silent 700®
electronic data terminals

Model 743 KSR
Model 745 Portable
Maintenance Manual

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TEXAS INSTRUMENTS
INCORPORATED

ENGINEERING CHANGE NOTICE

DATE	ECN	LEVEL	DESCRIPTION

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SECTION I

EQUIPMENT DESCRIPTION

1.1 SCOPE.

This manual contains descriptions, theory of operation, and maintenance procedures for the Silent 700® Models 743 and 745 Electronic Data Terminals manufactured by the Digital Systems Division of Texas Instruments Incorporated. The information in this manual is intended to help in maintaining and servicing these data terminals. The troubleshooting data is designed to help isolate problems to one of the five assemblies. A general description of the Models 743/745 and available options is included in this section of the manual. Necessary interfacing and installation information is contained in Section 2, and a general theory of operation is included in Section 3. Section 4 describes maintenance procedures. Lists of materials, related mechanical drawings, and electrical schematics are included in the appendixes to this manual.

1.2 GENERAL DESCRIPTION.

The Silent 700® Models 743/745 Electronic Data Terminals are self-contained, compact, durable machines designed for use in a wide variety of telecommunications systems. Silent electronic printing is achieved using a five by seven dot matrix on a monolithic, solid-state printhead which prints up to 80 characters across the page. The dot matrix is composed of 35 individual, solid-state heating elements, each electronically controlled. Voltage is applied to the appropriate elements in the matrix for each printable character. The thermal energy thus generated is transferred to heat-sensitive paper, creating a visible image. The Models 743 and 745 feature a 58-key, TTY 33-compatible, modular keyboard with integral numeric keypad, carrier-detect indicator, two-key rollover, and key debounce circuitry.

Both models are designed and built using snap-in, quick replacement modules for fast, simple field maintenance. The primary modules include the case, keyboard, printhead and paper drive mechanism, cooling fan, and the printed-wiring board (PWB) which contains all electronics.

1.2.1 MODEL 743. The TI Model 743 Data Terminal, shown in Figure 1-1 is a light-weight, electronic-printing data terminal capable of operating in full- or half-duplex modes at 10 or 30 characters per second. The Model 743 uses a character set and code compatible with the American Standard Code for Information Interchange (ASCII). The standard communications interface provided with this model is the EIA RS-232-C.

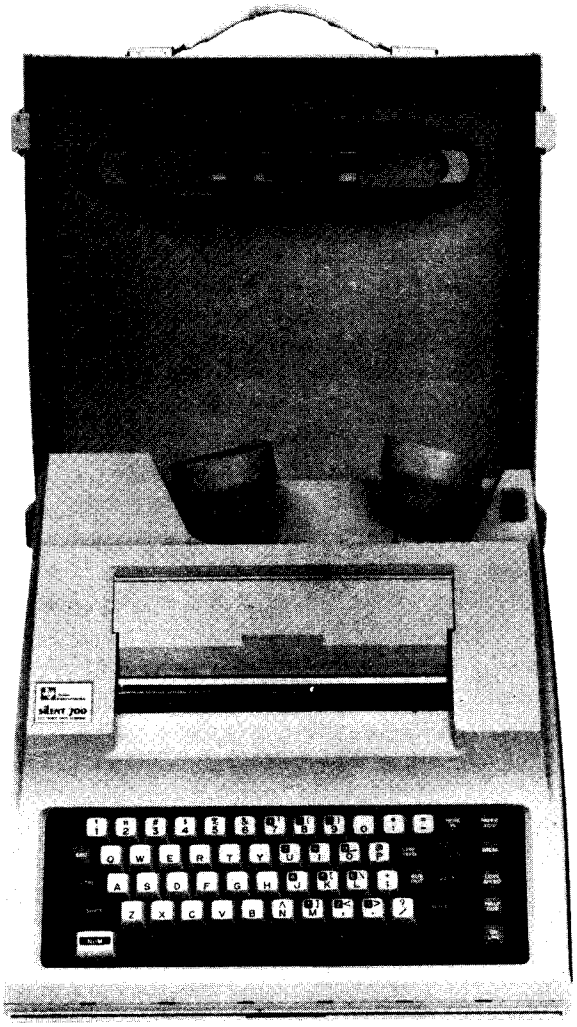
1.2.2 MODEL 745. The TI Model 745 Portable Data Terminal, shown in Figure 1-1, is a light-weight, portable, electronic-printing data terminal with a built-in acoustic coupler and integral carrying case. The Model 745 is capable of operating in full- or half-duplex modes at 10 or 30 characters per second, using a character set and code compatible with the American Standard Code for Information Interchange (ASCII). The Model 745 is designed to use standard commercial telephone facilities for interrogation of computerized data bases from a remote location.

1.3 OPTIONS.

Several options are available for both the Model 743 and 745, but some options may be used on only one model. Options for both models are listed in Table 1-1.

1.3.1 OPTIONS AVAILABLE ON BOTH MODELS 743 AND 745. The following options are available for both models.

1.3.1.1 Answer-Back Memory. The optional Answer-Back Memory configuration provides a customer-specified 1- to 21-character identification sequence which is transmitted to the communications line upon receipt of the ENQ code from the line or upon actuation of the HERE IS key by the operator. In addition to the character sequence, the customer also specifies whether or not the transmitted sequence of characters is printed if the terminal is in the half duplex mode. The answer-back contents are not printed when the terminal is off-line and the ENQ code is received or the HERE IS key is actuated.



Model 745 Portable Data Terminal
With Acoustic Coupler

Model 743 Keyboard/Send-Receive (KSR)
Data Terminal

P1000032a&b

Figure 1-1. Models 743/745 Data Terminals

Table 1-1. Options for the Models 743/745 Data Terminals

Option	Available for	
	Model 743	Model 745
Acoustic Coupler	No	Yes (standard)
Auxiliary Acoustic Coupler	No	Yes
Internal Modem	Yes	No
Auxiliary Modem	Yes	No
EIA 103A	Yes	No
EIA 113A	Yes	No
TTY Half Duplex	Yes	No
TTY Full Duplex	Yes	No
European Acoustic Coupler	No	Yes
Answer-Back Memory	Yes	Yes
230-Volt Operation	Yes	Yes

1.3.1.2 230-Volt Operation. The 230-volt option enables operation of the terminal in locations with the following power specifications:

230 Vac, +10%, -15%; 47 to 63 Hz.

1.3.2 MODEL 743 OPTIONS. The following options are available only on the Model 743 data terminal.

1.3.2.1 Current Loop Interface. The current loop interface option converts the EIA levels of the basic unit into a TTY 33-compatible current loop interface. This interface may be used in either four-wire or two-wire communications systems. The nominal operating current is 20 milliamps dc. A 6-foot cable terminated in four spade lugs is provided with this option.

1.3.2.2 Internal Modem. The modem configuration converts the EIA levels of the standard Model 743 to FSK tones for presentation to a Bell-type CDT, manual Data Access Arrangement (DAA). When connected to the DAA, the modem is functionally equivalent to a Bell 113A Data Set. It meets all interface requirements of the DAA, including adjustment of the transmit level without removal of any parts. A 6-foot cable, terminating in two spade lugs, is supplied for CDT DAA connection.

1.3.2.3 Auxiliary EIA Interface. The Auxiliary EIA Interface of a Model 743 is applicable only to the internal modem configuration. It provides separate EIA interfaces to the keyboard printer and to the internal modem, which permits connection of an external device (e.g., tape cassette, plotter, etc.) between the two interfaces. The 6-foot cable supplied provides CDT DAA spade lug terminations as well as a 25-pin male connector for terminating the keyboard/printer interface and a 25-pin female connector for terminating the internal modem EIA interface. Both connectors are compatible with the requirements of EIA Specification RS-232C. With these two connectors connected together, the terminal functions as described in paragraph 1.3.2.2 above.

1.3.3 MODEL 745 OPTIONS. The following options are available only for the Model 745.

1.3.3.1 Auxiliary EIA Interface. The Auxiliary EIA Interface option of the Model 745 provides separate EIA interfaces to the internal acoustic coupler and to keyboard/printer functions. This option enables connection of an external device (e.g., tape cassette, plotter, etc.) between the two interfaces. The 6-foot cable supplied provides a 25-pin male connector for terminating the keyboard/printer interface and a 25-pin female connector for terminating the internal acoustic coupler. Both connectors are compatible with the requirements of EIA Specification RS-232C. With these two connectors plugged together, the terminal functions the same as a basic Model 745.

1.3.3.2 European Acoustic Coupler. The European Acoustic Coupler option converts the EIA levels of the basic unit to FSK tones for presentation to a standard commercial telephone handset. The European Acoustic Coupler operates in full duplex mode over switched telephone networks at data rates up to 300 baud in accord with the requirements of *C.C.I.T.T. Recommendation VIII, Data Transmission*. Like the U.S. acoustic coupler for the basic Model 745, this version operates in the *originate mode* only: no signals are transmitted until the carrier signal is received from the *answer* end of the communication link.

1.4 PHYSICAL DIMENSIONS.

The Model 743 Data Terminal is a compact unit designed for desk-top use. The Model 745 Data terminal is a self-contained unit designed to fit easily beneath a commercial airliner seat. The Model 745 outer structure is built to afford protection, from both the elements and physical abuse, of that normally attributed to a sturdy attache case.

Size
The overall terminal dimensions are

Depth:	16.0 inches
Width:	15.4 inches
Height:	4.6 inches

Weight
The maximum weight of the Model 743 and 745 terminals with paper is

Model 745	13.5 pounds
Model 743	11.2 pounds

1.5 ENVIRONMENTAL LIMITS.

The terminal, exclusive of the thermal paper, will meet the minimum specified performance requirements after enduring the following environmental conditions.

With Shipping Container

1. Temperature: -30°C to 70°C
2. Relative Humidity: 10% to 95% without condensation
3. Shock: Drop from 40 inches on each surface and corner
4. Vibration; Sinusoidal, 2G, 5 to 50 Hz; 4G, 50 to 500 Hz; 6-minute linear sweep
5. Altitude: 50,000 feet
6. Cargo Bounce: per MIL–STD 810B; 1-inch double amplitude orbital motion, 225 RPM, 30 minutes per side.

Without Shipping Container

1. Temperature: -30°C to 70°C
2. Relative Humidity: 10% to 95% without condensation
3. Shock:

   Portable model
   20G for 11 milliseconds

4. Vibration: Sinusoidal 1.5G, 5 to 500 Hz.

SECTION 2

EQUIPMENT INSTALLATION

2.1 PRELIMINARY CHECKOUT.

Visually check the data terminal before applying power. After unpacking, check for any obvious shipping damage such as a damaged top cover. Look for packing material inside the mechanism and roller. Verify that the inner cover and base fit snugly together.

NOTE

The printer will not operate without paper on the drive roller since damage to both platen and printhead could result. The machine is equipped with fail-safe control logic which may be reset by cycling power or pressing the PAPER ADVance key.

2.2 POWER CONNECTION.

The Models 743/745 Data Terminals are factory wired for three-wire 120 Vac or 230 Vac power. The power cord plugs into the right rear of the terminal.

2.3 COMMUNICATIONS INTERCONNECTIONS.

The communications interface is available through the telephone handset muffs located at the top rear of the Model 745 and through the appropriate cable attached to the rear (opposite the power connection) of all configurations of the Model 743 and the auxiliary EIA option of the Model 745.

2.3.1 ACOUSTIC COUPLER CONFIGURATION, MODEL 745. Using the built-in acoustic coupler, the communications link is completed as follows.

a. Switch power on.

b. Set the LOW SPEED switch on the keyboard to up for 30 CPS* or depressed for 10 CPS; these equal 300 baud and 110 baud, respectively.

c. Set the transmission mode switch (HALF DUP) on the keyboard to the HALF (depressed) or FULL (up) DUPlex mode.

d. Set the ON LINE key to the depressed position.

e. Lift the telephone handset from the cradle and dial the appropriate number to connect the Model 745 to the data equipment at the other end of the telephone line.

f. When an audible high-frequency signal (MARK) is heard on the receiver, place the telephone handset into the acoustic coupler muffs so that the telephone handset cord is to the left side of the data terminal. Wait 3 to 6 seconds for the CARRIER DETECT indicator to illuminate.

g. Begin communication according to your system instructions.

h. In the event the communication link is lost during operation, replace the handset into its cradle, and repeat steps e through g above.

2.3.2 EIA CONFIGURATION, MODEL 743. A 6-foot cable with a 25-pin male connector (Cannon DB-25P or equivalent) on the modem end and a mating 15-pin female connector on the data terminal end is provided with the standard EIA interface for the Model 743 terminal. Pin assignments are listed in Table 2-1. Complete the following steps to establish the communications link.

a. Connect the 6-foot cable between the terminal and the data set.

b. Set the LOW SPEED key on the keyboard to the appropriate speed: depressed for 10 CPS or up for 30 CPS.

c. Switch Power to on.

d. Set the ON LINE key to the depressed position.

*CPS = characters per second

Table 2-1. Model 743 EIA Interface Cable Pin Assignments

Terminal Connector	Cable Termination	Function
103A Data Set (Cable Part No. 983848)		
9	1	Protective Ground
13	2	Transmit Data
12	3	Receive Data
1	7	Signal Ground
11	8	Data Carrier Detect
15	20	Data Terminal Ready
10	4	Request to Send/+12 Volts
113A Data Set (Cable Part No. 983854)		
9	1	Protective Ground
13	2	Transmit Data
12	3	Receive Data
1	7	Signal Ground
15	20	Data Set Ready
11 – 10	N/A	Carrier Detect to +12volts

e. Begin communications according to your system instructions.

2.3.3 TTY CONFIGURATION, MODEL 743. A 6-foot cable (TI Part No. 983850-0001) is provided to connect the Model 743 to the communication line. This cable consists of a 15-pin Amp connector for connection at the rear of the terminal and four spade lugs at the other end of the cable. Pin assignments are listed in Table 2-2. Use the following procedure to complete the communication link for four-wire (full-duplex) and two-wire (half duplex).

a. For full duplex mode connect the four wires (X1 and X2 to the transmit pair and RL1 and RL2 to the receive pair) to the signal source as shown in Figure 2-1. For half duplex operation connect X1 and RL2 to the communication source. Connect X2 to RL1, thus putting the terminal's transmit and receive leads in series as shown in Figure 2-1.

b. Set the SPEED selection key to the depressed position for 10 CPS or up for 30 CPS.

c. Set the data terminal power switch to the ON position.

d. Set the ON LINE key to the depressed position.

e. The terminal should be operable. If not, check polarity of the leads described in step a. above, and repeat steps b. through d.

2.3.4 INTERNAL MODEM CONFIGURATION, MODEL 743. A 6-foot cable (TI Part No. 983849-0001) terminated in two spade lugs is available for the Model 743. This cable provides standard EIA data tip and data ring output/input signals. Pin assignments are listed in Table 2-3. The procedure for completing the communications link is as follows:

a. Connect the 6-foot cable between the terminal and the CDT DAA. See Table 2-3 for pin assignments.

b. Switch power to on.

c. Set the SPEED selection key to the depressed position for 10 CPS or up for 30 CPS.

d. Set the ON LINE key to the depressed position.

e. On the telephone, dial the appropriate number to connect the data terminal to the data equipment.

f. When an audible high frequency signal is heard through the receiver, lift the white "hang up" button on the telephone cradle and place the handset on the table beside the dial unit.

g. When the CARRIER DETECT indicator illuminates (1 to 4 seconds); begin communications according to your system instructions.

2.3.5 AUXILIARY EIA CONFIGURATION. The Models 743/745 Data Terminals can be equipped with EIA interface capability by use of either of two optional cables:

- Auxiliary EIA coupler cable (TI Part No. 983847-0001) for the Model 745.

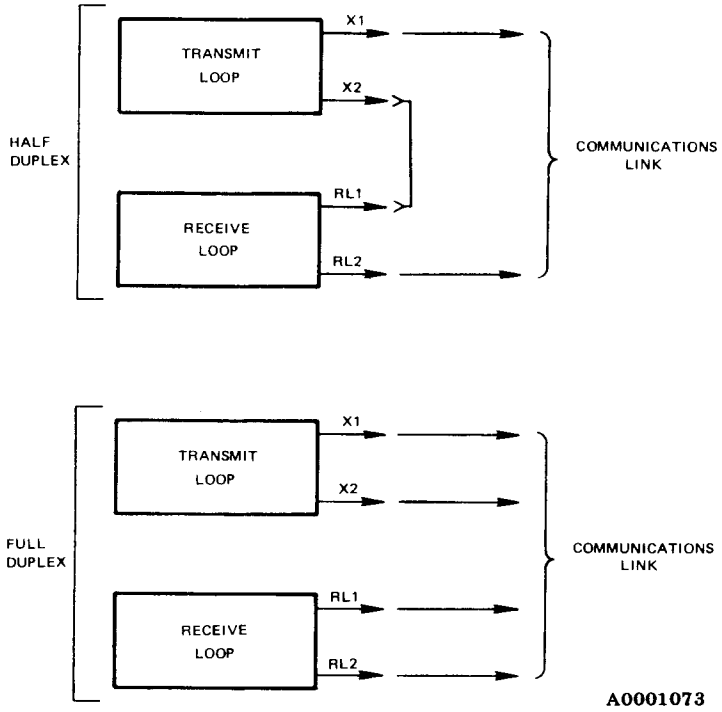


Figure 2-1. Model 743 Teletype Configurations

- Auxiliary EIA modem cable (TI Part No. 983855-0001) for the Model 743.

2.3.5.1 Auxiliary EIA Coupler, Model 745. In this application the coupler is used to communicate with an external device and, therefore, is used separately from terminal operation. Figure 2-2 diagrams this mode of operation, and pin assignments are listed in Table 2-4. The link may be completed through use of the following procedure.

a. Connect P1 of the 6-foot cable to J403 (the connector at the rear of the Model 745).

b. Connect P2 to P3 at the opposite end of the 6-foot cable.

c. Test terminal operation as though it were a standard Model 745; follow the procedure outlined in Section 2-3.1 above. If this link tests satisfactorily, continue the procedure.

d. Unplug P2 from P3 and plug P2 into an external device. Complete the communications link as described in Section 2-3.1 above.

Table 2-2. Teletype Current Loop Cable Pin Assignments (TI Part No. 983850-0001)

Terminal Connector	Termination Connector	Function
6	Terminal Lug 1	Receive A (white)
7	Terminal Lug 2	Receive B (green)
5	Terminal Lug 3	Transmit A (black)
4	Terminal Lug 4	Transmit B (red)
13 – 3	N/A	Transmit Jumper
12 – 8	N/A	Receive Jumper
11 – 2	N/A	Carrier Detect Jumper

Table 2-3. Model 743 Internal Modem Cable Pin Assignments (TI Part No. 983849-0001)

Terminal Connector	Termination Connector	Function
5	Terminal Lug 1	DATA TIP (RED)
4	Terminal Lug 2	DATA RING (BLACK)
13 – 3	N/A	Transmit Jumper
12 – 8	N/A	Receive Jumper
11 – 2	N/A	Carrier Detect Jumper

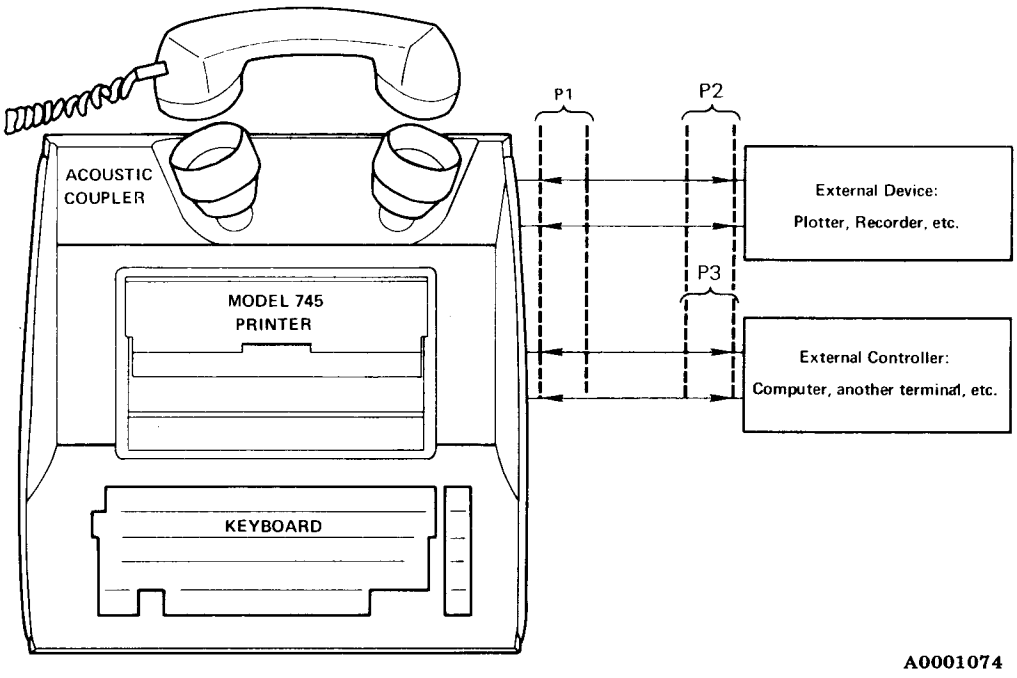


Figure 2-2. Auxiliary EIA Coupler Connections for the Model 745

Table 2-4. EIA/Auxiliary Acoustic Coupler Cable Pin Assignments Model 745

(TI Part No. 983847)

Terminal Connector	Cable Termination	Function
9	1	Protective Ground[1]
13	2	Transmit Data[1]
12	3	Receive Data[1]
10	4	+12 Volts to RTS[1]
1	7	Signal Ground[1]
11	8	Carrier Detect to Data Carrier[1]
15	20	Data Terminal Ready Detect[1]
8	3	Receive Data[2]
3	2	Transmit Data[2]
1	7	Signal Ground[2]
2	8	Carrier Detect[2]
9	1	Protective Ground[2]
6	5	Clear to Send[2]
7	6	Data Set Ready[2]

NOTES

1. Relative to the keyboard and printer (P2).
2. Relative to the acoustic coupler internal to the terminal and on another connector (P3).

e. Check your external device for satisfactory operation before continuing.

f. Connect J2 to an external controller. Check the Model 745 keyboard and printer for normal operation.

2.3.5.2 Auxiliary EIA Modem, Model 743. In this application the modem is used to operate an external device rather than normal terminal functions. Figure 2-3 diagrams this mode of operation. Pin assignments are listed in Table 2-5. The communications link may be completed using the following procedure.

a. Connect P1 of the 6-foot cable to J403 (the connector at the rear of the Model 743).

b. Connect the spade lugs to the CDT DAA.

c. Connect P2 to P3 and test the Model 743 for normal operations as outlined in Section 2.3.2 above.

d. After the link has been completed, remove P2 from P3 and connect P2 to an external device.

e. Test the external device for satisfactory operation.

f. Connect P2 to an external controller and test the Model 743 printer and keyboard for normal operation (see Section 2.3.2 above).

2.4 LOADING PAPER.

The following procedure describes how to load a fresh supply of paper into the Models 743/745. See Figure 2-4 for identification of components.

> **IMPORTANT NOTE**
> **The warranty and/or service contract on the thermal printhead is subject to nullification if the thermal printing paper used in the Silent 700 Data Terminal does not meet TI Specification 972603-0001.**

a. Set the power switch on.

b. Open the paper door and remove the excess (old) paper from the paper receptacle.

c. Grasp a new paper supply roll so that the loose end of the paper faces you with the end pointing up.

d. Place the paper supply roll on the paper roll supports; check that the roll can rotate freely.

e. Grasp both corners of the end of the paper and gently pull up about 6 inches of paper.

f. Feed the paper over the dancing roller and down the paper chute until it can be seen behind the window. The paper will not slide under the printhead because the printhead is pressed against the platen.

g. Press the PAPER ADVance key with your right hand while simultaneously pushing the paper gently down the paper chute with your left hand. The paper will feed under the printhead, then under the window/pinch roller.

h. Tear off excess paper by pulling forward over the tearoff edge of the window.

i. Close the paper door.

2.5 ADJUSTMENTS.

Only two field adjustments are possible in normal use: printing image contrast (darkness) and transmit levels.

2.5.1 PRINT CONTRAST. The printing image contrast is preset at the factory and should not require adjustment. However, if darker or lighter print is desired, see Section 4.3.1 of this manual for the procedure.

2.5.2 ACOUSTIC COUPLER AND MODEM ADJUSTMENTS. The acoustic coupler and modem are factory calibrated for average operating conditions. However, since some variation exits in telephones and communications lines, the acoustic coupler and modem may require occasional adjustment. See Section 4.3.2 for detailed procedures to adjust the acoustic coupler and modem transmit levels.

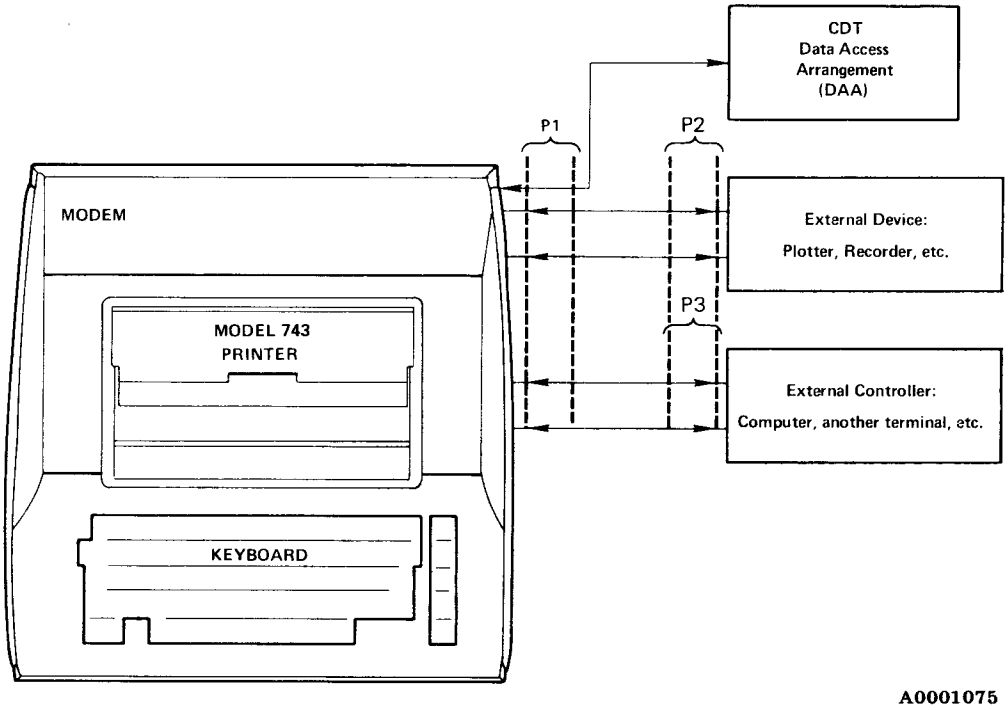


Figure 2-3. Auxiliary EIA Modem Connections for the Model 743

Table 2-5. EIA/Auxiliary Modem Cable Pin Assignments for Model 743

(Cable, TI Part No. 983855)

Terminal Connector	Termination Connector	Function
9	1	Protective Ground[1]
13	2	Transmit Data[1]
12	3	Receive Data[1]
10	4	Request to Send to +12V[1]
1	7	Signal Ground[1]
11	8	Data Carrier Detect[1]
15	20	Data Terminal Ready[1]
8	3	Receive data[2]
3	2	Transmit data[2]
1	7	Signal Ground[2]
2	8	Carrier detect[2]
9	1	Protective Ground[2]
6	5	Clear to Send
7	6	Data Set Ready
5	Terminal Lug A	Data Tip (RED)
4	Terminal Lug B	Data Ring (BLACK)

NOTES

1. Relative to keyboard and printer (P2)

2. Relative to Internal Modem (P3)

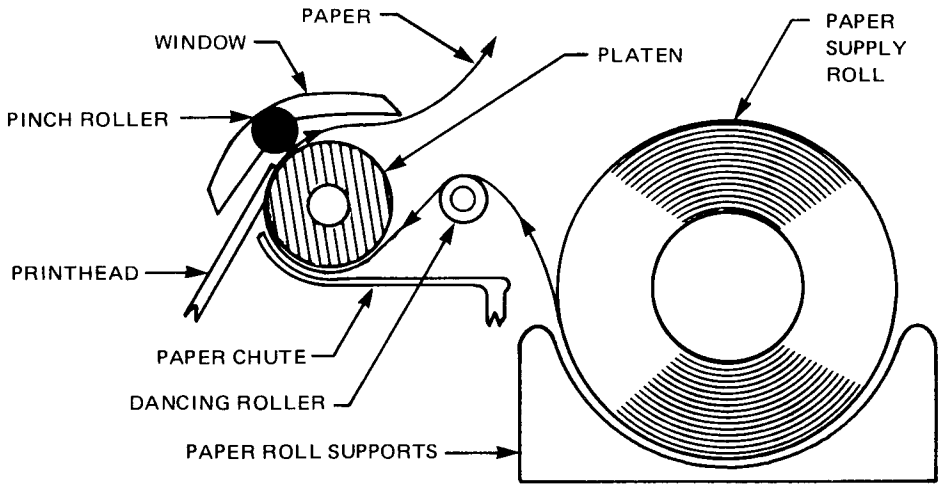


Figure 2-4. Paper Loading Diagram

2.6 OPERATING ENVIRONMENT.

The Models 743/745 Data Terminals are designed and built to operate within specifications under the following environmental conditions.

- Ambient temperature: 10°C to 40°C*
- Relative humidity: 10 percent to 90 percent without condensation
- Altitude: to 12,000 feet
- Vibration: sinusoidal vibration of 0.5G peak in the range of 10 to 60 Hz
- Shock: 0G
- Temperature shock: operate in a 25°C, 50 percent relative humidity environment within 30 minutes after being stored for 2 hours at -30°C at 50 percent relative humidity.

These specifications apply to equipment hardware; for paper limitations see TI Paper Specification 972603 (maximum temperature in the vicinity of paper roll is less that 5°C greater than ambient temperature).

*Derate upper limit 1°C per 1000 feet above 6000 feet altitude.

SECTION 3

THEORY OF OPERATION

3.1 FUNCTIONAL DESCRIPTION.

The Models 743/745 are low cost, light weight, interactive data terminals which utilize the thermal printing technique. A functional block diagram of the Models 743/745 is shown in Figure 3-1. The terminals operate in two modes, ON–LINE or OFF–LINE, selectable by the operator.

- ON–LINE Operation. With the ON LINE key depressed the keyboard and printer operate in conjunction with the external interfaces as dictated by the communications discipline and modified by the specific interface options.
- OFF–LINE Operation. With the ON LINE key unlocked (up) the terminal operates in a "typewriter" mode; i.e., the keyboard is connected to the printer and no data is transmitted or received. All communications-related functions of the keyboard are inoperable in this mode (i.e., BREAK, HERE IS, etc.).

The following paragraphs in this Section describe the theory of operation of the Models 743/745 Data Terminals. Schematics referred to in the text may be found in Appendix B to this manual.

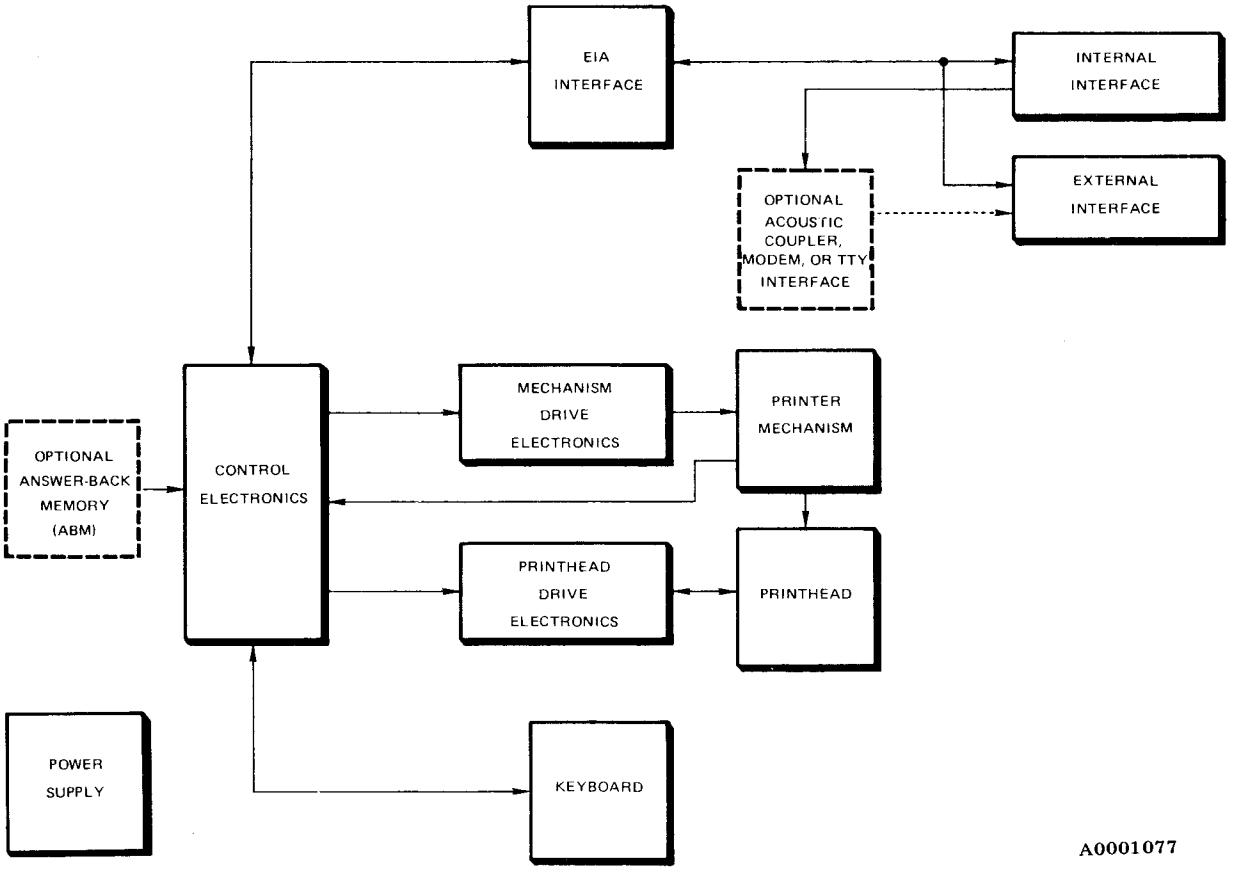


Figure 3-1. Models 743/745 Simplified Block Diagram

3.2 CONTROL ELECTRONICS.

The control electronics function in the Models 743/745 is performed by an interrupt driven, stored program, microprocessor system. The microprocessor system consists of a Texas Instruments TMS 8080 microprocessor, two 1Kx8 TMS 4700 ROM's, a 64x8 TMS 4036 RAM, and a special purpose TMS5501 I/O device.

The control electronics monitors all terminal inputs and generates all necessary timing and control signals to effect data transfers, cause printhead and paper motion, and generate printable characters through the thermal printhead matrix.

3.2.1 COMMUNICATIONS DISCIPLINE. The control electronics monitors received data from the EIA or the optional interfaces. It generates the appropriate timing and code structure to transmit data entered through the keyboard. The control electronics transmits and receives asynchronous serial data in accord with *ANSI Standard for Character Structure and Parity Sense X3.16-1966 and ANSI Standard for Bit Sequence X3.15-1967.*

3.2.2 SPEED. The terminal transmission speed is determined by an operator selectable, two-position pushbutton switch at 10 characters per second (110 baud) or 30 characters per second (300 baud).

3.2.3 BUFFERING. A buffer is provided to store characters received while a carriage return/line feed (CR/LF) is in progress. The combination of print time, CR time, and buffer is such that fill characters are not required and no data is lost even for an automatic CR/LF at column 81. This yields a true 30 CPS printing capability (see paragraph 3.11.5 for details).

3.2.4 CHARACTER STRUCTURE. A character is made up of a start bit (always ZERO or spacing), 7 data bits (least significant bit first), a parity bit, and 2 stop bits at 110 baud (always ONE or marking) or 1 stop bit at 300 baud (always ONE or marking). Figure 3-2 illustrates the character serial data timing. Table 3-1 shows the code structure for the USASCII code as interpreted by the terminal.

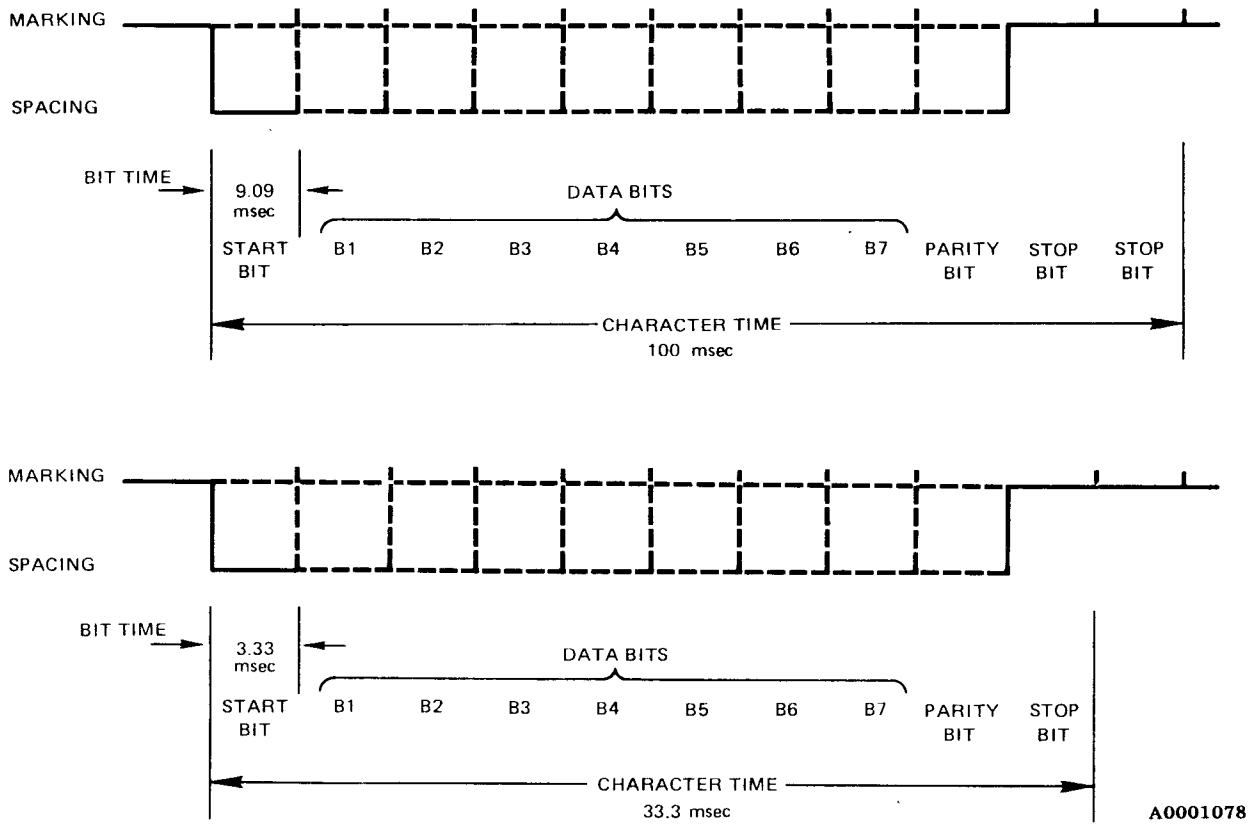


Figure 3-2. Serial Data Timing Diagram

The Models 743/745 utilize a limited USASCII character set. Lowercase alphabet characters are not generated and are translated to their uppercase equivalents when received.

3.2.5 PARITY. The parity of received data is ignored by the printer. The parity of the transmitted character is factory-strappable between odd, even, or continuous mark. Parity is not operator-selectable but is set at the factory according to the original purchase order.

Table 3-1. USASCII Code System and Character Set

b_4 b_3 b_2 b_1	b_7→0 b_6→0 b_5→0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
0 0 0 0	NUL	DLE	SP	0	@	P	\	p
0 0 0 1	SOH	DC1	!	1	A	Q	a	q
0 0 1 0	STX	DC2	"	2	B	R	b	r
0 0 1 1	ETX	DC3	#	3	C	S	c	s
0 1 0 0	EOT	DC4	$	4	D	T	d	t
0 1 0 1	ENQ	NAK	%	5	E	U	e	u
0 1 1 0	ACK	SYN	&	6	F	V	f	v
0 1 1 1	BEL	ETB	'	7	G	W	g	w
1 0 0 0	BS	CAN	(	8	H	X	h	x
1 0 0 1	HT	EM	)	9	I	Y	i	y
1 0 1 0	LF	SUB	*	:	J	Z	j	z
1 0 1 1	VT	ESC	+	;	K	[	k	{
1 1 0 0	FF	FS	,	<	L	\	l	|
1 1 0 1	CR	GS	-	=	M	]	m	}
1 1 1 0	SO	RS	.	>	N	^	n	~
1 1 1 1	SI	US	/	?	O	—	o	DEL

PRINTABLE CHARACTERS

PRINTER CONTROL CHARACTERS

CODES GENERATED AND TRANSMITTED BY THE TERMINAL, BUT NO ACTION IS TAKEN

TRANSLATED TO UPPER CASE EQUIVALENTS WHEN RECEIVED BY THE TERMINAL

PRINTED WHEN RECEIVED BUT NOT GENERATED

USASCII CONTROL CHARACTERS
(From USA Standards Institute Publication X3.4–1968)

ACK	acknowledge	EM	end of medium	NAK	negative acknowledge
BEL	bell	ENQ	enquiry	NUL	null
BS	backspace	EOT	end of transmission	RS	record separator
CAN	cancel	ESC	escape	SI	shift in
CR	carriage return	ETB	end of transmission block	SO	shift out
DC1	device control 1	ETX	end of text	SOH	start of heading
DC2	device control 2	FF	form feed	STX	start of text
DC3	device control 3	FS	file separator	SUB	substitute
DC4	device control 4 (stop)	GS	group separator	SYN	synchronous idle
*DEL	delete	HT	horizontal tabulation	US	unit separator
DLE	data link escape	LF	line feed	VT	vertical tabulation

*not strictly a control character

A0001113

3.2.6 DUPLEX OPERATION. Duplex operation of the communications circuit is operator-selectable to either half or full duplex via a two-position key on the keyboard. In full duplex operation the keyboard is connected to the transmitter, and the printer is connected to the receiver. In this mode it is possible to transmit data at the 30-CPS rate from the keyboard while the printer is receiving data from the line at the same 30-CPS rate.

In half duplex operation the keyboard is connected to the transmitter, and the printer is connected to the receiver. Any data transmitted from the keyboard also is printed. If the keyboard and the receiver simultaneously require the printer, the keyboard has priority.

3.2.7 ANSWER–BACK MEMORY OPTION. The Answer-Back Memory option is implemented by a PROM inserted in a socket located on the printed wiring board (PWB) inside the Model 743/745 (see Section 3.11.7 for additional information).

3.2.8 KEYBOARD SCAN. The control electronics generates control signals to scan the keyboard and debounce keyswitch depressions. When a key depression is detected during a scan, the character is encoded and the appropriate action is taken by the terminal. Each scan is complete so as to detect possible multiple key depressions. When simultaneous depressions are detected during a scan, neither key is acted upon. This scanning/debounce technique effects a two-key rollover with lockout.

3.2.9 MECHANISM CONTROL. The control electronics also generates control signals for horizontal positioning of the printhead as well as vertical positioning of the printing paper.

3.2.9.1 Horizontal Printhead Positioning. The control electronics positions the printhead horizontally by timing different levels of current through the phase windings of the three-phase, 15-degree stepping motor. The motor is coupled mechanically to the printhead. The control electronics monitors an optical sensor mounted on the motor shaft which provides feedback to control both stepping motion during printing and slew motion during carriage return. The print/step cycle operates asynchronously up to 35 CPS during the period required to empty the data buffer.

Carriage return time for a full 80 columns is typically 180 milliseconds. A backspace consumes one character time. An automatic carriage return/line feed (CR/LF) is executed upon receipt from the keyboard or line of the 81st character in a line. Fault detection methods are used by the control electronics to prevent damage during power cycling conditions, obstruction of printhead motion, or loss of the optical sensor signal.

3.2.9.2 Vertical Printhead Positioning. The control electronics positions the printhead vertically by timing the current levels through the line feed solenoid. The solenoid is mechanically coupled to a ratchet mechanism which advances paper beneath the printhead. A line feed is performed in one character-time. By holding the PAPER ADVance key depressed, the operator can direct the control electronics to perform repeated line feeds.

3.2.9.3 Printhead Lift Control. The control electronics generates timed current levels through the printhead lift solenoid which is mechanically coupled to the printhead pressure bar. Raising the printhead relieves pressure upon the paper during line feed and carriage return operations.

3.2.9.4 Character Printing. Upon receipt of a character from the keyboard or the communications line, the control electronics generates the appropriate control signals to form the selected character utilizing the five by seven dot matrix on the thermal printhead. The print voltage is enabled, and then the matrix data is transferred to the printhead one column at a time. The characters formed by the five by seven dot matrix printhead are shown in Figure 3-3.

3.3 PRINTER MECHANISM.

The printer mechanism positions the printhead horizontally as each character is printed. The mechanism also returns the printhead to column one and advances the paper into position for the next line of print. The last character printed as well as the previous line are visible to the operator under normal lighting conditions. A line constitutes up to 80 character positions (columns).

3.3.1 CHARACTER SPACING. Characters are spaced in 0.100-inch increments (center to center) within a tolerance of ±0.005 inch.

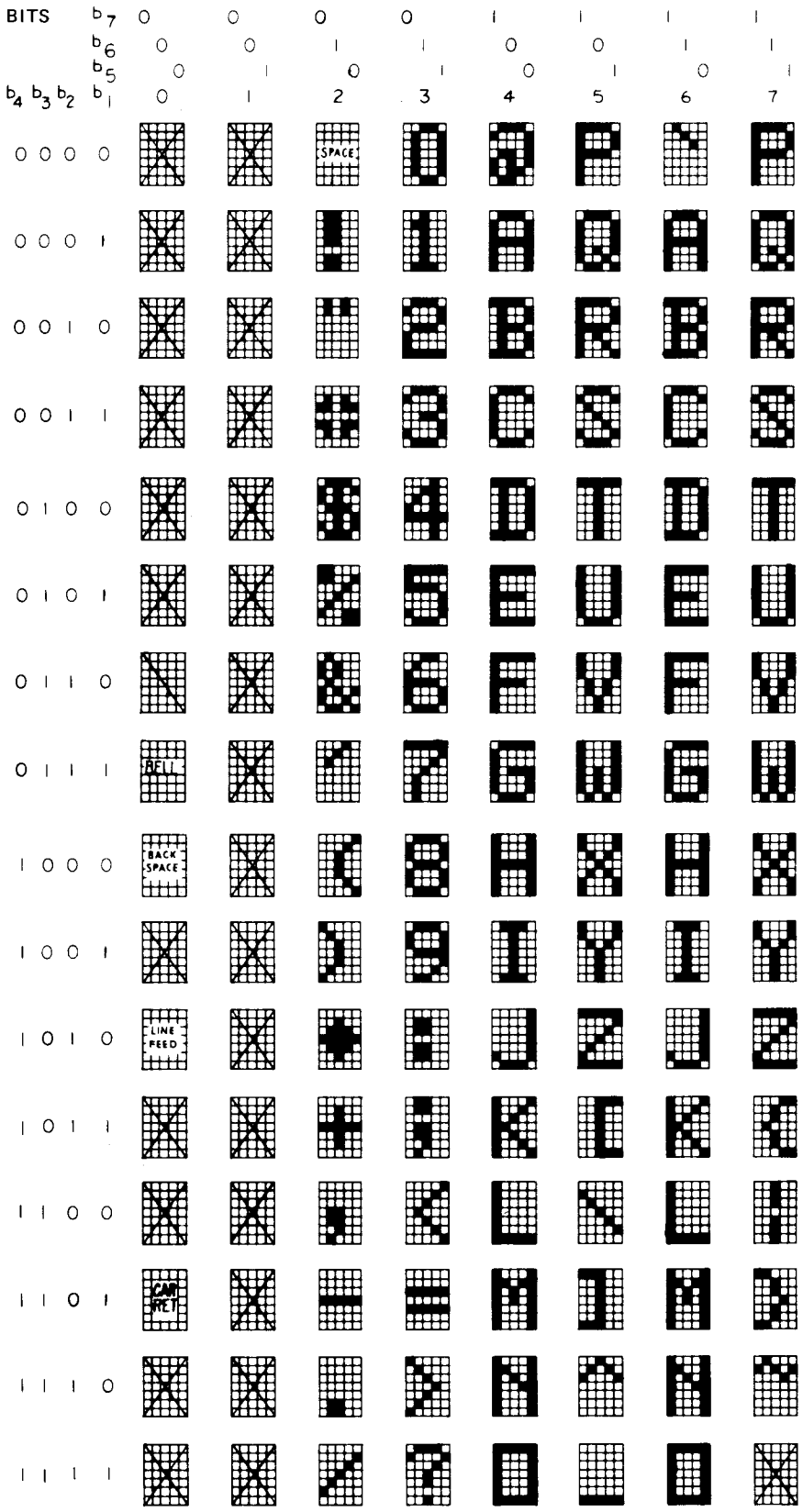


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Figure 3-3. Printhead Matrix Character Set Generation

3.3.2 LINE SPACING. Line spacing is 0.167 ±0.005 inch center to center, producing six lines per inch (single space).

3.3.3 PAPER SUPPLY. The mechanism accepts 100-foot rolls of paper with a 1.93-inch maximum outside diameter, wound with the heat-sensitive surface outside. The paper width is 8.54 inches maximum. The mechanism is designed to operate only with paper meeting *TI Thermal Paper Specification 972603* and the *TI Thermal Paper Print Quality Specifications 244156-9801, -9802, and -9803.*

3.3.4 PAPER LOADING. After an initial line feed of at least 30 lines, paper will feed parallel between adjacent lines of print to within 0.02 inches and all lines will be perpendicular to the paper edge within 0.05 inch.

3.3.5 PAPER TEAROFF. The back edge of the paper window is sharpened to provide means to tear off printed paper. This method minimizes paper waste and does not disturb the remaining paper supply.

3.3.6 PRINTHEAD PRESSURE. The mechanism uses a solenoid to relieve printhead pressure against the platen during carriage return or line feed. This preserves accuracy of character and line registration.

3.4 PRINTHEAD SYSTEM.

The printhead consists of a five by seven matrix of 35 heating elements and a transistor mounted on a monolithic chip. Mounted on a heatsink, the chip is connected to the printhead interface PC card with a flexible cable. Mounted on the printhead interface PC card are two selected resistors (RTRIM and R3) which control the characteristics of the temperature compensation circuit so that its operation is optimum for each individual printhead. A block diagram of the printhead subsystem is shown in Figure 3-4.

Each of the 35 heating elements on the printhead consists of an SCR and a heating element. The 35 elements are controlled by the printhead driver address lines diagrammed in Figure 3-5. When both X and Y inputs are positive to a given element, the SCR energizes and remains on (approximately 10 msec) until PVOLTS is switched off.

3.4.1 PRINTHEAD ADDRESS DRIVERS. The printhead address drivers are implemented on two

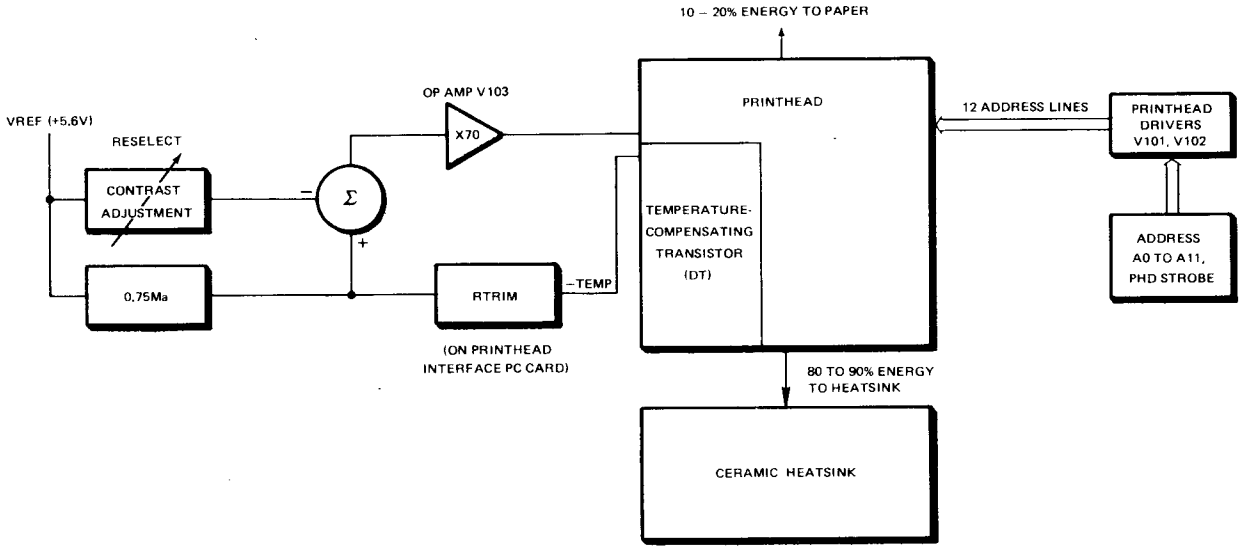

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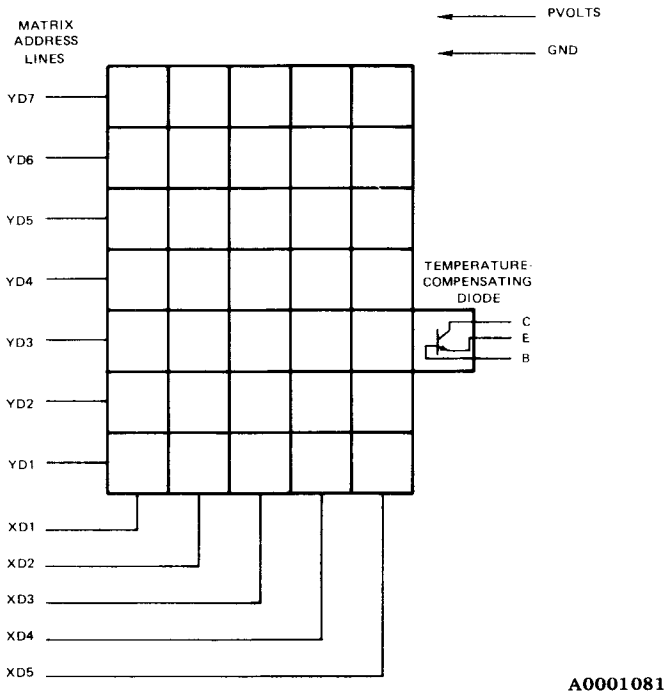
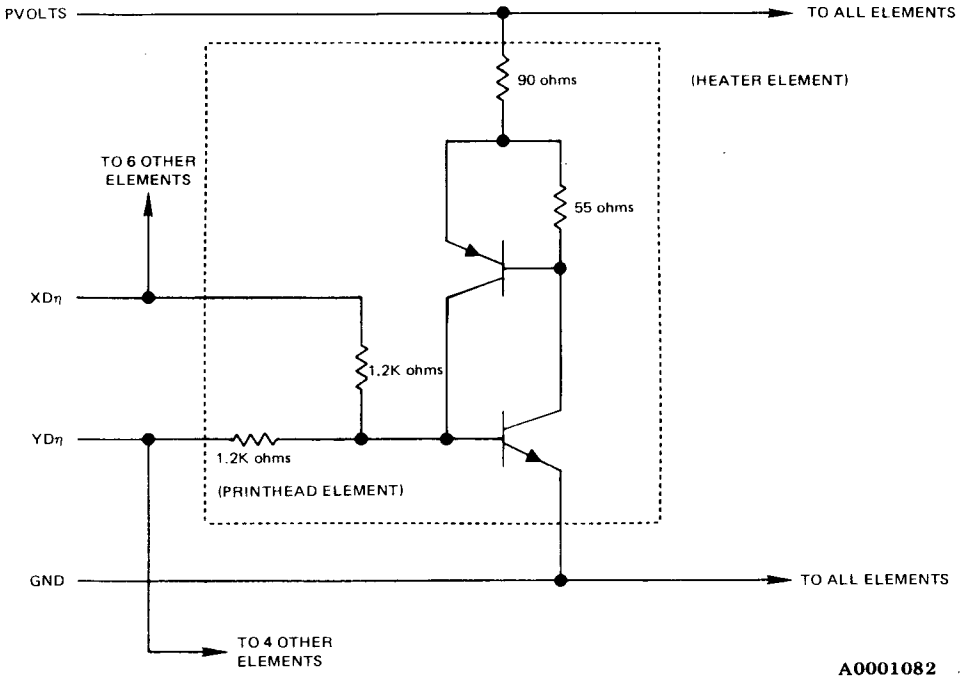
Figure 3-4. Model 743/745 Printing Subsystem Block Diagram



Printhead Matrix Address Lines



Printhead Element Block Diagram

Figure 3-5. Printhead Matrix and Address Lines, and Printhead Element Block Diagram

SN98614 linear integrated circuits, each of which consists of six driver circuits. Each driver circuit has a low power, TTL–AND input stage and a totem pole, power transistor output stage. All drivers are enabled by a signal called PHDSTRBE, and each is controlled by an individual address line from the processor.

