"DATASPEED*" 40 STATION

FOR "DATA-PHONE**" SERVICE

DESCRIPTION

1. GENERAL

1.01 This section provides a description of DATASPEED 40 Stations arranged for DATA-PHONE service. It includes information on identification, operation, and characteristics of the components that make up the station, and describes station operation on the switched network.

1.02 Included in this section is a description of variable features that may be ordered for the station, and options that may be implemented in the field.

2. STATION IDENTIFICATION

2.01 A DATASPEED 40 Station is a combination of modular components interconnected to provide data communications on the switched network. The station provides asynchronous serial operation at 1050 or 1200 baud using a 10-unit code (one start bit, seven ASCII (American National Standard Code for Information Interchange) character bits, an even parity bit, and one stop bit). Interface to the telephone line is through a 202-series data set with any necessary auxiliary equipment.

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** Registered Service Mark of AT&TCo.

2.02   Three basic station configurations are available: Keyboard Display (KD), Keyboard-Display Printer (KDP), and Receive-Only Printer (ROP). The KD and KDP configurations provide send and receive operation with facilities to prepare and edit data for send operation. The ROP provides hard copy of received data.

2.03   The KD configuration (Figure 1) consists of a cathode ray tube display device with related logic, an operator console, and a controller. This arrangement has the capability of preparing data from the keyboard, displaying this data on the screen, editing the displayed data, and sending the displayed data on-line through a data set. Data received from the line can be displayed.

2.04   The KDP (Figures 2 and 3) has all the features of the KD, and also includes a printer with related logic. The printer can be used to provide hard copy of the transmitted or received data.

2.05   The ROP configuration (Figure 4) consists of a printer, controller, and operator console. It provides hard copy of received data. This arrangement may be ordered with an optional 1000-character buffer to compensate for difference in operating speeds of the printer and the sending device.

2.06   The modular design of DATASPEED 40 components permits a variety of station layouts. The KD and KDP can be pedestal mounted or table mounted as illustrated in Figures 1, 2, and 3. The ROP is restricted to the pedestal mounted arrangement of Figure 4.

TABLE MOUNTED   PEDESTAL MOUNTED

Figure 1 - DATASPEED 40 KD

DISPLAY

ELECTRONICS
PACKAGE

OPERATOR
CONSOLE

PRINTER
PACKAGE
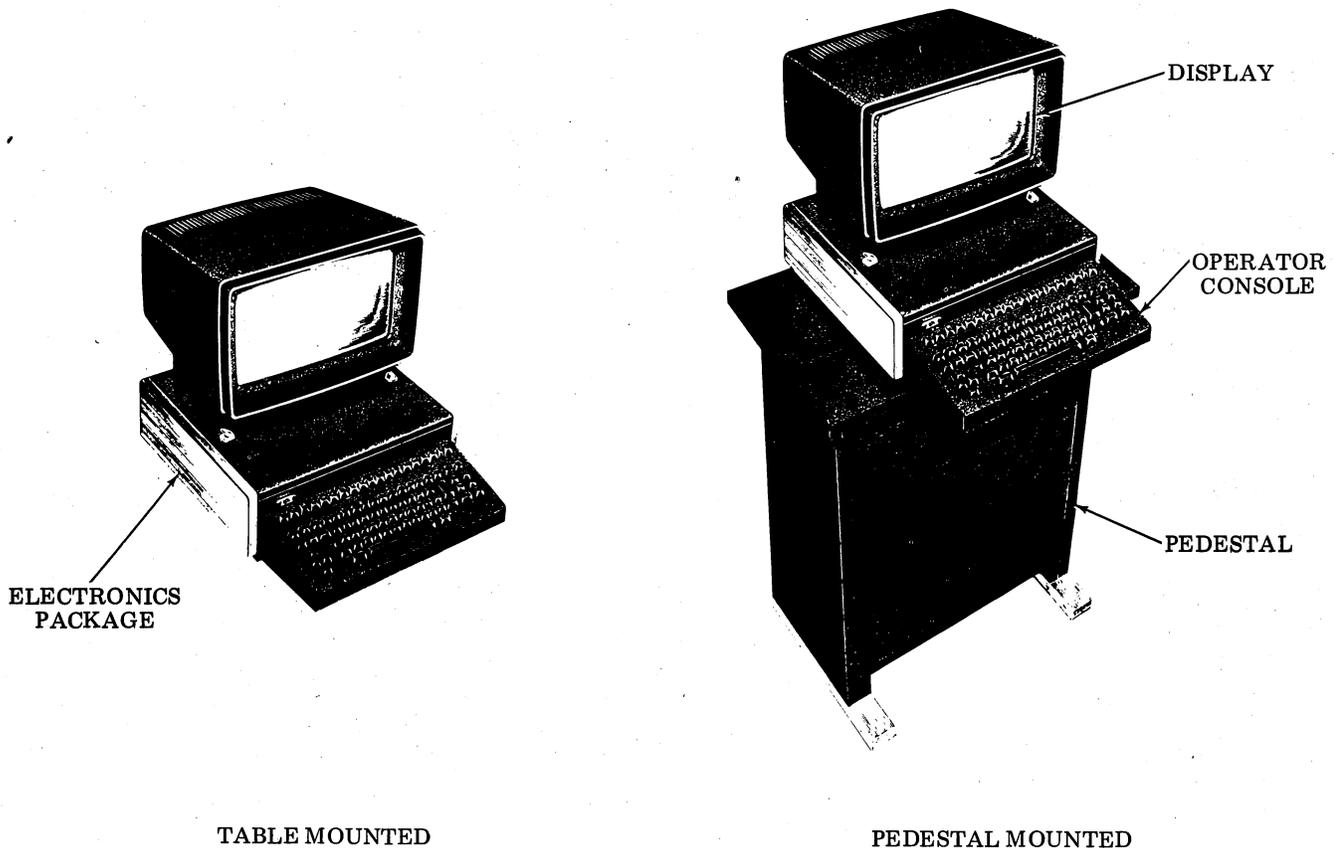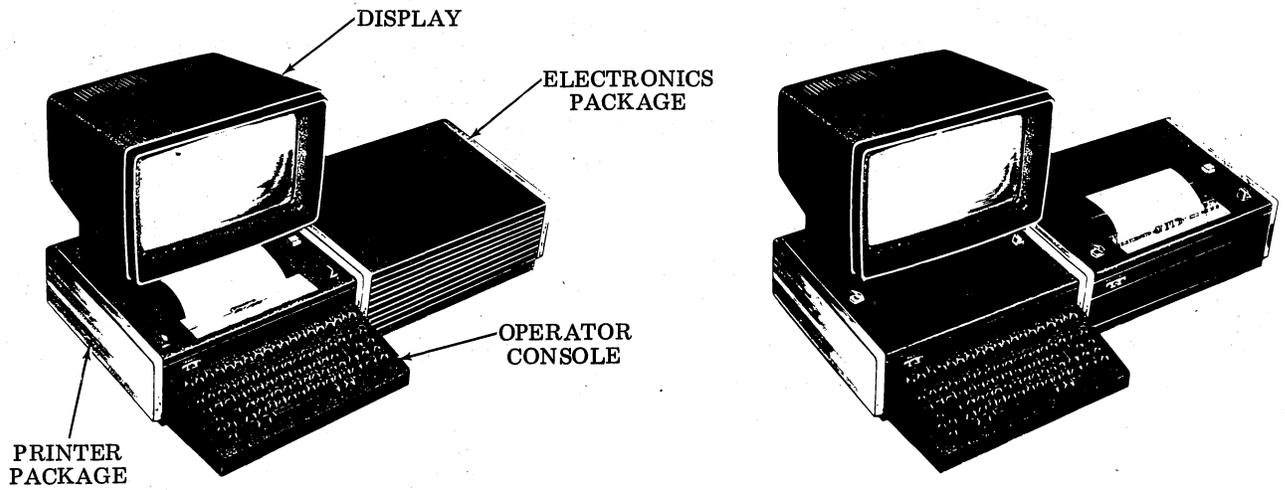
Figure 2 - DATASPEED 40 KDP Arrangements — Table Mounted
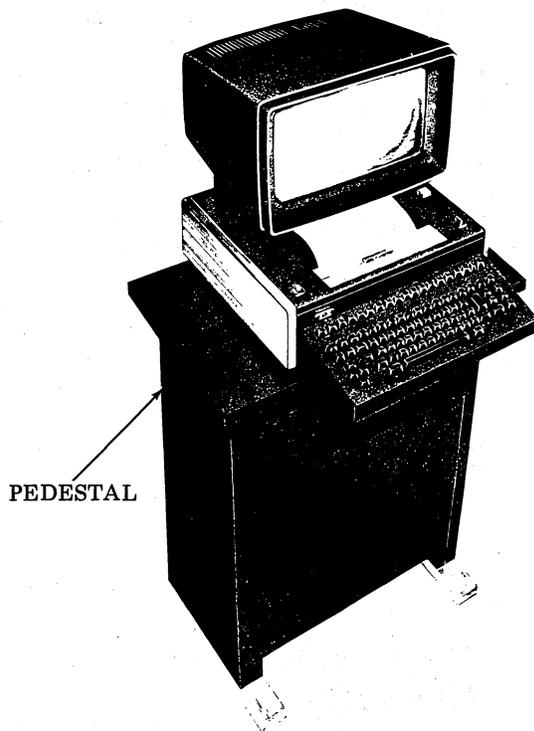
PEDESTAL

PEDESTAL

PRINTER
PACKAGE

PEDESTAL

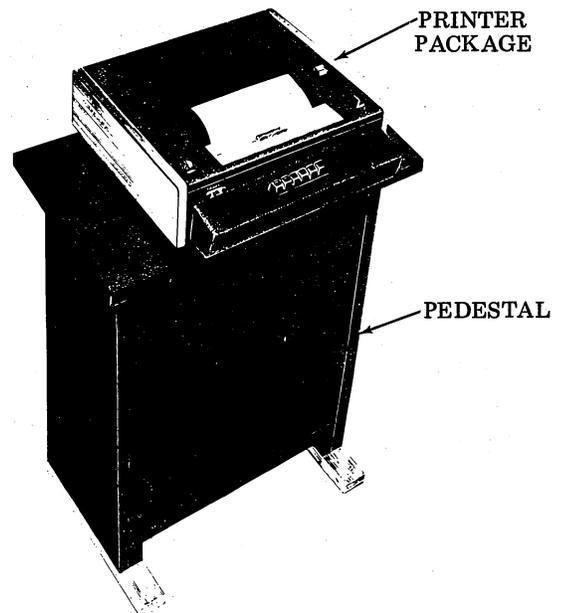Figure 3 - DATASPEED 40 KDP —
Pedestal Mounted

Figure 4 - DATASPEED 40 ROP

2.07   The following paragraphs describe the basic functions and characteristics of the components that make up a DATASPEED 40 Station.

DISPLAY DEVICE (KD AND KDP)

2.08   The display device consists of a display monitor and display logic. The monitor contains a cathode ray tube (CRT) and its drive circuitry. The display logic, which is part of the station electronics package, controls the information displayed on the CRT screen.

A.   Display Monitor

2.09   The display monitor is illustrated in Figure 5. This assembly mounts atop the station electronics package or printer package, depending on the station configuration. The mounting posts on the underside of the monitor contain connectors that mate with connectors in the posts on the electronics package or printer package.

MONITOR
ON/OFF
SWITCH

BRIGHTNESS
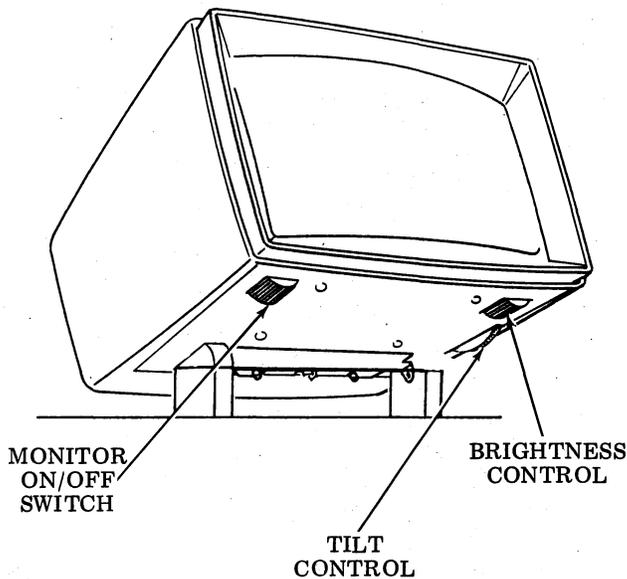CONTROL

TILT
CONTROL

Figure 5 - Display Monitor
(KD and KDP)

2.10   There are two electric controls on the underside of the monitor. The on/off switch (left front) controls the power to the monitor. The brightness control (right front) adjusts the brightness of the display. A mechanical tube tilt control, to the rear of the brightness control, adjusts the angle of the monitor screen for comfortable viewing.

2.11   The monitor displays a maximum of 24 lines with a maximum of 80 characters per line. Characters are formed in a 7 by 9 dot matrix, refreshed 60 times per second for flicker-free display.

2.12   All graphic characters of the ASCII code (Table A) are displayed. Control characters are displayed using the symbols shown next to the control characters in Table A.

2.13   The only characters not displayed are Space (produces a blank space in the display) and Backspace. The backspace function is produced locally by one of the editing controls or can be produced by an incoming Backspace character on-line.

2.14   The cursor (white rectangle) is always present when the monitor is turned on, and indicates where the next operation will take place. In Figure 6A the cursor is shown in position to enter the next letter of a message.

2.15   The operator can position the cursor to any point on the screen for editing purposes. If the cursor overlays a character already on the screen, the character changes to a black on white "negative" image (Figure 6B).

