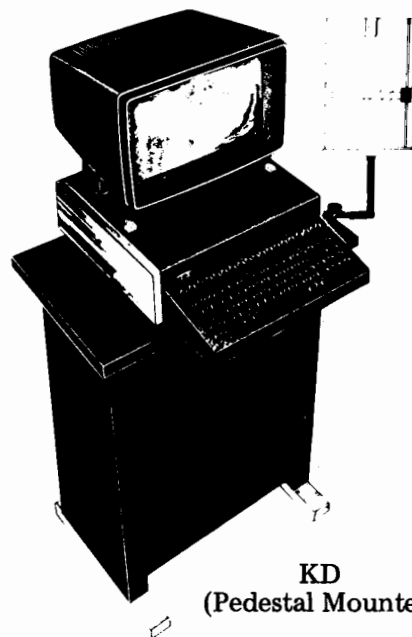
When a message is typed locally on the keyboard of the operator console, or received from a remote location, it can be displayed on a screen similar to that of a television set. Displayed messages can be prepared or modified locally by using the keyboard or editing controls prior to transmission.



KD
(Table Model)

Your keyboard display may be a table model or pedestal mounted arrangement using an optional copyholder. A printer may be associated with your keyboard display, KDP (Keyboard Display Printer). Refer to 999-301-121, How To Operate manual, for printer operation and maintenance.

The purpose of this manual is to provide basic instructions on how to operate an Asynchronous DATASPEED 40 Keyboard Display locally.



KD
(Pedestal Mounted)

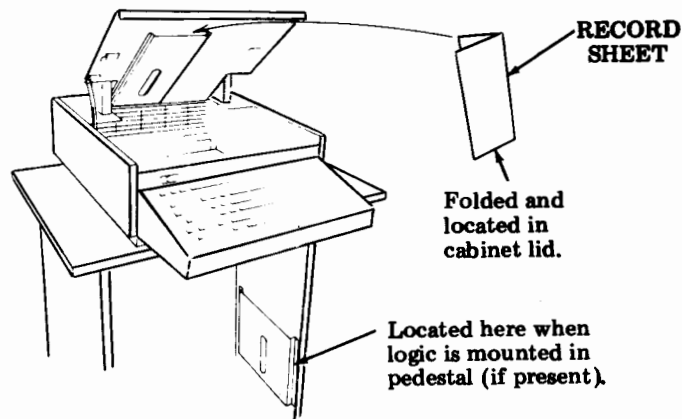
Refer to your data set How To Operate manual if a DATAPHONE Attendant Set is associated with your KD or KDP. If your keyboard display is not associated with an attendant set, it will not be necessary

to establish a telephone connection before sending or receiving a message. Refer to system operating instructions for communication procedures for these terminals.

Your terminal may or may not be provided with some of the features described in this manual. Features described can usually be identified by observing if certain keytops are provided on the operator console.

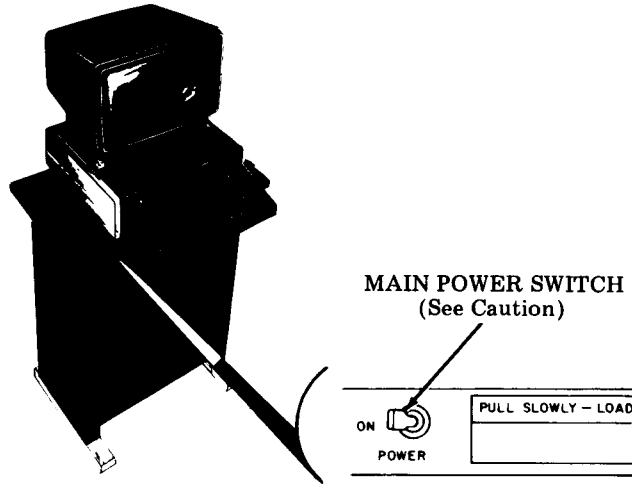
A record of how your terminal is equipped is provided with the set. This record lists the options that may affect operation as well as the features described in this manual. Your instructor can use this to explain exceptions.

The record sheet may be located in the slot under the cover behind the keyboard or in the pedestal. If it is located in the pedestal, assistance will be required to gain access to the sheet. The door to the pedestal, with the logic mounted, weighs approximately 55 pounds.



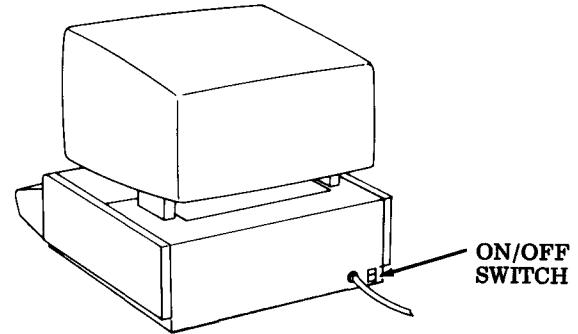
2. TURNING ON POWER . . .

