CHAPTER 7
ADJUSTMENT PROCEDURES AND LUBRICATION

This chapter contains a detailed description of the following LA120 adjustments and information on lubrication.

Print head adjustment (Paragraph 7.1)
Printer mechanism adjustment (Paragraph 7.2)
Paper guide adjustment (Paragraph 7.3)
Paper out switch adjustment (Paragraph 7.4)
Ribbon tension adjustment (Paragraph 7.5)
Ribbon drive assembly adjustment (Paragraph 7.6)
Idler gear assembly adjustment (Paragraph 7.7)
Bumper assembly adjustment (Paragraph 7.8)
Print bar adjustment (Paragraph 7.9)
Lubrication (Paragraph 7.10)

7.1 PRINT HEAD ADJUSTMENT

The following procedure describes the print head adjustment.

1. Set power switch to off, and remove paper and ribbon.
2. Move print head to middle of print bar (Figure 7-1).
3. Loosen the four (6-32) screws holding print head (Figure 6-3).
4. Set carriage adjustment lever to no. 1 and position print head for contact with print bar.
5. Tighten the four (6-32) screws to 10 ± 2 in/lbs of torque.
6. Replace ribbon and paper.

7.2 PRINTER MECHANISM ADJUSTMENT

1. Set power switch to OFF.

2. Perform printer housing removal procedure (Paragraph 6.2.1).

NOTE
Printer mechanism adjustment can be checked by going directly to Step 5.

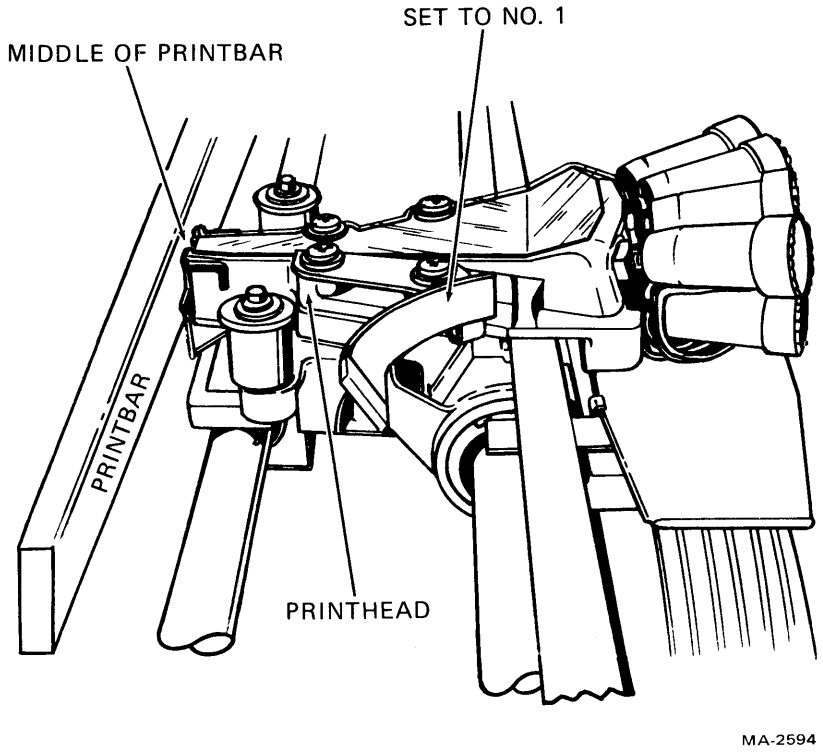


Figure 7-1 Print Head Adjustment

3. Loosen the two (8-32) screws on power supply, thereby causing mounting plate to drop. Tilt power supply back to gain access to printer mechanism rear mounting screw.

4. Loosen the four (10-32) screws that secure printer mechanism to cabinet base (Figure 7-2).

5. Adjust position of printer mechanism (front to back) so that front surface of print bar is in line with centerline of reference holes in cabinet (Figure 7-2) within 0.030 inch. Tighten the four (10-32) screws to 5 ± 1 in/lb of torque.

6. Perform printer housing installation procedures (Paragraph 6.2.2).

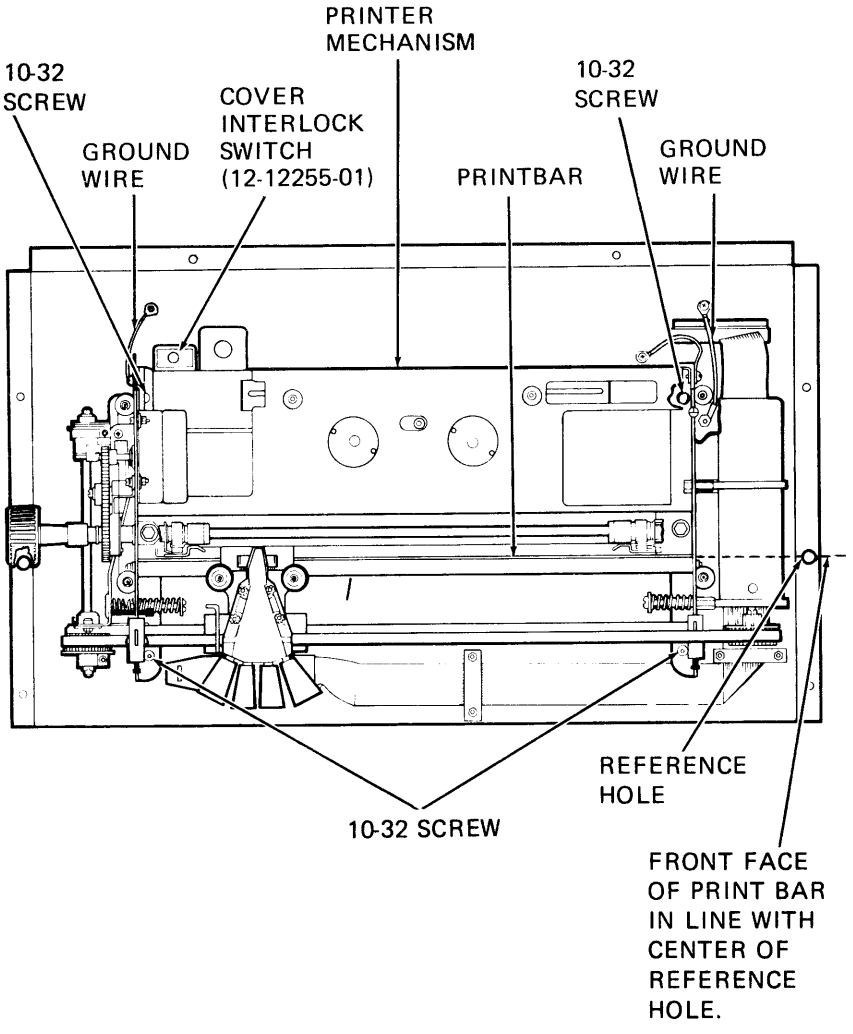


Figure 7-2 Printer Mechanism Alignment

7.3 PAPER GUIDE ADJUSTMENT

1. Loosen the three (8-32) screws at bottom of paper guide and adjust for 2.54 to 3.556 mm (0.10 to 0.14 in) gap between paper guide and bent-up flange of base (Figure 7-3).

2. Place paper in machine but do not feed it up into tractors. Pull paper up through cabinet and printer mechanism to ensure that there is no drag on paper.

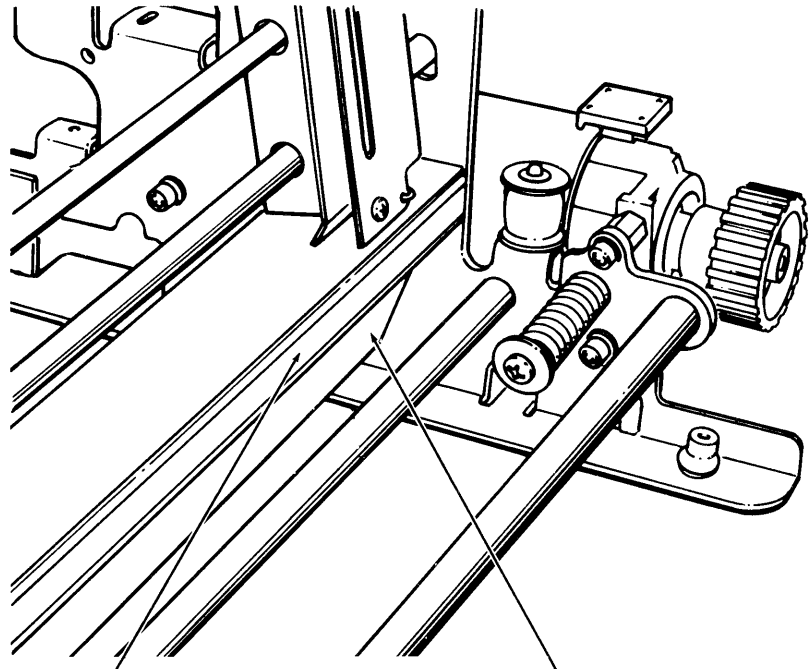


Figure 7-3 Paper Guide Adjustment

7.4 PAPER OUT SWITCH ADJUSTMENT

This procedure describes paper out switch adjustment.

1. Set power switch to OFF.
2. Lift up and remove printer cover. Make sure there is paper in LA120.
3. Loosen the two (4-40) screws at paper out switch (Figure 7-4).

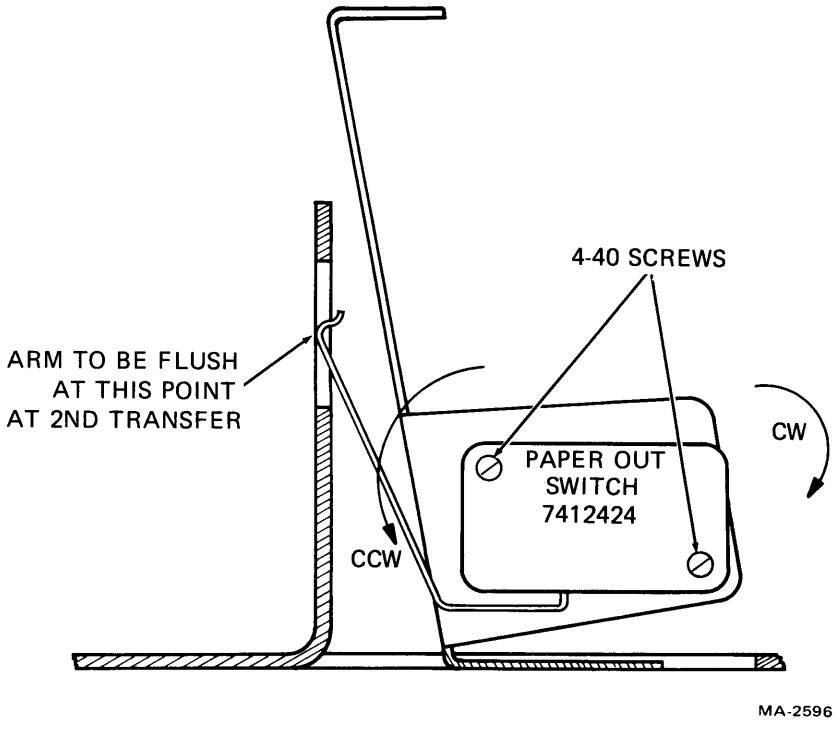


Figure 7-4 Paper Out Switch Adjustment

NOTE
If screws cannot be loosened, it may be necessary to reform switch arm to attain the adjustment.

4. Rotate paper out switch counterclockwise until switch clicks (transfers), then rotate switch clockwise until switch clicks again (transfers back). Tighten the two (4-40) screws to 5 ± 1 in/lb.
5. Replace printer cover.
6. Restore power.