A

B

Figure 6 - Appearance of Cursor
on Screen

TABLE A

ASCII CODES

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

*No character displayed on screen.

NUL - Null	BS - Back Space	DLE - Data Link Escape	CAN - Cancel
SOH - Start of Heading	HT - Horizontal Tab	DC1 - Device Control 1	EM - End of Media
STX - Start of Text	NL - New Line	DC2 - Device Control 2	SUB - Substitute
ETX - End of Text	VT - Vertical Tab	DC3 - Device Control 3	ESC - Escape
EOT - End of Transmis'n	FF - Form Feed	DC4 - Device Control 4	FS - Field Separator
ENQ - Enquiry	CR - Carriage Ret.	NAK - Negative Acknowledge	GS - Group Separator
ACK - Acknowledge	SO - Shift-Out	SYN - Synchronous	RS - Record Separator
BEL - Bell	SI - Shift-In	ETB - End of Trans'n Block	US - Unit Separator

SP - Space   DEL - Delete

B. Display Logic

2.16   The display logic consists of the elec-
        tronic circuits that store the displayed
characters and permit editing of these characters.
The logic is contained on a set of circuit cards
mounted in the electronics package (Figure 7).
The basic display logic package provides for up to
1920 characters (24 lines of 80 characters).
Additional circuit cards can be added to the
display logic package to expand the storage
capability to 3840 characters (48 lines) or 5760
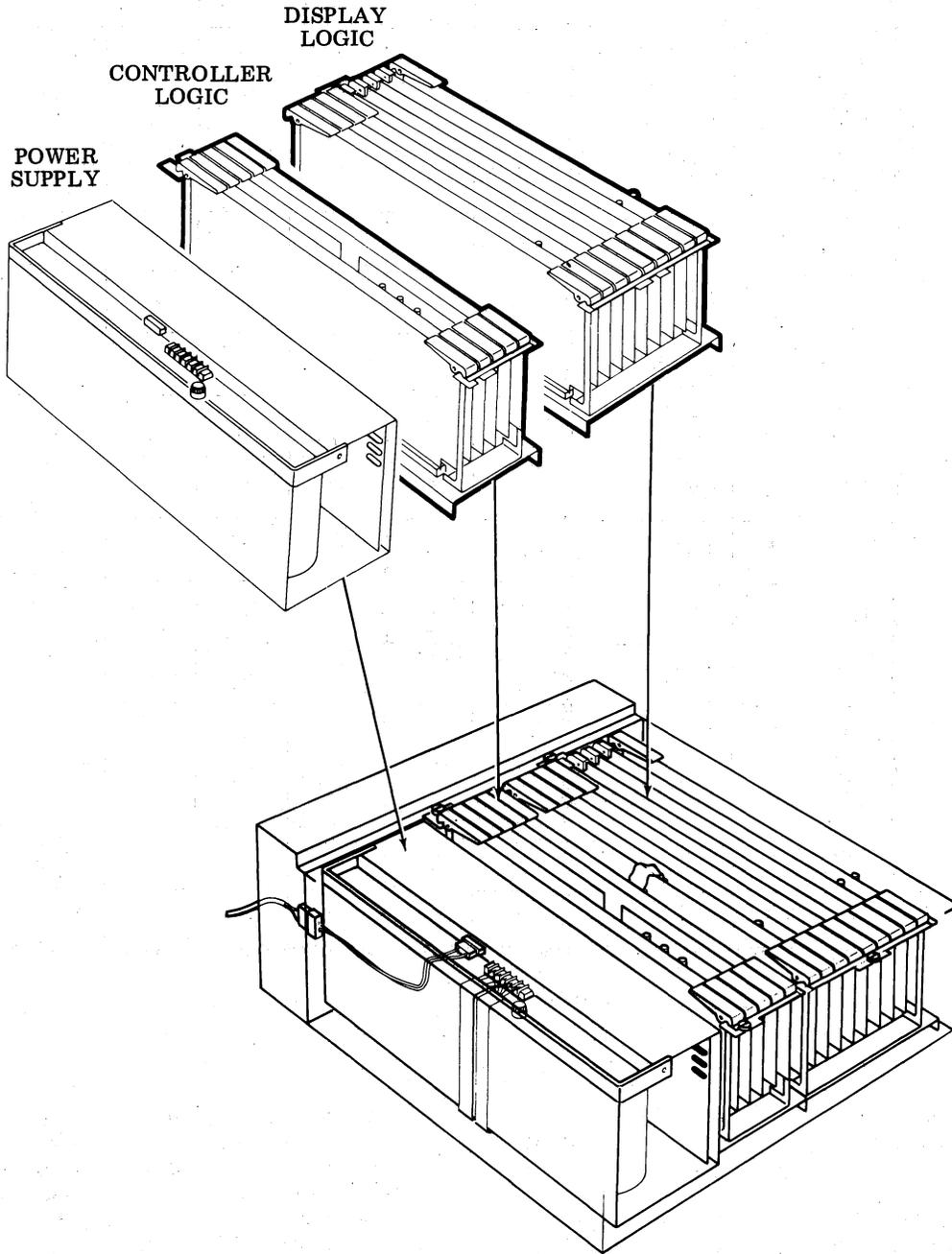characters (72 lines).

Figure 7 - Logic Circuits and Power Supply of Electronics Package

2.17   A group of 24 lines of data is referred to as a segment. This is the maximum storage capacity of the basic logic arrangement. With expanded storage, additional segments containing lines 25 to 48 and 49 to 72 are available.

2.18   The monitor can display 24 consecutive lines (one complete segment). With expanded storage it can display any one complete segment or the end of one segment and the beginning of the next. Although not displayed on the screen, the other segments in an expanded storage arrangement are retained in the logic and can be placed on the screen when desired.

2.19   The total volume of data in storage is called a page. With basic storage, a page consists of one segment. With expanded storage, a page consists of two or three segments. In the display, each segment is identified by a segment marker to the left of the first line of the segment. The segment marker for segment one is one short line (-). With expanded storage, segment two is identified by two lines (=) and segment three by three lines (≡). A segment marker is always present on the screen when the monitor is turned on, even if there is no data displayed.

2.20   Protected format is a feature of terminals equipped with full edit capability. It enables certain information (protected) to be retained while other information (unprotected) is added to or removed from the display. In effect, protected data simulates a business form which may be set up as desired by the operator. Unprotected data is then added in appropriate positions and edited in the usual way. Depending on the options described in the table of options in this section (Table B), all data or only unprotected data may be sent on-line. The operator can remove the unprotected data and retain the protected data to enter new unprotected data, or can clear the screen (and logic) when the operation is completed.

2.21   A typical protected format display is illustrated in Figure 8A. The protected data is always displayed at half-intensity so it can be distinguished from unprotected data. Unprotected data is added to the display in Figure 8B.

2.22   A highlight feature, also a feature of full edit terminals, makes it possible to emphasize certain data in the display. With this feature, highlighted characters continually flash from full to half-intensity.

A

B

Figure 8 - Protected Data (A) and Protected Data Plus Unprotected Data (B)

PRINTER (KDP AND ROP)

2.23   The DATASPEED 40 printer (Figure 9) is an electromechanical impact printer which provides hard copy of data stored in the display logic or received on-line. Maximum line length for the basic printer is 80 characters per line, spaced 10 characters per inch horizontally, and 6 lines per inch vertically. A 2-line buffer in the printer logic permits printing of one full line of data while the next line is being accumulated.
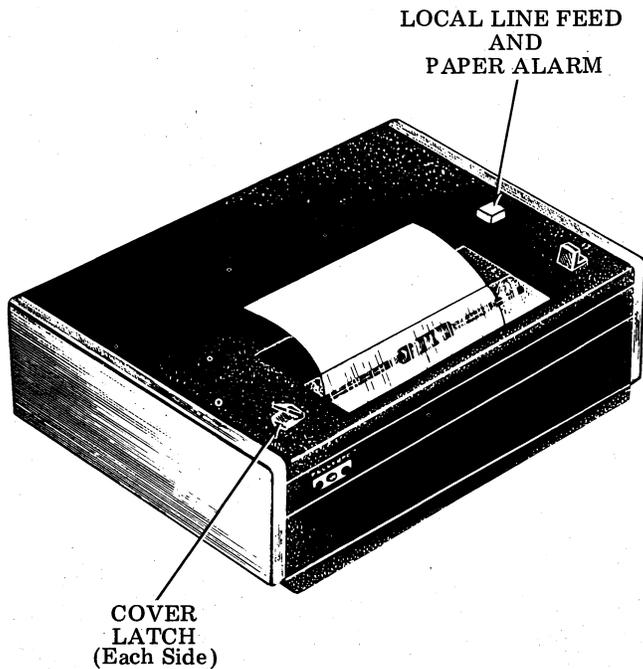
Figure 10 - Printer

Figure 9 - DATASPEED 40 Printer Package

Figure 11 - Printing Mechanism

2.24   The printer mechanism is shown in Figure 10. Printing is accomplished by a horizontal row of 80 print hammers, one for each character position across the page. The type pallets are mounted in a belt-like carrier which moves at a constant speed across the face of the page. As indicated in Figure 11, the print hammers face the type pallets, and the paper and ribbon are between them. The hammers impact the paper and ribbon against the character pallets when the pallets are in the appropriate columns of the line.

2.25   The printer can be arranged to print a full complement of 94 ASCII graphic characters or to print a 63 character monocase set. With monocase printing, the lower case graphics may be "folded over" by the printer logic so that the upper case equivalents are printed. This makes it possible for a 63 character printer to print information received from a 94 character source.

2.26   The type carrier has 192 type pallet slots. For the monocase printer, these slots are filled by three sets of 63 character pallets, plus one identification pallet between each set. The identification pallet for this carrier option is ≛ (a double letter A, broken by horizontal lines). For the full ASCII option there are two sets of 94 character pallets plus two additional slots at the end of each character set. In each pair of additional slots, the first is a blank and the second contains the identification pallet ≛ (letter A over B, broken by horizontal lines).

2.27   The identification pallets serve as a substitute for a character received with incorrect parity, if the printer is set up for this option. With this option, if a parity error is detected in the received data, the errored character is printed as ≛ or ≛ ,depending on the type carrier used.
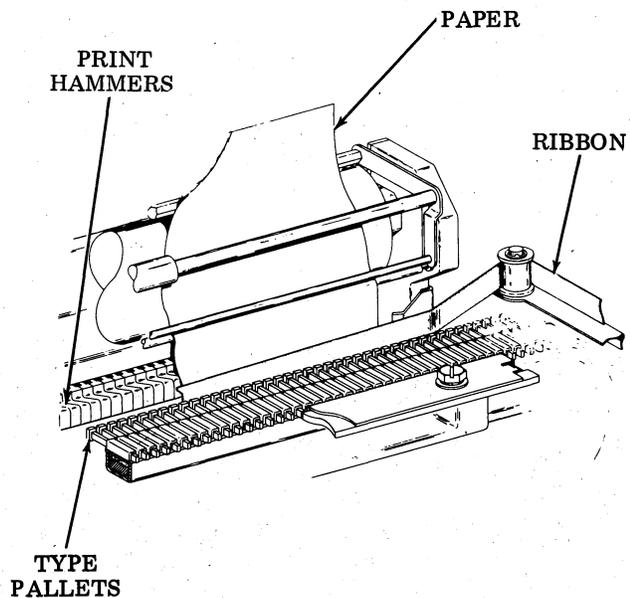
Note: The identification pallets are cast to be read when viewing the face of the pallet. This is why the character (noticeably the "B") is a mirror image when printed.

2.28   The printing rate depends on the time it takes for one complete character set to pass across the paper. Since the carrier velocity is the same for all printers, the printing rate is related to the size of the character set used. With the full ASCII set (94 characters per set, two sets per carriage) the maximum time required to print one line is 272 ms. For the monocase set (63 characters per set, three sets per carriage) the maximum time is 191 ms per line. In terms of lines per minute, this amounts to approximately 220 lines per minute for full ASCII and 314 lines per minute for monocase printing.

2.29   The line feed time of the printer is approximately 30 ms. If New Line characters are received on-line faster than they can be executed, the printer ignores New Line characters and prints the data serially on one line until a certain minimum line length or line fill is received. This feature, referred to as data stacking, prevents loss of characters that would otherwise occur during line feed operations. Data stacking occurs only during on-line reception.

2.30   A 1000-character buffer is available as a variable feature for ROP stations. This feature eliminates the need for data stacking, because the buffer temporarily stores characters when the input data rate exceeds the capability of the printer, and supplies these characters at a rate the printer can handle. If the buffer reaches

capacity, the logic drops the reverse channel signal to halt the incoming data. When the buffer can accept more data, the reverse channel signal is restored and transmission resumes.

2.31   The printer responds to the following control characters:

LF — Produces carriage return and line feed.

VT — Produces carriage return and line feed.

FF — Produces carriage return and line feed.

CR — Produces carriage return without line feed (permits underline or overprint).

ETX — Produces paper feed of approximately 16 lines (field option).

All other control characters are ignored.

2.32   The printer includes a local paper advance button at the right side of the cover (Figure 9). Paper feeds out at slightly less than the line feed rate as long as this button is depressed. This button includes a low-paper alarm indicator. If a low-paper condition occurs (about 10 feet of paper on roll), the indicator lights but printing continues to the end of the message. The Data Terminal Ready lead then turns off, and causes the data set to turn off reverse channel, so no further messages can be received on-line until the paper is replaced. Local printing is also inhibited in the alarm condition. An option is provided in the ROP controller to drop DTR immediately on low paper. This may be required when long messages or multiple messages are received on a single call.

