EE161-HB-OMI-010/W106-UGC-136BX

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TECHNICAL MANUAL

OPERATION AND MAINTENANCE INSTRUCTIONS

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

TELETYPEWRITER SET AN/UGC-136BX

E-Systems, Inc., ECI Division

Contract No. N00039-88-C-0118

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LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of this page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:
Original ..0..1 JULY 1991

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 474 CONSISTING OF THE FOLLOWING:

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RECORD OF CHANGES

Change No.	Date	Title or Brief Description	Entered By

VALIDATION PERFORMANCE

Technical Manual,
Operation and Maintenance Instruction,
Organizational and Intermediate Level
Teletypewriter Set AN/UGC-136BX

Contractor:

E-Systems, Inc.
ECI Division
P.O. Box 12248
St. Petersburg, Florida 33733

Subcontractor: (If performing validation)

Contract No(s) and Purchase Orders, if applicable

N00039-84-C-0197

Chapter	Section	Paragraph	Date Validation Completed	Check here if not validated
1	-	-	4-6-90	
2	-	-	4-6-90	
3	-	-	4-6-90	
4	-	-	4-6-90	
5	-	-	4-6-90	
6	1	-	4-6-90	
	2	-	4-6-90	
7	-	-		(Reviewed)
8	-	-	4-6-90	

Name & Authority of Validating Officer

John R. Schwarz
Supervisor, Logistics Support

Signature of Validation Officer

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LIST OF TABLES

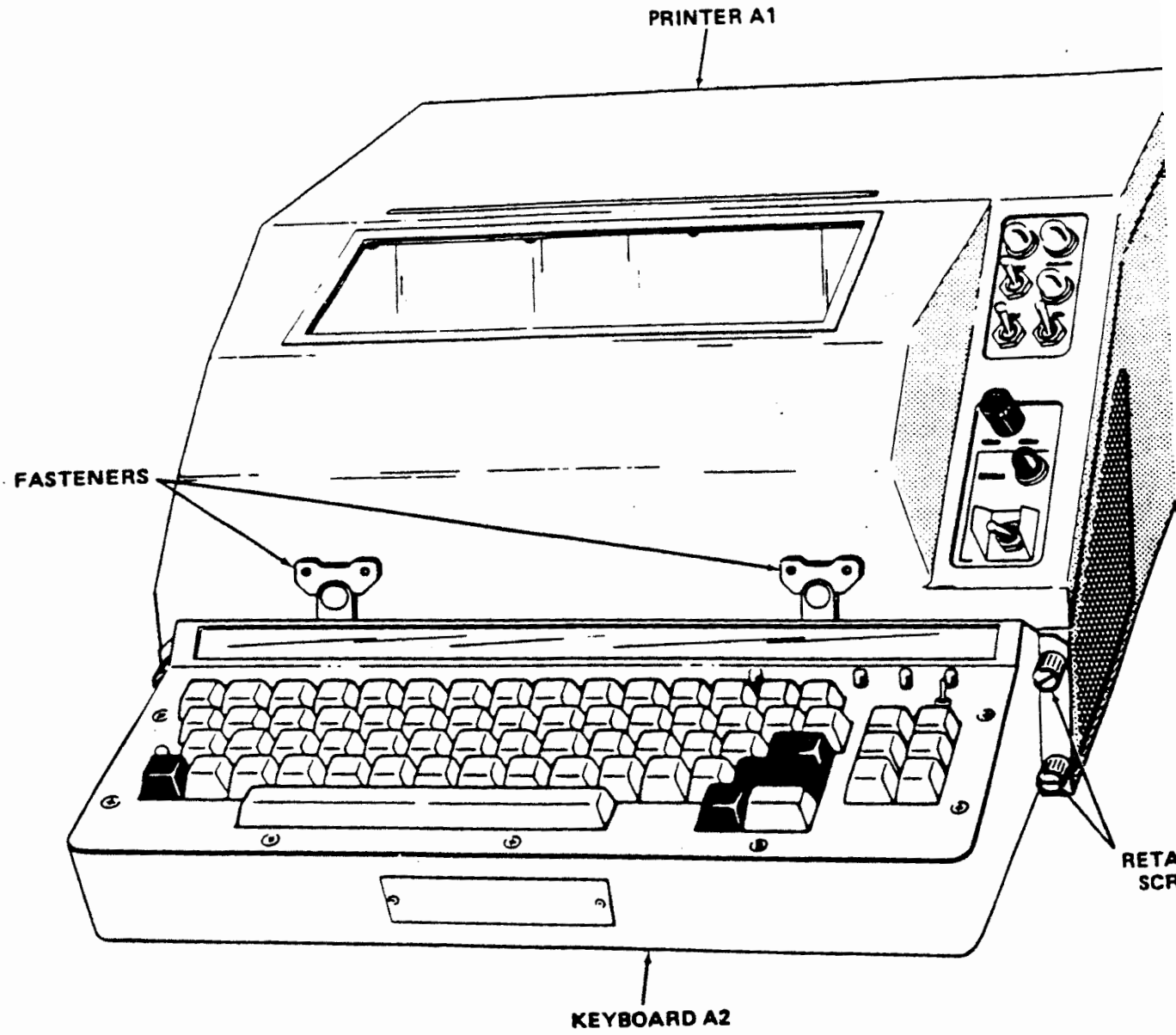

Figure 1-1. Teletypewriter Set, AN/UGC-136BX

CHAPTER 1

GENERAL INFORMATION AND SAFETY PRECAUTIONS

1-1. SAFETY PRECAUTIONS.

Standard safety precautions are to be observed when the modules are removed from the case during troubleshooting. The following warnings and cautions are applicable to Teletypewriter Set AN/UGC-136BX and are contained in this manual:

WARNING

Death or injury may occur if the power cable safety ground wire is not connected to a suitable AC receptacle safety ground return. Also, an additional safety ground strap must be connected to E1 ground stud at the rear of the Keyboard-Printer. (table 2-4, table 5-3, para 8-7.2)

WARNING

When using alcohol for cleaning, adequate ventilation must be provided. Avoid inhalation of the fumes and prolonged skin contact. (para 4-3)

WARNING

Wear protective eye gear when using pressurized air. (para 4-3)

WARNING

Dangerous voltages exist when power is on. (FO 5-9, sheet 3 of 4)

WARNING

Voltages as high as 115 volts are contained in the equipment discussed in this manual. Use standard safety precautions when the modules of this unit are removed from the case. Disconnect the power cable at J1 (figure 6-5, View B) before making any test connections, or before working inside the chassis. (para 6-4, para 6-4.6)

WARNING

The carton weighs 91 lbs complete. To prevent injury to personnel or damage to equipment, two persons are required for lifting and carrying. (para 8-3)

WARNING

The Keyboard-Printer weighs approximately 68 pounds. To avoid injury to personnel, two persons are required for lifting, carrying, and installing the Keyboard-Printer. (para 8-7)

CAUTION

Ensure carriage shaft lever is forward and properly adjusted (para 6-2.2). Firing of printhead into free air may damage printhead. (table 2-4, table 5-3, para 6-2)

CAUTION

To avoid bending left margin sensing tab, move printhead to center of machine before removing ribbon cassette. Press space bar and RPT key (28, figure 2-3) to move carriage. (table 2-8)

CAUTION

Damage will result to equipment if power is applied to print mechanism before zener diodes are checked. (figure FO 5-20)

CAUTION

Damage will result to printhead if power is left on for more than 2 seconds and pins are not flush with end of printhead. (figure FO 5-20)

CAUTION

Use extreme care while turning the timing disc to avoid bending its edges. (para 6-3.2)

CAUTION

The logic modules contain static sensitive devices. Care must be exercised to prevent electrostatic discharge which may damage the devices. (para 6-4.2)

CAUTION

Connector pins can be easily bent and equipment damaged if modules are not carefully removed and replaced. (para 6-4.2)

CAUTION

Do not move the printhead mechanism back away from the platen when the printhead is located at the left margin. Always move the printhead horizontally to a location in center of platen before moving printhead away from platen. This procedure must be adhered to in order to avoid damage to the left margin sensing tab. (para 6-4.5)

CAUTION

Connector pins on the underside of the Power Supply module can be bent and damaged if care is not exercised when removing and replacing this unit. (para 6-4.6)

CAUTION

Exercise care when removing locknut as it is under spring pressure. (para 6-4.9)

CAUTION

When performing steps j through p, exercise extreme caution so as not to damage ribbon connector or bend left margin sensor plate on carriage assembly. (para 6-4.9)

CAUTION

Exercise care in moving Motor Control assemblies to prevent damage to wiring. (para 6-4.19)

1-2. INTRODUCTION.

This manual contains operation and maintenance instructions for Teletypewriter Set AN/UGC-136BX (hereinafter referred to as the Keyboard-Printer), and is intended for use by operator and maintenance personnel. The following paragraphs provide general information pertaining to the Keyboard-Printer.

1-2.1 Scope. This manual provides information for operating, maintaining (preventive and corrective), troubleshooting and installing the Keyboard-Printer. Also contained in the manual is a functional description and parts list for the equipment.

1-2.2 Applicability Data. The information contained in this manual applies to the Keyboard-Printer, manufactured by E-Systems, Inc., ECI Division, part number 01-01344.

1-2.3 Unit Designator. In this manual, Teletypewriter Set AN/UGC-136BX is designated Unit 1. The unit designator (1) is omitted in the manual unless it is required for clarity.

1-3. EQUIPMENT DESCRIPTION.

The purpose of the Keyboard-Printer, shown in figure 1-1, is to provide a method of transmitting and receiving messages within a communications network. The Keyboard-Printer operates locally or remotely and allows the operator to create messages for transmission, using a compose/edit mode. Because of its design, the equipment allows the operator to transmit, receive, and compose messages simultaneously. The equipment can be operated at any location that meets the power and environment requirement and has access to the communications network. The Keyboard-Printer is easily installed in any standard 19-inch rack and does not require any external support equipment. Because of the multiple input/output (I/O) port design, the equipment is capable of operating with several peripherals (i.e., page displays, bulk storage devices, etc.).

1-3.1 Capabilities. The Keyboard-Printer is capable of transmitting and receiving data at rates from 45.5 to 4800 baud. The three I/O ports can be set to transmit or receive at any of the selectable baud rates in either ITA-2 or ITA-5 (ASCII) Codes. The transmitted or received data is stored in the message store module which is capable of storing up to 256 blocks of data. Each block contains 252 characters, which allows for a maximum storage area of 64,512 characters. With external memory devices, additional storage for messages is available. The message composing and editing functions are accomplished using a standard four-row MIL-STD-1280, Type 1, Class 1 keyboard and six memory control keys. Messages can be composed on-line and transmitted, or off-line and stored for future transmission. Received messages may be stored for later printout or printed as received. Messages in memory can be recalled and edited, which permits adding, deleting, or overwriting by line or character. Safeguards in the equipment prevent accidental deletion or overwriting of stored messages. Additional features provide a status review of messages in memory, recording of message and line numbers, priority routines, and error indications.

1-3.2 Limitations. The Keyboard-Printer is capable of storing 64 messages or 256 blocks of data. If 60 messages or 240 blocks of data are contained in memory, a forced delete operation will take place upon receipt of the next message. The forced delete operation will inform the operator that the message is being deleted and will then print the deleted message if it has not been previously printed.

1-4. REFERENCE DATA.

Reference data for the Keyboard-Printer is listed in table 1-1.

1-5. EQUIPMENT, ACCESSORIES, AND DOCUMENTS SUPPLIED.

Table 1-2 provides a list of all equipment, accessories, and documents supplied with the Keyboard-Printer.

1-6. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED.

Table 1-3 provides a list of equipment and publications required but not supplied to operate, test, an troubleshoot the Keyboard-Printer.

1-7. FIELD AND FACTORY CHANGES.

Table 1-4 is provided at the end of thi chapter to record field and factor changes.

Table 1-1. Reference Data

Item	Characteristic
Manufacturer	E-Systems, Inc., ECI Division
Type	Teletypewriter Set AN/UGC-136BX
Model	01-01344-001
Repairable Identification Code (RIC)	EP00008610
Power input	115 Vac, 60 Hz, 250 watts maximum
Environmental Characteristics	
Humidity	Up to 95%
Ambient temperature	0° to 50°C
Functional Characteristics	
Code sets	ITA-2 or ITA-5 (ASCII)
Character font	7 by 9 matrix
Character spacing	10 per inch horizontal, 6 per inch vertical
Line length	Selectable 69-80 characters
Print speed	120 characters per second
Message storage capacity	256 blocks of 252 characters each
Paper type	Single-ply or multi-ply, Grade A, Type I Class I, White, 7530-00-142-9037
Paper size	Standard roll teletype paper (either 8-1/2 or 8-7/16 inches wide; diameter up to 5.0 inches

Table 1-1. Reference Data-Continued

Item	Characteristic
Functional Characteristics -continued	
Ribbon	Cassette type, Mfr. 51809, Part No. 197939
Copy capability	Original plus two copies
Functional Operating Modes	
Remote mode	The Keyboard-Printer is under the control of a remote terminal.
Local mode	The Keyboard-Printer is under the control of the keyboard and operates as a typewriter when not placed in the transmit or compose mode.
Receive mode	The Keyboard-Printer is on-line to receive data in memory and print, or receive in memory for later printout.
Compose and edit mode	The Keyboard-Printer functions as an electric typewriter entering data into memory for later editing and/or transmission.
Transmit mode	The Keyboard-Printer transmits data directly from keyboard entry or from memory.
Signal Characteristics	
Signal type	Serial asynchronous/synchronous/isosynchronous
Signal level	±5-volt (bipolar operation) data and control, TTL internal control
Signal speeds (baud rate)	45.5, 50, 75, 100, 110, 150, 200, 300, 600, 1200, 2400, and 4800 baud rates (switch-selectable)
Mark/space sense	Either +5V or -5V (switch-selectable)
Signal distortion	
Transmitted signal	Transmit accuracy greater than 1 percent for all baud rates. Transmitted signal distortion less than 2 percent of an element at any speed.
Received signals	The Keyboard-Printer accurately prints received data, provided early and late (bias) distortion does not exceed 48 percent of a signal element at any speed.
Parity	Odd, even, or none (refer to table 2-7).

Table 1-2. Equipment, Accessories, and Documents Supplied

Quantity per equipment	Nomenclature	Overall dimensions			Weight (lbs)
		Height (in./cm)	Width (in./cm)	Depth (in./cm)	
1	Teletypewriter Set AN/UGC-136BX	8.5/ 21.59	15.75/ 40	24.5/ 62.2	68 (uncrated w/paper) 91 (crated w/paper)
2	Teletypewriter Set AN/UGC-136BX Operation and Maintenance Technical Manual	11.0	8.5	3.0	

Table 1-3. Equipment and Publications Required But Not Supplied

SCAT code	Category	Recommended equipment	Alternate	Test parameters	Applications
4212	Voltmeter	Digital Voltmeter (DVM) 8600A-01 FSCM 89536	None	0 to 1200 Vac 0 to ±1200 Vdc 0 to 20 megohms	Troubleshooting or Corrective maintenance
	Instruction Manual	Operating & Service Manual, Digital Voltmeter (DVM) 8600A-01	N/A	N/A	Reference
	Retaining Ring Pliers	Waldes Truarc model no. 22	Equiv.	N/A	Corrective maintenance
	Insertion Tool	3M model no. 3522	Equiv.	N/A	Corrective maintenance
	Connector	MS3116F14-5SW	None	N/A	Power Connector J1
	Connector	M24308/3-3	None	N/A	Signal Connector J2

Table 1-3. Equipment and Publications Required But Not Supplied-Continued

SCAT code	Category	Recommended equipment	Alternate	Test parameters	Applications
4308	Oscilloscope	AN/USM-425(V)1	Equiv.	Dc to 100 MHz 0 to 100 Vac 0 to 100 Vdc	Troubleshooting or corrective maintenance
	Instruction Manual	Operating and Servicing Manual, Oscilloscope AN/USM-425(V)1	N/A	N/A	Reference
4245	Multimeter	55026-260-6XLP	Equiv.	0 to 250 Vac 0 to 250 Vdc 0 to ∞ ohms 0 to 10 mA	Troubleshooting
	Instruction Manual	Operating and Servicing Manual, Simpson 260-6XLP	N/A	N/A	Reference
4448	Megohm Tester	24655-1863	Equiv.	0 to 250 Wvdc 0 to ∞ ohms	Troubleshooting
	Instruction Manual	Operating and Servicing Manual, Model 1863	N/A	N/A	Reference
	Decade Box	24655-1432M	Equiv.	50-12K ohms	Corrective maintenance
	Instruction Manual	Operating and Servicing Manual, Model 1432M	N/A	N/A	Reference
	Force Gauge	Chatillon Model DPP5	Equiv.	0 to 5 Ft lbs	Corrective maintenance

Table 1-4. Record of Field and Factory Changes

Change number	Nomenclature	Description

CHAPTER 2

OPERATION

2-1. INTRODUCTION.