7.5 RIBBON TENSION ADJUSTMENT

The following procedure first checks individual spool drag; then, with ribbon installed, a carriage drag test is performed.

1. Set power switch to OFF.
2. Lift up and remove printer cover.
3. Remove ribbon spools and ribbon.
4. Place an empty spool on side not being driven.
5. Wind a small piece of string or ribbon on empty spool. Measure force required to pull string in the direction the ribbon normally takes (Figure 7-5). The measured force should be approximately 0.14 to 0.20 kg (5 to 7 oz).
6. Adjust spool drag by tightening or loosening adjustment screw, while holding nut at base of screw. An 11/32-inch wrench is required to hold nut.
7. Move direction changing guide and check remaining undriven spool for 0.14 to 0.20 kg (5 to 7 oz) tension.

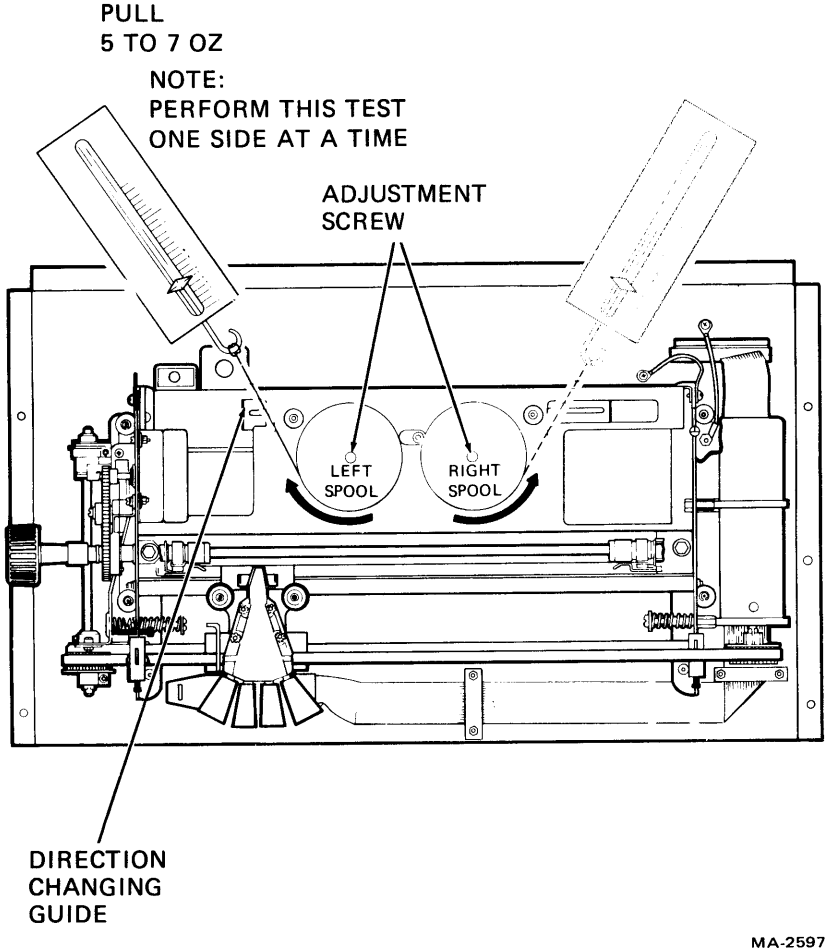


Figure 7-5 Ribbon Spool Tension Adjustment

NOTE

If a tension gauge is not available, ribbon tension can be approximately adjusted by tightening adjustment screw all the way (until compression spring under ribbon chassis is completely compressed) and then backing off 2-1/2 turns. (Each one-half turn of the screw equals approximately 1 oz of tension.)

8. Install ribbon and spools.

9. With ribbon fully wound on left spool, the ribbon moving right to left across the face of the print head, and the ribbon grommet starting to pull the reverse sensor to the right, a pull test on the carriage from the left to right should indicate a pull of no more than 1.8 kg (4 lb) (Figure 7-6). The ribbon should be moving right to left across the face of the print head when the pull test is made.

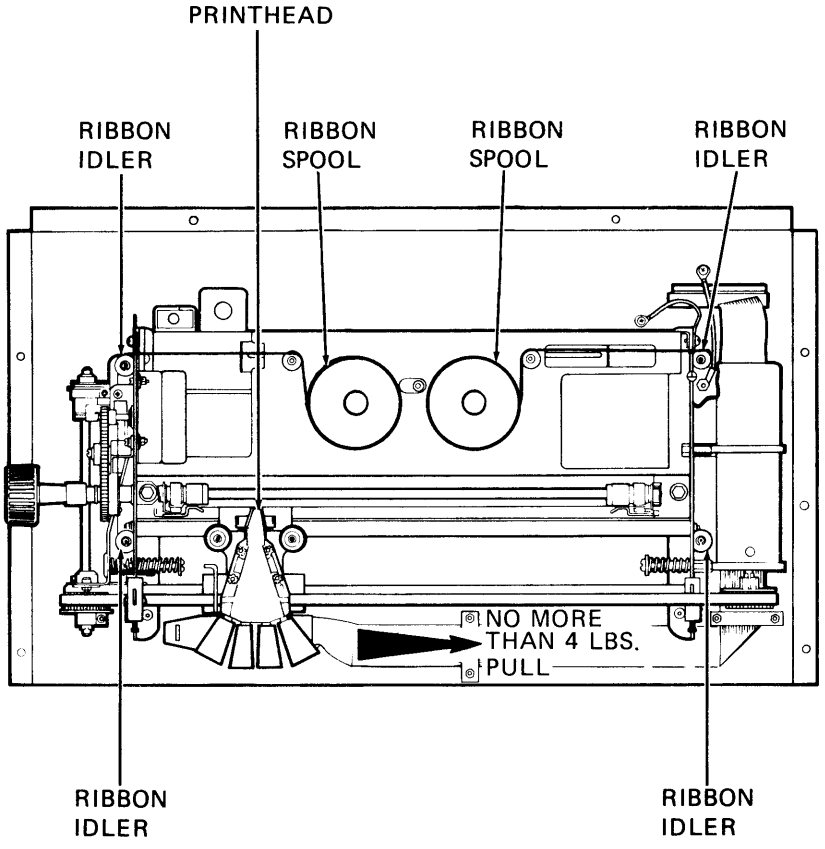


Figure 7-6 Ribbon Threading/Drag Test

Failure to achieve a pull of 1.8 kg (4 lb) maximum could indicate a problem in one of the following areas:

- Ribbon path
- Carriage assembly (misaligned or damaged bearings)
- Printer assembly (damaged end plates)
- Ribbon chassis
- Ribbon drive assembly

10. Reinstall printer cover.

11. Restore power.

7.6 RIBBON DRIVE ASSEMBLY ADJUSTMENT

This procedure describes the ribbon drive assembly adjustment.

1. Set power switch to OFF.

2. Lift up and remove printer cover.

3. Rotate ribbon drive pulley on ribbon drive until clutch eccentric is at its highest point.

4. The ribbon drive pushrod should be at the center of the elongated hole (Figure 7-7). Rotate ribbon drive pulley and check travel of pushrod to either side of the elongated hole. Travel should be equal on both sides of the centerline.

5. To adjust for conditions listed in the previous step, loosen the 8-32 upper pivot screw (Figure 7-7) and move ribbon drive assembly the required amount (Figure 7-8).

6. Tighten the 8-32 screw to 18 ± 2 in/lb, and rotate ribbon drive pulley on ribbon drive until clutch eccentric is at its highest point. Repeat Step 4.

7. Replace printer cover.

8. Restore power to LA120.

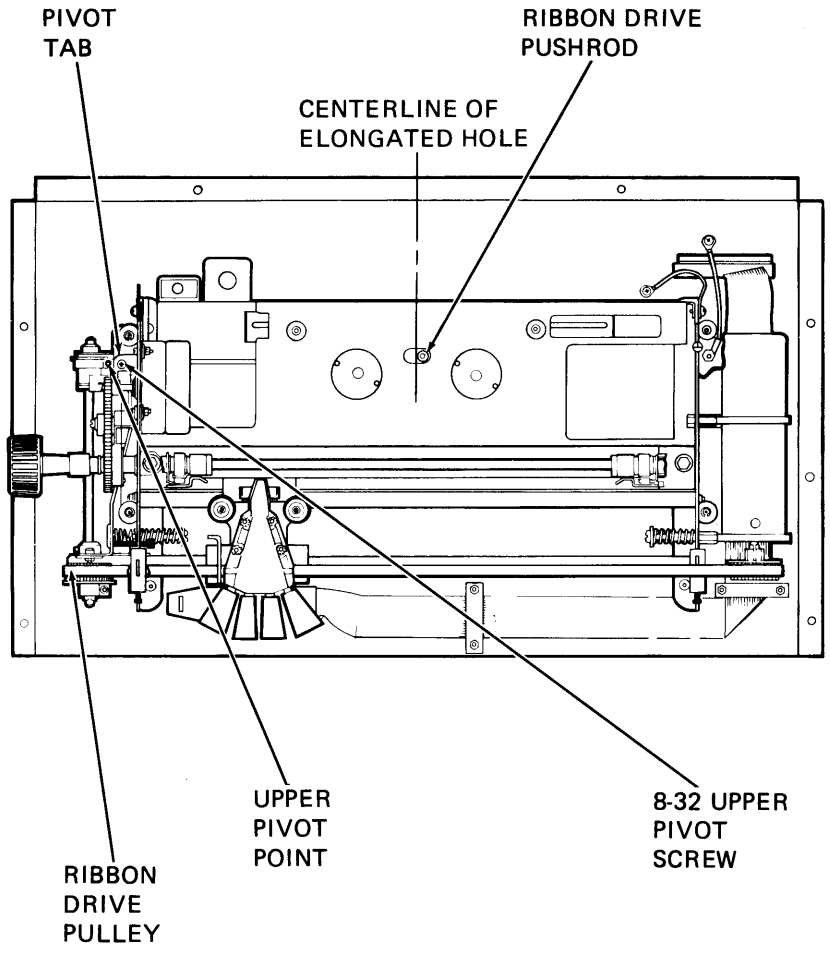


Figure 7-7 Ribbon Drive Adjustment

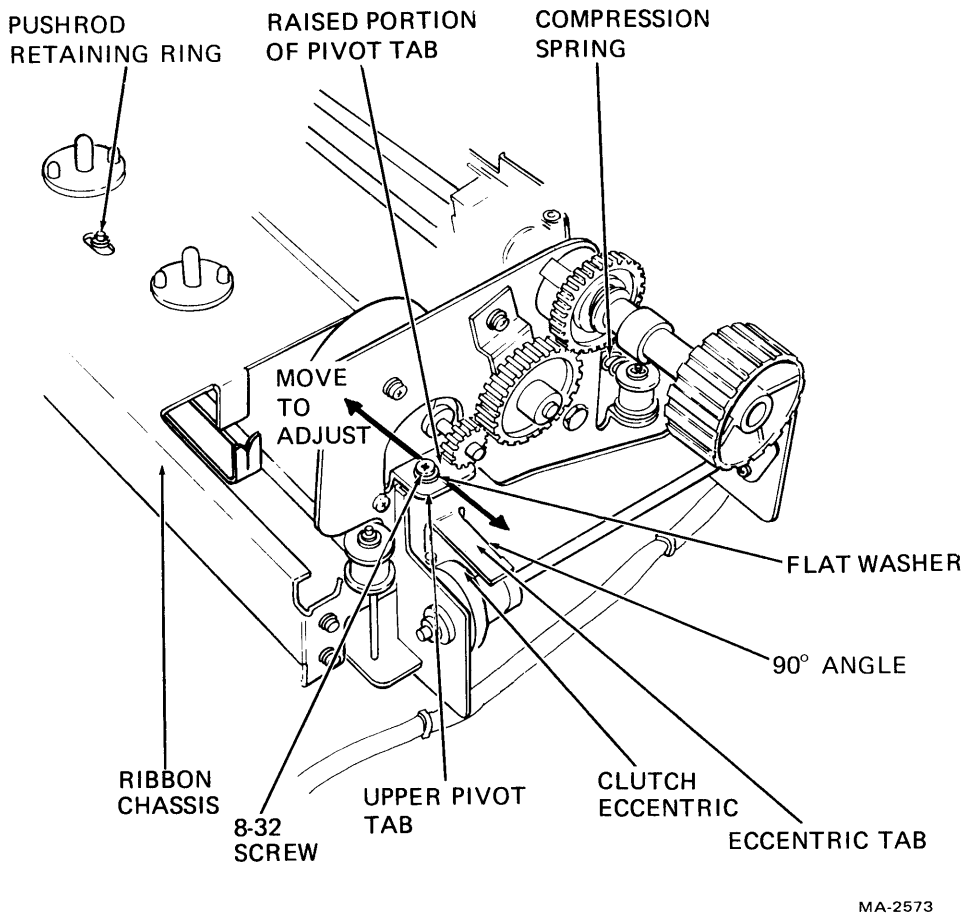


Figure 7-8 Ribbon Drive Assembly

7.7 IDLER GEAR ASSEMBLY ADJUSTMENT

This procedure adjusts the idler gear assembly for the correct amount of backlash.