At a given DATASPEED 40 location, your keyboard display may be located on a DATASPEED 40 type pedestal. Pedestals with power switches turn on power to your keyboard display electronics and in some systems, station controllers or other connected devices. Verify operation of this power switch with your local supervisor or office manager.



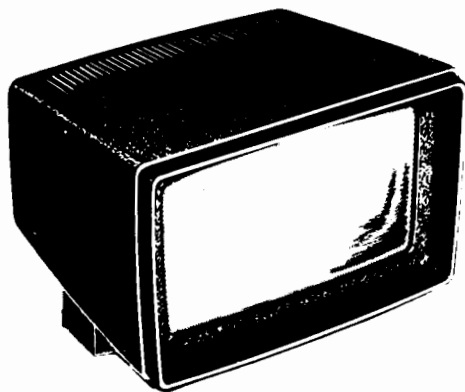
Caution: Do not turn off power when terminal is operating, may cause unnecessary delay in system operation.

If your keyboard display is a table model, the ac power switch is located at the left rear of the cabinet. This switch may be turned on and off at will unless instructed otherwise.



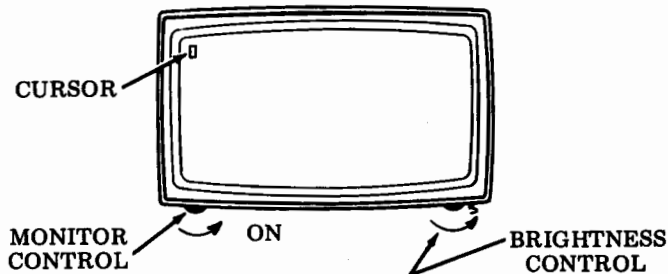
When main power to the set is first turned on, random characters may be displayed on the display screen. This is caused from power variations when power to the entire set is turned on. Simply depress the HOME key and then the CLEAR key on the operator console to clear display.

3. DISPLAY



The display screen can accommodate a format of up to 24 lines of data with room on each line for up to 80 characters.

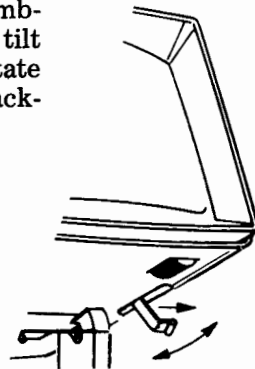
There are three attendant-operated controls on the display. To turn on the display, rotate the monitor control counterclockwise.



When the monitor control is turned on (provided that power to display cabinet is on) the cursor should appear after a slight delay. Rotate brightness control counterclockwise to brighten if cursor is not visible.

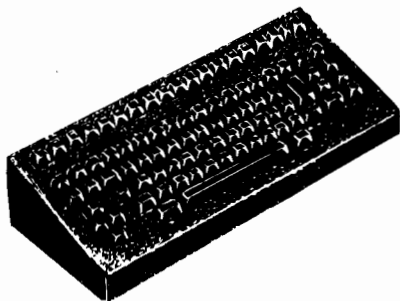
Note: The cursor is a light rectangular area on the screen that indicates where the next character will be displayed or next local function will take place.

Should there be any lighting glare nearby, a screen tilt control is provided. Move adjusting lever to the right to disengage from rack teeth. Then move lever forward or backward to obtain desired position. Release lever to lock in place. If your display is equipped with a thumb-wheel for screen tilt control, simply rotate wheel forward or backward.



Brightness may be turned down or power may be turned off at the monitor control without loss of data or system delay when not in use.

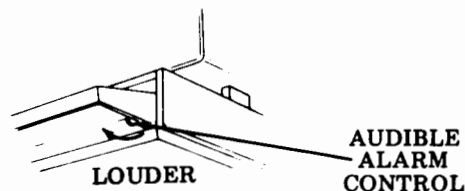
4. OPERATOR CONSOLE (KEYBOARD)



Your operator console permits you to enter data, edit displayed data, and perform certain control functions. Data entry is done by means of the keyboard operated like that of a typewriter.

Most keys on the keyboard generate a single character when depressed. Some keys are designated as repeat keys and by depressing these keys with additional force cause the character to repeat until key is released. Only one key at a time may be depressed to enter the repeat mode if it is a repeatable key.

During operation of your keyboard or when the character B_L (bell) is received, an audible alarm may sound (feature not operable on some units). The alarm loudness can be adjusted by moving the control forward or backward to desired level.