Each driver translates TTL data into the levels necessary to control the printhead heating elements. The nominal output levels of the drivers are -4.7 volts low and +3.5 volts high.

3.4.2 TEMPERATURE COMPENSATION CIRCUIT. The printhead temperature compensation circuit provides a regulated, temperature compensated voltage to the printhead. The voltage is programmed by the selected resistors on the printhead interface PC card and the voltage drop across the base-to-emitter and collector junctions of the temperature compensation transistor on the monolithic printhead chip.

3.4.3 PRINT VOLTAGE CIRCUIT. Referring to schematic 983842 in Appendix B, R112 meters approximately 0.74mA of current to RTRIM and DT (temperature-compensating transistor). RTRIM and DT are connected in series with R110 to ground on the printhead assembly. RTRIM is selected during manufacture so that its resistance compensates for variations in the voltage/current characteristics of DT. Thus, the resulting PVOLTS is correct for a particular printhead. The resulting voltage at E125 is nominally 0.964 volt.

When the PRINT signal is at zero from the processor, Q103 is energized, applying +5 volts to the cathode of CR106 which holds it off and holds Q102 on. In the ON state Q102 has a maximum resistance of 60 ohms. At a 1-volt level RTRIM and DT have characteristic impedances of approximately 1.0V/0.75mA = 1.3 ohms. Capacitor C114 charges at a rate of (1.3k +0.06k) X 1 X 10^{-6} second or about a 1.4 msec time constant ±20% for variations in C114 and the voltage changes, and resulting impedance changes, in RTRIM and DT. The maximum charge time for C114 is 1.672 msec X 5 = 8.36 msec. The holding time for C114 is greater than 0.1 second with less than 1 percent drop.

When PRINT switches high and Q103 is off, the Q103 collector and CR106 cathode are at -12 volts. This switches Q102 off and prevents the voltage on C114 from changing during a PRINT period.

Circuit gain is not changed when the CONTRAST potentiometer R123 is adjusted. Gain is fixed at 70.

R122 is selected during manufacturing unit test of the PWB in order to calibrate the function of the temperature compensation circuit. This calibration enables use of any printhead with any PWB without any adjustment or circuit change.

CR107 provides a level shift of 15 volts which enables amplifier U103 to output up to 25 volts and a minimum of 5 volts.

CR108 and 105 provide two functions:

(1) Isolation of Q104 base from the gain loop of the compensation circuit which enables PVOLTS to be switched on and off without disturbing the circuit equilibrium

(2) The two diode drops shift the base potential of Q104 base position so that a dc measurement of PVOLTS can be made at the cathode of CR107 without energizing PVOLTS.

Q101 switches the base of Q104 to ground and holds it there except when PVOLTS is on. Diodes CR101 and CR102 provide base current to Q101 to keep it at ground whenever a break occurs in the DT/RTRIM circuit which would cause excessive PVOLTS.

As diagrammed in Figure 3-6, C113 and R108 control the initial step of PVOLTS and the rate of change of PVOLTS when it is switched on by Q101 being turned off. Q103 and C109 form a timing circuit whose natural period is 10.5 to 15 msec. Normally, this circuit is switched on at the leading edge and off at the trailing edge of the 10-millisecond PRINT control signal from the processor. But only in case of a processor failure which allows PRINT to stay at a logic ONE level would the PRINT time be controlled by this circuit.

3.5 MECHANISM DRIVE ELECTRONICS.

The mechanism drive electronics converts the TTL logic level signals of the control electronics into closed-loop controlled dc current for application to a three-phase, 15-degree stepping motor, a printhead lifting solenoid, and a paper advance solenoid located on the printer mechanism. The selection and control of these currents are programmed by the processor and its associated firmware algorithms.

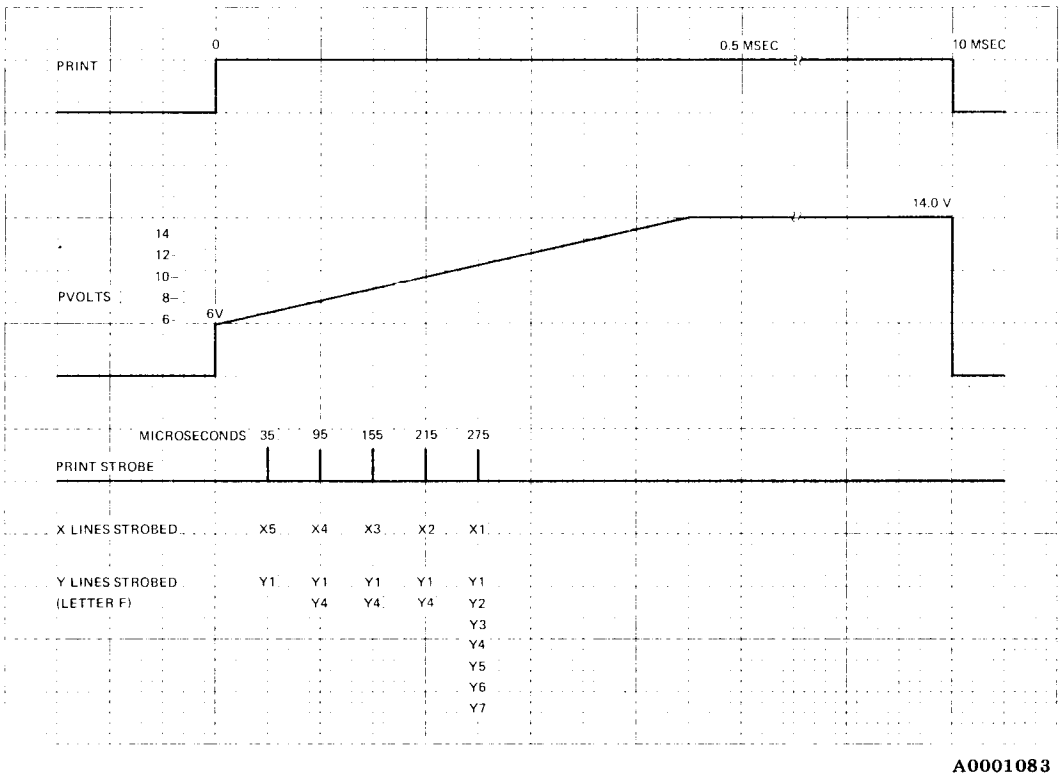


Figure 3-6. Printhead Interface Timing (for letter "F")

3.5.1 MOTOR DRIVE ELECTRONICS. The motor drive electronics (see schematic 983842, sheet 6 in Appendix B) is comprised of four sections: phase selecting circuits, a current regulating circuit, a current decay time-constant circuit, and a feedback sensor circuit. A block diagram of the motor drive electronics is shown in Figure 3-7.

3.5.1.1 Phase Selecting Circuits. Current in each of the three motor phases is selected and controlled by three identical transistor networks:

Phase A - Q207, Q208, Q215
Phase B - Q206, Q204, Q202
Phase C - Q205, Q201, Q203

The operation of the circuits is discussed using only one network, phase A, as an example. The TTL logic level from U26-10 selects current flowing in phase A. When this signal is a logic ONE, base current is supplied to Q207. Emitter current in Q207 energizes Q208, supplying sufficient base drive to saturate Q215. Emitter current of Q215 is applied to the phase A winding.

3.5.1.2 Current Regulator Circuit. Emitter current for Q205, Q206, and Q207 is controlled by the current regulator circuit (schematic 983842, sheet 6). This circuit is a switching regulator type, synchronized to a 20-kHz square wave signal (PWRCLK) from U28-8. This signal is integrated by C203, R223, and C209. The resulting triangular signal is summed with the motor phase current sample voltage from R233 and is applied to pin 2 of U201. When the voltage at pin 3 of U201 is more positive than at pin 2, emitter current for the phase select circuits is switched on by U201 through R212. When the voltage at pin 2 is more positive, the emitter current is switched off.

The reference voltage at pin 3 of U201 is set by the processor to one of two levels, which consequently regulates the motor phase current to one of two levels. *Hold* current is regulated at 0.65 amps and *step* current is regulated at 1.4 amps. When the STEP signal from U26-5 is at a logic ZERO, the current regulator circuit applies *hold* current to the motor phase winding. When the STEP signal is at a logic ONE, *step* current is applied. As the STEP signal goes

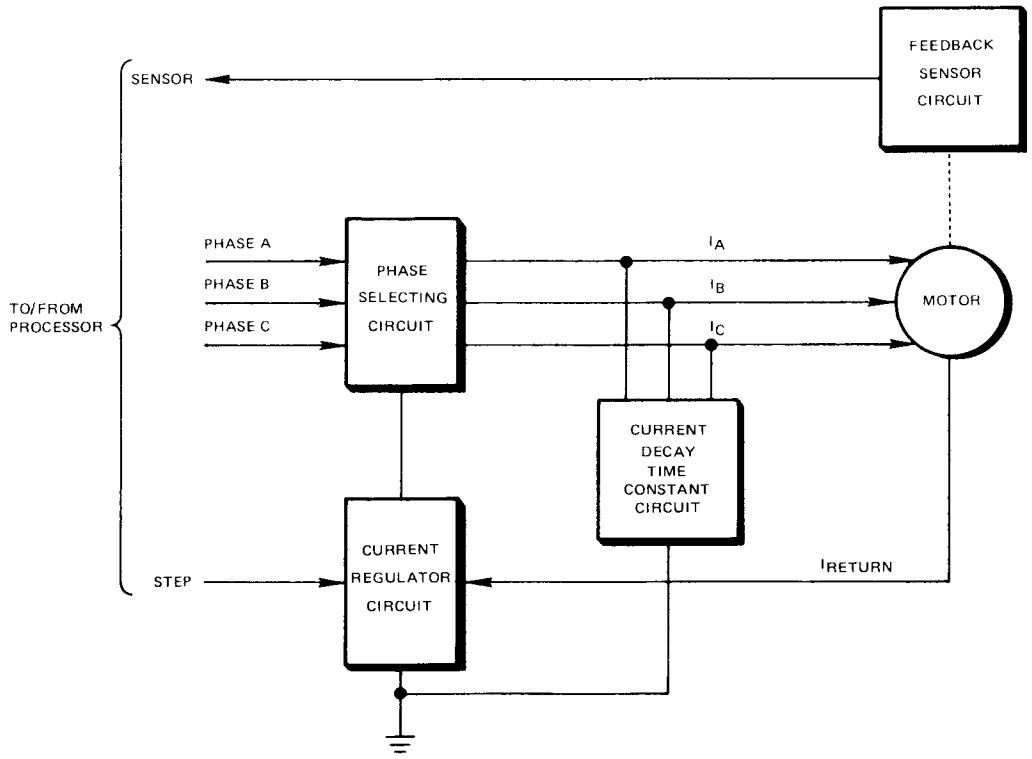


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Figure 3-7. Motor Drive Circuit Block Diagram

from a logic ZERO to ONE, the current regulator circuit ramps the motor current up to 1.4 amps by charging C204 through R222, R232, and R234 to prevent sudden changes in motor torque and to reduce audible noise in printhead movement.

3.5.1.3 Current Decay Circuit. When the current regulator senses sufficient current in the motor and switches off the current through Q215, the emitter of Q215 is suddenly switched from +30 volts to a negative voltage by the inductive flyback of the motor winding. The value of this negative voltage determines the time necessary to discharge the current in that winding. An approximation of this time may be computed using LI/V = t
where L = winding inductance
I = motor current
V = voltage from winding to ground
t = time of current decay

During periods when motor current needs to remain constant, transistors Q214 and Q209 are energized with base current via CR202 and R229. The flyback voltage during these periods is limited to VCR207 (-1 V) + VCQ209 (-1 V) or approximately -2 volts. This provides a very long discharge time and enhances regulator efficiency.

When the processor requires quick discharge of the phase current, it sets a ONE at U26 pin 2, FAST signal. This energizes Q212 and Q213 which removes base current from Q214 and Q209. This enables VCQ209 to go to -22 volts, providing a 0.75 amps per msec discharge rate for motor winding inductance.

3.5.1.4 Feedback Sensor Circuit. The processor requires data on position of the motor in order to "know" when to apply braking, to change phases, or to make other decisions concerning motion of the printhead carriage. This data is provided by the feedback sensor. Figure 3-8 diagrams the output characteristics of the feedback sensor circuit.

Primary operation of the feedback sensor is accomplished by a 24-position slotted wheel which interrupts a light path between an IR emitting diode and a photosensitive transistor. This assembly is mounted on the stepping motor which drives the printhead carriage. The circuit is shown in Figure 3-9. The current from the phototransistor is translated

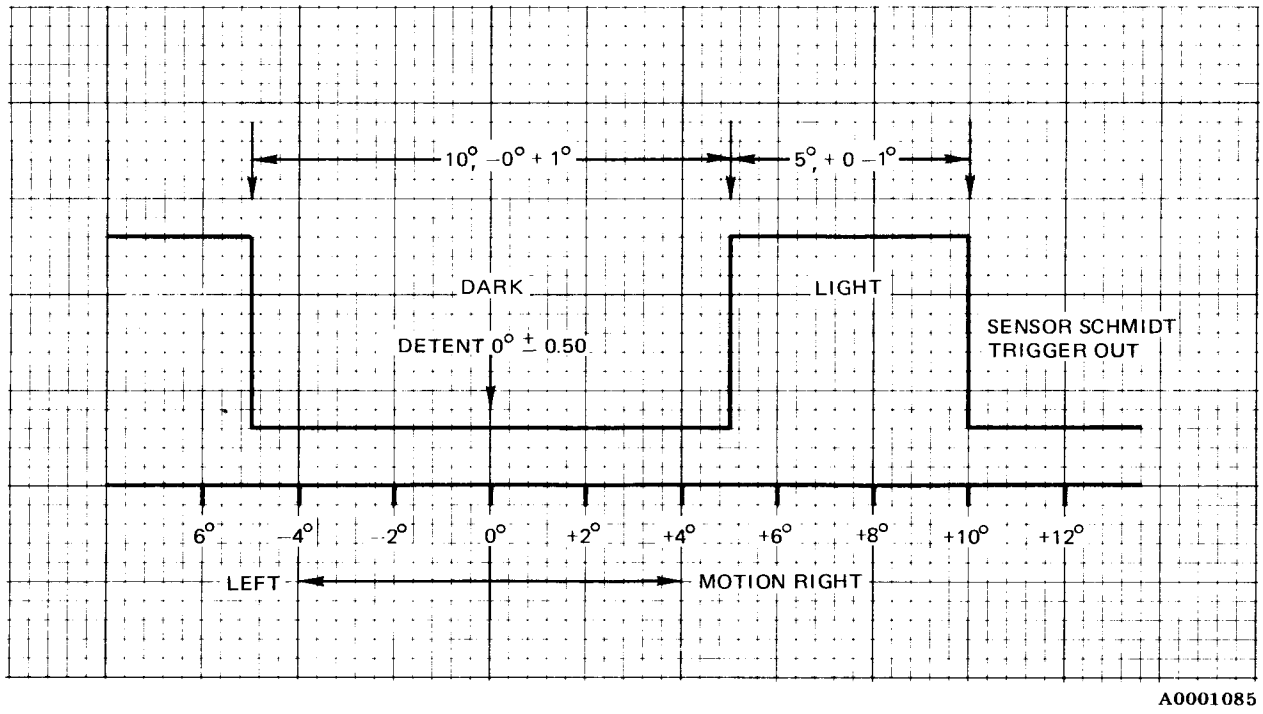

Figure 3-8. Motor Drive Circuit Feedback Sensor Output Characteristics

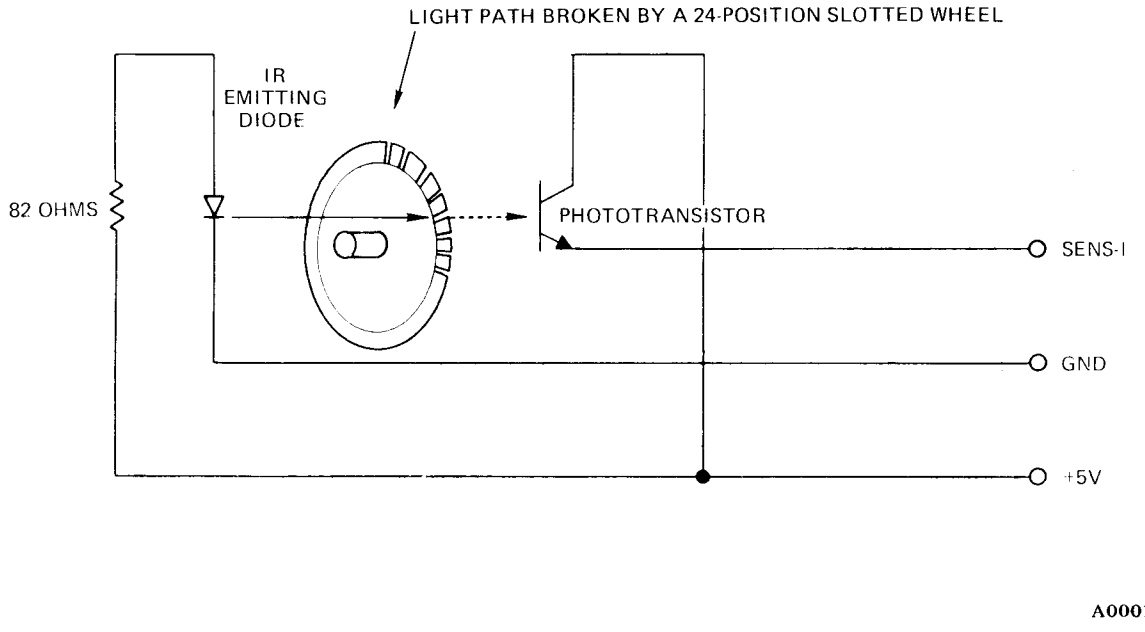

Figure 3-9. Feedback Sensor Light Path Schematic

into a TTL logic level signal by the Q2 and Q3 circuit shown in Figure 3-10.

As the slotted wheel opens the light path, current flows through the photo transistor, energizing Q2 which deenergizes Q3. Resistor R15 adds hysteresis to the circuit to provide regenerative feedback during transitions; this eliminates false triggering of the sensor.

3.5.2 SOLENOID DRIVERS. The solenoid drivers (see schematic 983842, sheet 6) are basically transistor voltage switches which provide a means for the processor to energize the two solenoids (printhead and/or line feed). The transistors are NPN Darlington devices with a minimum current gain of 1000. Base current is provided when the processor sets U25, pin 15 for line feed and U25, pin 5 for printhead lift to a logic ONE. The collector of Q251 saturates +1.5 volts (maximum), sinking current for the line feed solenoid. When the processor resets U25, pin 15 to a logic ZERO, Q251 goes off; simultaneously, the inductive flyback of the solenoid current drives the collector of Q251 to a peak of approximately +65 volts. During the flyback, current flows through CR251 and R257, discharging the inductive current from the solenoid.

The printhead lift circuit is identical to the line feed except that the +30 volts is applied to the junction of R258 and CR252. This limits the current in the printhead lift to a maximum 0.9 amps and limits the voltage stress on Q252 to about +31 volts.

3.6 KEYBOARD.

The keyboard is a TTY33-compatible, alphanumeric keyboard with an integral numeric keypad. The keyboard is equipped with 55 single-action keys, three alternate action keys, and one indicator lamp. Keyboard layout and symbolization are shown in Figure 3-11. Figure 3-12 shows the output status when the CTRL (control) NUMber, or SHIFT keys are not depressed. Figures 3-13, 3-14, and 3-15 show the output status of the various keys when the CTRL, NUMber, and SHIFT keys are held depressed. The CARRIER DETECT lamp indicates that the data carrier signal is being received by the terminal (or that the carrier detect signal input is biased ON).

The following seven special-function keys are provided.

a. PAPER ADVance - the PAPER ADVance key, when held depressed, causes the

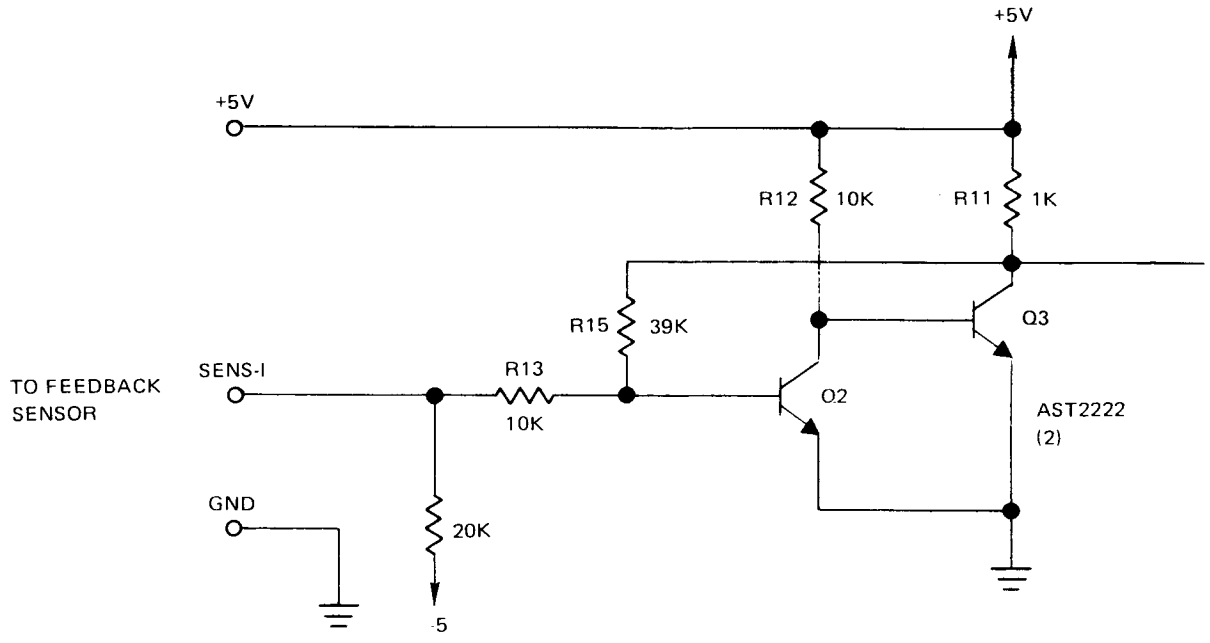

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Figure 3-10. Feedback Sensor Q2, Q3 Circuit Schematic

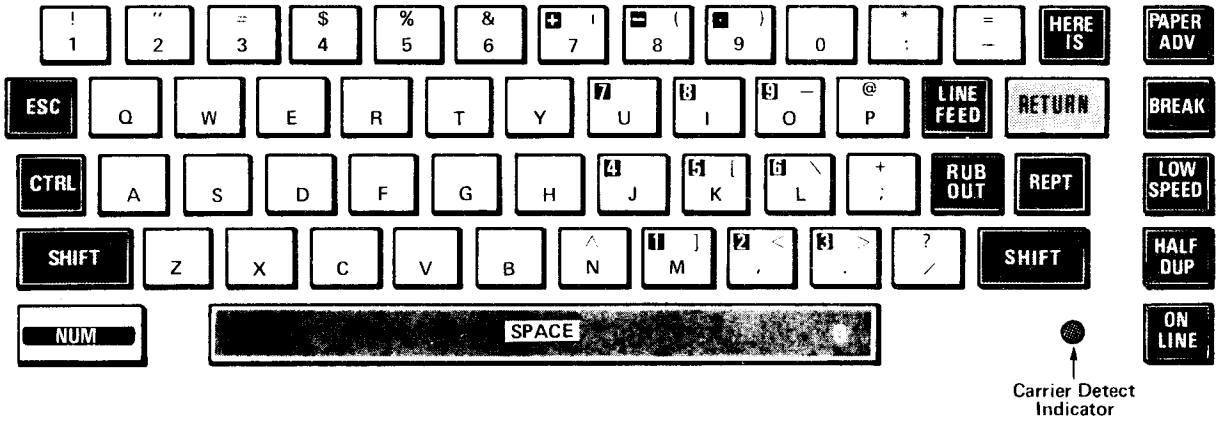

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Figure 3-11. Keyboard Layout and Symbolization

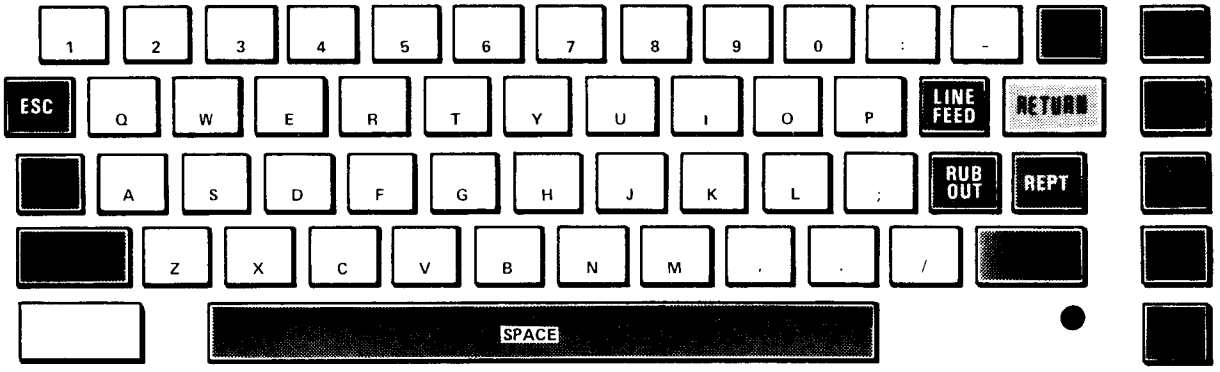

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Figure 3-12. Code Generating Keys With No Mode Keys Depressed

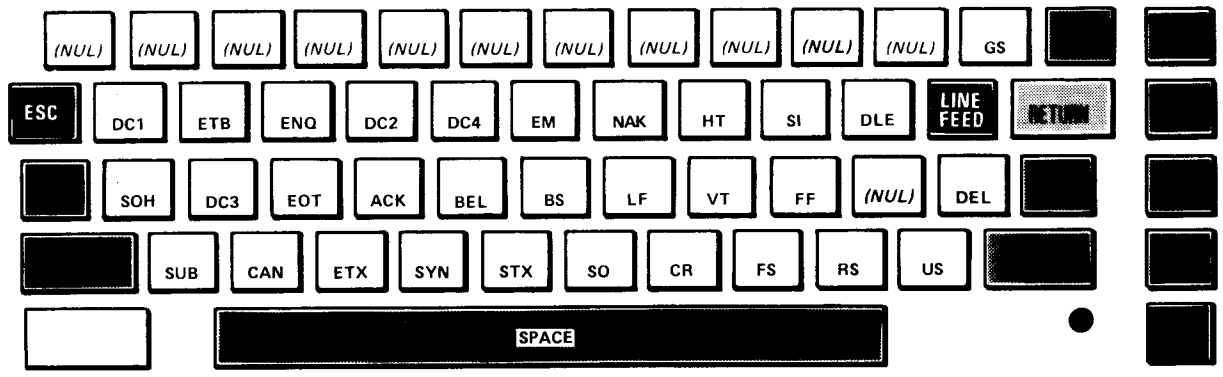

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Figure 3-13. Code Generating Keys With CRTL Key Depressed

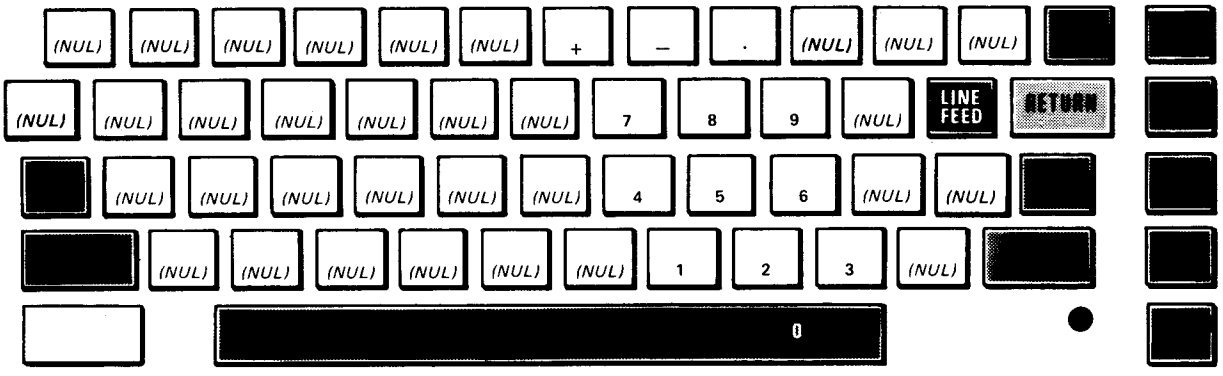

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Figure 3-14. Code Generating Keys With Numbers Key Depressed

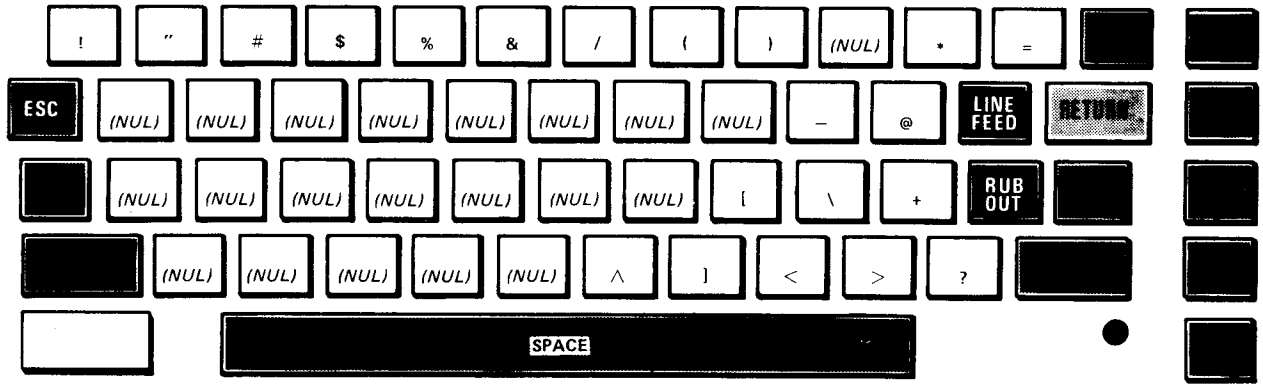

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Figure 3-15. Code Generating Keys With Shift Key Depressed

printer to perform a carriage return (CR), and continuous line feeds (LF) after returning the printhead to column 1; no code is transmitted. A 200-millisecond pause follows the first line feed before continuous line feeds are performed.

b. BREAK - The BREAK key, when depressed, causes the terminal to transmit a continuous space as long as the key is depressed and the terminal is on-line.

c. HERE IS - The HERE IS key, when depressed, causes the optional answerback memory contents (if installed) to be transmitted if the terminal is ON–LINE.

d. REPT - The REPT key, when held depressed in addition to a character key, causes the terminal to repeatedly generate the character at the terminal operating speed.

e. LOW SPEED - The LOW SPEED key is a two-position switch key which sets the transmission rate at 10 characters per second (CPS) when locked down and 30 CPS when unlocked (up).

f. HALF DUPlex - The HALF DUPlex key is a two-position switch key which sets the communication status to half duplex when locked down and full duplex when unlocked (up).

g. ON LINE - The ON–LINE key is a two-position key which sets the terminal to on-line status when locked down and local status when unlocked (up).

3.7 OPERATOR CONTROLS AND INDICATORS.

Operator controls and indicators in addition to those contained on the keyboard include the following:

a. Power Switch - a toggle switch is used to switch both sides of ac line power to the terminal. The switch is located on the top right rear corner of the inner cover.

b. Bell - a buzzer is provided to produce an audible signal which has a frequency of

3.2 kHz nominal. Duration of the signal is 250 ±25 milliseconds for reception of the ASCII BEL character from the line or local.

3.8 POWER SUPPLY.

The Models 743/745 power supply (see schematic 983842, sheets 1 and 2) converts ac input power to the regulated dc output power required to drive all circuits within the terminal. The output is listed in Table 3-2. The power supply is designed to operate without degraded performance over the full range of steady-state and transient conditions. The Models 743/745 Terminals consume a maximum 75 watts.

Table 3-2. Power Supply dc Output

Output Voltage	Output Current	Percent Regulation with Transient Line/Load and Offset
(Vdc)	(amps)	
+30	0.17	±10%
+12	0.10	± 5%
-12	0.20	±10%
+ 5	0.80	± 5%
- 5	0.05	± 5%

The power supply output is electrically isolated (within the regulator) from the input voltages to provide overvoltage protection to the load and overcurrent protection to the regulator circuit. As shown in Figure 3-16, the power supply is primarily a multiple output, self-oscillating converter/regulator. A single ferrite core transformer provides drive to the power switch transistor, multiple output voltages, input-output isolation, and output voltage regulation. The power supply operates in the flyback mode; that is, energy stored in the transformer is delivered to the load(s) during the off time of the power transistor. Thus, only a single power transistor is necessary. The required base drive power at the optimum impedance level is provided directly from the transformer.

In operation (refer to schematic 983842, sheet 2) input ac power, after passing through a high frequency noise filter (T302-C325-C326) is rectified by diode bridge CR323-326. The resulting dc current then passes through R330 and SCR Q310 (normally on) where it is smoothed before storage across filter capacitors C306 and C308, from which the input or primary side dc current is supplied.

3.8.1 POWER TRANSFORMER. The power supply circuit is self-oscillating; the positive feedback path passes from the power transformer primary (terminals 1 and 2) to the base-drive winding (terminals 13 and 14). The base drive signal is coupled through C318 and diode CR315, then through current-setting resistor R322 to the base of power transistor Q311. Oscillation begins when the primary-side dc appears. A current set by R329 and R324 flows through R322 into the base of Q311, biasing it onto the approximate 50 to 100 mA collector current. Random noise components of the Q311 collector current thus ensures that its collector current will increase because of the positive feedback from primary to base windings. The base current established through R322 ensures that Q311 will saturate. Therefore, the collector current of Q311 will increase linearly as determined by the primary inductance of transformer T301 and the input dc supply voltage impressed across it.

When the voltage drop across R338 produced by the Q311 emitter current has risen to approximately 0.6 volt, Q309 begins to conduct, shunting base drive from the power transistor base which causes it to lose saturation. As soon as its collector voltage begins to rise, Q311 is rapidly switched off by regenerative feedback. Falling collector current causes rising collector voltage (because of the transformer primary inductance), resulting in falling base drive voltage and falling base current. The collector voltage of Q311 "flys back" above the input dc supply voltage (resulting in reverse base drive current coupled through C318) until the rectifier(s) in the transformer secondary circuit(s) become forward biased, and currents flow into the output filter capacitors (and output load resistances). The energy stored in the magnetic field of the transformer during the "on" time of Q311 is transferred to the output during the "off" time of Q311.

A 30-volt output is obtained from winding 3-4, rectified by CR322, and filtered by C332 and C331. Positive and negative 12 volts are obtained, respectively, from windings 9-10 and 11-12, diodes CR301 and CR304, and capacitors C301 and C303. Positive 5 volts is obtained from winding 7-8, rectified by CR302 and CR303 in series, and filtered by C302. The higher drop of the series-connected

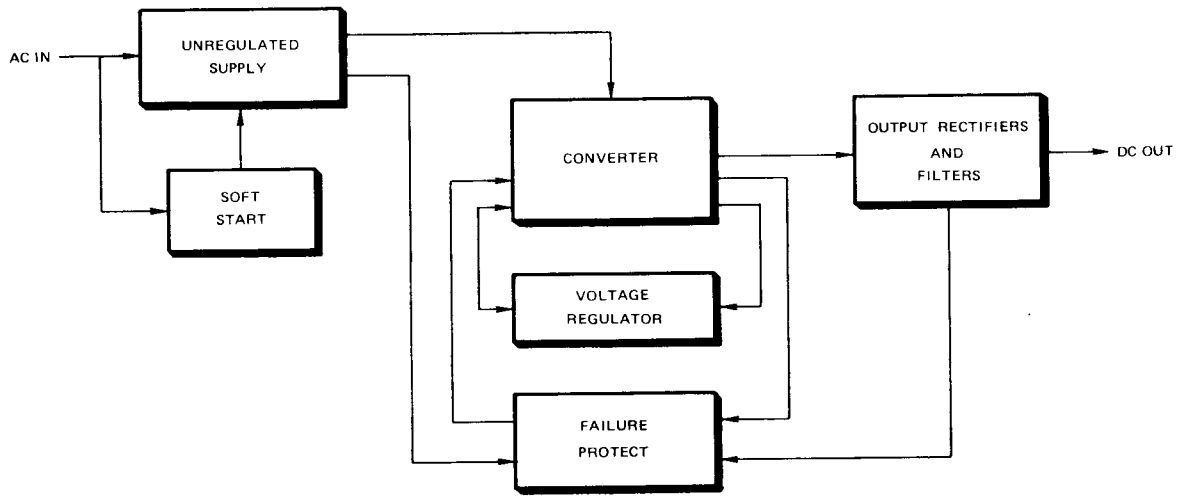

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Figure 3-16. Model 743/745 Power Supply Functional Block Diagram

diodes permits obtaining 5 and 12 volts from input flyback voltages with a 2 to 1 ratio (about 6.35 and 12.7 volts).

Secondary current(s) continue to flow, decreasing (approximately) linearly with time, until the transformer flux has fallen essentially to zero. The transformer terminal voltages remain at their flyback values during the entire period of secondary current flow. During a single flyback period the output voltages rise only a few percent of their full values, as determined by the output capacitors. As the flyback currents fall to zero, the voltages across the transformer windings decay toward zero. During the flyback interval C318 acquires a charge of about 1 volt (left hand side positive) from current drawn from R322 which is clamped by Q309; this charge acts as an emitter follower in the inverted mode (collector acting as emitter and vice-versa) when its collector goes over a diode drop below the primary side dc ground (the current coming from start-up resistors R329 and R324 is much smaller than the currents in R322 and have negligible effect once oscillation is initiated). So, as the voltage across the base drive winding falls toward zero, the positive voltage across C318 raises the base of Q311 to the threshold of conduction through R322, initiating another regenerative power transistor energizing cycle.

3.8.2 VOLTAGE REGULATOR. Transistors Q305, Q307, and Q308, along with op-amp U302 and associated resistors and diodes and regulator-winding transformer-terminals 5-6, constitute the voltage regulator portion of the power supply. Until the output voltages reach their correct values, the power transistor collector current ramps up to its current limit (as set by Q309) each cycle, transferring the maximum safe amount of energy (determined principally by transformer heating and core saturation limitations) each cycle to the filter capacitors and output loads. During each flyback cycle, C313 is charged through CR310 and series resistors R311 and R312 the same way the output capacitors are.

R311 with C314 and R312, along with the main regulator filter capacitor C313, serve as high-frequency noise and spike filters so that C313 is charged to the average value (less a diode drop) of the flyback voltage appearing across the sense winding

during each cycle. As soon as voltage is developed across C313, the negative input of U302, because of the voltage divider formed by R325, R335, and R336, becomes negative with respect to its positive input which, since zener diode CR317 passes essentially zero current until its breakdown voltage is approached, is held at the full output voltage of C313 through R316, R314, and R313. This assures that the op-amp will remain in positive saturation and, therefore, that Q305 will be off. As the regulator outputs rise toward their correct values and the voltage across C313 increases proportionally, the voltage at the U302 positive input is clamped as CR317 begins conducting. Voltage then appears across R313 and R314 because of current in R316 which, as the voltage on the negative input of U302 approaches that of its positive input (because of current through R315), initiates output voltage regulation. As its base voltage falls below the output of C313 by two diode drops, Q305 begins to conduct, acting essentially as a controlled constant current source whose output current flows into timing capacitor C317.

During flyback the base drive winding, which also drives R323, is negative, energizing CR314 and thereby clamping the timing capacitor to ground through the base-collector diode of Q307, sinking the output of current source Q305. When the power transistor Q311 switches on after flyback ends, R323 is taken positive by the base drive winding, thus causing Q307 to operate as an emitter follower, buffering the timing capacitor C317. The voltage across C317 then begins to ramp up at a rate proportional to the current from Q305. When the increasing voltage across C317 reaches approximately two diode drops, the output of buffer Q307 begins to rapidly energize Q308, which shunts drive current from Q311 and causes its regenerative turnoff just as does current limiter Q309. The action of the regulator loop thus controls the power transistor-on time and thereby the peak current flowing in the transformer primary.

The voltage across C313 is held constant (to within 1 millivolt) by U302 operating at its full dc open loop gain to maintain zero differential input voltage. Constant voltage across C313 implies that the flyback voltage feeding CR310 remains constant, and since all windings are very tightly coupled (required for satisfactory power supply operation) the flyback or output voltage from all windings remains constant (neglecting IR drops). Therefore, almost no cross-coupling occurs to the output voltage from one winding from changing loads on any other winding, and nearly no effect results from changing primary side dc input voltage. The only significant output voltage deviations, well within tolerances, are the changes in output voltage from its own load change which result from rectifier diode drop and winding IR drops. High frequency ripple and noise components are minimized by the use of four-terminal capacitors.

3.8.3 FAILURE PROTECTION. Transistors Q302, Q303 and associated components form a latch which positively switches off converter switch Q311 in the event of sustained overcurrent (> 500 msec) which is sensed by peak rectifier/filter CR309-C309. The same protection occurs if output overvoltage is sensed by Q304 and associated components and is transmitted to the latch by optical coupler U301. When the latch triggers, it switches on Q306, initially providing a large base drive by the discharge of C316, principally through R320 and CR313. This assures that Q306 will immediately switch off Q311 and hold its base below the threshold of conduction (<0.2V) as long as primary side dc is present.

3.8.4 SOFT START CIRCUIT. SCR Q310 and resistor R330 with associated components form a "soft start" circuit to limit the peak inrushing current during initial charging of primary side dc filter capacitors C306 and C308 (to <25 amps). Initial charging current is limited by R330. Q310 is triggered after approximately 50 msec as determined by C327 and associated resistors. Charging current for C327 disappears immediately upon removal of the ac input and the Q310 gate voltage falls below the trigger level (in approximately 20 msec) before the main filter capacitors have appreciably discharged. This ensures that R330 will limit surge currents if the ac input should fail for a few cycles and then return.

3.8.5 ELECTROMAGNETIC INTERFERENCE (EMI) FILTER. Switching noise or other EMI from the power supply does not cause circuit errors in the terminal or interference on the ac power line. The terminal power supply and other circuitry is not susceptible to interference conducted on the ac line.

3.8.6 ELECTRICAL POWER INTERFACE.

- Input Power - Standard input power is 115 ±15% 10% volts ac, 47 to 63 Hz,

single-phase line; 230 volt operation is optional. Power consumption does not exceed 75 watts. The desired input voltage, 115 or 230 Vac, must be specified on the original purchase order.

- Transient Voltage - Transient voltage must not exceed the limits specified in Figure 3-17.

- Voltage Spike - Voltage spikes on the ac line must not exceed the energy contained in a 175 V, 100-microsecond triangular pulse.

- Power Connector - The ac power line connector is a standard UL and CSA approved type-U, grounded, three-prong plug with a connecting three-wire UL and CSA approved cable at least 6 feet long.

3.9 CURRENT LOOP INTERFACE.

3.9.1 RECEIVER CIRCUIT. The current loop (TTY) receiver (see schematic 983842, sheet 8) consists of the necessary circuitry to sense current from an external source and to convert the current levels to the appropriate EIA-level logic values. The voltage drop across receiver inputs RL1/RL2 is 3 volts (maximum) at 20-mA loop current into RL1. The MARK/SPACE threshold decision current is nominally 8.5±3.5 mA. The receiver circuit utilizes an optically coupled isolator to isolate the current loop from the terminal circuitry.

A current level at the receiver circuit input above the MARK/SPACE threshold will forward-bias the photodiode of U402. When U402 photodiode is forward-biased, the phototransistor is energized, supplying base current drive to energize Q401. With Q401 on, a logic ONE is presented to the input of U401, and the output of U401 is negative (less than -3 volts).

With a current level at the receiver circuit input below the MARK/SPACE threshold, the photodiode and phototransistor of U402 are off, and Q401 is off since no base drive is available. With Q401 off a logic ZERO is presented to the input of U401, and the output of U401 is positive (greater than +3 volts).

Receive Circuit Summary:

Current into Terminal RL1 (J403-6)	Logic Designation	Receive DATA (J403-8)
Less than 5 mA	Space (Logic ZERO)	Positive (> +3V)
Greater than 12 mA	Mark (Logic ONE)	Negative (< -3V)

3.9.2 TRANSMIT Circuit. The current loop (TTY) transmitter (see schematic 983842, sheet 8) consists of the circuitry necessary to switch the current in the transmit loop (supplied from an external source). The input to the transmitter is an EIA-level logic value. The voltage drop across the transmitter output terminals is less than 1.5 volts at 20-mA loop current. The maximum SPACING leakage current is 0.5 mA at 50 Vdc.

A positive voltage level (greater than +3 volts) at the transmitter input (J403-3) will switch off Q403. With Q403 off, the photodiode and phototransistor of U403 are off. With no base current drive, output transistor Q402 is off and the transmitter is "open" (i.e. no current).

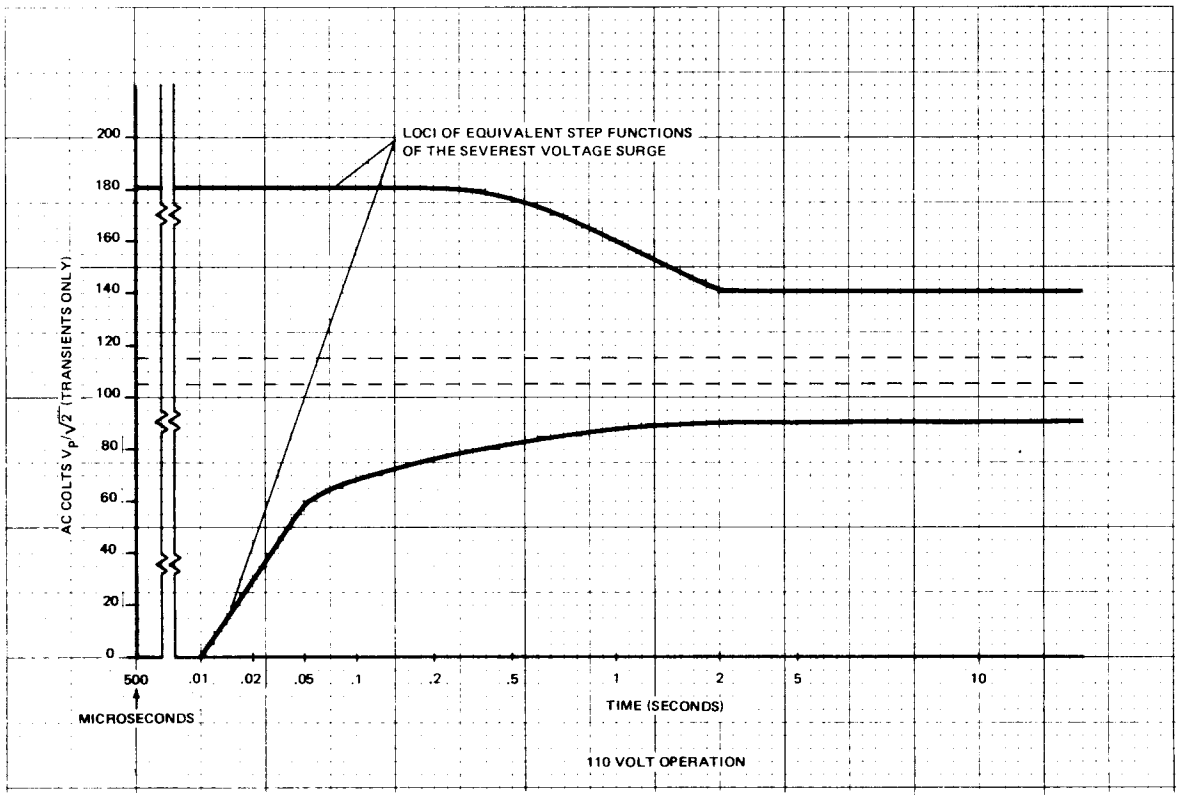
A negative voltage level (less than -3 volts) at J403-3 will energize Q403. With Q403 on, the photodiode and phototransistor of U403 are energized. With base drive supplied to Q402, the output transistor remains on, allowing current flow in the transmit loop.

Transmit Circuit Summary:

Transmit Data (J403-3)	Logic Designation	Transmitter Output
Positive (> +3V)	Space (Logic ZERO)	Open (No current)
Negative (<-3V)	Mark (Logic ONE)	Closed (Current flow)

3.10 INTERNAL INTERFACE.

The internal interface to the Models 743 KSR communications circuit has provisions for all signals required by the available options. Interfaces associated with specific options are provided by the use of a specific interface cable. The internal interface



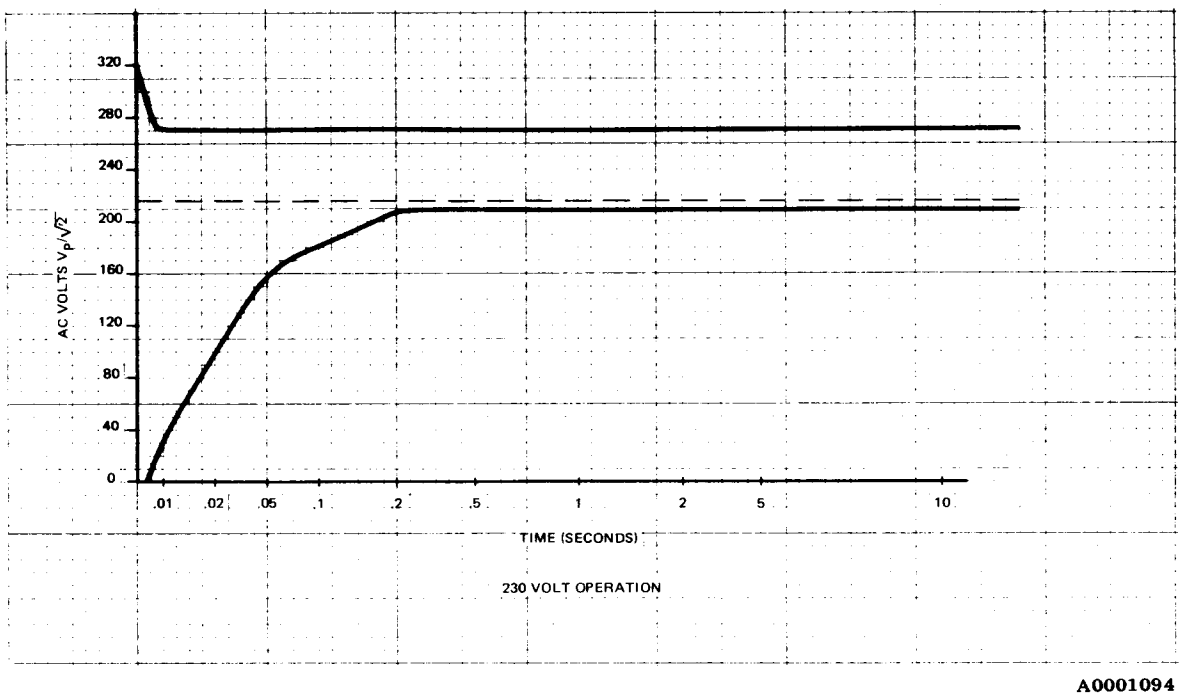


Figure 3-17. Transient Surge ac Voltage Step Function Loci Limits For 110 Vac Operation

is implemented through a 15-position connector located at the rear of the unit. Pin assignments and functions are listed in Table 3-3.

3.11 FIRMWARE.

The basic microprocessor control electronics consists of the central processing unit (CPU) integrated circuits, its ROMs and RAM, the input/output(I/O) device, control logic for communication between the CPU and I/O, and buffers for communication of data between the I/O and the control devices. A block diagram of the firmware control system is shown in Figure 3-18. The I/O and timer devices are shown in Figure 3-19.

The 2K of ROM are used for program and table-lookup storage. The 64 words of RAM are utilized for program stacking and for software flags, counters, etc. Address decoding logic is included to supply enable signals for the ROM, RAM, I/O, the I/O output buffers, and the printhead line buffers.

The central processing unit (CPU) controls the operations of the I/O through firmware commands. These commands are decoded by the I/O chip from the CPU control signals and five address bus lines from the CPU. The firmware commands include *read receiver buffer, read input bus, read interrupt reset ROM, read I/O status, load discrete commands, load baud rate command, load transmit buffer, load output register, load interrupt mask register, and load one of five timers.*

After loading the I/O output bus and outputting the correct address, the CPU scans the keyboard one row at a time. After outputting the scan the CPU then reads the I/O input bus to determine the status of the eight keys scanned in that particular row. In the same manner, but with a different address, the CPU controls the stepping motor, the printhead lift and line feed solenoids, and the bell.

The printhead line buffers are controlled solely by the CPU address lines. By outputting the appropriate data on address bits 12 to 15 to the address decode logic to generate a printhead strobe and outputting the particular printhead line buffer data on address bits 0 to 11, the appropriate printhead elements are heated to create visible images.