1. Set power switch to OFF.

2. Perform printer housing removal procedure (Paragraph 6.2.1).

NOTE
Idler gear backlash can be checked by going directly to Step 4.

3. To adjust backlash loosen the two (8-32) screws securing idler gear assembly to side plate (Figure 7-9).

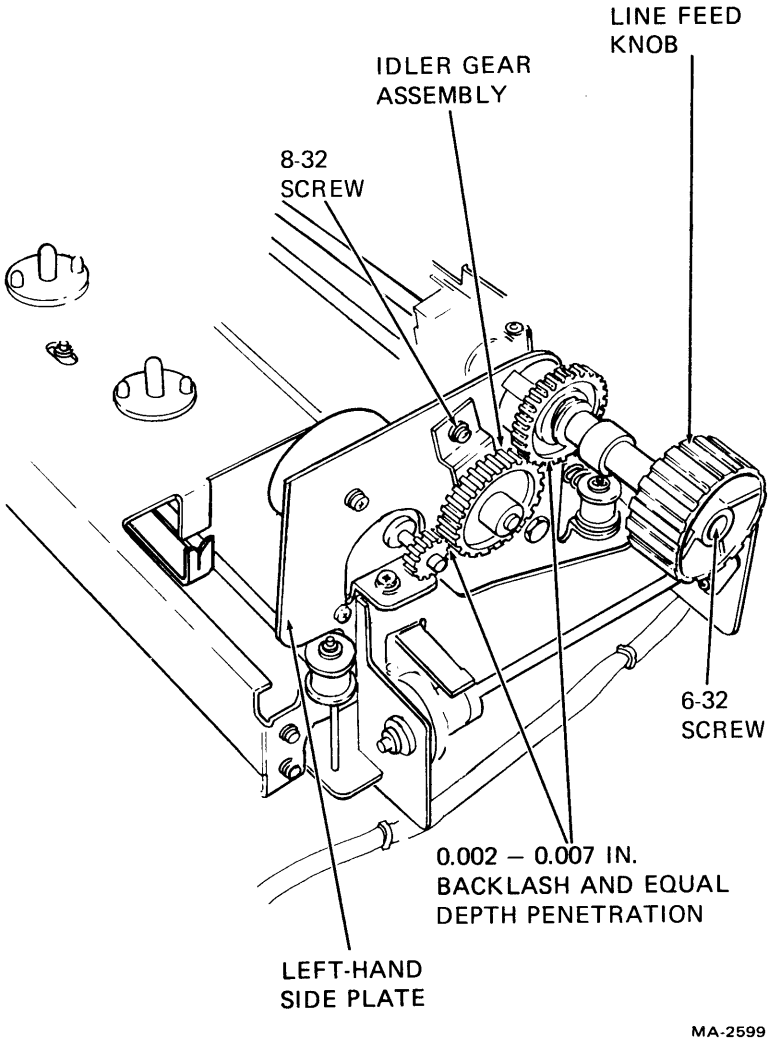


Figure 7-9 Idler Gear Assembly

4. With idler gear in mesh with stepping motor gear and tractor drive gear, adjust idler gear to achieve equal depth penetration and a backlash* of 0.0508 to 0.01778 mm (0.002 to 0.007 in) between each pair of gears (Figure 7-9). The idler gear should be free to slide in and out. Rotate gears to check backlash in several places.

5. Tighten the two (8-32) screws to 18 ± 2 in/lb of torque.

6. Perform printer housing installation procedure (Paragraph 6.2.2).

7. Restore power to LA120.

7.8 BUMPER ASSEMBLY ADJUSTMENT

Tighten the screws (Figure 7-10) until the top of the washers are 43.69 mm (1.72 in) from the right and left side plates. Center the spring around the screw.

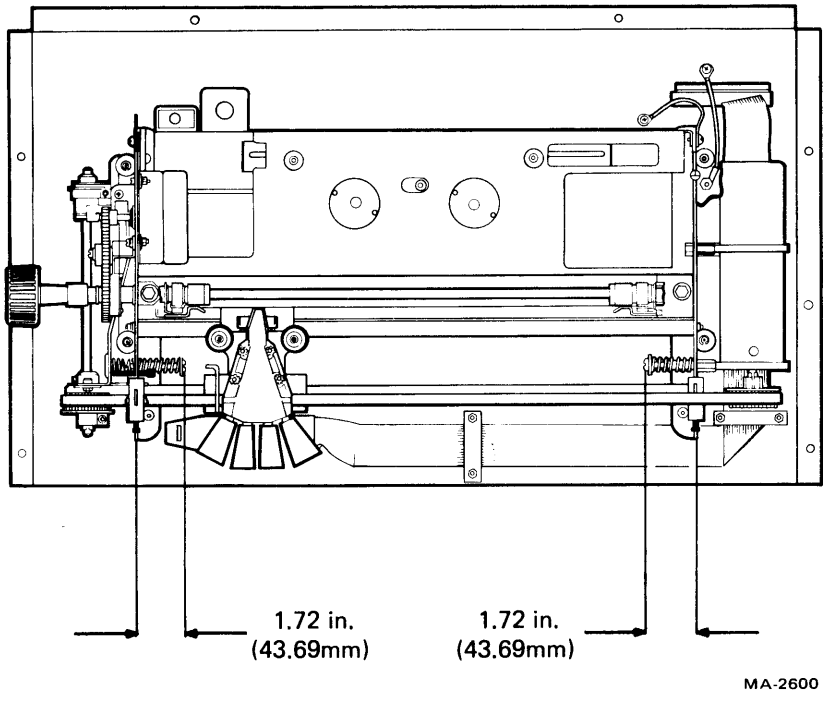


Figure 7-10 Bumper Assembly Adjustment

*Backlash is the amount a gear turns prior to turning the gear it meshes with.

7.9 PRINT BAR ADJUSTMENT

1. Remove power from LA120.

2. Remove printer housing (Paragraph 6.2.1).

3. Remove ribbon and ribbon spools.

4. Check print bar adjustment by moving print head along carriage shafts, with carriage lever in maximum forward position, and checking distance from print head jewel to print bar. As the print head moves from one end of the carriage shafts to the other, the distance must be 0.010 ± 0.002 in. (See Figure 7-11 for measurement points.) If adjustment is not correct, continue with procedure.

5. Position tractors in center of their travel.

6. Position print head to extreme right of carriage shafts.

7. Loosen the 7/16 inch hex-head screws on each end of the print bar.

8. With carriage lever in maximum forward position, use a feeler gauge to set print bar 0.010 inch from print head jewel as shown in Figure 7-11. Tighten down the 7/16 inch hex-head screw on the right end of the print bar.

NOTE

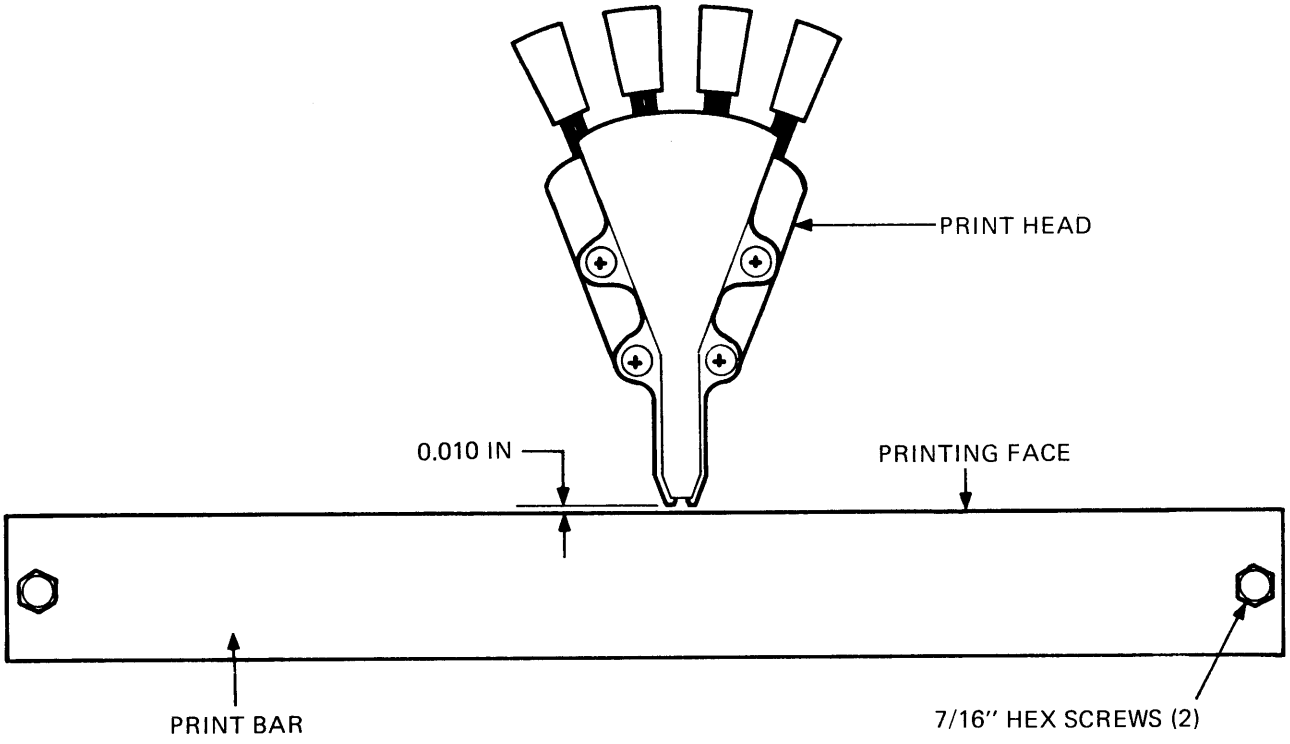
Tightening the screw may move the print bar. In this case, proceed to Step 9 to adjust the left end of the bar and then repeat Step 8.