The following conditions will cause the alarm to sound:

- Writing a character in the 7th character position prior to the end of a line.*
 - Writing a character in the last character position of a line.*
 - Attempting to overwrite a protected character.
 - Attempting to write any character after a NEW LINE symbol.
- *The end of a line has been defined as the 80th character position of a line or the character position just before a protected new line symbol.

When power is first turned on, the  key should be lit indicating the local mode. The local mode allows data entry and editing between the keyboard and display in accordance with the descriptions given on the following pages.

4. OPERATOR CONSOLE (KEYBOARD) (Cont)

Left-Hand Editing Controls

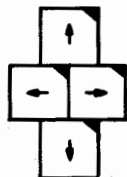
Note: These keys position cursor or displayed data, but do not alter information on page. They operate only in local mode or send-receive mode.



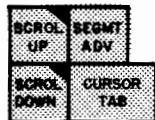
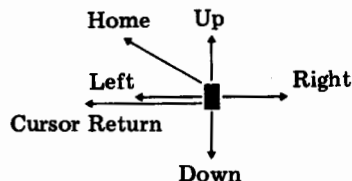
Returns cursor from any point on screen to first character position of first line of first segment. (See Page 8 for segment marker.)



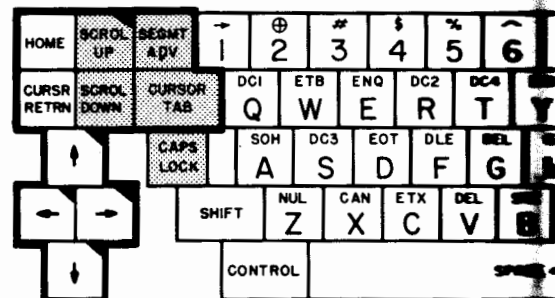
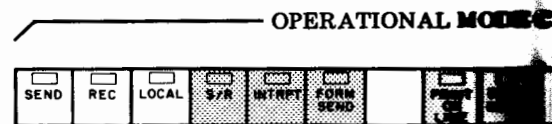
Returns cursor from any position on a line to first character of that line.



These keys move the cursor in the direction indicated by the arrow.



Optional Editing Controls, see Page 8.



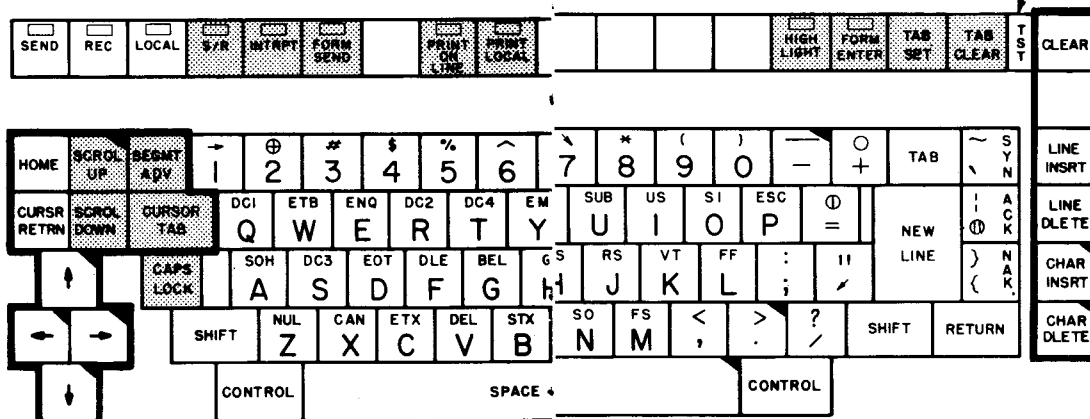
KEYBOARD
(See Page 8)



Key repeats when held fully depressed.

See Page 21.

OPERATIONAL MODE C ONTROLS (See Page 16)



KEYBOARD (See Page 11)



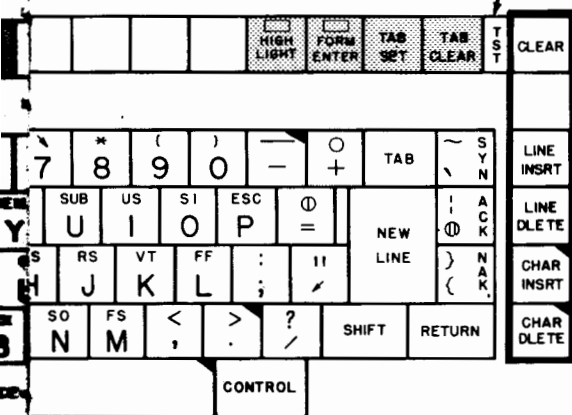
Key repeats when held fully depressed.