The normal state of the CPU is the halt state. The CPU is interrupt-driven out of the halt state when

Table 3-3. Internal Interface Connector Pin Assignments

Pin No.	Source	Function
9	Terminal	*Protective Ground* – Connected to terminal chassis and power cord ground
1	Common	*Signal Ground* – Common return for all data and control lines
14	Terminal	*CR Busy* – Low power TTL level, high-true when printhead is lifted
15	Terminal	*DTR* – EIA level held to ON condition when terminal is on-line
13	Terminal	*XMTD* – Transmit data; EIA level held to mark state when no data is being transmitted
12	External	*RCVD* – Receive data; EIA level held to mark state by external device when no data is to be printed
11	External	*CDET* – Carrier detect; EIA level held to ON condition by external device when data is to be received on pin 12
2	Terminal	*CARDET* – Carrier detect; EIA level held to ON condition by terminal when data is to be honored on pin 1
8	Terminal	*RCVDATA* – Receive data; EIA level held to mark state by terminal when no data is being received
3	External	*XMIT DATA* – Transmit data; EIA level held to mark state by external device when no data is to be transmitted
6	External	*RL 1* – High side of receive data current loop when current loop option is installed
7	External	*RL 2* – Low side of receive data current loop when current loop option is installed
5	Terminal	*DT* – Data Tip; EIA level for transmit data when modem option is installed *X1* – High side of transmit data current loop when current loop option is installed *X2* – Low side of transmit data current loop when current loop is installed.
10	Terminal	*PI2V* – Spare EIA level held to ON condition when terminal power is on

processing is required. An interrupt forces the CPU to one of eight different trap locations. Power up may be considered an interrupt since it occupies trap location 0. These interrupts are generated within the I/O device but can be controlled by the CPU. The CPU can disable or enable all interrupts, or it can enable any combination of them by loading the *interrupt mask register*.

The firmware package is an operating system responsible for Model 743/745 Data Terminal operations. For purposes of discussion, the operating system may be divided into several major subsections as shown in Figure 3-20. The *power-up* routine initializes all system pointers and flags and starts the *keyboard scanner* routine. The *keyboard scanner* routine detects key depressions and encodes them into ASCII characters, and the *data control* routine directs the characters to the appropriate processing program. The *transmitter* routine generates parity and transmits characters. The *character analyzer* routine determines if the mechanism is busy and if not, passes the character to the appropriate processing subprogram. If the mechanism is busy, the character is queued for later processing.

The operating system is provided with eight interrupts; five interrupts are used by the software system. A brief description of each interrupt is listed in Table 3-4. The software system is divided into three operating levels. The base level (when no interrupts are occurring) is a halt state. All Model 743/745 processing is done in response to an interrupt. No activity occurs in the base level. The next level is composed of the keyboard timer interrupt and the receiver interrupt.

The *receiver* and *keyboard* routines can only interrupt the processor when it is in the halt state; neither routine can interrupt the other. The highest level is composed of the two timers associated with printing/stepping and the sensor interrupt. These routines can interrupt the processor out of the halt state, *keyboard scanner*, or *receiver* routines. Routines running at the highest level cannot be interrupted. This three-level interrupt system is implemented by controlling the contents of the interrupt mask register in the I/O device.

3.11.1 POWER–UP ROUTINE. When the POWER switch is first set to ON, the power supply generates a

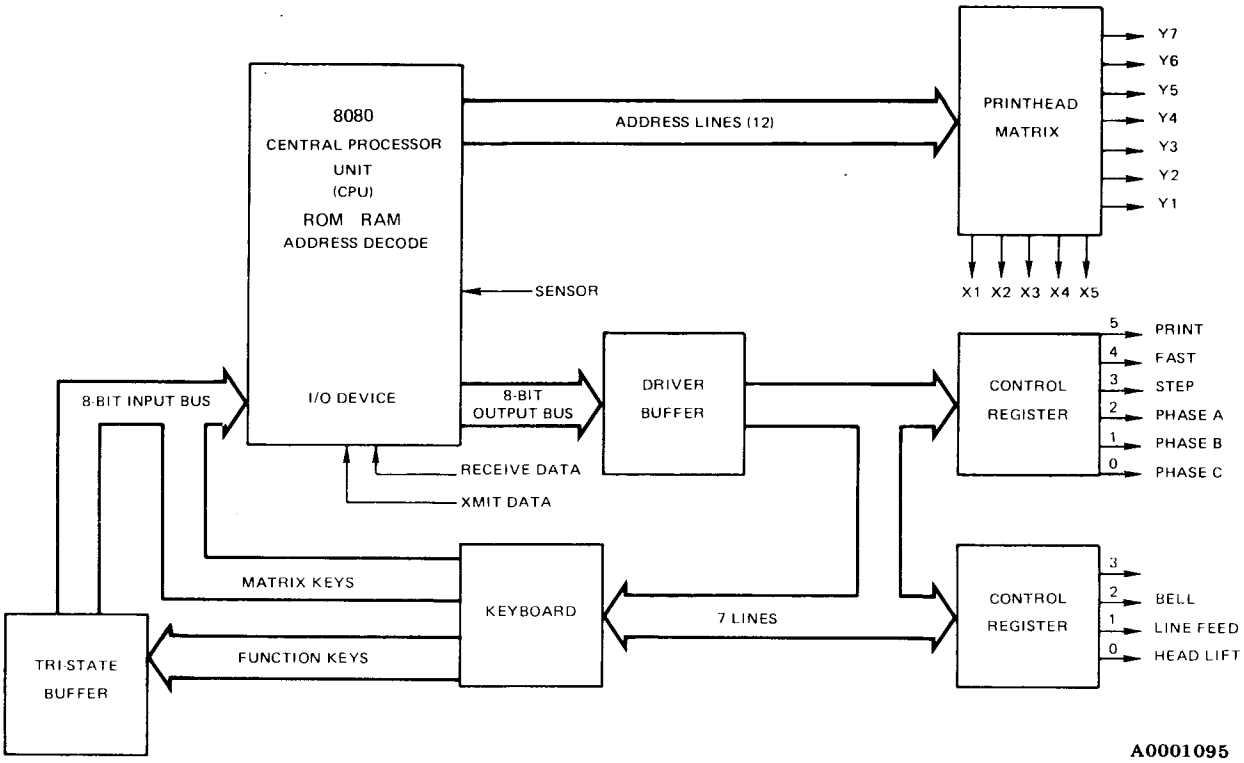


Figure 3-18. Model 743/745 Firmware Control System Block Diagram

reset to the CPU. This starts the CPU with interrupts disabled at trap location 0 or at address 0000. The purpose of this routine is to:

(1) Initialize the necessary RAM locations such as flags, counters, pointers, etc.

(2) Reset the I/O

(3) Set up the CPU stack pointer

(4) Start the keyboard scanner

(5) Begin machine functions such as line feed and returning the printhead to column 1 by performing backspaces.

The CPU then enters the halt state and waits for more work in the form of interrupts.

3.11.2 KEYBOARD ROUTINE. The *keyboard* routine scans, encodes, and debounces keys. After each key entry *keyboard* reports to data control the status of the function keys and whether or not a valid key has been detected in the keyboard matrix. The keyboard matrix is diagrammed in Figure 3-21.

3.11.2.1 Scanning. In the *keyboard* routine three unique time periods are defined:

(1) Search period = 4 msec

(2) Debounce period = 11 msec

(3) Wait period = 11 msec.

The time at which the *keyboard* routine is re-entered is determined by one of these three modes. For the search and debounce modes, a scan takes place upon

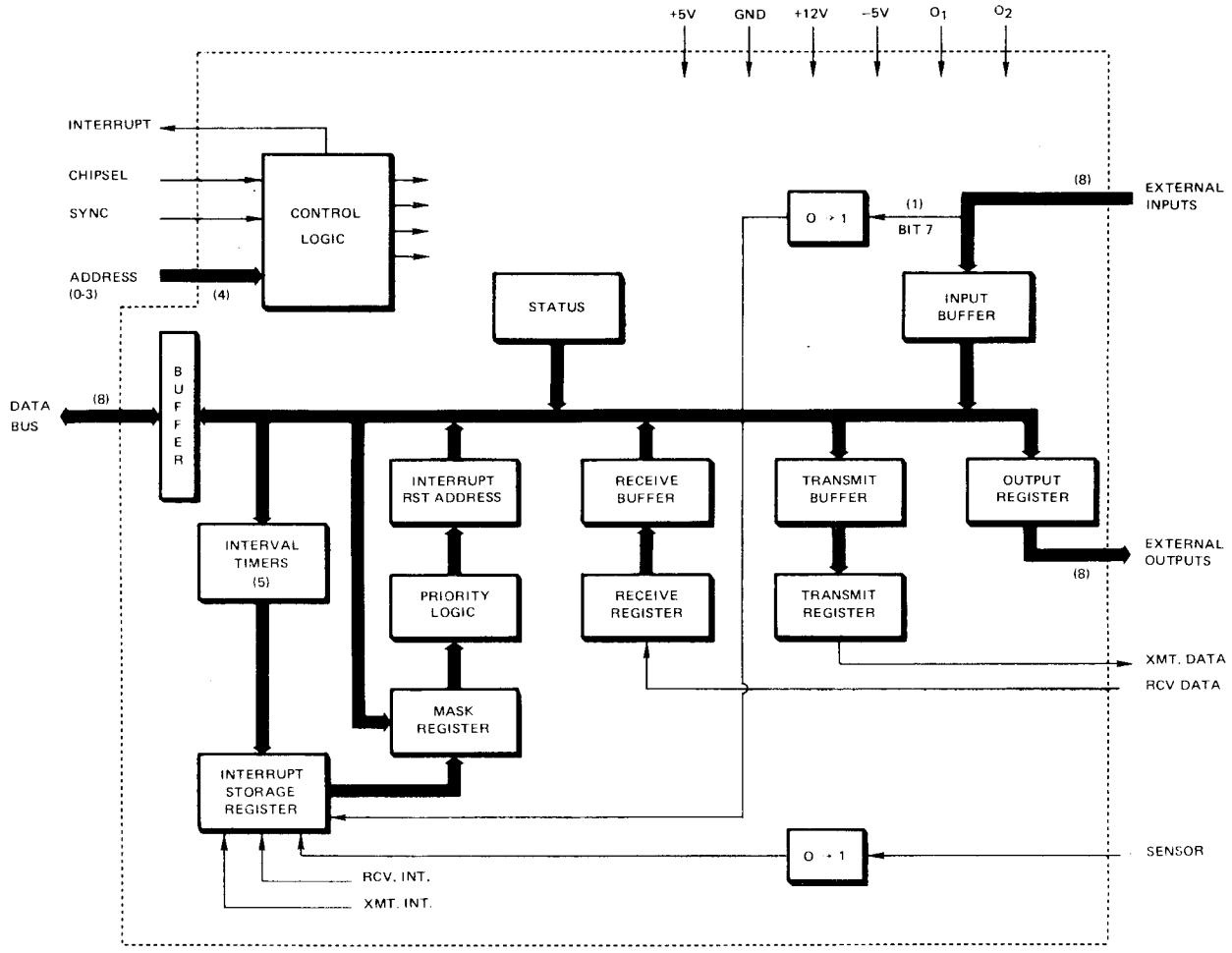


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Figure 3-19. Functional Block Diagram I/O and Timer Device

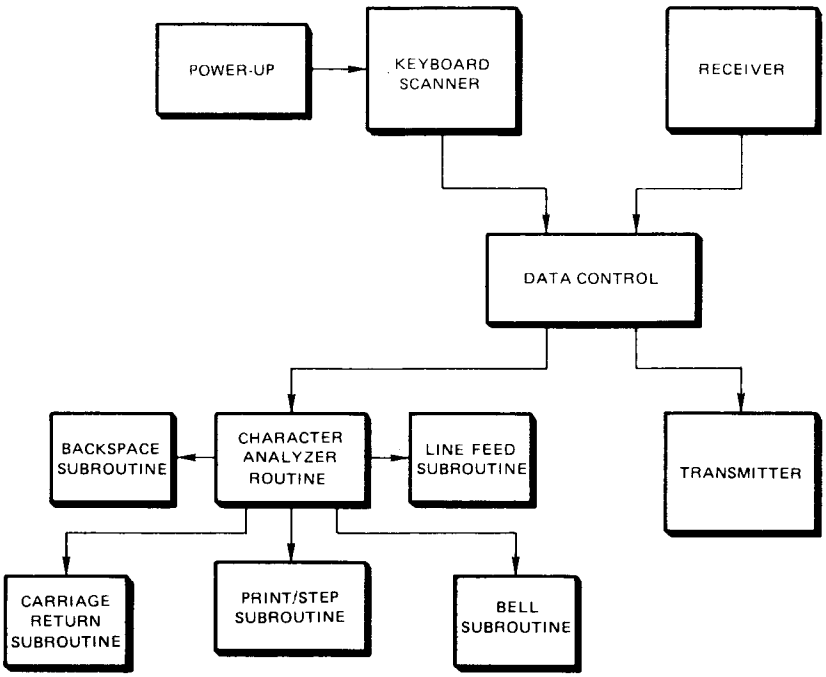

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Figure 3-20. Model 743/745 Firmware Structure

Table 3-4. Firmware Operating System Interrupts

Trap	Location (Hex)	Name	Function
0	00	Power-up	Activates the power-up, initialize routine
1	08	Timer 2	Used for step timing
2	10	Sensor	Feedback for motor control
3	18	Timer 3	Used for print/step timing
4	20	Receiver	Character received by I/O
5	28	Transmitter	Transmit buffer empty (not used)
6	30	Timer 4	Keyboard scanner timer
7	38	Timer 5	Spare timer

every entry. The wait period is utilized when a PAPER ADVance is pressed or when a character is repeating. Upon an initial detection of paper advance, scanning is inhibited for 20 wait periods. While repeating a character, scanning takes place only once every third wait period. When a second key (other than the REPT key) is detected in the matrix, the scanning process is immediately stopped and the *keyboard* routine reports to data control that no new key was detected. Otherwise, when one or no key is pressed, a complete scan of the matrix occurs. The scanner utilizes a row and column counter so that when a depressed key is detected, row and column location data is recorded for use in encoding. Function keys are read and their status reported to data control upon every entry into the keyboard routine.

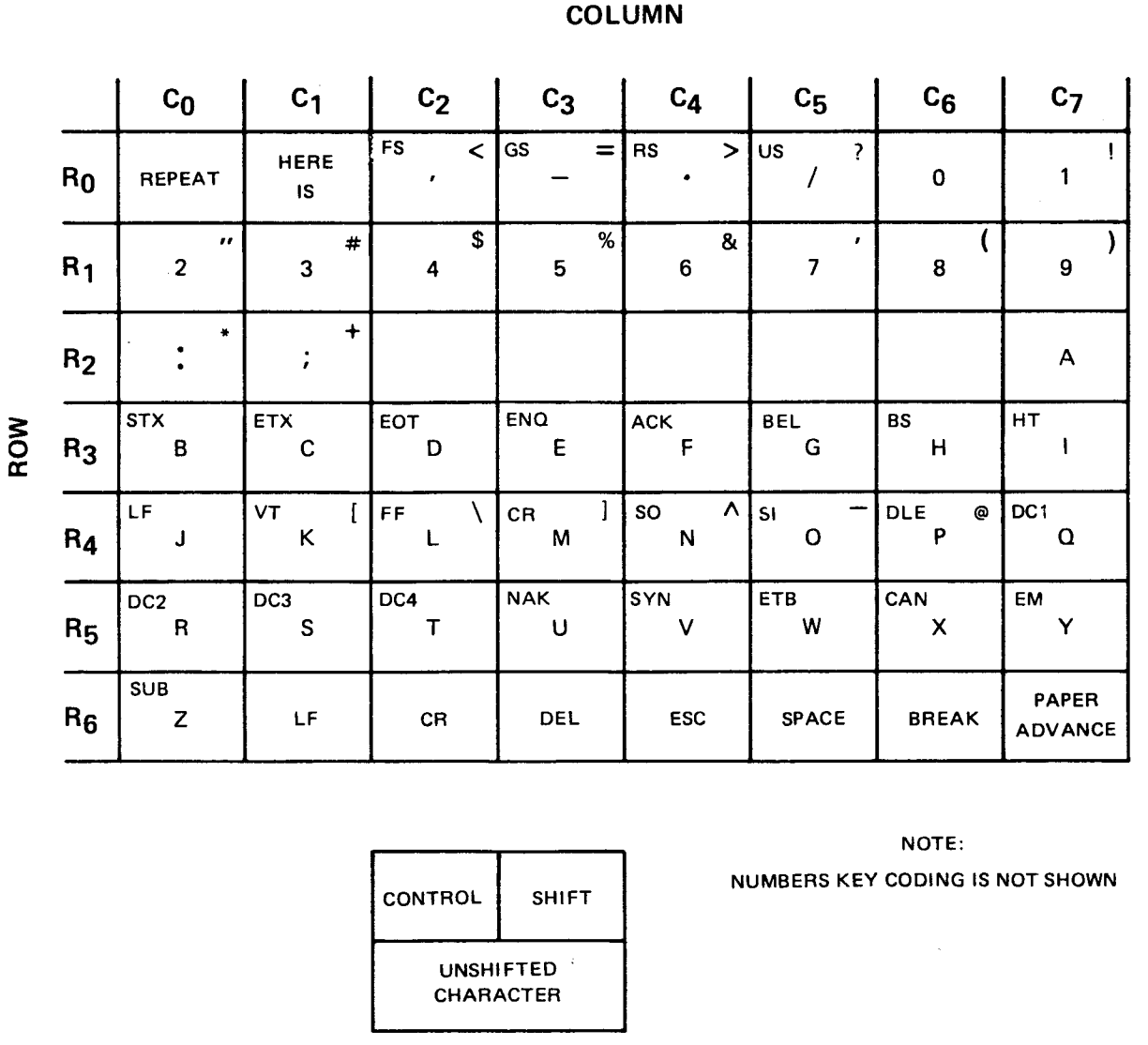

Figure 3-21. Model 743/745 Keyboard Matrix Encoding Scheme

3.11.2.2 Debounce. A debounce period, defined as 11 msec, occurs upon make and break of a key. Debounce of make-of-a-new-key and break-of-an-old-key may occur simultaneously. When the CPU is not in the debounce mode, it is considered in the search mode which lasts 4 msec. The search mode occurs also for both make and break, and like debounce, search-for-make-and-break may also occur simultaneously. Therefore, if two keys are pressed almost simultaneously, the second key need only be pressed 4 msec past the break bounce of the first key. The PAPER ADVance and REPT keys are not debounced.

3.11.2.3 Encoding. When a new key depression is detected in the matrix, it is encoded immediately. REPT (repeat), HERE IS, BREAK, and PAPER ADVance are not ASCII encoded keys. In the NUMbers mode the row/column data is used to obtain the ASCII code from a look-up table; five special keys are similarly encoded: LINE FEED, carriage RETURN, RUB OUT, the space bar, and ESC. All other keys are positioned in the matrix so that the addition of a constant number to the row/column number of each key will provide the ASCII code for that key in the unshifted mode. For the CTRL (control) and SHIFT modes the ASCII code is obtained by adding or subtracting an appropriate number depending upon the particular key. After encoding, the new ASCII character is passed to data control for immediate action. Encoding occurs upon detection and not after debounce of the key.

3.11.2.4 Repeat Function. Any printable character may be repeated by pressing a character key in conjunction with the REPT key. The character will be printed continually until the REPT key is released. Pressing a new key causes its ASCII character to be repeated.

3.11.2.5 Receiver. Upon receiving a full ASCII character the I/O device transfers the character from the receiver register to the receiver buffer and generates an interrupt to the CPU. The CPU then removes that character within 30 msec to prevent loss. The sole purpose of the receiver routine is to fetch the character from the receiver buffer and pass it to data control.

3.11.3 DATA CONTROL ROUTINE. Data is supplied to the Models 743/745 from two sources: the keyboard and the receiver. Hence, the data control routine has two major divisions: *keyboard data control* and *receiver data control*.

3.11.3.1 Keyboard Data Control. The first function of *keyboard data control* is to update the baud rate status to the I/O and to update the local flag status in RAM. It then decides whether or not the keyboard has any new data; if not, data control is exited. Transmission of a new character occurs if the terminal is on-line and the transmitter is not busy. The character is transferred to the *character analyzer* to determine what printer action is to be taken if the terminal is in the local mode or if the transmitter is not busy and the terminal is in the half duplex mode.

3.11.3.2 Receiver Data Control. A received character is sent to the *character analyzer* if the terminal is in the on-line mode, if at least two spaces remain in the eight-character *printer character queue buffer*, and if the paper-out count is not 5. Otherwise, the character is ignored and no action is taken.

3.11.3.3 Print Complete. After completing a printer action, all printer software routines enter *print complete*. This terminates the printer action and indicates that the mechanism is free. Print complete detects any character that might have been stored in the printer queue buffer and passes it to the character analyzer for processing.

3.11.4 CHARACTER ANALYZER. The *character analyzer* accepts a character from either data control or print complete and determines what printer action should be taken. A BEL character immediately starts the bell signal. No action is taken on a DELete or NUL character. If the mechanism is not busy, the following procedure is taken on all other characters. Printable characters enter *print state 1* and immediately start printing. CR, LF, and BS enter appropriate printer states, but all other control characters are ignored. If the mechanism is busy, the character is stored in the printer character queue buffer (eight-character capacity) for later processing.

3.11.4.1 Bell Routine. The time interval for the bell signal to sound upon receipt of a BEL character is 250 msec. To time this period the *bell* routine utilizes the keyboard timer. When a BEL character is received, a counter is set to the appropriate value and the bell signal is energized. The *keyboard* routine then decrements this counter at each entry and when the count reaches zero, the bell is switched off.

3.11.4.2 Print/Step Routine. The *print/step routine* is designed to generate the pulse train shown in Figure 3-22. The routine can be divided into two sections. The first section, energizes the *printhead voltage* (PVOLT), indexes into the dot matrix table (stored in ROM) by the ASCII character value, chooses the appropriate dot pattern, and loads the printhead one column at a time. Loading is accomplished by generating an address which includes the printhead strobe bit, the column being loaded, and the column dot pattern. The printhead is loaded during the first 200 μsec of PVOLT-on.The PVOLT signal remains on for 10 msec.

The second section steps the printhead one column by using two timers and the sensor. One timer is used to control pulse widths for the fast and step pulses. The *sensor* signals the beginning of braking. The second timer is used to time the total step and is divided into two segments: the first verifies ~~that~~ the sensor occurred, and the second segment defines the end of the step. The use of the second timer makes the step time independent of when the sensor interrupt occurs. Figure 3-23 shows a state diagram of this sequence.

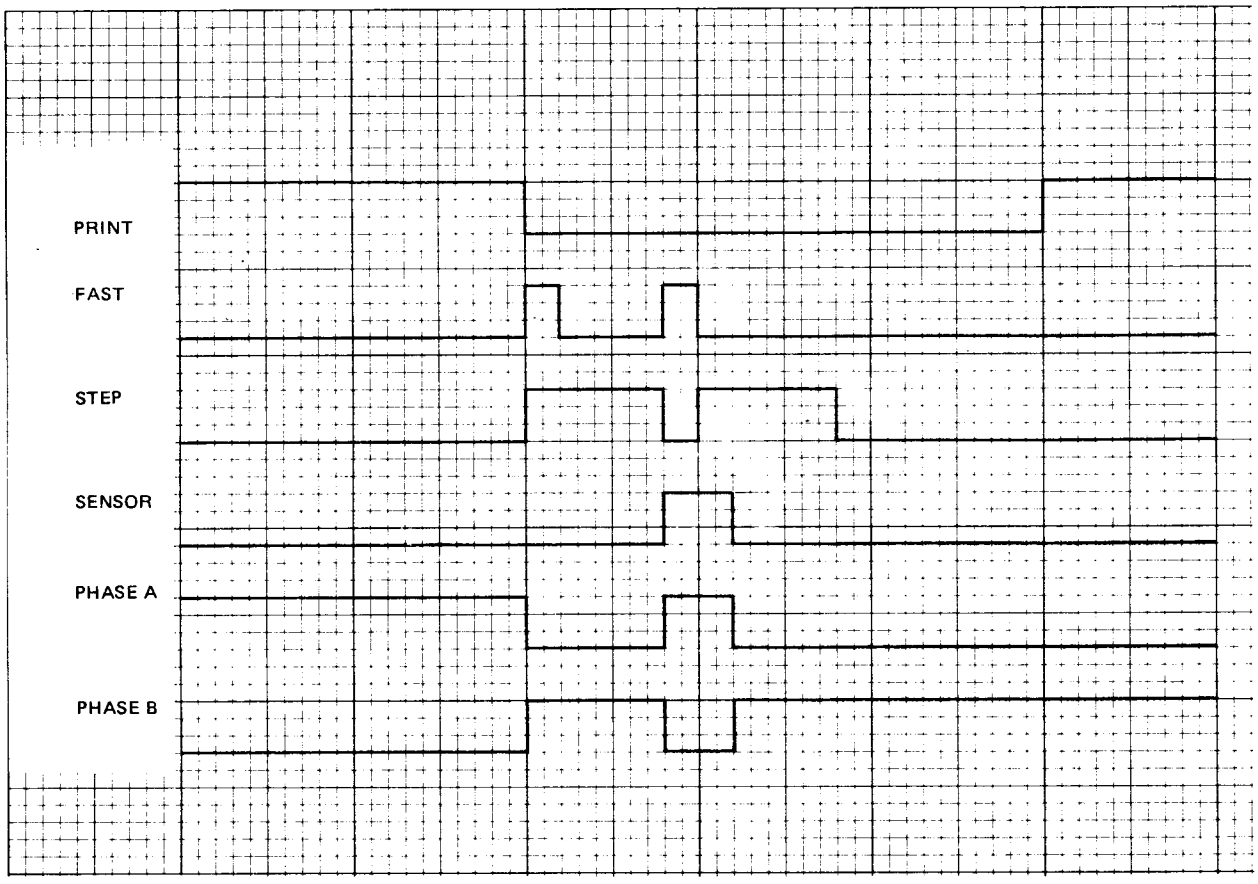

Figure 3-22. Models 743/745 Print/Step Routine Pulse Train

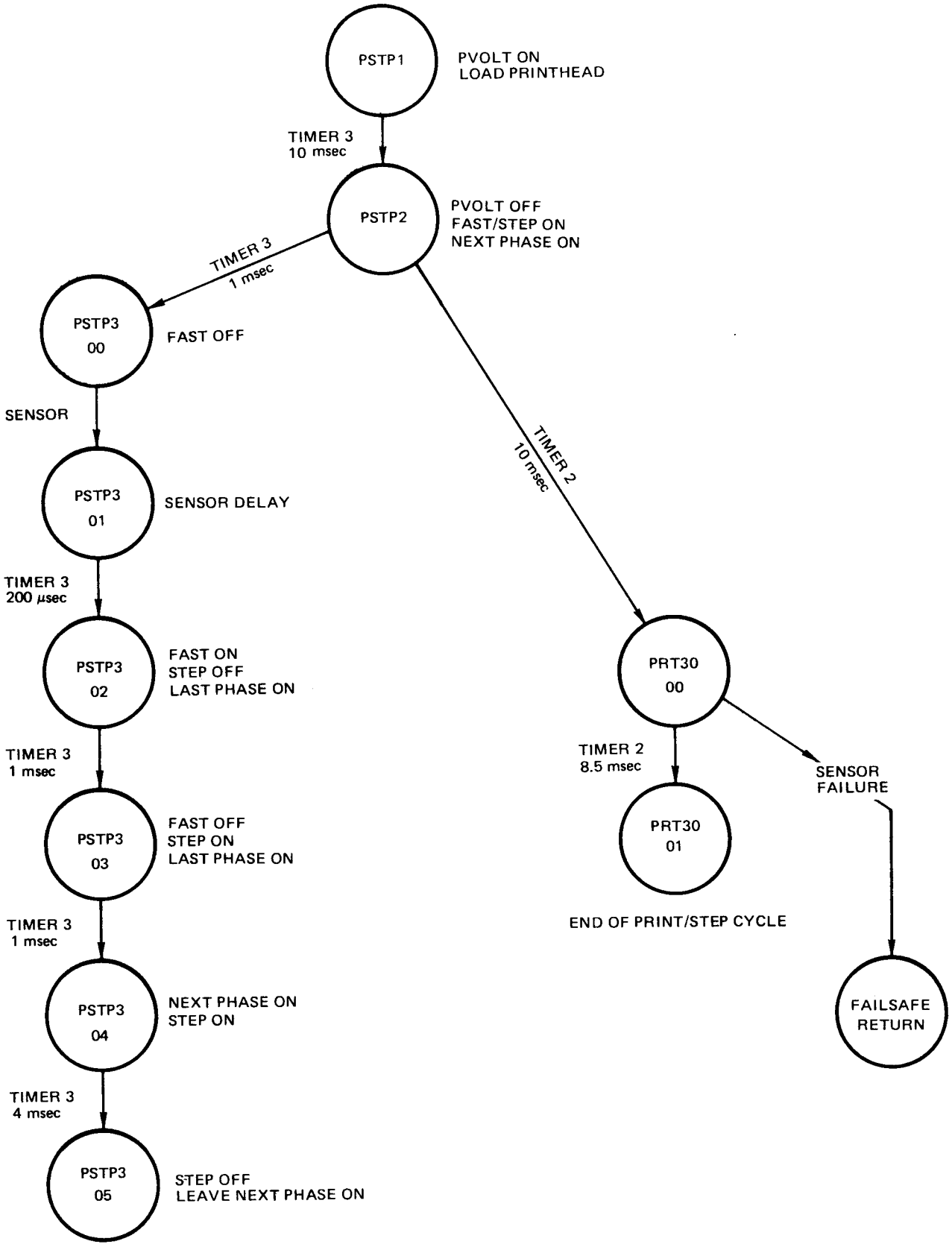

Figure 3-23. Print/Step Routine State Diagram

3.11.4.3 Backspace Routine. The *backspace* routine uses the step section of *the print/step routine*. The only difference is that the phase is calculated to cause the printhead to step left instead of right.

3.11.4.4 Line Feed Routine. The *line feed* routine energizes the printhead lift and line feed solenoids for 15 msec, then off for 16.8 msec. This causes the paper to advance one line.

3.11.4.5 Carriage Return Routine. A carriage return from column 1 causes no action. A carriage return from column 2 is treated as a backspace. Printhead lift is activated until the printhead reaches column 2. Stepping current remains on throughout the carriage return to provide the motor sufficient current for acceleration and deceleration. Speed control during carriage return is accomplished by changing phases on the motor feedback sensor (acceleration) or by changing phase after the feedback sensor (deceleration). Figure 3-24 is a state diagram of the carriage return algorithm.

a. Acceleration Outside Column 20. In the carriage return routine the timer value is set to 1.5 msec. Since the motor is stopped, the timer will expire and cause an interrupt before the sensor reacts. Motor phases are changed when the sensor reacts, causing acceleration of the motor. Five 1-msec pulses are generated during the first five steps of acceleration to provide quick acceleration.

b. Constant Speed Control. Once the feedback sensor signal occurs faster than 1.5 msec, the motor phase change occurs when the timer expires, decelerating the motor. Acceleration and deceleration are used for the constant speed region. Note that the change from acceleration (paragraph a. above) to constant speed occurs without a change of state in the firmware.

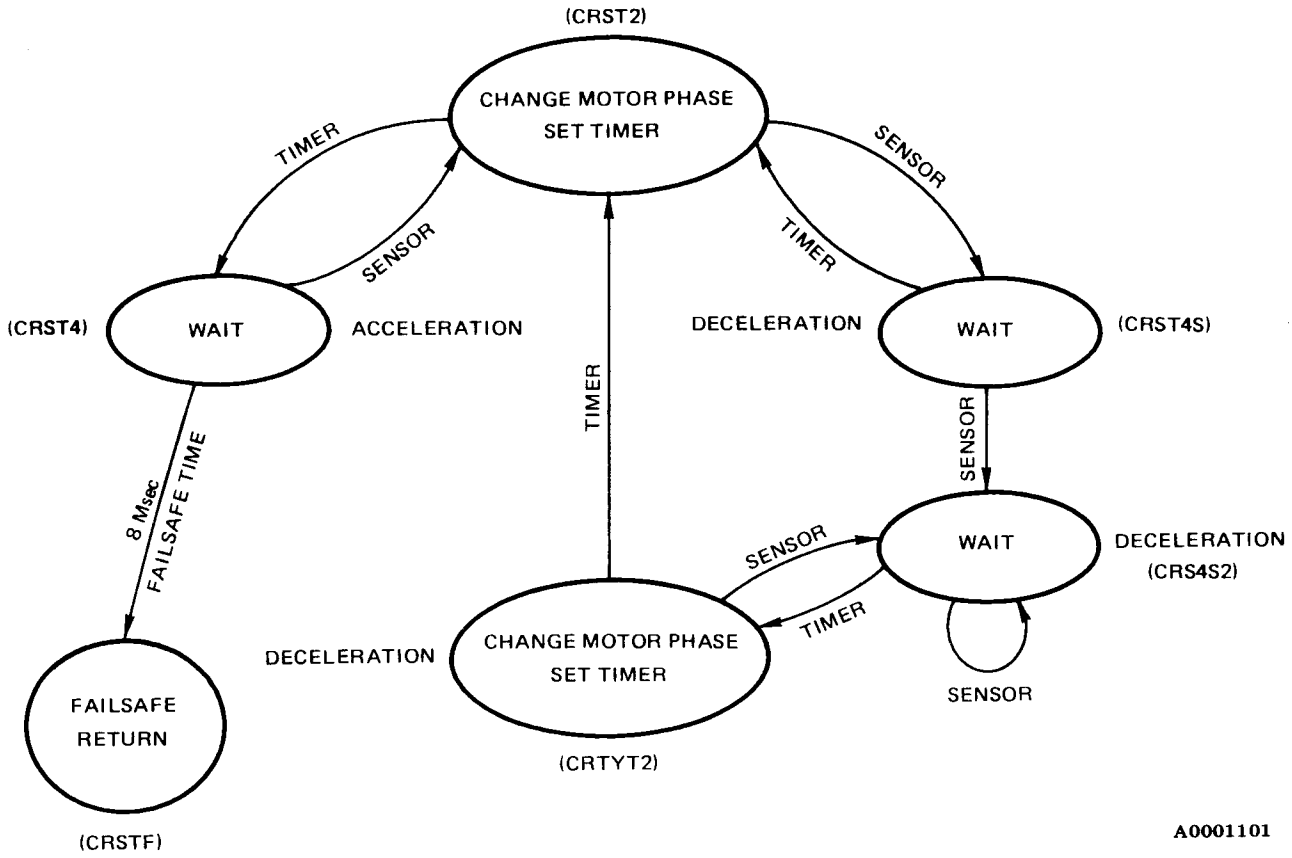

Figure 3-24. Carriage Return Routine State Diagram

c. Deceleration at Column 12. When the printhead reaches column 12 and the phase change to move to column 11 is output, the firmware detects that it is time to decelerate. Instead of setting the timer to 1.5 msec, a longer time is used. For each column throughout the deceleration period, a successively longer time is used when setting the timer. This causes the motor phases to change on the timer, initiating deceleration. The values in the deceleration table were selected to decelerate the motor along a profile which resembles the natural deceleration of the system.

d. Acceleration/Deceleration Inside Column 21. A different rate of acceleration is used for each column inside column 21. A slower acceleration enables the processor to intercept the deceleration profile and bring the printhead to a smooth stop. This time is used until a column is reached inside column 12 where its deceleration time is longer. This represents the point where the deceleration profile is intercepted and deceleration begins.

3.11.5 CHARACTER BUFFERING. There are several advantages to the use of character buffering in a data terminal. Using a character buffer to store a received character while the mechanism is busy eliminates need for the traditional filler characters sent after a carriage return. To implement such a scheme the print/step time of the data terminal must be less than the time consumed to receive a character. Character buffering increases input to the terminal by eliminating the transmission time used to send filler characters. Interfaces to the data terminal are simplified since the transmitting system does not need to recognize certain control characters which require special handling. Because of the desirability of character buffering and the ability of the Models 743/745 to perform a print/step cycle in 28.5 msec, an eight-character buffer is designed into the operating system.

3.11.6 PAPER ADVANCE OPERATION. The paper advance (PA) function is generated by the *keyboard* routine. Upon an initial detection of the PA key, the terminal is forced OFF line, a carriage return character (CR) is generated, and scanning is inhibited for 20 wait periods. The PA flag is set, and the carriage return character is processed. As long as the PAPER ADV key is depressed, the keyboard scanner sets the PA flag and generates a CR character every third wait period. At the end of the CR, the PA flag is checked and control transfers to the *line feed* routine.

The *line feed* routine causes one line feed and clears the PA flag. A continuous stream of line feeds then are executed as long as the PAPER ADV key is depressed. Received characters will be lost since the terminal is forced into an off-line mode.

3.11.7 ANSWER-BACK MEMORY. The Answer-Back Memory (ABM) option for the Models 743/745 data terminals transmits any programmed sequence of one to 21 ASCII characters to serve as station identification. The character string, along with the system software to implement the ABM feature, is included in a 256 x 8 PROM (74S741) which plugs into a socket on the PWB. The message sequence is activated by the HERE IS key or by receipt of an ENQ character if the terminal is on-line. An optional bit in the PROM indicates to the ABM system program if the ABM message is to be printed when operating in the half-duplex mode.

Following is a list of operating characteristics of the ABM option:

- Activated locally by HERE IS key if the terminal is on line
- Activated remotely by receipt of the ENQ character if on-line
- While in an ABM sequence, operation of the HERE IS key or receipt of an ENQ character will not cause the ABM sequence to restart
- During an ABM sequence, if the terminal is taken off-line, the sequence will be aborted
- The ABM sequence cannot be activated if the terminal is performing a paper advance.
- If the terminal is in the half-duplex mode and the option to print the ABM message is set, the ABM message will be transmitted and printed. Characters

received during the printing of the ABM message will also be printed.

- During an ABM sequence, characters generated at the keyboard are ignored.

- Parity is generated based on the strappable option on the PWB (factory-adjustable only).

- If the BREAK key is already activated when an ENQ character is received, the ABM sequence will start; but the transmitter will not transmit the characters because it is in the BREAK mode. If the terminal is in the half-duplex mode and the option to print is enabled, the message will be printed.

3.11.8 LEFT MARGIN/PAPER–OUT DETECTION. During the step sequence, the *print/step* routine can detect a sensor failure. During normal operation, sensor failures indicate an attempt to step the printhead through an abnormally high friction area (left margin stop or stepping the printhead with no paper between it and the drive roller). This information is used to detect both left margin and paper-out in the Model 743/745 operating system.

3.11.8.1 Left Margin Detect. During power up, the printhead is stepped to the left by performance of repeated backspaces. A sensor failure is generated when the printhead is stepped against the left margin. Sensor failure also occurs if the motor is told to step to the phase it already is in. By forcing the printhead to step at least three steps during power up, the operating system gets in step with the motor and the next sensor failure after the initial three steps is considered the left margin.

3.11.8.2 Paper-Out Detection. During step operations after power up, a sensor failure will activate the paper-out condition. The friction between the printhead and the platen is too great without paper to perform a normal step. The character analyzer checks this condition before passing control to the print/step state. When paper-out is activated, the character analyzer will only process CR, LF, and BELL characters. The keyboard routine checks for a paper-out condition when the PAPER ADVance key is detected. Instead of generating a series of CR characters, the keyboard routine generates a series of LF characters. Paper can be loaded in the terminal by using the PA key or LF key when the terminal is off-line. Entering a CR with the terminal off-line during a paper-out condition will force a power up return to the left margin.

3.11.8.3 On Line Operation during Paper-Out. When the terminal is operating in the on-line mode and runs out of paper, the paper-out sequence (see paragraph 3.11.8.2 above) will be entered. If the terminal is unattended, the carriage returns in the input data stream will cause the terminal to repeatedly seek the left margin, then detect no paper. To prevent such a loop from occurring, a paper-out count is incremented each time paper-out is detected. If this count reaches 5, the receiver will start discarding all characters. This count is reset to 0 by a successful carriage return, by a paper advance operation, or by a power off/on sequence.

3.12 ACOUSTIC COUPLER/MODEM.

The acoustic coupler/modem circuitry in the Models 743/745 Data Terminals provides the interface between the terminal and a standard commercial telephone line. Since the bandwidth of telephone lines is limited, digital information cannot feasibly be transmitted over any but short distances. However, digital information can be converted into analog form which can be transmitted over telephone company voice-grade telephone lines of the direct distance dialing (DDD) network. The acoustic coupler is standard on the Model 745; the modem is an option available on the Model 743.

For 300-baud operation an analog technique called frequency shift keying (FSK) is used to transmit data. Frequency shift keying simply is the shifting of a signal between two frequencies. One frequency represents a logic ONE; the other represents a logic ZERO. Figure 3-25 shows an alternating digital data pattern and its FSK equivalent. The acoustic coupler/modem circuitry in the Model 743/745 converts the digital data to be transmitted into an FSK signal and also converts a received FSK signal into digital data. The bandwidths of the FSK signals are chosen to provide simultaneous transmission and reception of data (full duplex) over a single voice-grade line. The frequencies assigned to the acoustic coupler/modem are listed in Table 3-5. The Bell System frequencies are used primarily in the United States, Canada, and Mexico. The CCITT frequencies are used throughout Europe, Japan, and Australia.

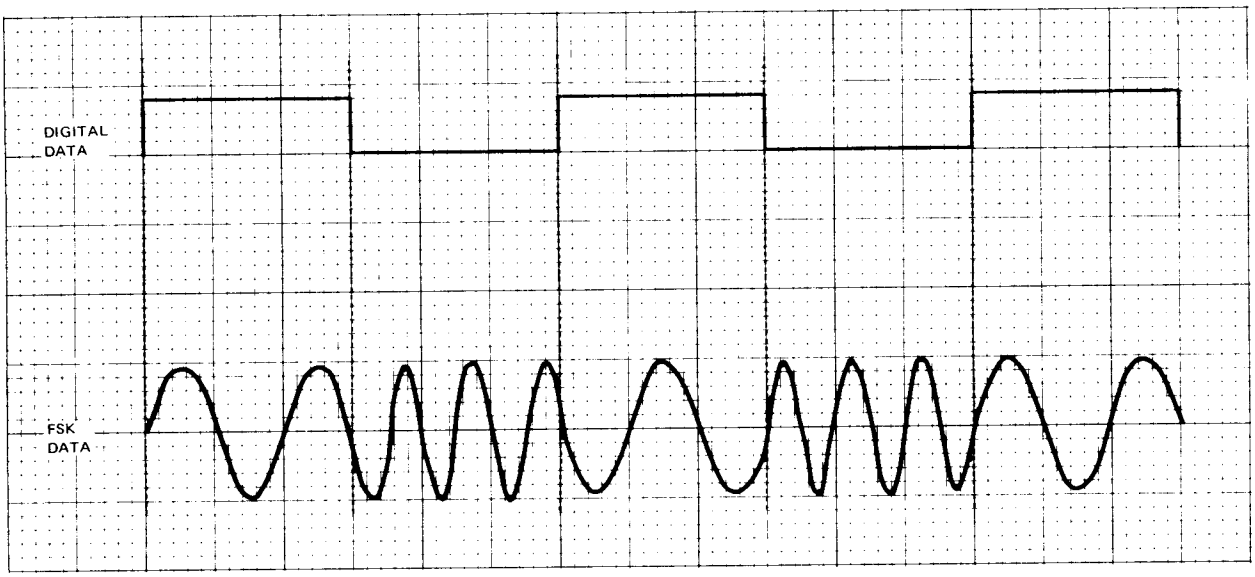

Figure 3-25. Frequency-Shift Keying (FSK) Modulation

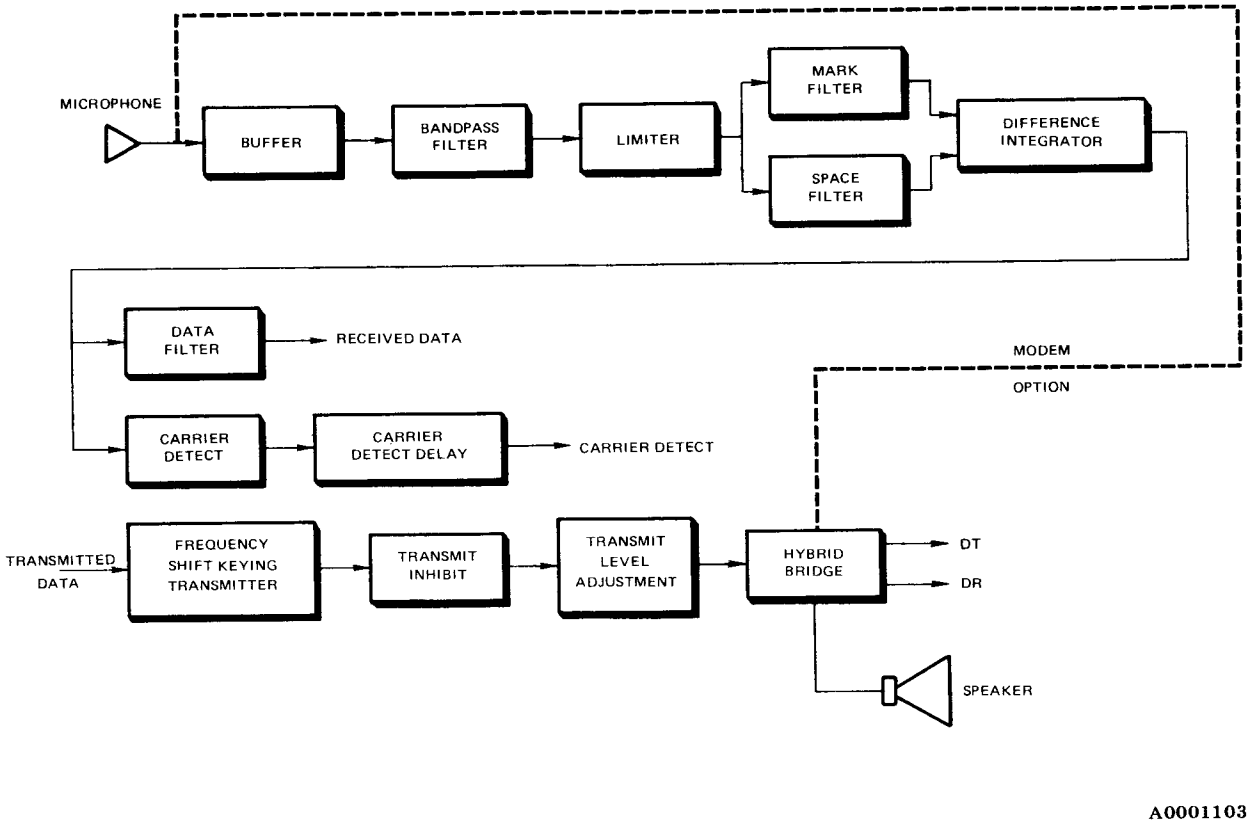

Figure 3-26. Acoustic Coupler/Modem Block Diagram

Table 3-5. Acoustic Coupler FSK Transmission Frequency Assignments

	Bell System		CCITT	
	XMIT	RCV	XMIT	RCV
"1" (MARK)	1270	2225	980	1650
"0" (SPACE)	1070	2025	1180	1850

The acoustic coupler interfaces with the telephone line through a standard telephone handset which fits into two rubber muffs on the rear of the Model 745. One muff contains a microphone; the other, a speaker. The interface is entirely acoustic.

The modem (available as an option only on the Model 743) interfaces directly with the telephone line via a transformer contained within a data coupler provided by the telephone company. A block diagram of the acoustic coupler/modem is shown in Figure 3-26. A schematic of the circuitry is contained in Appendix B. Note that the modem and acoustic coupler share most of the same circuitry; for this reason the operation of the acoustic coupler is described first and the differences between the acoustic coupler and modem are discerned where appropriate in the text.

3.12.1 RECEIVER SECTION. The receiver section of the acoustic coupler/modem consists of a buffer, bandpass filter, limiter, mark and space filters, difference integrator, data filter, carrier detector, and carrier detect delay circuits. The microphone is connected through the buffer (simply an amplifier) to a bandpass filter which passes in-band signals and attenuates out-of-band signals and noise, thus providing some selectivity. The output of the bandpass filter is applied to the limiter which provides a constant amplitude signal to the mark and space filters. The mark filter's greatest output occurs when the mark frequency is received, and the space filter's greatest output occurs when the space frequency is received.

The output of the mark and space filters is applied to a difference integrator which determines which filter has the most output over a bit time. The difference integrator's output is applied to the data filter and carrier detect circuit. The data filter smoothes the difference integrator output and converts the signal to ±10-volt levels. The carrier detect circuit determines whether an in-band or out-of-band signal is present at the input of the coupler.

An in-band signal starts a 3- to 6-second time in the carrier detect delay circuit before it provides a valid carrier indication to the terminal and transmit inhibit circuit. An out-of-band signal starts a 100- to 300-millisecond delay before a no-carrier indication is provided to the terminal and transmit inhibit.

Referring to Schematic 983842, sheet 7 in Appendix B, the signal input to the acoustic coupler is an audible tone emitted by the telephone handset. This FSK signal is converted to an electrical signal by the microphone. The incoming signal then is amplified by the buffer amplifier (U414, R501, R500, and R495), the gain of which is determined by R501 and R495.

The signal then goes to a three-stage stagger-tuned bandpass filter which amplifies in-band signals and attenuates out-of-band signals and noise, thus providing selectivity. The first stage of the filter (U413, R491, R494, R502, R473, C428 and C427) has a nominal center frequency of 2325 Hz, a gain of 5 and a Q of 5. The second stage of the bandpass filter (U407, R489, R490, R488, R450, C418, and C417) has a nominal center frequency of 1900 Hz, a gain of 5, and a Q of 5. The last stage of the filter (U406, R446, R429, R428, R445, C412, and C411) has a nominal center frequency of 2115 Hz, a gain of 1.4, and a Q of 5.

The composite filter response yields an overall gain of 25 dB with relatively linear phase characteristics and a 300-Hz bandwidth. The linear phase characteristics contribute to equal mark and space frequency delays.

The limiter (U406, R442, R444, CR408, CR409) produces a constant amplitude (±1.2 volts, peak-to-peak) input signal for the mark and space filters by limiting the positive and negative excursions of the output with CR408 and CR409.

The bandwidth of the incoming signal at 300 baud is 300 hertz, centered about the carrier frequency of 2125 Hz (1750 Hz for CCITT). To receive signals of this bandwidth, the mark filter is nominally tuned to 2275 Hz, and the space filter is tuned to 1975 Hz. Both filters have equal gains, and the envelope delay at the center frequency of each filter is equal.

The difference integrator circuitry determines which filter has the most output over a bit time. The

outputs of the mark and space filters are subtracted by CR413, R476, CR416, and R479 and by CR415, R481, CR414 and R474. When a mark is received, the output of U410 (pin 1) is in positive saturation; similarly, when a space is received U410 (pin 1) is in negative saturation. Under no-signal conditions, the output of U410 is zero.

The data filter stage, R455 and C413, form a low-pass filter which removes any carrier frequency signals still present on the output of the difference integrator. The remaining components of the data filter (U410, R454, and R453) constitute a comparator with hystersis. The output of U410 (pin 7) is in negative saturation for a mark and in positive saturation for a space.

3.12.1.1 Carrier Detect. The carrier detect circuit determines if an FSK signal is being received. The carrier detect circuit receives its input signal from the output of the difference integrator (U410, pin 1) which is +10 volts or -10 volts when a signal is received or zero volts when no signal is received.

Under a no-signal condition U404 (pin 1) is -10 volts since U404 (pin 2) is pulled to -12 volts through R423, and U404 (pin 3) is at zero volts. When the output of the difference integrator exceeds +2 volts, the input (U404, pin 2) becomes more positive than pin 3 (U404), and the output (U404, pin 1) switches to -10 volts.

Similarly, when the output of the difference integrator ranges between the negative saturation voltage of U410 (pin 1) and -5 volts, the noninverting input of the carrier detect op-amp (U404, pin 3) is more negative than the inverting input (U404, pin 2), so the output switches to -10 volts. To prevent a loss of carrier indication while receiving data during which the output of the difference integrator is switching between +10 volts and -10 volts, the voltage stored on C409 and C404 (in conjunction with the RC time constants of C409, R422, and R424 or C404, R402, and R403) are sufficient to prevent the output of U404 (pin 1) from switching to a no-carrier condition (+10 volts).

3.12.1.2 Carrier Detect Delay. The carrier detect delay circuit generates the appropriate energizing and deenergizing delays required by the terminal. A negative 10-volt signal from U404 (pin 1) indicates that a valid carrier is present. Since CR405 is reverse biased, C410 is charged to -10 volts through R426. R426 and C410 determine the energizing time of 3 to 6 seconds. When the voltage across C410 is less than the -7.5 volt threshold of the comparator (formed by U404, R404, R405, and R406), its output switches to +10 volts, indicating the presence of a carrier. When the output of the carrier detect circuit (U404, pin 1) is positive (+10 volts), C410 discharges through CR405 and R425. R425 and C410 determine the deenergizing time (typically 100 to 300 msec). When the voltage across C410 is more positive than -4 volts, the comparator output switches to -10 volts, indicating no carrier.

3.12.2 TRANSMITTER SECTION. The transmitter section consists of an FSK transmitter and transmit inhibit circuitry, a transmit level adjustment, and hybrid bridge circuits.

The FSK transmitter is a triangular-wave oscillator which oscillates at one of the two FSK frequencies selected by the digital transmit data signal. The transmit inhibit circuit is a low-pass filter which removes high order harmonics present in the triangular wave. The filter's output is disabled until a valid carrier signal is received. The low-pass filter output is connected through the output level adjustment to the hybrid bridge.

When the PWB is configured as an acoustic coupler (Model 745), the hybrid bridge is used as a buffer amplifier to drive the speaker. When the PWB is configured as a modem (Model 743 option), the hybrid bridge permits the FSK transmit data to be applied to the telephone line via the DT and DR leads. In the modem configuration the received FSK data also is present on the DT and DR leads since it is a two-wire full-duplex system. The hybrid bridge not only applies the received FSK signal to the receiver input (as indicated by the dashed line on Figure 3-26), but it also isolates the transmitter section from the receiver section.

For purposes of discussion, refer to Schematic 983842, sheet 7 in Appendix B and assume that the output of U412 (pin 7) of the FSK transmitter is at -12 volts. CR412 is reverse biased, and CR411 is forward biased. A -6.3 volt reference is established by CR420, CR417, and CR419. The constant negative voltage at the input of the integrator (U407, C416, and the series combination of R472 and R448) causes the output (U407, pin 7) to ramp linearly positive with time.

The rate at which the ramp rises is a function of the current flowing into the inverting input (pin 6) of U407. When the output passes +6.3 volts, the noninverting input of U412 is slightly positive because of the voltage divider formed by R487/R485 between the negative reference and U407 (pin 7).

The positive voltage at U412 (pin 2) causes the output to switch to +12 volts, and a +6.3 volt reference is established by CR421, CR417, and CR418 at the input to the integrator. The integrator now ramps linearly negative until the output is slightly less than -6.3 volts. The noninverting input of U412 is now slightly negative, so the output switches to -12 volts, and the cycle starts again.

In order to change the frequency of the oscillator, a shunt resistor (R447) is switched across the series combination of R472 and R448 by Q405. Q405 is switched on and off by the output level present at U405.

3.12.2.1 Transmit Low-Pass Filter. The triangular wave output of the transmitter section is altered using a low-pass filter to lower the distortion by attenuating all harmonics of the fundamental frequency. The output of the low-pass filter is held in positive saturation until a carrier signal is detected. Then Q404 is switched on and the low-pass filter output is enabled.

3.12.2.2 Transmit Level. The output of the low-pass filter is applied to the top of a 10k ohm potentiometer which determines the transmit level. U413 (pins 1, 2, and 3) forms a buffer to drive either the speaker (acoustic coupler) or the duplexer (modem).