9. Move the print head away from the print bar with the carriage lever and position the print head to the extreme left of the carriage shafts. Move the print head to the maximum forward position and perform Step 8 for the left end of the print bar.

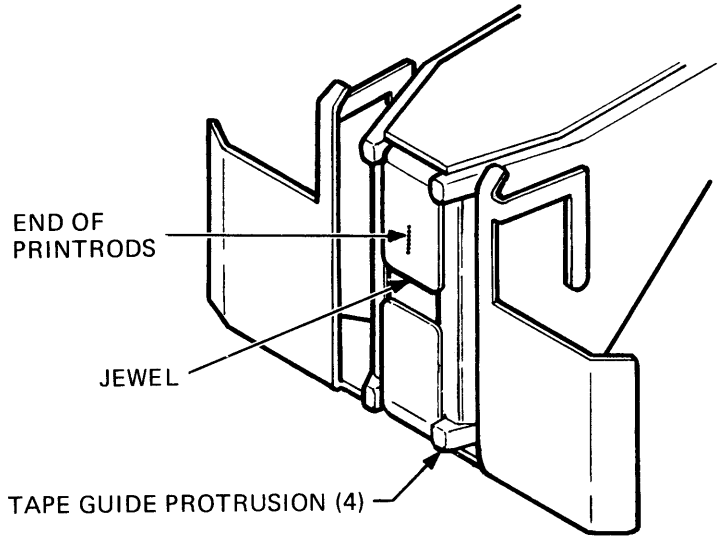
10. With carriage lever in maximum forward position, move print head from one end of the carriage shafts to the other, while checking that space between print head jewel and print bar does not vary more than ± 0.002 inch (i.e., at no point in the travel should a 0.013 inch shim fit between the jewel and the print bar, nor should a 0.007 inch shim fail to fit between the jewel and the bar). If the space varies more than ± 0.002 inch, the carriage shafts are probably bent and should be replaced (Paragraphs 6.7 and 6.9).

11. Replace ribbon and ribbon spools.

12. Replace printer housing (Paragraph 6.2.2).



A. TOP VIEW



B. FACE OF PRINT HEAD

NOTE: INSERT FEELER GUAGE BETWEEN TAPE GUIDE PROTRUSIONS AND UP AGAINST JEWEL.

MA-4678

Figure 7-11 Print Bar Adjustment

7.10 LUBRICATION

The LA120 DECwriter is factory lubricated; however, after an extended period of time, lubrication may be required (oiling should be done infrequently). Table 7-1 lists those areas that may require lubrication.

Table 7-1 Lubrication Points

Area	Lubricant	Amount
Carriage Shafts (Figure 7-12)	Digital Part No. 49-00174, or Nye Oil No. 622-00	1 or 2 drops on each carriage shaft
Ribbon Drive Assembly (Figure 7-13)	SAE 30	1 or 2 drops on each of the five places shown in Figure 7-13

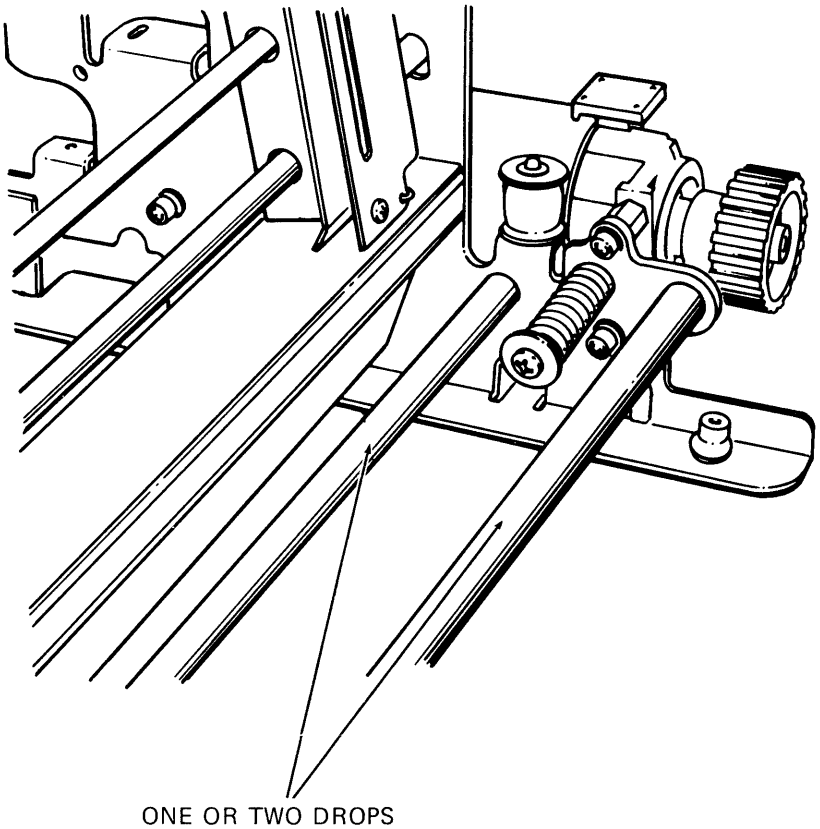


Figure 7-12 Carriage Shaft Lubrication

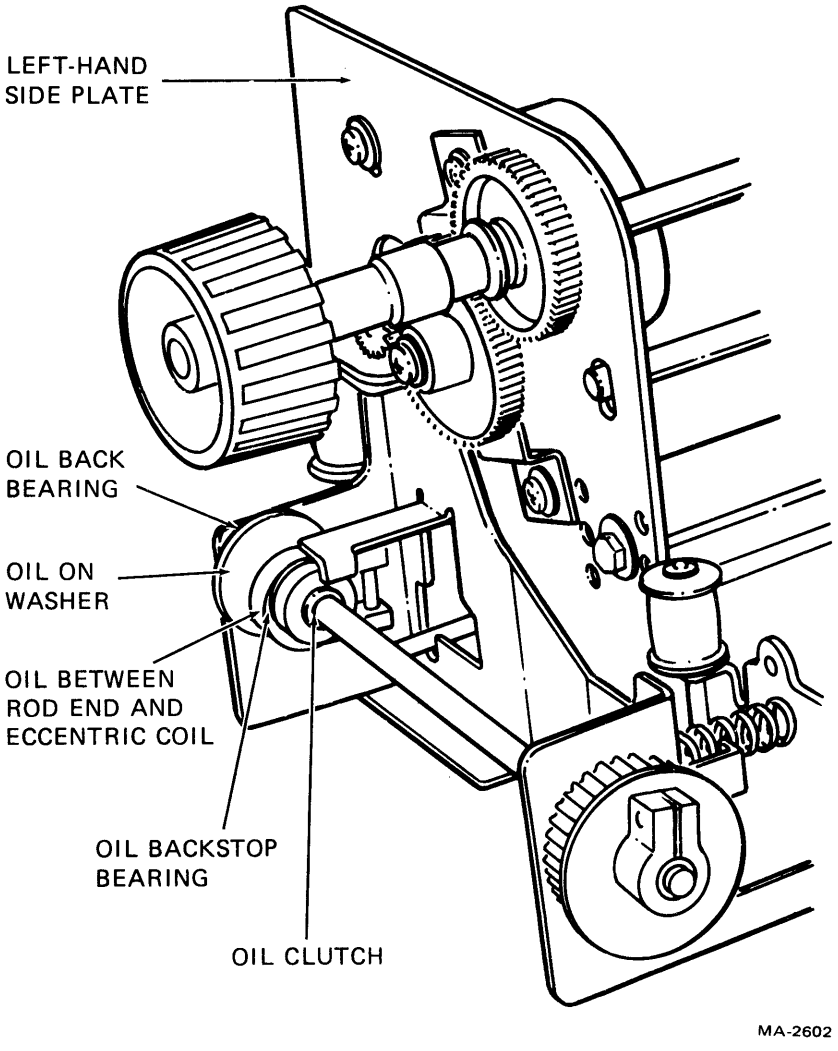


Figure 7-13 Ribbon Drive Assembly Lubrication

CHAPTER 8
20 mA LA12X-AL OPTION

8.1 GENERAL

The 20 mA loop option allows the terminal to communicate directly with the computer up to a distance of 305 m (1000 ft) without the use of a modem.

8.2 INSTALLATION

Table 8-1 lists the items in the 20 mA LA12X-AL option kit.

Table 8-1 20 mA LA12X-AL Option Kit

Item No.	Quantity	Description	Part No.
1	1	20 mA External interface cable	BC05F
2	1	20 mA Assembly (logic board)	AD-7016059-0-0
3	1	20 mA Harness assembly	AD-7016186-0-0
4	2	Screw, hex head slotted #8-32, 0.38 long	9009988-08
5	2	Washer, lock, ext. tooth #8	9008072-00

Install the 20 mA option as described in the following steps. Refer to Figure 8-1 during the procedure. Callout reference numbers in the figure are keyed to the item numbers in Table 8-1.

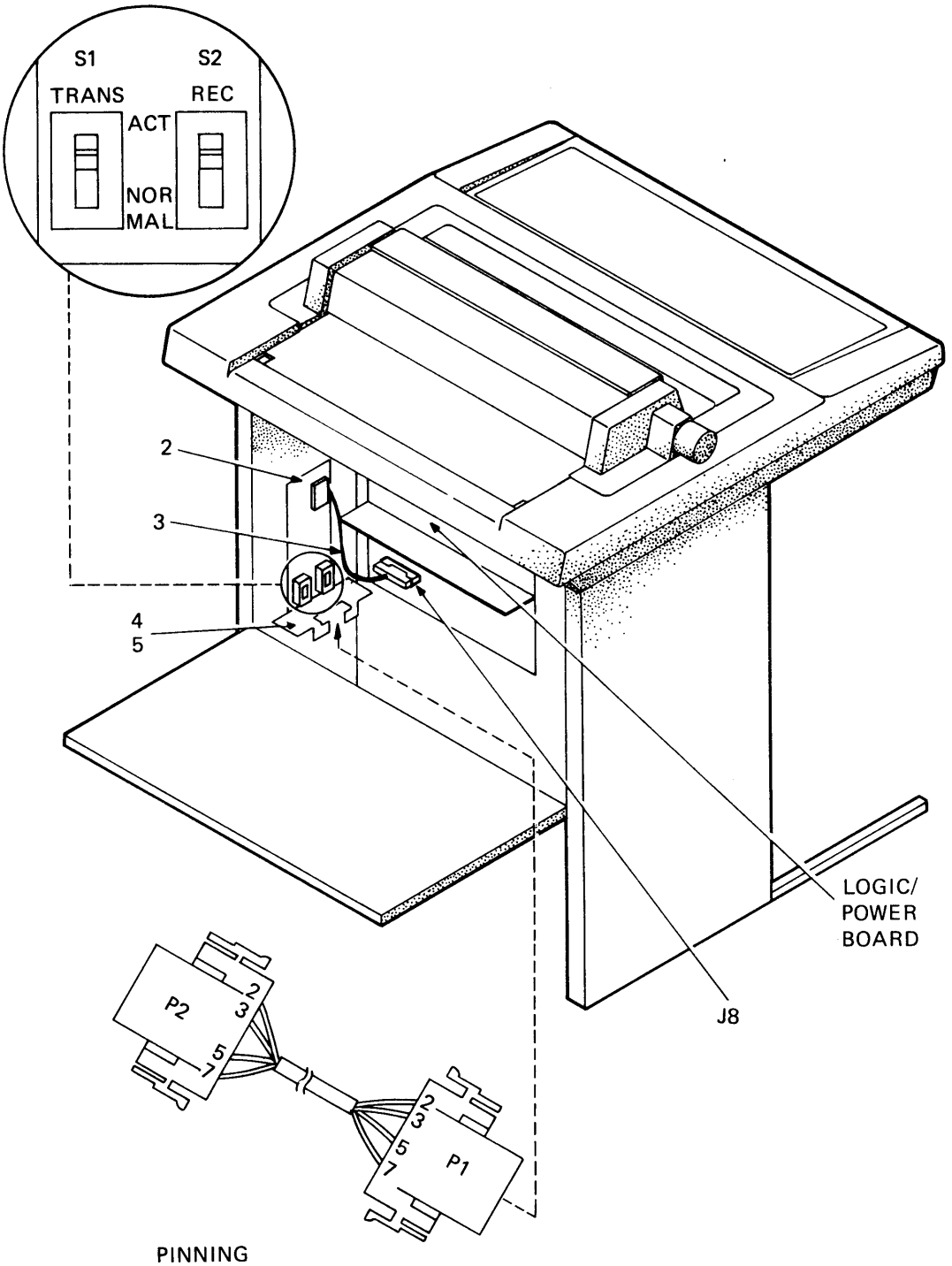
1. Set TRANS switch on 20 mA assembly to NORMAL. If the LA120 must provide current to the transmit line, set switch to ACT.