Key not present on some terminals.

CONTROLS (See Page 16)

See Page 21.



DA RD
(11)



Key not present on some terminals.

Right-Hand Editing Controls

Note: These keys alter information on the screen and operate only in the local mode. Operation of these keys can be affected when protected data or tab marks are present.



Removes data from cursor position to the right and down to bottom of page.

Before:

```
THE QUICK BROWN
FOX JUMPED OVER
THE LAZY DOG'S
```

After:

```
THE QU
```

Note: A page may consist of one, two, or three segments.

(Continued on Page 9)

4. OPERATOR CONSOLE (KEYBOARD) (Cont)

Optional Left-Hand Editing Controls



Moves display up one line at a time until last segment marker appears at top of display.



Moves display down one line at a time until first segment marker appears at top of display.



Moves display up to next 24 line segment. Segment markers are as follows:

- Segment 1 - Line 1
- = Segment 2 - Line 25
- ≡ Segment 3 - Line 49.

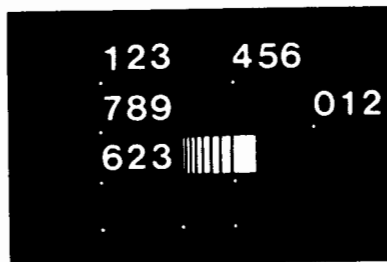
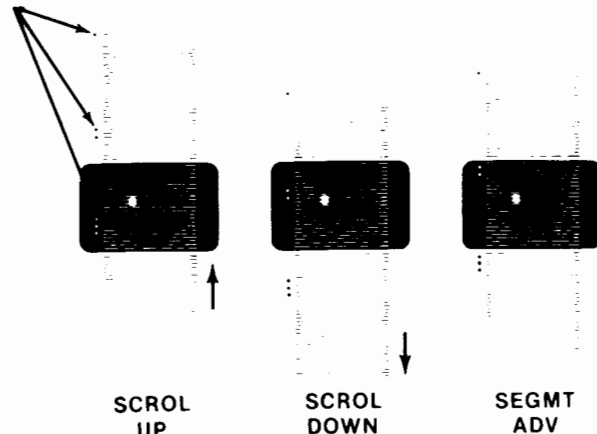
Moves from Segment 1 to 2 to 3 to 1.

Note: A page may consist of 1, 2, or 3 segments of 24 lines each. The three segments contain a total of 72 lines; each line contains a maximum of 80 characters.

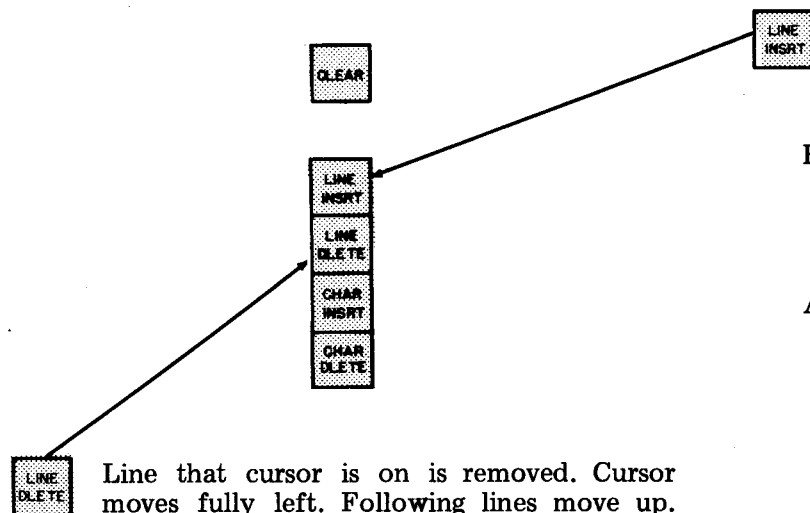


Once tab stops are set (refer to Page 18 for TAB SET key operation), this key permits rapid movement of cursor without disturbing data between tab stops (ie, tab mark, next line, or end of protected field) for rapid entry of formatted data. Use at all times for all tabbing functions unless instructed otherwise.

SEGMENT
MARKER



Right-Hand Editing Controls (Cont)



Line that cursor is on and following lines move down. Cursor moves fully left.

Before:

```
THE QUICK BROWN  
THE LAZY DOG'S
```

After:

```
THE QUICK BROWN  
THE LAZY DOG'S
```

Before:

```
THE QUICK BROWN  
FOX JUMPED OVER  
THE LAZY DOG'S
```

After:

```
THE QUICK BROWN  
THE LAZY DOG'S
```

Missing line can now be entered from the operator console.

Note: LINE INSRT occurs only when bottom line of last segment is blank (all spaces).