OPERATOR CONSOLE (KD AND KDP)

2.33   The operator console of a KD or KDP permits keyboarding of data, editing of displayed data, and manual control of the station. The console contains a keyboard, editing controls, and operational controls and indicators.

2.34   Figure 12 shows the key layout on the basic operator console. The labeled keys represent the basic key complement. The PRINT ON LINE and PRINT LOCAL keys (shaded in Figure 12) are present only in the KDP. The CAPS LOCK key (shaded) is present

only if the station is optioned for full ASCII character generation. Unlabeled key positions are covered by blocking keytops.

2.35   Each key is a modular switch, independent of all other keys. These key-switches are soldered directly to a circuit card on the underside of the console. The logic circuits generate the characters and produce the desired operations. The keytops can be inserted or removed to form various keyboard arrangements.

A.   Keyboard

2.36   Figure 13 shows the keyboard of the operator console. The graphic key layout is similar to that of a standard office typewriter, with additional keys to provide ASCII control characters. The keyswitch and logic circuit design permits high speed operation (over 2000 words per minute). If a key is depressed before another key is fully released, outputs are produced sequentially for each key depressed.
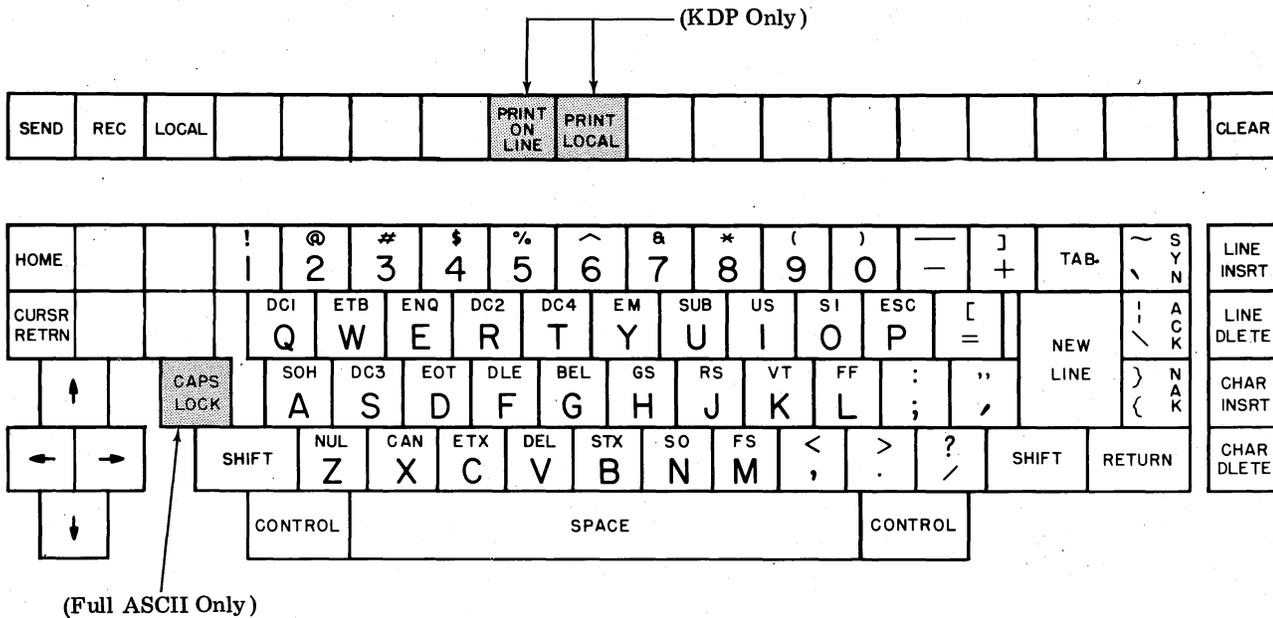
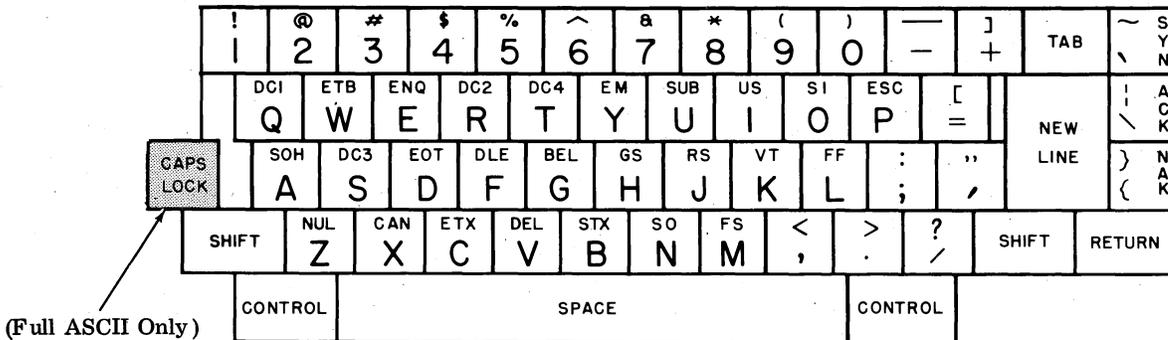Figure 12 - Key Layout of Basic KD or KDP Operator Console

Figure 13 - KD or KDP Keyboard

2.37 ASCII control characters (except for TAB, NEW LINE, and RETURN, which have their own keys) are produced by depressing CONTROL and the corresponding character keys.

2.38 The CAPS LOCK key (if present) operates in essentially the same way as the shift lock key of a standard typewriter, but shifts only the alpha characters and does not affect the others. This makes it possible to type combinations of alpha capitals and numbers without shifting and unshifting. This key is a push-to-lock, push-to-unlock keyswitch. When the CAPS LOCK key is not depressed, the keyboard provides upper and lower case graphics as controlled by the SHIFT keys. When depressed, lower case graphics in the last two columns of Table A are converted to upper case equivalents.

2.39 For monocase operation, the CAPS LOCK keyswitch is locked in the depressed position and covered by a blocking keytop.

2.40 The ⌐ and ⟩ keys and the spacebar are repeatable. By depressing them beyond the normal downstop position they continuously generate characters at a 28 character-per-second rate until released.

B. Basic Editing Controls

2.41 The editing controls are used to edit displayed data in the local mode. The basic editing cluster at the left of the keyboard (Figure 14) controls the cursor position but does not alter the characters in storage. These controls are used to position the cursor preparatory to editing. The keys function as indicated in Figure 14.

2.42 The basic editing controls of Figure 15 (right side of keyboard) alter the characters in the logic (and on the screen). They function as indicated in the figure.

C. Operational Controls

2.43 There are three operational mode controls common to both the KD and KDP. These keys (with indicators) are the SEND, REC, and LOCAL keys on the control strip as shown in Figure 16. The PRINT ON LINE and PRINT LOCAL keys are present in a KDP to control the operation of the printer. The basic functions of these keys and indicators are indicated in the figure.

OPERATOR CONSOLE (ROP)

2.44 The operator console of the RO Printer contains four operational control keys and indicators as illustrated in Figure 17. The basic functions of these keys are indicated in the figure.

CONTROLLER (KD AND KDP)

2.45 The controller consists of a set of circuit cards which control the terminal devices and provide an interface to the data set. These cards are part of a modular electronics package which also includes the display logic and power supply (Figure 7). The complete electronics package may be in a cabinet under or adjacent to the display unit, or it may be mounted in the pedestal, depending on the station configuration. Certain cards are switch-programmable to permit selection of field options.

Return cursor, from any point on screen, to first character position of first line of first segment.

Return cursor from any position in a line to first character position of that line.

Move cursor one position in direction indicated. The ← key provides backspace. These four keys are repeatable when depressed beyond normal downstop position. Cursor movement is limited to the segment displayed on the monitor.

Figure 14 - Basic Keys of Left-Hand Editing Cluster

Removes all data from (and including) cursor position to the right and down to bottom of page.

Shift all data down one position from line in which cursor is located. Cursor goes to first character position of vacated line, and the line is filled with spaces. Function not performed if characters other than spaces are in last line of page.

CLEAR

LINE
INSRT

LINE
DLETE

CHAR
INSRT

CHAR
DLETE

Removes all characters from line in which cursor is located. Cursor goes to first character position of line, and all subsequent lines move up one position to fill in vacant line.

Shifts all characters in a line one position to right from cursor position, leaving space at cursor position. Operation cannot occur unless there is a space at end of line. This key is repeatable.

Removes character overlayed by cursor. All characters to right of cursor move one position to left to fill in vacant position. This key is repeatable.

THE QUICK BROWN
FOX JUMPED OVER
THE LAZY DOG'S

THE QU

THE QUICK BROWN
THE LAZY DOG'S

THE QUICK BROWN

THE LAZY DOG'S

THE QUICK BROWN
FOX JUMPED OVER
THE LAZY DOG'S

THE QUICK BROWN
THE LAZY DOG'S

THE QUICK BROWN

THE QUICK BROWN

THE QUICK BROWN

THE QUICK BROWN

Note: Basic functions indicated above are modified by protected data in terminals equipped with full edit feature. See 3.07 for details.

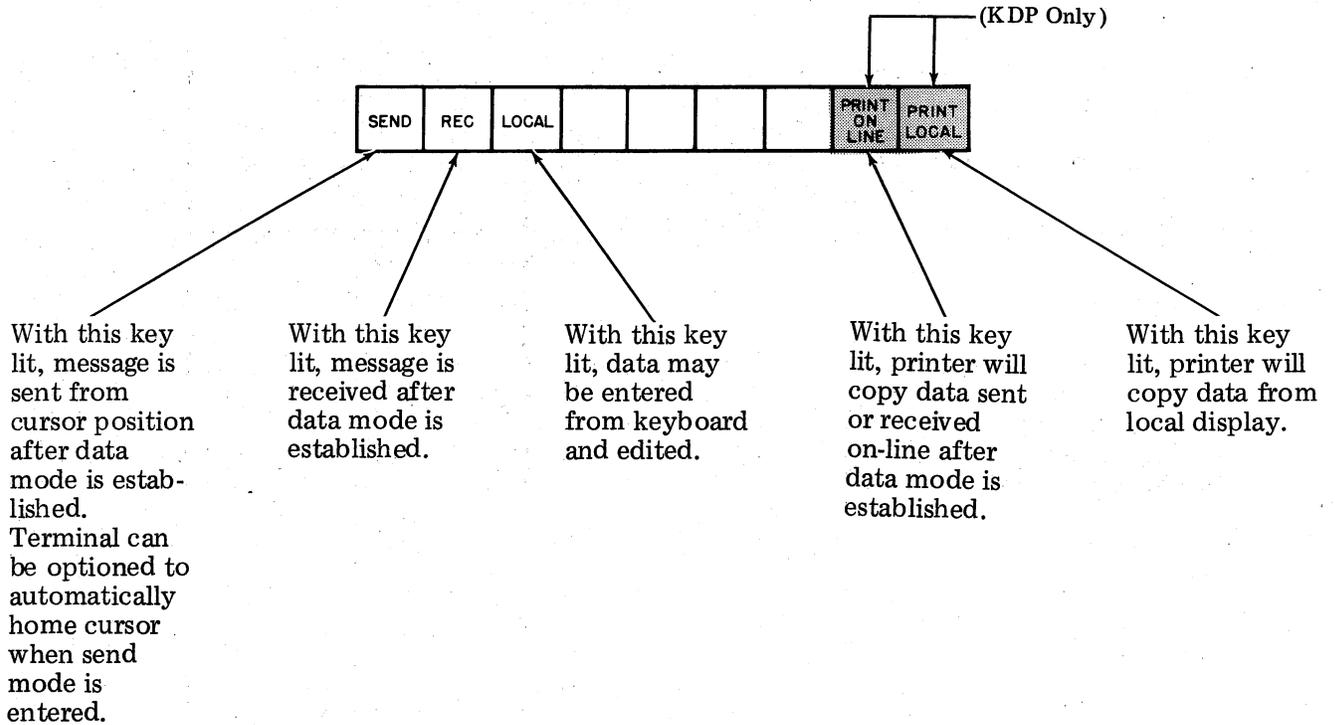Figure 15 - Basic Functions of Right-Hand Editing Controls

(KDP Only)

| SEND | REC | LOCAL | | | | | PRINT ON LINE | PRINT LOCAL |

With this key lit, message is sent from cursor position after data mode is established. Terminal can be optioned to automatically home cursor when send mode is entered.

With this key lit, message is received after data mode is established.

With this key lit, data may be entered from keyboard and edited.

With this key lit, printer will copy data sent or received on-line after data mode is established.

With this key lit, printer will copy data from local display.

Figure 16 - Basic Functions of Operational Controls

| | INTRPT | TRANS START | IN SERVICE | DATA ERROR | |

Permits incoming message to be interrupted. When depressed (indicator lights red), turns off reverse channel to halt remote sender. Depressing again turns off indicator and restores reverse channel.

(Optional)
Controls discrete calling generator if station is so equipped. When depressed (indicator lights green), 14-bit message is sent to remote sender. Also used to test printer off-line by generating 64-character test message which repeats until depressed again.

Indicator lights (green) when station is in operating condition (turned on, no alarms, supply voltage normal, etc). Goes out if alarm occurs. When alarm is corrected, key is depressed to place station in operation. Key may also be operated to take station out of service.