2. Set REC switch to NORMAL. If LA120 must provide current on the receive line, set the switch to ACT.

3. Lower rear cabinet door on LA120.

4. Disconnect and remove any plug connected to J8 on logic/power board.

5. Slip 20 mA assembly (2) up through hole in floor of cabinet. Secure with two hex-head screws (4) and washers (5).



PINNING

FROM	TO
P1-2	P2-3
P1-3	P2-2
P1-5	P2-7
P1-7	P2-5

MA-2320

Figure 8-1 Installation of 20 mA LA12X-AL Option

6. Connect 20 mA harness assembly (3) between jack on 20 mA logic board (2) and J8 on logic/power board.

7. Place LA120 in SET-UP mode. Select and store the following features:

   Modem = 1 (FDX, no modem)
   Auto Disconnect = 0 (OFF)

8. Connect P1 of 20 mA external interface cable to bottom connector on 20 mA logic board.

8.3 TEST AFTER INSTALLATION

After the LA120 is connected to the system, transmit and receive data to verify the installation.

8.4 ELECTRICAL CHARACTERISTICS

8.4.1 Transmitter

	Min	Max
Open circuit voltage	5.0 V	50 V
Voltage drop marking	–	4.0 V
Spacing current	–	2.0 mA
Marking current	20 mA	50 mA

8.4.2 Receiver

	Min	Max
Voltage drop marking	–	2.5 V
Spacing current	–	3.0 mA
Marking current	15 mA	50 mA

8.4.3 Pin Assignments (Figure 8-2)

1 – Test Negative
2 – Transmit –
3 – Receive –
5 – Transmit +
7 – Receive +
8 – Protective ground

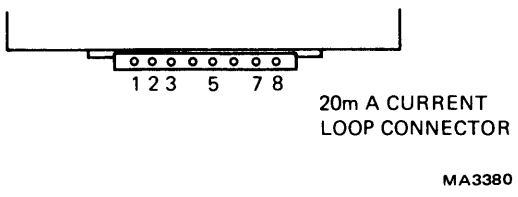


Figure 8-2 20 mA Current Loop Connector

CHAPTER 9
EXPANDED BUFFER OPTION LA12X-DL

Typically a printer receives a series of characters, temporarily stores the characters in a buffer, and then prints the characters one at a time. The LA120 contains a standard 1000 character buffer. The expanded buffer option enables the standard 1000 character buffer to be increased in size to 4000 characters (4K).

An example of the use of this option is an LA120 connected to a video terminal (VT100) whose screen contains 24 lines at 132 characters per line (a total of 3168 characters). The LA120 could receive these characters at 9600 baud, store all 24 lines in the buffer, and then print the characters at the LA120 printing speed of 180 characters per second.

The LA120 buffer control feature* is not affected by this option. If XON, XOFF, and large buffer is selected, XOFF will still be generated around 600 characters. The only difference is that the buffer is now 4000 characters instead of 1000 characters.

If XON, XOFF, or the equivalent is not used, and the system is operating at high baud rates (for example 2400 baud) for long periods, it may be possible to exceed the 4K buffer capacity.

*See *LA120 User Guide.*

CHAPTER 10
LA120-RE

10.1 INTRODUCTION

The LA120-RE is a receive only data communications terminal. Its 180 char/s printer uses an impact dot matrix technique (7 × 9), and can handle data up to 9600 baud.

The LA120-RE is identical to the LA120 DECwriter III with one exception; the LA120-RE does not have any type of keyboard.

The SET-UP parameters of this terminal are preset at the factory. Appendix B lists the factory stored settings for each parameter. The legend strip label in Figure 11-5 shows how to interpret the settings.

Two options, the LA12X-HL full keyboard (Figure 10-1) or the LA12X-YL function keypad (Figure 10-2), can be installed on the LA120-RE to allow customers to modify SET-UP parameters.

With the installation of the LA12X-HL option, the LA120-RE becomes a fully functioning LA120 DECwriter III. All features and capabilities of this combination are explained in previous chapters of this manual.

When the LA12X-YL option is installed on the LA120-RE, it remains receive only; however, the SET-UP parameters can now be changed to meet customer requirements. For a description of how to operate the LA12X-YL function keypad option, refer to Chapter 12.

10.2 INSTALLATION

To install the LA120-RE, perform the procedures given in Chapter 2. Because the LA120-RE has no keyboard, the self-test function cannot be performed. Sending data to the terminal will verify its proper operation.

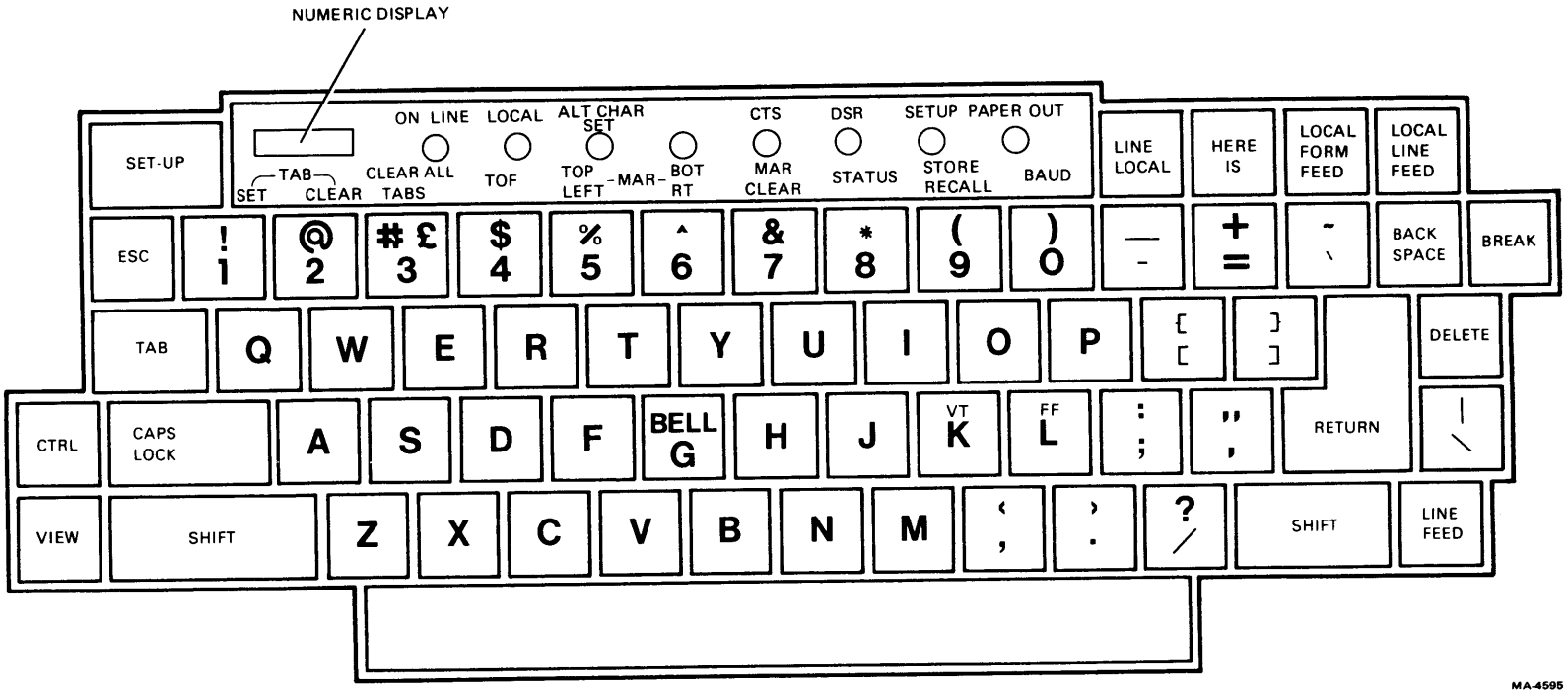


Figure 10-1 LA12X-HL Keyboard

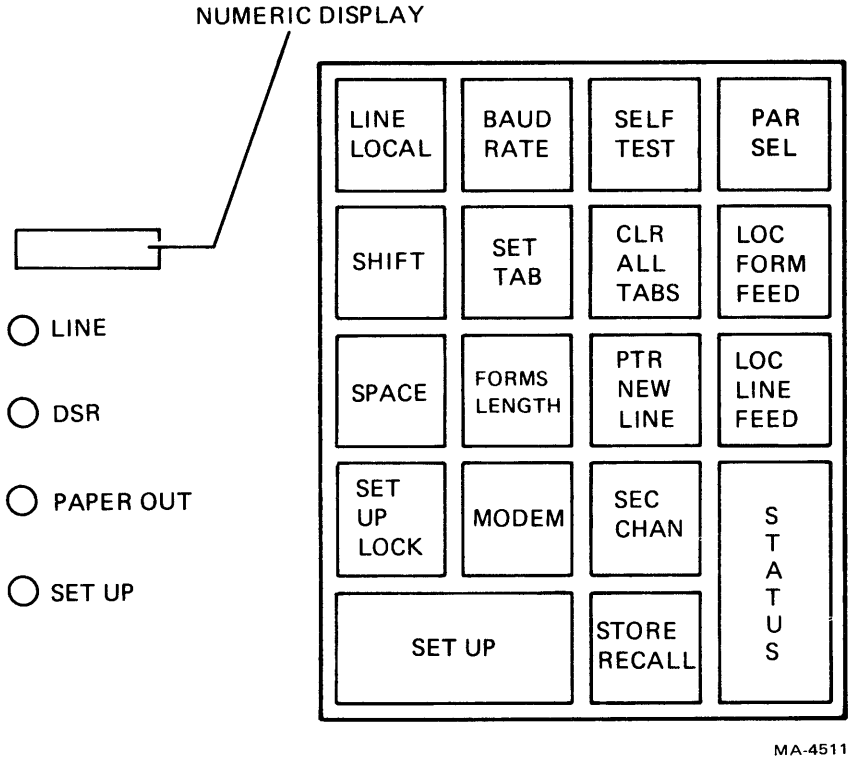


Figure 10-2 LA12X-YL Keypad

CHAPTER 11
LA12X-HL KEYBOARD OPTION

11.1 INTRODUCTION

The LA12X-HL is a full keyboard kit for use with the LA120-RE. When the LA12X-HL is installed, an LA120-RE becomes a complete LA120 DECwriter III terminal.

11.2 INSTALLATION

Before installing the LA12X-HL, examine the kit to determine that it contains all the items listed in Table 11-1.