The duplexer (U414, pins 5, 6, and 7; R496, R498, and R499) provides the appropriate driving and terminating impedances to match the modem to the telephone company's data access arrangement (DAA). The duplexer also provides isolation between the transmitter and receiver of the modem to prevent a strong transmitter signal from swamping a small received signal.

SECTION 4

MAINTENANCE

4.1 PREVENTIVE MAINTENANCE.

The TI Models 743/745 Data Terminals are designed and built to provide long term trouble-free operation under rigorous operating conditions. To ensure continuation of the highest performance levels, the machine should be cleaned at regular intervals. The printer mechanism and printhead should be kept clean and free of foreign objects.

To ensure that the printer mechanism continues to provide maximum print quality, the printhead should be cleaned periodically as follows: (Refer to Figure 4-1 for location of components).

1. Remove the thermal paper from the platen and paper chute. If necessary, cut the paper where it enters the chute. Press and hold the PAPER ADV key until the short piece exits the window/pinch roller.

2. Insert a sheet of good quality bond paper through the paper chute, around the platen, and under the window/pinch roller. Use the PAPER ADV key to advance the bond paper.

3. Type four to six lines on the bond paper.

NOTE

The thermal printer will not print visibly on conventional paper.

4. Press the PAPER ADV key to remove the cleaning paper and reload the thermal paper supply.

The printhead should be cleaned as instructed above each time a new roll of paper is loaded into the printer. Clean the printhead more often if the printed images start to fade as a result of residue accumulating on the printhead.

4.2 TROUBLESHOOTING.

Troubleshooting data terminal malfunctions is facilitated by use of the flow diagrams starting on page 4-10 to help localize failures to a particular assembly. When one or more subassemblies are removed during the troubleshooting process, each suspected subassembly should be reinstalled, one at a time, to verify it is indeed the cause of the failure. But in the case of a catastrophic failure, such as blown fuses, overheated or burned components, or other obvious physical defects, return the subassembly to the factory for repair and skip the verification step described above.

NOTE

The troubleshooting diagrams are intended for use by trained service personnel.

4.3 ADJUSTMENTS.

The Models 743/745 Data Terminals have only two field adjustments in normal use: print CONTRAST control and the coupler TRANSMIT LEVEL control. All other adjustments are completed at the factory and should not be changed.

4.3.1 PRINT CONTRAST. To adjust print image contrast, locate the CONTRAST potentiometer clearance hole on the right rear side of the inner cover. Insert a small screwdriver through the clearance hole in the inner cover.

a. To darken the printed image, slowly rotate the adjustment screw clockwise while printing characters from the keyboard until the desired contrast is achieved.

b. To lighten the printed image, rotate the adjustment screw counterclockwise.

4.3.2 ACOUSTIC COUPLER OR MODEM TRANSMIT ADJUSTMENT. This adjustment controls the audio level of the signal applied to the telephone line. The audio level is adjusted at the factory to produce -15 dBm (0 dBm = 1 milliwatt dissipated in a 600-ohm load) on the telephone line after passing through the telephone handset from the

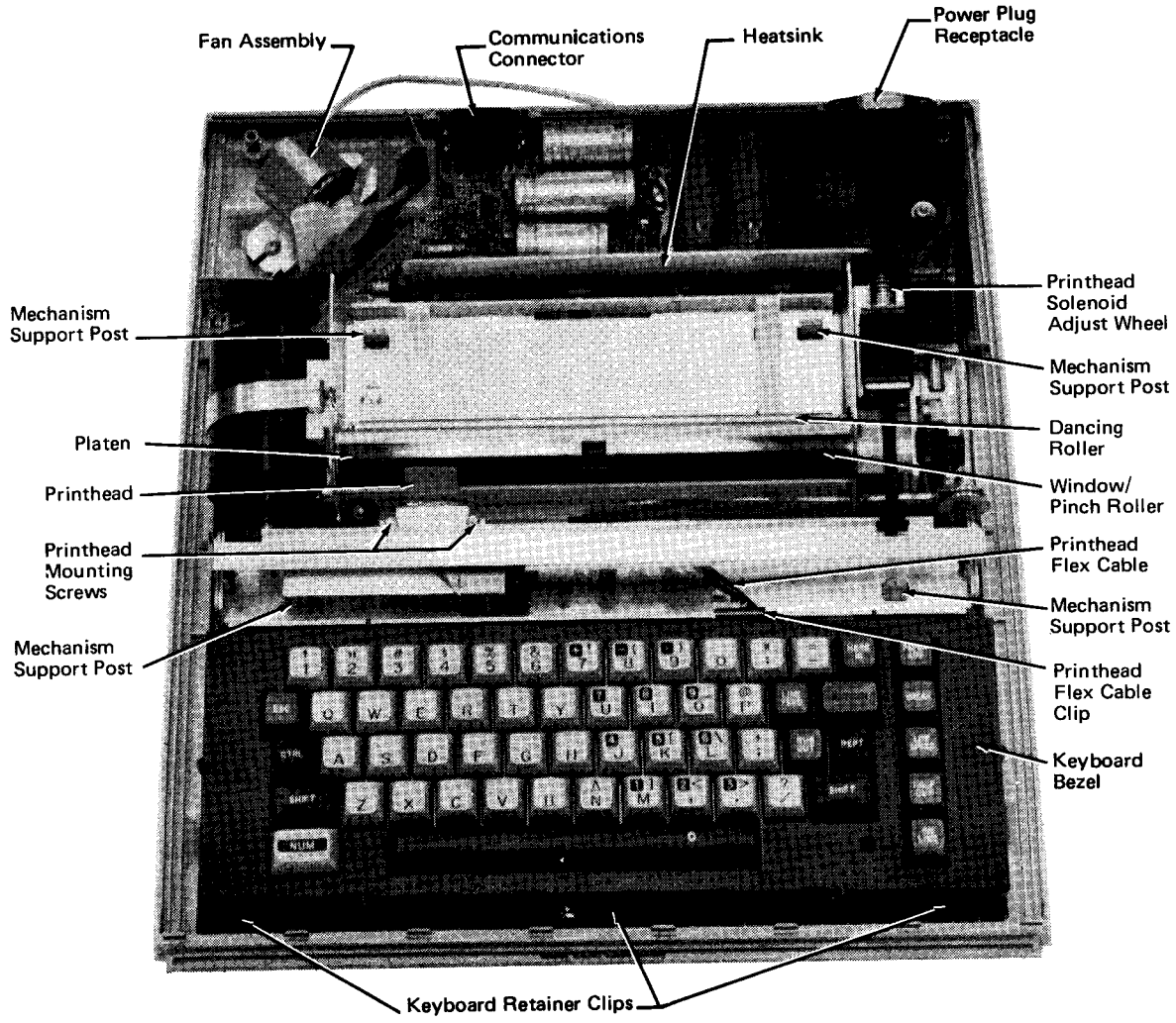

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Figure 4-1. Models 743/745 Component Locations

acoustic coupler or -9 dBm after passing through the CDT DAA from the modem. The level for an acoustic coupler may be adjusted to accommodate different handsets and telephone systems as follows:

a. Locate the TRANSMIT LEVEL potentiometer clearance hole on the left rear side of the inner cover. Insert a small screwdriver through the clearance hole in the inner cover.

b. Establish contact with a remote terminal.

c. Slowly rotate the TRANSMIT LEVEL adjustment screw clockwise until the terminal begins to receive garbled data from the remote source. Reduce the level slightly to achieve error-free reception.

4.3.3 PRINTER SUBSYSTEM ADJUSTMENTS. Under normal operating conditions, the closed-loop control circuitry of the printer subsystems will compensate for friction changes caused by wear, temperature variations, and component aging. No field adjustments are required except alignment of the thermal printhead after replacement of the mechanism or printhead assembly. If print quality deteriorates, do not attempt adjustments until the cause is fully understood.

4.3.3.1 Printhead Pressure Adjustment.

a. Remove the inner cover from the terminal as instructed in paragraph 4.4.3 below.

b. Manually position the printhead approximately 4 inches from the left margin.

c. Press the printhead solenoid (Figure 4-2) so that the solenoid is in the fully energized position.

d. Place a measuring scale along the solenoid linkage and measure the travel distance.

e. Adjust solenoid travel to at least 0.04 inch but no greater than 0.05 inch by rotating the knurled wheel at the rear of the solenoid. (Rotate the wheel clockwise to increase travel, counterclockwise to decrease travel.)

f. Repeat step e. several times to ascertain that the adjustment is correct.

4.3.3.2 Printhead Position Alignment. After installing a new printhead, check a printed line of zeroes (0). If the tops or bottoms of the "0" are missing anywhere along the printed line, correct as follows by repositioning the printhead carriage rod support bearings at each end of the mechanism (see Figure 4-3).

a. Loosen the screw that clamps the bearing to the frame. Move the bearing up if the bottom of the letters are missing; move down if the tops are missing. Independently adjust each end for the condition observed.

b. After adjusting, verify that the printhead carriage does not rub against the frame and that the top of the printhead does not interfere with the window/pinch roller.

c. Retighten the clamping screws and type several more lines of zeros to recheck printing quality. Readjust as necessary.

4.4 SUBASSEMBLY REPLACEMENT.

The modular-design subassemblies may be easily removed to facilitate repair or replacement. Figures 4-1, 4-2, and 4-3 show the important modules and their attachment and plug-in points. Detailed procedures are contained in the following subsections.

CAUTION

Disconnect the data terminal ac power cord from the wall receptacle before attempting any internal disassembly procedures.

4.4.1 OUTER COVER REMOVAL (MODEL 745 ONLY).

a. Place the terminal in its normal operating position on a table and release the four

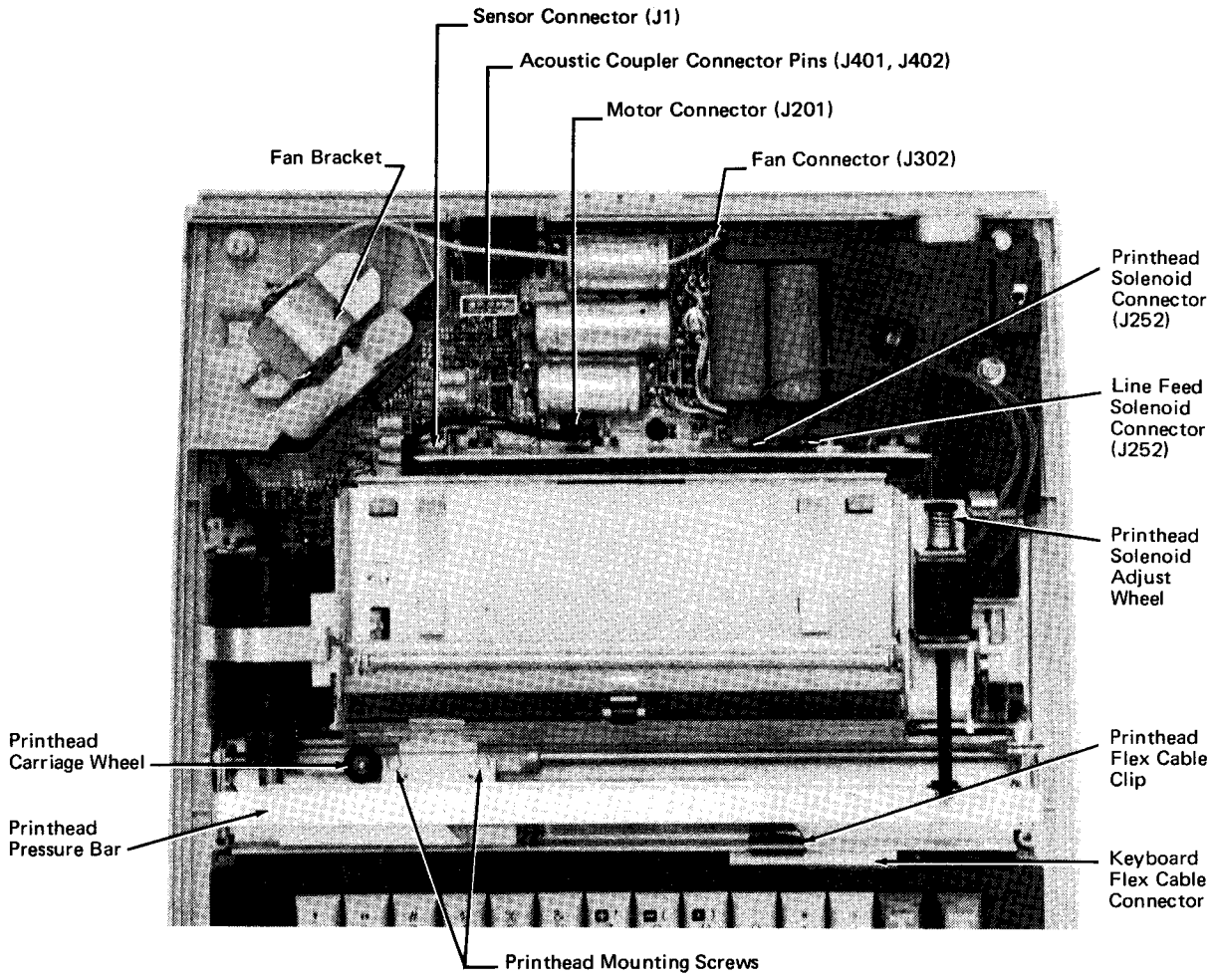

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Figure 4-2. Module Connectors and Printhead Components

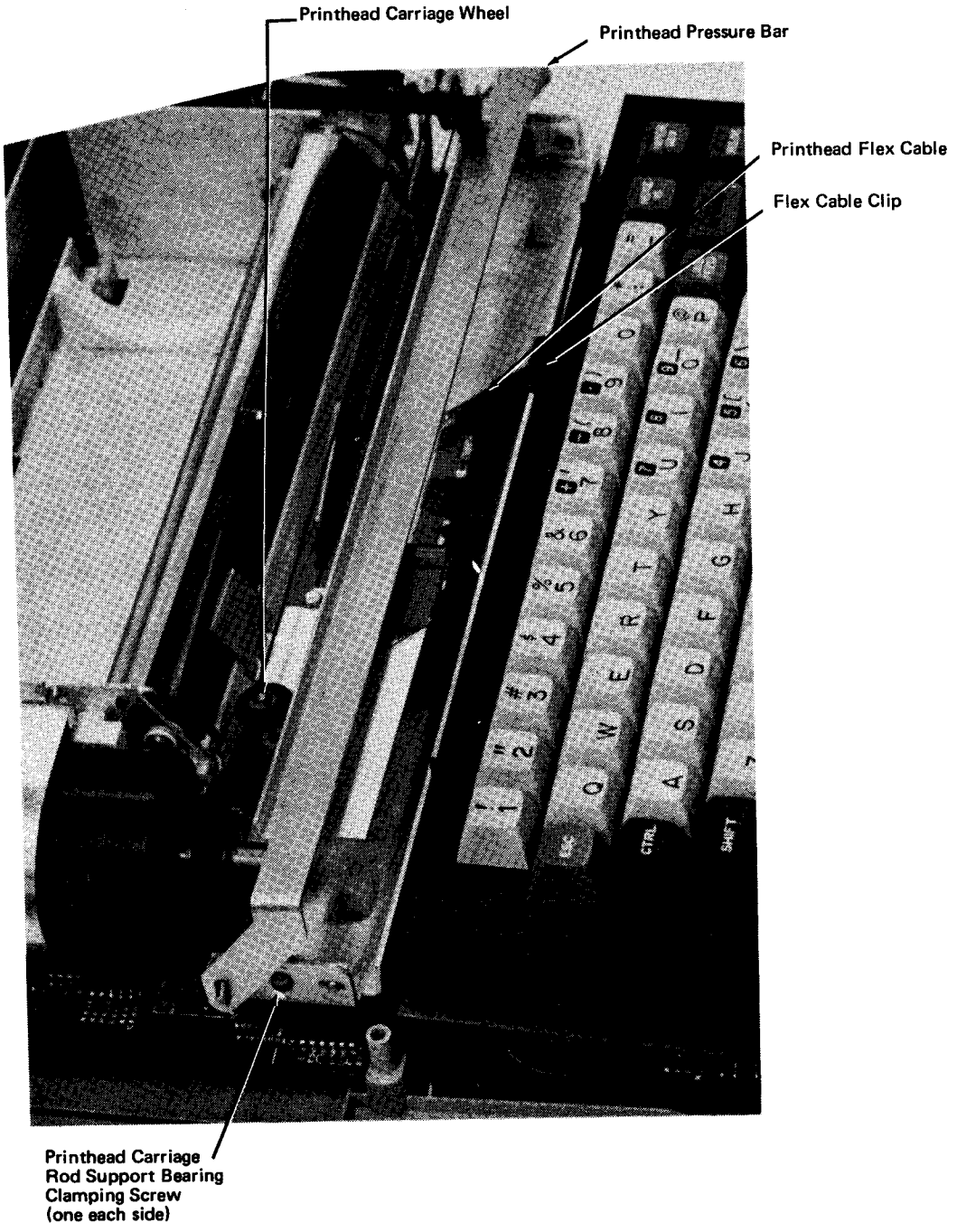

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Figure 4-3. Printhead Adjustment and Components

latches (two on each side) that secure the outer cover.

b. Slowly lift the outer cover up and off the terminal.

4.4.2 OUTER COVER INSTALLATION (MODEL 745 ONLY).

a. Position the bottom rear edge of the outer cover into the base rear groove at an angle and lower the outer cover, engaging the front edge and groove.

b. Close the four latches.

4.4.3 INNER COVER REMOVAL. (Both Models)

a. Unplug the ac power cord and communications cable (if present) from the rear of the terminal.

b. Place the terminal upside down on a padded work surface.

c. Remove the four 4-40 X 1 inch recessed screws which secure the base to the inner cover.

d. Manually grasp the cover and base together and turn the terminal right side up.

e. Lift up the inner cover about 3 inches and rotate toward the rear of the base; then unplug the microphone and speaker (Model 745 only) from the printed wiring board (PWB). The inner cover is then free.

4.4.4 INNER COVER INSTALLATION

a. Set the inner cover on its back at the rear of the data terminal.

b. Connect the two telephone muff assembly cables (Model 745 only) to the PWB.

c. Verify that the fan, mechanism, printhead, and keyboard cables are connected to their PWB connector pins.

d. Verify that the power cord receptacle is inserted in its groove in the base.

e. Lower the front of the inner cover, keeping cables and wires off the heatsink and away from the fan blade.

f. Guide the paper compartment rear wall (on the inner cover) into the slot at the bottom rear of the mechanism paper supply roll compartment.

g. Verify that the sides, front, and rear of the cover are engaged in their respective grooves in the base.

h. Grasp the cover and base together and turn the unit upside down.

i. Install four 4-40 X 1 inch screws through the base and tighten.

4.4.5 MECHANISM REMOVAL.

a. Check that the ac power cord and communications cable are unplugged from the rear of the terminal and remove the inner cover as instructed in paragraph 4.4.3.

b. Release the rear of the mechanism by pressing the two rear mechanism support posts (Figure 4-1) inside the paper supply compartment toward the front of the terminal.

c. Lift the rear of the mechanism sufficiently to clear the two rear posts and slide the mechanism forward to center the front posts in the mechanism slots.

d. Lift the entire mechanism approximately 4 inches and unplug the printhead connector (J101) from the PWB. The connector is located beneath the mechanism.

e. Disconnect the sensor and motor connectors, the two solenoid connectors, and the mechanism ground connector (located beneath the solenoids).

CAUTION

Grasp the connectors only by their plastic bodies when disconnecting. Do not pull on the wires. Needle-nose pliers may be used if more convenient.

f. Lift the mechanism from the terminal.

4.4.6 MECHANISM INSTALLATION.

a. Verify that the spring spacers are seated atop each of the four mechanism mounting posts.

b. Hold the mechanism above the PWB and connect the printhead connector to J101 on the PWB.

c. Route the motor and sensor cables under the mechanism and behind the left rear mounting post.

d. Connect the sensor cable (three wires) to J1 and the motor cable (four wires) to J201 on the PWB. Connect the printhead solenoid to J251 and the line feed solenoid to J252 on the PWB. Connect the mechanism ground cable to the tab located beneath the solenoids.

e. Lower the rear mechanism slots over the rear mounting posts and press down the mechanism to engage posts. Pull the mechanism forward to engage the front slots and mounting posts and press down to engage the front posts.

4.4.7 KEYBOARD REMOVAL.

a. Remove the inner cover as instructed in paragraph 4.4.3.

b. Remove the keyboard bezel (Figure 4-1) by relieving the snap-on posts on the left and right ends of the keyboard and bezel.

c. Press the keyboard assembly toward the rear of the terminal until the three front retainer clips are free of the keyboard.

d. Lift the front of the keyboard assembly up and slide the keyboard assembly forward off the terminal.

e. Disconnect the flexible cable from the top right rear of the keyboard.

4.4.8 KEYBOARD INSTALLATION.

a. Lay the keyboard in front of the terminal and connect the keyboard flex cable connector (Figure 4-2) to the keyboard.

b. Lift the keyboard and insert the rear edge into the three rear keyboard clips of the base while gently folding the cable beneath the keyboard.

c. Push the keyboard toward the rear of the terminal until the front clips of the base are clear. Lower the front edge of the keyboard and release, inserting the front edge into the three front clips.

d. Install the keyboard bezel by pushing down on the bezel until the two end posts snap into place.

4.4.9 FAN REMOVAL AND INSTALLATION.

a. Unplug the fan cable connector from the PWB at J302 (Figure 4-2).

b. Loosen both fan bracket screws.

c. Slide the fan motor and blades forward and out of the bracket.

To install the fan complete the above steps in reverse order. Rotate the fan blades manually to ascertain freedom of movement: move the fan as needed.

4.4.10 PWB REMOVAL.

a. Remove the inner cover (paragraph 4.4.3), keyboard (paragraph 4.4.7), mechanism (paragraph 4.4.5), and the mechanism mounting post springs and spacers.

b. Slide the ac power receptacle out of its mounting slots.

c. Remove the PWB by lifting it straight up.

4.4.11 PWB INSTALLATION. PWB installation is accomplished by reversing the order of removal.

CAUTION

Pay particular attention to the jumper plugs and the optional Answer-Back Memory (ABM) PROM to ensure PWB replacement configuration is accurate. If there is any question of the correct configuration, refer to Table 4-1 for the jumpers needed for a particular configuration. The ABM PROM is designed for each application, having unique ABM codes. See paragraph 4.4.14 for the ABM replacement procedure.

4.4.12 PRINTHEAD REMOVAL. Refer to Figures 4-1, 4-2, and 4-3 for location of printhead components.

a. Remove the inner cover as instructed in paragraph 4.4.3.

b. Remove the mechanism assembly from the terminal (see paragraph 4.4.5).

c. Remove the clip that secures the printhead flex cable to the front edge of the mechanism.

d. Loosen the two screws which retain the printhead to the printhead carriage assembly.

e. While lifting up on the printhead assembly, pull back on the printhead assembly.

f. Gently remove the printhead assembly. (If the printhead will not come off, repeat steps d and e).

4.4.13 PRINTHEAD INSTALLATION. Refer to Figures 4-1, 4-2, and 4-3 for location of printhead conponents.

a. Secure the printhead carriage wheel against the printhead pressure bar.

b. Slide the printhead into position onto the printhead carriage, ascertaining that the plastic pins fit into the holes in the printhead assembly.

c. Tighten the two screws that retain the printhead assembly.

d. Adjust printhead pressure as instructed in paragraph 4.3.3.1.

e. Lay the flex cable under the printhead with a rolling loop to the left as shown in Figure 4-3.

f. Attach the flex cable clip onto the mechanism and the flex cable.

g. Verify satisfactory operation between the printhead carriage wheel and the printhead pressure bar. Install the mechanism in the terminal as instructed in paragraph 4.4.5.

h. Adjust printhead position alignment as instructed in paragraph 4.3.3.2.

4.4.14 ABM REPLACEMENT. If the Answer-Back Memory option is installed, the ABM message is contained in an SN74S471 PROM. The PROM is factory-programmed and installed in network location U12 under the keyboard on the terminal electronics PWB. If replacement of the ABM PROM is required, a programmed replacement must be obtained from the factory or from a local field service office. Order an ABM kit (TI Part 983858-0001) with the terminal ABM message specified on the purchase order.

The ABM message contained in the terminal ABM PROM is recorded on a label attached to the inside surface of the inner cover. The ABM message must be at least one character and no more than 21 characters, consisting of any printable ASCII characters listed in Table 3-1.

4.4.15 POWER CORD STORAGE (MODEL 745). The ac power cord is stored on the inside of the outer cover on the portable model 745. Figure 4-4 and the following instructions describe cord storage.

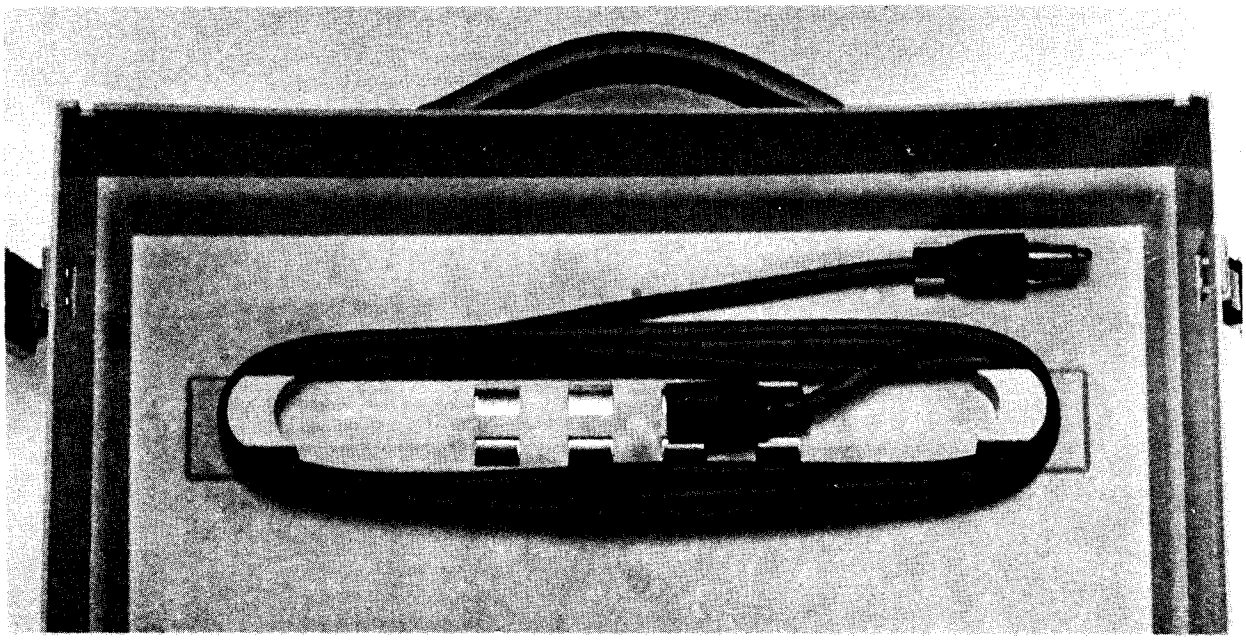
a. Attach the male power plug to its clip.

b. Wind the power cord counterclockwise around the winding posts.

c. Attach the female power plug to the nearest clip in the center of the coil of wire.

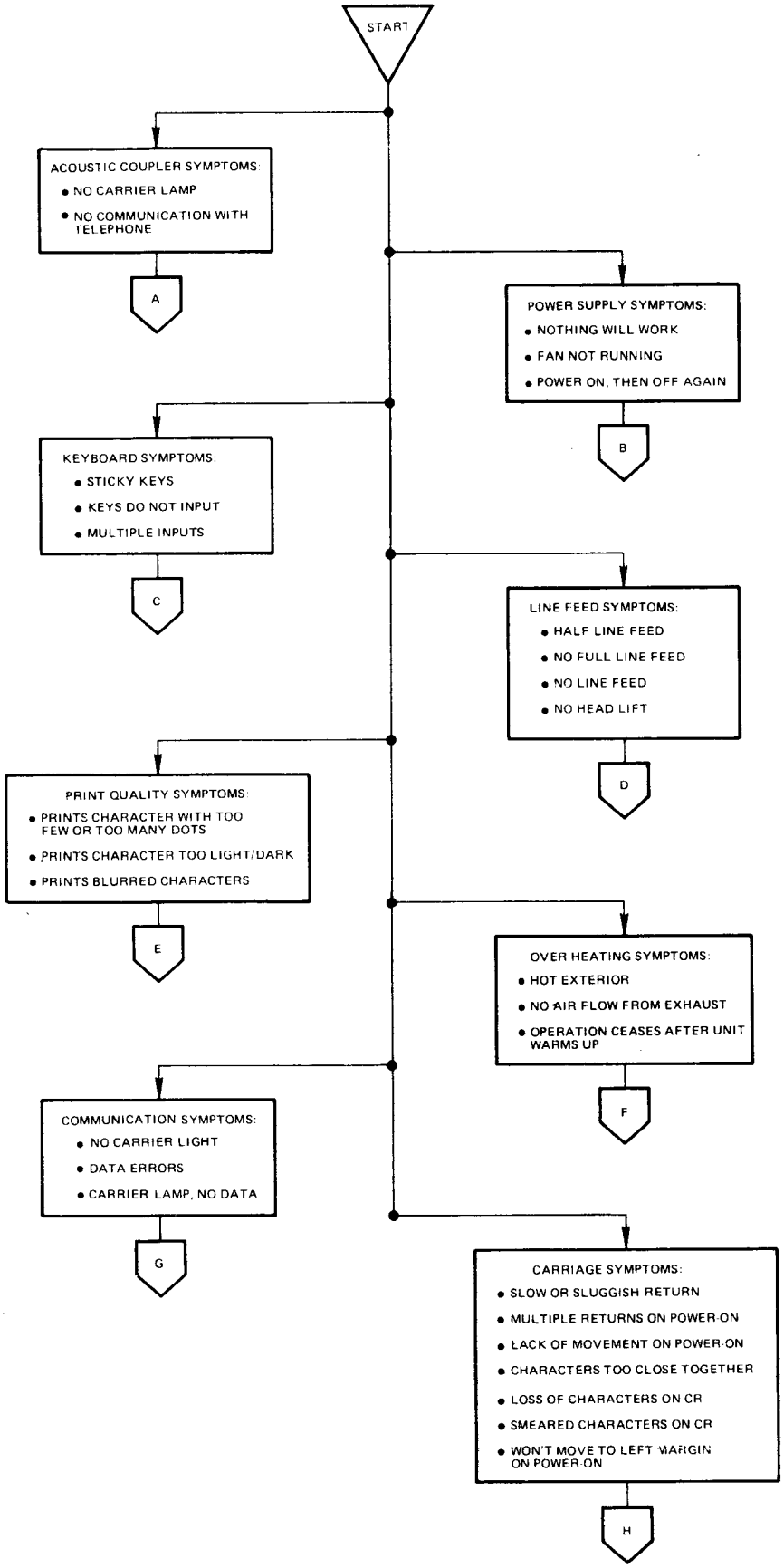
Table 4-1. Models 745/745 Optional Internal Electronics Jumpers

Use	Signals	PWB Jumper Points
POWER SUPPLY JUMPERS	+30V(SUPPLY) to +30V(LOAD) +5V(SUPPLY) to +5V(LOAD) +5V(SENSE) to +5V(LOAD) +12V(SENSE) to +12V(LOAD) +12V(SUPPLY) to +12V(LOAD) -5V(SUPPLY) to -5V(LOAD) -12V(SUPPLY) to -12V(LOAD)	E311-E314, E312-E315 E325-E326 E307-E308 E304-E305 E317-E318 E329-E330 E321-E322
STANDARD PORTABLE INTERNAL JUMPERS	XMTD to XMIT DATA RCVD to RCVDATA CDET to CARDET	E403-E406 E402-E405 E401-E404
743 KSR W/MODEM OPTION	(HYBRDG) to (MIC) SGND to DR	E415-E416 E413-E414
PARITY	EVEN (STANDARD) ODD MARK SPACE	(NO JUMPERS) E74-E76 E74-E76, E75-E77 E75-E77



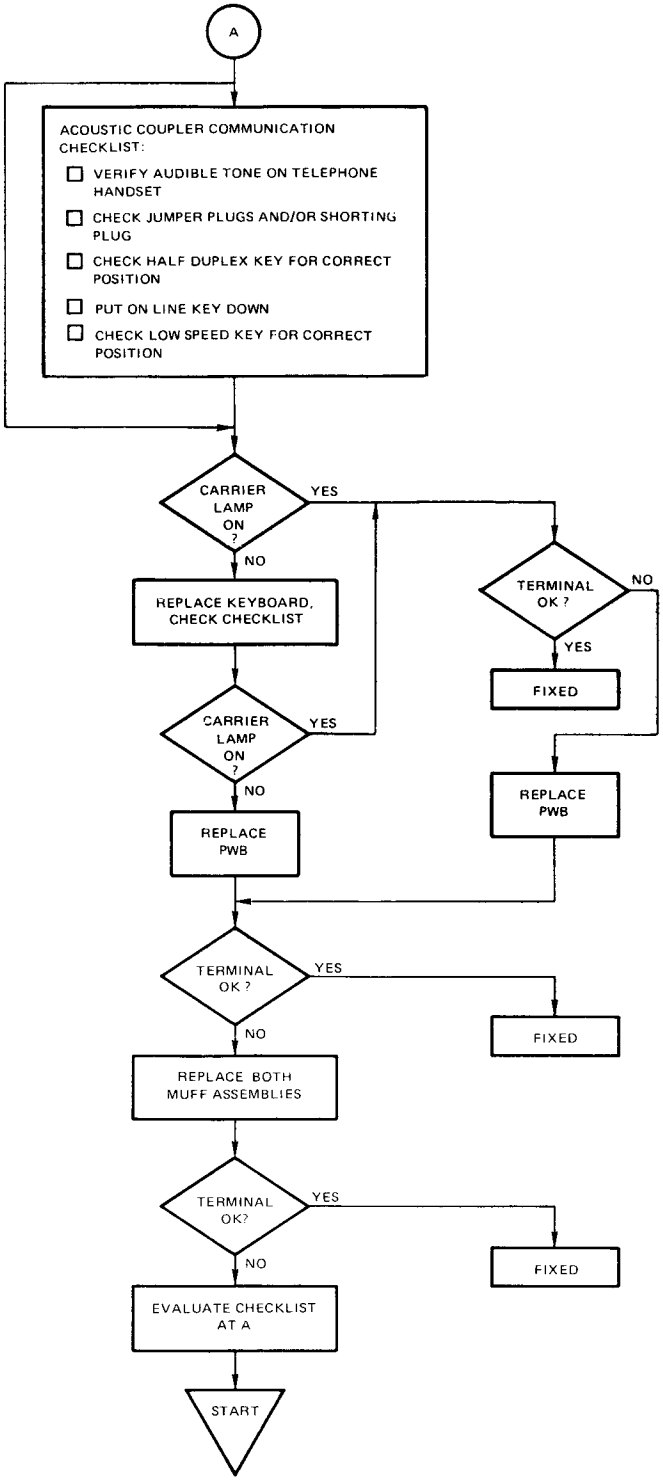
P1000030

Figure 4.4. Power Cord Storage in 745 Outer Cover



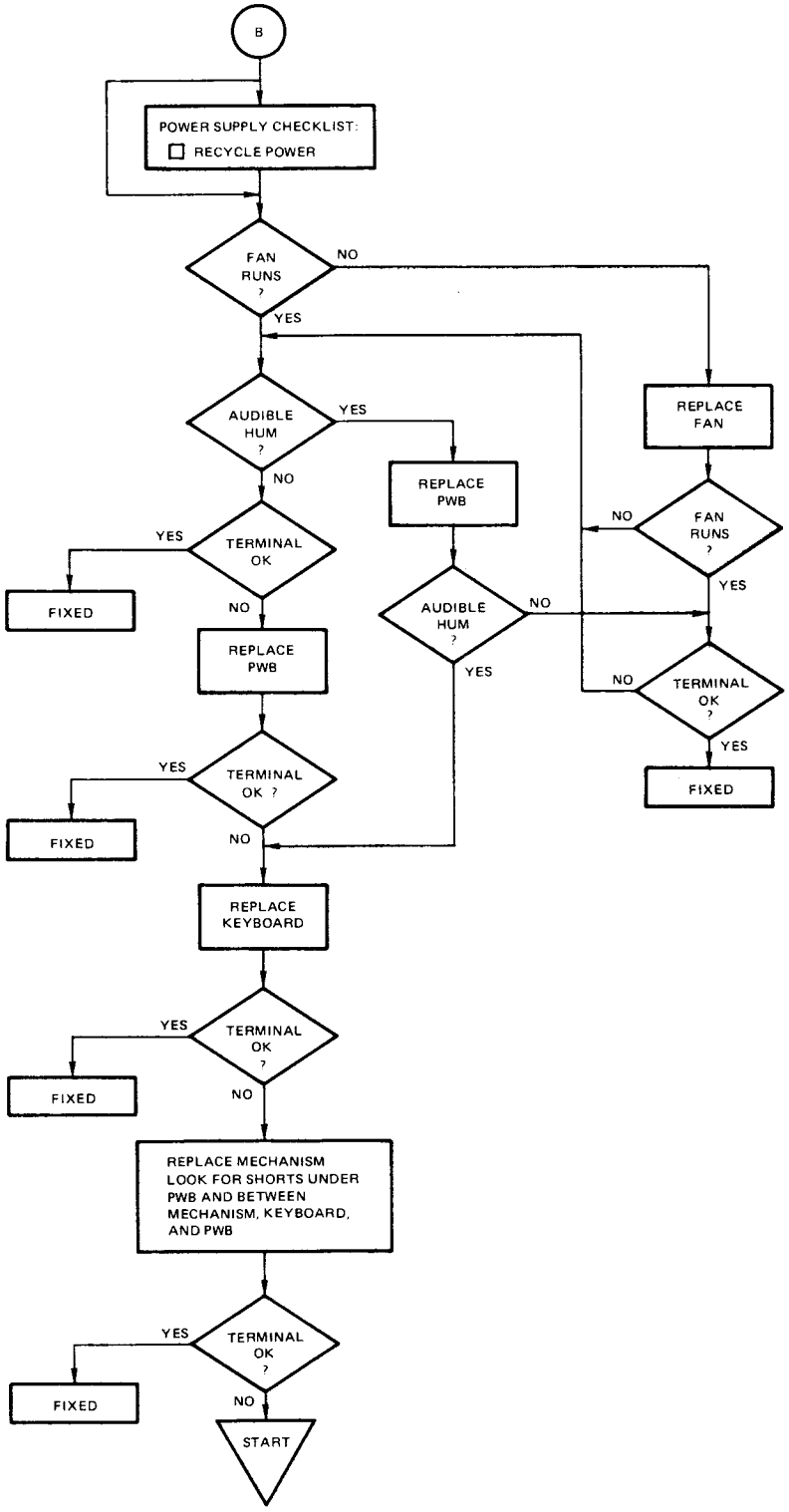
A0001104

Troubleshooting Flow Diagrams



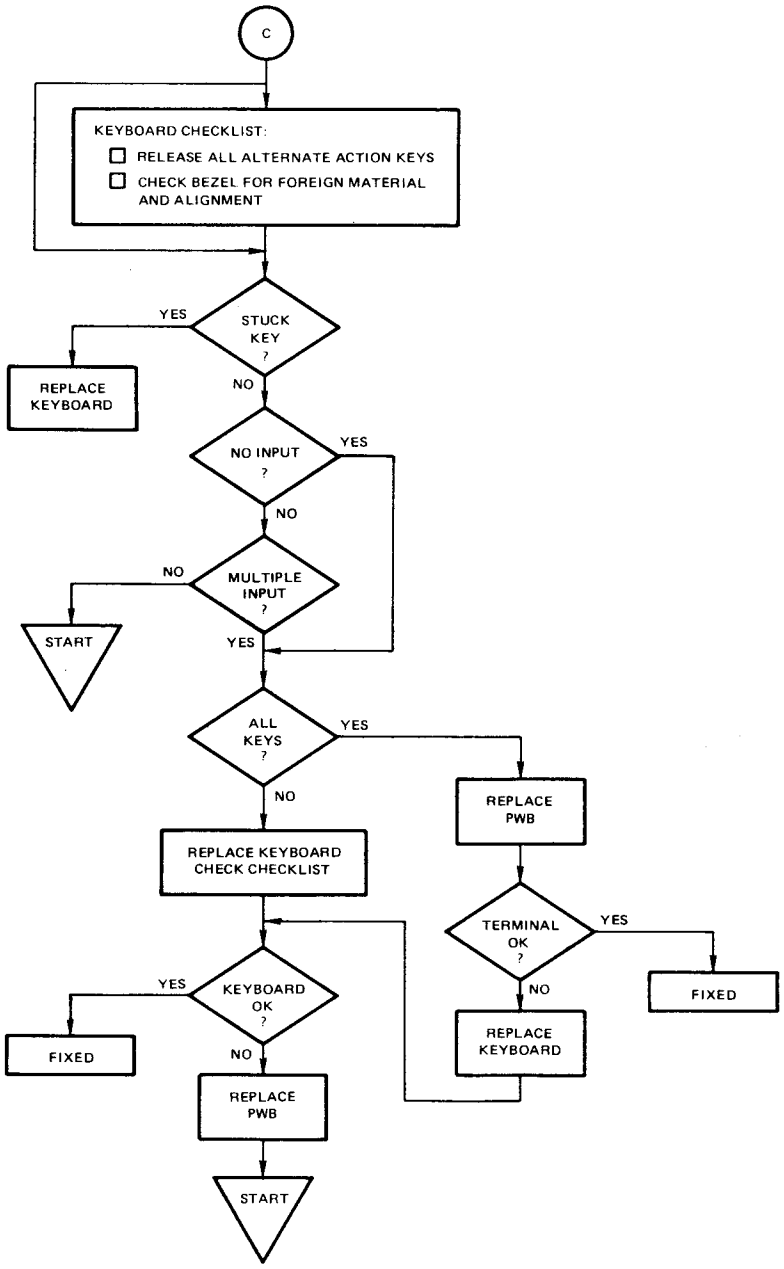
A0001105

Troubleshooting Flow Diagrams



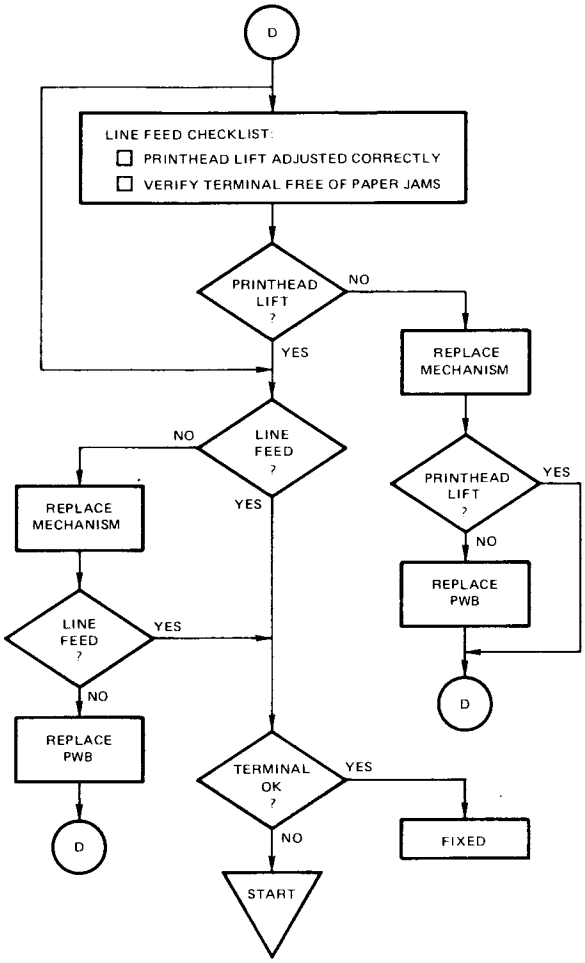
A0001106

Troubleshooting Flow Diagrams



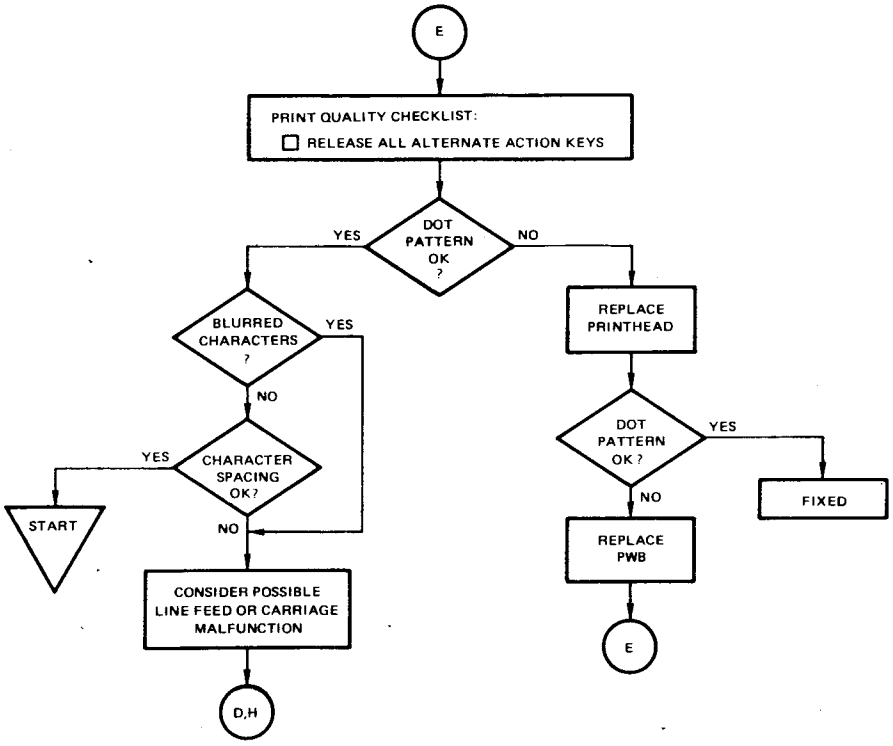
A0001107

Troubleshooting Flow Diagrams



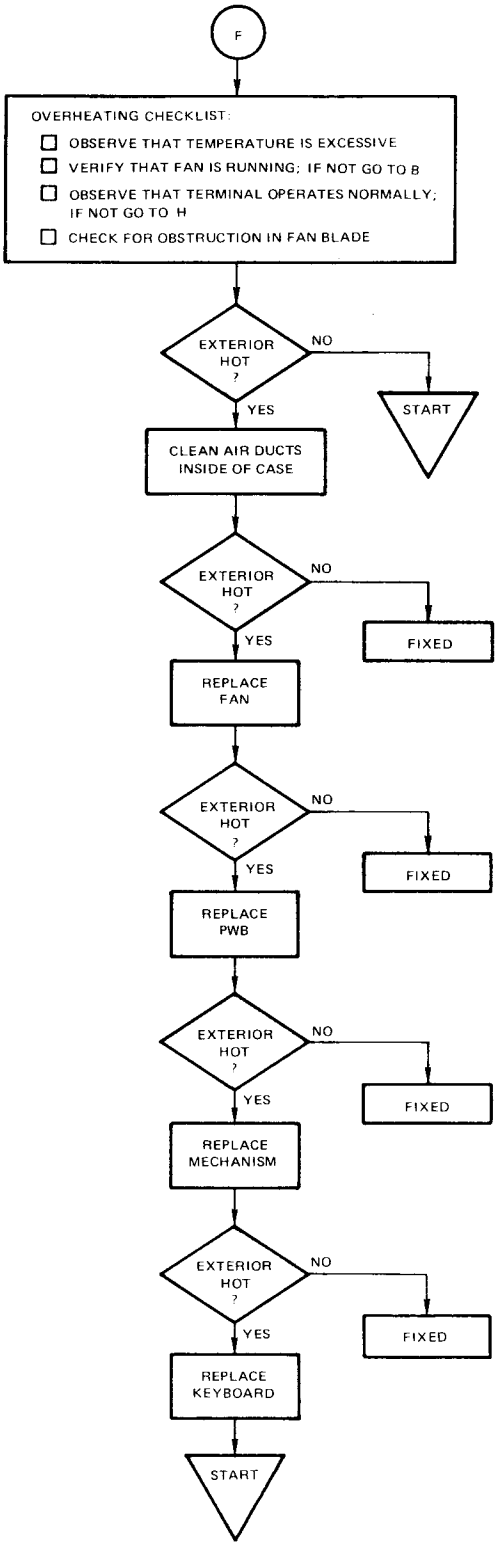
A0001108

Troubleshooting Flow Diagrams



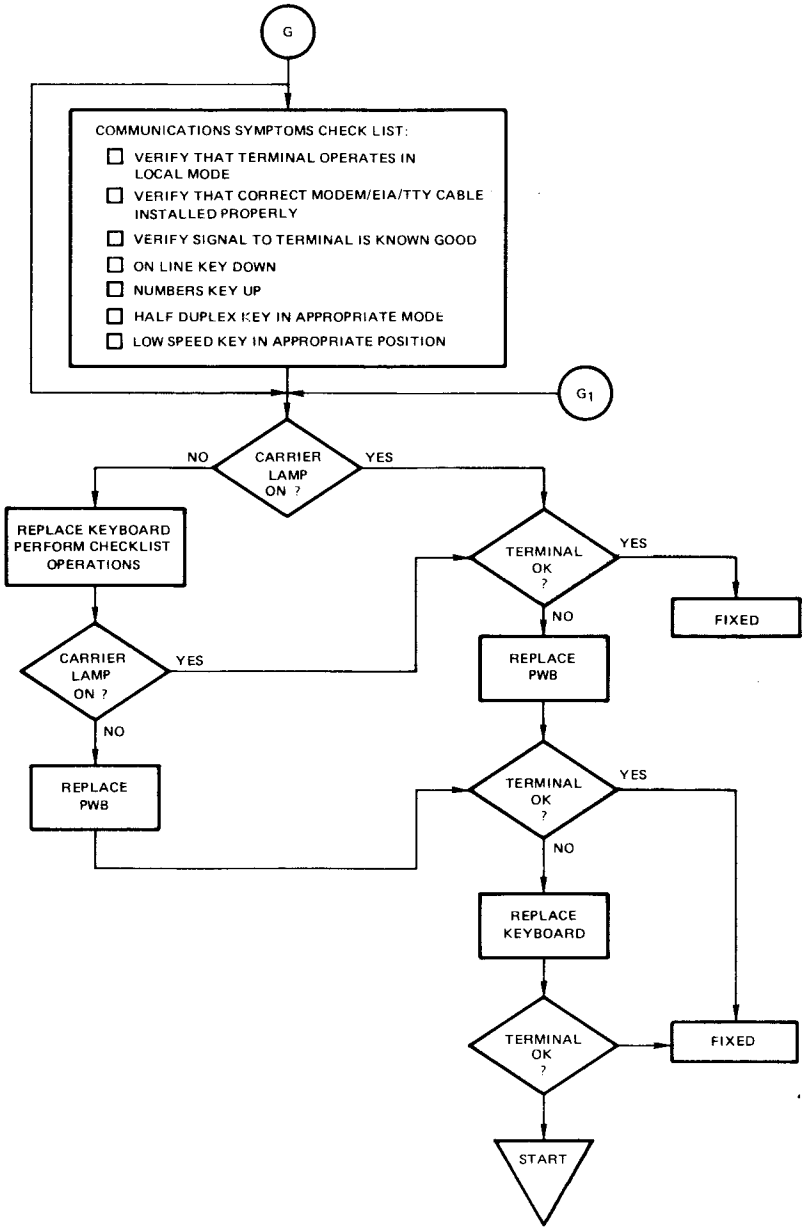
A0001109

Troubleshooting Flow Diagrams



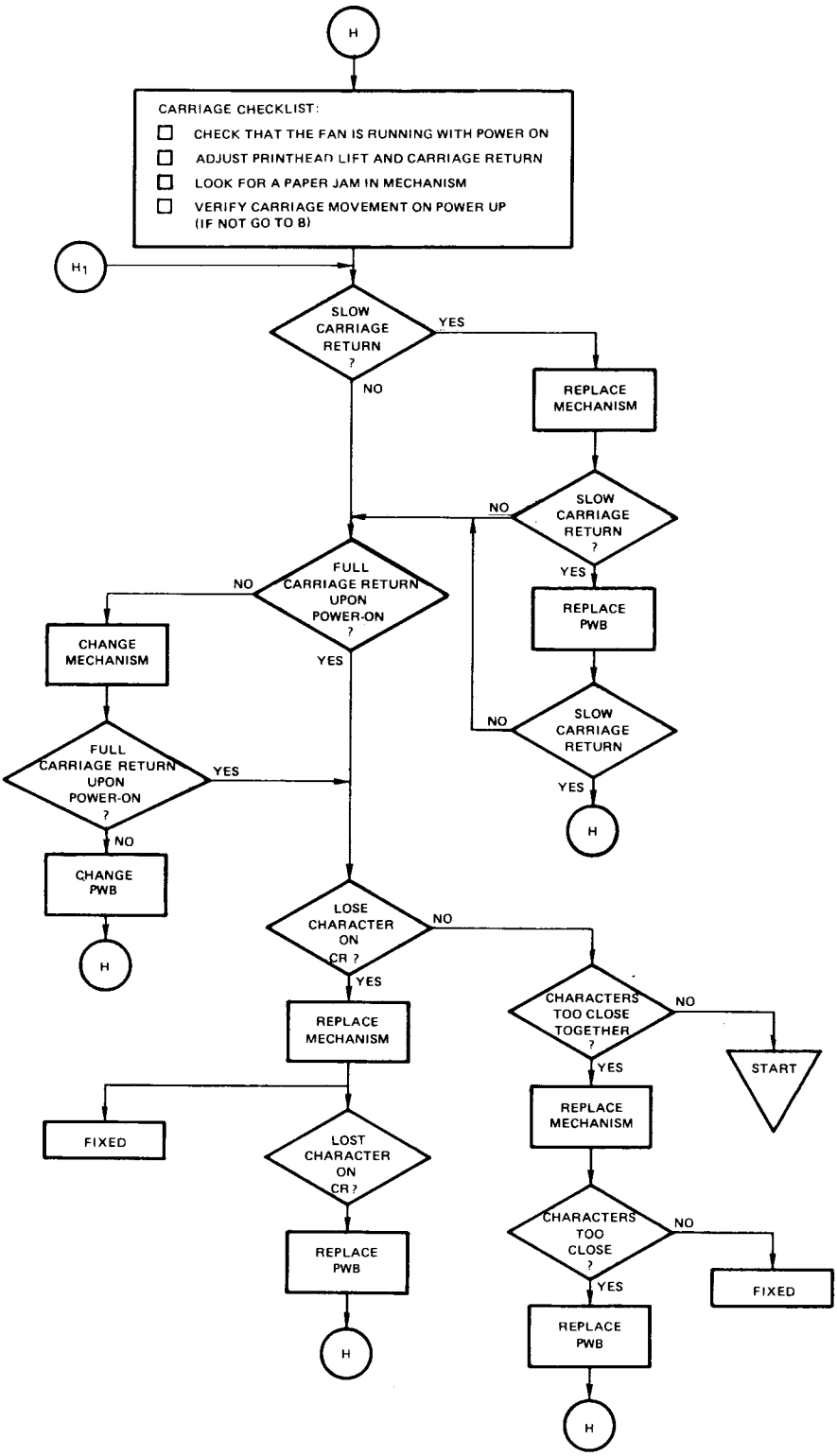
A0001110

Troubleshooting Flow Diagrams



A0001111

Troubleshooting Flow Diagrams



A0001112

Troubleshooting Flow Diagrams

APPENDIX A

ASSEMBLY DRAWINGS AND LISTS OF MATERIAL

NOTES CONTINUE:
10 TIGHTEN TO 3.5 IN-LBS
11 TIGHTEN TO 3.5 ± .5 IN-LBS
12 KEYBOARD AND INSERT ARE ON -0001 AND -0002 ONLY
13 SAFETY COVER (ITEM 27) INSTALLED ON PWB ASSY (ITEM 2) OVER POWER SUPPLY HIGH VOLTAGE AREA.