The Keyboard-Printer is intended to be used by an operator to transmit, receive, compose and edit messages. The messages are sent to and received from other stations on the communications network. The Keyboard-Printer can be controlled locally or remotely from a page display. The compose and edit mode allow the operator to compose or edit messages which are displayed on a one-line, 80 character display, and stored in memory. The operator may transmit the composed or edited message from memory, or transmit a message as it is being composed. Received messages are stored in memory and can be recalled and edited, which permits adding, deleting, or overwriting by character or by line. The edited received message may then be transmitted if required. The operator may review composed, edited and received messages stored in memory by initiating a message status report from the Keyboard-Printer. The Keyboard-Printer may be interfaced to an optional bulk storage disk drive unit. The disk drive unit reads and writes data and provides required status information to the Keyboard-Printer. This chapter describes the controls and indicators for the Keyboard-Printer and provides instructions for operation of the equipment. The information consists of descriptions of individual controls and indicators, and procedures for equipment turn-on, operation, and turnoff.

2-2. CONTROLS AND INDICATORS.

The controls and indicators are shown in figures 2-1, 2-2, and 2-3. Descriptions of the controls and indicators shown in these figures are provided in tables 2-1, 2-2, and 2-3.

2-2.1 Keyboard-Printer Control Panel. Figure 2-1 shows the Keyboard-Printer control panel and identifies all controls and indicators. Table 2-1 describes the functions of the controls, indicators, and audible alarm.

2-2.2 Configuration Control Panel. The configuration controls are located on the front of the printer chassis, and are accessible by releasing the two cover fasteners on the front panel and lifting the front cover to its lock-in position. These controls set the Keyboard-Printer to a specific configuration. The configuration controls are shown in figure 2-2, and are listed with their functions in table 2-2.

2-2.3 Keyboard and Message Memory Controls. Controls and indicators required for operation of the Keyboard-Printer are grouped together on the keyboard for ease of operation. The four-row MIL-STD-1280, Type I, Class 1 keyboard and special keys are shown in figure 2-3. The memory controls consist of a cluster of six special keys on the right of the keyboard, together with the EXIT/ENTER key as shown in figure 2-3. These keys control the manipulation of data for either internal or external memory. Table 2-3 describes the functions of the keyboard, memory controls, and indicators.

2-2.4 Loudspeaker Control. The loudspeaker control (A1A1R2) is located in the center-top of the Print Mechanism. The control is rotated cw and ccw to raise and lower, respectively, the volume of the audible alarm. The control is adjusted to the desired volume level of the operator.

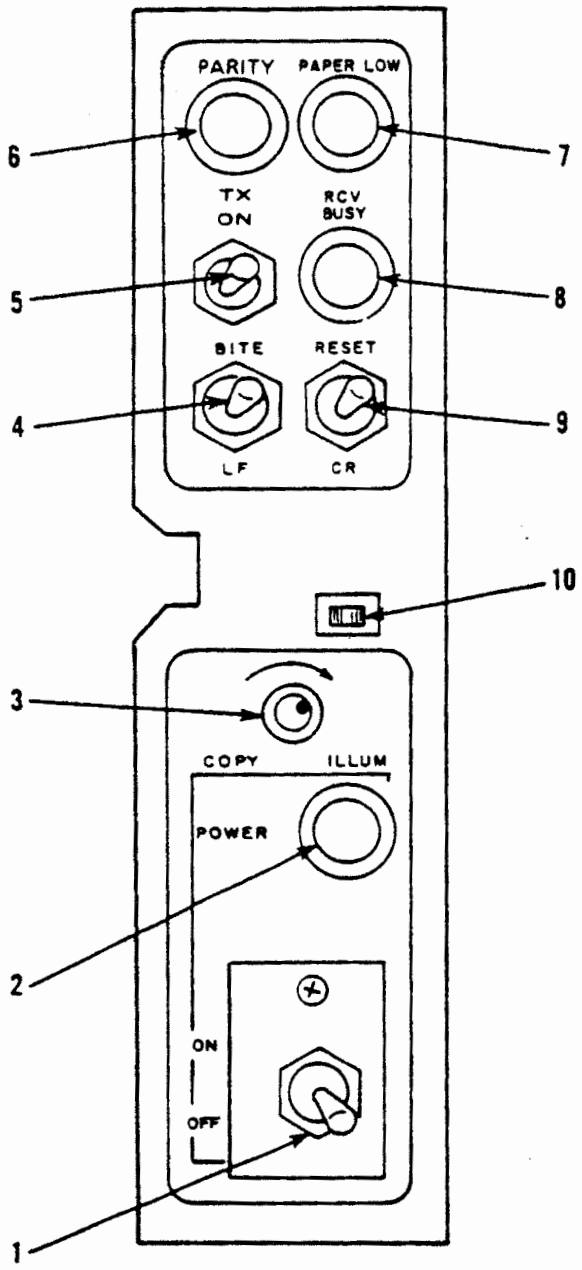

Figure 2-1. Keyboard-Printer Control Panel, Operating Controls and Indicators

Table 2-1. Keyboard-Printer Control Panel, Operating Controls and Indicators

Index no. figure 2-1	Control or indicator	Function
1	POWER ON/OFF switch (circuit breaker)	Two-position circuit breaker. When set to ON, Keyboard-Printer is energized. All logic is reset when switch is moved from OFF to ON. When set to OFF, Keyboard-Printer is deenergized and the memory is cleared of all information. Power Supply overload condition will cause the circuit breaker to trip, breaking the circuit, which will also erase the memory of all stored information. To reset, the switch must be set to OFF, then back to ON.
2	POWER indicator (green)	Indicates power is on and circuit breaker is closed.
3	COPY ILLUM (potentiometer)	Varies intensity of copy illumination lamps. This control also allows the lamps to be turned off.
4	BITE/LF switch (momentary, center off)	BITE position - Initiates self-test routine, performs lamp test while switch is depressed, and prints full character set at high speed. (See figure 2-4.) LF position - Causes Keyboard-Printer to perform a local line feed.
5	TX ON switch	Enables keying of the transmitter.
6	PARITY indicator (white)	Indicates that a parity error has been detected in the received data.

Table 2-1. Keyboard-Printer Control Panel, Operating Controls and Indicators-Continued

Index no. figure 2-1	Control or indicator	Function
7	PAPER LOW indicator (white)	Flashes when paper needs to be added.
8	RCV BUSY indicator (white)	Indicates open circuit or space condition; off during mark condition on receive line.
9	RESET/CR switch (momentary, center off)	RESET position - Resets PARITY and PAPER LOW indicators, external BELL line, and terminates BITE. CR position - Causes Keyboard-Printer to perform a local carriage return.
10	Safety interlock switch	Prevents the Keyboard-Printer from printing while the cover is open. The local line feed (LF) and carriage return (CR) switches are still active and can be actuated when the cover is open. Characters received while the cover is open will be stored in the message store memory and will be printed after the cover has been closed. The safety interlock switch can be placed in a locked position (bypassed), which will allow printing while the cover is open. This is done by pressing the switch slightly to the left and raising it to its detent position. To unlock the switch, simply press down on it to remove it from its detent position.

Table 2-1. Keyboard-Printer Control Panel, Operating Controls and Indicators-Continued

Index no. figure 2-1	Control or indicator	Function
In addition to the above listed switches and lights, the following audible alarms inform the operator of Keyboard-Printer operations:		
	End-of-line alarm (bell)	• Bell rings in compose/edit operation when the seventh character from the end of the line (69-80 characters) is entered. • Detection of parity error in received message. • Bell rings if operator commits control or data entry error.

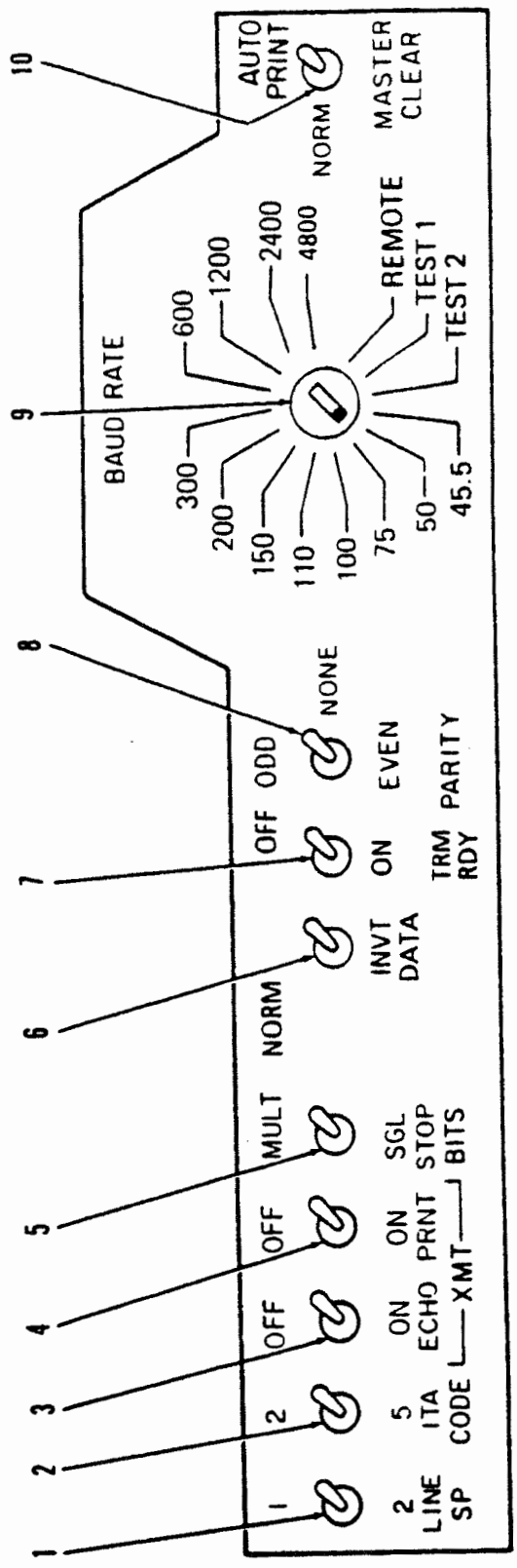

Figure 2-2. Configuration Control Panel, Operating Controls

Table 2-2. Configuration Control Panel, Operating Controls

Index no. figure 2-2	Control or indicator	Function
1	LINE SP 1/2 switch (toggle)	When set to 1, causes one line space for every line feed function received. When set to 2, causes two line spaces for every line feed function received.
2	ITA CODE 2/5 switch (toggle)	When set to 2, places Keyboard-Printer in ITA-2 configuration. When set to 5, places Keyboard-Printer in ITA-5 (ASCII) configuration.

NOTE

Non-valid ITA-2 characters entered on the keyboard while in the ITA-2 configuration will not be printed, stored in memory, or transmitted, and will result in an audible tone when the non-valid key is pressed.

3	XMT ECHO ON/OFF switch (toggle)	Affects handling of received messages when Keyboard-Printer is in a transmit mode of operation. In the OFF position, all messages received while actively transmitting are printed, stored in memory and assigned message numbers. In the ON position, all messages received while actively transmitting are assumed to be echoed messages and are printed, but are not stored or assigned message numbers.
4	XMT PRNT ON/OFF switch (toggle)	In the OFF position, the Keyboard-Printer will not print transmitted messages or data.

Table 2-2. Configuration Control Panel, Operating Controls-Continued

Index no. figure 2-2	Control or indicator	Function
4	XMT PRNT ON/OFF switch (toggle)-continued	In the ON position, activates the Keyboard-Printer and allows the operator to see, character by character, what is being transmitted from memory or the keyboard. If the PRINT ENABLE switch (10, figure 2-3) is in the ON position, messages received during transmit/print operation take priority. Printing of the transmitted message will then be interrupted until received messages have been printed, at which time the Keyboard-Printer will resume printout of the transmitted message. Otherwise, received messages will be stored in memory.
5	STOP BITS SGL/MULT switch (toggle)	Selects the minimum number of stop bits that are received and transmitted. In the SGL position, allows serial data to be received and transmitted with the minimum number of stop bits of one. In the MULT position, allows serial data to be received and transmitted with the minimum number of stop bits of: two stop bits if ITA CODE switch is set to 5 (ASCII). one and a half stop bits if ITA CODE switch is set to 2.

Table 2-2. Configuration Control Panel, Operating Controls-Continued

Index no. figure 2-2	Control or indicator	Function
6	DATA INVT/NORM switch (toggle)	Selects the mark/space sense of the transmit and receive data lines. In NORM position, mark is a logic high and space is a logic low. In INVT position, mark is a logic low and space is a logic high.
7	TRM RDY ON/OFF switch (toggle)	ON position terminal operates normally. OFF position communication port inhibit line is active inhibiting the receipt of data till the switch is set to ON.
8	PARITY ODD/EVEN/NONE switch (toggle)	ODD, EVEN, or NONE positions select the type of parity that is checked and transmitted. Its function depends on the position of the ITA CODE switch. Table 2-7 shows the data parity configuration for these switch settings. This switch is only active in the ITA-5 configuration. In the ITA-2 configuration, the switch is not used.
9	BAUD RATE switch (rotary)	Positions 45.5, 50, 75, 100, 110, 150, 200, 300, 600, 1200, 2400, 4800 select transmit and receive data rate. REMOTE position - Allows the baud rate to be set remotely at 50, 75, 1200, or 2400.

Table 2-2. Configuration Control Panel, Operating Controls-Continued

Index no. figure 2-2	Control or indicator	Function
9	BAUD RATE switch (rotary) -continued	Position TEST 1 allows the BITE test message to print continuously when the BITE (4, figure 2-1) switch is pressed. TEST 2 is used for RCV ONLY MODEL 2 to boot or unload bulk storage device.
10	AUTO PRINT/NORM/MASTER CLEAR switch (toggle)	AUTO PRINT position - Received messages are printed and not stored. NORM position - Received messages are printed and stored in memory (printing depends on PRINT ENABLE switch (10, figure 2-3) position on keyboard. MASTER CLEAR position - Initiates a power on sequence which performs a self test of the unit, prints out the configuration message and clears the memory.

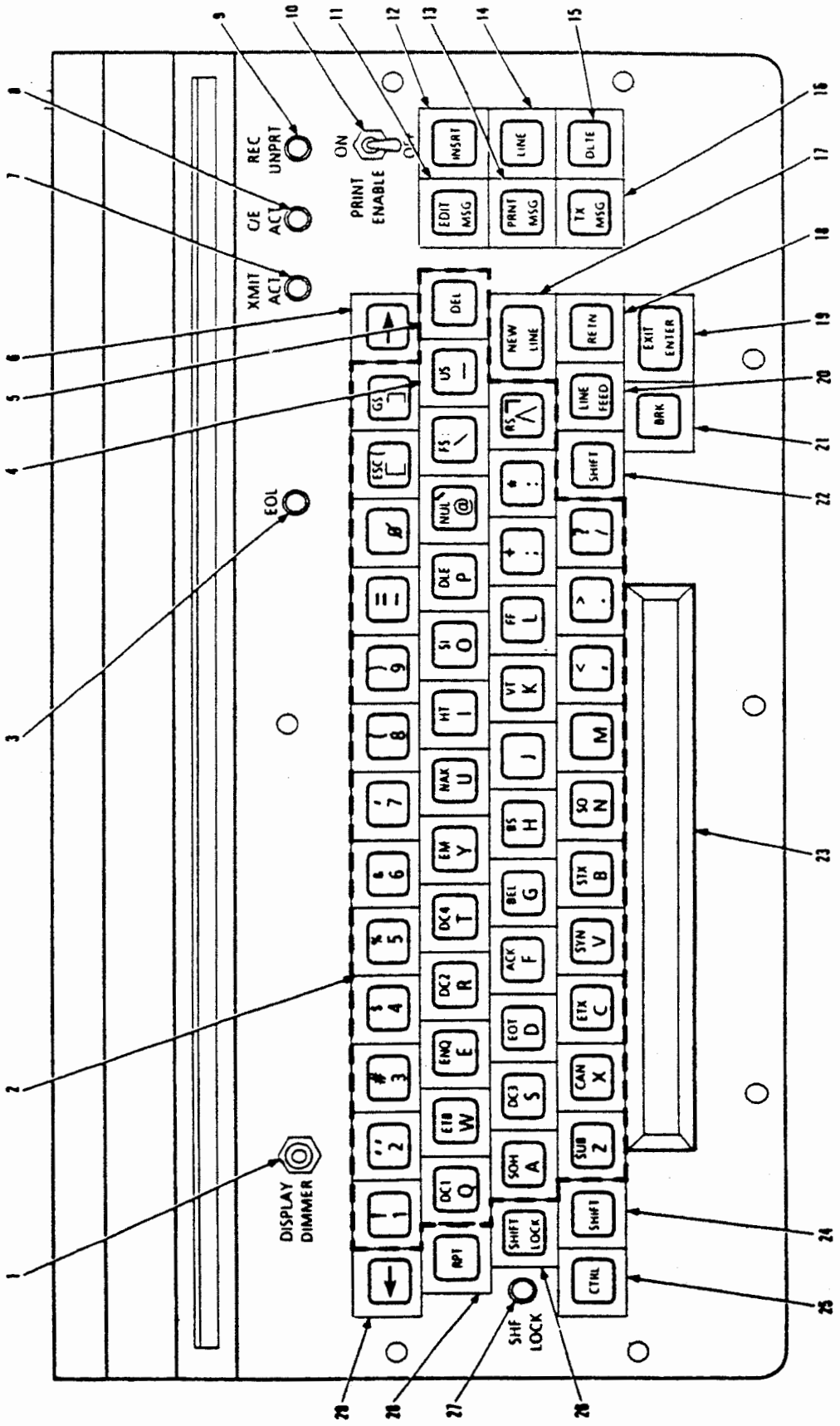

Figure 2-3. Keyboard, Operating Controls and Indicators

Table 2-3. Keyboard, Operating Controls and Indicators

Index no. figure 2-3	Control or indicator	Function
1	DISPLAY DIMMER control	When pressed and held causes display intensity to cycle until released.
2	Message character keys	Message character keys are standard ITA-5 design using QWERTY layout. The following keys also function as control keys when pressed along with the CTRL key. These keys are labeled on the front of the key with their control functions.