Right-Hand Editing Controls (Cont)

CLEAR

LINE
INSRT
LINE
DELETE
CHAR
INSRT
CHAR
DELETE

CHAR
INSRT

Character that cursor is over and succeeding characters move to right. Only the line that the cursor is on is affected.

Before:

THE QU[█]ICK BROWN

After:

THE QU[█]ICK BROWN

Missing character can now be entered from operator console.

Note: CHAR INSRT will not operate if a character other than space is in the last character position in the line.

CHAR
DELETE

Removes character that cursor is over. Characters to right of cursor move left. Only the line that the cursor is on is affected.

Before:

THE QUI[█]CK BROWN

After:

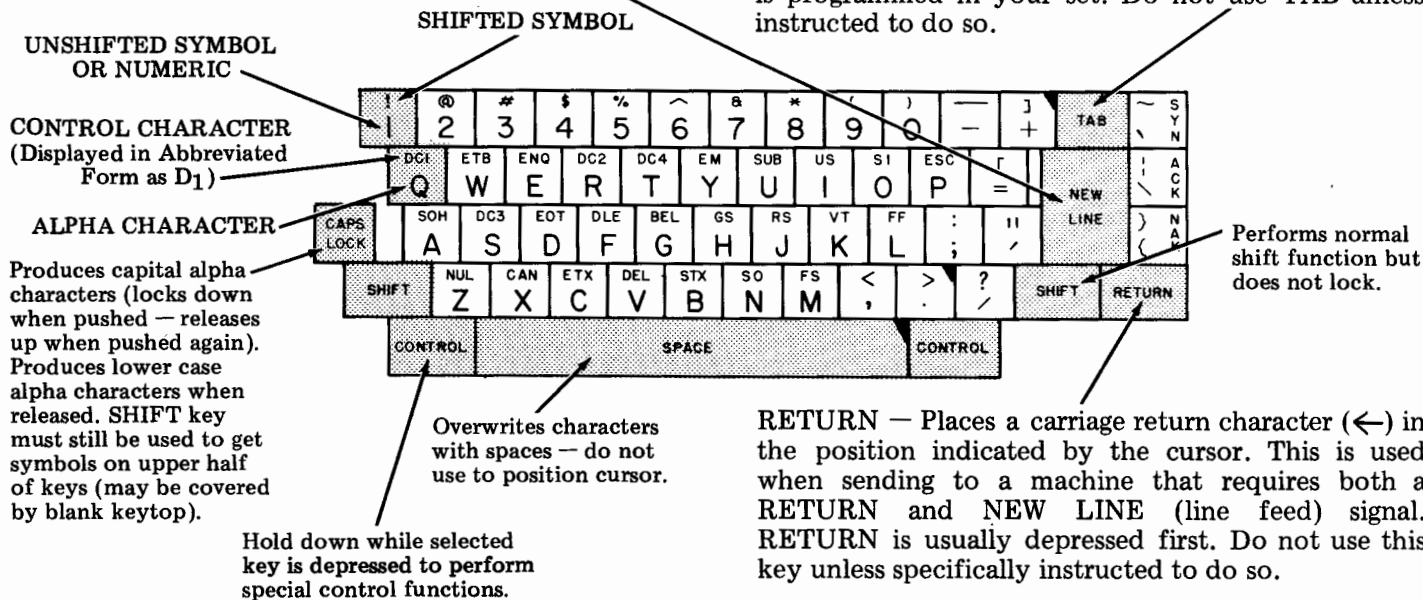
THE QU[█]ICK BROWN

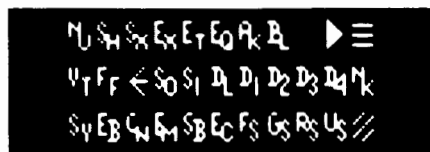
NEW LINE — Entered immediately following last character on a line to position cursor at first character position of next line. If entered after the 80th character on a line, the NEW LINE symbol ($\equiv$) will not appear on the monitor but the function will take place.

TAB (Horizontal Tab)

Displays symbol ► and moves cursor to first tab stop on right. If there is no tab setting on right, cursor moves to start of next line. If there is protected data en route, the cursor stops instead at the first unprotected character following protected data, whether on that line or next line.

Note: There are a number of options associated with horizontal TAB. Be sure you know how this function is programmed in your set. Do not use TAB unless instructed to do so.





Certain operational functions (nonprinting) are activated by depressing the CONTROL key and, at the same time, a designated letters key.

The definitions for the control codes are given. Some control codes do not have a definition because they are either not used at the present time, or are used in special applications. If required, instructions will be given locally in the space provided.

ETX (End of Text) — Displays symbol E_X . If option is enabled, upon receipt transmission halts and may switch terminal from receive to local mode. If sending, may switch terminal from send mode to receive or local mode.