Table 11-1 LA12X-HL Installation Kit

Description	Part Number	Quantity
Keyboard/Keycap Assembly	7015763-01	1
Keyboard Cable Assembly	1700120-00	1
Self-Tapping Screw	9010083-00	4
Plastic Cover	1215053-00	2
DECwriter III Label	3615684-00	1
Legend Strip Label	3615683-00	1

To install the LA12X-HL on an LA120-RE perform the following.

1. Remove power by disconnecting ac plug.
2. Remove printer paper and printer cover.
3. Remove six (6-32) self-tapping screws and flat washers that secure printer housing to cabinet base (Figure 11-1) and set them aside. Lift off printer housing and set aside.
4. Snap off cover from keyboard bezel.
5. Snap off keyboard bezel.
6. Open rear access door on cabinet.
7. Disconnect interlock/paper out cable from terminator in J1 on logic board and remove terminator card (Figure 11-2).
8. Route interlock/paper out cable up through cabinet and connect to J3 on keyboard. The four-pin connector can be inserted in either direction.

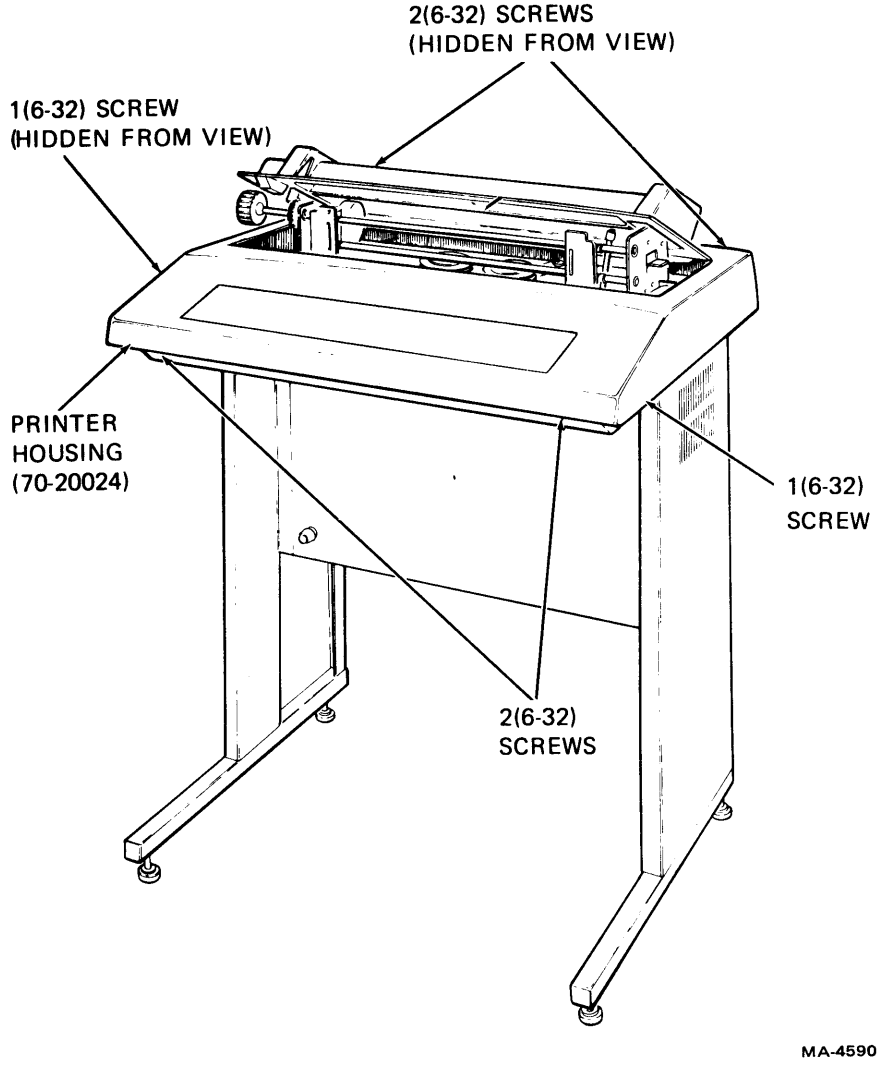


Figure 11-1 Printer Housing Removal and Installation

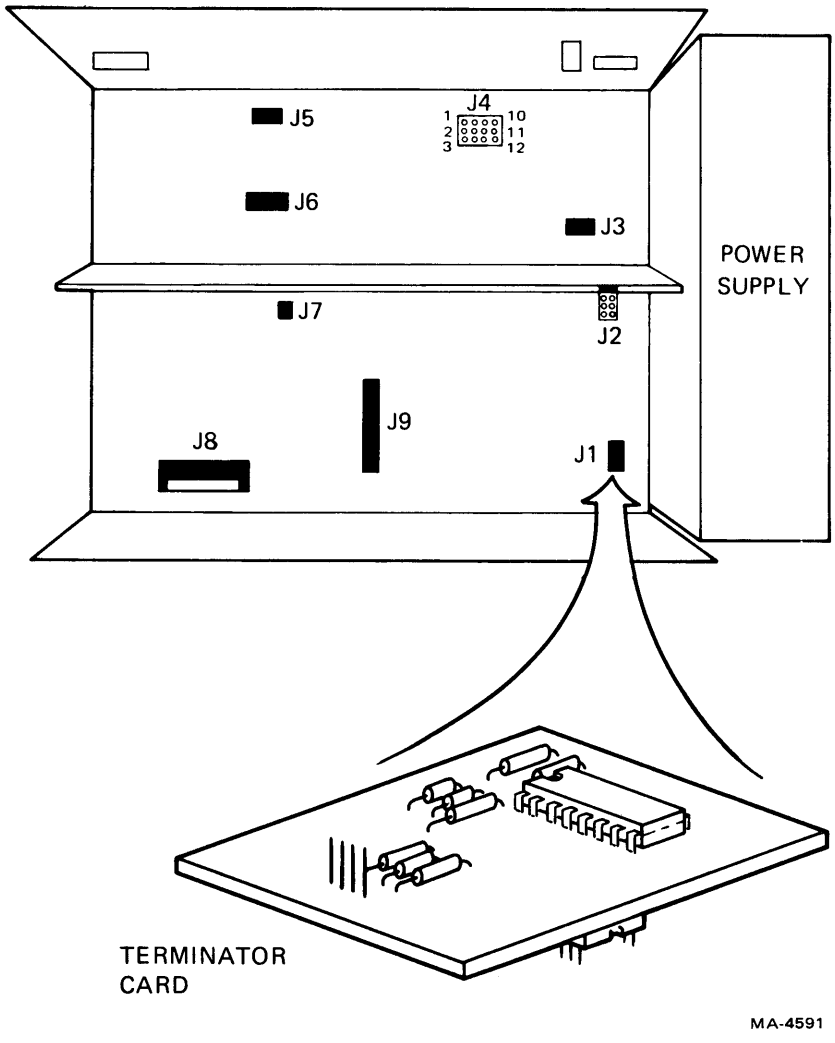


Figure 11-2 Terminator Card Removal

9. Route the end of the keyboard cable, with the notched connector, down through the cabinet and connect it to J1 on logic board. The notched end faces pin 1 on J1 (Figure 11-3).

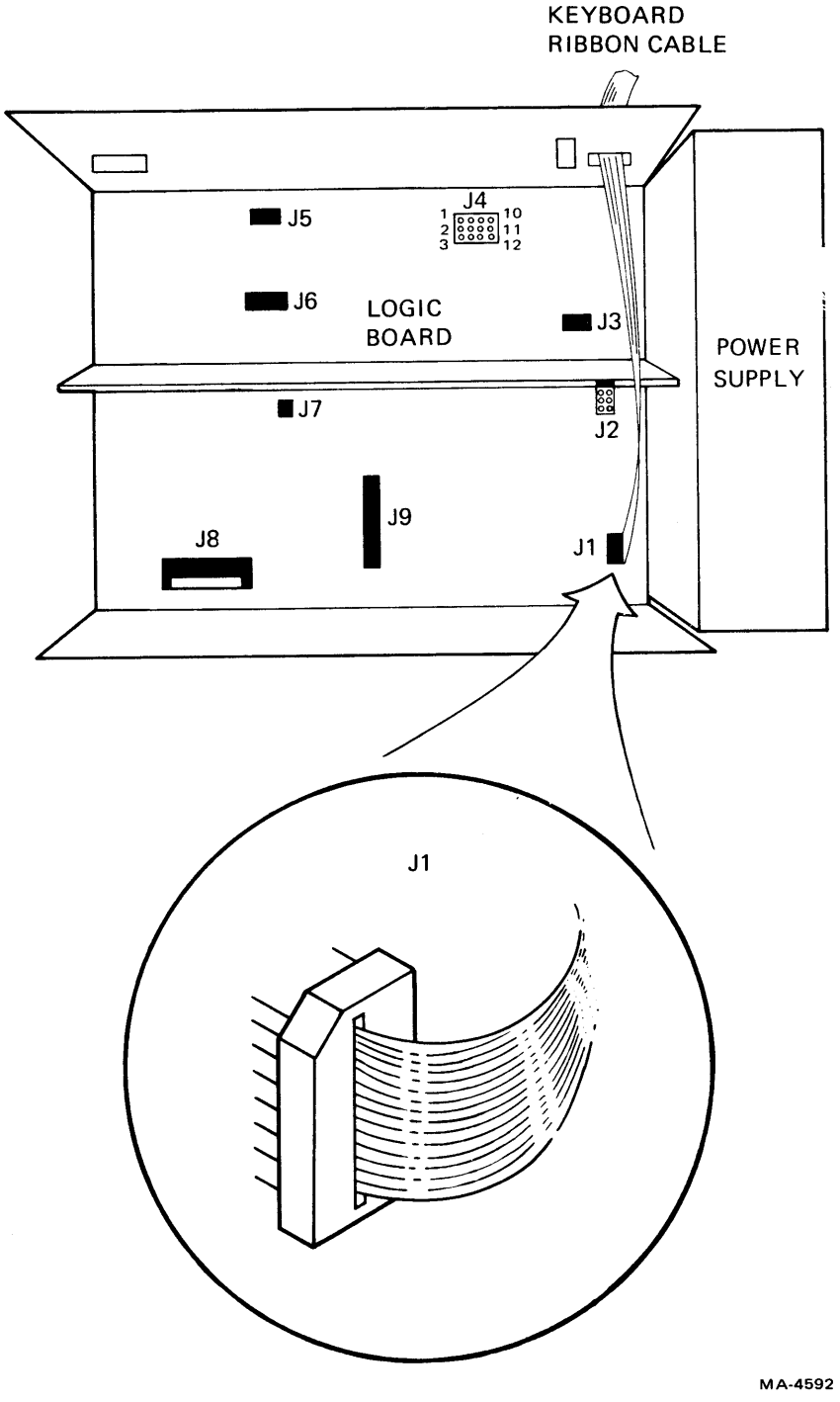


Figure 11-3 Keyboard Cable Installation

10. Connect the other end of the keyboard cable to J2 on the keyboard. The cable should enter the left side of the connector when inserted in J2 (Figure 11-4).

NOTE

To prevent scratching or damaging keyboard or keyboard bezel, rest keyboard bezel on a piece of foam or other cushioning material when performing the next step.