Lower	Front	Function
1	POR INIT	Used to control initializing of the ports.
2	POR STAT	Used to determine the current status of the ports.
3	SOM/ EOM	Used to change SOM or EOM.
4	LOC/ REM	Used to select local/remote control of Keyboard-Printer.
6	RCV TERM	Terminates received message with improper EOM.
8	LL SEL	Used to change line lengths.

Table 2-3. Keyboard, Operating Controls and Indicators-Continued

Index no. figure 2-3	Control or indicator	Function
2	Message character keys -continued	Lower / Front / Function 9 / OVR RIDE / Overrides automatic insertion of carriage return and line feed in compose/edit mode. Ø / CON TX / Used for continuous transmit.
3	EOL indicator	Illuminates to indicate only six character positions remain on the present line.
4	US/-/FIGS key	Used to manually shift from letters to figures in ITA-2. However, not normally used as the Keyboard-Printer automatically shifts from letters to figures when a figure key is pressed.
5	DEL/LTRS key	Used to manually shift from figures to letters in ITA-2. However, not normally used as the Keyboard-Printer automatically shifts from figures to letters when a letter key is pressed.
6	→ key	Moves carriage or cursor (one-line display) to the right one character position for each time pressed when in the character edit mode.
7	XMIT ACT indicator	Illuminates when the Keyboard-Printer is transmitting on any port.

Table 2-3. Keyboard, Operating Controls and Indicators-Continued

Index no. figure 2-3	Control or indicator	Function
8	C/E ACT indicator	Illuminates when Keyboard-Printer is in compose/edit mode. Flashes when there are less than 5,000 character positions remaining in memory or 62 message tables are active.
9	REC UNPRT indicator	Indicates memory contains a received unprinted message and will extinguish when all received messages have been printed.
10	PRINT ENABLE ON/OFF switch	In ON position, received messages are printed and stored in memory. In OFF position, received messages are stored in memory but not printed. Stored messages will be printed when switch is returned to the ON position.
11	EDIT MSG/READ key	Enables compose/edit mode. When used with SHIFT key enables reading of bulk storage device, (if connected).
12	INSRT/FMT key	Enables inserting of characters or lines. When used with SHIFT key enables formatting (scratching) of disk in bulk storage device, (if connected).
13	PRINT MSG/DIR key	Enables printing of a stored message. In compose/edit mode, prints messages stored in memory with line numbers. Also used to initiate memory status message. When used with SHIFT key provides directory listing for bulk storage device, (if connected).

Table 2-3. Keyboard, Operating Controls and Indicators-Continued

Index no. figure 2-3	Control or indicator	Function
14	LINE/BOOT key	Enables the printing and editing of a line. When used with SHIFT key provides booting (on-line) operation to bulk storage device, (if connected).
15	DLTE/UNLD key	Enables the deletion of characters lines, or messages. When used with SHIFT key places bulk storage device (if connected) in an off-line status.
16	TX MSG/WRITE key	Initiates the transmit message process. Printer will respond with "PORT=" if two or more ports are configured as communication ports. If equipment is configured with only one communication port, the Keyboard-Printer will default to that port and respond by printing "MPN=". When used with SHIFT key enables writing to the bulk storage device, (if connected).
17	NEW LINE key	Provides the standard end-of-line function (2 carriage returns and 1 line feed) on a single key.
18	RETN key	Performs a carriage return.
19	EXIT/ENTER key	Used to enter commands into the Keyboard-Printer and to enter a particular mode of operation. When used with the CTRL or SHIFT key it terminates the present mode of operation.
20	LINE FEED key	Performs a line feed.
21	BRK key	Puts continuous "space" condition on the transmit data line.

Table 2-3. Keyboard, Operating Controls and Indicators-Continued

Index no. figure 2-3	Control or indicator	Function
22	SHIFT key	Shifts carriage from upper case to lower case characters and, if pressed when in lower case (shift lock), causes Keyboard-Printer to be shifted back to upper case. Not normally used in ITA-2 except for some punctuations. May be used instead of the CTRL key to EXIT the compose/edit or transmit modes.
23	Space bar	Moves carriage or cursor to right one space.
24	SHIFT key	Same as index no. 22.
25	CTRL key	Puts keyboard in control mode of operation. Must be depressed when desired control key is pressed.
26	SHIFT LOCK key	Sets keyboard for lower case type until SHIFT key is pressed.
27	SHF LOCK indicator	Illuminates when keyboard is shifted to lower case.
28	RPT key	Initiates repeat of last key code which was depressed and continues until RPT key is released.
29	← key	Moves carriage or cursor (one-line display) to the left one character position each time pressed.

2-3. OPERATING PROCEDURES.

Operating procedures for the Keyboard-Printer encompass several configurations and modes. With the multiport interface capability, the Keyboard-Printer can be controlled locally or remotely and operate with supporting peripherals (i.e., page display, bulk storage device, etc.). The operating instructions are contained in table 2-4 and are divided into the following areas; preliminary startup, turn-on, performance check, modes of operation, turnoff, and emergency turnoff procedures. The following paragraphs provide information concerning each of these areas.

2-3.1 Preliminary Startup. The preliminary startup procedure involves verification of configuration switch settings and cable connections. Configuration switch settings, for the Keyboard-Printer, are dependent on the system requirements. Cable connections, as a minimum, involve power (J1), ground (E1), and signal (J2), but may also involve cables for peripherals. The preliminary startup procedure is contained in table 2-4, steps 1 through 5.

2-3.2 Turn-on. The turn-on procedure involves identifying the operating status of the equipment. The Keyboard-Printer will automatically determine the operating status and provide the operator with a printed status report, identified as the configuration message (see appendix A). The first step of the power-on sequence is to determine the operating status of the equipment, which is identified by the illumination and extinguishing of the indicators. The process for illuminating and extinguishing the indicators, is part of the power-on sequence and can be used as a troubleshooting aid for the maintenance technician (see table 5-3). Upon completing the operating status check, the Keyboard-Printer will print "READY", and the amount of memory available. The power-on sequence also determines the operating configuration by reading the configuration switches (1 through 10, figure 2-2), the three I/O ports, the keyboard port, and the non-volatile memory. This information is then printed for the operator (see appendix A). The turn-on procedure is contained in step 6 of table 2-4.

2-3.3 Performance Check. The performance check procedure determines that the overall performance and quality of the print function is acceptable. The quality and completeness of the printed test message should be compared with figure 2-4. The performance check procedure is contained in step 7 of table 2-4.

2-3.3.1 Local Mode. The local mode provides the operator with control over the Keyboard-Printer for the keyboard. As a stand-alone terminal, without a remote control terminal, the keyboard is powered-up in the local mode. If the Keyboard-Printer is used as part of a system, with a remote control terminal (i.e., page display), the keyboard is powered-up inactive and in remote. When in remote, the operator can change the keyboard mode from remote to local, provided the proper conditions are met. When the keyboard is in local but not in an operational mode (i.e., transmit message, compose/edit, etc.) it will function the same as a normal typewriter. To return the keyboard to remote, the operator only needs to press and hold the CTRL key while pressing and releasing the 4, LOC/REM (figure 2-3). The local keyboard mode procedure is contained in steps 8 through 10, table 2-4.

2-3.3.2 Port Initialization. The port initialization procedure allows the operator to change the configuration of the ports. Each port goes through an initialization process during the power-up sequence. Port 1 is the primary communication port and is tested to determine if a communication line is connected. After the test is complete and determined to be operational, Port 1 is configured to match the settings of the configuration switches. Port 2 is used primarily as the external memory port and is tested to determine if an

external memory device is connected. If the external memory device is connected and operational, the Keyboard-Printer will initialize the port to bring the external memory device on-line. If the external memory device is not connected, Port 2 will not initialize. Port 3 is the remote control display port. During the power-on sequence, the port is tested to determine if a remote control device (i.e., page display) is connected. If a remote control device is connected, the port is initialized for remote operation and the keyboard is in the remote mode. If a remote control device is not connected, the port is initialized for one-line display operation and the keyboard is active. During operation of the Keyboard-Printer, it may be necessary to change the configuration of the ports because of an operational change (i.e., baud rate, data invert, etc.). Port initialization procedures are provided in steps 11 through 20, table 2-4.

2-3.4 Modes of Operation. The Keyboard-Printer is capable of operating in four different modes: receive, transmit, compose, and edit. The following paragraphs provide descriptions of each of these modes of operation.

2-3.4.1 Receive Modes. The Keyboard-Printer is always on-line to receive data and can be operated in any of the following receive modes: Receive, print, and store in memory - used when received messages need to be printed and stored when they are received; receive and store in memory, where messages may be printed later - used when it is desirable to operate the Keyboard-Printer in the compose/edit or transmit mode without being interrupted; receive and print - used when it is not necessary to store received messages after they have been printed. All messages received and stored in memory are assigned message numbers from 129 through 255. When the received message cannot be stored in memory, due to lack of room, a forced delete operation takes place. Refer to table 2-5 for priority of deletion of messages. Table 2-4, steps 26 through 28, contain procedures for th receive, print, and store in memor operation, and steps 29 and 30 contai procedures for the receive and store i memory operation. Step 31 is the pro cedure for printing but not storin received messages.

2-3.4.2 Transmit Mode. Transmittin messages from the Keyboard-Printer ca be accomplished in two ways: direct from the keyboard or from memory. Ta ble 2-4, steps 32 through 35, conta procedures for keyboard transmissior and steps 36 through 38 contain pro cedures for transmitting from memory Step 39 is the procedure for manuall terminating transmissions from memory.

2-3.4.3 Compose Mode. Messages can composed from the keyboard, using th one-line display or the printer. Com posed messages are stored in memory ar are assigned message numbers from to 127. The stored messages can edited, printed, and/or transmitted. the operator selects the compose/ed mode and either 60 messages or 2- blocks are already contained in memor a forced delete operation takes pla (see table 2-5). Table 2-4, steps through 42, contains procedures to followed when composing message steps 43 through 50, contains procedur for correcting errors; steps through 54 are procedures to print me sages.

2-3.4.4 Edit Mode. Messages in memor whether received or composed, can recalled for editing. Editing may done by an entire message, a sin line, or a single character. Ad tionally, the message may be prin with line numbers to assist in locat the area to be edited. The three e mode capabilities are: The message e mode which allows the printing of message with line numbers and deletion of the entire message; the l edit mode which allows the deletion c line, an insertion of a line, or replacement of a line; and the charac edit mode which allows the deletion characters, the insertion of charact

or the replacement of characters within a line. Table 2-4, steps 55 through 85, contain procedures to be used when editing messages.

2-3.5 Special Operations. Special operations of the Keyboard-Printer include: clearing memory, memory status, manual termination of received messages, etc. The following paragraphs provide descriptions of these operations.

2-3.5.1 Clearing Memory. The memory can be cleared by opening the Keyboard-Printer cover and placing the AUTO PRINT/NORM/MASTER CLEAR switch (10, figure 2-2), located on the configuration control panel, to the MASTER CLEAR position, or by turning the machine off.

2-3.5.2 Querying Memory Status. Table 2-4, steps 86 and 87, contain procedures for determining contents and status of messages in memory as well as the memory storage capability (in number of blocks) available. An example of a status printout is shown in figure 2-5.

2-3.5.3 Manual Termination of a Received Message. The procedure for manually terminating a received message that did not include a valid end-of-message sequence is described in table 2-4, step 88.

2-3.5.4 Delete Message Mode. The procedure for deleting a message from memory is described in table 2-4, step 89.

2-3.5.5 Continuous Transmission of a Stored Message. The procedure for continuously transmitting a stored message is described in table 2-4, steps 90 and 91.

2-3.5.6 Override Mode. The procedure for entry to the override mode during transmit and compose operations is described in table 2-4, steps 92 and 93. The override mode allows the operator to compose a message and/or transmit it without using carriage return and line feed special characters.

2-3.5.7 Line Length. The procedure for entry to the 80/69-character line ITA-2 mode during transmit and compose operations is described in table 2-4, steps 94 and 95.

2-3.5.8 Letters and Figures Functions. Letters and figures functions are automatically inserted by the Keyboard-Printer when typing number and letter characters. Letters and figures functions can be manually inserted in compose, edit, or keyboard transmit mode by depressing the US/FIGS or DEL/LTRS key (4 or 5, figure 2-3).

2-3.5.9 Bell Function. The bell function may be used by pressing CTRL and BEL keys in all modes of operation. The receipt of a message containing a bell function will cause an audible tone and light the PARITY lamp (6, figure 2-1). The PARITY lamp may be extinguished by use of the RESET/CR switch (9). Additionally, the volume control for the audible bell tone is located on the print mechanism. To lower the volume, turn knob counterclockwise; to increase the volume, turn knob clockwise.

2-3.5.10 End-of-line Alarm and EOL Indicator. An end-of-line alarm will sound and the EOL indicator will illuminate when only 6 character positions are left until the end of line.

2-3.5.11 Compose/edit Active Light. When the C/E ACT indicator (8, figure 2-3) is illuminated, it indicates that a message(s) has been stored in memory. When flashing, it indicates only 5000 characters of storage capacity remains. Message(s) will be printed and deleted to clear memory space above 5000 characters and the C/E ACT indicator stops flashing.

Table 2-4. Operating Instructions

Step	Procedure	Indication/comments
	PRELIMINARY STARTUP	
1	Check POWER ON/OFF switch (1, figure 2-1) is in OFF position.	
2	To open cover, turn two cover fasteners 1/2 turn CCW and disengage cover fasteners from their catches on front of Keyboard-Printer cover, raise cover to lock-in position.	Check paper supply. Replace if necessary. Check to see if ribbon cassette is firmly in place.
3	Set configuration controls/ switches (1-10, figure 2-2) as necessary.	Settings are based on specific system requirements.

CAUTION

Ensure carriage shaft lever is forward and properly adjusted (para 6-2.2). Firing of printhead into free air may damage printhead.

4	Release cover latch, close Keyboard-Printer cover by engaging two cover fasteners with their catches and turning 1/2 turn CW. Place cover fastener handles in up position to prevent noise.	
5	Check cable connections for power, signal, ground and peripherals (if applicable) are properly made.	

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	TURN-ON	

WARNING

Death or injury may occur if the power cable safety ground wire is not connected to a suitable AC receptacle safety ground return. Also, an additional safety ground strap must be connected to E1 ground stud at the rear of the Keyboard-Printer.

6	Set POWER ON/OFF switch (1, figure 2-1) to ON.	POWER indicator (2, figure 2-1) illuminates. All other indicators, except SHF LOCK, illuminate and the end-of-line alarm sounds, for approximately one second. Upon completion of power-on sequence, the configuration message is printed. An example of a possible configuration message follows: READY C/E= 256 MEMORY BLOCKS AVAILABLE 2F A4 40 10 7F PAGE DISPLAY CONNECTED ASR INITIALIZATION COMPLETE SOM=VZCZC EOM= ≡NNNN LINE LENGTH= 80

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	PERFORMANCE CHECK	
7	Set BITE/LF switch (4, figure 2-1) to the BITE position, and then release.	Lamp test is performed while switch is in BITE position and stopped when switch is released. BITE position also initiates high speed printing of character set (see figure 2-4). Test message will stop after approximately 35 seconds. Momentarily setting RESET/CR switch to RESET position and then releasing will cause test message to stop.
	Local Mode	
		If the page display is connected, the keyboard is inactive and in the remote mode. If the page display is not connected, the keyboard is in the local mode. Perform step 8 to place keyboard in local mode, if necessary.
8	Press and hold CTRL key (25, figure 2-3) while pressing the 4, LOC/REM key (2, figure 2-3), then release.	After approximately 35 seconds "LOCAL KEYBOARD IS ACTIVE" will be printed. The keyboard will switch to the local mode and become active, if the page display is not in the edit mode. If the page display is actively being used, then, after approximately 35 seconds, "PAGE DISPLAY BUSY", will be printed. The operator must wait and then repeat this step to enter the local mode. Once in the local mode the keyboard will operate as a normal typewriter until an operational mode is selected (i.e., transmit message, print, compose/edit, etc.).

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	PERFORMANCE CHECK-continued	
8	-continued	If the page display is connected and active, "PRINTER REQUESTS KEYBOARD" is displayed at time of request. If page display is not actively being used, approximately 35 seconds later the Keyboard-Printer will enter local mode and "KEYBOARD IS INACTIVE" is displayed.