NOTES CONTINUE:
5 ADD THE FOLLOWING INFORMATION TO ITEM 15 PRIOR TO APPLICATION:
CASH-0001/-0003
MODEL 745 PORTABLE, STANDARD
50/60 HZ 983801-0001
115 V 100 W S/N 0Y 745

9 ATTACH GROUND CABLE FROM E34 TO ITEM 3 PRIOR TO INSTALLING ITEM 6.

NOTES: UNLESS OTHERWISE SPECIFIED
1 INSTALL FAN (ITEM 5) AND POSITION SO THAT THE BLADE IS CENTERED BETWEEN THE MOUNTING BRACKET (ITEM 4) AND THE PWB (ITEM 2).
2 POWER CORD (ITEM 8) SHOULD BE INSTALLED IN ITS STORAGE POSITION WITHIN OUTER COVER ASSY (ITEM 7). SEE VIEW G.
3 ENSURE W301 OF THE PWB ASSY (ITEM 2) IS INSTALLED IN RETAINING SLOTS (IN ITEMS 3 AND 6 BEFORE INSTALLING ITEM 16.
4 INSTALL NAME PLATE (ITEM 20) ON OUTER COVER (ITEM 7) AS SHOWN IN VIEW E.
5 INTERNAL JUMPER PLUGS; ITEM 11, INSTALLED ON -0001 ASSEMBLY ONLY.
6 APPLY ITEM 15 TO NON-TEXTURED AREA.
7 KEEP WIRES OUT OF FAN AND OFF HEATSINK WHEN INSTALLING ITEM 6.

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	409622(C) New for 11475	11-14-75	
		ADDED 5 & ASSOCIATE CABLE PICTORIAL		
	B	409913(C) ZE Rahrmann 12-24-75	1/21/76	
	C	410069 D EE Rahrmann 1-24-76	1-28-76	
		1/ADDED NOTE 13 ZONE D-7 CALLOUT D-7		
		2/ADDED NOTE 12 ZONE D-7 CALLOUT B-11		
		3/ADDED ITEMS 24,25 & 26 TO LM		
		4/CHANGED ITEM 11 IN LM P/N WAS 9782-83-0003		
	D	407955 (C) J Espinoza 3-27-76	3-31-76	
		1/CHANGED NOTE 11 WAS "TIGHTEN TO 5 ± 5 IN-LBS" ON LM'S -0001 & -0002 ITEM 8 WAS P/N 537408-1		
	E	4-5811(C) J Wheeler 5-5-76	5-5-76	
		IN BOTH LM'S ADDED ITEM 27 (-0001 & -0002)		
	F	408165 (C) Z Wheeler 5-27-76	5-27-76	
		NOTE 11 WAS "TIGHTEN TO 2 ± .5 IN-LBS"		
	G	415142(C) Espinoza & Wheeler 8-18-76		
		FID CHANGES HERE MADE TO REJECT -0003 & -0004 LM'S ADDED -0003 & -0004		

PART NUMBER	DESCRIPTION
983801-0001	DATA TERMINAL, 745 PORTABLE, STANDARD
983801-0002	DATA TERMINAL, 745 PORTABLE, W/FIA/AUX.CPLR
983801-0003	DATA TERMINAL, 745 PORT, STANDARD, W/O KYBD
983801-0004	DATA TERMINAL, 745 PORT, W/AUX.CPLR, W/O KYBD

TOP VIEW
WITH INNER COVER (ITEM 6)
& OUTER COVER (ITEM 7)
REMOVED FOR CLARITY

QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

P.A.R.T.S. LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.010 THRU .128	+.004 -.001	.281 THRU .390	+.009 -.001
.129 THRU .280	+.005 -.001	.391 THRU .500	+.009 -.001
.501 THRU .780	+.009 -.001	.781 THRU 1.000	+.010 -.001
		1.001 THRU 3.000	+.010 -.001

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES ANGLES ± 1°
  3 PLACE DECIMALS ± .010
  2 PLACE DECIMALS ± .02

MATERIAL:

DWN	DATE 6-7-75
CHK	9-16-75
ENGR	9/16/75
QA	9/17/75
MFG	9/17/75
CONTR NO	
DESIGN ACTIVITY RELEASE	11/4/75

983800 8732
NEXT ASSY USED ON
APPLICATION

SEQ NO	IDENT	F SPEC	NO	ADDITIONAL
	PROCESS			CLASSIFICATION

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

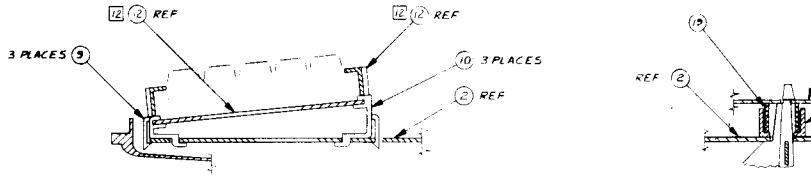
DATA TERMINAL,
745 PORTABLE

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983801

SCALE 1/2 REV G SHEET 1 OF 2

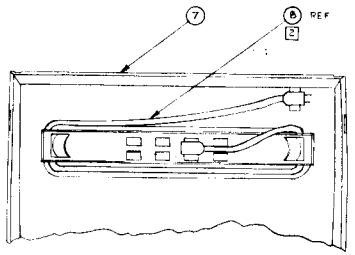
LM

983801 D

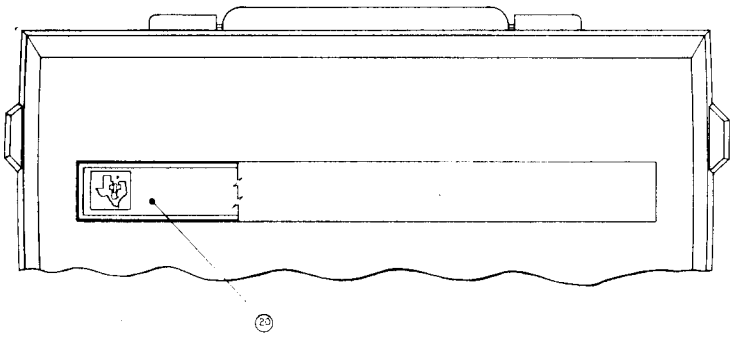


SECTION A-A
SCALE: FULL
SHT 1 ZONE B-6

SECTION B-B
SCALE: NONE
4 PLACES
(2@180° CW)
SHT 1 ZONE C-6

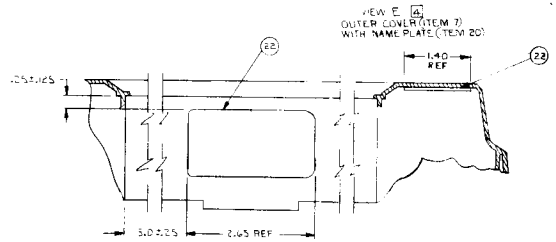


VIEW G
SCALE 1/2

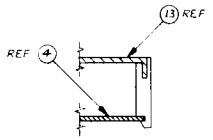


VIEW E 4
OUTER COVER (ITEM 7)
WITH NAME PLATE (ITEM 20)

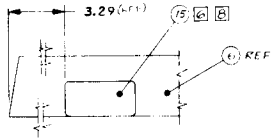
CABLE/JUMPER PLUG HOOK-UP SCHEDULE					REMARKS
		DESCRIPTION	START	FINISH	
	1	ITEM 5 FAN ASSY	P302	PWB - J302	
	2	(ITEM 3) PRINTHEAD	P101	PWB - J101	PRINTHEAD INCLUDED WITH ITEM 3
12	3	ITEM 4 KEYBOARD ASSY	W1P1	KYBD - W1P1	
	4	ITEM 8 POWER CORD	P301	PWB - J301	POWER CORD SHIPPED WOUND IN OUTER COVER ASSY, ITEM 7
	5	(ITEM 6) SPEAKER	P401	- J401	SPEAKER INCLUDED WITH ITEM 6.
	6	(ITEM 6) MICROPHONE	P402	- J402	MICROPHONE INCLUDED WITH ITEM 6
	7	(ITEM 3) MOTOR DRIVE	P201	- J201	INCLUDED WITH ITEM 3.
	8	(ITEM 3) HEAD LIFT SOL	P251	- J251	
	9	(ITEM 3) LINE FEED SOL	P252	- J252	
	10	(ITEM 3) SENSOR	P1	PWB-J1	
	11	ITEM 11 JUMPER PLUG	PWB-E401	PWB-E404	INTERNAL JUMPER PLUGS ITEM 11 INSTALLED ON -0001 ASSEMBLY ONLY
	12	ITEM 11 " "	PWB-E402	PWB-E405	
	13	ITEM 11 " "	PWB-E403	PWB-E406	



SECTION F-F
SCALE 1/1
ROTATED 90°CW



SECTION D-D
SCALE: NONE
2 PLACES
(1 OPPOSITE END
180° CW)
SHT 1 ZONE B-5



VIEW C-C
SCALE: NONE
SHT 1 ZONE C-4
ROTATED 90° CW

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983801
SCALE	REV G	SHEET 2

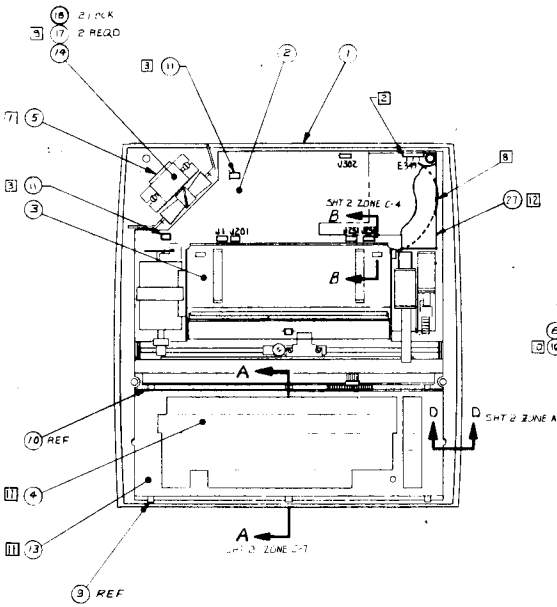
983801 D

A-4

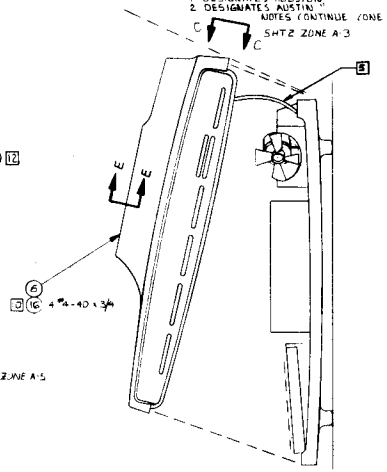
AUGUST 13, 1976 LIST OF MATERIAL

PART NUMBER	REV	DESCRIPTION
983801-0001	G	DATA TERMINALS,745 PORTABLE,STANDARD
983801-0002	G	DATA TERMINAL,745 PORTABLE,W/EIA/AUX.

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM	I
0001	00001.000	983807-0001	BASE ASSEMBLY,745	EA	
0002	00001.000	983841-0001 1222-3841-013	TERMINAL ELECTRONICS,743/745 W/MODEM	EA	
0003	00001.000	983833-0001 1222-3833-609	MECHANISM ASSEMBLY WITH PRINTHEAD	EA	
0004	00001.000	983992-0001 MIC- 58SD17-2	KEYBOARD,UNENCODED,LIM ASCII,743/745	EA	
0005	00001.000	983825-0001 1222-3825-000	FAN ASSY	EA	
0006	00001.000	983808-0001 1222-3808-000	COVER ASSEMBLY,INNER,WITH MUFFS	EA	
0007	00001.000	983809-0001	OUTER COVER ASSY	EA	
0008	00001.000	972674-0001	CABLE #18 AWG 3 COND POWER,ELECTRICAL	EA	
0009	00003.000	983905-0001	CLIP,KEYBOARD,FRONT	EA	
0010	00003.000	983904-0001	CLIP,KEYBOARD,REAR	EA	
0011	00003.000	972487-0001	JUMPER PLUG,CONNECTOR BLACK	EA	
0012	00004.000	983907-0001	SPACER,SPRING	EA	
0013	00001.000	983944-0001	BEZEL,KEYBOARD ROCKER SWITCH	EA	
0014	00001.000	983863-0001 1222-3863-005	BRACKET,FAN MOTOR	EA	
0015	00001.000	983908-0001	PLATE,IDENTIFICATION	EA	
0016	00004.000	972988-0019	SCREW 4-40 X .750 PAN HEAD CRES	EA	
0017	00002.000	972679-0009	SCREW #4-20 X 3/8"LG THD FORM,HEX	EA	
0018	00002.000	411101-0057 QPL- MS35335-57	LOCKWASHER # 4 EXTERNAL TOOTH CRES	EA	
0019	00004.000	419346-0342 SEE- TI DRAWING	HELICAL,COMPRESS SPRING	EA	
0020	00001.000	983914-0001	NAMEPLATE,OUTER COVER	EA	
0021	00001.000	984024-9701 1222-4024-000	MANUAL OPERATOR 745 DATA TERMINAL	EA	
0022	00001.000	960141-0001	LABEL,SERVICE	EA	
0023	REF	984026-9901	TEST PROC,SYSTEM TEST,743/745	EA	
0024	REF	993876-9901	TEST PROCEDURE,RUN-IN 743/745	EA	
0025	REF	984031-9901	TEST PROCEDURE,MANUAL 743/745	EA	
0026	00001.000	972603-0001 LAB- 70930138	PAPER,THERMAL PRINTING,WHITE	RL	
0027	00001.000	983911-0001	COVER,SAFETY	EA	
0028	00000.000	984015-0001	KEYBOARD,UNENCODED ALPHA	EA	
0028A			ALTERNATE FOR ITEM 4		
0029	00000.000	983989-0001	INSERT,KEYBOARD	EA	
0029A			ALTERNATE FOR ITEM 13,TO BE		
0029B			USED ONLY WITH ITEM 28		
9997	00007.160	239999-9997	COST, SUB-CONTRACT	EA	
9999	00001.000	239999-9999	COST, SHRINKAGE	EA	



TOP VIEW
WITH INNER COVER (ITEM 6) REMOVED FOR CLARITY



NOTES: UNLESS OTHERWISE SPECIFIED
1. INSTALL FAN (ITEM 5) AND POSITION SO THAT THE BLADE IS CENTERED BETWEEN THE MOUNTING BRACKET (ITEM 4) AND THE PWB (OPP'D).
2. INSTALL ISOLATOR (ITEM 7) IN THE FAN ASSY (ITEM 5) IS INSTALLED IN RETAINING CLIP (ITEM 8) BEFORE INSTALLING ITEM 16.
3. INTERNAL JUMPERS (ITEM 11) INSTALLED ON -0002 ASSEMBLY ONLY.
5. KEEP WIRES OUT OF FAN AND OFF HEATSINK WHEN INSTALLING ITEM 5.
6. ADD THE FOLLOWING INFORMATION TO ITEM 15 PRIOR TO APPLICATION:
DASH-0001/-0003
MODEL 743 KSR, EIA/TTY
50/60 HZ 983802-0001/-0003
115V 100W S/N XXYY743
DASH-0002/-0004
MODEL 743 KSR W/MODEM
50/60 HZ 983802-0002/-0004
115V 100W S/N XXYY745
*Y DESIGNATES PRODUCTION LOCATION:
1 DESIGNATES HOUSTON,
2 DESIGNATES AUSTIN"

NOTES CONTINUE ZONE B-1

PART NUMBER	DESCRIPTION
983802-0001	DATA TERMINAL, 743 KSR, EIA/TTY
983802-0002	DATA TERMINAL, 743 KSR, W/MODEM
983802-0003	DATA TERMINAL 743 KSR, EIA/TTY, W/O KYBD
983802-0004	DATA TERMINAL 743 KSR, W/MODEM, W/O KYBD

NOTES CONTINUE

J REV. CONT. ECN 415181
4) CHANGED FLAG NOTE [G] WAS:
ADD THE FOLLOWING INFORMATION TO IT IS PRIOR TO APPLICATION:
DASH-0001, MODEL 743 KSR, EIA/TTY, 50/60 HZ, 983802-0001, 115V, 100W, S/N XXYY
DASH-0002, MODEL 743 KSR W/MODEM, 50/60 HZ, 983802-0002, 115V, 100W, S/N XXYY
5) LM-1 1-2:
IT 4 P/N WAS 984015-1, IT 13 P/N WAS 7839 89-1
ADDED ITEMS 28, 28A, 29, 29A, & 29B

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	409621(C) ... ADDED [8] & ASSOCIATED CABLE PICTORIAL		
	B	#10030 (E) ... DELEATED (ITEM 20) P/N 983914-0001	11-10-75	
	C	409914(C) ... ON SH 2 N SECTION E-E SERVICE LABEL (ITEM 22) WAS LOCATED ON RIGHT SIDE, BELOW TOP SURFACE, 1.40 REF. SIDE OF LABEL CENTERED ON FLAT SURFACE	12-24-75	1/16/76
	D	410069 D ... 1 ADDED NOTE [5] ZONE D,6 CALLOUT ZONE D,7 2 ADDED NOTE [6] ZONE D,6 CALLOUT ZONE B,6 3 ADDED ITEMS 24, 25 & 26 TO LM 4 CHANGED ITEM 17 ON LM P/N WAS 972483-0003	1-24-76	1-26-76
	E	409883 (E) ... -0001 & -0002 ITEM 21 P/N WAS 984014-9701	1-30-76	2-3-76
	F	410071 (E) ... 1) NOTE 4 WAS [4] APPLY ITEM 15 TO NON TEXTURED AREA 2) SH 1 BOTH VIEWS AND SH 2 SECTION A-A REMOVED COVER SUPPORTING SHOULDER ON BASE PICTORIAL (FRONT & REAR OF BASE) 3) LM -0001 & -0002 ITEM 1 P/N WAS 983807-0001 4) LM-0001 & -0002 ITEM 6 P/N WAS 983808-0002	3-27-76	4-2-76
	G	407954(C) ... DELAG NOTE 10 WAS "TIGHTEN 5-5IN-LBS.2) LM -0001&0002 ITEM 8 P/N WAS 537408-0001, 3) -0002 TITLE WAS KSR W/MODEM, ADDED ITEM 27 P/N 983848-0001	4-11-76	4-19-76
	H	413911 (C) ... ON BOTH LM's ADDED ITEM 27 (-0001 & -0002)	5-16-76	5-19-76
	J	415181 (C) ... 1) ADDED -0001 & -0004 TO P/N - DESCRIPTION BLOCK 1 LM. 2) ADDED FLAG NOTE [11] & [12] 3) ZN C-6, 1 FLAG NOTE [8] CHANGE 3301 TO E 349 3 REV CONT., ZN B-1	8-18-76	

SEQ NO	IDENT	T-SPEC	NO	ADDITIONAL
		PROCESS		CLASSIFICATION

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY: MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.015 ± .004 / .139 ± .001	.189 ± .001 / .250 ± .001	.281 ± .005 / .390 ± .001	
.281 ± .005 / .750 ± .001	.281 ± .010 / 1.000 ± .001	1.001 ± .013 / 2.000 ± .001	

		8732	
NEXT ASSY	USED ON		
APPLICATION			

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES
ANGLES ±1°
2 PLACE DECIMALS ± .010
3 PLACE DECIMALS ± .002
MATERIAL:

DRAWN: [illegible] 6-17-75
CHK: [illegible]
ENGR: 7/6/75
QA: [illegible]
MFG: [illegible] 8-18-75
CONFIG MG:
DESIGN ACTIVITY RELEASE:

PARTS LIST

Z QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

TEXAS INSTRUMENTS INCORPORATED, Equipment Group, Dallas, Texas

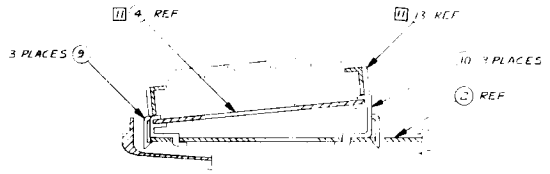
DATA TERMINAL, 743 KSR
743

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983802

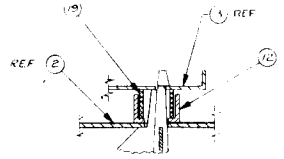
SCALE 1/2 | REV J | SHEET 1 OF 2

LM FILMED

983802 D

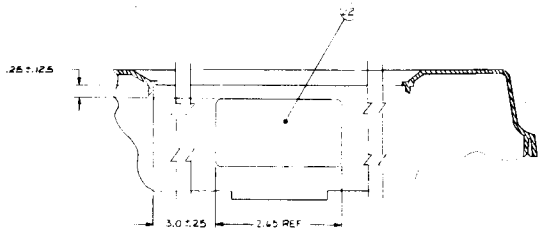


SECTION A-A
SCALE: FULL
SHT 1 ZONE B-6

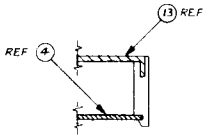


SECTION B-B
SCALE: NONE
4 PLACES
(2 @ 180° CW)
SHT 1 ZONE C-6

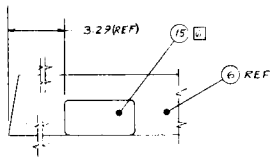
	CABLE HOOK-UP SCHEDULE			REMARKS
	DESCRIPTION	START	FINISH	
1	ITEM 5 FAN ASSY	P302	PWB - J302	
2	(ITEM 3) PRINTHEAD	P101	PWB - J101	PRINTHEAD INCLUDED WITH ITEM 3
11 3	ITEM 4 KEYBOARD ASSY	W1P1	KYBD - W1P1	
4	ITEM 8 POWER CORD	P301	PWB - J301	
5	(ITEM 3) MOTOR DRIVE	P201	- J201	INCLUDED WITH ITEM 3
6	(ITEM 3) HEAD LIFT SOL	P251	- J251	
7	(ITEM 3) LINE FEED SOL	P252	- J252	
8	(ITEM 3) SENSOR	P1	PWB-J1	
9	ITEM 11 JUMPER PLUG	PWB-E4/3	PWB-E4/4	JUMPER PLUGS, ITEM 11, INSTALLED ON - 0002 ASSEMBLY ONLY.
10	ITEM 11 JUMPER PLUG	PWB-E4/5	PWB-E4/6	



SECTION E-E
SCALE
ROTATED 90° CW



SECTION D-D
SCALE: NONE
2 PLACES
(1 OPPOSITE END
180° CW)
SHT 1 ZONE B-5



VIEW C-C
SCALE: NONE
SHT 1 ZONE C-4
ROTATED 90° CW

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983802
SCALE	REV J	SHEET 2

983802 D

A-7

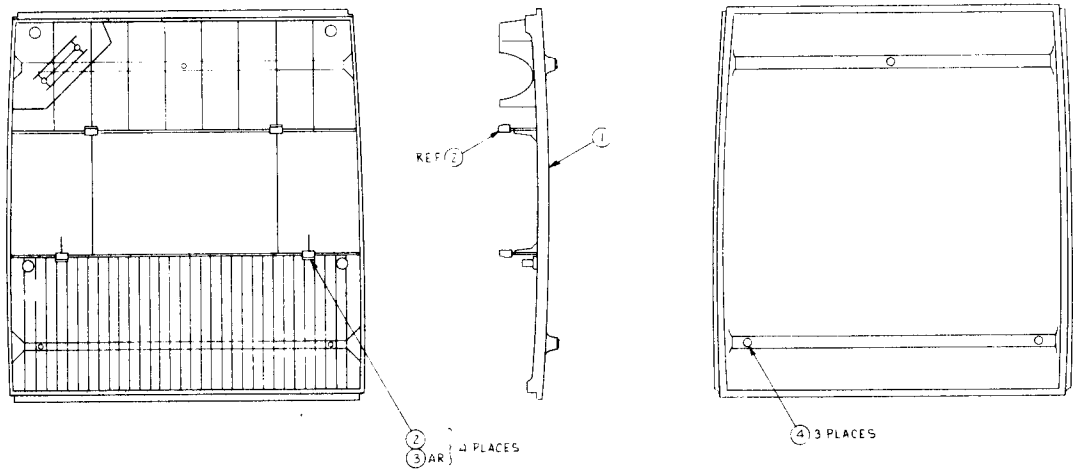
FILMED

AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER	REV	DESCRIPTION
983802-0001	J	DATA TERMINAL,743 KSR,EIA/TTY
983802-0002	J	DATA TERMINAL,743 KSR,W/MODEM

ITEM.	QUANTITY.	COMPONENT.	DESCRIPTION	UM	I
0001	00001.000	983838-0001	743 BASE ASSY	EA	
0002	00001.000	983841-0002	TERMINAL ELECTRONICS,743-EIA/TTY 1222-7000-004	EA	
0003	00001.000	983833-0001	MECHANISM ASSEMBLY WITH PRINTHEAD 1222-3833-609	EA	
0004	00001.000	983992-0001	KEYBOARD,UNENCODED,LIM ASCII,743/745 MIC- 585017-2	EA	
0005	00001.000	983825-0001	FAN ASSY 1222-3825-000	EA	
0006	00001.000	983859-0001	743 COVER ASSY	EA	
0008	00001.000	972674-0001	CABLE #18 AWG 3 COND POWER,ELECTRICAL	EA	
0009	00003.000	983905-0001	CLIP,KEYBOARD,FRONT	EA	
0010	00003.000	983904-0001	CLIP,KEYBOARD,REAR	EA	
0011	00002.000	972487-0001	JUMPER PLUG,CONNECTOR BLACK	EA	
0012	00004.000	983907-0001	SPACER,SPRING	EA	
0013	00001.000	983944-0001	BEZEL,KEYBOARD ROCKER SWITCH	EA	
0012	00004.000	983907-0001	SPACER,SPRING	EA	
0013	00001.000	983944-0001	BEZEL,KEYBOARD ROCKER SWITCH	EA	
0014	00001.000	983863-0001	BRACKET,FAN MOTOR 1222-3863-005	EA	
0015	00001.000	983908-0001	PLATE,IDENTIFICATION	EA	
0016	00004.000	972988-0019	SCREW 4-40 X .750 PAN HEAD CRES	EA	
0017	00002.000	972679-0009	SCREW #4-20 X 3/8"LG THD FORM,HEX	EA	
0018	00002.000	411101-0057	LOCKWASHER # 4 EXTERNAL TOOTH CRES QPL- MS35335-57	EA	
0019	00004.000	419346-0342	HELICAL COMPRESS SPRING SEE- TI DRAWING	EA	
0021	00001.000	984030-9701	MANUAL,MODEL 743 KSR DATA TERM OPR INSTR 1222-4030-000	EA	
0022	00001.000	960141-0001	LABEL,SERVICE	EA	
0023	REF	984026-9901	TEST PROC,SYSTEM TEST,743/745	EA	
0024	REF	993876-9901	TEST PROCEDURE,RUN-IN 743/745	EA	
0025	REF	984031-9901	TEST PROCEDURE,MANUAL 743/745	EA	
0026	00001.000	972603-0001	PAPER,THERMAL PRINTING,WHITE LAB- 70930108	RL	
0027	00001.000	983911-0001	COVER,SAFETY	EA	
0027	00001.000	983849-0001	CABLE ASSY,MODEM I/F 1222-3849-002	EA	
0028	00001.000	983911-0001	COVER,SAFETY	EA	
0028A			ALTERNATE FOR ITEM 4		
0028	00000.000	984015-0001	KEYBOARD,UNENCODED ALPHA	EA	
0028A			ALTERNATE FOR ITEM 4		
0029	00000.000	983989-0001	INSERT,KEYBOARD	EA	
0029A			ALTERNATE FOR ITEM 13,TO BE		
0029B			USED ONLY WITH ITEM 28		

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	41000-5(C) Ref Cards 12-8-75 ADDED REAR VIEW AND ITEM 4. WAS 1/1 SCALE	12/8/75	[illegible]



QTY REQ	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
2	1				

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .125	.004 .001	.126 THRU .250	.005 .001	.251 THRU .500	.006 .001
.501 THRU .750	.008 .001	.751 THRU 1.000	.010 .001	1.001 THRU 2.000	.012 .001

NEXT ASSY | USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES
ANGLES ± 1°
3 PLACE DECIMALS ± .010
2 PLACE DECIMALS ± .02

MATERIAL

	DATE
DWN	5-15-75
CHK	
ENGR	
QA	
APVD	5/15/75
CONTR NO	
DESIGN ACTIVITY RELEASE	

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas Texas

BASE ASSEMBLY

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983807

SCALE 1/2 REV A SHEET

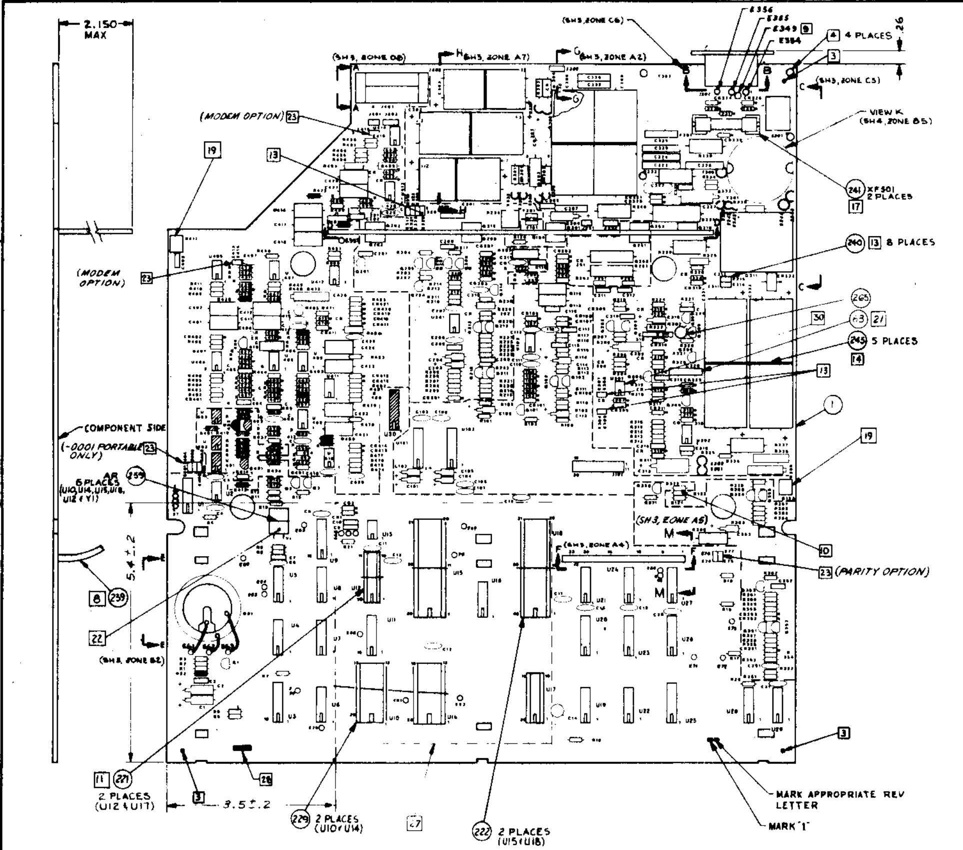
LM

983807 D

FEBRUARY 13, 1976 L I S T O F M A T E R I A L

PART NUMBER	REV	DESCRIPTION.....
983807-0001	A	BASE ASSEMBLY

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0001	00001.000	983980-0001	BASE-PRINTER CASE	EA
0002	00004.000	983988-0001	CAP,MECHANISM POST	EA
0003	AR	235374-1000	SOLVENT METHYL ETHYL KETONE 99% PRA PUR WHC-36035	GL
0004	00003.000	972678-0007	BUMPER,RUBBER	EA



-0001 & -8001 SHOWN

NOTES: UNLESS OTHERWISE SPECIFIED

1. CLINCHING COMPONENT LEADS OPTIONAL
2. DO NOT SOLDER ON COMPONENT SIDE
3. MASK TOOLING HOLES ON BOTH SIDES OF BOARD TO PREVENT SOLDER FROM ENTERING HOLES
4. MOUNTING HOLES FOR SNAP-IN SAFETY COVER (ITEM 232); INSTALL AFTER TEST
5. ▨ INDICATES COMPONENTS NOT USED
6. MAXIMUM LEAD LENGTH FROM CONDUCTOR SIDE OF BOARD IS .075
7. J301 (ITEM 255) MOUNTED FLUSH ON PWB (ITEM 1)
8. INSTALL WITH TIN PLATED CONTACT END OF CABLE IN BOARD
9. *SOLDER ITEM 244 TO E349 (CHASSIS GND).*
10. *R122 (ITEM 101) SELECTED AT UNIT TEST; (261, 316, 365, 432, 511, 619, 732, 887, 1100 OR 1400 OHMS).*
11. *U12 USED FOR OPTIONS; INSTALLED AT UNIT CONFIGURATION; TIE-DOWN USED ONLY IF NETWORK IS INSTALLED.*
12. MOUNT DISC (ITEM 223) TO SUPPORT (ITEM 231) USING SILICONE (RTV) (ITEM 254). 3 POSTS ON SUPPORT USED TO CENTER DISC. DISC SHOULD NOT TOUCH POSTS ON SUPPORT
13. INSTALL JUMPER PLUG (ITEM 240), ON PINS (ITEM 230) AT LOCATIONS (E304 & E305), (E311 & E314), (E312 & E315), (E307 & E308), (E317 & E318), (E321 & E322), (E325 & E326) & (E329 & E330)
14. TYWRAP KNOT SHOULD BE POSITIONED ON CONDUCTOR SIDE OF PWB (ITEM 1)
15. SOLDER WIRE TO HOLE IN GROUND PLANE ON PWB (E357)
16. ~~INSTALL PINS (ITEM 258) AT HOLES E64 THRU E77, E413 THRU E416, J1, J201, J251, J401, J402, J252, E401 THRU E406, E304, E305, E307, E308, E311, E312, E314, E315, E317, E318, E321, E322, E325, E326, E329, E330, & J302~~
17. INSTALL FUSE CLIP WITH END TANGS TO OUTSIDE OF FUSE POSITION
18. T301 LEADS SHALL BE RESTRAINED AS NECESSARY USING EXISTING TY-WRAPS
19. POT ADJUSTMENT SHOULD FACE EDGE OF PC BOARD
20. *TIGHTEN SCREWS ON Q311 HEATSINK TO 6 IN-LBS, TIGHTEN ALL OTHER SCREWS TO 3 IN-LBS.*
21. *C320 (ITEM 63) TO BE INSTALLED AT APPROXIMATLY 45° (TOWARD CR329).*
22. CRYSTAL Y1, (ITEM 220) IS TO BE INSTALLED SUCH THAT THE CRYSTAL CASE IS .030 (MIN) FROM THE NEAREST ETCH RUN.
23. JUMPERS INSTALLED AT UNIT CONFIGURATION IF REQUIRED.
24. ITEM 97, 98, 99, 100, 148, 149 & 150 TO BE INSTALLED WITH A CLEARANCE OF .020 (MIN) AND .120 (MAX) BETWEEN THE COMPONENT BODY AND THE PWB (ITEM 1)
25. MAXIMUM INSTALLED HEIGHT ON C323, C324, C328, C329, (ITEM 64) IS "0.87"
26. *SEAL THREADS ON ITEM 262 PER F-650 USING ITEM 267.*
27. *FOR -8001 & -8002 ONLY. ATTACH ITEM 292 TO AREA INDICATED ON CIRCUIT SIDE OF PWB (OPPOSITE COMPONENTS) WITH MASKING TAPE AFTER UNIT TEST.*

(NOTES CONT... ON SH 2)

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
A	REVISED W/CHG ENG DESIGN CHG		
	FORMAL RELEASE		
B	410002 (C) 11-10-75 — LM-0001 & -0002 1) ITEM 163 QTY WAS 2.0 2) ITEM 166 QTY WAS 1.0 3) ITEM 237 QTY WAS 10.0 4) ITEM 184 QTY WAS 1.0 5) DELETED R108 FROM 185B 6) DELETED R232 FROM 181A. 7) ADDED ITEMS 265, 266, 8) ADDED R232 TO 184A 9) ADDED R108 TO 166 LM-0001 10) ITEM 181 QTY WAS 15.0 LM-0002 11) ITEM 181 QTY WAS 10.0 12) BALOONED ITEM 265 AT Q307 (SHT 1 & 2) 13) BOXED-IN NOTE 13 14) ADDED NOTE 24 15) PROC. 1 WAS 2, 16) PROCESS 2 WAS 1 17) ADDED PROCESSES 3 AND 4.	11-21-75	
C	409688 (C) 12-9-75 — ITEM 2 QTY WAS 00002.000 & ADD DESCRIPTION RA30 ON DASH 1 ITEM 163 QTY WAS 00003.000 & OMIT DESCRIPTION R018 ON DASH 1 ITEM 160 QTY WAS 00001.000 ADD DESCRIPTION R018 ON DASH 1 ITEM 163 QTY WAS 00005.000 & OMIT DESCRIPTION R018 ON DASH 2 ITEM 160 QTY WAS 00001.000 & ADD DESCRIPTION R018 ON DASH 2 DELETED FLAT WASHER (IT 237) FOR J405 BOTH SIDES, ITEM 237 QTY WAS 18.	12-22-75	
D	409845 (C) 1-24-76 — 1) LM: -0001 ITEM 105A DELETED R429, ADDED R494, ITEM 106A DELETED R494, ADDED R429. ITEM 114A DELETED R446, ADDED R502... [illegible] ... WITH PWB (ITEM 1)	1/26/76	
E	410074 (C) 3-23-76 — (1) SH 1 ADDED "(MODEM OPTION)" TO NOTE 23 IN ZN D7 & C8. (2) NOTE 11 WAS "U12 USED FOR OPTIONAL ABM, INSTALLED FROM CONFIGURATION GUIDE AT UNIT ASSEMBLY." (3) NOTE 21 WAS: TIE DOWN WIRES (ITEM 259) ARE TO BE INSTALLED ON NETWORKS AFTER TEST. TIE DOWN WIRE FOR U12 IS TO BE INSTALLED ONLY IF NETWORK IS INSTALLED IN SOCKETS. (4) ADDED NOTE 26. (5) NOTE 10 WAS: SELECTED AT UNIT TEST (R122) (6) NOTE 9 WAS:		

(REVISIONS CONT ON SH 2)

PART NUMBER	DESCRIPTION
983841-8002	TERMINAL ELECTRONICS, 743-EIA/TTY
983841-8001	TERMINAL ELECTRONICS, 743/745 W/MODEM
983841-0002	TERMINAL ELECTRONICS, 743-EIA/TTY
983841-0001	TERMINAL ELECTRONICS, 743/745 W/MODEM

SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL
4		155-02	02	USE ITEM 254, SILICONE RUBBER AND ITEM 266, PRIMER
3	SLDR	127-02	00	
2	SLDR	124-02	00	
1	MARK	100-02	21	HGT. 09 CLR. BLK.

PROCESS — CLASSIFICATION

FOR CORRELATION TO GOVT/IND SPECIFICATIONS, SEE TI DRAWING 729467

NEXT ASSY	USED ON
983802	8132
983801	8132

APPLICATION

PARTS LIST

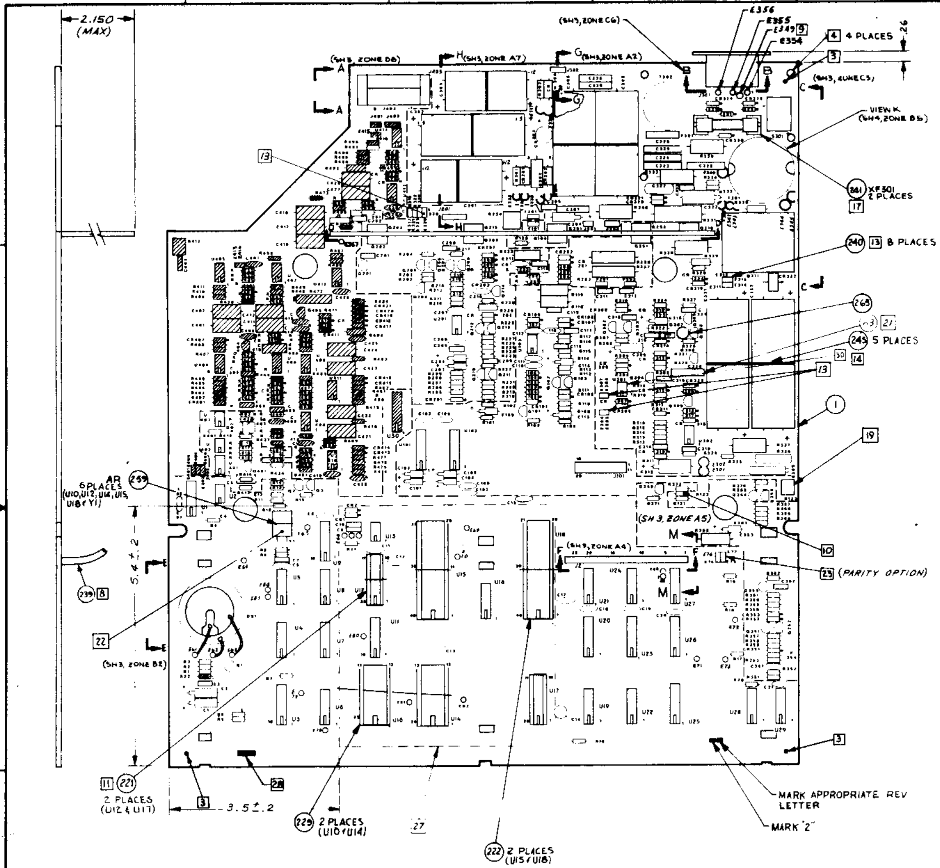
TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas, Texas

TERMINAL ELECTRONICS

SIZE D — CODE IDENT NO 96214 — DRAWING NO 983841 — REV L — SHEET 1 OF 4

LM

A-11



-0002 & -8002 SHOWN

NOTES CONTINUED FROM SH 1

28 STAMP OR MARK SITE CODE IN APPROXIMATE LOCATION INDICATED. THE CODE WILL INDICATE MONTH YEAR & SITE OF MANUFACTURE AS FOLLOWS:

XXXX
- SITE: 1 - HOUSTON, 2 - AUSTIN
- YEAR: LAST DIGIT
- MONTH: 01-09, 10-12

EXAMPLE: MAY, 1976-HOUSTON CODE # 0561

29 ON ITEMS 29 THRU 34, MINIMUM CLEARANCE TO PWB (ITEM 1) TO BE .1" AND MAXIMUM HEIGHT TO BE .35"

30 AFTER FLOW SOLDER & FINAL CLEANING ENCAPSULATE U301 WITH RTV (IT. 254). DO NOT USE PRIMER (IT. 266)

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	E	CONTINUED: SOLDER WIRING HARNESS (ITEM 244) TO E 349 (CHASSIS GND). (7) ADDED "IF REQUIRED" AT END OF NOTE 23. (8) SH 1 & 2: ZN B4 ADDED "(PARITY OPTION)" NEXT TO NOTE 23. (9) ADDED "(-0001 PORTABLE ONLY)" NEXT TO NOTE 23 IN ZN C8. (10) NOTE 20 WAS: TIGHTEN ALL SCREWS TO 6 IN/LBS. (11) ADDED NOTE 27. (12) SH 1 & 2, ZN B7 ADDED 5.4±.2 & 3.5±.2. (13) ZN D5, 1 & 2 ROTATED T301 APPROX 45° CCW. (14) SH 3: ADDED VIEW M-M. (15) ADDED TO VIEW E-E: "ARM WITH LOCATING TAB" (REVOLVED 180°) (16) CORRECTED SECTION J-J. (17) CORRECTED VIEW L-L & ADDED ITEM 268 (18) SH 4: NOTE ZN C7 WAS "WIRES UNDER TY-WRAP AND COMPONENT LEADS." (19) ZN D5 ADDED ITEM 245 & NOTE "DO NOT TIE TO ANY COMPONENT LEADS." (20) TABLE 1: E333 WAS E335. (21) E335 WAS E333. (22) ZN C5: E302 WAS E301. (23) E301 WAS E302. (24) L/M: -0001 ASSY R435, 437, & 497 WAS 1K. (25) ITEM 169 QTY 13 WAS 16. (26) ITEMS 169 C & D, DELETE R435, 437, & 497. (27) ITEM 175 QTY 6 WAS 3. (28) ITEM 175A ADDED R435, 437, 497. (29) L/M: -0002 ASSY R497 3.3 K WAS 1 K. (30) ITEM 169 QTY 16 WAS 17. (31) ITEM 169C DELETED R497. (32) 175 QTY 4 WAS 3. (33) ITEM 175A ADDED R497. (34) ITEM 263 P/N 993649-9901 WAS 993650-9901. (35) LM: -0001 & -0002 ASSY: ITEM 143 P/N 972228-0010 WAS 97222-0009. (36) ITEM 245 P/N 972632-0001 WAS 418212-0010. (37) ITEM 245 QTY 8 WAS 5. (38) ADDED ITEM 267, P/N 415804-0005, QTY AR, SEALING COMPOUND. (39) ITEM 256 P/N 972779-0001 WAS 802373-0020, DELETED "PLATE" FROM DESC. (40) ADDED ITEM 268, QTY 1, EA P/N 418730-0105 WASHER, NYLON. (41) ITEM 255 QTY 10 WAS 9. (42) ADDED ITEM 290, P/N 984023-9901, QTY REF, EA, LISTING, PWB INTERFACE SIGNALS, 743/745. (43) ITEM 101B RESISTANCE RANGE 261 Ω TO 1.4K Ω WAS 274 Ω TO 642 Ω. (44) ITEM 96 P/N 972630-0018 WAS 532439-0018. (45) ITEM 156, R313 WAS 972946-0031, 39 Ω. (46) ITEM 157, R314, WAS 972946-0033, 47 Ω. (47) ITEM 101 WAS 399999-9702, RESISTOR SELECTED. (48) L M: -8001 & -8002 ASSY, ADDED ITEM 291, P/N 983841-0001 (-0002 FOR -8002 ASSY), QTY 1, TERMINAL ELECT, 743/745. (49) ADDED ITEM 292, P/N 995377-0001, QTY 1, PACKING VELOFOAM. (50) ADDED ITEM 293, P/N LU995313-9901, QTY REF, PROCEDURE, PACKING. (51) SH 2: -0002 ASSY ZN C7 CROSS-HATCHED R430. (52) SH 1: -0001 ASSY ZN C7 CROSS-HATCHED R440. (53) SH 2: ZN D8 ADDED 2.150 (MAX). (54) SH 1 & 2: DELETED FLAG NOTE 21 IN ZN A8 & C8. (55) SH 2: DELETED FLAG NOTE 23 IN ZN C7 & C8. (56) CROSS-HATCHED JUMPER LOCATIONS E401-E404, E402-E405, & E403-E406. (57) SH 1 & 2: ADDED FLAG NOTE 13 TO ZN C4 & D6. (58) ADDED FLAG NOTE 21 TO C320 IN ZN C5. (58) SH 1: ZN A6 ADDED -8001. (59) SH 2: ADDED -8002 TO ZN A6. (60) SHT 1 & 2 ZN B5, ADD SECTION LINES M-M		
	F	407957 (B) J. Wachel 4-9-76. (1) -0001 IT 54 QTY WAS 39. (2) IT 54 H ADDED CR 3. (3) IT 230 QTY WAS 59. (4) IT 115 QTY WAS 1. (5) IT 115 A ADDED R354. (6) -0002 IT 54 WAS QTY WAS 21. (7) IT 54 E ADDED CR3. (8) IT 230 QTY WAS 59. (9) IT 115 ADDED P/N 539370-0473, QTY 1, RES. (10) IT 115A ADDED R354. (11) -0001 & -0002 IT 196 QTY WAS 2. (12) IT 196 A DELETED R354. (13) IT 90 QTY WAS 6. (14) IT 90A DELETED C352. (15) IT 82 QTY WAS 2. (16) IT 82 A ADDED C352.	4-24-76	
	G	409127 (C) 5-4-76. (1) -0001 IT 230 QTY WAS [illegible]. (2) -0001 IT 258 QTY WAS 0. VENDOR P/N WAS BFI-75483 001. (3) -0002 ITEM 230 QTY WAS 46. (4) 0002 IT 258 QTY WAS 0. VENDOR P/N WAS BFI 75483 001. (5) NOTE 16 WAS INSTALL PINS (ITEM 230) AT HOLES. (6) SHEET 3, VIEW G-G IT 258 WAS IT 230 59 PLACES FLAGNOTE 16.	[illegible]	
	H	408192 (E). (1) ITEM 249 WAS P/N 972988-0017 QTY 4 (2) ITEM 250 QTY WAS 5 (3) SHEET 3 SECTION J-J BALLOON ITEM (250) 4 40 x 3/8 WAS (249) 4-40 x 1/2 PH (4) NOTE 24 SHEET 1 .120 MAX WAS .062 MAX	6-12-76	

REVISIONS CONT ON SH 3

983841-0002 TERMINAL ELECTRONICS, 743 EIA/TTY
PART NUMBER | DESCRIPTION

QTY REQD 2	QTY REQD 1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE
.013 THRU .125 +.004 -.001; .126 THRU .250 +.005 -.001; .251 THRU .500 +.006 -.001
.501 THRU .750 +.008 -.001; .751 THRU 1.000 +.010 -.001; 1.001 THRU 2.000 +.012 -.001

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES ANGLES ±1°, 3 PLACE DECIMALS ±.010, 2 PLACE DECIMALS ±.02

MATERIAL

DWN | DATE
CHK
ENGR
QA
APVD
CONTR NO
DESIGN ACTIVITY RELEASE

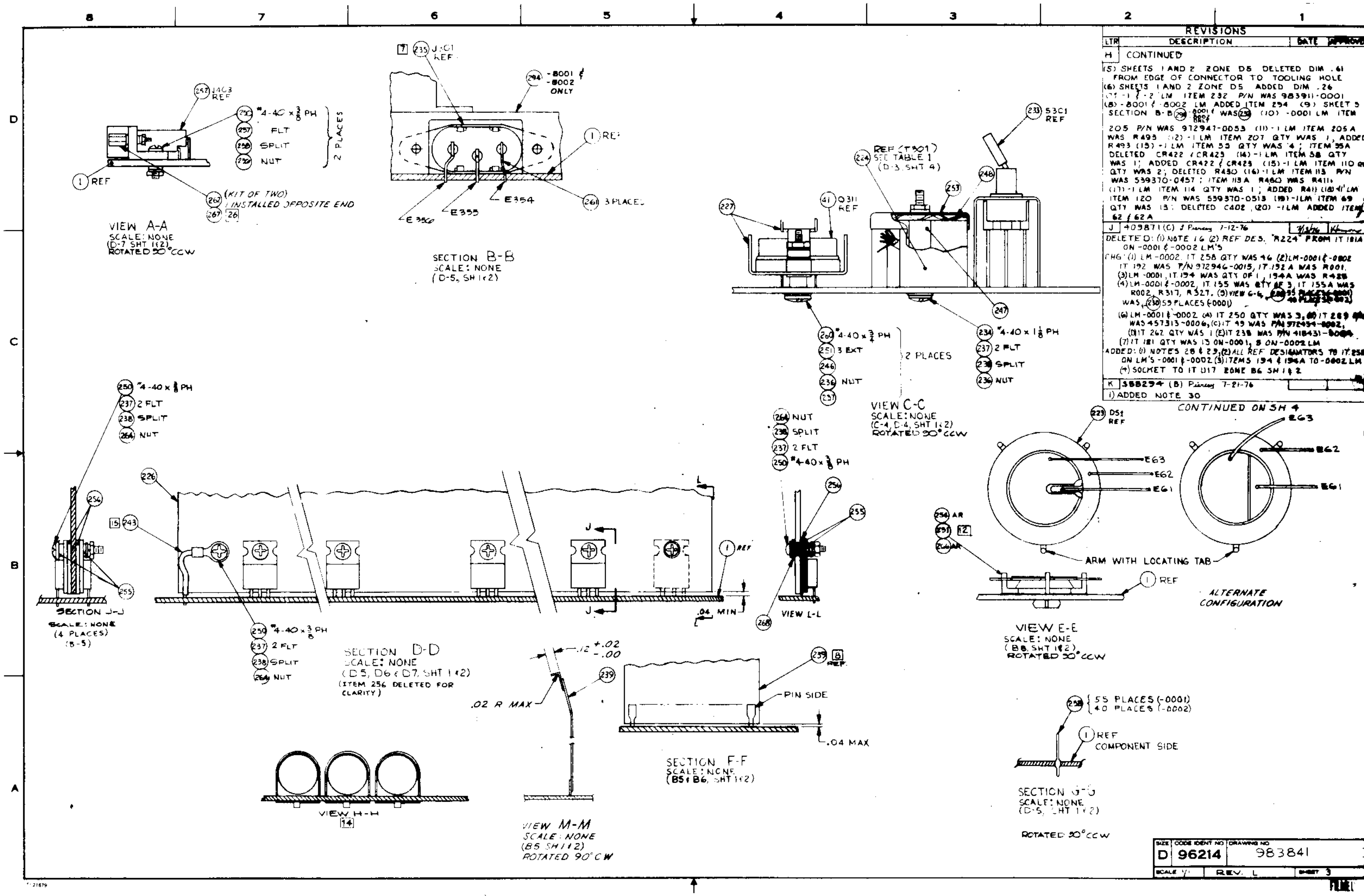
TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas Texas