(Optional)
Indicator lights (red) when parity error is detected in incoming message. Depressing key extinguishes indicator.
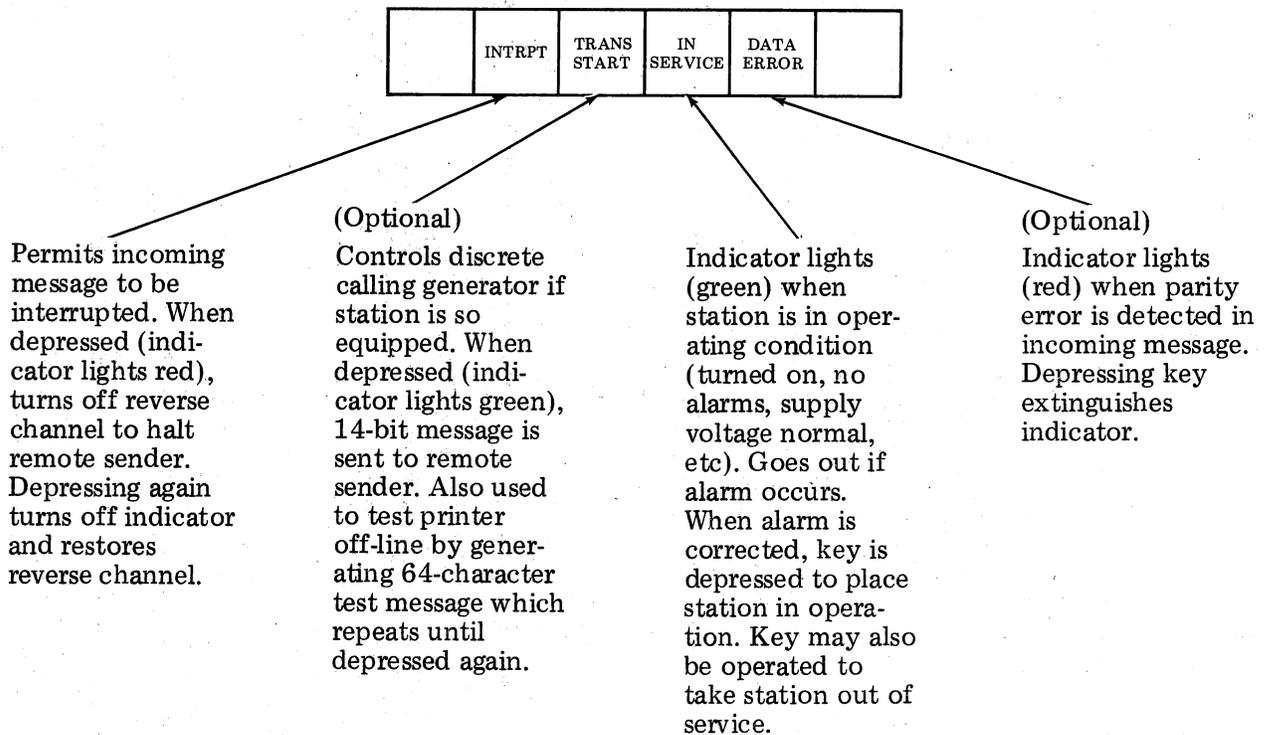
Figure 17 - Basic Functions of Controls and Indicators on Operator
Console of ROP

CONTROLLER (ROP)

2.46   The ROP controller contains the circuit cards which control the printer and provide an interface to the data set. There is provision for an optional 1000-character buffer. The controller module is mounted with the power supply module in the pedestal of the printer as shown in Figure 18.

POWER SUPPLY

2.47   The power supply is a modular unit mounted in the electronics package (see Figures 7 and 18). It operates from the 117 v 60 Hz ac line and produces dc outputs of +5 v, +12 v, and -12 v to operate the logic circuits.

DATA SETS

2.48   DATASPEED 40 Stations operate on-line at 1200 baud with a field option available for 1050-baud operation. The data set used with the station must permit asynchronous operation at these speeds. The interface must conform to EIA (Electronic Industries Association) Specification RS-232-C. The active leads of the EIA interface for DATASPEED 40 operation are shown in Figure 19.

2.49   The voltage levels on the EIA interface leads conform to those specified in RS-232-C. Maximum open-circuit voltage does not exceed 25 volts between any signal lead and signal ground or protective ground. Maximum
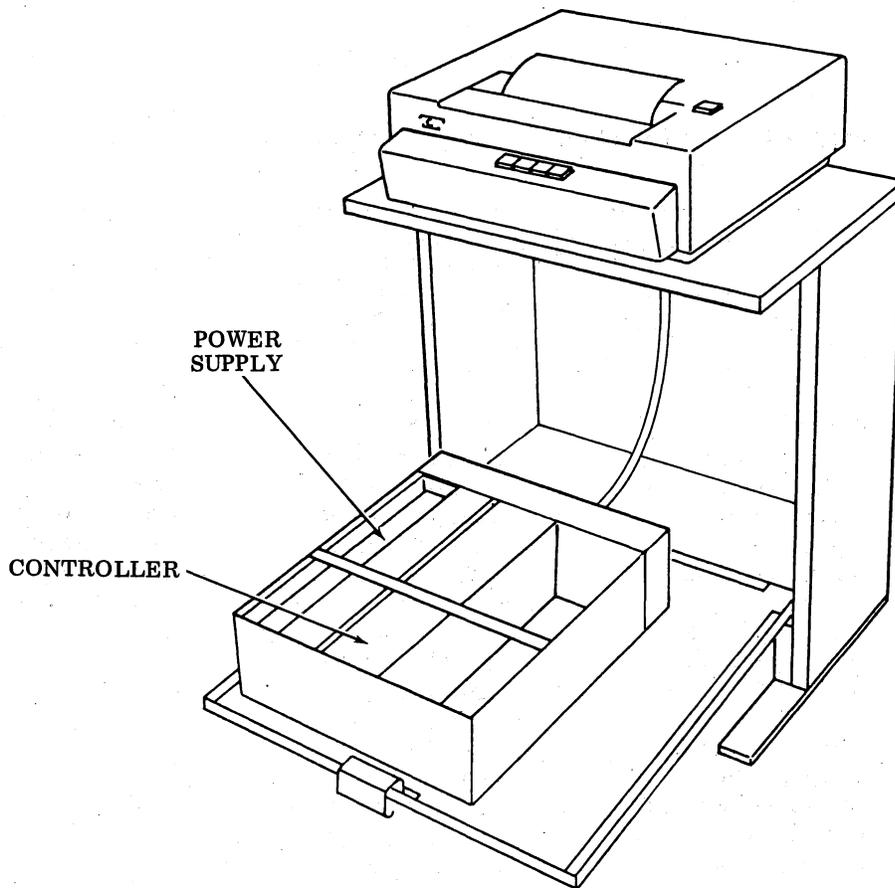

Figure 18 - Controller and Power Supply Position in RO Printer

short-circuit current between any two conductors does not exceed 0.5 A.

2.50 The Marking level for data signals is designated as -3 to -25 v, and the Spacing level is +3 to +25 v, with respect to signal ground. For control signals, the ON level is designated as +3 to +25 v, and the OFF level is -3 to -25 v. The -3 to +3 v region is an undefined transistion region. However, any level below +3 v is Marking or OFF. Thus, a zero signal condition (including an open-circuit or loss of power) results in a constant Marking or OFF condition and prevents false indications.

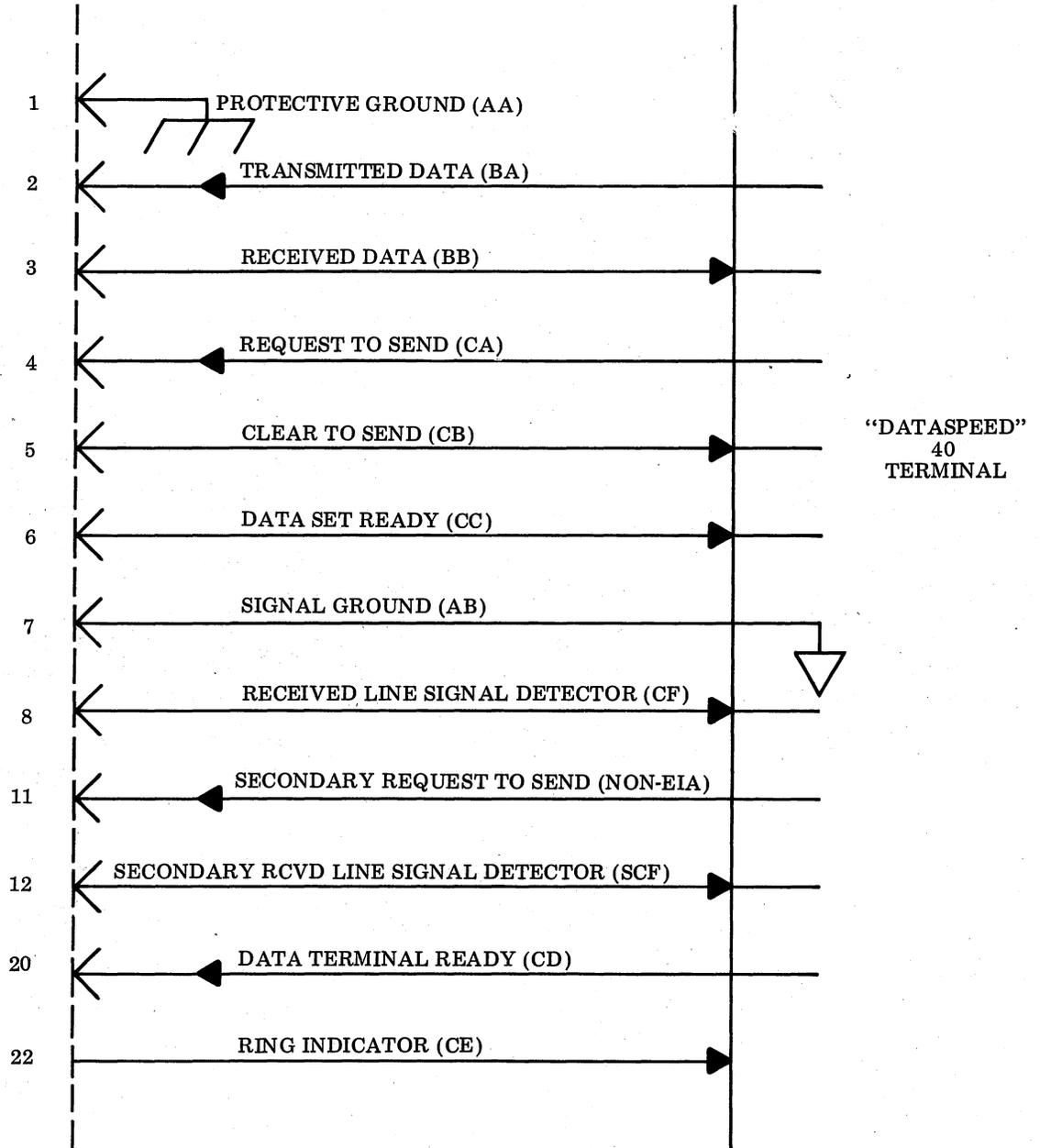Figure 19 - EIA Interface Connections

2.51   The functions of the EIA interface signal leads as used in DATASPEED 40 Stations are as follows:

PROTECTIVE GROUND (AA) — Electrically bonded to equipment frame and connected through power cable to external ground to minimize shock hazard.

SIGNAL GROUND (AB) — Common reference for signal circuits. Connected to equipment frame to minimize noise in signal circuits.

TRANSMITTED DATA (BA) — Carries data signals from DATASPEED 40 Terminal to data set for transmission to remote station. In order for this lead to be active, the Request To Send, Clear To Send, and Data Set Ready leads must be ON. When not conditioned to send, DATASPEED 40 Terminal must hold this lead OFF (constant Mark). RO unit must hold this lead OFF at all times.

RECEIVED DATA (BB) — Carries data signals from data set to DATASPEED 40 Terminal when data is received from remote station. In half-duplex operation, Received Data is held OFF (constant Mark) when Request To Send leads at both stations are OFF.

REQUEST TO SEND (CA) — Carries control signal from DATASPEED 40 Terminal to data set to condition data set to transmit. Carrier is transmitted when this signal is ON. Must remain ON whenever DATASPEED 40 Terminal has data to send or is sending data. Must remain ON for at least 1 ms after end of last bit applied to Transmitted Data lead to insure that last bit clears modulator before carrier turns off. If local copy is being received from 2-wire circuit from demodulator during transmission, must remain ON for at least 4 ms to allow last bit to clear demodulator. In half-duplex service, OFF condition holds data set in receive condition, and ON condition holds data set in transmit condition, regardless of conditions of Transmitted Data and Received Data leads. RO units must hold Request To Send OFF at all times.

CLEAR TO SEND (CB) — Carries control signal from data set to DATASPEED 40 Terminal indicating that data set is prepared to transmit data. The ON condition is a response to the ON condition of the Request To Send lead, delayed 200 ms to permit the data set to establish a communication channel to the remote station. When Request To Send turns OFF, Clear To Send also turns OFF. In RO units, Clear To Send must be held OFF at all times.

DATA SET READY (CC) — Carries control signal from data set to DATASPEED 40 Terminal to indicate that data set is ready to operate.

An OFF condition indicates:

(a)   An abnormal or test condition that disables or impairs the service.

(b)   That the communication channel is switched to the voice mode.

(c)   That the local data set is not connected to the communication channel (ie, the data set is on-hook).

The Data Set Ready lead is ON at all other times. This lead merely indicates the status of the local data set. It is not an indication that a communication channel has been established to a remote station, nor does it indicate the status of any remote station or equipment.

DATA TERMINAL READY (CD) — Carries control signal from DATASPEED 40 Terminal to data set to control switching of the data set to the communication channel. The ON condition permits the data set to be connected to the communication channel. If the station is equipped to originate calls manually or by use of an Automatic Calling Unit, the ON condition of the Data Terminal Ready lead serves only to maintain the connection established by these means. If the station is wired for automatic answering of received calls, connection to the line occurs as a response to the ringing signal. An OFF condition removes the data set from the communication channel for reasons such as:

(a)   Free the line for other use, such as voice or use by other stations.