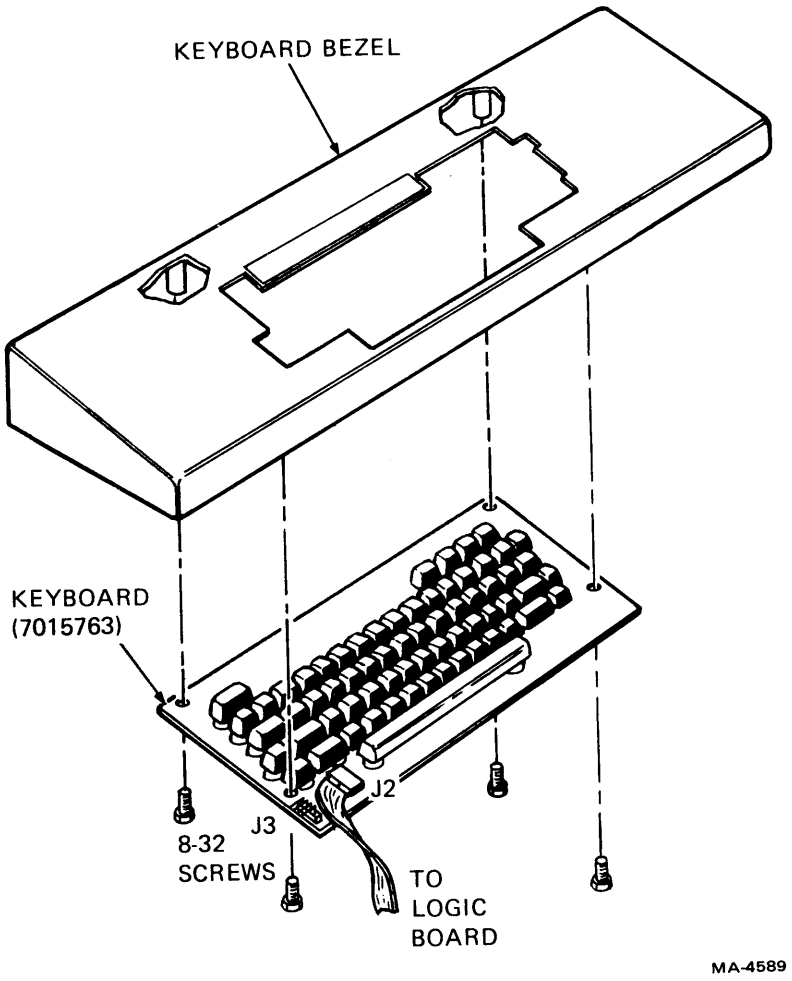


Figure 11-4 Keyboard Installation

11. Turn keyboard bezel upside down and secure keyboard with four (8-32) self-tapping screws (Figure 11-4).

12. Snap keyboard bezel into printer base.

13. Snap two plastic covers into keyboard bezel on either side of keyboard.

14. Attach legend strip and product designation labels to their appropriate space on keyboard bezel (Figure 11-5).

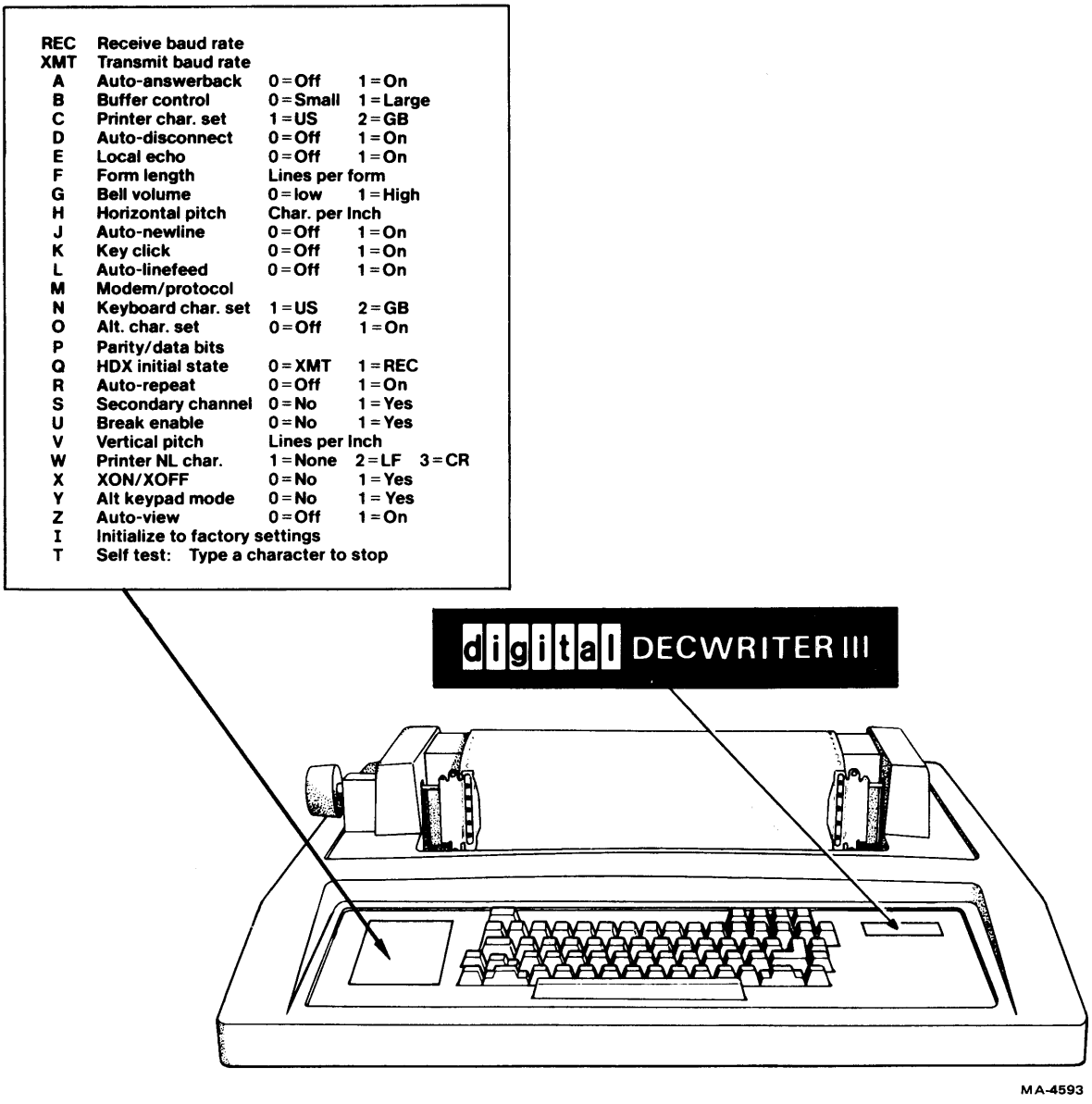


Figure 11-5 Label Installation

15. Place printer housing on cabinet base and secure it with six (6-32) self-tapping screws and flat washers.

16. Install printer paper and cover.

17. Restore power.

18. Perform self-test procedure described in Chapter 1, Part 2, of the *LA120 User Guide*.

11.3 OPERATOR'S INFORMATION

Refer to Chapter 1 to operate the LA120-RE with the LA12X-HL option installed.

CHAPTER 12
LA12X-YL OPTION

12.1 INTRODUCTION

The LA12X-YL is a function keypad kit for use with the LA120-RE. When the LA12X-YL is installed, the LA120-RE remains receive only; however, the user now has the capability of modifying the SET-UP parameters.

12.2 INSTALLATION

Before installing the LA12X-YL, examine the installation kit to determine that it contains all the items listed in Table 12-1.

Table 12-1 LA12X-YL Installation Kit

Description	Part Number	Quantity
Keypad Assembly	7016799-00	1
Keyboard Cover Assembly	7016759-00	1
Keyboard Cable Assembly	1700120-00	1
Self-Tapping Screw	9010083-01	4
DECwriter III Label	3615684-00	1

To install the LA12X-YL on the LA120-RE, perform the following.

1. Remove power by disconnecting ac plug.
2. Remove printer paper and printer cover.
3. Remove six (6-32) self-tapping screws and flat washers that secure printer housing to cabinet base (Figure 12-1) and set them aside. Lift off printer housing and set aside.
4. Snap off cover from keyboard bezel.
5. Snap off keyboard bezel.
6. Open rear access door on cabinet.
7. Disconnect interlock/paper out cable from terminator in J1 on logic board and remove terminator card (Figure 12-2).
8. Route interlock/paper out cable up through cabinet and connect to J2 on keypad. The four-pin connector can be inserted in either direction.