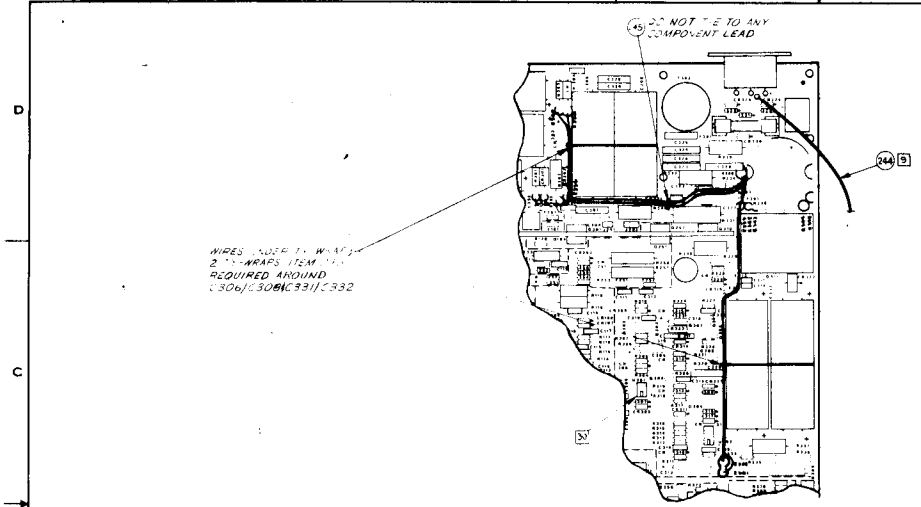
TERMINAL ELECTRONICS

SIZE D | CODE IDENT NO 96214 | DRAWING NO 983841
SCALE 1/1 | REV L | SHEET 2

MFD TI-7814E

D 983841


REVISIONS
LTR DESCRIPTION DATE APPROVED
H CONTINUED
(5) SHEETS 1 AND 2 ZONE D5 DELETED DIM .61 FROM EDGE OF CONNECTOR TO TOOLING HOLE
(6) SHEETS 1 AND 2 ZONE D5 ADDED DIM .26
(7) -1 & -2 LM ITEM 232 P/N WAS 983911-0001
(8) -8001 & -8002 LM ADDED ITEM 294 (9) SHEET 3 SECTION B-B 294 -8001 & -8002 ONLY WAS 255 (10) -0001 LM ITEM 205 P/N WAS 972941-0053 (11) -1 LM ITEM 205A WAS R493 (12) -1 LM ITEM 207 QTY WAS 1, ADDED R493 (13) -1 LM ITEM 55 QTY WAS 4; ITEM 55A DELETED CR422 & CR423 (14) -1 LM ITEM 58 QTY WAS 1; ADDED CR422 & CR423 (15) -1 LM ITEM 110 QTY WAS 2; DELETED R450 (16) -1 LM ITEM 113 P/N WAS 539370-0457; ITEM 113A R460 WAS R411 (17) -1 LM ITEM 114 QTY WAS 1; ADDED R411 (18) -1 LM ITEM 120 P/N WAS 539370-0513 (19) -1 LM ITEM 69 QTY WAS 13; DELETED C402 (20) -1 LM ADDED ITEM 62 & 62A
J 409871 (C) J Piersey 7-12-76
DELETED: (1) NOTE 16 (2) REF DES. "R224" FROM IT 181A ON -0001 & -0002 LM'S
CHG: (1) LM -0002 IT 258 QTY WAS 46 (2) LM-0001 & -0002 IT 192 WAS P/N 972946-0015, IT 192A WAS R001. (3) LM -0001, IT 194 WAS QTY OF 1, 194A WAS R428 (4) LM-0001 & -0002, IT 155 WAS QTY OF 3, IT 155A WAS R002, R317, R327. (5) VIEW G-G, 258 55 PLACES (-0001) 40 PLACES (-0002) WAS 230 59 PLACES (-0001)
(6) LM -0001 & -0002 (A) IT 250 QTY WAS 3, (B) IT 269 P/N WAS 457313-0006, (C) IT 49 WAS P/N 972454-0002, (D) IT 262 QTY WAS 1 (E) IT 238 WAS P/N 418431-[illegible]
(7) IT 181 QTY WAS 13 ON -0001, 8 ON -0002 LM
ADDED: (1) NOTES 28 & 29, (2) ALL REF DESIGNATORS TO IT 258 ON LM'S -0001 & -0002 (3) ITEMS 194 & 194A TO -0002 LM (4) SOCKET TO IT U17 ZONE B6 SH 1 & 2
K 388294 (B) Piersey 7-21-76
1) ADDED NOTE 30
CONTINUED ON SH 4
VIEW A-A
SCALE: NONE
(D-7 SHT 1 & 2)
ROTATED 90° CCW
(KIT OF TWO) INSTALLED OPPOSITE END
#4-40 x 3/8 PH
FLT
SPLIT
NUT
2 PLACES
REF
SECTION B-B
SCALE: NONE
(D-5, SH 1 & 2)
J-C1 REF
-8001 & -8002 ONLY
E350
E355
E354
3 PLACES
REF (T301)
SEE TABLE 1 (D-3, SHT 4)
53C1 REF
Q311 REF
#4-40 x 3/8 PH
3 EXT
NUT
2 PLACES
#4-40 x 1 1/8 PH
2 FLT
SPLIT
NUT
VIEW C-C
SCALE: NONE
(C-4, D-4, SHT 1 & 2)
ROTATED 90° CCW
DS1 REF
E63
E62
E61
ARM WITH LOCATING TAB
AR
ALTERNATE CONFIGURATION
VIEW E-E
SCALE: NONE
(B8 SHT 1 & 2)
ROTATED 90° CCW
SECTION J-J
SCALE: NONE
(4 PLACES)
(B-5)
SECTION D-D
SCALE: NONE
(D5, D6 & D7, SHT 1 & 2)
(ITEM 256 DELETED FOR CLARITY)
.04 MIN
VIEW L-L
.12 +.02 -.00
.02 R MAX
VIEW M-M
SCALE: NONE
(B5 SH 1 & 2)
ROTATED 90° CW
VIEW H-H
PIN SIDE
.04 MAX
SECTION F-F
SCALE: NONE
(B5 & B6, SHT 1 & 2)
55 PLACES (-0001)
40 PLACES (-0002)
REF COMPONENT SIDE
SECTION G-G
SCALE: NONE
(D-5, SHT 1 & 2)
ROTATED 90° CCW
SIZE D
CODE IDENT NO 96214
DRAWING NO 983841
REV. L
SHEET 3



VIEW K-K
WIRE ROUTING VIEW(T-301) FOR-0001 AND0002 SEE TABLE I

TABLE 1

NO	COLOR	FROM	TO	
1	BRN	T 301-1	E340	
2	RED	-2	E339	
3	ORN	-3	E344	
4	YEL	-4	E343	
5	GRN	-5	E302	16
6	BLU	-6	E301	15
7	VIO	-7	E336	
8	GRY	-8	E335	
9	WHT	-9	E334	
10	BLK	-10	E332	
11	WHT/BRN	-11	E337	16
12	WHT/RED	-12	E338	15
13	WHT/ORN	-13	E342	
14	WHT/YEL	T 301-14	E345	

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
L	409588 B J Pierce 8-14-76		

1) LM ITEM 221 QTY WAS 2.
2) ADDED REF DESIG XU030 TO ITEM 221A

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983841

SCALE 1/1 REV L SHEET 4

983841 D

AUGUST 13, 1976 LIST OF MATERIAL

PART NUMBER	REV	DESCRIPTION
983841-0001	L	TERMINAL ELECTRONICS,743/745 W/MODEM
983841-0002	L	TERMINAL ELECTRONICS,743-EIA/TTY

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM	I
0001	00001.000	983840-0001	PWB,PORTABLE PRINTER	EA	
0002	00001.000	222222-7109	NETWORK SN74109N	EA	
0002A			U003 , , , ,		
0003	00002.000	222222-7157	NETWORK SN74157N	EA	
0003A			U020 ,U023 , , ,		
0004	00001.000	222222-7174	NETWORK SN74174N	EA	
0004A			U026 , , , ,		
0005	00002.000	222222-7175	NETWORK SN74175N	EA	
0005A			U009 ,U025 , , ,		
0006	00002.000	222222-7404	NETWORK SN7404N	EA	
0006A			U005 ,U021 , , ,		
0007	00002.000	222222-7406	NETWORK SN7406N	EA	
0007A			U024 ,U027 , , ,		
0008	00001.000	222222-7492	NETWORK-SN7492N	EA	
0008A			U028 , , , ,		
0009	00001.000	222222-7493	NETWORK-SN7493N	EA	
0009A			U029 , , , ,		
0010	00002.000	222224-2741	NETWORK SN72741P OPERATIONAL AMP -SN72741P	EA	
0010A			U103 ,U302 , , , -SN72741P		
0011	00002.000	222225-2311	NETWORK LM311N,SN72311P SEE- TI DRAWING	EA	
0011A			U201 ,U412 , , , SEE- TI DRAWING		
0012	00001.000	240000-7411	NETWORK-SN74H11N - 0 -000	EA	
0012A			U008 , , , , - 0 -000		
0013	00001.000	244715-7404	NETWORK,SN74L04N	EA	
0013A			U004 , , , ,		
0014	00001.000 1 or 2	537948-0001	NETWORK SN75150P TI -SN75150P	EA	
0014A			U002 , , , , TI -SN75150P		
0015	00001.000	944472-0001	NETWORK,TMS-8080 MICRO PROCESSOR TI -TMS8080	EA	
0015A			U015 , , , , TI -TMS8080		
0016	00001.000	971000-0001	IC,OPTICALLY COUPLED ISOLATOR TI -TIL111	EA	
0016A			U301 , , , , TI -TIL111		
0017	00001.000	972450-0002	NETWORK,SN75189AN/MC1489AL QUAD LINE RCR SEE- TI DRAWING	EA	
0017A			U001 , , , , SEE- TI DRAWING		
0018	00001.000	972452-0001	NETWORK,TMS4036NL 64WORD X 8BIT ST RAM TI -TMS4036NL	EA	
0018A			U017 , , , , TI -TMS4036NL		
0019	00001.000	972459-0001	NETWORK 1K X 8 STATIC ROM TI -TMS4700-ZA4701	EA	
0019A			U010 , , , , TI -TMS4700-ZA4701		
0020	00001.000	972459-0002	NETWORK 1K X 8 STATIC ROM TI -TMS4700-ZA4702	EA	
0020A			U014 , , , , TI -TMS4700-ZA4702		
0021	00010.000	972463-0001	NETWORK,SN72558P/MC1458P1 OP AMP SEE- TI DRAWING	EA	

AUGUST 13, 1976 LIST OF MATERIAL PR

PART NUMBER	REV	DESCRIPTION.....	STD. MATER
983841-0001	L	TERMINAL ELECTRONICS,743/745 W/MODEM	$ 164.

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0021A			U404 ,U405 ,U406 ,U407 ,U408		
			SEE- TI DRAWING		
0021B			U409 ,U410 ,U411 ,U413 ,U414		
			SEE- TI DRAWING		
0022	00001.000	972469-0001	NETWORK,I/O AND TIMER DEVICE (TMS.5501)	EA	
			TI--TMS5501		
0022A			U018 , , , ,		
			TI--TMS5501		
0023	00001.000	972673-0001	NETWORK 75361AP DUAL NAND DRIVER	EA	
			TI -SN75361AP		
0023A			U013		
			TI -SN75361AP		
0024	00001.000	972900-7138	NETWORK SN74LS138N	EA	
			TI -SN74LS138N		
0024A			U011 , , , ,		
			TI -SN74LS138N		
0025	00001.000	972900-7432	NETWORK SN74LS32N	EA	
			TI -SN74LS32N		
0025A			U007 , , , ,		
			TI -SN74LS32N		
0026	00001.000	972900-7451	NETWORK SN74LS51N	EA	
			TI -SN74LS51N		
0026A			U006 , , , ,		
			TI -SN74LS51N		
0027	00002.000	983810-0001	IC,SN98614N DRIVER THERMAL PRINTHEAD	EA	
			TI -SN98614N		
0027A			U101 ,U102 , , ,		
			TI -SN98614N		
0028	00001.000	972625-0001	NETWORK OCI449 OPTICALLY COUPLED	EA	
			TI -OCI449		
0028A			U403		
			TI -OCI449		
0029	00001.000	772637-0006	TRANSISTOR,TIS99	EA	
			TI--TIS99		
0029A			Q402		
			TI--TIS99		
0031	00002.000	772116-0001	TRANSISTOR TIS75	EA	
			TI--TIS75		
0031A			Q102 ,Q405 , , ,		
			TI--TIS75		
0032	00005.000	800523-0001	TRANSISTOR A5T2907 PNP SILICON	EA	
			TI--A5T2907		
0032A			Q103 ,Q213 ,Q214 ,Q303 ,Q305		
			TI--A5T2907		
0033	00022.000	972057-0001	TRANSISTOR-A5T2222 NPN SILICON	EA	
			TI--A5T2222		
0033A			Q001 ,Q002 ,Q003 ,Q101 ,Q205		
			TI--A5T2222		
0033B			Q206 ,Q207 ,Q210 ,Q211 ,Q212		
			TI--A5T2222		
0033C			Q302 ,Q304 ,Q306 ,Q308 ,Q309		
			TI--A5T2222		
0033D			Q351 ,Q352 ,Q353 ,Q354 ,Q355		
			TI--A5T2222		
0033E			Q356 ,Q404 , , ,		
			TI--A5T2222		
0034	00003.000	972455-0004	TRANSISTOR,SILICON-P-N-P,A5T4029	EA	
			TI -A5T4029		
0034A			Q201 ,Q204 ,Q208 , ,		
			TI -A5T4029		
0035	00001.000	972465-0002	THYRISTORS,TRIODE P-N-P-N SILICON TIC106	EA	
			TI -TIC106C		
0035A			Q310 , , , ,		
			TI -TIC106C		
0036	00001.000	972499-0001	NETWORK,LM320T-5.0/MC7905CP,-5 VOLT	EA	
			SEE- TI DRAWING		
0036A			Q301 , , , ,		
			SEE- TI DRAWING		
0037	00003.000	972572-0002	TRANSISTOR,TIP121 SILICON N-P-N DARLNGTN	EA	
			TI--TIP121		
0037A			Q104 ,Q251 ,Q252 , ,		
			TI--TIP121		
0038	00001.000	972957-0001	TRANSISTOR, NPN,LOW CURRENT AMP TO-5	EA	
			MOT- 2N930A		
0038A			Q307 , , , ,		
			MOT- 2N930A		
0039	00003.000	972962-0001	TRANSISTOR,TIP41B NPN,PLASTIC	EA	
			TI -TIP41B		
0039A			Q202 ,Q203 ,Q215 , ,		
			TI -TIP41B		

AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER REV DESCRIPTION.....
983841-0002 L TERMINAL ELECTRONICS,743-EIA/TTY

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0040	00001.000	972963-0001	TRANSISTOR,TIP42B PNP,PLASTIC TI - TIP42B	EA	
0040A			Q209 , , , , TI - TIP42B		
0041	00001.000	974759-0001	TRANSISTOR,EP1580,N-P-N SILICON	EA	
0041A			Q311 , , , ,		
0044	00001.000	539468-0003	DIODE,1N4003 1AMP 200PIV RECTIFIER TI - 1N4003	EA	
0044A			CR403 TI - 1N4003		
0045	00008.000	539468-0007	DIODE,1N4007 1AMP 1000PIV RECTIFIER TI -1N4007	EA	
0045A			CR315,CR320,CR323,CR324,CR325 TI -1N4007		
0045B			CR326,CR330,CR331, , TI -1N4007		
0046	00004.000	972116-0001	X DIODE UTG1249 (MAY USE 1N5808/1N5809) UNT--UTG 1249	EA	
0046A			CR301,CR302,CR304,CR322, UNT--UTG 1249		
0047	00005.000	972268-0002	DIODE 1N4934-1 AMP MOT- 1N4934	EA	
0047A			CR205,CR206,CR207,CR251,CR252 MOT- 1N4934		
0048	00001.000	972268-0006	DIODE 1N4937 1 AMP SEE- TI DRAWING	EA	
0048A			CR321, , , , SEE- TI DRAWING		
0049	00001.000	972454-0019	DIODE,1N716A 12V 5% SIL VOLT REG TI -1N716A	EA	
0049A			CR107 TI -1N716A		
0050	00001.000	972454-0025	DIODE,1N721A 20V 5% SIL VOLT REG -1N721A	EA	
0050A			CR203, , , , -1N721A		
0051	00002.000	972460-0007	DIODE,SILICON,ZENER 1% SEE- TI DRAWING	EA	
0051A			CR104,CR351, , , SEE- TI DRAWING		
0052	00001.000	972608-0001	DIODE,1N5820 3AMP SCHOTTKY RECTIFIER MOT-1N5820	EA	
0052A			CR303, , , , MOT-1N5820		
0053	00002.000	972624-0001	DIODE,1N5711 SCHOTTKY HP -1N5711	EA	
0053A			CR319,CR328, , , HP -1N5711		
0054	00040.000	972932-0001	DIODE,1N914B SWITCHING 75V PIV 75MA 4NS TI - 1N914B	EA	
0054A	for - 0001		CR001,CR002,CR103,CR105,CR106 TI - 1N914B		
0054B			CR108,CR202,CR204,CR306,CR307 TI - 1N914B		
0054C			CR308,CR309,CR310,CR311,CR313 TI - 1N914B		
0054D			CR314,CR316,CR318,CR329,CR352 TI - 1N914B		
0054E			CR353,CR401,CR402,CR404,CR405 TI - 1N914B		
0054F			CR406,CR408,CR409,CR410,CR411 TI - 1N914B		
0054G			CR412,CR413,CR414,CR415,CR416 TI - 1N914B		
0054H			CR418 CR419 CR420 CR421 CR3 TI - 1N914B		
0054	00022.000	972932-0001	DIODE,1N914B SWITCHING 75V PIV 75MA 4NS TI - 1N914B	EA	
0054A	for - 0002		CR001 CR002 CR103 CR105 CR106 TI - 1N914B		
0054B			CR108 CR202 CR204 CR306 CR307 TI - 1N914B		
0054C			CR308 CR309 CR310 CR311 CR313 TI - 1N914B		
0054D			CR314 CR316 CR318 CR329 CR352 TI - 1N914B		
0054E			CR353 CR3 TI - 1N914B		

AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT...	DESCRIPTION.....	UM	I
0055	00002.000	972934-0006	DIODE,1N751A 5.1 V 5% SIL VOLT REG	EA	
			QPL- 1N751A		
0055A			CR201 CR417		
			QPL- 1N751A		
0056	00001.000	972934-0007	DIODE,1N752A 5.6 V 5% SIL VOLT REG	EA	
			QPL- 1N752A		
0056A			CR312, , , ,		
			QPL- 1N752A		
0057	00001.000	972934-0008	DIODE,1N753A 6.2 V 5% SIL VOLT REG	EA	
			QPL- 1N753A		
0057A			CR317, , , ,		
			QPL- 1N753A		
0058	00003.000	972934-0014	DIODE,1N759A 12.0 V 5% SIL VOLT REG	EA	
			QPL- 1N759A		
0058A			CR305 CR422 CR423		
			QPL- 1N759A		
0059	00002.000	972967-0001	DIODE 1N4152 SILICON SWITCHING	EA	
			SEE- TI DRAWING		
0059A			CR101,CR102, , ,		
			SEE- TI DRAWING		
0062	00001.000	419051-0102	CAP FIX FILM FOIL .001 UF 5% 200VDC	EA	
			TRW- 663UW		
0062A			C402		
			TRW- 663UW		
0063	00005.000	410529-0103	CAP FIX CERAMIC .010 MF GMV 1 KV	EA	
			CRL- DD-103		
0063A			C307 ,C320 ,C325 ,C326 ,C330		
			CRL- DD-103		
0064	00004.000	412645-0015	CAPACITOR,.1 UF +80,-20% 500VDC CER DIEL	EA	
			1222-3866-000		
0064A			C323 ,C324 ,C328 ,C329 ,		
			1222-3866-000		
0065	00001.000	418356-2344	CAP FIX 0.22 MF 50V 10% TANTALUM SOLID	EA	
			QPL-M39003/1-2244		
0065A			C204 , , , ,		
			QPL-M39003/1-2244		
0066	00003.000	418356-2350	CAP FIX 0.47 MF 50V 10% TANTALUM SOLID	EA	
			QPL-M39003/1-2350		
0066A			C113 ,C203 ,C318 , ,		
			QPL-M39003/1-2350		
0067	00037.000	419058-0003	CAP.FIX CERAMIC .05 MF 20V + 80/-20%	EA	
			CRL- UK20-503		
0067A	for - 0001		C004 ,C005 ,C006 ,C008 ,C011		
			CRL- UK20-503		
0067B			C012 ,C013 ,C014 ,C015 ,C017		
			CRL- UK20-503		
0067C			C018 ,C019 ,C020 ,C021 ,C103		
			CRL- UK20-503		
0067D			C106 ,C107 ,C108 ,C110 ,C111		
			CRL- UK20-503		
0067E			C112 ,C116 ,C206 ,C207 ,C210		
			CRL- UK20-503		
0067F			C211 ,C351 ,C406 ,C407 ,C408		
			CRL- UK20-503		
0067G			C413 ,C414 ,C415 ,C425 ,C426		
			CRL- UK20-503		
0067H			C429 ,C430 , , ,		
			CRL- UK20-503		
0067	00027.000	419058-0003	CAP.FIX CERAMIC .05 MF 20V + 80/-20%	EA	
			CRL- UK20-503		
0067A	for - 0002		C004 C005 C006 C008 C011 C012		
			CRL- UK20-503		
0067B			C013 C014 C015 C017 C018 C019		
			CRL- UK20-503		
0067C			C020 C021 C103 C106 C107 C108		
			CRL- UK20-503		
0067D			C110 C111 C112 C116 C206 C207		
			CRL- UK20-503		
0067E			C210 C211 C351		
			CRL- UK20-503		
0068	00001.000	972225-0533	CAPACITOR,3.3 MF 50VT80-20% CERAMIC	EA	
			SEE- TI DRAWING		
0068A			C410 , , , ,		
			SEE- TI DRAWING		
0069	00012.000	972476-0001	CAP,.01UF,1% 50WVDC MINIMUM	EA	
			SEE- TI DRAWING		

AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0069A			C401 C411 C412 C416 C417 C418		
			SEE- TI DRAWING		
0069B			C421 C422 C423 C424 C427 C428		
			SEE- TI DRAWING		
0070	00002.000	972601-0001	CAPACITOR 200UF 200WVDC 10%	EA	
			SEE- TI DRAWING		
0070A			C306 ,C308 , , ,		
			SEE- TI DRAWING		
0071	00001.000	972924-0002	CAP FIX TANT SOLID 56 MFD 10 % 6 VOLT	EA	
			QPL-M39003/1-2246		
0071A			C309 , , , ,		
			QPL-M39003/1-2246		
0072	00001.000	972924-0006	CAP FIX TANT SOLID 39 MFD 10 % 10 VOLT	EA	
			QPL-M39003/1-2259		
0072A			C001 , , , ,		
			QPL-M39003/1-2259		
0073	00001.000	972924-0010	CAP FIX TANT SOLID 22 MFD 10 % 15 VOLT	EA	
			QPL-M39003/1-2271		
0073A			C304 , , , ,		
			QPL-M39003/1-2271		
0074	00001.000	972924-0011	CAP FIX TANT SOLID 68 MFD 10 % 15 VOLT	EA	
			QPL-M39003/1-2274		
0074A			C327 , , , ,		
			QPL-M39003/1-2274		
0075	00005.000	972924-0013	CAP FIX TANT SOLID 2.2 MFD 10 % 20 VOLT	EA	
			QPL-M39003/1-2283		
0075A			C101 ,C102 ,C104 ,C105 ,C353		
			QPL-M39003/1-2283		
0076	00001.000	972924-0014	CAP FIX TANT SOLID 15 MFD 10 % 20 VOLT	EA	
			QPL-M39003/1-2289		
0076A			C002 , , , ,		
			QPL-M39003/1-2289		
0077	00001.000	972924-0015	CAP FIX TANT SOLID 47 MFD 10 % 20 VOLT	EA	
			QPL-M39003/1-2295		
0077A			C313 , , , ,		
			QPL-M39003/1-2295		
0078	00002.000	972924-0017	CAP FIX TANT SOLID 1.0 MFD 10 % 35 VOLT	EA	
			SPR-150D105X9035A		
0078A			C109 ,C114 , , ,		
			SPR-150D105X9035A		
0079	00001.000	972928-0005	CAP FIX MICA 500V 1500 PF 5 %	EA	
			QPL-CM06F152J00		
0079A			C322 , , , , ,		
			QPL-CM06F152J00		
0080	00001.000	972929-0379	CAP FIX CERAMIC 100 PF 10 % 200 V	EA	
			QPL-M39014/01-1379		
0080A			C007		
			QPL-M39014/01-1379		
0081	00002.000	972929-0376	CAP FIX CERAMIC 68.0 PF 10 % 200 V	EA	
			QPL-M39014/01-1376		
0081A			C009 ,C010 , , ,		
			QPL-M39014/01-1376		
0082	00003.000	972929-0385	CAP FIX CERAMIC 220 PF 10% 200V	EA	
			SEE- TI DRAWING		
0082A			C119 C205 C352		
			SEE- TI DRAWING		
0083	00002.000	972929-0397	CAP FIX CERAMIC .001 UF 10% 200V	EA	
			QPL-M39014/01-1397		
0083A			C115 ,C117 , , ,		
			QPL-M39014/01-1397		
0084	00002.000	972929-0411	CAP FIX CERAMIC .0056 UF 10% 100V	EA	
			SEE- TI DRAWING		
0084A			C419 ,C420 , , ,		
			SEE- TI DRAWING		
0085	00001.000	972931-0016	CAPACITOR 4400UF-10/+75% 7.5V	EA	
			SEE- TI DRAWING		
0085A			C302 , , , , ,		
			SEE- TI DRAWING		
0086	00002.000	972931-0039	CAPACITOR 2100UF-10/+75% 16V	EA	
			SEE- TI DRAWING		
0086A			C301 ,C303 , , ,		
			SEE- TI DRAWING		
0087	00002.000	972931-0083	CAPACITOR 1700UF-10/+75% 40V	EA	
			SEE- TI DRAWING		
0087A			C331 ,C332 , , ,		
			SEE- TI DRAWING		
0088	00003.000	972965-0004	CAP FIX CERAMIC 2200 PF 10% 200V	EA	
			QPL- CK06BX222K		
0088A			C003 ,C404 ,C409 , ,		
			QPL- CK06BX222K		

AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0089	00001.000	972965-0008	CAP FIX CERAMIC .0047 MF 10% 200 V	EA	
			QPL- CK06BX472K		
0089A			C317 , , , ,		
			QPL- CK06BX472K		
0090	00005.000	972965-0012	CAP FIX CERAMIC .010 MF 10% 200V	EA	
			QPL- CK06BX103K		
0090A			C118 C201 C202 C208 C209		
			QPL- CK06BX103K		
0091	00002.000	972965-0016	CAP FIX CERAMIC .022 MF 10% 100V	EA	
			QPL- CK06BX223K		
0091A			C315 C321		
			QPL- CK06BX223K		
0092	00010.000	972965-0024	CAP FIX CERAMIC .100 MF 10% 100V	EA	
			QPL- CK06BX104K		
0092A			C305 ,C310 ,C311 ,C312 ,C314		
			QPL- CK06BX104K		
0092B			C316 ,C319 ,C333 ,C403 ,C405		
			QPL- CK06BX104K		
0096	00001.000	972630-0018	RES FIX .150 OHM 1W 1% WIREWOUND POWER	EA	
0096A			R338		
			MIL-RW70UR150F		
0097	00001.000	538425-0045	RES 18. OHM 5% 2WATT FIX COMP	EA	
			RCR-42G180JS/QPL39008		
0097A			R330 , , , ,		
			RCR-42G180JS/QPL39008		
0098	00001.000	538425-0087	RES 1000. OHM 5% 2WATT FIX COMP	EA	
			SEE- TI DRAWING		
0098A			R337 , , , ,		
			SEE- TI DRAWING		
0099	00002.000	538425-0115	RES 15000. OHM 5% 2WATT FIX COMP	EA	
			SEE- TI DRAWING		
0099A			R332 ,R339 , , ,		
			SEE- TI DRAWING		
0100	00001.000	538425-0123	RES 33000. OHM 5% 2WATT FIX COMP	EA	
			RCR-42G333JS/QPL39008		
0100A			R340 , , , ,		
			RCR-42G333JS/QPL39008		
0101	00001.000	983937-0001	RESISTOR,SELECTED,743/745 PWR,PVOLTS	EA	
0101A			P/N 539370-XXXX SELECTED		
0101B			RESISTOR 261 OHMS TO 1.4K		
0101C			OHMS R122		
0102	00001.000	539370-0289	RES FIX FILM 100 OHM 1% .25 WATT	EA	
			COR- NA55		
0102A			R110 , , , ,		
			COR- NA55		
0103	00001.000	539370-0345	RES FIX FILM 383 OHM 1% .25 WATT	EA	
			COR- NA55		
0103A			R121 , , , ,		
			COR- NA55		
0104	00001.000	539370-0347	RES FIX FILM 402 OHM 1% .25 WATT	EA	
			COR- NA55		
0104A			R222 , , , ,		
			COR- NA55		
0105	00001.000	539370-0373	RES FIX FILM 750 OHM 1% .25 WATT	EA	
			COR- NA55		
0105A			R494		
			COR- NA55		
0106	00001.000	539370-0374	RES.FIXED FILM 768 OHMS 1% .25WATT	EA	
			COR-NA55D-100PPM/C		
0106A			R429		
			COR-NA55D-100PPM/C		
0107	00001.000	539370-0382	RES FIX FILM 931 OHM 1% .25 WATT	EA	
			COR- NA55		
0107A			R490 , , , ,		
			COR- NA55		
0108	00001.000	539370-0383	RES FIX FILM 953 OHM 1% .25 WATT	EA	
			COR- NA55		
0108A			R207 , , , ,		
			COR- NA55		
0109	00001.000	539370-0385	RES FIX FILM 1.00K OHM 1% .25 WATT	EA	
			COR- NA55		
0109A			R355 , , , ,		
			COR- NA55		
0110	00001.000	539370-0399	RES FIX FILM 1.40K OHM 1% .25 WATT	EA	
			COR- NA55		

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0110A			R444 COR- NA55		
0111	00001.000	539370-0427	RES FIX FILM 2.74K OHM 1% .25 WATT COR- NA55	EA	
0111A			R114 , , , , COR- NA55		
0112	00001.000	539370-0441	RES FIX FILM 3.83K OHM 1% .25 WATT COR- NA55	EA	
0112A			R238 , , , , COR- NA55		
0113	00001.000	539370-0549	RES FIX FILM 51.1K OHM 1% .25 WATT COR- NA55	EA	
0113A			R430 COR- NA55		
0114	00002.000	539370-0465	RES FIX FILM 6.81K OHM 1% .25 WATT COR- NA55	EA	
0114A			R411 R502 COR- NA55		
0115	00002.000	539370-0473	RES FIX FILM 8.25K OHM 1% .25 WATT COR- NA55	EA	
0115A	1 or 2		R489 R354 COR- NA55		
0116	00001.000	539370-0477	RES FIX FILM 9.09K OHM 1% .25 WATT COR- NA55	EA	
0116A			R325 , , , , COR- NA55		
0117	00001.000	539370-0489	RES FIX FILM 12.1K OHM 1% .25 WATT COR- NA55	EA	
0117A			R206 , , , , COR- NA55		
0118	00001.000	539370-0497	RES FIX FILM 14.7K OHM 1% .25 WATT COR- NA55	EA	
0118A			R335 , , , , COR- NA55		
0119	00001.000	539370-0499	RES FIX FILM 15.4K OHM 1% .25 WATT COR-NA55D-100PPM/C	EA	
0119A			R101 , , , , COR-NA55D-100PPM/C		
0120	00001.000	539370-0574	RES FIX FILM 93.1K OHM 1% .25 WATT COR- NA55	EA	
0120A			R410 COR- NA55		
0121	00001.000	539370-0522	RES FIX FILM 26.7K OHM 1% .25 WATT COR- NA55	EA	
0121A			R446 COR- NA55		
0122	00001.000	539370-0561	RES FIX FILM 68.1K OHM 1% .25 WATT COR- NA55	EA	
0122A			R491 COR- NA55		
0123	00002.000	539370-0565	RES FIX FILM 75.0K OHM 1% .25 WATT COR- NA55	EA	
0123A			R442 R445 COR- NA55		
0124	00001.000	539370-0569	RES FIX FILM 82.5K OHM 1% .25 WATT COR- NA55	EA	
0124A			R450 , , , , COR- NA55		
0125	00002.000	539370-0606	RES FIX FILM 200 K OHM 1% .25 WATT COR- NA55	EA	
0125A			R495 ,R500 , , , COR- NA55		
0126	00002.000	539370-0620	RES FIXED FILM 280 K OHMS 1% .25WATT COR-NA55D-100PPM/C	EA	
0126A			R457 ,R461 , , , COR-NA55D-100PPM/C		
0127	00003.000	539812-0005	RES FIX FILM 1.00K OHM .1% .125 WATT COR- NC4-50PPM/C	EA	
0127A			R351 ,R356 ,R357 , , COR- NC4-50PPM/C		
0128	00001.000	539812-0014	RES FIX FILM 3.01K OHM .1% .125 WATT COR- NC4-50PPM/C	EA	
0128A			R353 , , , , COR- NC4-50PPM/C		
0129	00001.000	539812-0024	RES FIX FILM 215 OHM .1% .125 WATT COR- NC4-50PPM/C	EA	
0129A			R113 , , , , COR- NC4-50PPM/C		
0130	00001.000	539812-0025	RES FIX FILM 383 OHM .1% .125 WATT COR- NC4-50PPM/C	EA	

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM I
0130A			R115 , , , ,	
			COR- NC4-50PPM/C	
0131	00001.000	539812-0027	RES FIX FILM 1.15K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0131A			R352 , , , ,	
			COR- NC4-50PPM/C	
0132	00001.000	539812-0028	RES FIX FILM 6.19K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0132A			R112 , , , ,	
			COR- NC4-50PPM/C	
0133	00004.000	539812-0029	RES FIX FILM 7.15K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0133A			R463 ,R464 ,R466 ,R483 ,	
			COR- NC4-50PPM/C	
0134	00004.000	539812-0030	RES FIX FILM 7.87K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0134A			R438 ,R456 ,R460 ,R478 ,	
			COR- NC4-50PPM/C	
0135	00001.000	539812-0031	RES FIX FILM 9.24K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0135A			R452 , , , ,	
			COR- NC4-50PPM/C	
0136	00001.000	539812-0032	RES FIX FILM 10.5K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0136A			R458 , , , ,	
			COR- NC4-50PPM/C	
0137	00003.000	539812-0033	RES FIX FILM 23.2K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0137A			R448 ,R485 ,R487 , ,	
			COR- NC4-50PPM/C	
0138	00002.000	539812-0034	RES FIX FILM 31.6K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0138A			R441 ,R443 , , ,	
			COR- NC4-50PPM/C	
0139	00001.000	539812-0035	RES FIX FILM 33.2K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0139A			R117 , , , ,	
			COR- NC4-50PPM/C	
0140	00001.000	539812-0039	RES FIX FILM 124K OHM .1% .125 WATT	EA
			COR- NC4-50PPM/C	
0140A			R447 , , , ,	
			COR- NC4-50PPM/C	
0141	00002.000	972141-0062	NETWORK,RESISTOR 6.8K OHMS 2% 14 PIN	EA
			SEE- TI DRAWING	
0141A			U016 U019	
			SEE- TI DRAWING	
0142	00001.000	972228-0008	RES,VAR 2 K-OHM CERMET ELEMENT	EA
			BOU-3006P-1-202	
0142A			R472 , , , ,	
			BOU-3006P-1-202	
0143	00001.000	972228-0010	RESISTOR,VARIABLE 10K OHM CERMET FILM	EA
			BOU- 3006P-1-103	
0143A			R336	
			BOU- 3006P-1-103	
0144	00001.000	972228-0013	X RES.VAR 100K OHM CERMET FILM	EA
			BOU- 3006P-1-104	
0144A			R309 , , , ,	
			BOU- 3006P-1-104	
0145	00001.000	972466-0001	RES,VAR,CERMET-20K,5%	EA
			CTS- 375T203J	
0145A			R234 , , , ,	
			CTS- 375T203J	
0146	00001.000	972619-0004	RESISTOR VAR 500 OHM 5% .5W	EA
0146A			R123	
0147	00001.000	972619-0008	RESISTOR VAR 10K OHM 5% .5W	EA
0147A			R412	
0148	00001.000	972554-0006	RESISTOR,FIXED,WIREWOUND .5 OHM 3W 1%	EA
			SEE- TI DRAWING	
0148A			R233 , , , ,	
			SEE- TI DRAWING	
0149	00002.000	972942-0013	RES FIX 20.0 OHMS 5% 5 WATT WIREWOUND	EA
			OHM- 995-4568	
0149A			R257 ,R258 , , ,	
			OHM- 995-4568	
0150	00001.000	972942-0039	RES FIX 400 OHM 5% 5 WATT WIREWOUND	EA

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0150A			R331 , , , ,		
0151	00001.000	972946-0009	RES FIX 4.7 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA	
0151A			R311 , , , , ROH- R-25		
0152	00001.000	972946-0013	RES FIX 6.8 OHM 5%.25W CARBON FILM	EA	
0152A			R312 , , , ,		
0153	00003.000	972946-0017	RES FIX 10.0 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA	
0153A			R201 ,R204 ,R217 , , ROH- R-25		
0154	00001.000	972946-0021	RES FIX 15.0 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA	
0154A			R231 , , , , ROH- R-25		
0155	00002.000	972946-0025	RES FIX 22.0 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA	
0155A			R317 R327 ROH- R-25		
0156	00001.000	972946-0039	RES FIX 82.0 OHMS 5 % .25 W CARBON FILM ROH- R-25	EA	
0156A			R313 ROH- R-25		
0157	00001.000	972946-0003	RES FIX 2.7 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA	
0157A			R314 ROH- R-25		
0158	00007.000	972946-0045	RES FIX 150 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0158A	for - 0001		R202 ,R203 ,R216 ,R227 ,R315 ROH- R-25		
0158B			R319 ,R334 , , , ROH- R-25		
0158	00010.000	972946-0045	RES FIX 150 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0158A	for - 0002		R202 R203 R216 R227 R315 R319 ROH- R-25		
0158B			R334 R401 R417 R434 ROH- R-25		
0159	00002.000	972946-0048	RES FIX 200 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0159A			R253 ,R255 , , , ROH- R-25		
0160	00002.000	972946-0049	RES FIX 220 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0160A			R018 R212 ROH- R-25		
0161	00001.000	972946-0052	RES FIX 300 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0161A			R106 , , , , ROH- R-25		
0162	00004.000	972946-0053	RES FIX 330 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0162A			R205 ,R230 ,R251 ,R252 , ROH- R-25		
0163	00004.000	972946-0055	RES FIX 390 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0163A			R310 R316 R318 R320 ROH- R-25		
0164	00005.000	972946-0057	RES FIX 470 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0164A			R102 R211 R228 R8 R9 ROH- R-25		
0165	00006.000	972946-0058	RES FIX 510 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0165A			R003 R007 R016 R017 R019 R020 ROH- R-25		
0166	00002.000	972946-0059	RES FIX 560 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0166A			R108 R333 ROH- R-25		
0167	00001.000	972946-0060	RES FIX 620 OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0167A			R358 , , , , ROH- R-25		

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PART NUMBER REV DESCRIPTION.....
983841-0002 L TERMINAL ELECTRONICS,743-EIA/TTY

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM I
0169	00013.000 for - 0001	972946-0065	RES FIX 1.0K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0169A			R004 ,R005 ,R006 ,R011 ,R021 ROH- R-25	
0169B			R103 ,R213 ,R214 ,R215 ,R218 ROH- R-25	
0169C			R226,R323,R470 ROH- R-25	
0169	00016.000 for - 0002	972946-0065	RES FIX 1.0K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0169A			R004 R005 R006 R011 R021 R103 ROH- R-25	
0169B			R213 R214 R215 R218 R226 R323 ROH- R-25	
0169C			R413,R416 R419,R440 ROH- R-25	
0170	00004.000	972946-0069	RES FIX 1.5K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0170A			R107 ,R304 ,R407 ,R452 , ROH- R-25	
0171	00001.000	972946-0071	RES FIX 1.8K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0171A			R120 , , , , . ROH- R-25	
0172	00011.000	972946-0072	RES FIX 2.0K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0172A			R105 ,R209 ,R254 ,R256 ,R360 ROH- R-25	
0172B			R361 ,R366 ,R367 ,R370 ,R371 ROH- R-25	
0172C			R414 , , , , ROH- R-25	
0173	00001.000	972946-0075	RES FIX 2.7K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0173A			R225 , , , , ROH- R-25	
0174	00005.000	972946-0076	RES FIX 3.0K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0174A			R421 ,R475 ,R477 ,R480 ,R482 ROH- R-25	
0175	00006.000	972946-0077	RES FIX 3.3K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0175A			R326,R359,R3C8,R435,R437,R497 ROH- R-25	
0176	00003.000	972946-0079	RES FIX 3.9K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0176A			R219 ,R220 ,R221 , , ROH- R-25	
0177	00005.000	972946-0081	RES FIX 4.7K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0177A			R104 ,R109 ,R116 ,R432 ,R433 ROH- R-25	
0178	00004.000	972946-0082	RES FIX 5.1K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0178A			R362 ,R363 ,R364 ,R365 , ROH- R-25	
0179	00003.000	972946-0085	RES FIX 6.8K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0179A			R010 ,R307 ,R372 , , ROH- R-25	
0180	00001.000	972946-0087	RES FIX 8.2K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0180A			R454 , , , , . ROH- R-25	
0181	00012.000	972946-0089	RES FIX 10 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0181A			R012 R013 R223 R305 R306 R321 ROH- R-25	
0181B			R455 R474 R476 R479 R481 R492 ROH- R-25	
0182	00001.000	972946-0091	RES FIX 12 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0182A			R486 , , , , ROH- R-25	
0182	00001.000	972946-0037	RES FIX 68.0 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA
0182A			R418 ROH- R-25	
0183	00001.000	972946-0050	RES FIX 240 OHM 5 % .25 W CARBON FILM ROH- R-25	EA
0183A			R415 ROH- R-25	

PART NUMBER 983841-0001 REV L — DESCRIPTION..... TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0183	00001.000	972946-0092	RES FIX 13 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0183A			R431 , , , ,		
0184	00002.000	972946-0095	RES FIX 18 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0184A			R232 R324 ROH- R-25		
0185	00002.000	972946-0096	RES FIX 20 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0185A			R014 ,R427 , , , ROH- R-25		
0186	00002.000	972946-0097	RES FIX 22 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0186A			R496 ,R498 , , , ROH- R-25		
0187	00001.000	972946-0099	RES FIX 27 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0187A			R405 , , , , ROH- R-25		
0188	00001.000	972946-0103	RES FIX 39 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0188A			R015 , , , , ROH- R-25		
0189	00002.000	972946-0105	RES FIX 47 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0189A			R408 ,R409 , , , ROH- R-25		
0190	00003.000	972946-0110	RES FIX 75 K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0190A			R402 R422 R369 ROH- R-25		
0191	00003.000	972946-0113	RES FIX 100K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0191A			R404 ,R453 ,R471 , , ROH- R-25		
0192	00001.000	972946-0031	RES FIX 39.0 OHM 5 % .25 W.CARBON FILM ROH- R-25	EA	
0192A			R2 ROH- R-25		
0193	00001.000	972946-0116	RES FIX 130K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0193A			R406 , , , , ROH- R-25		
0194	00002.000	972946-0117	RES FIX 150K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0194A			R425 R1 ROH- R-25		
0195	00002.000	972946-0127	RES FIX 390K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0195A			R403 ,R424 , , , ROH- R-25		
0196	00001.000	972946-0129	RES FIX 470K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0196A			R328 ROH- R-25		
0197	00001.000	972946-0131	RES FIX 560K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0197A			R210 , , , , ROH- R-25		
0198	00001.000	972946-0134	RES FIX 750K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0198A			R111 , , , , ROH- R-25		
0199	00002.000	972946-0135	RES FIX 820K OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0199A			R423 ,R501 , , , ROH- R-25		
0200	00002.000	972946-0137	RES FIX 1.0M OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0200A			R449 R451 ROH- R-25		
0201	00001.000	539370-0602	RES FIX FILM 182 K OHM 1% .25 WATT COR- NA55	EA	
0201A			R439 COR- NA55		
0202	00001.000	972946-0139	RES FIX 1.2M OHM 5 % .25 W CARBON FILM ROH- R-25	EA	
0202A			R426 , , , , ROH- R-25		

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0203	00001.000	539370-0585	RES FIX FILM 121 K OHM 1% .25 WATT	EA
			COR- NA55	
0203A			R465	
			COR- NA55	
0204	00001.000	972947-0029	RES FIX 33 OHM 5 % .5 W CARBON FILM	EA
			ROH- R-50	
0204A			R322 , , , ,	
			ROH- R-50	
0205	00001.000	972946-0093	RES.FIX 15K OHM 5% .25W CARBON FILM	EA
			ROH- R-25	
0205A			R224	
			ROH- R-25	
0206	00003.000	972947-0057	RES FIX 470 OHM 5% .5 W CARBON FILM	EA
			ROH- R-50	
0206A			R229 ,R301 ,R303 , ,	
			ROH- R-50	
0207	00002.000	972947-0060	RES FIX 620 OHM 5% .5 W CARBON FILM	EA
			ROH- R-50	
0207A			R493 R499	
			ROH- R-50	
0208	00001.000	972947-0065	RES FIX 1.0K OHM 5% .5 W CARBON FILM	EA
			ROH- R-50	
0208A			R484 , , , ,	
			ROH- R-50	
0209	00001.000	972947-0117	RES FIX 150K OHM 5%.5W CARBON FILM	EA
			ROH- R-50	
0209A			R329 , , , ,	
			ROH- R-50	
0210	00001.000	972978-0069	RES FIX COMP 47 OHMS 1.0W 5%	EA
			SEE- TI DRAWING	
0210A			R332 , , , ,	
			SEE- TI DRAWING	
0211	00001.000	972978-0093	RES FIX COMP 470 OHMS 1.0W 5%	EA
			SEE- TI DRAWING	
0211A			R119 , , , ,	
			SEE- TI DRAWING	
0212	00001.000	972978-0100	RES FIX COMP 910 OHMS 1.0W 5%	EA
			SEE- TI DRAWING	
0212A			R368 , , , ,	
			SEE- TI DRAWING	
0213	00001.000	972978-0138	RES FIX COMP 1.0 W 2.0 K OHMS 5 %	EA
			QPL-RC32G202JS	
0213A			R118 , , , ,	
			QPL-RC32G202JS	
0214	00001.000	972141-0057	NETWORK,RES. 4.7 K OHM 2 % 14 PIN DIP	EA
			BEC- 899-1-R4.7K	
0214A			U022	
			BEC- 899-1-R4.7K	
0217	00001.000	416434-0203	FUSE 2.0 A 250V 3AG	EA
			LIT- 312002	
0217A			F301 , , , ,	
			LIT- 312002	
0218	00001.000	530588-0006	FUSE,CARTRIDGE 1AMP	EA
			LIT--275001	
0218A			F251	
			LIT--275001	
0219	00003.000	530588-0008	FUSE,CARTRIDGE 2 AMP	EA
			LIT-275002	
0219A			F101 F201 F252	
			LIT-275002	
0220	00001.000	972445-0001	CRYSTAL,12 MHZ,QUARTZ	EA
			SEE- TI DRAWING	
0220A			Y001 , , , ,	
			MIL--CR60A/U 12 MHZ	
0221	00003.000	539544-0010	SOCKET,20PIN IC LOW PROFILE SOLDER TAIL	EA
			TI -C93-20-02	
0221A			XU012 XU017 XU030	
			TI -C93-20-02	
0222	00002.000	972236-0120	SOCKET,40PIN IC STD PROFILE SOLDER TAIL	EA
			TI -C92-40-30	
0222A			XU015 XU018	
			TI -C92-40-30	
0223	00001.000	972461-0001	DISC,SOUND-PIEZO-ELECT 3200 + 600HZ	EA
			SEE- TI DRAWING	
0223A			DS001, , , ,	
			SEE- TI DRAWING	
0224	00001.000	972602-0001	TRANSFORMER,SWITCHING RGLTR,PWR SPLY	EA
0224A			T301	

PART-NUMBER, REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0225	00001.000	972614-0001	TRANSFORMER,TOROID SEE- TI DRAWING	EA
0225A			T302 , , , , SEE- TI DRAWING	
0226	00001.000	983909-0001	HEATSINK,DRIVER 1222-3909-006	EA
0227	00001.000	533517-0001	HEATSINK,ELECT-ELEC TOP AND BASE,TO-3 THR- 6103B	EA
0228	00001.000	972498-0001	CONN,DBL ROW,EDGE MTG-20 POSITIONS -SEE DWG	EA
0228A			J101 -SEE DWG	
0229	00002.000	539544-0007	SOCKET,24PIN IC LOW PROFILE SOLDER TAIL TI -C93-24-02	EA
0229A			XU010 XU014 TI -C93-24-02	
0230	00000.000	972494-0001	PIN,.025 SQUARE AMP- 4-87022-2	EA
0230A			ALTERNATE FOR ITEM 258 P/N AMP- 4-87022-2	
0230B			972456-0002 AMP- 4-87022-2	
0231	00001.000	983910-0001	SUPPORT,TONE GENERATOR	EA
0233	00001.000	972451-0001	SWITCH,TOGGLE,DPDT,5A	EA
0233A			S301	
0234	00001.000	972988-0022	SCREW 4-40 X 1.25 PAN HEAD CRES	EA
0235	00001.000	972488-0001	RECEPTACLE,MALE,RECESSED,3 PRONG SEE- TI DRAWING	EA
0235A			J301 SEE- TI DRAWING	
0236	00005.000	411115-0044	NUT,4-40 HEXAGON CRES STEEL MS -35649-244	EA
0237	00018.000	411027-0803	WASHER .125 X .250 X .022 FLAT CRES QPL- MS15795-803	EA
0238	00009.000	411104-0135	WASHER #4 LOCKSPLIT QPL- MS35338-135	EA
0239	00001.000	972493-0001	CABLE-ASSEMBLY,FLAT-FLEXIBLE AMP- 88178-1	EA
0240	00008.000	972487-0001	JUMPER PLUG,CONNECTOR BLACK	EA
0241	00002.000	772635-0001	CLIP,FUSE LIT-102068	EA
0243	00001.000	983836-0001	CABLE,HEATSINK GROUND 1222-3836-005	EA
0244	00001.000	983837-0001	WIRING HARNESS MECHANISM GROUND 1222-3837-005	EA
0245	00008.000	972632-0001	STRAP,TIE DOWN,CABLE-NON-STD,0-1-1/4 D.	EA
0246	00002.000	416925-0400	SPACER,#4 1/8"LG ALUM ANODIZED -NAS43000-8	EA
0247	00001.000	416925-0412	SPACER,#4 7/8"LG ALUM ANODIZED -NAS43000-56	EA
0248	00001.000	972621-0001	SPRING,RING FER-991-191-00	EA
0250	00008.000	972988-0015	SCREW 4-40 X .375 PAN HEAD CRES	EA
0251	00006.000	411101-0057	LOCKWASHER # 4 EXTERNAL TOOTH CRES QPL- MS35335-57	EA
0252	00001.000	972620-0001	CONN,PLUG,PC BD-15 POSITION AMP-206913-2	EA
0252A			J403 AMP-206913-2	
0253	00001.000	972306-0001	COVER,ROUND-ALUMINUM SEAMLESS HU--2735CA-AL	EA
0254	AR	417559-0001	SILICONE RUBBER (RTV) DOW 3140 SEE- TI DRAWING	TU
0255	00010.000	972628-0001	WASHER,#4 .115ID .2000D-SHLDR NON-MET SEA-5607-45	EA
0256	00009.000	972779-0001	INSULATOR,MICA COATED,TO-220 CASE	EA
0257	REF	983842-9901	DIAGRAM,LOGIC,DET-PORTABLE PRINTER	EA
0258	AR	972456-0002	PIN,.025 SQUARE BEI- 75481-002	EA
0258A			ITEM 230 P/N 972494-0001 MAY BEI- 75481-002	
0258B			BE USED AS AN ALTERNATE BEI- 75481-002	

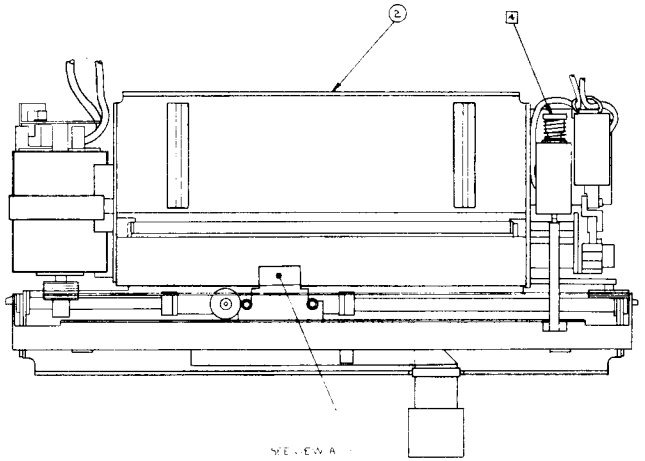
AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER REV DESCRIPTION.....
983841-0001 L TERMINAL ELECTRONICS,743/745 W/MODEM

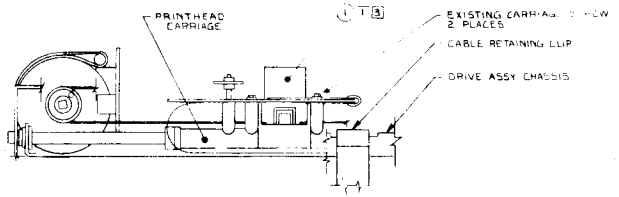
ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0258C			E65 E66 E67 E68 E69 E70 E74 BEI- 75481-002	
0258D			E75 E76 E77 E304 E305 E307 BEI- 75481-002	
0258E			E308 E311 E312 E314 E315 E317 BEI- 75481-002	
0258F			E318 E321 E322 E325 E326 E329 BEI- 75481-002	
0258G			E330 E401 E402 E403 E404 E405 BEI- 75481-002	
0258H			E406 E413 E414 E415 E416 J1-1 BEI- 75481-002	
0258I			J1-3 J1-4 J201-1 J201-3 BEI- 75481-002	
0258J			J201-4 J201-5 J251-1 J251-2 BEI- 75481-002	
0258K			J252-1 J252-3 J302-1 J302-2 BEI- 75481-002	
0258L			J302-3 J401-1 J401-2 J402-1 BEI- 75481-002	
0258M			J402-2 J402-3 BEI- 75481-002	
0259	00000.500	236528-0000	WIRE 22 AWG 1 COND WHITE TEFLON SOLID	FT
0260	00002.000	972988-0019	SCREW 4-40 X .750 PAN HEAD CRES	EA
0261	00000.500	411400-0018	WIRE,BARE TINNED,18AWG, COPPER BUS IWP- 18-630	FT
0262	00002.000	406769-0001	SCREW,SPECIAL,CONNECTOR LOCKING CIE- 020418-2	EA
0263	REF	993649-9901	TEST PROC,743/745 TERMINAL ELTRC-960ATS	EA
0264	00006.000	416453-0021	NUT,PLAIN,4-40 UNC-2B HEX,CRES,SMALL QPL- NAS671-C4	EA
0265	00001.000	185113-0001	X SPACER XST TO-18 CASE * -	EA
0265A			Q307 * -	
0266	AR	417200-0004	PRIMER,SILICONE RUBBER-RED COR- 1203	PT
0267	AR	415804-0005	SEALING COMPOUND,ANAEROBIC-BLUE GRADE C	QT
0268	00001.000	418730-0105	WASHER # 6 FLAT TEFLON QPL- NAS1515-06L	EA

NOTES: UNLESS OTHERWISE SPECIFIED
1. ATTACH THE PRINTHEAD ASSY.(ITEM 1) TO THE CARR ASS BY USING THE TWO EXISTING CARRIAGE SCREWS. REFER TO VIEW A. BE SURE PEGS ARE ENGAGED IN HEAD PLATE HOLES.
2. POSITION AND ATTACH PRINTHEAD ASSY. CABLE USING THE EXISTING RETAINER CLIP AT DIM. SHOWN FROM THE ASSEMBLY FRONT EDGE.
3. CAUTION: PRINTHEAD ASSY. (ITEM 1) IS VERY FRAGILE. EXTREME CARE MUST BE TAKEN TO AVOID DAMAGE.
4. ADJUST SPRING SO THAT SOLENOID HAS A STROKE OF .045 ± .005 MEASURED AT MAXIMUM DEFLECTION. BAR MAY HAVE NO MORE THAN .020 WARP WITHIN ONE LINE LENGTH.