(b)   Permit use of DATASPEED 40 Terminal for local operation.

(c)   Terminating a call (going on-hook).

The OFF condition of the Data Terminal Ready lead does not disable the operation of the Ring Indicator lead.

RING INDICATOR (CE) — Carries a control signal from the data set to the DATASPEED 40 Terminal to indicate that a ringing signal is being received from a remote station. This circuit is used for automatic answering of calls. The ON condition indicates that a ringing signal is being

received. An OFF condition is present at all other times. Operation of this circuit is not affected by the condition of the Data Terminal Ready lead.

RECEIVED LINE SIGNAL DETECTOR (CF) — Carries a control signal from the data set to the DATASPEED 40 Terminal to indicate that the data carrier is being received and has been received for at least 40 ms. If the data carrier is lost (transmiting data set is turned OFF or a fault condition exists), Received Line Signal Detector turns OFF after a 15 ms delay. In half-duplex service, an option in the data set allows Received Line Signal Detector to respond to carrier signal from either the local or remote transmitting data set.

SECONDARY REQUEST TO SEND (Non-EIA) — Carries a signal from the DATASPEED 40 Terminal to the data set to permit communication from the receiving data set to the transmitting data set simultaneously with the primary data channel. Can be used only when Request To Send is OFF. Provided only on data sets equipped for Reverse Channel.

SECONDARY RECEIVED LINE SIGNAL DETECTOR (SCF) — Carries a signal from the data set to the DATASPEED 40 Terminal in response to a Reverse Channel signal from the receiving data set (remote station) simultaneous with the primary data channel. Provided only on data sets equipped for Reverse Channel.

2.52   A 202C Data Set is initially described for DATASPEED 40 Stations. This data set meets the above requirements and provides necessary dial and control facilities for switched network operation. Other data sets suitable for DATASPEED 40 Stations are the 202D (with an 804A Data Auxiliary Set) and 202S (with a 565HK or 2565HK Telephone Set, or equivalent). The data set options required for operation in DATASPEED 40 Stations are described in Field Installation and Maintenance Practice Section 575-100-350.

2.53   Typical data set mounting arrangements are shown in Figure 20 for the KDP (top) and ROP (bottom) pedestal mounted units. A 202C Data Set is assumed for these examples. A 202D or 202S Data Set would be mounted inside the pedestal, with the 804A Data Auxiliary Set or 565HK/2565HK Telephone Set mounted on top of the pedestal. Details of data set mounting procedure are provided in Field Installation and Maintenance Practice Section 575-100-350.
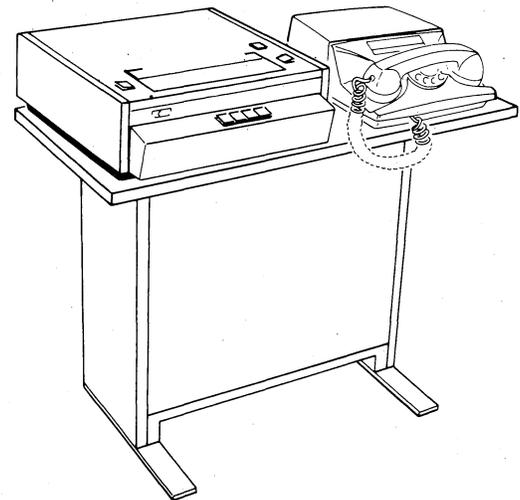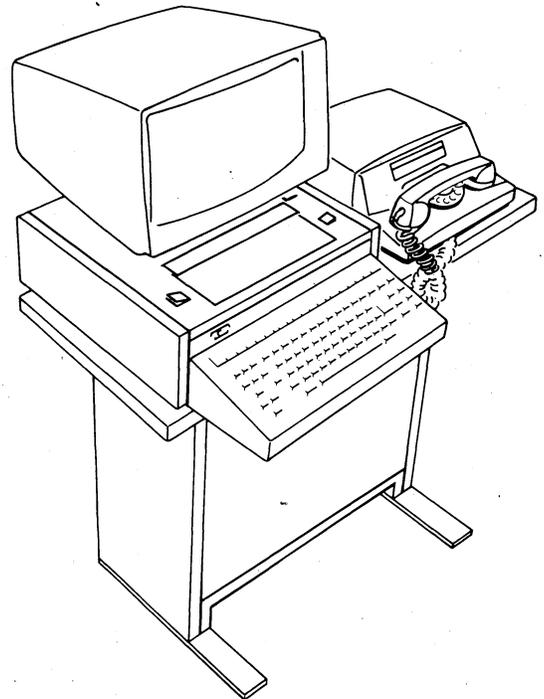

Figure 20 - Mounting Arrangements for 202C Data Set on KDP or ROP Pedestal

3.   VARIABLE FEATURES AND FIELD OPTIONS

3.01   DATASPEED 40 Terminals can be ordered with a number of variable features, and can be programmed for a number of operating options in the field. The variable

features and field options are described in the following paragraphs.

EXPANDED STORAGE (KD AND KDP)

3.02   This feature increases the storage capacity of the basic logic (24 lines) to 48 lines or 72 lines. The feature is provided by adding one circuit card per additional segment of storage to the display logic package.

3.03   Three keytops are added to the operator console to provide access to the additional segment(s). These keys are shown outlined in Figure 21. The functions of the three keys are described in the figure.

ADDITIONAL EDITING (KD AND KDP)

3.04   This feature provides horizontal tab, highlight, protected format, and form outline operations not available with the basic editing arrangement. It also adds an audible alarm to the operator console. The feature requires alternate circuit cards in the display logic package and additional cards in the controller logic package.

3.05   The additional editing operations are controlled by a set of keys added to the operator console. The added keys are shown outlined in Figure 22. The functions of the keys are indicated in the figure.

(KDP Only)

(Full ASCII Only)
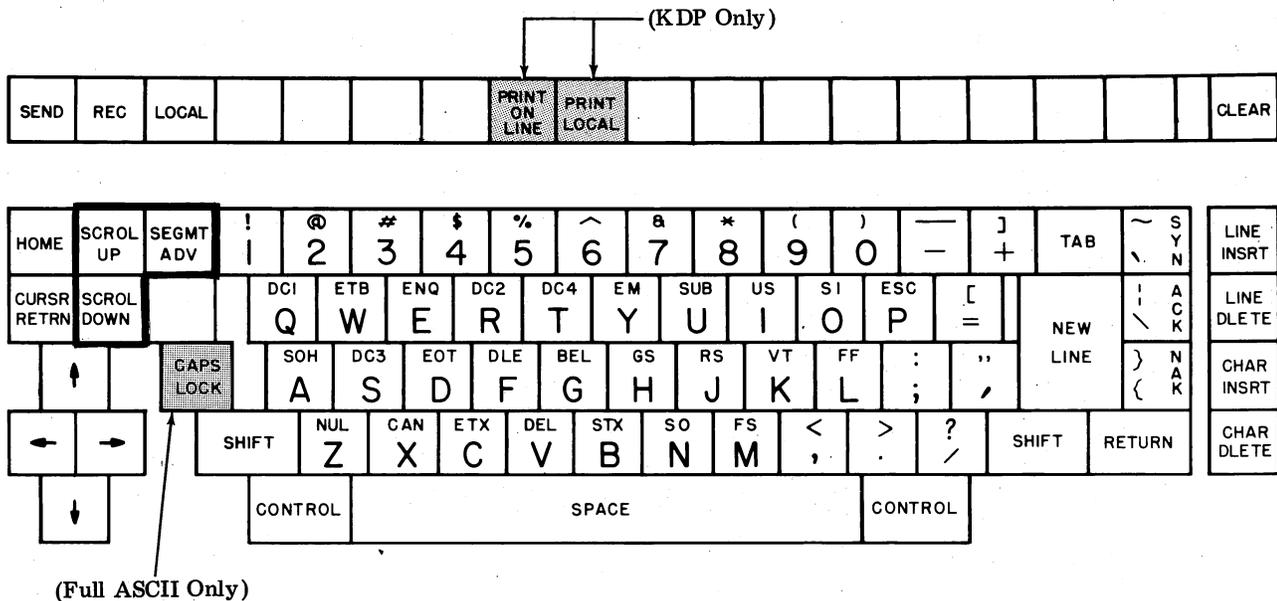
SCROL UP — Moves displayed copy up one line at a time. Top line disappears and next line of page appears at bottom of display. Scrolling stops when last line of page is at bottom of display. This key is repeatable.

SCROL DOWN — Moves displayed copy down one line at a time. Bottom line disappears and previous line of page appears at top of display. Scrolling stops when first line of page is at top of screen. This key is repeatable.

SEGMT ADV — Causes segments of display to advance from one to two to one (48 line logic) or one to two to three to one (72 line logic).

Figure 21 - Key Layout of KD or KDP Operator Console With Expanded Storage Feature

— (KDP Only)

| SEND | REC | LOCAL | | | FORM SEND | | PRINT ON LINE | PRINT LOCAL | | | | HIGH LIGHT | FORM ENTER | TAB SET | TAB CLEAR | | CLEAR |

(Full ASCII Only)
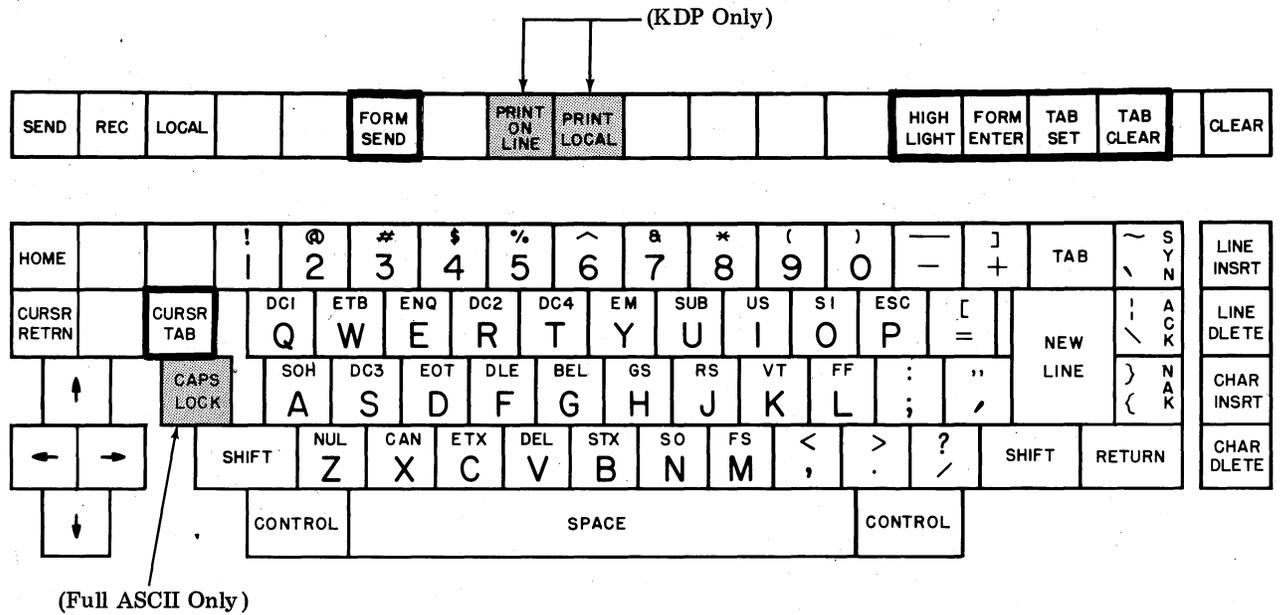
FORM SEND — Permits operator to send, as part of message, all escape sequences defining conditions such as highlighted or protected data.

HIGH LIGHT — All data entered with this key depressed will be highlighted (flash continuously full to half-intensity at a 1 cycle-per-second rate). Protected data is not affected.

FORM ENTER — All data entered with this key depressed will be protected. This key must be depressed to enter, change, or clear protected data.

TAB SET — Causes a vertical column of tab marks (dots) from the cursor location to the end of the page. No characters on the page are affected.

TAB CLEAR — Clears all columns of tab marks from the cursor location to the end of the line.

CURSR TAB — Advances the cursor to the next tab mark or to the first character position of the next line.

Figure 22 - Key Layout of KD or KDP Operator Console With Full Edit Feature

3.06   Protected characters are entered, changed, or cleared with the FORM ENTER key depressed (indicator lit). When the FORM ENTER key is released (indicator unlit) the protected characters are unaffected by the editing controls. Any attempt to enter data in a protected area will result in an audible alarm. The cursor will advance but the protected data will not change. Forms are outlined by entering a protected New Line character one character position beyond the last character desired in the line.

3.07   Protected characters and form outline modify the functions of the right-hand editing controls as follows (control functions are otherwise as indicated in Figure 15):

CLEAR — Removes only unprotected characters from cursor position to end of page. To remove protected characters, FORM ENTER must be depressed.

LINE INSRT — Function not performed if characters other than unprotected spaces or protected New Line are in last line of line field, or if line containing cursor has protected characters other than protected New Line.

LINE DLETE — Function not performed if line containing cursor has protected characters other than protected New Line.

CHAR INSRT — Function not performed if cursor is over protected character.

CHAR DLETE — Function not performed if cursor is over protected character.

3.08   The horizontal tabulation function is provided with the full edit feature. Operation of the TAB key on the keyboard causes a horizontal tab character (▶) to be entered in the cursor position, if the cursor is in an unprotected position. All unprotected characters between this point and the next tab stop are changed to spaces. The cursor advances to the next tab stop, or if there are no tab stops in the same line, to the first character position of the next line.