NOTE

When operating the keyboard as a typewriter, the PRINT ENABLE switch should be set to OFF to prevent incoming messages from printing while the operator is typing.

9	Set PRINT ENABLE ON/OFF switch (10, figure 2-3) to OFF position.	All characters typed on the keyboard will be printed, but not stored in memory. Keyboard-Printer will continue to monitor data lines for received messages and store them in memory.
10	Set PRINT ENABLE ON/OFF switch to ON position.	Any received messages stored in memory that have not been printed, will be printed.
	Port Initialization	
11	Press and hold CTRL key (25, figure 2-3) while pressing and releasing 2/PORT STAT (2, figure 2-3).	Configuration of each port is printed.
12	Verify each port is properly configured.	The port configuration data identifies the operational characteristics of the ports (ITA-2 or ITA-5, number of stop bits, normal/invert data, etc.). Compare this to your operational needs.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	PERFORMANCE CHECK-continued	
13	Press and hold CTRL key (25, figure 2-3) while pressing and releasing 1, PORT INIT key (2, figure 2-3).	"PORT INITIALIZATION: ENTER PORT # (1/2/3), OR DEPRESS EXIT KEY" will be printed.
14	Press and release 2 key (2, figure 2-3).	"2 ENTER PORT DEVICE N=N/C, C=COM LINE, B=BULK STORE" will be printed.
15	Press and release C key (2, figure 2-3).	"C SET CONFIG SWITCHES, THEN DEPRESS ENTER KEY" will be printed.
16	Press and release EXIT/ENTER key (19, figure 2-3).	"PORT INITIALIZED ENTER PORT # (1/2/3), OR DEPRESS EXIT KEY" will be printed. RCV BUSY lamp illuminates.
17	Press and hold CTRL key (25, figure 2-3) while pressing and releasing EXIT key (19, figure 2-3).	"EXIT" will be printed.
18	Repeat step 11.	Printout should reflect configuration changes made in step 13 thru 17.
19	Repeat steps 13 thru 17 to return port 2 to original configuration. If in original configuration port 2 was disconnected during step 15, enter "N".	
20	Repeat step 11.	Port 2 configuration status should reflect original configuration.

NOTE

If any configuration switches are changed during operation, it will be necessary to reinitialize to affect the change.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	PERFORMANCE CHECK-continued	
	NOTE The SOM and EOM sequence is programmed by the operator. A maximum of five characters is allowed for either the SOM or EOM. The SOM or EOM can consist of any character except the null character.	
	Start of Message/End of Message	
21	Depress and hold CTRL key (25, figure 2-3) and press 3 (number) key (2, figure 2-3).	"SOM=" will be printed.
22	Type desired SOM.	Typed word will follow "SOM=".
23	Press the EXIT/ENTER key (19, figure 2-3).	"EOM=" will be printed.
24	Type desired EOM.	Typed word will follow "EOM=".
25	Press the EXIT/ENTER key (19, figure 2-3).	"SOM AND EOM INPUT COMPLETE" will be printed.
	MODES OF OPERATION	
	Receive Modes	
	Receive, Print and Store	
26	Change switches on configuration control panel for proper settings (step 3).	Keyboard-Printer is always on line to receive data.
27	Set AUTO PRINT/NORM/MASTER CLEAR switch (10, figure 2-2) to NORM.	
28	Set PRINT ENABLE ON/OFF switch (10, figure 2-3) switch to ON position.	REC UNPRT indicator (9, figure 2-3) will illuminate when characters are stored in memory. RCV BUSY indicator (8, figure 2-1) will flash as characters are being received. Incoming messages will be printed when they are

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
28	-continued	received, stored in memory, and assigned message numbers from 129 through 255. Received messages are assigned the next sequential message number, based on a valid end of message sequence and a valid start of message sequence. The memory capacity is 256 blocks, or 64 messages. When the memory has 240 blocks, or 60 messages in store, the C/E ACT indicator will start to flash and initiate a forced delete operation to prevent the memory from overflowing. "DELETE (message no.)" will be printed as messages are deleted. Refer to table 2-5.
	Receive and Store	
29	Set PRINT ENABLE ON/OFF switch (10, figure 2-3) to OFF position.	REC UNPRT indicator (9, figure 2-3) will illuminate when characters are received into the memory. RCV BUSY indicator will flash as characters are received. Incoming messages will be stored in memory and assigned message numbers 129 through 255. Messages will not be printed unless a forced delete operation takes place, or PRINT ENABLE ON/OFF switch is placed in ON position.
30	Set PRINT ENABLE ON/OFF switch in ON position.	Messages received while PRINT ENABLE switch was OFF will be printed.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
	Receive and Print	
31	Set AUTO PRINT/NORM/MASTER CLEAR switch (10, figure 2-2) to AUTO PRINT position.	Received data will be printed when received but not stored.
	Transmit Modes	
	Keyboard Transmit Mode	
32	Check switches on configuration control panel for proper settings (step 3).	
33	Press TX MSG key (16, figure 2-3).	"MPN=" will be printed.
34	Press EXIT/ENTER key (19, figure 2-3). Type message on keyboard.	"KB" will be printed after "MPN=". XMIT ACT indicator (7, figure 2-3) will illuminate. Keyboard is on-line for direct message transmission. If XMT PRNT ON/OFF switch (4, figure 2-2) is ON then "TX PORT 1" will be printed followed by the characters as entered from the keyboard.
35	To exit transmit mode, press and hold SHIFT key (22 or 24, figure 2-3) or CTRL (25, figure 2-3) key then press EXIT/ENTER key (19, figure 2-3).	XMIT ACT indicator (7, figure 2-3) extinguished and "EXIT" is printed.
	Transmit from Memory Mode	
36	Press TX MSG key (16, figure 2-3).	"MPN=" is printed.
37	Type MPN that is to be transmitted.	Typed message number will follow "MPN=".

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
38	Press EXIT/ENTER key (19, figure 2-3).	XMIT ACT indicator (7, figure 2-3) will illuminate indicating message is being transmitted from memory. Message will be printed character-by-character as it is transmitted if XMT/ PRNT ON/OFF switch (4, figure 2-2) is ON. XMIT ACT indicator (7, figure 2-3) will extinguish when transmission is completed. Keyboard-Printer automatically exits the transmit mode. If BREAK is printed, check configuration switch DATA INVT/NORM (6, figure 2-2).

NOTE

Up to three messages may be sent at the same time by separating the typed message numbers with commas.

39	To terminate transmissions from memory, press and hold SHIFT or CTRL key (22, 24 or 25, figure 2-3) and press the EXIT/ENTER key (19, figure 2-3).	Transmission will be terminated. XMIT ACT (7, figure 2-3) indicator will extinguish and EXIT is printed.
	Compose Mode	
	Composing Message	
40	Set PRINT ENABLE ON/OFF switch (10, figure 2-3) to the OFF position if composition is desired without being interrupted by a received message. If one-line display is active it is not necessary to set PRINT ENABLE ON/OFF switch to OFF.	Any received message will be stored in memory and numbered for later printout. REC UNPRT indicator will illuminate if any messages are received while composing and remain illuminated until all received messages are printed.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
41	Press EDIT MSG key (11, figure 2-3) and EXIT/ENTER key (19, figure 2-3).	C/E ACT indicator (8, figure 2-3) will illuminate. "MPN" followed by message number 1 through 127 will be printed or displayed (e.g. MPN1).
42	Using keyboard, type message.	Message prints out or is displayed and is entered in memory. If enough memory is not available for message, a forced delete operation will occur.
	Correcting Errors	
43	Position printhead or cursor over incorrect character/figure by using the backspace (←) key (29, figure 2-3).	Individual characters will be erased on one-line display as ← key is depressed.
44	Type over error(s).	Incorrect character/figure will be corrected in memory.
45	Type remaining characters to complete the line of text.	
46	To delete entire line being typed, press LINE key (14, figure 2-3). Enter line number and press EXIT/ENTER key (19, figure 2-3).	"L (line number)" will be printed or displayed followed by text of selected line.
47	Press DLTE key (15, figure 2-3).	"D (line number)" will be printed. The next line is then printed or displayed. If last line has been deleted, previous line is printed or displayed.
48	Press INSRT key (12, figure 2-3) and retype correct line.	"I" will be printed followed by new text of line which will be printed or displayed.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
49	Press PRINT MSG key (13, figure 2-3) to print composed message with line numbers.	"P (message number)" followed by message with line numbers will be printed.
50	To exit compose mode, press and hold CTRL or SHIFT key (25, 22 or 24, figure 2-3) and press EXIT/ENTER key (19, figure 2-3).	C/E ACT indicator (8, figure 2-3) extinguished. EXIT is printed.
	Print Message	
51	To print a message without line numbers, exit compose mode as described in previous step.	
52	Press PRINT MSG key (13, figure 2-3).	"P" is printed.
53	Using keyboard, type message number (e.g. 3).	Message number is printed following "P".
54	Press EXIT/ENTER key (19, figure 2-3).	Composed message will be printed. To print any messages that were received while in compose mode perform step 30.
	Edit Mode	Messages may be edited by: 1. Specifying message to be edited (message may be deleted in its entirety at this point). 2. Specifying the line to be edited (entire line may be deleted, replaced or additional lines inserted at this point).

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
54	-continued	3. Specifying characters within the line to be deleted, inserted or corrected by use of the ← and → keys.
	Message Edit	
55	To enter the edit mode, press EDIT MSG key (11, figure 2-3).	C/E ACT indicator (8, figure 2-3) will illuminate and "MPN" will be printed or displayed.
56	Set PRINT ENABLE ON/OFF switch (10, figure 2-3) to the OFF position (if operator does not want to be interrupted by a received message). If a received message is desired to be printed when it is received, or the operator is using the one-line display, place the PRINT ENABLE ON/OFF switch to the ON position.	Any messages received during editing activity will be stored in memory and numbered for later print out or printed when received if using the one-line display. REC UNPRT indicator will illuminate if any messages are received while PRINT ENABLE ON/OFF switch is set to OFF. When PRINT ENABLE switch is set to ON and messages are printed, REC UNPRT indicator will extinguish.
57	Using keyboard, type message number to be edited (e.g. 1).	"MPN (message number)" will be printed or displayed.
58	Press EXIT/ENTER key (19, figure 2-3).	

NOTE

The Keyboard-Printer is now in the edit mode and any of the following editing operations can be performed: print message, line edit mode, and character edit mode. To exit edit mode, press and hold SHIFT key (22 or 24, figure 2-3) and press EXIT/ENTER key (19, figure 2-3).

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
58	-continued	Depending on the equipment configuration this procedure will be different. In some configurations the first line of the message will be printed or displayed. To scroll forward through the message, press the LINE FEED key (20, figure 2-3). Pressing and holding the CTRL key (25, figure 2-3) and the LINE FEED key will enable the scrolling backwards through the message. In other configurations the line function key must select the numbered line.
59	To print message, press PRINT MSG key (13, figure 2-3).	Selected message will print out with line numbers in the left margin.
	Line Edit	
60	To perform only Line Edit function, press LINE key (14, figure 2-3).	"L" will be printed or displayed.
61	Using keyboard, type line number to be edited.	Typed "(Line number)" will be printed or displayed following "L".
62	Press EXIT/ENTER key (19, figure 2-3).	Line will be printed or displayed.
63	To delete this line, press DLTE key (15, figure 2-3).	"D" will be printed and line will be deleted. The remaining lines will be automatically renumbered and the nex line will be printed or displayed. If line deleted was last line of message, then previous line will be printe or displayed.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
64	To insert new line at beginning of message, press LINE key (14, figure 2-3), type Ø (number).	"LØ" will be printed or displayed.
65	Press EXIT/ENTER key (19, figure 2-3).	"LØ" will be printed or display goes blank.
66	Press INSRT key (12, figure 2-3), and type a new line. Press NEW LINE key (17, figure 2-3).	"I" will be printed or cursor will appear at left side of display. New line is placed in memory, remaining lines are renumbered. If enough memory is not available to store the new data, a forced delete operation will occur. Inserts end-of-line function (2 carriage returns (CR), and 1 line feed (LF)).
67	Type any additional lines required by pressing NEW LINE key (17, figure 2-3) after each new line(s) is typed.	Same as step 66.
68	To insert a new line at other places in the message, press LINE key (14, figure 2-3) and type preceding line number.	"L (line number)" will be printed or displayed.
69	Press EXIT/ENTER key (19, figure 2-3), INSRT key (12, figure 2-3), type new line and press NEW LINE key (17, figure 2-3).	"I" will be printed or cursor will appear at left side of display. If one-line display is used after INSRT key is depressed, display is blank and new line will print. New line is placed in memory and remaining lines renumbered. Inserts end-of-line function (2 carriage returns (CR), and 1 line feed (LF)).

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
70	Type any additional lines required by pressing NEW LINE key (17, figure 2-3) after each new line(s) is typed.	Inserts end-of-line function (2 carriage returns (CR), and 1 line feed (LF)). Replacing a line is a combination of DELETE and INSERT operations.
71	To replace a line, press LINE key (14, figure 2-3), type line number to be deleted. Press EXIT/ENTER key (19, figure 2-3).	Line number and line will print out or line will be displayed.
72	Press DLTE key (15, figure 2-3).	"D" will be printed and the line called out will be deleted from memory. The lines are then renumbered and the next line is printed or displayed.
73	Press LINE key (14, figure 2-3) and select line number preceding the line number deleted, press EXIT/ENTER key (19, figure 2-3), then press INSRT key (12, figure 2-3). Type in new line or lines.	New line is printed and is inserted in memory.
74	Press NEW LINE key (17, figure 2-3).	Inserts end-of-line function (2 carriage returns (CR), and 1 line feed (LF)). Lines may be reviewed in a message by specifying a line (steps 60 thru 62) followed by a line feed. Next line will be printed each time the LINE FEED key (20, figure 2-3) is pressed.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
	Character Edit	
75	To initiate character edit operation, specify the line to be edited (perform steps 60 thru 62).	Line number and line will be printed.
76	Press EXIT/ENTER key (19, figure 2-3).	Printhead will move to left margin or cursor will move to left side of display.
77	To delete a character, locate the printhead (or cursor if using the one-line display) over the character to be deleted, using either → or ← key (6 or 29, figure 2-3).	Characters will be printed or the cursor moves to the right as → key is pressed.
78	Press the DLTE key (15, figure 2-3).	Character is deleted and * is printed or remaining characters displayed will move to the left with each key depression. In the character edit mode, activation of the → or ← keys positions the printhead to the character to be inserted, deleted or corrected. DO NOT use the space bar to locate character during character edit.
79	To insert a character, locate printhead over the insert point using → or ← keys (6 or 29, figure 2-3). If using one-line display, place cursor over insert character space.	
80	Press INSRT key (12, figure 2-3).	

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	MODES OF OPERATION-continued	
81	Type in new character(s).	New character(s) are inserted. Characters to the right are moved to the right each time a character is inserted. If enough memory is not available to add the new characters, a forced delete operation will occur.
82	To replace or overwrite a character, locate the printhead or cursor if using the one-line display over the character to be replaced using the → or ← key (6 or 29, figure 2-3).	
83	Type the correct character.	Correct character will be displayed and inserted in memory.
84	To exit the character edit mode, press the EXIT/ENTER key (19, figure 2-3).	Line will be printed or displayed as corrected. Additional lines, characters may be edited in the message by specifying another line as described in steps 61 thru 85.
85	To exit the edit mode (when the message has been corrected), depress and hold the SHIFT or CTRL key (22, 24 or 25). Depress the EXIT/ENTER key (19, figure 2-3).	"EXIT" will be printed or display will go blank. C/E ACT indicator will extinguish.
	SPECIAL OPERATIONS	
	Message Status Mode	
86	Depress PRINT MSG key (13, figure 2-3).	

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	SPECIAL OPERATIONS-continued	
87	Depress the S key (2, figure 2-3).	A printout will follow stating either "EMPTY", or a status message will be printed. An example is shown in figure 2-5.
	Manual Termination of a Received Message	
88	Depress and hold the CTRL key (25, figure 2-3), and depress the 6 key (2, figure 2-3).	Message will be terminated in memory and keyboard becomes active again. REC UNPRT indicator extinguishes.
	Delete Message Mode	
89	Depress the DLTE key. Type message number, depress EXIT/ ENTER key (19, figure 2-3). Press Y for yes and N for no.	"MPN (message number)" will be printed or displayed. As a safeguard against inadvertent loss of messages, the Keyboard-Printer will respond with DELETE ?? If the message has not been printed, it will be printed prior to deletion. "EXIT" will be printed or display will go blank.
	Continuous Transmission from Storage	
90	Depress and hold the CTRL key (25, figure 2-3) and depress the Ø (number) key (2, figure 2-3). Press TX MSG key (16, figure 2-3). Type MPN that is to be transmitted. Press EXIT/ ENTER key (19, figure 2-3).	"CONT. XMIT" will be printed. Any message transmitted from storage will be continuously transmitted. To terminate a message transmission, depress and hold the CTRL or SHIFT keys (25, 22 or 24, figure 2-3) and press EXIT/ENTER key (19, figure 2-3).