EOT (End of Transmission) — Displays symbol E_T . If option is enabled, upon receipt transmission halts and may switch terminal from receive to local mode. If sending, may switch terminal from send to receive mode.

BEL (Bell) — Displays symbol B_L and causes keyboard alarm to sound.

VT (Vertical Tab) — Displays symbol V_T and causes printer to print next character at start of next line.

FF (Form Feed) — Displays symbol F_F . If option is enabled, upon receipt may switch terminal from receive to local mode. If sending and optioned to do so, halts transmission and switches terminal from send mode to receive or local mode.

FS (File Separator) — Displays symbol F_S . _____

RS (Record Separator) — Displays symbol R_S . _____

US (Unit Separator) — Displays symbol U_S . _____

DEL (Delete) — Displays symbol $\%$. _____

NUL (Null) — Displays symbol N_U . _____

SO (Shift Out) — Displays symbol S_O . _____

SI (Shift In) — Displays symbol S_I . _____

ETB (End Transmission Block) — Displays symbol E_B . _____

EM (End of Media) — Displays symbol E_M . _____

CAN (Cancel) — Displays symbol C_N . _____

DLE EOT sequence (Data Line Escape, End of Transmission) — Displays symbols D_L and E_T and causes terminal to disconnect from line and may switch terminal from receiving mode to local mode.

GS (Group Separator) — Displays symbol G_S . If option is enabled, upon receipt switches terminal from receive mode to local mode. If sending and optioned to do so, halts transmission and switches terminal from send mode to receive or local mode.

DC1, DC3 (Device Controls) — Displays symbol D_1 and D_3 respectively. _____

DC2, DC4 (Device Controls) — Displays symbol D_2 and D_4 respectively. Typically used in multiple line conversational mode message transmission.

SUB (Substitute Character) — Displays character S_B . Usually displayed in place of a received character that was in error, unless optioned to display the errored character as is.

ENQ (Enquiry) (E_N) — _____

NAK (Negative Acknowledge) (N_K) — _____

STX (Start of Text) (S_X) — Used to indicate the start of a message (text). May be used to end a heading started by SOH (see SOH — Start of Heading).

SYN (Synchronous Idle) (S_N) — _____

ACK (Acknowledge) — (A_K) — _____

SOH (Start of Heading) (S_H) — Used at beginning of an address or routing information (heading). STX may be used to indicate end of heading.

Receipt On Line of ESC (Escape) Sequences

Receipt of the following ESC character sequences causes the following actions to be performed, if the terminal is so equipped and the option is elected to perform them. Terminals not equipped or not elected to perform the actions, display the sequence symbols (shown in parentheses) instead.

Note: Printers print the numeric or alpha suffix only (ie, if ESC 1 sequence is used, only the 1 will be printed; if ESC W is used, only the W will be printed).

ESC 0 (zero) sequence (E_C0) — Sets a tab stop and displays the tab symbol (.), a small dot, at the lower left-hand corner of the character position at the cursor location, on that line only.

ESC 1 (E_C1) — Sets tab stops and displays tab symbols (.) at the cursor location on that line and on all lines below, to the end of display memory.

ESC 2 (E_C2) — Clears tab stops from the cursor location to the end of the line, on that line and on all lines below and to the right, to the end of the display memory.

ESC @ ($E_C@$) — Moves cursor to the first tab stop on right. If no tab setting on right, cursor moves to start of next line. If there is protected data en route, the cursor stops instead at the first unprotected character following protected data, whether on that line or the next line.

ESC 7 (E_C7) — Moves cursor up, one line.

ESC B (E_CB) — Moves cursor down, one line.

ESC C (E_CC) — Moves cursor right, one character.

ESC H (E_CH) — Advances displays to first segment and moves cursor to start of first line (home position).

ESC 3 (E_C3) — Causes characters that follow to be highlighted.

ESC 4 (E_C4) — Causes characters that follow to not be highlighted.

ESC W (E_CW) — Puts terminal in protected data mode, during which all received data will be displayed as protected data, and during which receipt of ESC J will cause protected data as well as unprotected data to be cleared.

ESC X (E_CX) — Removes terminal from protected data mode.

ESC J (E_CJ) — Clears all unprotected data from cursor position to the right and from all lines below cursor to bottom of display. (See ESC W.)

ESC R (E_CR) — Advances display to first segment, moves cursor to start of first line and clears all data from display memory, whether protected or unprotected, and all tab stops.

NOTES: _____

Operational Mode Controls



In DATAPHONE service with this key lit, message is sent only after data mode is established.

Message sending stops when a valid message ending character is reached or when mode is changed manually.