CONVERSATIONAL MODE (KD AND KDP)

3.09   This feature permits the DATASPEED 40 Station to exchange data with a remote station (ie, another DATASPEED 40 Station or computer installation) one line at a time or in blocks consisting of some predetermined number of lines. For single line conversation, the DATASPEED 40 Station transmits one line ending with a CR character, then reverts to the receive mode and awaits a reply from the remote station. For multiple line transmission, each block of data is prefixed with a DC2 and ended with a DC4.

3.10   The two keys outlined in Figure 23 are added to provide conversational mode. The functions of these keys are indicated in the figure.

PRINTER CHARACTER STORAGE (ROP)

3.11   This feature provides a 1000-character buffer that permits the RO printer to operate with remote stations with higher data rates. The buffer is part of a special controller module which is used in place of the basic ROP controller module to provide the storage feature.

FIELD OPTIONS

3.12   The DATASPEED 40 Station components provide a number of field options to satisfy the operating requirements of the user. These options are implemented by switches on the logic circuit cards. Thus, it is a simple matter to select an option, or to change it if the operating requirements of the station change at some later time.

3.13   In Table B the options are grouped according to the type of terminal. The options in any group apply only to the type of terminal(s) indicated. In each case the factory programmed option is indicated by a circle around the letter of the option.

—(KDP Only)

| SEND | REC | LOCAL | S/R | INTRPT | | PRINT ON LINE | PRINT LOCAL | | | | | | | | | | CLEAR |

HOME			! 1	@ 2	# 3	$ 4	% 5	⌃ 6	& 7	* 8	(9	) 0	— -	] +	TAB	~ \	S Y N	LINE INSRT
CURSR RETRN			DCI Q	ETB W	ENQ E	DC2 R	DC4 T	EM Y	SUB U	US I	SI O	ESC P	[=		NEW	¦ \	A C K	LINE DLETE
↑		CAPS LOCK	SOH A	DC3 S	EOT D	DLE F	BEL G	GS H	RS J	VT K	FF L	: ;	,, ,	LINE	} (	N A K	CHAR INSRT
←	→	SHIFT	NUL Z	CAN X	ETX C	DEL V	STX B	SO N	FS M	< ,	> .	? /	SHIFT	RETURN			CHAR DLETE
↓		CONTROL		SPACE							CONTROL						

(Full ASCII Only)
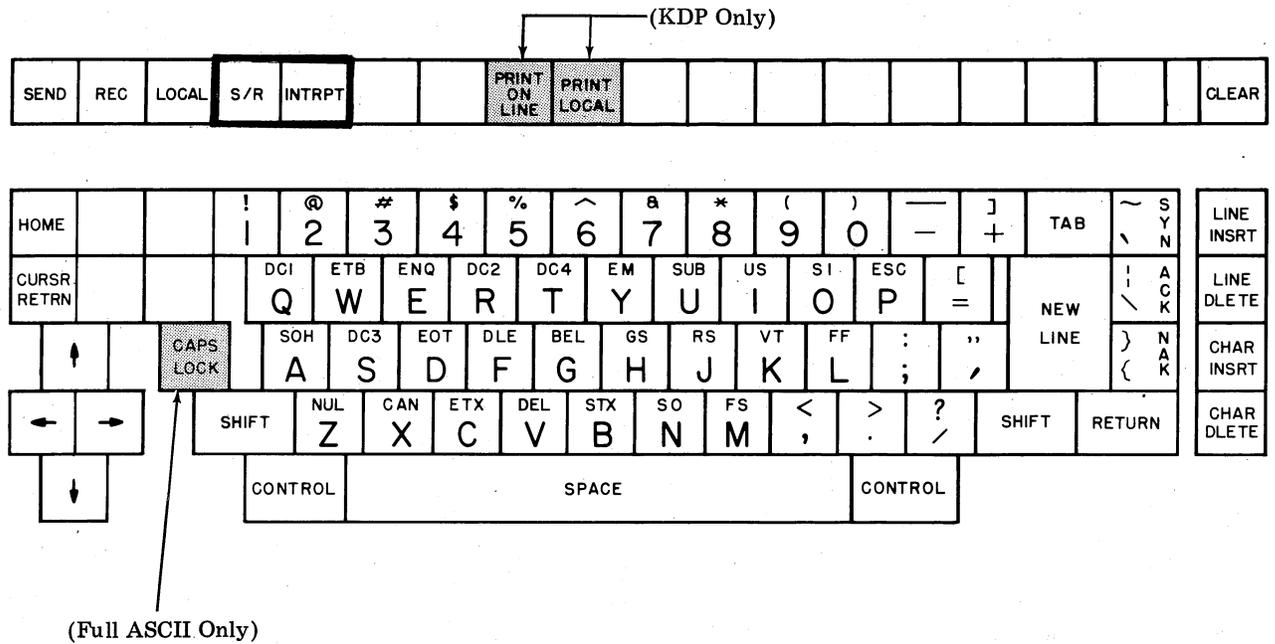
| S/R | Places station in conversational mode for line-at-a-time exchange under control of CR character, or for multiple line exchange prefixed by DC2 and ended by DC4. Initially conditions terminal as receiver. Message is entered with appropriate delimiters (CR or DC2/DC4). Terminal then alternates between send and receive mode to send and receive data. |

| INTRPT | Interrupts received message by turning off reverse channel (if reverse channel is used). |

Figure 23 - Key Layout of KD or KDP Operator Console With Conversational Mode Feature

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS

OPTIONS IN THIS GROUP ARE BASIC TO KD AND KDP TERMINALS			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
1	Interface to Printer (use one)	a. EIA	Used when terminal is associated with a remote RO printer with EIA interface.
		(b.) SSI	Used when terminal is associated with adjacent printer with SSI interface (KDP operation).
2	S/R Send (applies Only to terminals With Conversational Mode Feature) (use one)	(a.) DC2 sent auto	Controller automatically sends DC2 when conversational mode is entered. (Terminal switches to Send mode, sends DC2, then switches back to Receive mode to await response.) Multiline messages w/o DC2 can then be sent. Message must end with DC4.
		b. DC2 sent w/message	Multiline message to be sent to remote processor must begin with DC2 and end with DC4.
3	Send/Receive Baud Rate (use one)	a. 1050	Internal clock synchronized to send and receive at selected rate.
		(b.) 1200	
		c. 2400	Reserved for future use.
4	EIA Reverse Channel (use one)	(a.) Reverse channel operative	Terminal presents STD to data set in Receive mode, and must receive SRD from data set in Send mode.
		b. Reverse channel inoperative	Terminal presents STD to data set in Receive mode, but does not require SRD from data set in Send mode.
28	Disconnect on Loss of Carrier (use one)	(a.) Disconnect after 45 seconds	In Receive mode, timer starts on loss of carrier. After 45 seconds, disconnect occurs.
		b. Does not disconnect	Timer disabled. Does not disconnect on loss of carrier.

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO KD AND KDP TERMINALS WITH FULL EDIT FEATURES			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
5	Response to Received Characters (use one of each pair)	ⓐ Reject NUL	Received NUL characters are not displayed.
		b. Accept NUL	Received NUL characters are displayed as N_U.
		ⓒ Reject CR	Received CR characters are not displayed.
		d. Accept CR	Received CR characters are displayed as ←.
		ⓔ Reject DEL	Received DEL characters are not displayed.
		f. Accept DEL	Received DEL characters are displayed as ⧄.
6	Response to Received ESC Sequences (use one)	a. Received ESC sequences displayed but not performed	All received ESC sequences are displayed as Ec and second character of sequence (ie, Ec4), but function is not performed.
		ⓑ Received ESC sequences performed but not displayed	All received ESC sequences are performed, but no character is displayed on monitor screen.
7.	Response to Received Characters With Vertical Parity Error (use one)	a. Substitute character does not replace errored character	When character with incorrect (odd) vertical parity is received, the received character is displayed.
		ⓑ Substitute character replaces errored character	When character with incorrect (odd) vertical parity is received, the errored character is replaced by the character SUB, displayed as S_B.
8	Send Message-Ending Character (use one of each pair)	a. End on FF (not used in DATA-PHONE Service)	Data transfer ceases and Send mode terminates on FF.
		ⓑ Do not end on FF (must be used in DATA-PHONE Service)	FF inoperative as message-ending character.
		ⓒ End on ETX	Data transfer ceases and Send mode terminates on ETX. Subsequent mode depends on Option 11.

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO KD AND KDP TERMINALS WITH FULL EDIT FEATURES (Continued)			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
8 (cont)		d. Do not end on ETX	ETX inoperative as message-ending character.
		e. End on EOT (must be used in DATA-PHONE Service)	Data transfer ceases and Send mode terminates on EOT. Mode changes to Receive.
		f. Do not end on EOT (not used in DATA-PHONE Service)	EOT inoperative as message-ending character.
		g. End on GS	Data transfer ceases and Send mode terminates on GS. Subsequent mode depends on Option 11.
		h. Do not end on GS	GS inoperative as message-ending character.
9	Sending Highlight Delimiters (use one)	a. Disable Highlight in Send mode	Highlight delimiters (ESC3 and ESC4) not sent except in Form Send mode.
		b. Enable Highlight in Send mode	Highlight delimiters (ESC3 and ESC4) sent in both Send and Form Send modes. This modifies Option 13.
10	Line Ending Sequence (use one)	a. CR LF	In Send mode, CR LF sequence is generated at end of each line. NL may or may not be displayed locally as $\equiv$.
		b. CR CR LF	In Send mode, CR CR LF sequence is generated at end of each line. NL may or may not be displayed locally as $\equiv$.
		c. LF	In Send mode, LF is generated at end of each line. NL may or may not be displayed locally as $\equiv$.
11	Mode After Send (use one)	a. Local	Terminal goes to Local mode after Send mode is terminated by message-ending character selected for Option 8. (For DATA-PHONE Service, applies only to ETX and GS.)

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO KD AND KDP TERMINALS WITH FULL EDIT FEATURES (Continued)			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
11 (cont)		b. Receive	Station goes to Receive mode after Send mode is terminated by message-ending character selected for Option 8. (For DATA-PHONE Service, applies only to ETX and GS and disables DLE/EOT as disconnect sequence.)
		c. External mode	Not used in DATA-PHONE Service.
12	Form Enter in Local (use one)	a. Disabled	Terminal cannot enter or change protected data in Local mode.
		(b.) Enabled	Terminal can be placed in Form Enter in Local mode to enter or change protected data.
13	Send Variations. (All w/o delimiters except as modified by Option 9b. In Form Send mode, protected and unprotected data sent as displayed with delimiters — protected New Lines are not converted, but sent according to Option 10a., b., or c.) (use one)	a. Send all as displayed	Send all data as displayed except as modified by Option 9 for highlighted data. Send protected data as unprotected data (not preceded by ESC W nor followed by ESC X).
		(b.) Send all as displayed and convert HT to Space	Same as a. but converts all HT characters (▶) to Spaces.
		c. Send unprotected data as displayed and protected data as Spaces	Send all unprotected data as displayed except as modified by Option 9 for highlighted data. Send protected data as unprotected Spaces.
		d. Send unprotected data as displayed and protected data and HT as Spaces	Same as c. but converts all HT characters (▶) to Spaces.
		e. Send unprotected data as displayed and protected data as DEL	Send all unprotected data as displayed except as modified by Option 9 for highlighted data. Send protected data as unprotected DEL characters (⁄⁄).

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO KD AND KDP TERMINALS WITH FULL EDIT FEATURES (Continued)			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
13 (cont)		f. Send unprotected data only as displayed	Send all unprotected data as displayed except as modified by Option 9 for highlighted data. Protected data is not sent.
		g. Send unprotected data only as displayed, and HT at end of field	Send all unprotected data as displayed except as modified by Option 9 for highlighted data. Protected data is not sent. When a protected field is reached, an HT character (▶) is generated and transmission "skips" to the next unprotected character. When an HT character is in the display, the HT is sent and transmission skips to the next unprotected tab mark (.) or to the next unprotected character.
		h. Send unprotected data only as displayed, but convert unprotected HT to space	Send all unprotected data (except HT) as displayed except as modified by Option 9 for highlighted data. Convert unprotected HT (▶) to Space. Protected data is not sent.
27	Message Start	a. Home on transmit	Cursor automatically goes to home position before sending message.
		(b.) Send from cursor	Cursor does not automatically go home. Only data from cursor position to end of message is sent.

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO KDP AND ROP TERMINALS			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
17	Printer Margin and Form Length (use one)	a. For future use b.	
		c. 80 d. 73 through 79	Last character prints in indicated character position. For d., any position from 73 through 79 can be selected.
		e. For future use f.	
18	Printer Paper Feed-out (use one)	a. No paper feedout	No automatic paper feedout.
		b. Paper feedout on loss of carrier	Automatic feedout of 16 lines on loss of carrier.
		c. Paper feedout on ETX	Automatic feedout of 16 lines on detection of ETX.
19	Printer Errored character Symbol (use one)	a. Printed on even parity error	Errored character symbol (carrier symbol) is printed (or not printed) in place of character with parity error.
		b. Printed on odd parity error	
		c. Not printed on parity error	
		d. Printer has 96 character type set	Selected according to type set required for printer.
		e. Printer has 64 character type set	
		f. Printer has extended ASCII type set	
20	Line Feed Selection (use one)	a. Single	Single or double line feed is selected by switch on top right of printer (under cover).
		b. Double	

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO KDP AND ROP TERMINALS (Continued)			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
21	Foldover on Up-Low Printer (use one)	(a.) Lower case and upper case print	Both lower and upper case characters are printed.
		b. Lower case prints as upper case	Lower case characters are folded over to print as upper case equivalents.
22	Foldover on Monocase Printer (use one)	a. Lower case not folded over	Lower case characters except DEL are printed as carrier symbol ▓ .
		(b.) Lower case prints as upper case	Lower case characters are folded over to print as upper case characters.
23	Extended ASCII	a. Prints extended ASCII	Eighth bit of character is used to provide extended ASCII rather than vertical parity check. This option requires local engineering.
		b. Does not print extended ASCII	Printer prints only conventional ASCII with eighth bit reserved for parity check.
OPTIONS IN THIS GROUP APPLY ONLY TO ROP TERMINALS			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
3	Receive Baud Rate	a. 1050	Internal clock synchronized to receive at selected rate. Also applies to internal test generator clock.
		(b.) 1200	
		c. 2400	Reserved for future use.
24	Parity Detection (use one)	(a.) Even	Used when even parity characters are being received. Provides error indication upon detection of odd parity.
		b. Odd	Used when odd parity characters are being received. Provides error indication upon detection of even parity.
25	Parity Error Response (use one of each pair)	a. Print errored character	Upon detection of parity error, printer will print errored character symbol if Option 19 is so selected.