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	SPECIAL OPERATIONS-continued	
91	To exit the Keyboard-Printer from the "CONT. XMIT", depress and hold the CTRL key (25, figure 2-3) and press Ø (number) key (2, figure 2-3).	"NOT CONT. XMIT" will be printed. Any message transmitted from storage will not be continuously transmitted.
	Override Mode	
92	Depress and hold CTRL key (25, figure 2-3) and press 9 (number) key (2, figure 2-3).	"OVERRIDE MODE" will be printed. No CR/LF characters will be automatically inserted at the end of each line.
93	To exit the Keyboard-Printer from the "Override Mode", depress and hold CTRL key (25, figure 2-3) and press 9 (number) key (2, figure 2-3).	"NOT OVERRIDE MODE" will be printed. The Keyboard-Printer will now automatically insert CR/LF and the end of each line typed.
	Line Length	
94	Depress and hold CTRL key (25, figure 2-3) and press 8/LL SEL key (2, figure 2-3).	"LINE LENGTH=" will be printed.
95	Enter desired line length from 69 to 80 characters. Press EXIT/ ENTER key (19, figure 2-3).	"(number selected)" will be printed (e.g. "LINE LENGTH= 69").
	Bulk Storage Device Operations	
	Boot Operation	
96	Depress and hold SHIFT key (22 or 24, figure 2-3) and press LINE/BOOT key (14, figure 2-3).	XMIT ACT indicator illuminates and RCV BUSY lamp flashes during the booting operation. "MEDIA ID = (file or disk name) BOOT COMPLETE" will be printed. The bulk storage device is now on-line.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	SPECIAL OPERATIONS-continued	
96	-continued	If bulk storage device is on-line and a boot operation is attempted, the Keyboard-Printer will respond with "ERROR-UNLOAD B.S. BEFORE BOOTING" being printed.
	Formatting Operation	

NOTE

If bulk storage device is on-line (booted), bulk storage device must be unloaded (see step 106) prior to reformatting. Failure to unload bulk storage device prior to formatting will result in "ERROR-UNLOAD BEFORE FORMATTING MEDIA".

97	Depress and hold SHIFT key (22 or 24, figure 2-3) and press INSRT/FMT key (12, figure 2-3).	"FORMAT??" will be printed to prevent inadvertent loss of data from the bulk storage device media (disk).
98	Press Y for yes or N for no.	"INPUT MEDIA ID-TERM WITH ENTER" will be printed.
99	Type in a media name and press EXIT/ENTER key (19, figure 2-3).	"FORMAT COMPLETE" will be printed after the disk is erased and reformatted. XMIT ACT indicator only illuminates during formatting operation.
	Writing Operation	
100	Depress and hold SHIFT key (22 or 24, figure 2-3) and press TX MSG/WRITE key (16, figure 2-3).	"WRITE MPN=" will be printed.

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	SPECIAL OPERATIONS-continued	
101	Type number for message to be written to bulk storage device. Press EXIT/ENTER key (19, figure 2-3).	"(Selected MPN)" will be printed. XMIT ACT indicator will illuminate during writing operation. Upon completion of writing operation, XMIT ACT indicator extinguishes and "ASSIGNED BSN= (assigned number)" is printed.
	Reading Operation	
102	Depress and hold SHIFT key (24, figure 2-3) and press EDIT MSG/ READ key (11, figure 2-3).	"READ BSN=" will be printed.
103	Type bulk store number of message to be read from bulk storage device. Press EXIT/ ENTER key (19, figure 2-3).	XMIT ACT indicator illuminates and RCV BUSY lamp flashes during reading operation. "(selected BSN)" will be printed. After reading operation is complete, printer will respond by printing "MPN= (assigned number) BSN (selected BSN)" and data read from the bulk storage device.
	Directory Operation	
104	Depress and hold SHIFT key (22 or 24, figure 2-3) and press PRINT MSG/DIR key (13, figure 2-3).	"DIRECTORY BSN=" will be printed.
105	Type BSN that you desire to start directory listing at. Press EXIT/ENTER key (19, figure 2-3).	XMIT ACT indicator illuminates and RCV BUSY lamp flashes during directory operation. "(selected BSN)" will be printed and directory listing from BSN entered on, will be listed. Each BSN listed will contain 160 characters of the message, followed by "MSG LENGTH= (total number of characters in message)".

Table 2-4. Operating Instructions-Continued

Step	Procedure	Indication/comments
	SPECIAL OPERATIONS-continued	
	NOTE To stop directory operation, depress and hold CTRL key (25, figure 2-3) while pressing EXIT/ENTER key (19, figure 2-3).	
	Unloading Operation	
106	Depress and hold SHIFT key (24, figure 2-3) and press DLTE/ UNLD key (15, figure 2-3).	"BULK STORE UNLOADED" will be printed and bulk storage device is off-line.
	RO MODEL 2 Boot Operation	
107	Set BAUD RATE switch (9, figure 2-2) to the TEST 2 position. Set the BITE/LF switch (4, figure 2-1) to the BITE position.	RCV BUSY lamp flashes during booting operation. "MEDIA ID= (file or disk name) BOOT COMPLETE" will be printed. (Refer to step 96 for additional comments.)
	RO MODEL 2 Unload Operation	
108	Set BAUD RATE switch (9, figure 2-2) to the TEST 2 position. Set the BITE/LF switch (4, figure 2-1) to the LF position.	"BULK STORE UNLOADED" will be printed and bulk storage device is off-line.
	TURNOFF	
109	To turn Keyboard-Printer off, set the POWER ON/OFF switch (1, figure 2-1) to the OFF position.	POWER indicator (2, figure 2-1) extinguishes.
	EMERGENCY TURNOFF	
110	To turn the Keyboard-Printer off in an emergency, set the POWER ON/OFF switch (1, figure 2-1) to the OFF position.	POWER indicator (2, figure 2-1) extinguishes.

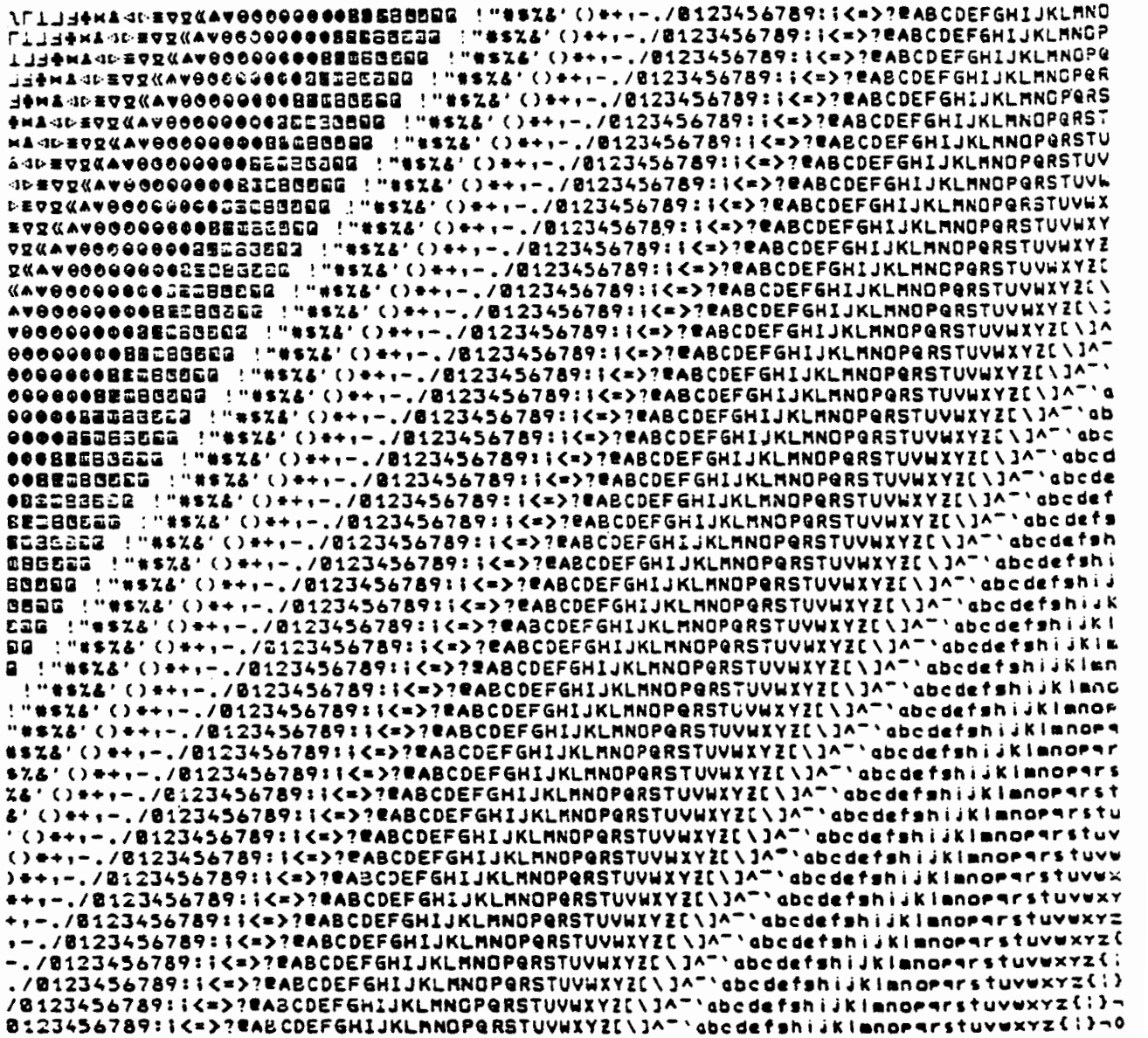

Figure 2-4. Print Test Pattern

Table 2-5. Priority for Deletion of Stored Messages

Priority	Description
1	Oldest received messages that have been printed.
2	Oldest received messages that have not been printed. Messages to be deleted are printed then annotated as having been deleted.
3	Messages being transmitted. Transmission will be terminated.
4	Messages being received. Message store will be completely clear at end of received data.

2-3.5.12 Bulk Storage Device Operation. When the Keyboard-Printer is configured to operate with external memory, it is usually in the form of a bulk storage device. If connected, the bulk storage device will be booted and brought on-line during the power-on sequence. Steps 96 through 108 of table 2-4 provide instructions for operating the bulk storage device. Messages stored in the bulk storage device, will not be deleted if the disk is full. The Keyboard-Printer will inform the operator when the disk is near capacity by printing "EARLY WARNING CHANGE MEDIA". This same message will be displayed on the page display if active.

2-3.6 Turnoff. To turn the Keyboard-Printer off, set the POWER ON/OFF switch (1, figure 2-1) to the OFF position.

2-3.7 Emergency Turnoff. To turn the equipment off in an emergency, set the POWER ON/OFF switch (1, figure 2-1) to the OFF position.

NOTE

When the POWER ON/OFF switch is set to the OFF position, all data in the message store memory is cleared.

2-4. KEYBOARD-PRINTER CHARACTERS.

The Keyboard-Printer characters are either International Telegraph Alphabet-2 (ITA-2) or International Telegraph Alphabet-5 (ITA-5) American National Standard Code for Information and Interchange (ASCII). The selection of the mode of operation is determined by the setting of the ITA CODE switch (2, figure 2-2) on the configuration control panel. The ITA-2 and ITA-5 characters are shown in figure 2-6 and figure 2-7, respectively. Table 2-6 lists the differences between the Keyboard-Printer keyboard and a Teletype keyboard when the ITA CODE switch is in the ITA-2 position.

2-5. OPERATOR MAINTENANCE.

Operator maintenance is limited to replacement of paper, ribbon cassette, control panel lamps, and general cleanliness of the Keyboard-Printer. Table 2-8 contains the procedures for replacing paper, ribbon cassette and control panel lamps. Figure 2-8 illustrates the paper feed mechanism.

P

MPN 1	C		P			400
MPN 2	C		P	T	D	451
MPN 129	C	R	P			345
MPN 130		R	P			6844
MPN 131		R				1785

C/E = 214 memory blocks available

Note that MPN 1 and 2 were composed, and 129 was changed; 129 through 131 were received. All messages except 131 have previously been printed and mpn 2 has been printed, transmitted and displayed but is still retained in memory. c/e = 161 memory blocks available indicates the amount of storage capacity remaining in blocks of memory.

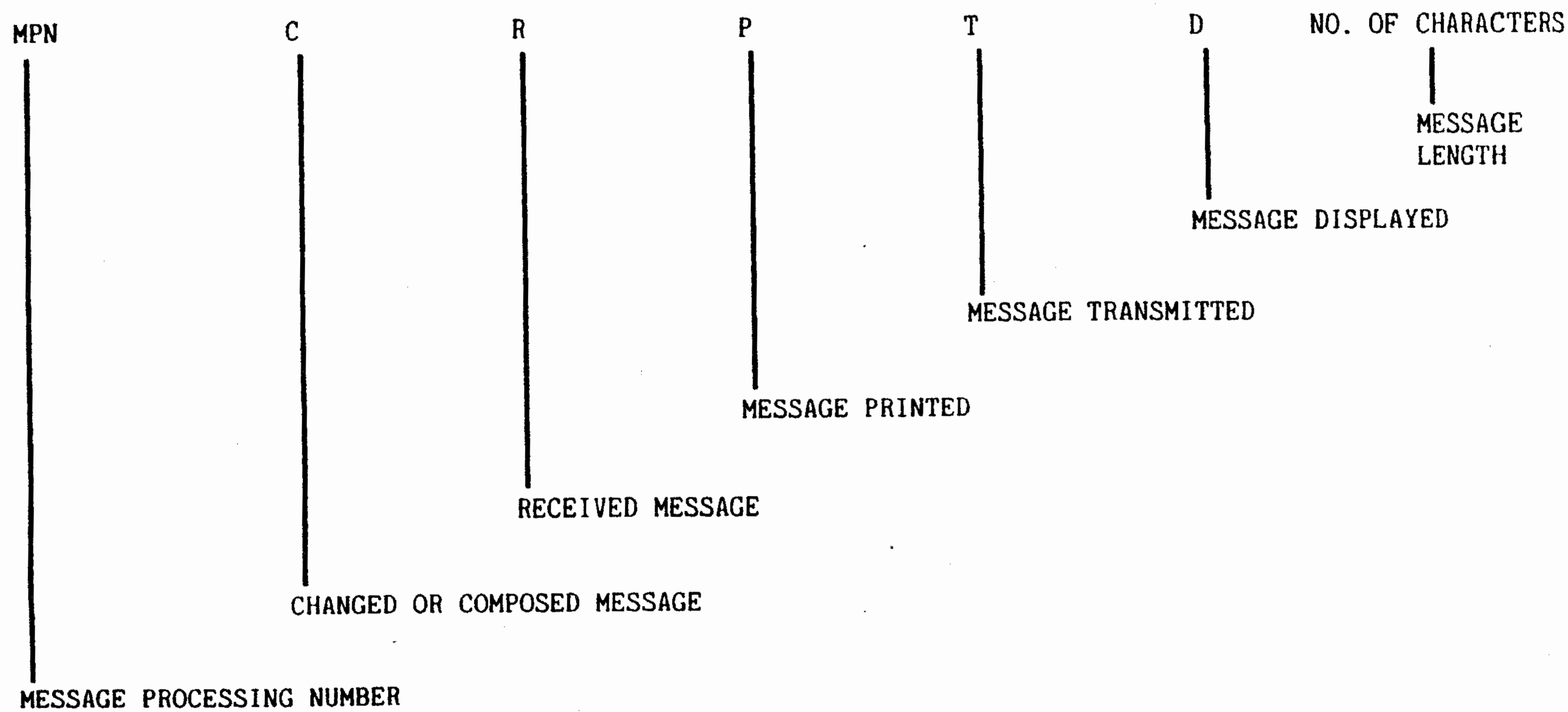

Figure 2-5. Sample Message Status Printout

Letters	Figures	Letters	Figures	Letters	Figures
A	-	J	'	S	BELL
B	?	K	(	T	5
C	:	L	)	U	7
D	$	M	.	V	;
E	3	N	,	W	2
F	!	O	9	X	/
G	&	P		Y	6
H	$	Q	1	Z	"
I	8	R	4		

NON-PRINTING CHARACTERS

- BLANK (NUL)
- SPACE
- CARRIAGE RETURN
- LINE FEED
- FIGURES (SO)
- LETTERS (SI)

Figure 2-6. ITA-2 Characters

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

Note: NON-PRINTING CHARACTERS (except in test message)

Figure 2-7. ITA-5 (ASCII) Characters

Table 2-6. Keyboard-Printer and Teletype Functional Differences

Teletype function	Keyboard-Printer function
LTRS	LTRS (DEL key) or CTRL + SI (O key)
FIGS	FIGS (US key) or CTRL + SO (N key)
BLANK	CTRL + NUL (to right of 0 key)
BELL	CTRL + BEL (G key)
2 CR 1 LF	NEW LINE key
#	SHIFT + 3 key

Table 2-7. Data Parity Configuration

ITA code	Parity	Notes
2	None	No parity accepted or transmitted in ITA mode.
5	Odd	Odd parity checked and transmitted.
5	Even	Even parity checked and transmitted.
5	None	No parity checked; parity bit exists but will not be set/reset to produce valid parity bits.