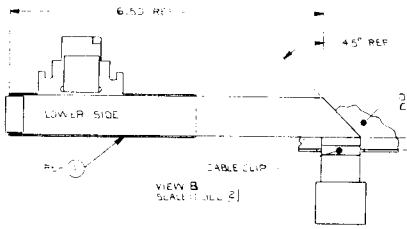
ZONE	LTR	REVISIONS: DESCRIPTION	DATE	APPROVED
	A	410094 (L) E.E. Release 12-9-75	12/10/75	
D,5 E,5		1) ADDED NOTE 4 AND CALLOUT 2) TYE-WRAP WAS		
E,6		3) HEX WASHER SCREWS WERE PHILIPS		
	B	409934 (L) 7 Releases 12-30-75		
		ON LM: ADDED ITEMS 3 & 4. CHANGED NOTE 4 WAS "ADJUST KNOB SO THAT SOLENOID HAS A STROKE OF .030 ± .05."		
	C	413814 (B)		
		NOTE 4 WAS: STROKE OF .050 MAX .025 MIN W/NO MORE THAN .025 VARIATION W/IN ONE LINE LGTH.		



VIEW A
SCALE: FULL



VIEW A
SCALE: FULL
(B-2)



QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL STD-100

HOLE TOLERANCE			
.312 THRU .128	.126 THRU .250	.251 THRU .500	.501 THRU .750
.751 THRU .501	.751 THRU 1.000	1.001 THRU 2.000	

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES
  ANGLES ±1°
  3 PLACE DECIMALS ± .010
  2 PLACE DECIMALS ± .02
- MATERIAL

DWN
CHK
ENGR
QA
APVD
DESIGN ACTIVITY RELEASE

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

MECHANISM ASSY WITH PRINTHEAD

SIZE	CODE IDENT NO	DRAWING NO
D	96214	5838.33

SCALE NONE | REV C | SHEET

LM FLUID

AUGUST 13, 1976 L I S T O F M A T E R I A L

PART NUMBER	REV	DESCRIPTION
983833-0001	C	MECHANISM ASSEMBLY WITH PRINTHEAD

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM
0001	00001.000	983829-0001	PRINTHEAD ASSY 1222-3829-024	EA
0002	00001.000	983811-0001	DRIVE MECHANISM 1222-3811-000	EA
0003	REF	993609-9901	FUNCTIONAL TEST PROCEDURE	EA
0004	REF	993610-9901	RUNIN TEST PROCEDURE	EA

WIRING LIST

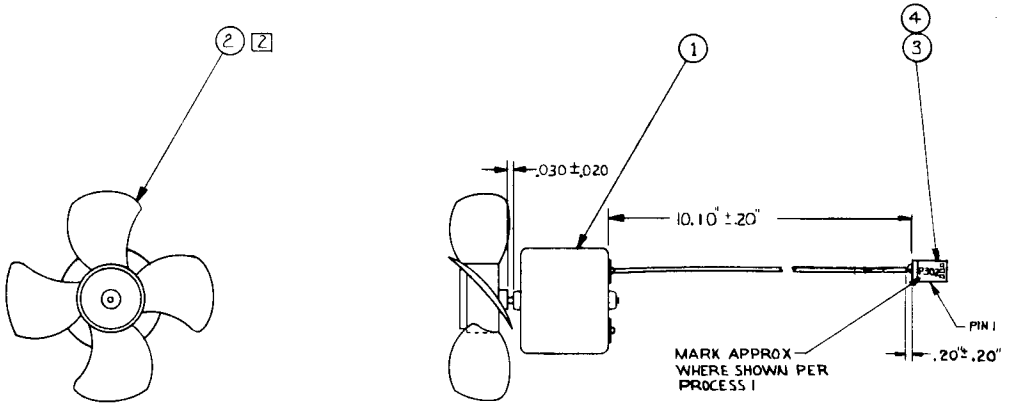
WIRE NO	DESCRIPTION	COMP CONN START STATION	COMP CONN FINISH STATION	REMARKS	ITEM NO
1	FAN MOTOR	B1—RED	P302-1	PINS 1 AND 3 ARE INTERCHANGEABLE	1
2	FAN MOTOR	B1—BLACK	P302-2		1
3	FAN MOTOR	B1—SHIELD	P302-3		1

NOTES:

1. COLOR (BLACK, TYPE 6 OR WHITE, TYPE 9) SHALL CONTRAST WITH COLOR OF ITEM 4.
2. SUPPORT SHAFT OF ITEM 1 WHILE INSTALLING ITEM 2.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
C-2 G-2	A	409517 (C) 7 Engineering 11-21-75 1) DIM, 10.10 ± 20" WAS 10.10 ± 10". 2) ADDED DIM .20 ± .20".	11/24/75	



2 QTY REQD	1 QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
	1	1	96214	983801	FAN ASSEMBLY	

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL STD 100

HOLE TOLERANCE

125	126 THRU 250	251 THRU 500
.013 THRU .125 ± .001	.004 THRU .250 ± .001	.005 THRU .500 ± .001
501 THRU 750	**751 THRU 1 000**	**1 001 THRU 2 000**
.008 THRU .750 ± .001	.010 THRU 1 000 ± .001	.012 THRU 2 000 ± .001

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ± 1°; 3 PLACE DECIMALS ± .010; 2 PLACE DECIMALS ± .02

DWN 27 MAY 75
CHK 6-16-75
ENGR
QA
APVD
CONTR NO
DESIGN ACTIVITY RELEASE 6-11-75

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

SIZE	CODE IDENT NO	DRAWING NO
C	96214	983825

SCALE 1/1 REV A SHEET 1

1	MARK	100-07	710	1
SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL
	PROCESS		CLASSIFICATION	

NEXT ASSY	USED ON
APPLICATION	

983825

A-31

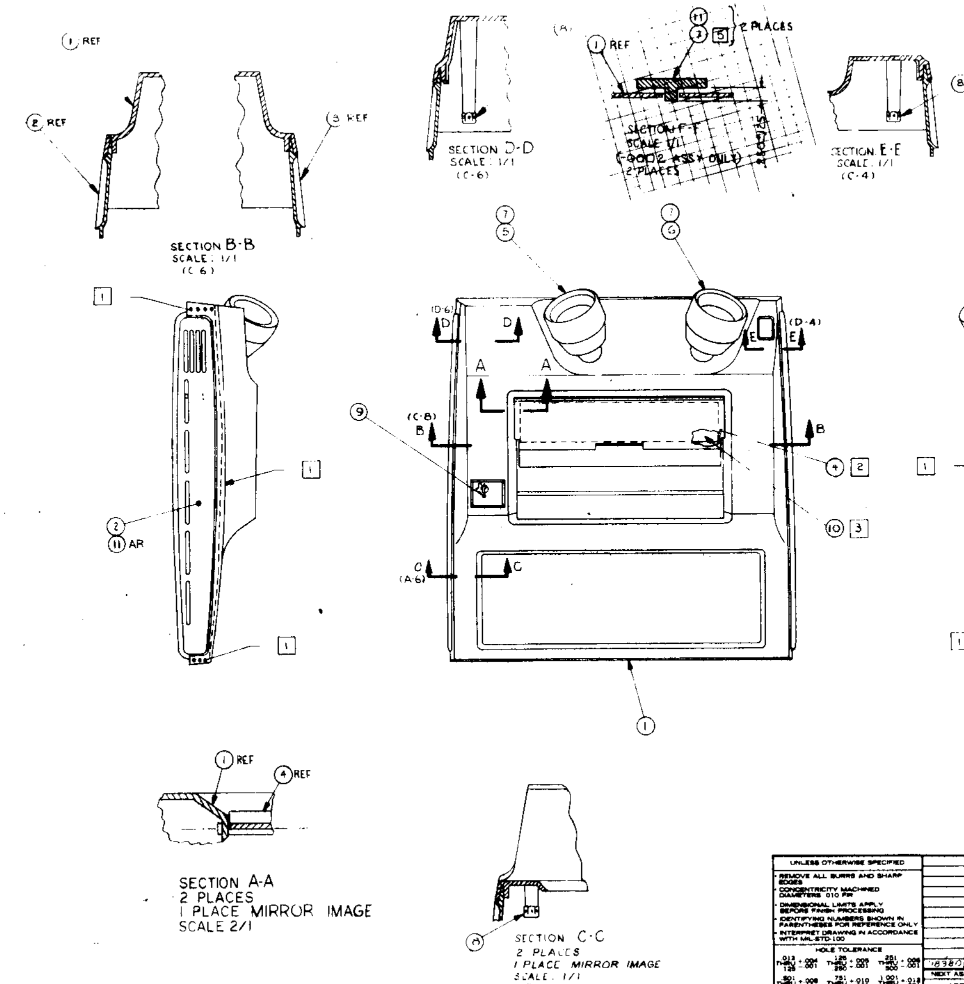
S

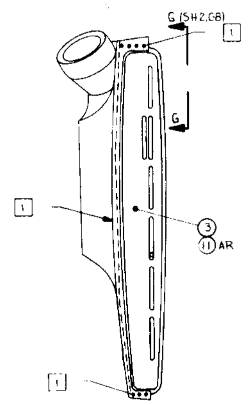
LM

FEBRUARY 13, 1976 LIST OF MATERIAL

PART NUMBER REV DESCRIPTION.....
983825-0001 A FAN ASSY

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0001	00001.000	972486-0002	MOTOR,FAN 12V DC CIE- CN35-T2	EA
0002	00001.000	972489-0001	BLADE,FAN 2-5/8"DIA .078 BORE CW ROT	EA
0003	00003.000	972104-0001	CONTACT ELEC-LOCKING,WIRE-TO.025 SQ POST AMP- 87124-1	EA
0004	00001.000	972484-0003	CONNECTOR HOUSING 3 CONTACT TI8-7175-8	EA
0004A			ITEMS 3 AND 4 CAN ONLY BE TI8-7175-8	
0004B			USED TOGETHER TI8-7175-8	
0005	00000.000	972482-0006	CONTACT,ELECTRICAL,CRIMP BEI- 75691-006	EA
0006	00000.000	772707-0034	RECEPTACLE,TERMINAL- 3 CAVITIES BEI-65039-034	EA
0006A			ITEMS 5 AND 6 MAY BE USED AS BEI- 75691-006	
0006B			ALTERNATES TO ITEMS 3 AND 4 BEI- 75691-006	
0006C			ITEMS 5 AND 6 MAY ONLY BE BEI- 75691-006	
0006D			USED TOGETHER BEI- 75691-006	





NOTE:

1. ASSEMBLE OUTER COVER (ITEM 1) LEFT SIDE INSERT (ITEM 2), AND RIGHT SIDE INSERT (ITEM 3) BY APPLYING ONE SOLID BEAD OF SUPER BONDER 150 (ITEM 11) CLOSE TO EDGE OF PARTS IN INDICATED AREA ... APPLIES TO FAR SIDE OF SIDE INSERTS (WITHOUT RIPS). SLIDE INSERTS INTO SLOTS OF INNER COVER. RIDGES ON SIDE INSERTS MUST TOUCH INNER COVER EDGE. CLAMP INNER COVER AND SIDE INSERTS TOGETHER AT UNIT PARTING LINE FOR APPROXIMATELY 4 MINUTES TO REACH HANDLING STRENGTH, AND CURE 1 HOUR BEFORE INSTALLATION. WARNING: SUPER BONDER 150 BONDS SKIN IN SECONDS TO ANY SURFACE. KEEP ADHESIVE OFF SKIN AND HANDLE WITH CAUTION.

-NOTE CONTINUED ZONE B1-

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	391673 (D) [signature] 9-22-75 1) TITLE OF -0001 ASSY L/M WAS COVER ASSY, INNER 2) ADDED -0002 ASSY L/M, 3) ADDED NOTES 4 & 5 TO F/D, 4) FLAGED ITEMS 5 & 6 ON F/D WITH [4], 5) FLAGED ITEM 7 WITH [5], 6) ADDED SECTION F-F	9-26-75	[signature]
D-6 D-5	B	ECN 410067 (D) R [signature] 12-8-75 ITEM 5 BALLOON WAS ITEM 6 ITEM 6 BALLOON WAS ITEM 5	12/12/75	[signature]
	C	409955 (C) R. [signature] 1-29-76 1) LM: -0001 ONLY: ADDED IT 12, P/N 418242-0040, QTY 1, 2) -0001 & 0002: IT 11 WAS P/N 235374-1000, 3) ADDED NOTE [6] ZN B-2, 4) ADDED SHEET 2, 5) ADDED SECTION G-G, SH2 ZN C8, 6) ADDED "X" AND "O" MARKS TO LEFT AND RIGHT SIDE VIEWS, 7) NOTE [1] WAS "ASSEMBLE ITEMS 1, 2 AND 3) BY WETTING THE INSIDE OF THE GROVE OF (ITEM 1) COMPLETELY WITH MEK (ITEM 11) AND INSERT (ITEM 2) OR (ITEM 3) RESPECTIVELY INTO THE SLOT. RIDGES ON SIDE INSERTS MUST TOUCH INNER COVER EDGES AS INDICATED. CAUTION MEK DISSOLVES PLASTIC AND WILL PERMANENTLY DAMAGE IT.	2/2/76	[signature]
	D	410009(D) [signature] 4-2-76 (1) DELETED -0002 ASSY. (2) DELETED SECTION F-F. (3) DELETED NOTES 4 & 5.	4/5/76	[signature]
	E	Nº 408169(C) J. CLARK 6/5/76 (1) ADDED PART NUMBER BLOCK TO F/D. (2) ADDED -0003 ASSY L/M.	11/19/76	[signature]
	F	413804(D) [signature] 7-26-76 F/D: CHANGED NOTE 1; CHANGED RIGHT AND LEFT SIDE VIEWS; DREW ITEM 10 TO SCALE		

NOTES: CONTINUED FROM ZONE D3

[2] INSTALL (ITEM 4) INTO (ITEM 1) BY BOWING/BENDING (ITEM 4) AND INSERTING STUDS INTO HOLES OF ITEM 1.

[3] CENTER PAPER LOADING LABEL (ITEM 10) ON UNDERSIDE OF PAPER DOOR (ITEM 4) WITHIN ±.10 OF CENTER LINE OF (ITEM 4)

~~[illegible]~~

[6] PULL CABLES TOGETHER AND SECURE TO ONE ANOTHER USING ITEM 12, -0001 ONLY

PART NUMBER	DESCRIPTION
983808-0003	COVER ASSY, WITHOUT TRANSMIT LEVEL ADJUSTMENT
983808-0001	COVER ASSY, WITH TRANSMIT LEVEL ADJUSTMENT

QTY REQD -2	QTY REQD -1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .125 +.004 −.001	.126 THRU .250 +.005 −.001	.251 THRU .500 +.006 −.001
.501 THRU .750 +.008 −.001	.751 THRU 1.000 +.010 −.001	1.001 THRU 2.000 +.012 −.001

NEXT ASSY	USED ON
983801	8132

APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES ANGLES ±1° 3 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.02

MATERIAL:

DWN [signature] DATE 5/20/75
CHK [signature] 8/6/75
ENGR [signature] 8/13/75
QA [signature] 8/18/75
APVD [signature] 8/15/75
CONTR NO
DESIGN ACTIVITY RELEASE [signature] 8/21/75

TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas, Texas

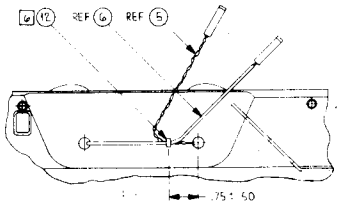
COVER ASSEMBLY, INNER

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983808

SCALE 1/2 REV F SHEET 1 OF 2

LM

D 983808



SECTION G-G
SCALE: 1/1
(SHT. C-3)

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983808
SCALE 1/1	REV F	SHEET 2

D 983808

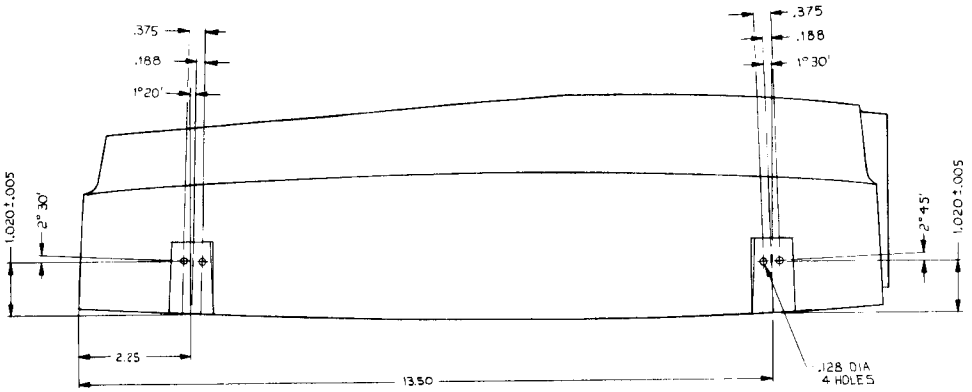
FILMED

AUGUST 13, 1976 L I S T O F M A T E R I A L

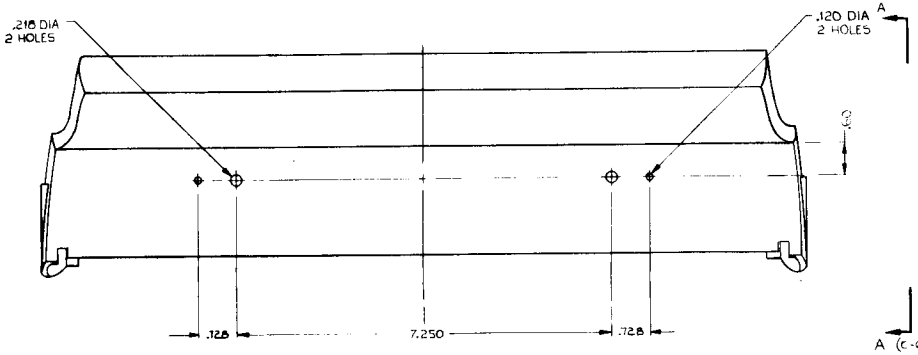
PART NUMBER REV DESCRIPTION.....
983808-0001 F COVER ASSEMBLY,INNER,WITH MUFFS

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM	I
0001	00001.000	983981-0001	COVER,INNER-PRINTER CASE	EA	
0002	00001.000	983983-0001	INSERT,LEFT SIDE	EA	
0003	00001.000	983984-0001	INSERT,RIGHT SIDE	EA	
0004	00001.000	983865-0001	DOOR,PAPER	EA	
0005	00001.000	983826-0001	MUFF ASSY,TRANSMIT,ACOUSTIC COUPLER 1222-3826-000	EA	
0006	00001.000	983827-0001	MUFF ASSY,RECEIVE ACOUSTIC COUPLER 1222-3827-000	EA	
0007	00002.000	983875-0001	RETAINER,MUFF	EA	
0008	00004.000	772334-0001	FASTNER 4-40 ON-SERT PAL-NR440004	EA	
0009	00001.000	983913-0001	NAMEPLATE,INNER COVER	EA	
0010	00001.000	983912-0001	LABEL,PAPER LOADING	EA	
0011	AR	972799-0001	ADHESIVE SOLVENTLESS RAPID CURING	EA	
0012	00001.000	418212-0040	STRAP,TIEDOWN,ADJUSTABLE,PLASTIC QPL- MS3367-4-9	EA	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406430 L Bracket use 9-22-75 DIM. 2.25 WAS 2.18 DIM. 3.50 WAS 3.43	1/27/77	



VIEW A-A
OPPOSITE SIDE IDENTICAL
(B-4)



-2 QTY REQD	-1 QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
				PARTS LIST		

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- ENTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .094 THRU .250	.095 THRU .249	.251 THRU .500	.501 THRU .750	.751 THRU 1.000	1.001 THRU 2.000	2.001 THRU 5.000
±.001	±.001	±.001	±.001	±.001	±.001	±.001

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES
  ANGLES ±1°
  3 PLACE DECIMALS ±.010
  2 PLACE DECIMALS ±.02

MATERIAL

		DATE
DWN	[illegible]	6-5-75
CHK	[illegible]	9-19-75
ENGR	[illegible]	9/19/75
QA		
APVD	[illegible]	9/19/75
CONTR-REL	[illegible]	9/19/75
DESIGN ACTIVITY RELEASE	[illegible]	9/24/75

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

COVER ASSEMBLY, OUTER

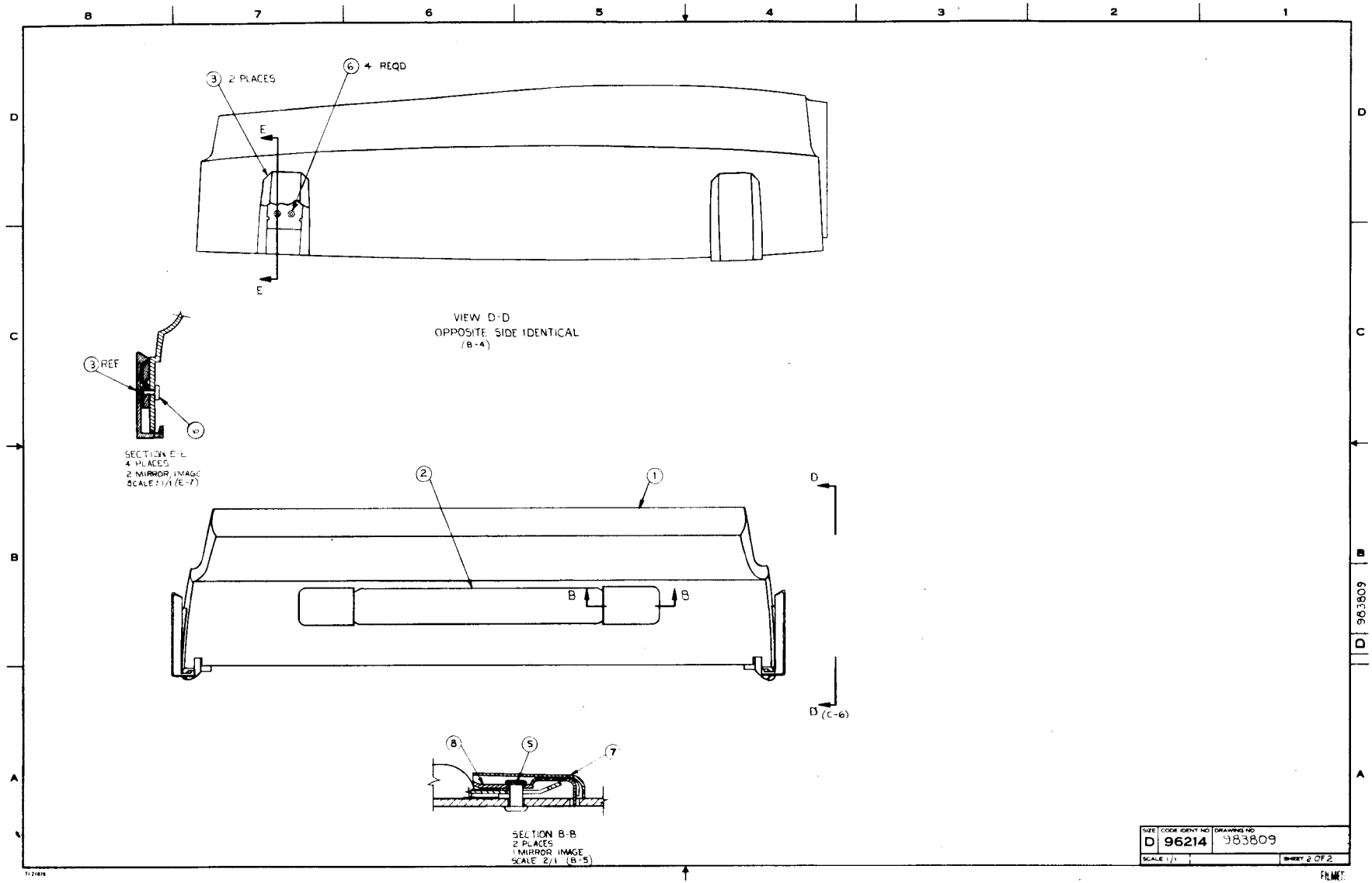
SIZE	CODE IDENT NO	DRAWING NO
D	96214	983809

SCALE 1/1 | REV A | SHEET 1 OF 2

983601	A132
NEXT ASSY	USED ON
APPLICATION	

LM FILMED

983809 D


8
7
6
5
4
3
2
1
D
C
B
A
3 2 PLACES
6 4 REQD
E
E
VIEW D-D
OPPOSITE SIDE IDENTICAL
(B-4)
3 REF
10
SECTION E-E
4 PLACES
2 MIRROR IMAGE
SCALE 1/1 (E-7)
2
1
B
B
D
D (C-6)
8
5
7
SECTION B-B
2 PLACES
1 MIRROR IMAGE
SCALE 2/1 (B-5)
SIZE D
CODE IDENT NO 96214
DRAWING NO 983809
SCALE 1/1
SHEET 2 OF 2
FILMED

NOVEMBER 21, 1975 L I S T O F M A T E R I A L

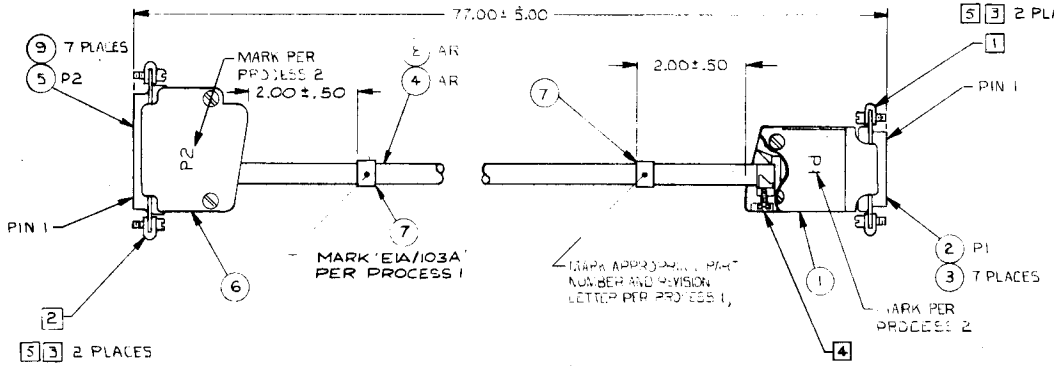
PART NUMBER	REV	DESCRIPTION.....
983809-0001	A	OUTER COVER ASSY

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0001	00001.000	983982-0001	COVER,OUTER-PRINTER CASE	EA
0002	00001.000	972449-0001	HANDLE,CASE-CARRYING,SOFT TOUCH PHC- 540C	EA
0003	00004.000	983901-0001	LATCH CASE	EA
0005	00002.000	418606-0190	RIVET .188 X.407 TUBULAR,C'SINK HEAD	EA
0006	00008.000	418606-0035	RIVET .123 X.375 TUBULAR,C'SINK HEAD	EA
0007	00002.000	972447-0001	CAP,PUSH-ON-HANDLE PHC- 314	EA
0008	00002.000	972448-0001	RETAINER,CASE HANDLE PHC- 315C	EA

WIRE NO.	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA.	FINISH STA.	REMARKS	ITEM NO.
1	22 AWG IPVC WHITE	6 FT. 5 IN.	PGND	P1-9	P2-1		8
2			XMTD	P1-13	P2-2		
3			RCVD	P1-12	P2-3		
4			SGND	P1-1	P2-7		
5			DCD(CDET)	P1-11	P2-8		
6			DTR	P1-15	P2-20		
7	22 AWG IPVC WHITE	6 FT. 5 IN.	RTS(P12V)	P1-10	P2-4		8

NOTES: UNLESS OTHERWISE SPECIFIED
1. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 1).
2. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 6).
3. RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD.
4. CABLE CLAMP DETAIL IN P2 SAME AS P1.
5. SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIP.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406027 (E) E.E. Rodriguez 8-12-75 1. TITLE WAS CABLE ASSY E.I.A. INTERFACE 2. ITEM 7 P/N WAS 533841-0001		
		FORMAL RELEASE		
	B	406446(E) [illegible] 10-22-75 ADDED 1) ITEM 10	9/24/75	
	C	409821(E) L. Wheat 11-1-75 ADDED NOTE 5		
	D	410063(D) L. Wheat 12-9-75 CHANGED NOTE 3 WAS "_____ WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."	12-9-75	
	E	413102(C) Wendy B. Cable 7-20-76 F/D: ADDED DIMENSION 2.00±.50 TO P2; ADDED MARKER STRAP TO SHOW ITEM 7 AND CALLED OUT "MARK 'EIA/103A' PER PROCESS 1"; LM: ITEM 7 P/N 235463-0006 QTY WAS 1.0	7/20/76	



SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL CLASSIFICATION
2	WIRE	103-01	712	CLR WHITE TYPE 9
1	MARK	100-01	712	CLR BLACK TYPE 6
	PROCESS			

QTY REQD -2	QTY REQD -1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
				PARTS LIST		

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL STD 100

HOLE TOLERANCE

.013 THRU .125 +.004 −.001	126 THRU 250 +.005 −.001	.251 THRU 500	006 001
501 THRU 750 +.008 −.001	751 THRU 1.000 +.010 −.001	1.001 THRU 2.000	012 001

NEXT ASSY	USED ON
983800	8-2-75
APPLICATION	

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ± 1° 3 PLACE DECIMALS ± .010 2 PLACE DECIMALS ± .02

		DATE
DWN	E.E. Rodriguez	6-27-75
CHK	[illegible]	7-24-75
ENGR	[illegible]	
QA	[illegible]	8/15/75
APVD	[illegible]	8/15/75
CONTR NO	[illegible]	
DESIGN ACTIVITY RELEASE	[illegible]	8/20/75

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

CABLE ASSY, E.I.A. (103A) INTERFACE

SIZE	CODE IDENT NO	DRAWING NO
C	96214	983848

SCALE NONE REV E SHEET

983848

A-39

FEBRUARY 13, 1976 L I S T O F M A T E R I A L

PART NUMBER	REV	DESCRIPTION.....
983848-0001	F	CABLE ASSY,EIA (103A) INTERFACE

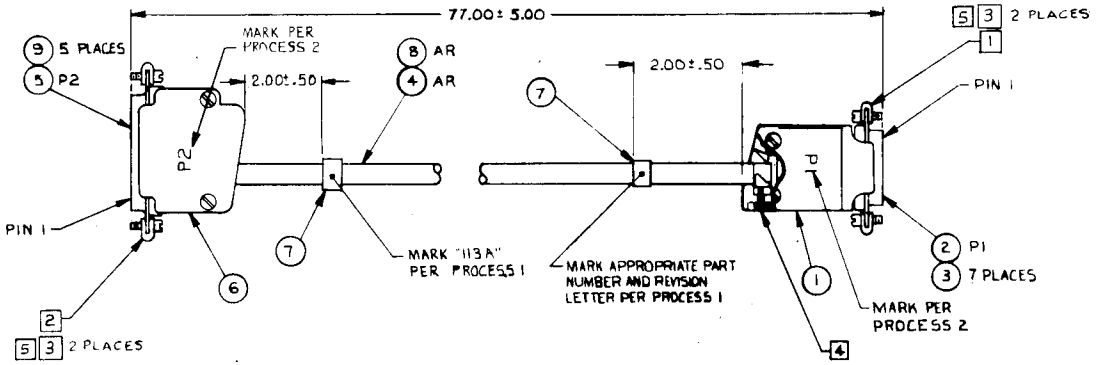
ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS AMP-206478-2	EA
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS AMP-205205-1	EA
0002A			P1 AMP-205205-1	
0003	00007.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA AMP-1-205201-2 STRIP	EA
0004	00006.500	411634-2600	SLEEVE,PVC .263 DIA .020 WALL QPL- MIL-I-6310	FT
0005	00001.000	539409-0005	CONNECTOR,PLUG 25 PINS AMP-205208-1	EA
0005A			P2 AMP-205208-1	
0006	00001.000	539903-0001	HOOD,CONN 25 PIN WITH RETAINERS AMP- 206478-3	EA
0007	00001.000	418201-0001	STRAP,MARKER,ADJUSTABLE,PLASTIC QPL- MS3368-1-9	EA
0008	00045.500	538347-3999	WIRE HOOKUP R-22 AWG 19 STR WHITE JUD- HH0115	FT
0009	00007.000	539430-0006	CONTACT,PIN 24-20AWG .068 INSUL DIA AMP-1-205202-1 STRIP	EA
0010	REF	970671-9901	OMNI TEST PROGRAM FOR CABLE ASSY,INTFC	EA

WIRE NO.	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA.	FINISH STA.	REMARKS	ITEM NO.
1	22 AWG IPVC WHITE	6 FT 5 IN.	PGND	P1-9	P2-1		8
2			XMTD	P1-13	P2-2		
3			RCVD	P1-12	P2-3		
4			SGND	P1-1	P2-7		
5		6 FT 5 IN	DTR	P1-15	P2-20		
6	22 AWG IPVC WHITE	3 IN	CDET/P12V	P1-11	P1-10		5

NOTES: UNLESS OTHERWISE SPECIFIED
1. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 1).
2. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 6).
3. RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD.
4. CABLE CLAMP DETAIL IN P2 SAME AS P1.
5. SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIPS.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406446 (E) Louis Hoon Sep 22,75 ADDED 1) ITEM 10	9/24/75	
	B	409824 (E) 2 Engineer 11-4-75 1) ADDED NOTE 5 2) ZONE 4B & 2C, FLAG NOTED 5.	11-6-75	
	C	410063 (D) R. Wheat 12-9-75 CHANGED NOTE 3, WAS "____ WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."	12-9-75	
	D	413103 (C) 2 Engineer 7-15-76 1) ITEM 7 QTY WAS 1	7/21/76	



SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL CLASSIFICATION
	PROCESS			
2	MARK	100-01	712	CLR WHITE TYPE 9
1	MARK	100-01	712	CLR BLACK TYPE 6

PARTS LIST

QTY REQD (2 | 1)	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL STD 100

HOLE TOLERANCE

.013 THRU .125 + .004 - .001	.128 THRU .500 + .008 - .001	.751 THRU .500 + .006 - .001
.501 THRU .750 + .008 - .001	.751 THRU 1.000 + .010 - .001	1.001 THRU 2.000 + .012 - .001

983800 | 8732
NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ± 1° 3 PLACE DECIMALS ± .010 2 PLACE DECIMALS ± .02

DWN E.E. Rodriguez 8-12-75
CHK Jim Booth 8-19-75
ENGR Neal Gregg 8-14-75
QA Jimmy Hill 8-15-75
APVD Dennis Shadrick 8-15-75
CONTR NO
DESIGN ACTIVITY RELEASE

TEXAS INSTRUMENTS
INCORPORATED
Equipment Group Dallas, Texas

CABLE ASSY, 113A
INTERFACE

SIZE	CODE IDENT NO	DRAWING NO
C	96214	983854

SCALE NONE | REV D | SHEET

983854

LM

A-41

FEBRUARY 13, 1976 L I S T O F M A T E R I A L

PART NUMBER	REV	DESCRIPTION
983854-0001	D	CABLE ASSY (113A) INTERFACE

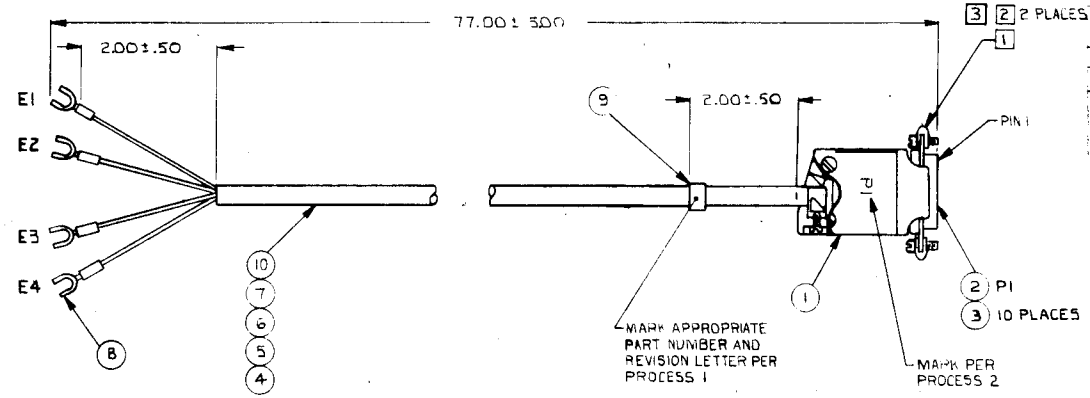
ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS AMP-206478-2	EA
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS AMP-205205-1	EA
0003	00007.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA AMP-1-205201-2 STRIP	EA
0004	00006.500	411634-2600	SLEEVE,PVC .263 DIA .020 WALL QPL- MIL-I-6310	FT
0005	00001.000	539409-0005	CONNECTOR,PLUG 25 PINS AMP-205208-1	EA
0006	00001.000	539903-0001	HOOD,CONN 25 PIN WITH RETAINERS AMP- 206478-3	EA
— 0007	00002.000	418201-0001	STRAP,MARKER,ADJUSTABLE,PLASTIC QPL- MS3368-1-9	EA
0008	00035.000	538347-3999	WIRE HOOKUP 8-22 AWG 19 STR WHITE JUD- HH0115	FT
0009	00005.000	539430-0006	CONTACT,PIN 24-20AWG .068 INSUL DIA AMP-1-205202-1 STRIP	EA
0010	REF	970674-9901	OMNI TEST PROGRAM FOR CABLE ASSY,INTFC	EA

WIRE NO.	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA.	FINISH STA	REMARKS	ITEM NO.
1	22 AWG WHITE	6.5FT	RL-1	P1-6	E1	WHITE WIRE	4
2	22 AWG WHITE/GRN	6.5FT	RL-2	P1-7	E2	GREEN WIRE	7
3	22 AWG WHITE/BLK	6.5FT	X-1	P1-5	E3	BLACK WIRE	6
4	22 AWG WHITE/RED	6.5FT	X-2	P1-4	E4	RED WIRE	5
5	22 AWG IPVC/WHITE	AR	XMTD-XMITDATA	P1-13	P1-3	JUMPER ON P1	4
6	22AWG IPVC/WHITE	AR	RCVD-RCVDATA	P1-12	P1-8	JUMPER ON P1	4
7	22 AWG IPVC/WHITE	AR	CDET P12V	P1-[illegible]	P1-2	JUMPER ON P1	4

NOTES: UNLESS OTHERWISE SPECIFIED
1. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 1).
2. RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD.
3. SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIPS.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406026 (E) E E Rodriguez 8-12-75 1. ITEM 9 P/N WAS 533841-0001 2. ITEM8 P/N WAS 411324-0001		
		FORMAL RELEASE		
	B	406446(E) [illegible] 10-22-75 ADDED 1) ITEM 11	9/22/75	
	C	409823(E) [illegible] 11-4-75 1) ADDED NOTE [3] 2) ZONE C-2, ADDED FLAG NOTE [3] 3) ADDED E1,E2,E3, & E4 ON SPADE LUGS.	11-4-75	
	D	410063 (D) R Dehart 12-9-75 CHANGED NOTE 2, WAS "____ WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."	12-9-75	
	E	409536 (E) [illegible] 5-15-76 LM ITEM 8 WAS QTY OF 4, P/N 232361-0002	5-15-76	



SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL CLASSIFICATION
2	MARK	100-01	712	CLR WHITE TYPE 9
1	MARK	100-01	712	CLR BLACK TYPE 6

PROCESS

QTY REQD -2	QTY REQD -1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD 100

HOLE TOLERANCE

.013 THRU .125 ± .004 ± .001	.126 THRU .250 ± .005 ± .001	.251 THRU .500 ± .006 ± .001
.501 THRU .750 ± .008 ± .001	.751 THRU 1.000 ± .010 ± .001	1.001 THRU 2.000 ± .012 ± .001

983800	8732
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ± 1° 3 PLACE DECIMALS ± .010 2 PLACE DECIMALS ± .02

		DATE
DWN	E E Rodriguez	6-25-75
CHK	D Brattle	7-24-75
ENGR		
QA		8-15-75
APVD	Jamie Warwick	7-24-75
CONTR NO		R H
DESIGN ACTIVITY RELEASE		9/21/75

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

CABLE ASSY, CURRENT LOOP

SIZE	CODE IDENT NO	DRAWING NO
C	96214	983850

SCALE NONE REV E SHEET

983850 C

A-43

LM

AUGUST 13, 1976 LIST OF MATERIAL

PART NUMBER	REV	DESCRIPTION
983950-0001	E	CABLE ASSY,CURRENT LOOP I/F

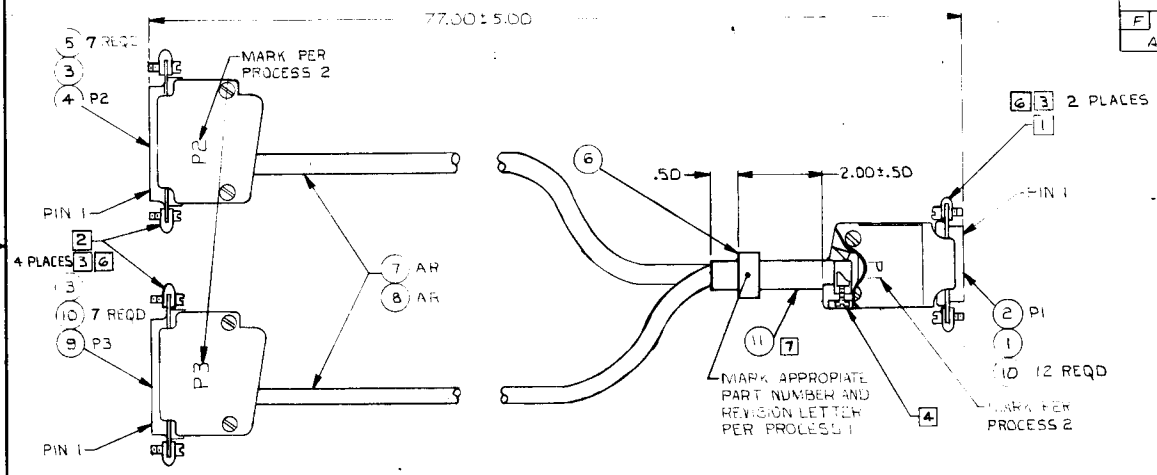
ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS AMP-206478-2	EA
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS AMP-205205-1	EA
0002A			P1 AMP-205205-1	
0003	00010.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA AMP-1-205201-2 STRIP	EA
0004	00007.000	538347-3999	WIRE HOOKUP 8-22 AWG 19 STR WHITE JUD- HH0115	FT
0005	00006.500	538347-3299	WIRE HOOKUP 8-22 AWG 19 STR RD/WH JUD- HH0115	FT
0006	00006.500	538347-3099	WIRE HOOKUP 8-22 AWG 19 STR BK/WH JUD- HH0115	FT
0007	00006.500	538347-3599	WIRE HOOKUP 8-22 AWG 19 STR GN/WH JUD- HH0115	FT
0008	00004.000	972561-0001	TERMINAL,SLOTTED TONGUE #4 STUD AMP--321035	EA
0009	00001.000	418201-0001	STRAP,MARKER,ADJUSTABLE,PLASTIC QPL- MS3368-1-9	EA
0010	00006.500	411634-2600	SLEEVE,PVC .263 DIA .020 WALL QPL- MIL-I-631D	FT
0011	REF	970673-9901	OMNI TEST PROGRAM FOR CABLE ASSY,CURRENT	EA

WIRE NO.	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA.	FINISH STA.	REMARKS	ITEM NO.
1	24 AWG IPVC WHITE	6.5FT	PGND	P1-9	P2-1	DATA TERMINAL	7
2			XMTD	P1-13	P2-2		
3			RCVD	P1-12	P2-3		
4			P12V/RTS	P1-10	P2-4		
5			SGND	P1-1	P2-7		
6			CDET/DCD	P1-11	P2-8		
7			DTR	P1-15	P2-20	DATA TERMINAL	
8			RCV DATA	P1-8	P3-3	ACOUSTIC COUPLER	
9			XM T DATA	P1-3	P3-2		
10			SGND	P1-1 [5]	P3-7		
11			CARDET	P1-2	P3-8		
12			PGND	P1-9 [5]	P3-1		
13			LTS	P1-6	P3-5		
14	24 AWG IPVC WHITE	6.5FT	DSR	P1-7	P3-6	ACOUSTIC COUPLER	7

NOTES: UNLESS OTHERWISE SPECIFIED
1. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 1).
2. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 3).
3. RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD.
4. CABLE CLAMP DETAIL IN P2 AND P3 SAME AS P1.
5. SECOND WIRE ON P1 END ONLY
6. SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIPS
7. SLEEVING (ITEM 8) FROM CONNECTORS P2 & P3 EXTENDS INTO ITEM 11 A MINIMUM OF ONE INCH BUT DOES NOT ENTER P1 CONNECTOR HOUSING

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406023 (E) E E Rodriguez 8-11-75 1. ITEM 6 P/N WAS 533841-0001, QTY WAS 3 2. ITEM 7 P/N WAS 533347-2999 3. ADDED ITEM 11 4. ITEM 10 QTY WAS 8		
		FORMAL RELEASE		
	B	406449 (E) [illegible] 9-8-75 1) ZN C-4, ITEM 5 WAS 8 REQD (2) LM ITEM 5 QTY WAS 21 3) ZN B-2, ITEM 10 WAS 14 REQD (4) LM ITEM 10 QTY WAS 7 5) ZN D-4, WIRE SIZE WAS 22 AWG	9/11/75	[illegible]
	C	406446 (E) [illegible] 10-22-75 ADDED 1) ITEM 12	9/29/75	[illegible] 03
	D	410003 (E) T. Bonnage 11-4-75 1) ADDED NOTE [6] 2) ZONE 2C / 4B ADDED [6]	11/4/75	[illegible]
	E	410063 (D) R Schaut 12-9-75 CHANGED NOTE 3, WAS "- - - WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."	12-9-75	12-9-75 [illegible]
	F	413880 (E) R Schaut 5-15-76 ADDED FLAG NOTE 7	5/15/76	[illegible]



SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL CLASSIFICATION
	PROCESS			CLASSIFICATION
2	MARK	100-01	712	CLR WHITE TYPE 9
1	MARK	100-01	712	CLR BLACK TYPE 9

2 QTY REQD	1 QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
				PARTS LIST		

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 F.I.R.
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL STD 100

HOLE TOLERANCE

.013 THRU .125 ± .004 ± .001	.126 THRU .250 ± .005 ± .001	.251 THRU .500 ± .006 ± .001
.501 THRU .750 ± .008 ± .001	.751 THRU 1.000 ± .010 ± .001	1.001 THRU 2.000 ± .012 ± .001

983800	8732
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ± 1° 3 PLACE DECIMALS ± .010 2 PLACE DECIMALS ± .02

DWN E E Rodriguez 6-26-75
CHK D Booth C 7-24-75
ENGR [illegible] 8/15/75
APVD [illegible] 7-24-75
CONTR NO [illegible]
DESIGN ACTIVITY RELEASE [illegible] 8/29/75

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas Texas

CABLE ASSEMBLY
AUX ACOUSTIC COUPLER

SIZE	CODE IDENT NO	DRAWING NO
C	96214	983847

SCALE NONE REV F SHEET

983847

A-45

LM

FEBRUARY 13, 1976 L I S T O F M A T E R I A L

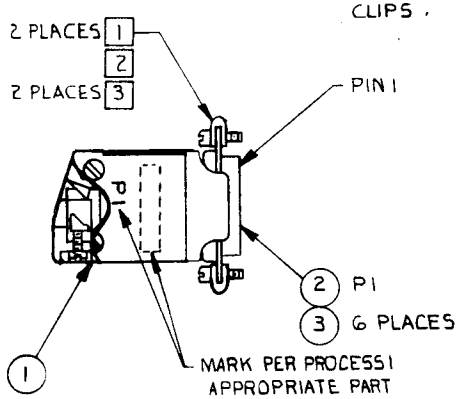
PART NUMBER	REV	DESCRIPTION.....
983847	F	CABLE ASSY,EIA/AUX ACOUSTIC COUPLER

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS	EA
			AMP-206478-2	
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS	EA
			AMP-205205-1	
0002A			P1	
			AMP-205205-1	
0003	00002.000	539903-0001	HOOD,CONN 25 PIN WITH RETAINERS	EA
			AMP- 206478-3	
0004	00001.000	539409-0005	CONNECTOR,PLUG 25 PINS	EA
			AMP-205208-1	
0004A			P2	
			AMP-205208-1	
0005	00007.000	539430-0006	CONTACT,PIN 24-20AWG .068 INSUL DIA	EA
			AMP-1-205202-1 STRIP	
0006	00001.000	418201-0001	STRAP,MARKER,ADJUSTABLE,PLASTIC	EA
			QPL- MS3368-1-9	
0007	00091.000	538347-2999	WIRE HOOKUP 8-24 AWG 19 STR WHITE	FT
			JUD- HH0112	
0008	00013.000	411634-2600	SLEEVE,PVC .263 DIA .020 WALL	FT
			QPL- MIL-I-631D	
0009	00001.000	539409-0006	CONNECTOR,RCPT 25 PINS	EA
			AMP-205207-1	
0009A			P3	
			AMP-205207-1	
0010	00019.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA	EA
			AMP-1-205201-2 STRIP	
0011	00000.250	411634-3800	SLEEVE,PVC, 3/8 DIA. BLACK	FT
			QPL- MIL-I-631	
0012	REF	970670-9901	OMNI TEST PROGRAM FOR CABLE ASSY	EA

WIRE NO	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA	FINISH STA	REMARKS	ITEM NO
1	22 AWG IPVC WHITE	1.0	XMTD-XMITDATA	P1-13	P1-3	JUMPER ON P1	4
2	22 AWG IPVC WHITE	1.0	RCVD-RCVDATA	P1-12	P1-8	JUMPER ON P1	4
3	22 AWG IPVC WHITE	1.0	CDET-CARDET	P1-11	P1-2	JUMPER ON P1	4

NOTES: UNLESS OTHERWISE SPECIFIED

1. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 1).
2. RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD.
3. SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIPS.