◯ — Indicates factory-programmed option.

TABLE B

OPTIONS FOR "DATASPEED" 40 TERMINALS (Continued)

OPTIONS IN THIS GROUP APPLY ONLY TO ROP TERMINALS (Continued)			
OPTION NO.	FUNCTION	OPTIONS	DESCRIPTION
25 (cont)		(b.) Print received character	Upon detection of parity error, printer will print character as received.
		c. Lamp lights	Upon detection of parity error, ERROR lamp lights and remains lit until button is depressed.
		(d.) Lamp does not light	ERROR lamp does not light upon detection of parity error.
26	Trans Start (use one of each pair)	a. Discrete calling code programmed	Marking and spacing bits (14) of selected discrete calling code are programmed.
		(b.) Discrete calling code not programmed	All 14 bits of discrete calling code are marking.
		c. Program code sent	Selected discrete calling code is sent upon depression of TRANS START button in on-line mode.
		(d.) Program code not sent	Discrete calling code is not sent.

◯ — Indicates factory-programmed option.

4. FUNCTIONAL DESCRIPTION

4.01   The basic elements of the DATA-SPEED 40 Station are shown in block diagram form in Figures 24 and 25. Figure 24 is the simplified block diagram of the KD and KDP, and Figure 25 is the diagram of the ROP. The signals exchanged between these elements are shown in the diagrams.

4.02   The heart of the DATASPEED 40 Station is the controller logic. These logic circuits interface with the data set, the operator console, the display logic (KD and KDP), and the printer (KDP and ROP).

4.03   The controller presents a standard EIA interface to the data set as indicated in Figures 24 and 25. Serial ASCII data and control

signals are interchanged between the controller and data set in the on-line send and receive modes (see Figure 19). The signals conform to EIA specification RS-232-C.

4.04   The interface between the controller and KD or KDP operator console, and between the controller and printer, is a TELE-TYPE ® Standard Serial Interface (SSI). This is a special signaling system in which 18-bit "words" convey information to and from a device on two pairs of 2-conductor cables. In the KDP or ROP controller/printer interface, SSI control and data words are transferred from controller to printer, and SSI words defining the status of the printer are transferred from printer to controller. In the KD or KDP controller/operator console interface,
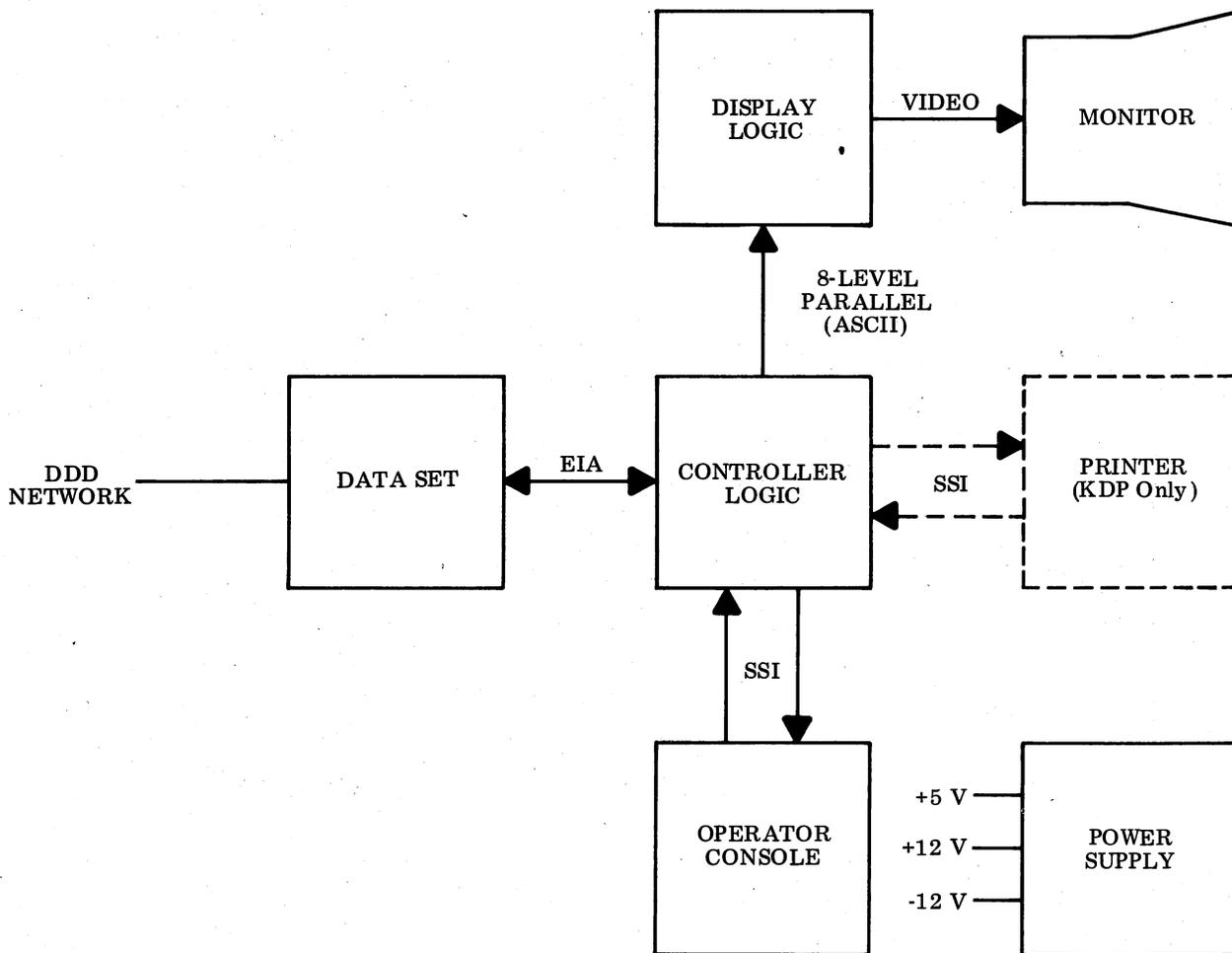
Figure 24 - Block Diagram of KD and KDP

SSI control words are transferred from controller to console, and SSI data and status words are transferred from console to controller.

4.05   In the RO printer, the signal inter-change between operator console and controller is in the form of switch contact closures and indicator signal voltages. The manual operation of the keys on the console produces switch closures which are interpreted by the controller logic to initiate the desired operating modes. Signals from the logic circuits to the operator console operate the indicator lamps on the console keys.

4.06   In the KD or KDP, the controller logic produces parallel ASCII code signals for the display logic in response to incoming EIA signals from the data set or SSI data signals from the operator console. These ASCII signals are applied to the display logic to generate the display character information.

4.07   The monitor contains the high voltage power supply and vertical and hori-zontal sweep circuits to produce a raster on the screen of the cathode ray tube. The display logic produces video signals that modulate the CRT beam to form the characters on the screen.
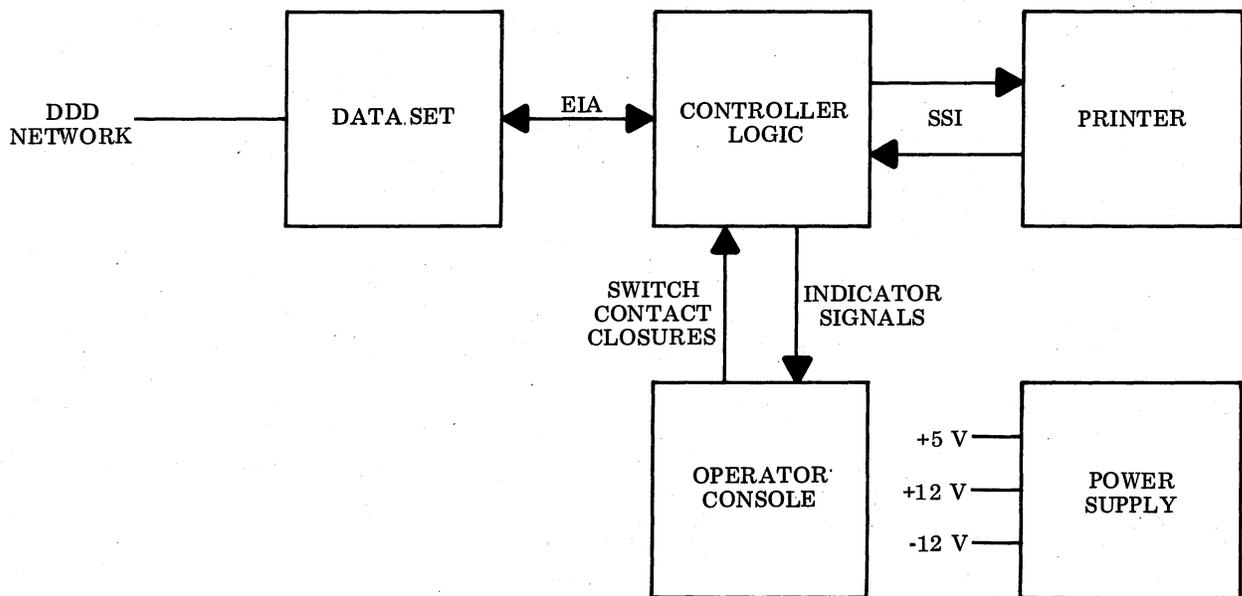
Figure 25 - Block Diagram of ROP

5. STATION OPERATION

5.01   When equipped with an appropriate data set, a DATASPEED 40 Station is capable of originating or answering calls in the attended or unattended mode. For the KD or KDP station, prepared messages displayed on the monitor can be sent on-line to a remote station. Received messages can be displayed on the monitor (and printed out on the printer of a KDP). An ROP station provides printed copy of received message only.

5.02   Typical call procedure is outlined in the sequence diagrams of Figures 26 and 27. These diagrams show the sequence of events for sender and receiver initiated calls in attended and unattended operation. A 202C Data Set or equivalent is assumed. For any other data set arrangement, the call procedure must be modified to accommodate the differences in data set and auxiliary equipment operation.
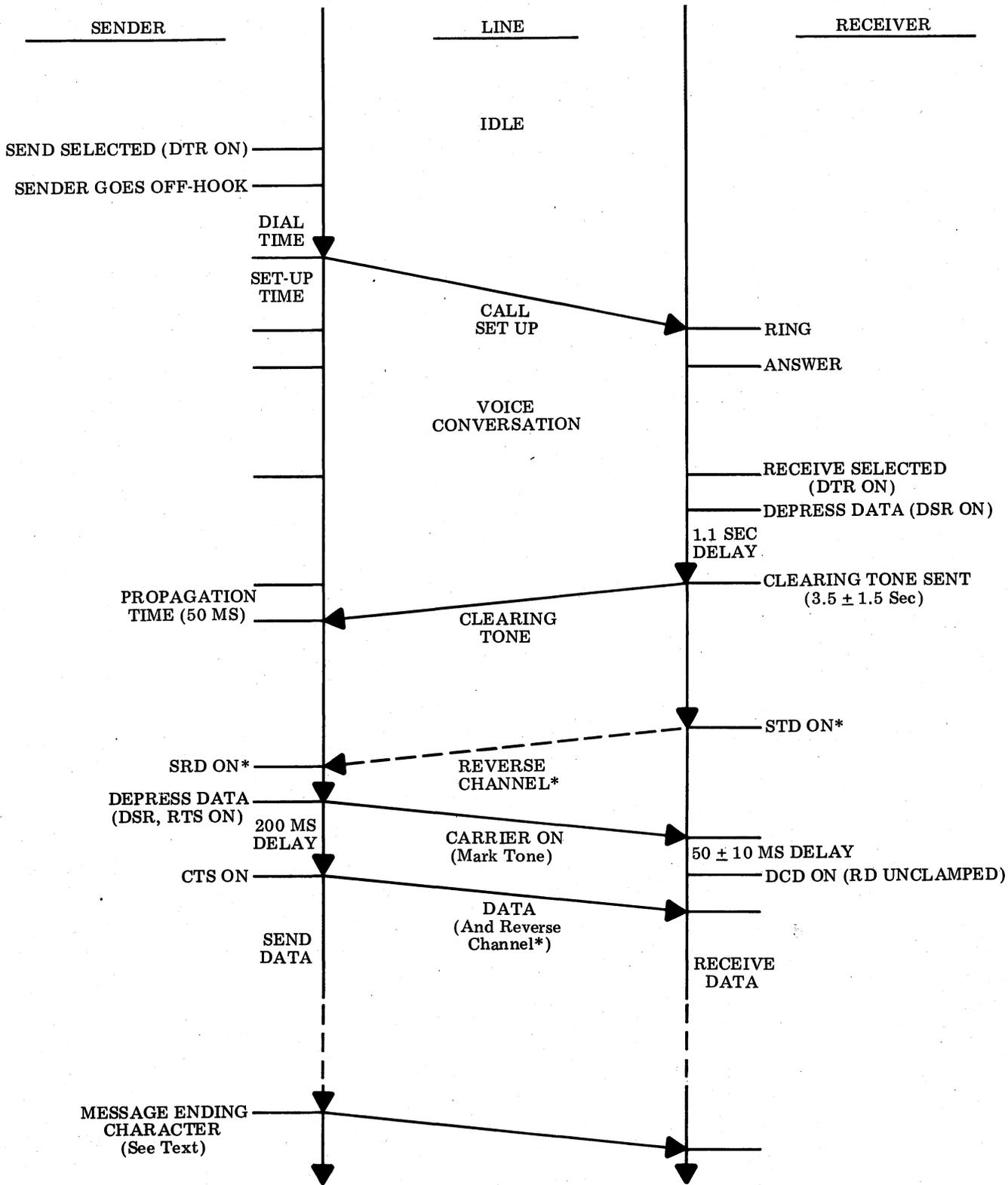
5.03   Message ending characters affect the status of a sender or receiver as follows:

GS or ETX — Mode of sender changes from SEND to LOCAL. Mode of receiver changes from REC to LOCAL, and STD lead turns off (STD lead will turn on if REC key is depressed).