NOTE

Odd/even refers to the number of 1s in the word (excluding start and stop bits).

Table 2-8. Operator's Maintenance Actions

Step	Procedure
	NOTE It is not necessary to turn off the Keyboard-Printer power to change paper. Messages received while the cover is open will be stored in the memory and will be printed after the paper has been loaded, the cover closed, and the RESET/CR switch (9, figure 2-1) pushed to the RESET position. Carriage shaft lever (figure 6-2) is normally set to the most rearward position for single-ply paper, and should be moved forward for multi-ply paper. Carriage shaft level may be adjusted for desired print contrast.
	PAPER REPLACEMENT (Refer to figure 2-8.):
1	Release the two cover fasteners (figure 1-1) and raise the cover to the lock-in position.
2	Move the paper roll locking lever forward to release the paper roll.
3	Remove the paper roll and spindle from the paper storage tray by lifting straight up.
4	Remove the spindle from the old roll and install spindle in the new roll.
5	Install the paper in the storage tray with the paper being unwound from the bottom.
6	Lock the paper roll in place by moving the paper roll locking lever back to the lock position.
7	Feed the paper between the platen and paper guide. Pull out about one foot of paper to align paper in the assembly.
8	Momentarily depress the BITE/LF switch (4, figure 2-1) to LF position so that the paper is fed through to the front of the unit.
9	Lift the plastic retaining plate assembly and place the paper underneath it so that it exits toward the rear.

Table 2-8. Operator's Maintenance Actions-Continued

Step	Procedure
	PAPER REPLACEMENT (Refer to figure 2-8.):-continued
10	Place the retaining plate assembly back to the normal position and depress the local BITE/LF switch (4, figure 2-1) to LF position to see that the paper is feeding properly. Feed the paper through the cover, close the cover and engage two cover fasteners, and tear off the excess paper evenly.
	RIBBON CASSETTE REPLACEMENT:
11	Release the two cover fasteners (figure 1-1) and raise the cover to the lock-in position.

CAUTION

To avoid bending left margin sensing tab, move printhead to center of machine before removing ribbon cassette. Press space bar and RPT key (28, figure 2-3) to move carriage.

12	Unlock the cassette by pulling up the latch at the top of the cassette.
13	Lift the cassette upward to remove.
14	Replace with new cassette.
15	Push down on latch to lock cassette in place.
16	Close the cover and engage two cover fasteners.

NOTE

The cassette should be disposed of in a proper manner, observing any applicable security regulations.

	LAMP REPLACEMENT (Control Panel and Print Mechanism Module only):
17	Unscrew lens on Control Panel (figure 2-1) or Print Mechanism (figure 6-2).
18	Remove lamp from lens on Control Panel or unseat lamp from socket in Print Mechanism.
19	Replace the new lamp in the lens on Control Panel or install new lamp in socket on Print Mechanism and reinstall the lens.

Table 2-8. Operator's Maintenance Actions-Continued

Step	Procedure
	LAMP REPLACEMENT (Control Panel and Print Mechanism Module only): -continued
	NOTE Lamps on the keyboard are not replaceable by the operator because of internal solder connections.

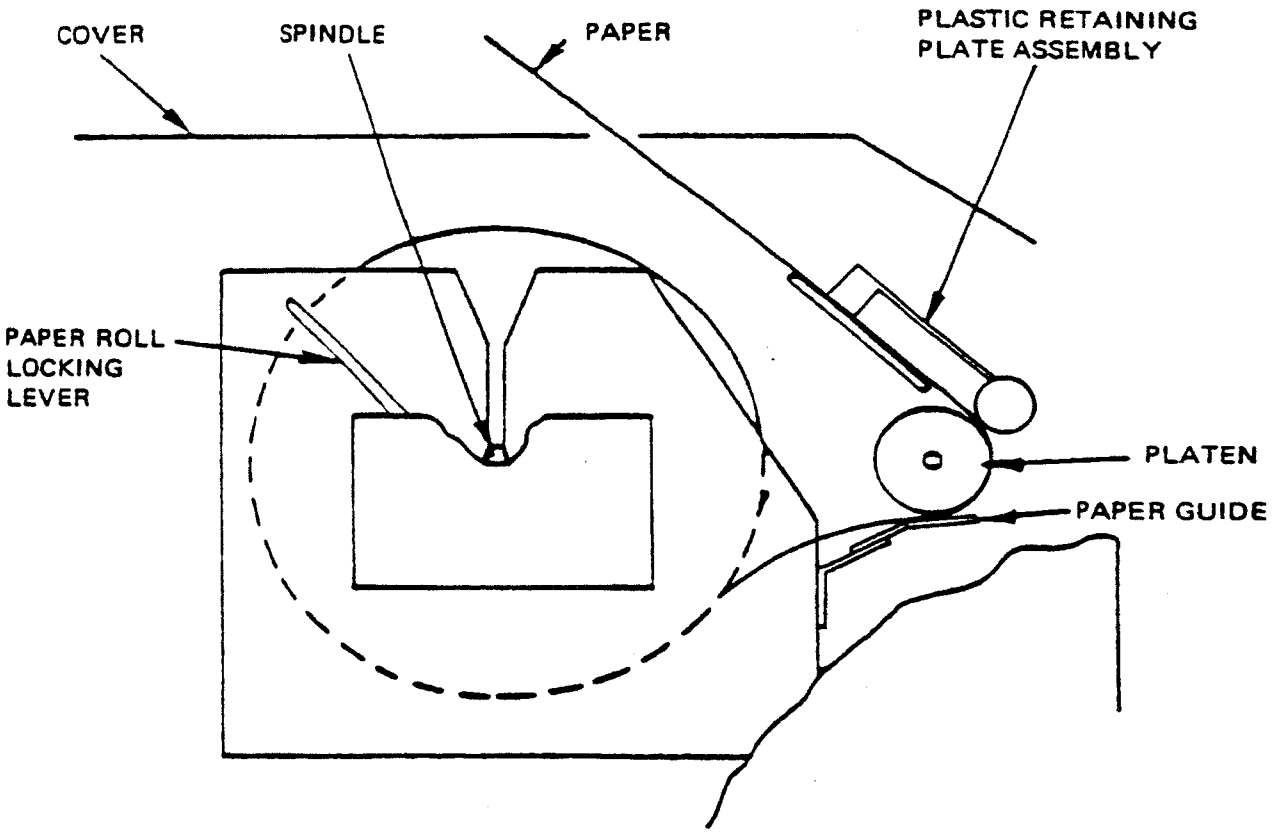

Figure 2-8. Paper Feed Mechanism (End View)

CHAPTER 8

INSTALLATION

8-1. INTRODUCTION.

The Keyboard-Printer is designed to operate within a communications network. These instructions are applicable to installing the Keyboard-Printer at any site where a communications network exists.

8-2. TOOLS AND MATERIALS.

There are no special tools required to install the Keyboard-Printer.

8-3. UNPACKING.

The Keyboard-Printer is packed in a Triplewall RSC carton, 1000 lb. test, with two inches of 1.6 density polyurethane foam cushioning for all surfaces (figure 8-1). The Keyboard-Printer is wrapped in Grade A wrapping paper prior to being placed into the carton. In addition, the printhead and carriage assembly are blocked on both sides with two pieces of polyurethane foam to prevent damage during shipment. Unpack the equipment as follows:

WARNING

The carton weights 91 lbs. complete. To prevent injury to personnel or damage to equipment, two persons are required for lifting and carrying.

NOTE

Exercise care in removing packing and crating materials. Some of these materials can be stored and reused for reshipment of equipment.

a. Cut sealing tape on top of carton and open.

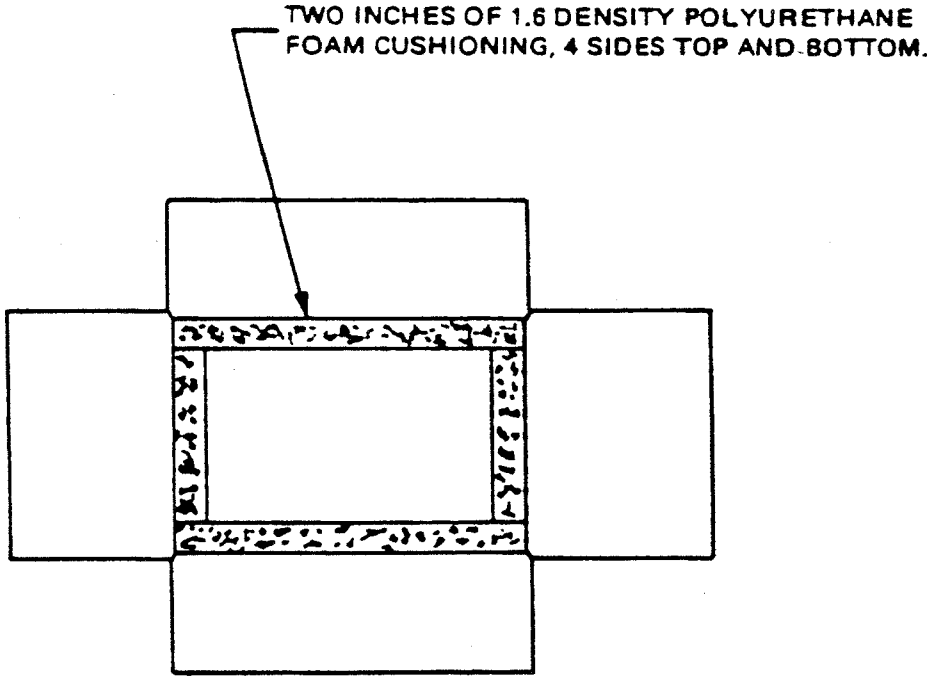

Figure 8-1. Keyboard-Printer, Packing Carton

b. Remove top layer of foam and four side cushions.

c. Lift Keyboard-Printer out of carton.

d. Retain shipping material for repacking and shipment.

8-4. REPACKING.

To repack the equipment, use the following procedure:

a. Wrap the Keyboard-Printer in Grade A wrapping paper.

b. Place Keyboard-Printer in shipping carton.

c. Place four side cushions between Keyboard-Printer and carton sides.

d. Place top layer of foam in carton.

e. Close carton and seal with shipping tape.

8-5. INSPECTION.

Visually inspect the Keyboard-Printer to determine if any physical damage was sustained during shipment. Also, check the following:

a. Check the equipment against the packing slip to see if all items were received.

b. Inspect connectors for bent or damaged pins.

c. Verify that control panel components are not broken.

d. Check that all hardware is tight and all screws are in place.

8-6. POWER REQUIREMENTS.

The Keyboard-Printer requires a source of 115 Vac, 60 Hz, single-phase power.

8-7. INSTALLATION INSTRUCTIONS.

WARNING

The Keyboard-Printer weighs approximately 68 pounds. To avoid injury to personnel, two persons are required for lifting, carrying and installing the Keyboard-Printer.

8-7.1 Preparation of Foundation. To install the Keyboard-Printer, perform the following:

a. Place the Keyboard-Printer on a sliding drawer in a standard 19-inch rack. See figure 8-2.

b. Attach Keyboard-Printer using 1/4-28 bolts of sufficient length to secure the front of the Keyboard-Printer to the drawer. The bolts should contain 1/4-inch flat washers and be inserted through the Keyboard-Printer (figure 8-2) into the two holes located on the bottom of the drawer. Fasten using 1/4-28 nuts.

c. Ensure Keyboard-Printer POWER switch is OFF.

8-7.2 Interconnections. Perform the following to interconnect the Keyboard-Printer:

WARNING

Death or injury may occur if the power cable safety ground wire is not connected to a suitable AC receptacle safety ground return. Also, an additional safety ground strap must be connected to E1 ground stud at the rear of the Keyboard-Printer.

a. Verify the power source as 115 Vac, 60 Hz before connecting

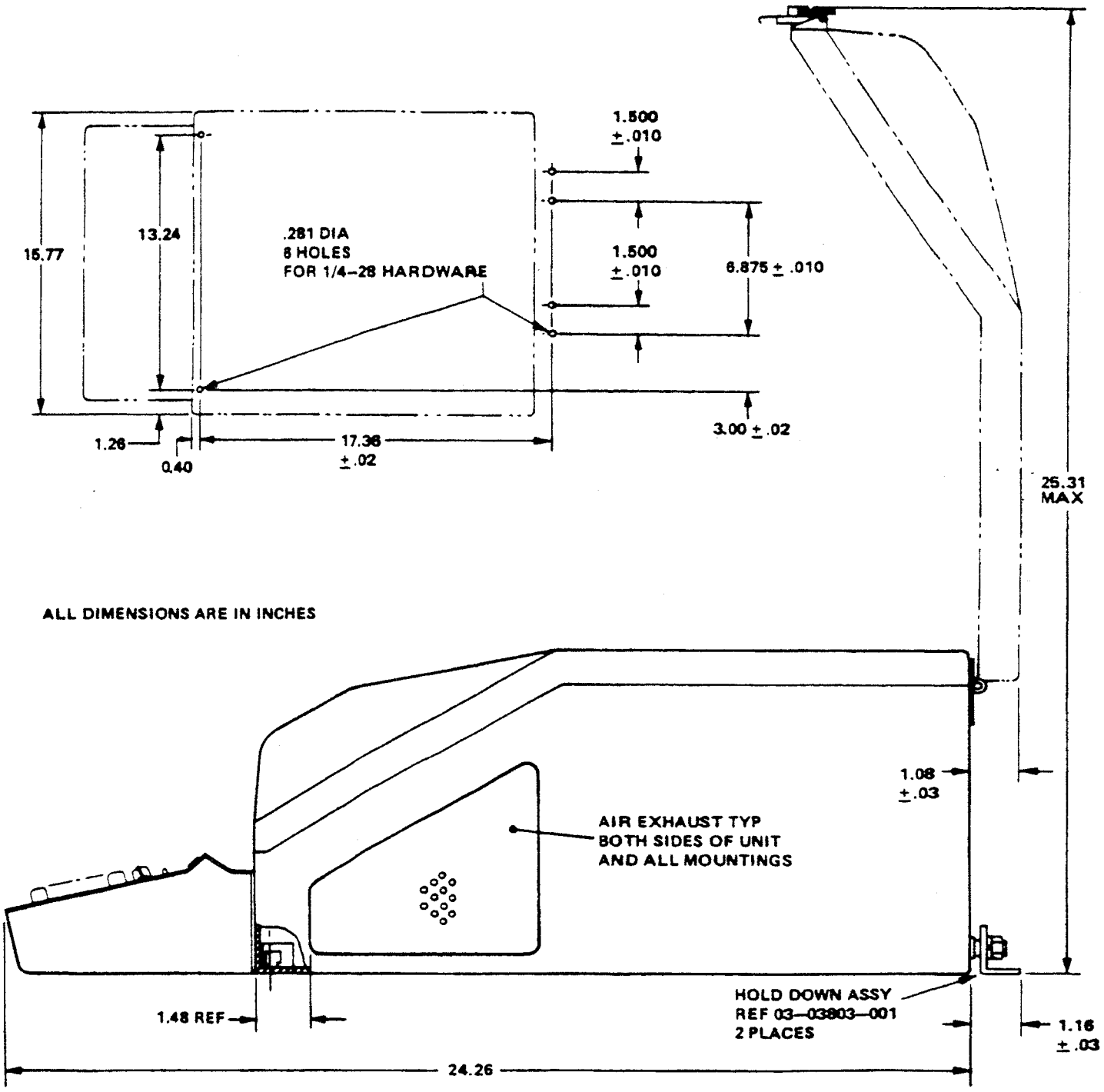

Figure 8-2. Keyboard-Printer, Installation Drawing

the power cable to connector J1 (figure 6-5).

b. Connect the signal cable to connector J2 (figure 6-5).

c. Connect safety ground return line to E1 ground stud (figure 6-5).

d. Fill out the Installation Standard Summary sheet.

8-7.3 Servicing. The Keyboard-Printer does not require servicing prior to initial operation.

8-7.4 Removal. Perform above interconnections and physical location steps in reverse order to remove the Keyboard-Printer.

8-8. INSTALLATION CHECKOUT.

Perform the following procedures prior to operating the Keyboard-Printer.

8-8.1 Installation Inspection and Preenergizing Procedures. Perform the following:

a. Ensure Keyboard-Printer is properly grounded and input power and control signal connectors are properly connected (see table 8-1).

b. Ensure mounting hardware is installed and secure.

c. Check configuration control panel (table 2-4, step 1-4), for proper switch settings.

d. Remove logic module A1A7 (para 6-4.2). Refer to table 8-2 and figure 8-3, to set the four switches for the proper system configuration. Replace logic module A1A7.

e. Ensure Installation Summary Sheet is complete.

f. Install paper and ribbon cartridge per table 2-8.

8-8.2 Initial Turn-on and Preliminary Test. Perform steps 1 through 14 of table 5-3.

8-8.3 Installation Verification Test. Perform steps 15 through 20 of table 5-3.