REVISIONS			
LTR	DESCRIPTION	DATE	APPD
A	406446 (E) Woodie Woods 10/22/75 ADDED 1) ITEM 5	9/29/75	
B	409820 (E) J Eaton 11-4-75 1) ADDED NOTE 3 2) ADDED 1.0" TOTAL LENGTH TO WIRES # 1,2,+3. 3) ON F/D: ADDED 3 AND OUTLINED P/N-REV AREA.	11/4/75	
C	410063 (D) L. Wheat 12-9-75 CHANGED NOTE 2, WAS "____ WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."	12-9-75	

SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL
1	MARK	100-01	712	CLR WHITE TYPE 9
	PROCESS			CLASSIFICATION

~~INTERFACE PROCESSES PER TI DRAWING 730402~~

-0002	-0001	ITEM NO.	UNIT OF ISSUE	DWG SIZE	PART NUMBER	DESCRIPTION	VENDOR PART NUMBER
QTY REQD					LIST OF MATERIALS		

UNLESS OTHERWISE SPECIFIED
DECIMAL .XX ± .02 .XXX ± .010
FRACTIONAL ± 1/64 ANGULAR ± 1°
CONCENTRICITY MACHINED DIAMETERS .004 TIR
ALL DIMENSIONS TO BE MET BEFORE PLATING
REMOVE ALL BURRS AND SHARP EDGES
DO NOT SCALE THIS DRAWING
ALL DIMENSIONS IN INCHES
SURFACES MARKED ✓ TO HAVE ✓

DRILLED HOLE TOLERANCES
.013 TO .136 ± .003 / .002 .136 TO .250 ± .005 / .003
.250 AND ABOVE ± .005

PROCESSES

PROJ NO.	SIZE	NEXT ASSY DWG NO.
8732	A	983800

DRAFTSMAN E E Rodriguez 7-14-75
CKD—DRAFTSMAN D Booth 7-29-75
DESIGN ENGINEER
APPD—ENGINEER J Eaton 7-30-75
APPD—MFG E H
RELEASE

TEXAS INSTRUMENTS
INCORPORATED
DIGITAL SYSTEMS DIVISION
HOUSTON, TEXAS

TITLE SHORTING PLUG
UNIT
SYSTEM
SCALE NONE | B | 983846 | REV C

FILMED

A-47

FEBRUARY 13, 1976 L I S T O F M A T E R I A L

PART NUMBER	REV	DESCRIPTION
983846-0001	C	SHORTING PLUG

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS AMP-206478-2	EA
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS AMP-205205-1	EA
0002A			P1 AMP-205205-1	
0003	00006.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA AMP-1-205201-2 STRIP	EA
0004	00000.500	538347-3999	WIRE HOOKUP 8-22 AWG 19 STR WHITE JUD- HH0115	FT
0005	REF	970669-9901	OMNI TEST PROGRAM FOR SHORTING PLUG	EA

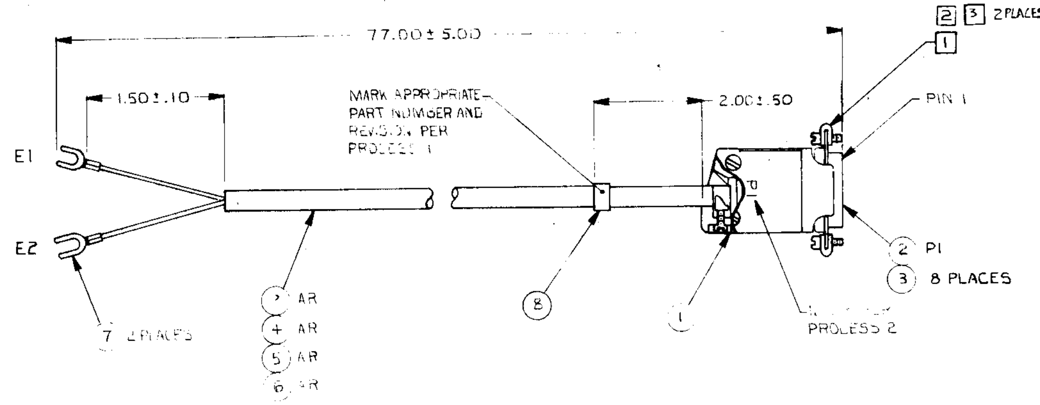
WIRE NO.	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA.	FINISH STA.	REMARKS	NO.
	22 AWG (WHITE/[illegible])		DT	[illegible]	E[illegible]		6
[illegible]	(W[illegible]/[illegible])		DR	[illegible] 4	E2	BLK IS DAT[illegible]	5
3	22 AWG [illegible]		XMT[illegible]-XMIT DATA	[illegible] 15	P1-3	JUM[illegible]	4
4	[illegible] AWG [illegible] WHITE		RCVD-[illegible]	[illegible]	[illegible]	[illegible]	4
5	22 AWG [illegible]		[illegible]DET-CAR[illegible]	[illegible]	P[illegible]2	J[illegible]	4

NOTES: UNLESS OTHERWISE SPECIFIED

1. CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH (ITEM 1).
2. RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD.
3. SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIPS.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406025 E E.E. Rodriguez 8-12-75 1. ITEM 8 P/N WAS 533841-0001 2. ITEM 7 P/N WAS 411324-0001		
		FORMAL RELEASE		
	B	408446(E) [illegible] 10-[illegible]-75 ADDED 1) ITEM 10	9/[illegible]/75	[illegible]
	C	409822(E) [illegible] 11-4-75 1) ADDED NOTE 3 2) ZONE 2-C ADDED 3 3) ADDED E1 & E2 ON SPADE LUGS.	11-4-75	[illegible]
	D	410063 (D) [illegible] 12-9-75 CHANGED NOTE 2, WAS "____WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."	12-9-75	[illegible]
	E	409535 (E) [illegible] 5-15-76 P/N OF ITEM 7 WAS 232361-0002, (#6 LUG)	5-15-76	[illegible]



SEQ NO	IDENT	F-SPEC	NO	ADDITIONAL
2	MARK	100-01	712	CLR WHITE TYPE 9
1	MARK	100-01	712	CLR BLACK TYPE 6
	PROCESS			CLASSIFICATION

QTY REQD 2	QTY REQD 1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .125 +.004 −.001	.126 THRU .250 +.005 −.001	.251 THRU .500 +.006 −.001
.501 THRU .750 +.008 −.001	.751 THRU 1.000 +.010 −.001	1.001 THRU 2.000 +.012 −.001

NEXT ASSY	USED ON
983800	8732

APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES: ANGLES ± 1°, 3 PLACE DECIMALS ± .010, 2 PLACE DECIMALS ± .02

		DATE
DWN	E.E. Rodriguez	6-25-75
CHK	[illegible]	7-24-75
ENGR		
QA	[illegible]	8-15-75
APVD	[illegible]	7-24-75
CONTR NO		R.H.
DESIGN ACTIVITY RELEASE	[illegible]	9/2/75

TEXAS INSTRUMENTS INCORPORATED
Equipment Group Dallas, Texas

CABLE ASSY, MODEM

SIZE	CODE IDENT NO	DRAWING NO
C	96214	983849

SCALE NONE REV E SHEET

983849 C

LM

AUGUST 13, 1976 LIST OF MATERIAL

PART NUMBER	REV	DESCRIPTION
983849-0001	E	CABLE ASSY,MODEM I/F

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS AMP-206478-2	EA
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS AMP-205205-1	EA
0002A			P1 AMP-205205-1	
0003	00008.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA AMP-1-205201-2 STRIP	EA
0004	00000.500	538347-3999	WIRE HOOKUP 8-22 AWG 19 STR WHITE JUD- HH0115	FT
0005	00006.500	538347-3099	WIRE HOOKUP 8-22 AWG 19 STR BK/WH JUD- HH0115	FT
0006	00006.500	538347-3299	WIRE HOOKUP 8-22 AWG 19 STR RD/WH JUD- HH0115	FT
0007	00002.000	972561-0001	TERMINAL,SLOTTED TONGUE #4 STUD AMP--321035	EA
0008	00001.000	418201-0001	STRAP,MARKER,ADJUSTABLE,PLASTIC QPL- MS3368-1-9	EA
0009	00006.500	411634-2100	SLEEVE,PVC .208 DIA .020 WALL QPL- MIL-I-631D	FT
0010	REF	970672-9901	OMNI TEST PROGRAM FOR CABLE ASSY,MODEM	EA

WIRE NO.	DESCRIPTION	TOTAL LENGTH	SIGNATURE	START STA.	FINISH STA.	REMARKS	ITEM NO.
1	24 AWG IPVC WHITE	6.5 FT	PGND	P1-9 [5]	P2-1	DATA TERMINAL	8
2	↕	↕	XMTD	P1-13	P2-2	↕	↕
3			RCVD	P1-12	P2-3		
4			P12V/RTS	P1-10	P2-4		
5			SGND	P1-1 [5]	P2-7		
6			CDET/DCD	P1-11	P2-8		
7			DTR	P1-15	P2-20	DATA TERMINAL	
8			RCV DATA	P1-8	P3-3	MODEM/EIA	
9			XMIT DATA	P1-3	P3-2	↕	
10			SGND	P1-1 [5]	P3-7		
11			CAR DET	P1-2	P3-8		
12			PGND	P1-9 [5]	P3-1		
13			CTS	P1-6	P3-5		
14	24 AWG IPVC WHITE		DSR	P1-7	P3-6	MODEM/EIA	8
15	22 AWG IPVC WHT/RED		DT	P1-5	E1	RED IS DATA TIP	9
16	22 AWG IPVC WHT/BLK	6.5 FT	DR	P1-4	E2	BLK IS DATA RING	10

NOTES: UNLESS OTHERWISE SPECIFIED

[1] CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH ITEM

[2] CABLE CLAMP SCREWS AND RETAINER CLIPS AND SCREWS INCLUDED WITH ITEM 3

[3] RETAINER CLIP INSTALLED WITH THREADED HOLE ON SAME SIDE AS SCREW HEAD

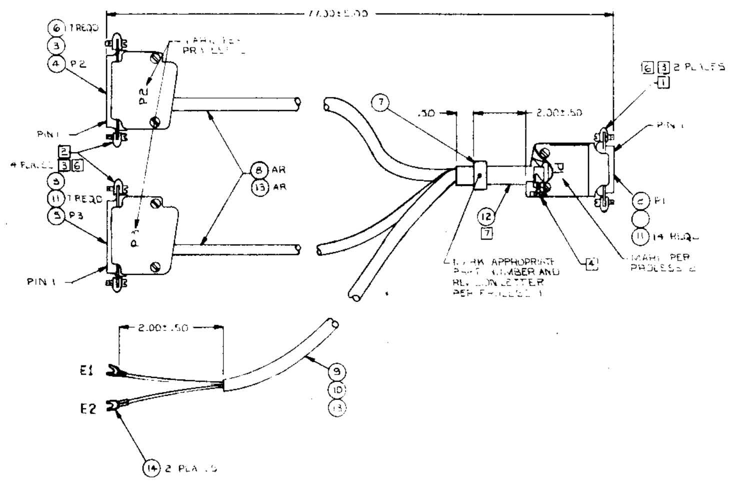
[4] CABLE CLAMP DETAIL IN P2 AND P3 SAME AS P1

[5] SECOND WIRE ON P1 END: 2 WIRES CRIMPED IN P1-9, AND 2 WIRES CRIMPED IN P1-1

[6] SCREWS MUST BE THREADED COMPLETELY THRU RETAINER CLIPS

[7] SLEEVING (ITEM 13) FROM CONNECTOR P2, P3, E1/E2 EXTENDS INTO ITEM 12 A MINIMUM OF ONE INCH, BUT DOES NOT ENTER P1 CONNECTOR HOUSING

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
D4	A	410004 (E) ADDED NOTE [6]	11-9-75	
	B	410063 (D) 12-9-75 CHANGED NOTE 3 WAS "_ _ _ _ WITH LARGE HOLE ON SAME SIDE AS SCREW HEAD."		
	C	409537(E) R. Wheat 5-27-76 ON F/D: ADDED NOTE 7. ON LM: ITEM 14 P/N WAS 232361-0002	5/21/76	



2	MARK	100-01	712	COLOR ... BLACK TYPE
1	MARK	100-01	712	COLOR BLACK TYPE
SEQ NO	IDENT	T-SPEC	NO	ADDITIONAL
	PROCESS			CLASSIFICATION

FOR CORRELATION TO GOVT/IND SPECIFICATIONS, SEE TI DRAWING 729467

-2	-1	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION
QTY REQD						

PARTS LIST

UNLESS OTHERWISE SPECIFIED
- REMOVE ALL BURRS AND SHARP EDGES
- CONCENTRICITY MACHINED DIAMETERS .010 FIR
- DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING
- IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY
- INTERPRET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .125 +.004 −.001	.126 THRU .250 +.006 −.001	.251 THRU .500 +.006 −.001
.501 THRU .750 +.008 −.001	.751 THRU 1.000 +.010 −.001	1.001 THRU 2.000 +.012 −.001

NEXT ASSY | USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
- DIMENSIONS ARE IN INCHES
- TOLERANCES ANGLES ±1° 3 PLACE DECIMALS ±.010 2 PLACE DECIMALS ±.02

MATERIAL:

DWN EE 9-3-75

CHK

ENGR 9/5/75

QA

APVD

CONTR NO

DESIGN ACTIVITY RELEASE

TEXAS INSTRUMENTS INCORPORATED Equipment Group Dallas, Texas

CABLE ASSY, EIA/AUXILIARY MODEM

SIZE	CODE IDENT NO	DRAWING NO
D	96214	983855

SCALE NONE | REV C | SHEET 1 OF 1

D 96214 983855

FILMED LM TI-7814E

AUGUST 13, 1976 LIST OF MATERIAL

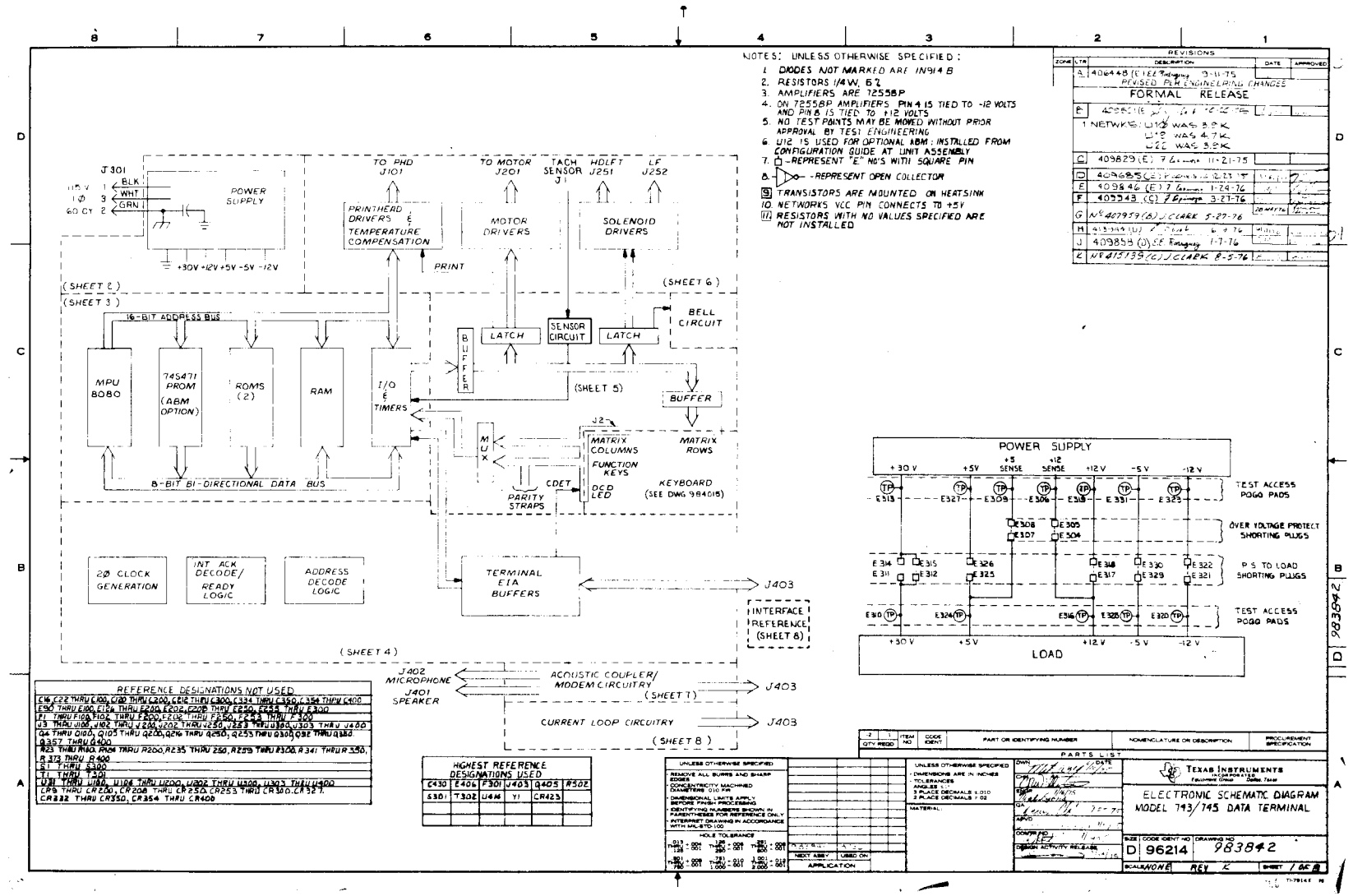
PART NUMBER REV DESCRIPTION.....
983855-0001 C CABLE ASSY,EIA/AUX MODEM

ITEM.	QUANTITY.	COMPONENT..	DESCRIPTION.....	UM
0001	00001.000	539903-0005	HOOD,CONN 15 PIN WITH RETAINERS AMP-206478-2	EA
0002	00001.000	539409-0004	CONNECTOR,RCPT 15 PINS AMP-205205-1	EA
0002A			P1 AMP-205205-1	
0003	00002.000	539903-0001	HOOD,CONN 25 PIN WITH RETAINERS AMP- 206478-3	EA
0004	00001.000	539409-0005	CONNECTOR,PLUG 25 PINS AMP-205208-1	EA
0004A			P2 AMP-205208-1	
0005	00001.000	539409-0006	CONNECTOR,RCPT 25 PINS AMP-205207-1	EA
0005A			P3 AMP-205207-1	
0006	00007.000	539430-0006	CONTACT,PIN 24-20AWG .068 INSUL DIA AMP-1-205202-1 STRIP	EA
0007	00001.000	418201-0001	STRAP,MARKER,ADJUSTABLE,PLASTIC QPL- MS3368-1-9	EA
0008	00091.000	538347-2999	WIRE HOOKUP 8-24 AWG 19 STR WHITE JUD- HH0112	FT
0009	00006.500	538347-3299	WIRE HOOKUP 8-22 AWG 19 STR RD/WH JUD- HH0115	FT
0010	00006.500	538347-3099	WIRE HOOKUP 8-22 AWG 19 STR BK/WH JUD- HH0115	FT
0011	00021.000	539430-0005	CONTACT,SOCKET 24-20AWG .068 INSUL DIA AMP-1-205201-2 STRIP	EA
0012	00000.250	411634-3800	SLEEVE,PVC, 3/8 DIA. BLACK QPL- MIL-I-631	FT
0013	00019.500	411634-2600	SLEEVE,PVC .263 DIA .020 WALL QPL- MIL-I-631D	FT
0014	00002.000	972561-0001	TERMINAL,SLOTTED TONGUE #4 STUD AMP--321035	EA
0015	REF	970675-9901	TEST PROGRAM,CABLE ASSY EIA AUX MODEM	EA

APPENDIX B

ELECTRONIC SCHEMATICS

Models 743/745 Data Terminals	983842 K



NOTES: UNLESS OTHERWISE SPECIFIED:

1. DIODES NOT MARKED ARE 1N914 B
2. RESISTORS 1/4W, 5%
3. AMPLIFIERS ARE 72558P
4. ON 72558P AMPLIFIERS PIN 4 IS TIED TO -12 VOLTS AND PIN 8 IS TIED TO +12 VOLTS
5. NO TEST POINTS MAY BE MOVED WITHOUT PRIOR APPROVAL BY TEST ENGINEERING
6. U12 IS USED FOR OPTIONAL ABM; INSTALLED FROM CONFIGURATION GUIDE AT UNIT ASSEMBLY
7. □ -REPRESENT "E" NO'S WITH SQUARE PIN
8. -REPRESENT OPEN COLLECTOR
9. TRANSISTORS ARE MOUNTED ON HEATSINK
10. NETWORKS VCC PIN CONNECTS TO +5V
11. RESISTORS WITH NO VALUES SPECIFIED ARE NOT INSTALLED

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	406448 (E) JCLARK 9-11-75 REVISED PER ENGINEERING CHANGES FORMAL RELEASE		
	B	409816 (E) JCLARK 11-7-75 1 NETWKS: U12 WAS 3.9K U19 WAS 4.7K U22 WAS 3.9K		
	C	409829 (E) JCLARK 11-21-75		
	D	409885 (E) JCLARK 12-23-75		
	E	409846 (E) JCLARK 1-29-76		
	F	409943 (E) JCLARK 3-27-76		
	G	N/C 407957 (E) JCLARK 5-27-76		
	H	413944 (E) JCLARK 6-9-76		
	J	409859 (D) JCLARK 1-7-76		
	K	N/C 415139 (E) JCLARK 8-5-76		

REFERENCE DESIGNATIONS NOT USED

C14, C22 THRU C100, C120 THRU C200, C218 THRU C300, C334 THRU C350, C356 THRU C400
E50 THRU E100, E154 THRU E200, E206, C208 THRU E250, E254 THRU E300
F1 THRU F100, F102 THRU F200, F206 THRU F250, F254 THRU F300
J3 THRU J100, J102 THRU J200, J202 THRU J250, J253 THRU J300, J303 THRU J400
Q4 THRU Q100, Q105 THRU Q200, Q216 THRU Q250, Q255 THRU Q300, Q312 THRU Q350, Q357 THRU Q400
R23 THRU R100, R104 THRU R200, R235 THRU 250, R255 THRU R300, R341 THRU R350, R373 THRU R400
S1 THRU S300
T1 THRU T301
U31 THRU U100, U104 THRU U200, U202 THRU U300, U303 THRU U400
CR9 THRU CR200, CR208 THRU CR250, CR253 THRU CR300, CR327, CR332 THRU CR350, CR354 THRU CR400

HIGHEST REFERENCE DESIGNATIONS USED

C430	E406	F301	J403	Q405	R502
S301	T302	U4M	Y1	CR423	

QTY REQD	ITEM NO	CODE IDENT	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	PROCUREMENT SPECIFICATION

PARTS LIST

UNLESS OTHERWISE SPECIFIED: REMOVE ALL BURRS AND SHARP EDGES; CONCENTRICITY MACHINED DIAMETERS .010 FIR; DIMENSIONAL LIMITS APPLY BEFORE FINISH PROCESSING; IDENTIFYING NUMBERS SHOWN IN PARENTHESES FOR REFERENCE ONLY; INTERNET DRAWING IN ACCORDANCE WITH MIL-STD-100

HOLE TOLERANCE

.013 THRU .128	+.004 -.001	.129 THRU .250	+.005 -.001	.251 THRU .500	+.006 -.001
.501 THRU .750	+.008 -.001	.751 THRU 1.000	+.010 -.001	1.001 THRU 2.000	+.012 -.001

NEXT ASSY | USED ON | APPLICATION

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ANGLES ±.5°; 3 PLACE DECIMALS ±.010; 2 PLACE DECIMALS ±.02; MATERIAL

DRAWN | DATE | CHK'D | ENGR | QA | APVD | CONTR NO | DESIGN ACTIVITY RELEASE

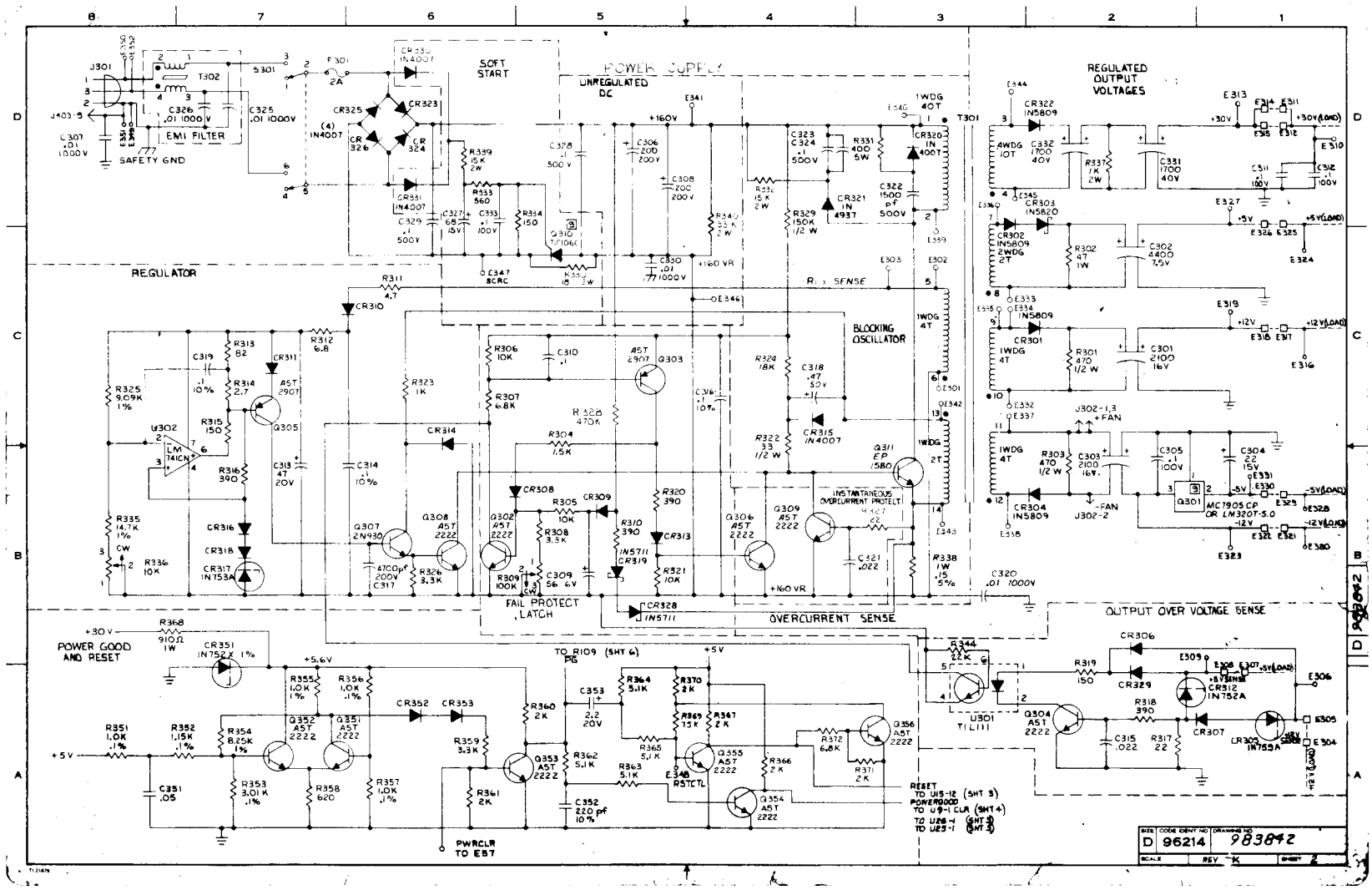
TEXAS INSTRUMENTS INCORPORATED, Equipment Group, Dallas, Texas

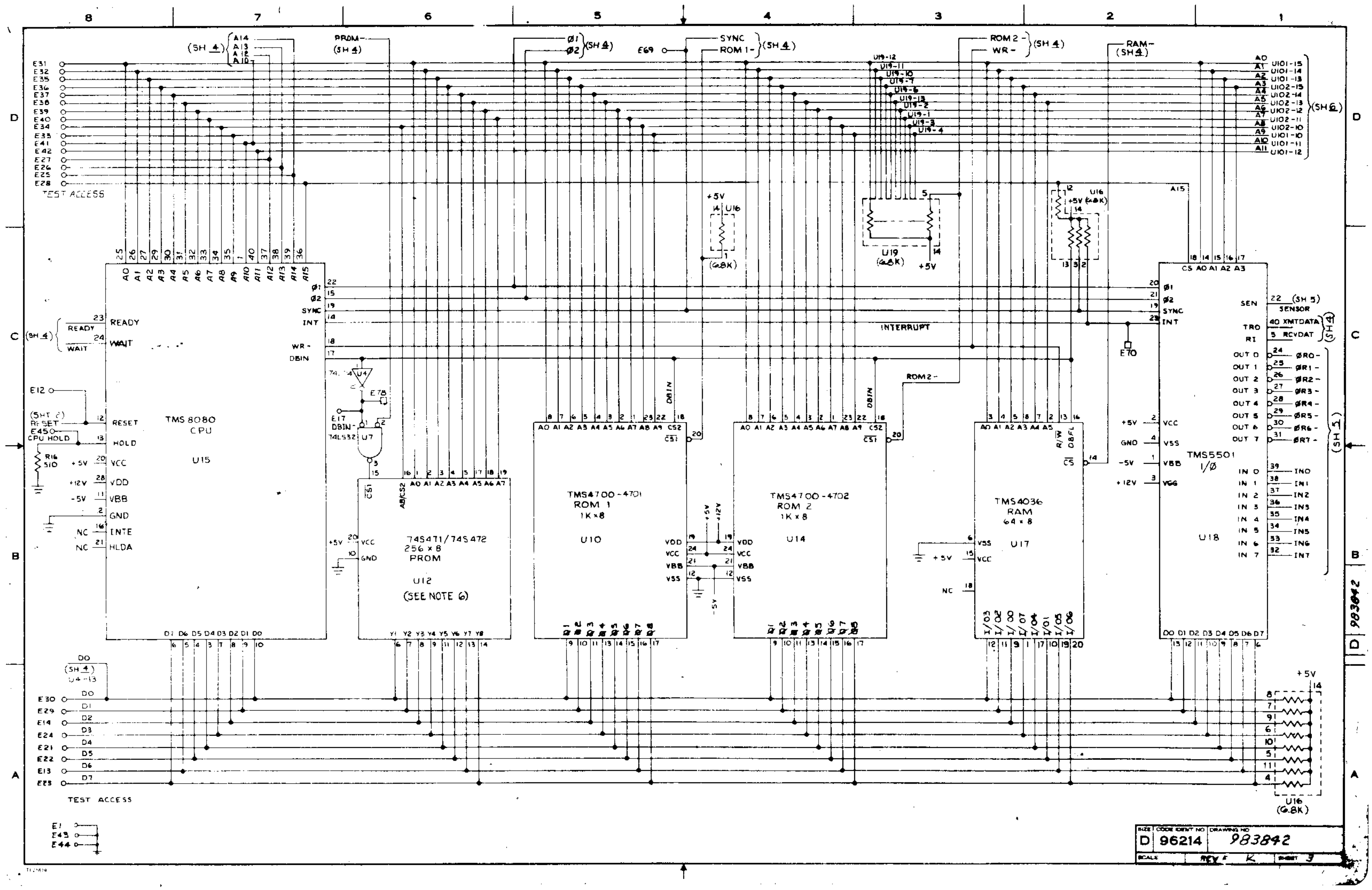
ELECTRONIC SCHEMATIC DIAGRAM
MODEL 743/745 DATA TERMINAL

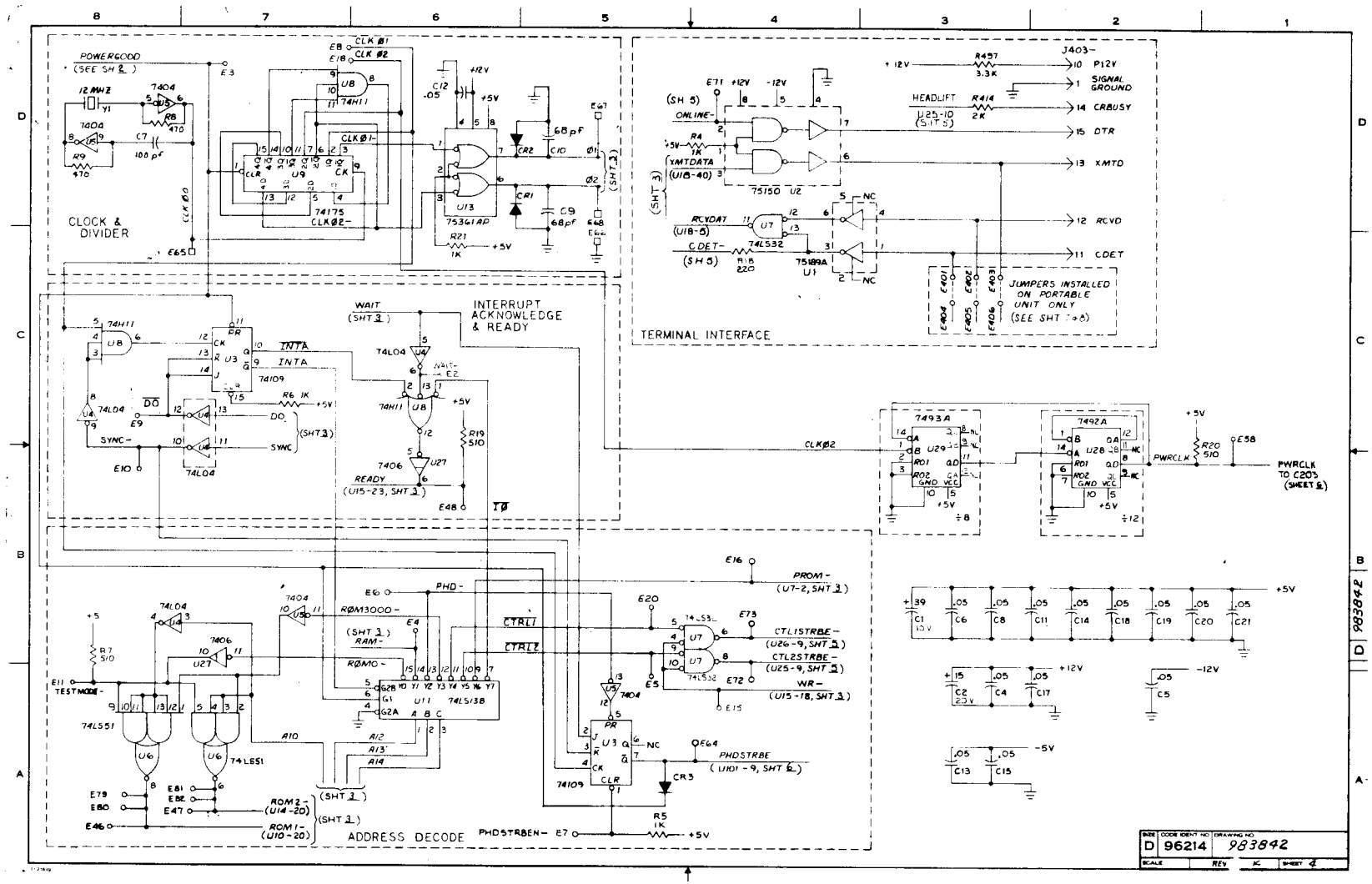
SIZE D | CODE IDENT NO 96214 | DRAWING NO 983842

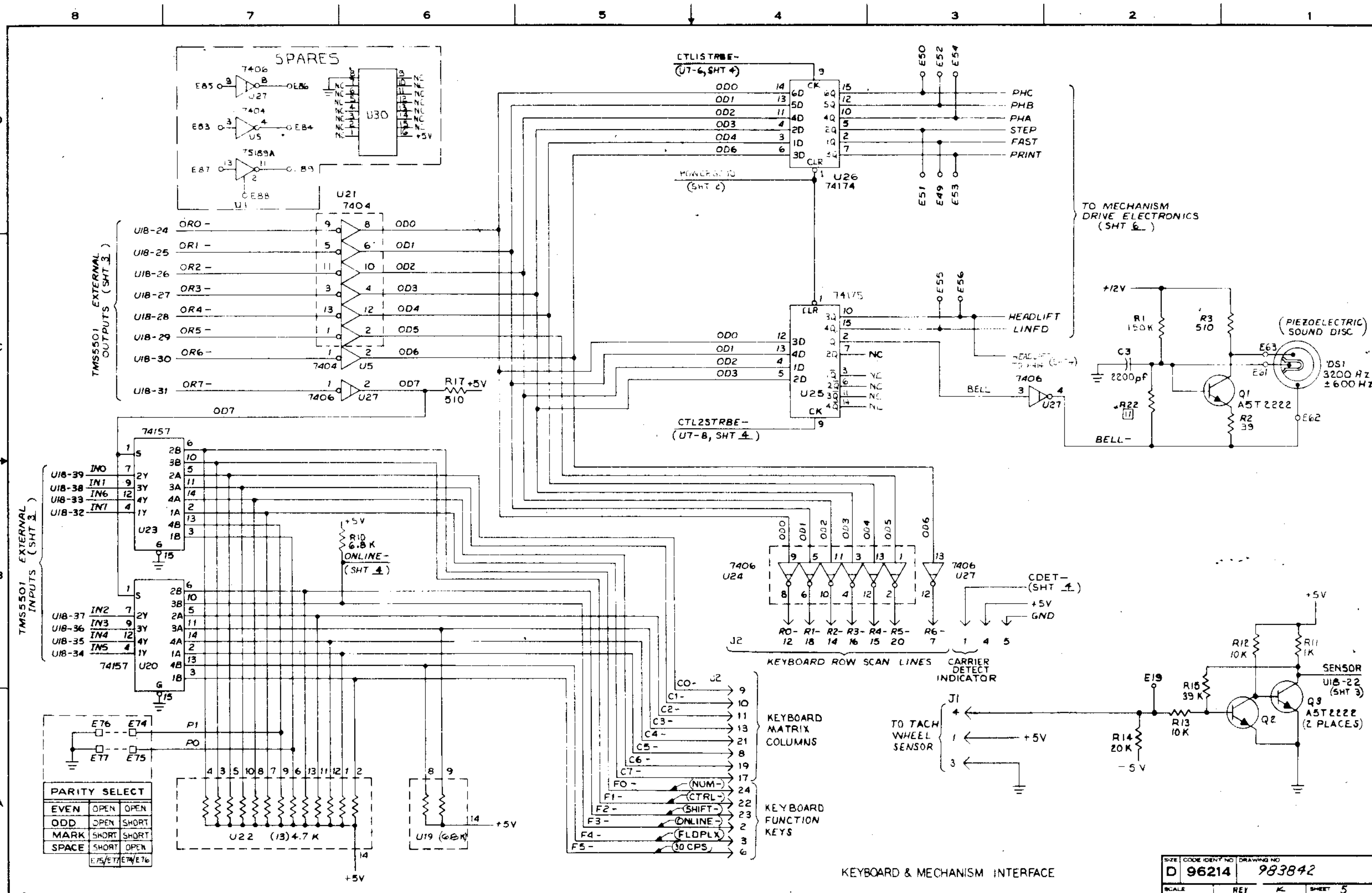
SCALE NONE | REV K | SHEET 1 OF 8

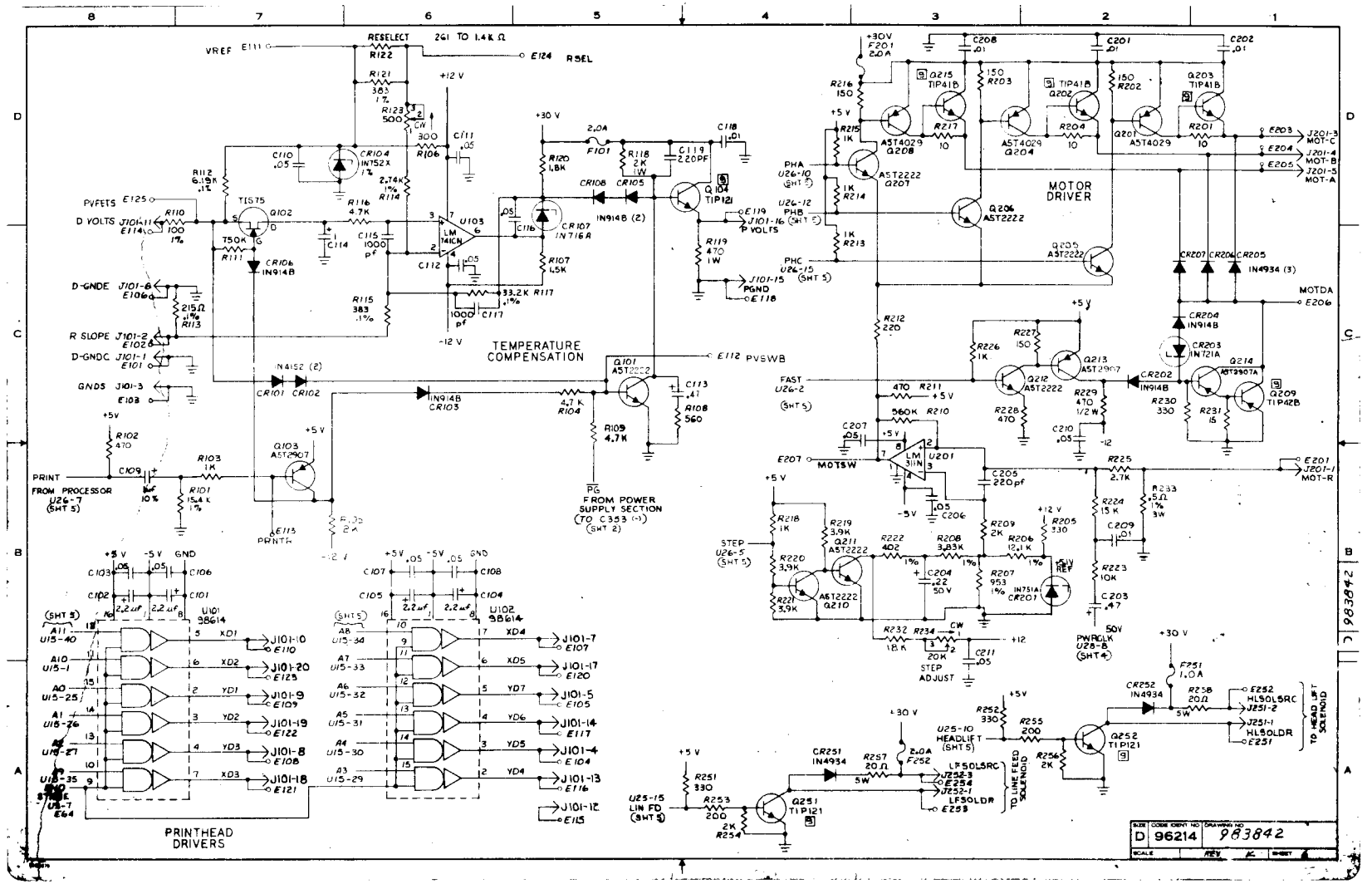
983842 D

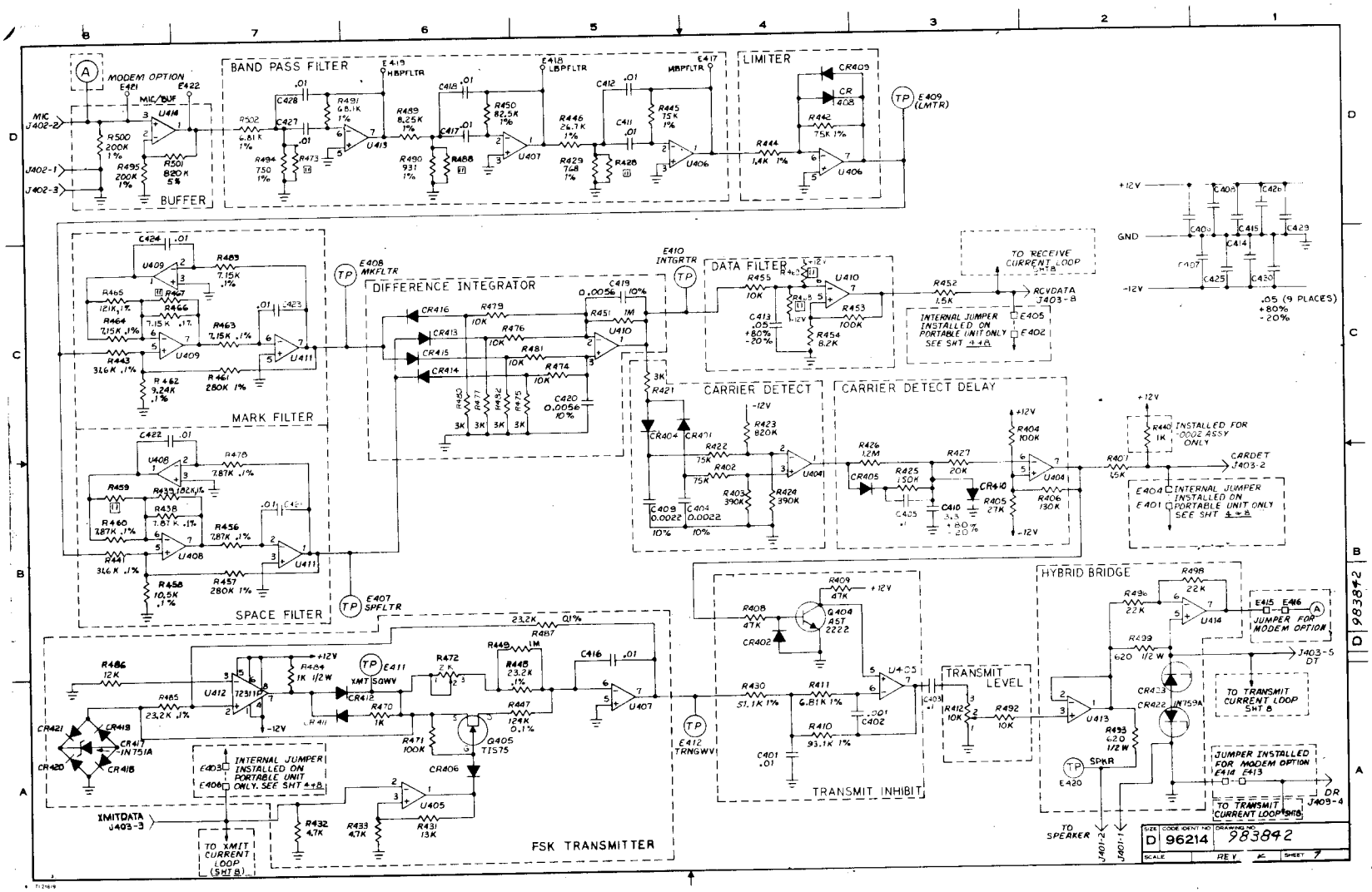

POWER SUPPLY
SOFT START
UNREGULATED DC
REGULATED OUTPUT VOLTAGES
EMI FILTER
SAFETY GND
REGULATOR
BLOCKING OSCILLATOR
FAIL PROTECT LATCH
OVERCURRENT SENSE
OUTPUT OVER VOLTAGE SENSE
POWER GOOD AND RESET
MC7905 CP OR LM320T-5.0
PWRCLR TO E87

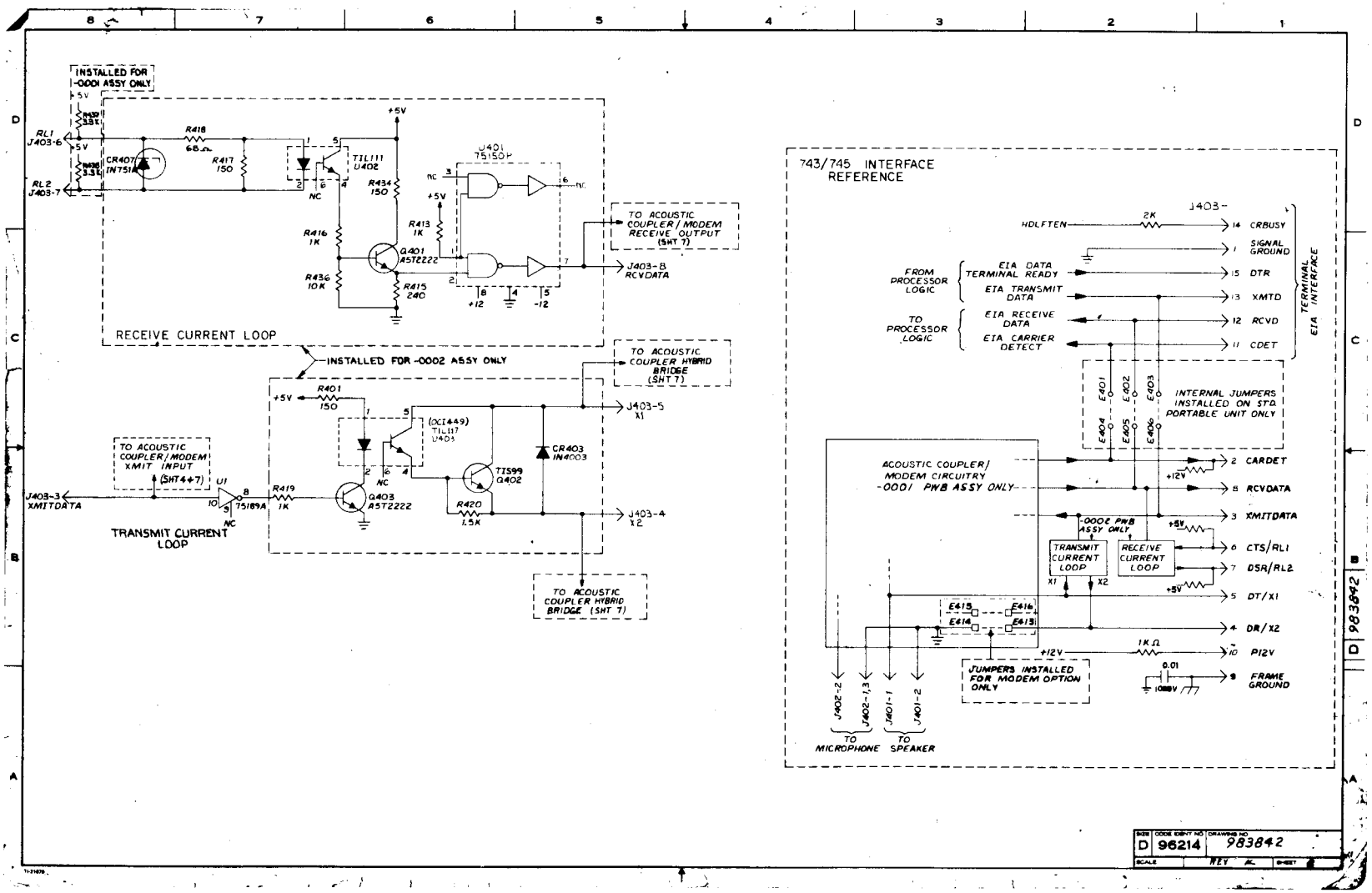

TMS 8080
CPU
U15
74S471/74S472
256 x 8
PROM
U12
(SEE NOTE 6)
TMS4700-4701
ROM 1
1K x 8
U10
TMS4700-4702
ROM 2
1K x 8
U14
TMS4036
RAM
64 x 8
U17
TMS5501
I/Ø
U18
INTERRUPT
TEST ACCESS
TEST ACCESS
D 96214 983842
REV K
SHEET 3


CLOCK & DIVIDER
INTERRUPT ACKNOWLEDGE & READY
TERMINAL INTERFACE
ADDRESS DECODE
JUMPERS INSTALLED ON PORTABLE UNIT ONLY (SEE SHT 3 & 8)
J403
P12V
SIGNAL GROUND
CRBUSY
DTR
XMTD
RCVD
CDET
PWRCLK TO C203 (SHEET 6)
PROM1 - (U7-2, SHT 3)
WR - (U15-18, SHT 3)
PHDSTRBE (U101-9, SHT 6)
ROM2 - (U14-20) (SHT 3)
ROM1 - (U10-20) (SHT 3)
CTL1STRBE - (U26-9, SHT 5)
CTL2STRBE - (U25-9, SHT 5)
D 96214
983842


SPARES
PARITY SELECT
EVEN OPEN OPEN
ODD OPEN SHORT
MARK SHORT SHORT
SPACE SHORT OPEN
E75/E77 E74/E76
TMS5501 EXTERNAL OUTPUTS (SHT 3)
TMS5501 EXTERNAL INPUTS (SHT 3)
CTL1STRBE- (U7-6, SHT 4)
CTL2STRBE- (U7-8, SHT 4)
PHC
PHB
PHA
STEP
FAST
PRINT
HEADLIFT
LINFD
TO MECHANISM DRIVE ELECTRONICS (SHT 6)
(PIEZOELECTRIC SOUND DISC)
DS1 3200 HZ ±600 HZ
BELL
BELL-
ONLINE- (SHT 4)
CDET- (SHT 4)
KEYBOARD ROW SCAN LINES
CARRIER DETECT INDICATOR
KEYBOARD MATRIX COLUMNS
KEYBOARD FUNCTION KEYS
(NUM-)
(CTRL-)
(SHIFT-)
(ONLINE-)
(FLDPLX)
(30 CPS)
TO TACH WHEEL SENSOR
SENSOR U18-22 (SHT 3)
A5T2222 (2 PLACES)
U22 (13) 4.7 K
U19 (68K)
KEYBOARD & MECHANISM INTERFACE
D 96214 983842
REV K SHEET 5


RESELECT
261 TO 1.4K Ω
VREF E111
R122
E124 RSEL
R121
383
1%
+12 V
R123
500
CW
R106
300
C111
.05
C110
.05
CR104
IN752X
2.74K
1%
R114
R116
4.7K
PVFETS E125
D VOLTS J101-11
E114
R110
100
1%
Q102
TIS75
750K
R111
CR106
IN914B
R112
6.19K
1%
C114
C115
1000
pF
U103
LM
141CN
C112
.05
R115
383
1%
1000
pF
C117
33.2K R117
1%
-12 V
+30 V
2.0A
F101
R120
1.8K
C116
.05
CR107
IN716A
CR108
CR105
IN914B (2)
R118
2K
1W
C119
220PF
C118
.01
Q104
TIP121
E119
J101-16
P VOLTS
R119
470
1W
J101-15
PGND
E118
PHA
U26-10
(SHT 5)
U26-12
PHB
(SHT 5)
PHC
U26-15
(SHT 5)
+30V
E201
2.0A
C208
.01
C201
.01
C202
.01
R216
150
+5 V
R215
1K
R214
1K
R213
1K
Q215
TIP41B
Q202
TIP41B
Q203
TIP41B
150
R203
150
R202
R217
10
R204
10
R201
10
AST4029
Q208
AST4029
Q204
AST4029
Q201
AST2222
Q207
Q206
AST2222
Q205
AST2222
MOTOR
DRIVER
E203
J201-3
MOT-C
E204
J201-4
MOT-B
E205
J201-5
MOT-A
CR207
CR206
CR205
IN4934 (3)
MOTDA
E206
CR204
IN914B
CR203
IN721A
Q214
AST2907A
CR202
IN914B
Q209
TIP42B
R230
330
R231
15
R229
470
1/2 W
R228
470
R227
150
Q213
AST2907
Q212
AST2222
R226
1K
R212
220
+5 y
FAST
U26-2
(SHT 5)
470 R211
+5 V
560K R210
C207
.05
+5 V
C210
.05
-12
E207
MOTSW
LM
311N
U201
C205
220pf
-5V
C206
.05
R225
2.7K
E201
J201-1
MOT-R
R233
.5Ω
1%
3W
R224
15 K
R223
10K
C209
.01
C203
.47
50V
PWRCLK
U28-8
(SHT 4)
+12
+5 V
R218
1K
R219
3.9K
Q211
AST2222
Q210
AST2222
R220
3.9K
R221
3.9K
STEP
U26-5
(SHT 5)
R222
402
1%
R208
3.83K
1%
C204
.22
50 V
R209
2K
R206
12.1K
1%
R207
953
1%
IN751A
CR201
5.1V
REF
+12 V
R205
330
R232
18 A
R234
CW
20K
3
2
1
STEP
ADJUST
C211
.05
+12
+30 V
F251
1.0A
CR252
IN4934
R258
20Ω
5W
E252
HL90LSRC
J251-2
J251-1
HL90LDR
E251
TO HEAD LIFT SOLENOID
+5V
R252
330
R255
200
Q252
TIP121
R256
2K
+30 V
U25-10
HEADLIFT
(SHT 5)
2.0A
F252
CR251
IN4934
R257
20Ω
5W
LF50LSRC
J252-3
E254
J252-1
LF50LDR
E253
TO LINE FEED SOLENOID
+5 V
R251
330
R253
200
2K
R254
U25-15
LIN FD
(SHT 5)
Q251
TIP121
TEMPERATURE
COMPENSATION
Q101
AST2222
E112 PVSWB
C113
.47
R108
560
R109
4.7K
IN4152 (2)
CR101
CR102
IN914B
CR103
4.7 K
R104
PG
FROM POWER
SUPPLY SECTION
(TO C353 (-))
(SHT 2)
+5V
R102
470
C109
10%
R103
1K
PRINT
FROM PROCESSOR
U26-7
(SHT 5)
R101
15.4 K
1%
Q103
AST2907
R105
2.0A
E113
PRNTR
-12 V
+5V
-5V
GND
C103
.05
.05
C106
C102
2.2uf
2.2 uf
C101
U101
98614
(SHT 5)
A11
U15-40
A10
U15-1
A0
U15-25
A1
U15-26
A2
U15-27
A3
U15-28
A4
U15-35
A5
U15-36
A6
U15-37
A7
U15-38
XD1
XD2
YD1
YD2
YD3
XD3
J101-10
E110
J101-20
E123
J101-9
E109
J101-19
E122
J101-8
E108
J101-18
E121
C107
.05
.05
C108
C105
2.2uf
2.2 uf
C104
U102
98614
(SHT 5)
A8
U15-34
A7
U15-33
A6
U15-32
A5
U15-31
A4
U15-30
A3
U15-29
XD4
XD5
YD7
YD6
YD5
YD4
J101-7
E107
J101-17
E120
J101-5
E105
J101-14
E117
J101-4
E104
J101-13
E116
J101-12
E115
PRINTHEAD
DRIVERS
D 96214 983842
983842


MODEM OPTION
BUFFER
BAND PASS FILTER
LIMITER
DIFFERENCE INTEGRATOR
DATA FILTER
MARK FILTER
SPACE FILTER
CARRIER DETECT
CARRIER DETECT DELAY
HYBRID BRIDGE
TRANSMIT LEVEL
TRANSMIT INHIBIT
FSK TRANSMITTER
TO RECEIVE CURRENT LOOP SHT 8
TO TRANSMIT CURRENT LOOP SHT 8
TO XMIT CURRENT LOOP (SHT 8)
INTERNAL JUMPER INSTALLED ON PORTABLE UNIT ONLY SEE SHT 4+8
JUMPER FOR MODEM OPTION
TO SPEAKER
SIZE D
CODE IDENT NO 96214
DRAWING NO 983842
SCALE
REV
SHEET 7


INSTALLED FOR -0001 ASSY ONLY
RL1 J403-6
RL2 J403-7
R418 68Ω
R417 150
CR407 IN751A
T1L111 U402
R434 150
R413 1K
R416 1K
R436 10K
Q401 A5T2222
R415 240
U401 75150P
+12
-12
TO ACOUSTIC COUPLER / MODEM RECEIVE OUTPUT (SHT 7)
J403-8 RCVDATA
RECEIVE CURRENT LOOP
INSTALLED FOR -0002 ASSY ONLY
TO ACOUSTIC COUPLER HYBRID BRIDGE (SHT 7)
R401 150
(OCI449) TIL117 U403
J403-5 X1
CR403 IN4003
TIS99 Q402
R420 1.5K
Q403 A5T2222
J403-4 X2
TO ACOUSTIC COUPLER / MODEM XMIT INPUT (SHT 4-7)
J403-3 XMITDATA
U1 75189A
R419 1K
TRANSMIT CURRENT LOOP
743/745 INTERFACE REFERENCE
J403-
HDLFTEN
2K
14 CRBUSY
1 SIGNAL GROUND
FROM PROCESSOR LOGIC
EIA DATA TERMINAL READY
15 DTR
EIA TRANSMIT DATA
13 XMTD
TO PROCESSOR LOGIC
EIA RECEIVE DATA
12 RCVD
EIA CARRIER DETECT
11 CDET
TERMINAL EIA INTERFACE
E401 E402 E403 E404 E405 E406
INTERNAL JUMPERS INSTALLED ON STD PORTABLE UNIT ONLY
ACOUSTIC COUPLER/ MODEM CIRCUITRY -0001 PWB ASSY ONLY
2 CARDET
8 RCVDATA
3 XMITDATA
-0002 PWB ASSY ONLY
TRANSMIT CURRENT LOOP
RECEIVE CURRENT LOOP
6 CTS/RL1
7 DSR/RL2
5 DT/X1
E415 E416 E414 E413
4 DR/X2
10 P12V
1K Ω
0.01
9 FRAME GROUND
JUMPERS INSTALLED FOR MODEM OPTION ONLY
J402-2 J402-1,3 J401-1 J401-2
TO MICROPHONE
TO SPEAKER
SIZE D
CODE IDENT NO 96214
DRAWING NO 983842
SCALE
REV
SHEET

USER'S CRITIQUE

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