EOT — Mode of sender terminal and data set changes from SEND to REC. Receiver terminal mode changes from REC to LOCAL. Receiver data set mode changes from REC to SEND (the station may not be a sender).
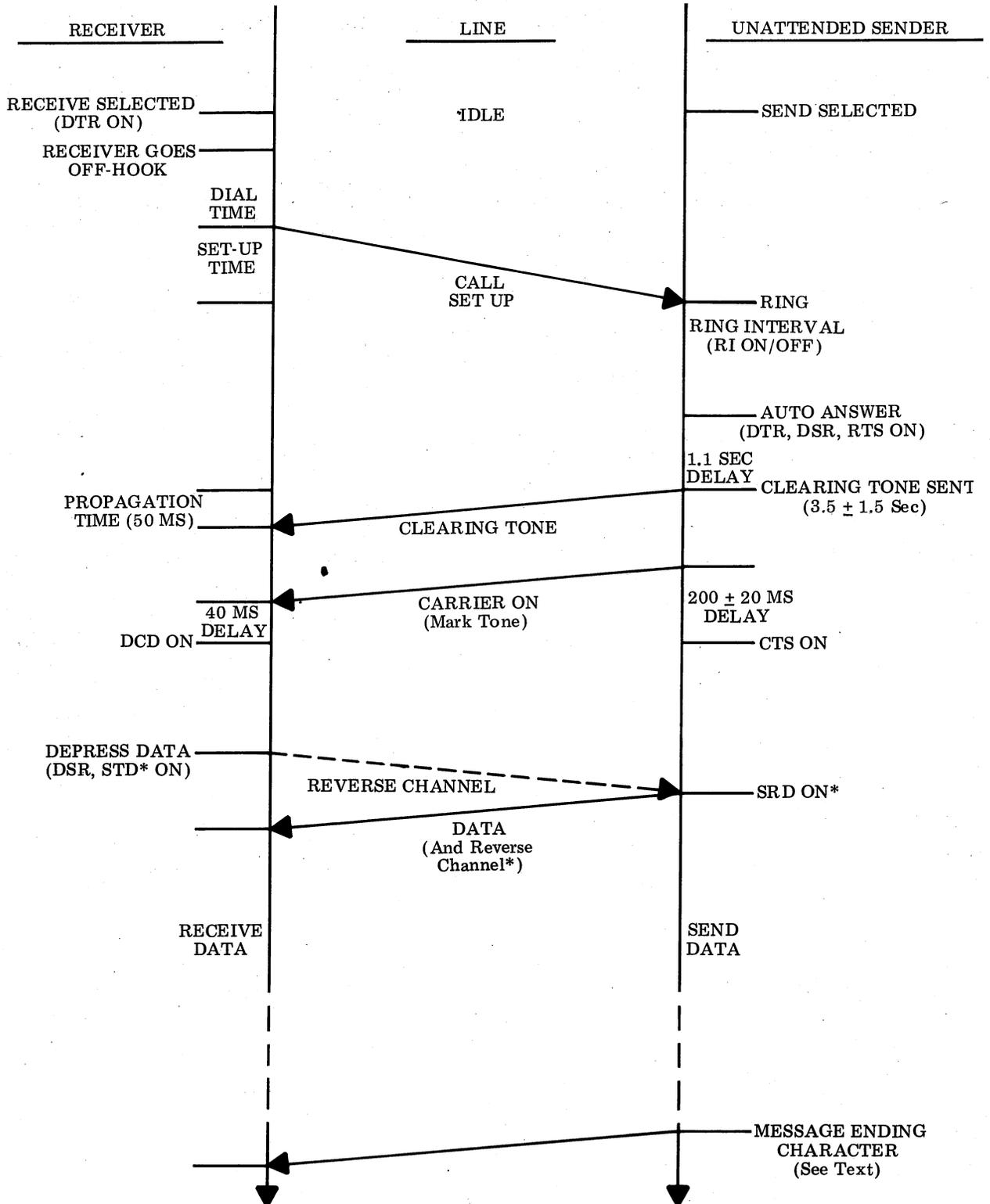
DLE/EOT — Sender and receiver disconnect and go to LOCAL mode. (RO Receiver does not have local mode.)

Note: An RO printer does not respond to GS, ETX, or EOT. If a station is sending blocks of data containing GS or ETX, the sender must hold its RTS lead on to maintain carrier to the ROP. Otherwise the ROP will disconnect after approximately 15 seconds.

SENDER   LINE   RECEIVER

IDLE

SEND SELECTED (DTR ON)

SENDER GOES OFF-HOOK

DIAL
TIME

SET-UP
TIME

CALL
SET UP   RING

ANSWER

VOICE
CONVERSATION

RECEIVE SELECTED
(DTR ON)

DEPRESS DATA (DSR ON)

1.1 SEC
DELAY

PROPAGATION
TIME (50 MS)

CLEARING TONE SENT
(3.5 ± 1.5 Sec)

CLEARING
TONE

STD ON*

SRD ON*

REVERSE
CHANNEL*

DEPRESS DATA
(DSR, RTS ON)

200 MS
DELAY

CARRIER ON
(Mark Tone)

50 ± 10 MS DELAY

CTS ON

DCD ON (RD UNCLAMPED)

DATA
(And Reverse
Channel*)

SEND
DATA

RECEIVE
DATA

MESSAGE ENDING
CHARACTER
(See Text)

*For applications that use reverse channel.

Figure 26 - Attended Operation — On-Line Via 202C Data Set, Sender Initiates Call

RECEIVER   LINE   UNATTENDED SENDER

RECEIVE SELECTED
(DTR ON)

IDLE

SEND SELECTED

RECEIVER GOES
OFF-HOOK

DIAL
TIME

SET-UP
TIME

CALL
SET UP

RING

RING INTERVAL
(RI ON/OFF)

AUTO ANSWER
(DTR, DSR, RTS ON)

1.1 SEC
DELAY

CLEARING TONE SENT
(3.5 ± 1.5 Sec)

PROPAGATION
TIME (50 MS)

CLEARING TONE

CARRIER ON
(Mark Tone)

200 ± 20 MS
DELAY

40 MS
DELAY

DCD ON

CTS ON

DEPRESS DATA
(DSR, STD* ON)

REVERSE CHANNEL

SRD ON*

DATA
(And Reverse
Channel*)

RECEIVE
DATA

SEND
DATA

MESSAGE ENDING
CHARACTER
(See Text)

*For applications that use reverse channel.

Figure 27 - Unattended Operation — On-Line Via 202C Data Set, Receiver Initiates Call

6. PHYSICAL CHARACTERISTICS

6.01   The following characteristics are typical for DATASPEED 40 installations.

Supply Voltage

115 v ac ±10% 60 Hz ±0.45 Hz from unswitched, standard 3 wire grounding type receptacle.

Current Drain, Power Consumption, and Heat Dissipation

KD . . . . . . 2.7 A, 260 W, 885 BTU/hr
KDP . . . . . 4.5 A, 360 W, 1230 BTU/hr
ROP . . . . . 3.2 A, 260 W, 885 BTU/hr
Data Set . . . . . 0.5 A, 15 W, 50 BTU/hr

Environmental Limits (Operating)

Ambient Temperatures . . . . . .+40°F to
110°F
Relative Humidity . . . . 2% to 95%
(noncondensing)
Altitude . . . . . . Sea level to 10,000 feet

Weight (Approximate)

Display Monitor W/Housing . . 42 pounds
Terminal Logic . . . . 50 pounds
Printer and Printer Logic . . . . 40 pounds
Housing for Terminal
Logic or Printer . . . . 15 pounds
Operator Console W/Cover . . . . 5 pounds
Pedestal . . . . 56 pounds
Data Set . . . . 14 pounds
Data Auxiliary Set . . . . .6 pounds

Dimensions (Space Requirements)

See Figure 28 for Typical KDP Arrangement.

Paper (Printer)
Standard Single Ply 8-1/2 inch wide, 5-Inch Diameter Roll.

Ribbon (Printer)
TP402444 or IBM 1443 Twin Spool Ribbon — 36 Yards BLK EE No. 40 SMIL

15-5/8"

17-3/8"

10"

6-1/2"

6-1/2"

17"

17-3/8"

17"

25"
(ROP's 19-1/2")

29"
(pedestal top)
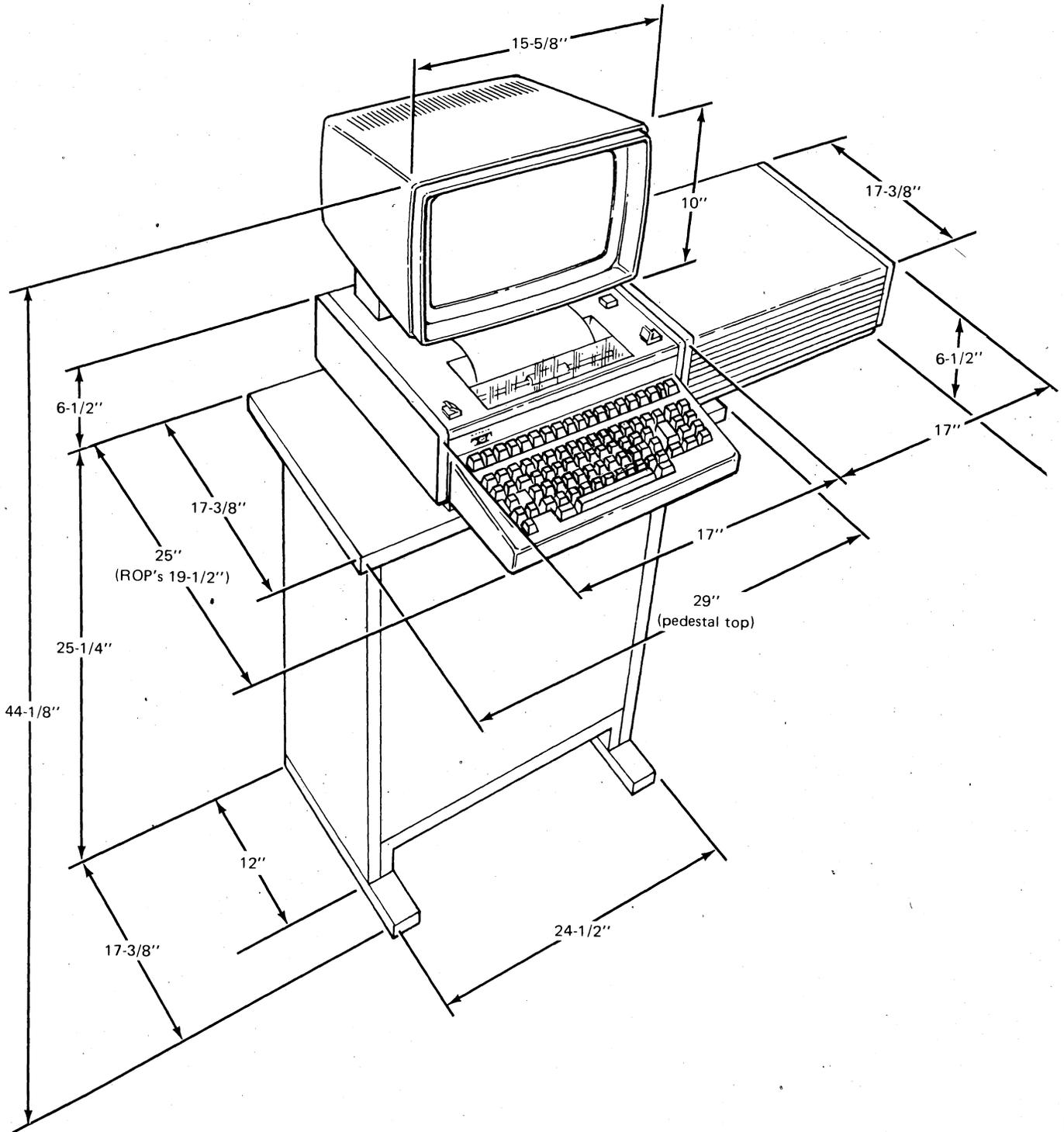
25-1/4"

44-1/8"

12"

17-3/8"

24-1/2"

Figure 28 - Physical Dimensions of Typical DATASPEED 40 Arrangement (KDP)