Table 8-1. Rear Panel Connectors and Signal Interface Information

Connector	Function
J1 Power Connector (five-pin, male receptacle connector)	Connects Keyboard-Printer to AC power source.
Pin / Signal	
A — 115 VAC	
B — 115 RTN	
C — GND (chassis)	
D — Not used	
E — Not used	
J2 Signal Connector (25-pin, male receptacle connector)	Through signal cable, provides signal interface or input/output signals between Keyboard-Printer and other equipment.
Pin / Signal	
1 — RXD1	Receive Data Port 1
2 — TXD1	Transmit Data Port 1
3 — TXINH1C	Transmit Inhibit Port 1
4 — RTS/RCVINH1C	Receive Inhibit Port 1
5 — BELLV28	External Bell
6 — RBRS1	Remote Baud Rate Select 1
7 — RBRS2	Remote Baud Rate Select 2
8 — RBRSS	Remote Baud Rate Select Status
9 — STCS-1	Transmit Switch
10 — STCS-1	Transmit Switch
11 — STC-2	Transmit Switch
12 — STC-1	Transmit Switch
13 — RXD2	Receive Data Port 2
14 — TXD2	Transmit Data Port 2
15 — TXINH2C	Transmit Inhibit Port 2
16 — RTS/RCVINH2C	Receive Inhibit Port 2
17 — RXD3	Receive Data Port 3
18 — TXD3	Transmit Data Port 3
19 — TXINH3C	Transmit Inhibit Port 3
20 — RTS/RCVINH3C	Receive Inhibit Port 3
21 — EXT CLK1	External Clock 1
22 — CLOCK OUT	Clock Out
23 — EXT CLK2	External Clock 2
24 — IORTN	I/O Return
25 — CHASSIS GND	Chassis Ground

Table 8-2. System Configuration Switch Settings

Switch	On	Off
U10-A	Syn/Asynchronous-normal	Isosynchronous
U10-B	Iso/Asynchronous-normal	Synchronous
U10-C	N/A	N/A
U10-D	N/A	N/A
U16-A	CTS	DSR3-normal
U16-B	RTS3	DTR3-normal
U16-C	CTC	DSR2-normal
U16-D	RTS3	DTR2-normal
U20-A	4800 Baud Clk filter	2400 Baud Clk filter-normal
U20-B	CTS1	DSR1-normal
U20-C	RTS1	DTR1-normal
U20-D	Keyline	BELLV28-normal
U21-A	RCV CLK int-normal	RCV CLK EXT 1
U21-B	TX CLK int-normal	TX CLK EXT 1 or 2*
U21-C	TX CLK-EXT CLK2-normal	TX CLK EXT 1
U21-D	RXD2-normal	RXD2 disconnected

*See U21C

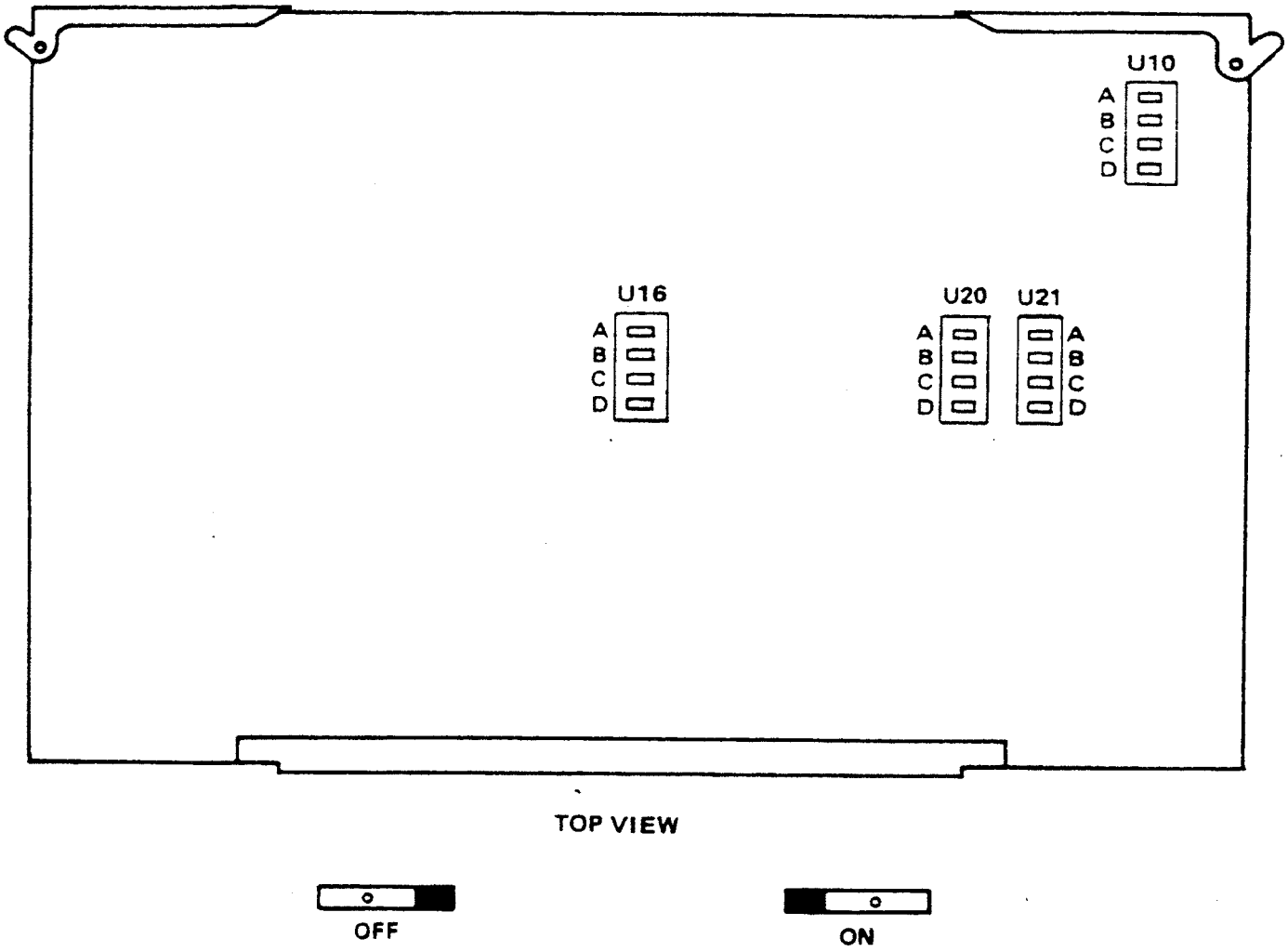

Figure 8-3. System Configuration Switch Locations

TELETYPEWRITER SET

AN/UGC-136BX

INSTALLATION STANDARDS SUMMARY

Input Voltage 115 Vac

Input Frequency 60 Hz

1 phase

Date _____

Serial Number _____

of Model _____

Installed in (ship or station)

_____

Record on this summary sheet the test indications which have been obtained during the installation verification test.

Table 5-3

Step No.	Ref Std
1	_____ Check
2	_____ Check
3	_____ Check
4	_____ Check
5	_____ Check
6	_____ Check
7	_____ Check
8	_____ Check
9	_____ Check
10	_____ Check
11	_____ Check
12	_____ Check
13	_____ Check
14	_____ Check
15	_____ Check
16	_____ Check
17	_____ Check
18	_____ Check
19	_____ Check
20	_____ Check

APPENDIX A

A-1. INTRODUCTION.

This appendix provides additional information concerning the configuration status message. This information consists of an example of a typical configuration message and detailed definition of the information provided by each line.

A-2. CONFIGURATION/STATUS MESSAGE.

The configuration status message (figure A-1) provides the configuration of the equipment, and the operational status at the time of power-on sequence. The following paragraphs provide descriptions of the information provided in each line of the message.

A-3. LINE 1.

Line 1 will contain the word "READY" at the completion of the power-on sequence if the equipment is operable. If the equipment is not operable, the word "READY" will not be printed and the maintenance technician should refer to chapter 5 to correct the fault.

A-4. LINE 2.

This line contains the total blocks of memory that are available for message storage. This is determined during the power-on sequence by examining the

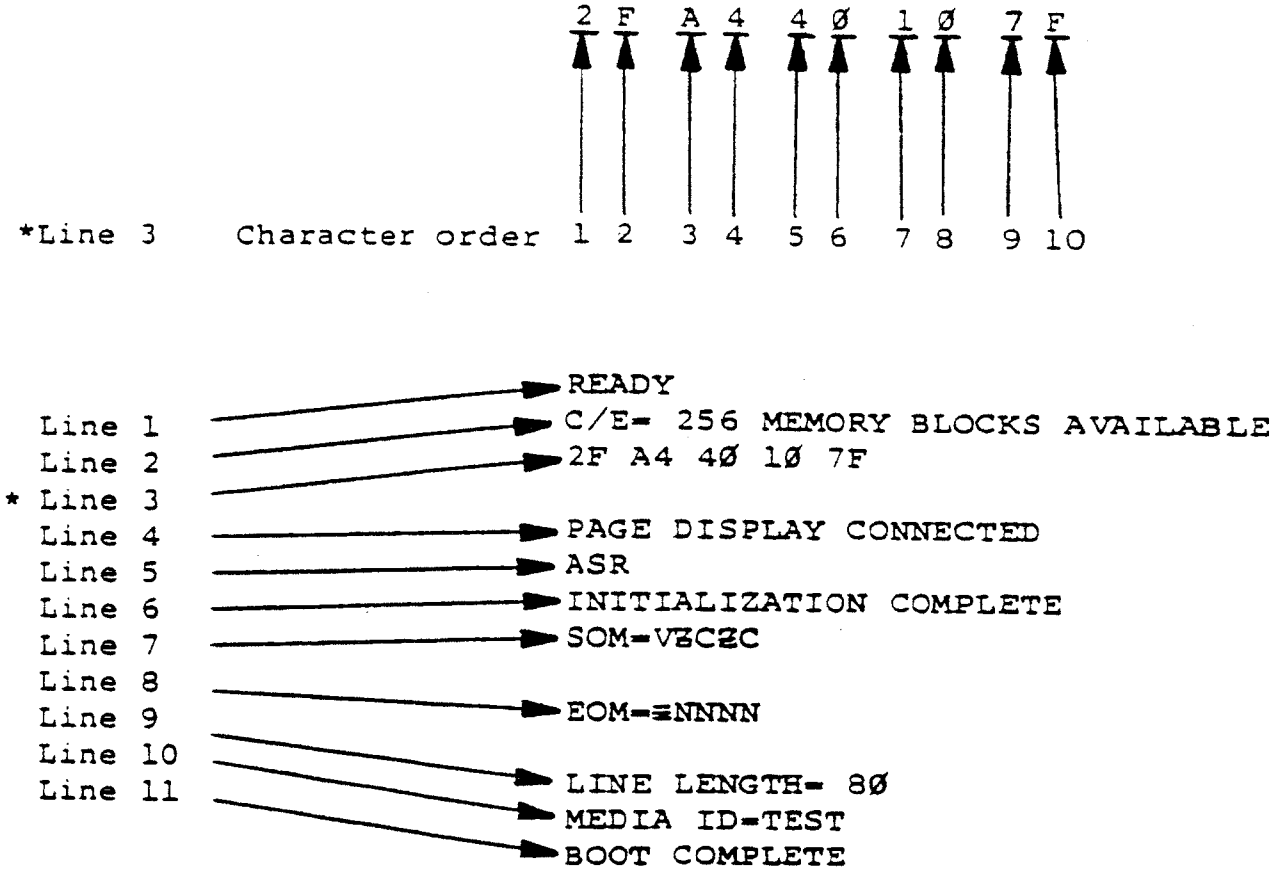

Figure A-1. Configuration/Status Message Printout

memory for defects and totaling the amount of memory that is operable.

A-5. **LINE 3.**

This line contains five pairs of hexadecimal coded characters. Each character represents the hexadecimal character for a four place binary code. The binary codes represent from one to four conditions that existed during the power-up sequence. Tables A-1 through A-10 are a breakdown of each character by order number (see figure A-1).

A-6. **LINE 4.**

When a page display is used in conjunction with the Keyboard-Printer it is normally connected to port 3. During the power-on sequence, the Keyboard-Printer will determine if the page display is connected. If so, it will be printed on line 4. If it is not connected, this line will be blank.

A-7. **LINE 5.**

This line provides the configuration of the Keyboard-Printer. The Keyboard-Printer can operate in four different configurations, as listed in table A-11. One of the four possible configuration codes will be printed on this line.

A-8. **LINE 6.**

After each port has been searched and the operating status determined, the operable ports are initialized. Upon completion of the initialization process, "INITIALIZATION COMPLETE" is printed.

A-9. **LINE 7.**

Line 7 identifies the start-of-message (SOM) code contained in memory. The SOM, end-of-message (EOM), line 8, and line length, line 9, are contained in a nonvolatile memory and are operator controlled functions. The operator enters the code or length into the equipment using the operating procedures provided in table 2-4. During the power-on sequence, the information is read and printed. To change the codes or line length, the operator must again perform the procedures in table 2-4.

A-10. **LINE 8.**

This line contains the end-of-message (EOM) contained in memory.

A-11. **LINE 9.**

This line contains the line length (69 to 80 characters) contained in memory.

A-12. **LINE 10.**

Line 10 contains the identification title for the disk when using a bulk storage device. The Keyboard-Printer will read this disk and then print "MEDIA ID = (name of disk)".

A-13. **LINE 11.**

This line will inform the operator when the bulk storage device is connected and operative, and the boot operation is completed, bringing the bulk storage device on-line. This operation will take place during the power-on sequence. If the bulk storage device is not connected or inoperative lines 10 and 11 are blank.

Table A-1. Character Order No. 1

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	XMIT PRINT = ON ECHO = ON DATA = INVRT XMIT RDY = ON
1	0	0	0	1	XMIT PRINT = OFF ECHO = ON DATA = INVRT XMIT RDY = ON
2	0	0	1	0	XMIT PRINT = ON ECHO = OFF DATA = INVRT XMIT RDY = ON
3	0	0	1	1	XMIT PRINT = OFF ECHO = OFF DATA = INVRT XMIT RDY = ON
4	0	1	0	0	XMIT PRINT = ON ECHO = ON DATA = NORM XMIT RDY = ON
5	0	1	0	1	XMIT PRINT = OFF ECHO = ON DATA = NORM XMIT RDY = ON
6	0	1	1	0	XMIT PRINT = ON ECHO = OFF DATA = NORM XMIT RDY = ON
7	0	1	1	1	XMIT PRINT = OFF ECHO = OFF DATA = NORM XMIT RDY = ON
8	1	0	0	0	XMIT PRINT = ON ECHO = ON DATA = INVRT XMIT RDY = OFF

Table A-1. Character Order No. 1-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	XMIT PRINT = OFF ECHO = ON DATA = INVRT XMIT RDY = OFF
A	1	0	1	0	XMIT PRINT = ON ECHO = OFF DATA = INVRT XMIT RDY = OFF
B	1	0	1	1	XMIT PRINT = OFF ECHO = OFF DATA = INVRT XMIT RDY = OFF
C	1	1	0	0	XMIT PRINT = ON ECHO = ON DATA = NORM XMIT RDY = OFF
D	1	1	0	1	XMIT PRINT = ON ECHO = ON DATA = NORM XMIT RDY = OFF
E	1	1	1	0	XMIT PRINT = ON ECHO = OFF DATA = NORM XMIT RDY = OFF
F	1	1	1	1	XMIT PRINT = OFF ECHO = OFF DATA = NORM XMIT RDY = OFF

Table A-2. Character Order No. 2

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = ON
1	0	0	0	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = ON
2	0	0	1	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = ON
3	0	0	1	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = ON
4	0	1	0	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = ON
5	0	1	0	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = ON
6	0	1	1	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = ON
7	0	1	1	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = ON
8	1	0	0	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = OFF

Table A-2. Character Order No. 2-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = OFF
A	1	0	1	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = OFF
B	1	0	1	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = ON AUTO PRINT = OFF
C	1	1	0	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = OFF
D	1	1	0	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = OFF
E	1	1	1	0	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = OFF
F	1	1	1	1	REMOTE BAUD SEL 1 = }* REMOTE BAUD SEL 2 = BREAK = OFF AUTO PRINT = OFF

*Remote Baud Sel 1 and 2 are used together as a binary code for remotely selecting baud rates. The following is the binary codes and their baud rates:

2^1	2^0	Baud Rate
0	0	50
0	1	75
1	0	1200
1	1	2400

Table A-3. Character Order No. 3

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = EVEN ITA CODE SWITCH = 5 STOP BITS SWITCH = MULT
1	0	0	0	1	PARITY ENABLE = NONE PARITY SENSE = EVEN ITA CODE SWITCH = 5 STOP BITS SWITCH = MULT
2	0	0	1	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = ODD ITA CODE SWITCH = 5 STOP BITS SWITCH = MULT
3	0	0	1	1	PARITY ENABLE = NONE PARITY SENSE = ODD ITA CODE SWITCH = 5 STOP BITS SWITCH = MULT
4	0	1	0	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = EVEN ITA CODE SWITCH = 2 STOP BITS SWITCH = MULT
5	0	1	0	1	PARITY ENABLE = NONE PARITY SENSE = EVEN ITA CODE SWITCH = 2 STOP BITS SWITCH = MULT
6	0	1	1	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = ODD ITA CODE SWITCH = 2 STOP BITS SWITCH = MULT
7	0	1	1	1	PARITY ENABLE = NONE PARITY SENSE = ODD ITA CODE SWITCH = 2 STOP BITS SWITCH = MULT
8	1	0	0	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = EVEN ITA CODE SWITCH = 5 STOP BITS SWITCH = SGL