Messages sent on line will be printed on the page printer from the cursor position when PRINT ON LINE and SEND are depressed before going into data mode. Only that data actually being sent to the line, according to the send option elected, will be printed.

Note: Editing keys on the operators console are not operational in this mode.



In DATAPHONE service with this key lit, messages can be received only after data mode is established. Changing from REC to LOCAL can disconnect a call.



Key may not be present on some terminals.



Messages received on line during attended operation can be copied on the page printer when PRINT ON LINE, REC, and then DATA is depressed during a call sequence.

Note: Editing keys on the operators console are not operational in this mode.

Normally lit when power is first turned on. Must be in local to enter and/or correct messages from the keyboard prior to transmission on line or to a printer via the PRINT LOCAL key.



These keys normally light when depressed and indicate the operational mode of the terminal.



Depression of this key or when this key is lit signifies that the terminal is in the conversational mode.

- Character-at-a-time*: Send on line from the keyboard a character-at-a-time. On some terminals the SEND key also must be depressed.
- Single line: End with RETURN (↵). Line will be sent.
- Multiple line: Start message with DC2 (CONTROL, R keys) and end with DC4 (CONTROL, T keys). With cursor at start of message, depress SEND key.

*If terminal is equipped with this feature, editing is performed by the use of Escape Sequences (see Page 14) since the editing keys are inoperative with this terminal in the S/R mode.



When depressed, may stop remote sending terminal.



When lit, a message will be sent as displayed, ie, protected characters and tab marks will be received at remote location.

Note: Used with SEND. Depress FORM SEND first, then depress SEND.

When key is not lit, messages will be sent with variations as follows (check with your instructor to see which are present):

- Protected characters sent as unprotected, as space, as delete, or not sent.
- Highlighted characters sent highlighted or not highlighted.
- Tab marks not sent.
- Unprotected tab symbol (►) may be sent, or may be sent as a space.
- Data may be skipped, ie, all data from unprotected ► symbol to next unprotected field.



When lit and in data mode, the page printer will copy printable data being sent (SEND lighted) or received (REC lighted). If AUTO button on attendant set is depressed, and LOCAL and PRINT ON LINE keys are depressed (KDP only), the call will be answered automatically.

Operational Mode Controls (Cont)

If it is desired to receive a message on the printer without disturbing a message in display storage, depress PRINT ON LINE and REC buttons and then turn off the monitor power switch. The keyboard is inoperative at this time. The station can be placed into data mode; or if left unattended, it can be placed into auto. answer mode.



When lit (SEND lamp will also light), the printer will copy printable data from local display. It turns off at the message ending character or if no message ending character, the end of the page.



When lit, unprotected characters entered in local mode will be highlighted (flashing). If FORM ENTER is used with this feature, the characters will be displayed at half-intensity, which signifies a protected character, but will not be flashing.



When this key is lit, characters entered in local mode will be protected. After key is turned off, characters will not be protected.

- Protected characters are displayed at half-intensity.

- Protected characters cannot be overwritten, moved, or cleared unless the FORM ENTER key is lit.
- Protected new lines ($\equiv$) can be used to provide a form outline.
- The position following a group of protected characters is a tab stop.
- Overrides HIGH LIGHT feature and causes characters to be shown at half-intensity — but characters will not flash.
- The key may not be present, or may be present but inoperative.

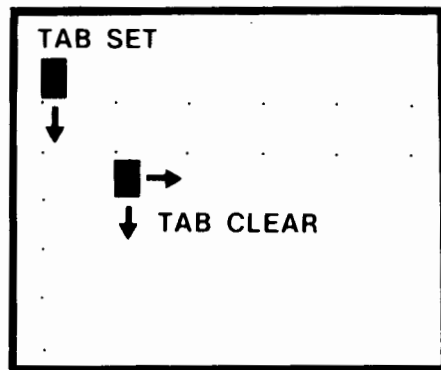
Note: To clear or change protected information, depress FORM ENTER first (key lights), then overwrite, clear, or edit data using right- or left-hand editing clusters. Depress FORM ENTER to turn off.



When depressed, places tab marks (.) on screen in column from cursor down to the end of the page.



When depressed, clears tab marks from cursor down and to the right. Clears any data between an HT mark (►) and the cleared tab mark to the end of the same line unless protected data is present.



Note: Tab marks (.) cannot be protected.

5. WHEN TROUBLE OCCURS . . .

Before reporting a trouble the attendant or local supervisor should perform the following checks and Keyboard Display Analysis to determine whether the data terminal equipment or system is at fault.

Check the following:

Are all ac power cords properly seated in power outlets?

- Are all power switches turned on at pedestals containing controllers, keyboard display and printer cabinet?