Table A-3. Character Order No. 3-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	PARITY ENABLE = NONE PARITY SENSE = EVEN ITA CODE SWITCH = 5 STOP BITS SWITCH = SGL
A	1	0	1	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = ODD ITA CODE SWITCH = 5 STOP BITS SWITCH = SGL
B	1	0	1	1	PARITY ENABLE = NONE PARITY SENSE = ODD ITA CODE SWITCH = 5 STOP BITS SWITCH = SGL
C	1	1	0	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = EVEN ITA CODE SWITCH = 2 STOP BITS SWITCH = SGL
D	1	1	0	1	PARITY ENABLE = NONE PARITY SENSE = EVEN ITA CODE SWITCH = 2 STOP BITS SWITCH = SGL
E	1	1	1	0	PARITY ENABLE = ODD/EVEN PARITY SENSE = ODD ITA CODE SWITCH = 2 STOP BITS SWITCH = SGL
F	1	1	1	1	PARITY ENABLE = NONE PARITY SENSE = ODD ITA CODE SWITCH = 2 STOP BITS SWITCH = SGL

Table A-4. Character Order No. 4

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Baud rate switch position
0	0	0	0	0	TEST 2
1	0	0	0	1	TEST 1
2	0	0	1	0	REMOTE
3	0	0	1	1	BLANK
4	0	1	0	0	4800
5	0	1	0	1	2400
6	0	1	1	0	1200
7	0	1	1	1	600
8	1	0	0	0	300
9	1	0	0	1	200
A	1	0	1	0	150
B	1	0	1	1	110
C	1	1	0	0	100
D	1	1	0	1	75
E	1	1	1	0	50
F	1	1	1	1	45.5

Table A-5. Character Order No. 5

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	TXRDY2 = NOT READY TXRDY3 = NOT READY ASYNC = SYNCHRONOUS ISOSYNC = ASYNCHRONOUS
1	0	0	0	1	TXRDY2 = READY TXRDY3 = NOT READY ASYNC = SYNCHRONOUS ISOSYNC = ASYNCHRONOUS
2	0	0	1	0	TXRDY2 = NOT READY TXRDY3 = READY ASYNC = SYNCHRONOUS ISOSYNC = ASYNCHRONOUS
3	0	0	1	1	TXRDY2 = READY TXRDY3 = READY ASYNC = SYNCHRONOUS ISOSYNC = ASYNCHRONOUS
4	0	1	0	0	TXRDY2 = NOT READY TXRDY3 = NOT READY ASYNC = ASYNCHRONOUS ISOSYNC = ASYNCHRONOUS
5	0	1	0	1	TXRDY2 = READY TXRDY3 = NOT READY ASYNC = ASYNCHRONOUS ISOSYNC = ASYNCHRONOUS
6	0	1	1	0	TXRDY2 = NOT READY TXRDY3 = READY ASYNC = ASYNCHRONOUS ISOSYNC = ASYNCHRONOUS
7	0	1	1	1	TXRDY2 = READY TXRDY3 = READY ASYNC = ASYNCHRONOUS ISOSYNC = ASYNCHRONOUS
8	1	0	0	0	TXRDY2 = NOT READY TXRDY3 = NOT READY ASYNC = SYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS

Table A-5. Character Order No. 5-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	TXRDY2 = READY TXRDY3 = NOT READY ASYNC = SYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS
A	1	0	1	0	TXRDY2 = NOT READY TXRDY3 = READY ASYNC = SYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS
B	1	0	1	1	TXRDY2 = READY TXRDY3 = READY ASYNC = SYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS
C	1	1	0	0	TXRDY2 = NOT READY TXRDY3 = NOT READY ASYNC = ASYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS
D	1	1	0	1	TXRDY2 = READY TXRDY3 = NOT READY ASYNC = ASYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS
E	1	1	1	0	TXRDY2 = NOT READY TXRDY3 = READY ASYNC = ASYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS
F	1	1	1	1	TXRDY2 = READY TXRDY3 = READY ASYNC = ASYNCHRONOUS ISOSYNC = ISOSYNCHRONOUS

Table A-6. Character Order No. 6

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	RXRDY1 = NOT READY RXRDY2 = NOT READY RXRDY3 = NOT READY TXRDY1 = NOT READY
1	0	0	0	1	RXRDY1 = READY RXRDY2 = NOT READY RXRDY3 = NOT READY TXRDY1 = NOT READY
2	0	0	1	0	RXRDY1 = NOT READY RXRDY2 = READY RXRDY3 = NOT READY TXRDY1 = NOT READY
3	0	0	1	1	RXRDY1 = READY RXRDY2 = READY RXRDY3 = NOT READY TXRDY1 = NOT READY
4	0	1	0	0	RXRDY1 = NOT READY RXRDY2 = NOT READY RXRDY3 = READY TXRDY1 = NOT READY
5	0	1	0	1	RXRDY1 = READY RXRDY2 = NOT READY RXRDY3 = READY TXRDY1 = NOT READY
6	0	1	1	0	RXRDY1 = NOT READY RXRDY2 = READY RXRDY3 = READY TXRDY1 = NOT READY
7	0	1	1	1	RXRDY1 = READY RXRDY2 = READY RXRDY3 = READY TXRDY1 = NOT READY
8	1	0	0	0	RXRDY1 = NOT READY RXRDY2 = NOT READY RXRDY3 = NOT READY TXRDY1 = READY

Table A-6. Character Order No. 6-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	RXRDY1 = READY RXRDY2 = NOT READY RXRDY3 = NOT READY TXRDY1 = READY
A	1	0	1	0	RXRDY1 = NOT READY RXRDY2 = READY RXRDY3 = NOT READY TXRDY1 = READY
B	1	0	1	1	RXRDY1 = READY RXRDY2 = READY RXRDY3 = NOT READY TXRDY1 = READY
C	1	1	0	0	RXRDY1 = NOT READY RXRDY2 = NOT READY RXRDY3 = READY TXRDY1 = READY
D	1	1	0	1	RXRDY1 = READY RXRDY2 = NOT READY RXRDY3 = READY TXRDY1 = READY
E	1	1	1	0	RXRDY1 = NOT READY RXRDY2 = READY RXRDY3 = READY TXRDY1 = READY
F	1	1	1	1	RXRDY1 = READY RXRDY2 = READY RXRDY3 = READY TXRDY1 = READY

Table A-7. Character Order No. 7

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	COVER UP = NO NOT USED MOTOR INT = NO OVERTEMP = NO
1	0	0	0	1	COVER UP = YES NOT USED MOTOR INT = NO OVERTEMP = NO
2	0	0	1	0	COVER UP = NO NOT USED MOTOR INT = NO OVERTEMP = NO
3	0	0	1	1	COVER UP = YES NOT USED MOTOR INT = NO OVERTEMP = NO
4	0	1	0	0	COVER UP = NO NOT USED MOTOR INT = YES OVERTEMP = NO
5	0	1	0	1	COVER UP = YES NOT USED MOTOR INT = YES OVERTEMP = NO
6	0	1	1	0	COVER UP = NO NOT USED MOTOR INT = YES OVERTEMP = NO
7	0	1	1	1	COVER UP = YES NOT USED MOTOR INT = YES OVERTEMP = NO
8	1	0	0	0	COVER UP = NO NOT USED MOTOR INT = NO OVERTEMP = YES

Table A-7. Character Order No. 7-continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	COVER UP = YES NOT USED MOTOR INT = NO OVERTEMP = YES
A	1	0	1	0	COVER UP = NO NOT USED MOTOR INT = NO OVERTEMP = YES
B	1	0	1	1	COVER UP = YES NOT USED MOTOR INT = NO OVERTEMP = YES
C	1	1	0	0	COVER UP = NO NOT USED MOTOR INT = YES OVERTEMP = YES
D	1	1	0	1	COVER UP = YES NOT USED MOTOR INT = YES OVERTEMP = YES
E	1	1	1	0	COVER UP = NO NOT USED MOTOR INT = YES OVERTEMP = YES
F	1	1	1	1	COVER UP = YES NOT USED MOTOR INT = YES OVERTEMP = YES

Table A-8. Character Order No. 8

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	LIMITER = OFF SEC STEP = NO SYNC = NO LEFT BRAKE = NO
1	0	0	0	1	LIMITER = ON SEC STEP = NO SYNC = NO LEFT BRAKE = NO
2	0	0	1	0	LIMITER = OFF SEC STEP = YES SYNC = NO LEFT BRAKE = NO
3	0	0	1	1	LIMITER = ON SEC STEP = YES SYNC = NO LEFT BRAKE = NO
4	0	1	0	0	LIMITER = OFF SEC STEP = NO SYNC = YES LEFT BRAKE = NO
5	0	1	0	1	LIMITER = ON SEC STEP = NO SYNC = YES LEFT BRAKE = NO
6	0	1	1	0	LIMITER = OFF SEC STEP = YES SYNC = YES LEFT BRAKE = NO
7	0	1	1	1	LIMITER = ON SEC STEP = YES SYNC = YES LEFT BRAKE = NO
8	1	0	0	0	LIMITER = OFF SEC STEP = NO SYNC = NO LEFT BRAKE = YES

Table A-8. Character Order No. 8-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	LIMITER = ON SEC STEP = NO SYNC = NO LEFT BRAKE = YES
A	1	0	1	0	LIMITER = OFF SEC STEP = YES SYNC = NO LEFT BRAKE = YES
B	1	0	1	1	LIMITER = ON SEC STEP = YES SYNC = NO LEFT BRAKE = YES
C	1	1	0	0	LIMITER = OFF SEC STEP = NO SYNC = YES LEFT BRAKE = YES
D	1	1	0	1	LIMITER = ON SEC STEP = NO SYNC = YES LEFT BRAKE = YES
E	1	1	1	0	LIMITER = OFF SEC STEP = YES SYNC = YES LEFT BRAKE = YES
F	1	1	1	1	LIMITER = ON SEC STEP = YES SYNC = YES LEFT BRAKE = YES

Table A-9. Character Order No. 9

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	LINE SPACE = 2 RESET = RESET ENGLISH = NO PAPER LOW = OK
1	0	0	0	1	LINE SPACE = 1 RESET = RESET ENGLISH = NO PAPER LOW = OK
2	0	0	1	0	LINE SPACE = 2 RESET = NOT RESET ENGLISH = NO PAPER LOW = OK
3	0	0	1	1	LINE SPACE = 1 RESET = NOT RESET ENGLISH = NO PAPER LOW = OK
4	0	1	0	0	LINE SPACE = 2 RESET = RESET ENGLISH = YES PAPER LOW = OK
5	0	1	0	1	LINE SPACE = 1 RESET = RESET ENGLISH = YES PAPER LOW = OK
6	0	1	1	0	LINE SPACE = 2 RESET = NOT RESET ENGLISH = YES PAPER LOW = OK
7	0	1	1	1	LINE SPACE = 1 RESET = NOT RESET ENGLISH = YES PAPER LOW = OK
8	1	0	0	0	LINE SPACE = 2 RESET = RESET ENGLISH = NO PAPER LOW = LOW

Table A-9. Character Order No. 9-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	LINE SPACE = 1 RESET = RESET ENGLISH = NO PAPER LOW = LOW
A	1	0	1	0	LINE SPACE = 2 RESET = NOT RESET ENGLISH = NO PAPER LOW = LOW
B	1	0	1	1	LINE SPACE = 1 RESET = NOT RESET ENGLISH = NO PAPER LOW = LOW
C	1	1	0	0	LINE SPACE = 2 RESET = RESET ENGLISH = YES PAPER LOW = LOW
D	1	1	0	1	LINE SPACE = 1 RESET = RESET ENGLISH = YES PAPER LOW = LOW
E	1	1	1	0	LINE SPACE = 2 RESET = NOT RESET ENGLISH = YES PAPER LOW = LOW
F	1	1	1	1	LINE SPACE = 1 RESET = NOT RESET ENGLISH = YES PAPER LOW = LOW

Table A-10. Character Order No. 10

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
0	0	0	0	0	LOCAL LF = LINE FEED LOCAL CR = CAR RTN BITE = ACTIVE PRINT ENABLE = OFF
1	0	0	0	1	LOCAL LF = NO LINE FEED LOCAL CR = CAR RTN BITE = ACTIVE PRINT ENABLE = OFF
2	0	0	1	0	LOCAL LF = LINE FEED LOCAL CR = NO CAR RTN BITE = ACTIVE PRINT ENABLE = OFF
3	0	0	1	1	LOCAL LF = NO LINE FEED LOCAL CR = NO CAR RTN BITE = ACTIVE PRINT ENABLE = OFF
4	0	1	0	0	LOCAL LF = LINE FEED LOCAL CR = CAR RTN BITE = INACTIVE PRINT ENABLE = OFF
5	0	1	0	1	LOCAL LF = NO LINE FEED LOCAL CR = CAR RTN BITE = INACTIVE PRINT ENABLE = OFF
6	0	1	1	0	LOCAL LF = LINE FEED LOCAL CR = NO CAR RTN BITE = INACTIVE PRINT ENABLE = OFF
7	0	1	1	1	LOCAL LF = NO LINE FEED LOCAL CR = NO CAR RTN BITE = INACTIVE PRINT ENABLE = OFF
8	1	0	0	0	LOCAL LF = LINE FEED LOCAL CR = CAR RTN BITE = ACTIVE PRINT ENABLE = ON

Table A-10. Character Order No. 10-Continued

Hexidecimal code	Binary code 2^3	2^2	2^1	2^0	Conditions present
9	1	0	0	1	LOCAL LF = NO LINE FEED LOCAL CR = CAR RTN BITE = ACTIVE PRINT ENABLE = ON
A	1	0	1	0	LOCAL LF = LINE FEED LOCAL CR = NO CAR RTN BITE = ACTIVE PRINT ENABLE = ON
B	1	0	1	1	LOCAL LF = NO LINE FEED LOCAL CR = NO CAR RTN BITE = ACTIVE PRINT ENABLE = ON
C	1	1	0	0	LOCAL LF = LINE FEED LOCAL CR = CAR RTN BITE = INACTIVE PRINT ENABLE = ON
D	1	1	0	1	LOCAL LF = NO LINE FEED LOCAL CR = CAR RTN BITE = INACTIVE PRINT ENABLE = ON
E	1	1	1	0	LOCAL LF = LINE FEED LOCAL CR = NO CAR RTN BITE = INACTIVE PRINT ENABLE = ON
F	1	1	1	1	LOCAL LF = NO LINE FEED LOCAL CR = NO CAR RTN BITE = INACTIVE PRINT ENABLE = ON

Table A-11. Keyboard-Printer Configuration Code

Code	Configuration
KSR	Keyboard Send/Receive - The keyboard send/receive configuration consists of the Printer and either a Page Display or keyboard connected. This configuration will also work with both a Page Display and keyboard connected as long as only one is active (local/remote) at a time.
ASR	Automatic Send/Receive - The automatic send/receive configuration is the same as the KSR with the addition of a Bulk Storage Device.
RCV ONLY MODEL 1	Receive Only Model One - The receive only model one configuration is a stand alone Printer without a Page Display or keyboard connected.
RCV ONLY MODEL 2	Receive Only Model Two - The receive only model two configuration is the same as the receive only model one with the addition of a Bulk Storage Device.

GLOSSARY

AC	alternating current
ACT	active
ASCII	American Standard Code for Information Interchange
ASR	automatic send/receive
ASSY	assembly
AUTO	automatic
BITE	built-in test equipment
BRK	break
BSN	bulk storage number
CB	circuit breaker
CCW	counterclockwise
C/E	compose/edit
CKT	circuit
CLK	clock
CPU	central processing unit
CR	carriage return
CTRL	control
CW	clockwise
D	daily
DC	direct current
DEL	delete
DLTE	delete
DIR	directory
DVM	digital voltmeter
EOL	end-of-line
EOM	end-of-message
FMT	format
INVT	invert
I/O	input/output
INSRT	insert
ITA-2	International Telegraph Alphabet Number Two
ITA-5	International Telegraph Alphabet Number Five
LED	light emitting diode
LF	line feed
KB	keyboard
M	monthly
MP	mechanical part
MPN	message processing number
MSG	message
MULT	multiple
NORM	normal
PIO	parallel input/output
PRNT	print
PWR	power
RDY	ready
REC	receive
RFI	radio frequency interference
RO	receive only
RPT	repeat
RETN	return
SGL	single
SHF	shift
SP	space
ST	store
TRM	terminal
TTL	transistor-transistor logic
TX	transmit
UNLD	unload
UNPRT	unprinted
USART	universal synchronous/asynchronous receive/transmit
W	weekly
XMT	transmit

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