Note 1: If all power cords are properly connected, all switches are on and no lamps are lit, determine whether power supply in the building has failed by checking lights in the room, another teletypewriter or other electrically operated machines in the office. If there is no power, report this trouble as you would report no lights.

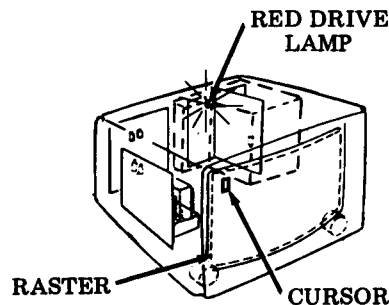
Note 2: If power is available in the building, perform the following Keyboard Display Analysis.

Keyboard Display Analysis

By answering the following questions, the attendant can assist in determining the cause of trouble. Any "no" response to a question can indicate a source of trouble.



- Is  lamp on operator console lit? (Depress key if lamp is off.)
- Is cursor displayed on the screen? (Monitor control on and brightness turned up.)
- Is red drive lamp lit in monitor? The red drive lamp can be seen through air vent slots (10th slot from right) at top rear of monitor cover as viewed from attendant position.



- Can raster (white outline of screen) be displayed? (Brightness turned all the way up.)
- Can data be entered from the operator console and displayed on the screen?
- Can certain lamps on the operator console be made to light? (See Operator Console Test Mode on this page.)
- Is character image displayed on the screen clearly seen?
- Does character on the screen correspond to character entered from the operator console?

Note 1: If you have answered “no” to any of the above questions, report findings when making trouble call.

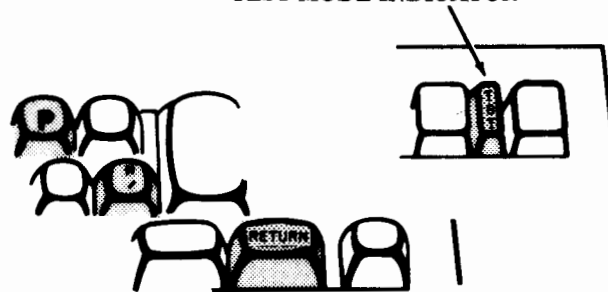
Note 2: If you have answered "yes" to all the above questions, the trouble is probably not in your keyboard display. Refer to your data set manual for testing procedures or if printer trouble is suspected, refer to printer manual, 999-301-121, How To Operate.

Operator Console Test Mode

Local analysis of the operator console can be performed easily by depressing certain keys causing certain lamps on the keyboard to light and extinguish. By doing so the attendant can internally analyze the operator console electronics, thus assisting in keyboard display trouble analysis.

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

TEST MODE INDICATOR



- Depress RETURN and QUOTES keys simultaneously with more force than is required in normal operation.

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

Operator Console Test Mode (Cont)

Note 1: If all lamps flash when test mode is entered, simply depress the RETURN and P keys simultaneously to extinguish lamps and re-enter test mode.

Note 2: Ignore any characters that may appear on your screen during test.

- Depress the following keys while observing lamps for proper indication.
- Depress key (or keys):

	Indicator Key	Indicator Condition
CONTROL & A	SEND	ON
CONTROL & C	SEND	OFF
CONTROL & D	REC	ON
CONTROL & D	REC	OFF
CONTROL & G	LOCAL	ON
CONTROL & G	LOCAL	OFF
CONTROL & G	S/R	ON
CONTROL & G	S/R	OFF
CONTROL & F	INTRPT	ON
CONTROL & ACK	INTRPT	OFF
CONTROL & E	FORM SEND	ON
CONTROL & E	FORM SEND	OFF
CONTROL & J	PRINT ON LINE	ON
NEW LINE	PRINT ON LINE	OFF

O	PRINT LOCAL	ON
CONTROL & O	PRINT LOCAL	OFF
I	HIGH LIGHT	ON
TAB	HIGH LIGHT	OFF
H	FORM ENTER	ON
←	FORM ENTER	OFF
→	REC	≥FLASH≤
CONTROL & C	REC	OFF
CURSR RETRN	S/R	≥FLASH≤
CONTROL & G	S/R	OFF
CLEAR	PRINT ON LINE	≥FLASH≤
NEW LINE	PRINT ON LINE	OFF
HOME	FORM ENTER	≥FLASH≤
←	FORM ENTER	OFF

(Test Ended)

- Depress RETURN and P keys simultaneously with additional force to clear test mode.

TST indicator will extinguish indicating test mode has cleared. Local lamp should light, (depress key if not lit).

Note 1: If lamps responded correctly in test mode, the trouble is probably not in the operator console.

Note 2: If any lamp failed to respond correctly, report failure to the Telephone Company.



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