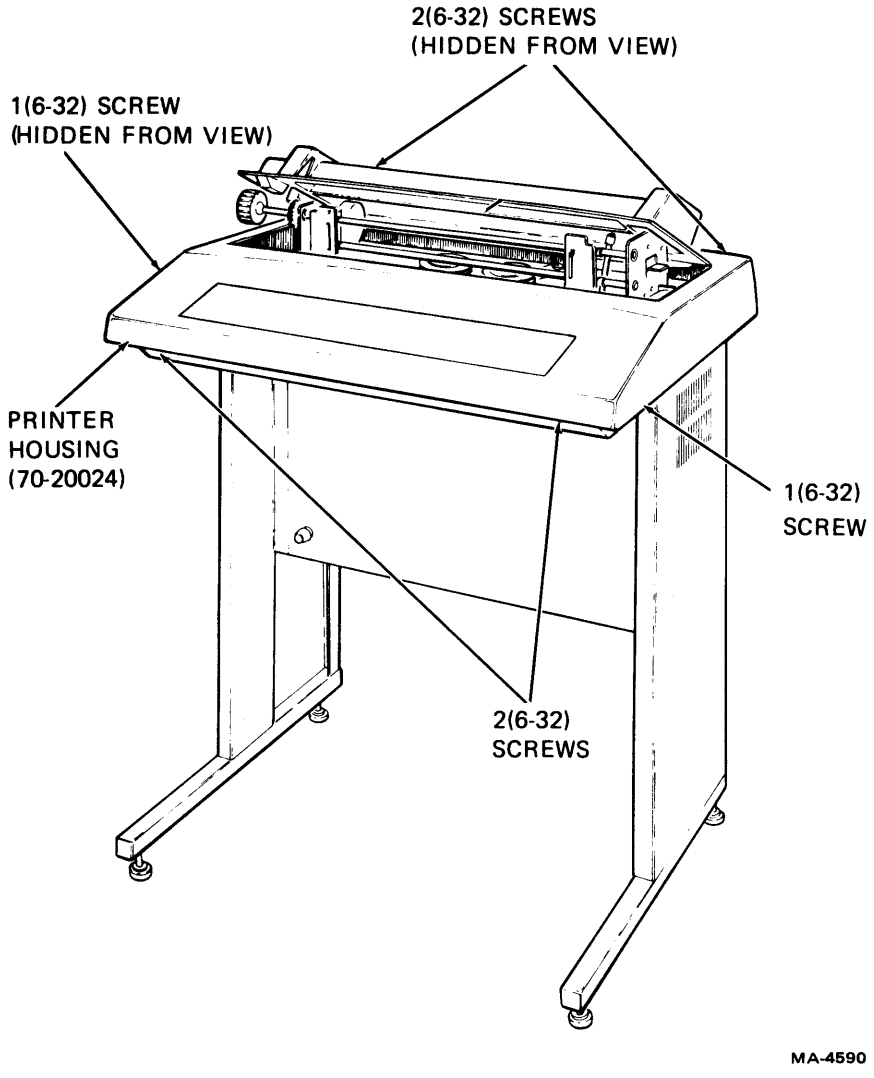


Figure 12-1 Printer Housing Removal and Installation

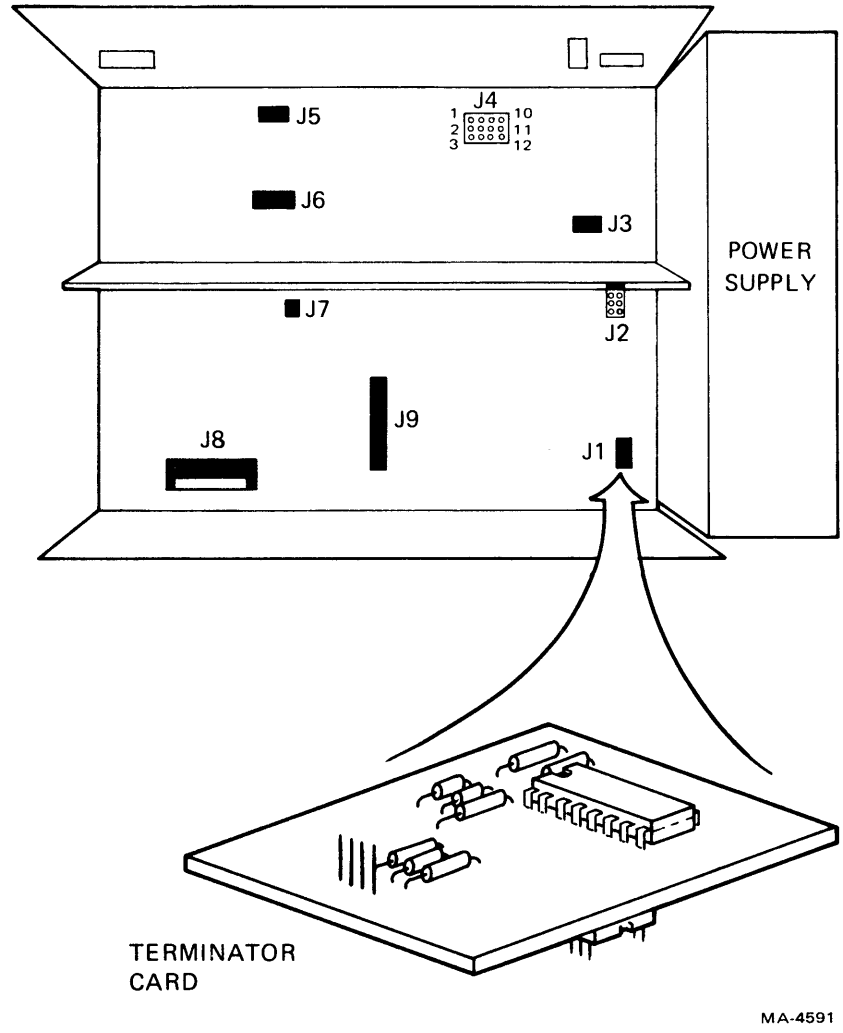


Figure 12-2 Terminator Card Removal

9. Route the end of the keyboard cable, with the notched connector, down through the cabinet and connect it to J1 on the logic board. The notched end faces pin 1 on J1 (Figure 12-3).

10. Connect the other end of the keyboard cable to J1 on keypad. The cable should enter the bottom of the connector when inserted in J1 (Figure 12-4).

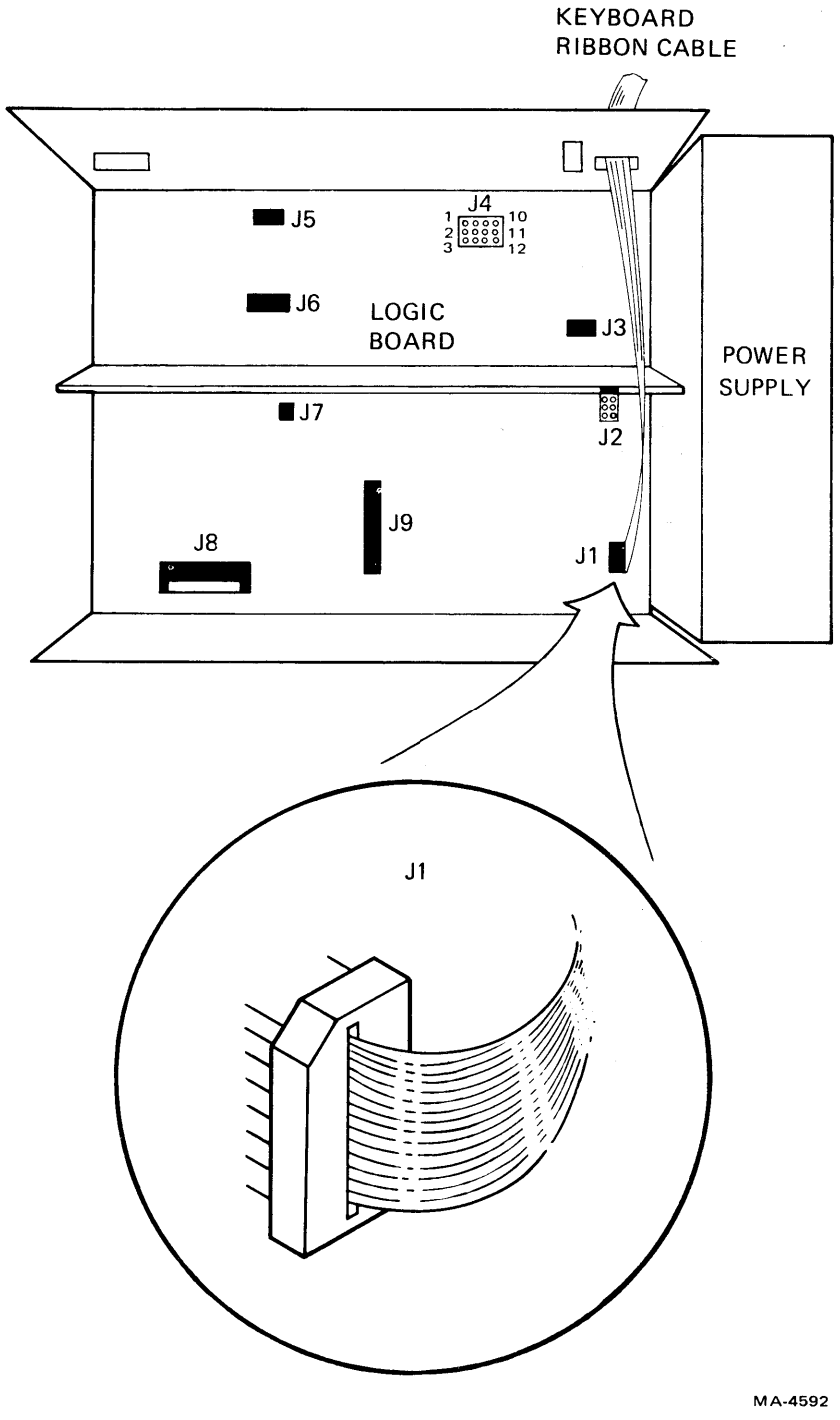


Figure 12-3 Keyboard Cable Installation

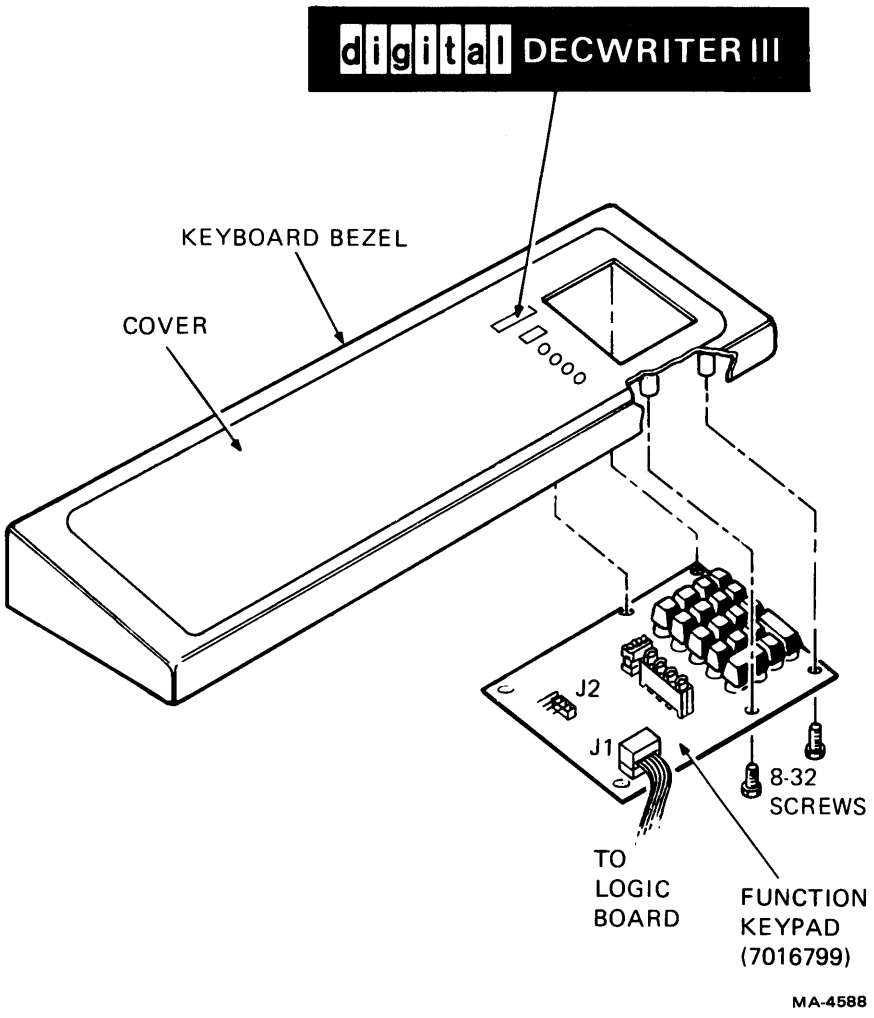


Figure 12-4 Keypad Installation

NOTE

To prevent scratching or damaging the keypad or keyboard bezel, rest the keyboard bezel on a piece of foam or other cushioning material when performing the next step.

11. Turn keyboard bezel upside down and secure keypad with four (8-32) self-tapping screws (Figure 12-4).

12. Snap keyboard bezel into printer base.

13. Snap keyboard cover assembly into keyboard bezel.

14. Attach product designation label to appropriate space on keyboard bezel (Figure 12-4).

15. Place printer housing on cabinet base and secure it with six (6-32) self-tapping screws and flat washers.

16. Install printer paper and cover.

17. Restore power.

18. Perform one of the two following self-test procedures given in Tables 12-2 and 12-3.

Table 12-2 Printing Self-Test

Procedure	Comments/Indication
Simultaneously press SET-UP LOCK and SET-UP.	Locks printer in SET-UP mode. Set-up light blinks.
Press SELF TEST.	Self-test pattern (Figure 12-5) will print out.
To stop test, press SELF TEST or any code producing character.	Exits from self-test. Pressing SET-UP will also exit from SET-UP mode.

Table 12-3 Nonprinting Self-Test

Procedure	Comments/Indication
Remove keyboard cover assembly.	Allows access to printed circuit board.
Simultaneously press SET-UP LOCK and SET-UP.	Locks printer in SET-UP mode.
Simultaneously press SHIFT and short the two split lugs on the left side of the keypad circuit board with a small screwdriver. Lugs are between J1 and J2 and are marked > key.	Same as printing self-test except spaces are substituted for printing characters.
To stop test, press SELF TEST or any code producing character.	Exits from self-test. Pressing SET-UP will also exit from SET-UP mode.

MA-4695

Figure 12-5 Self-Test Printout

12.3 OPERATOR'S INFORMATION

This section describes the function of the indicator lights and control keys and describes how the control keys are used.

12.3.1 Indicator Lights

NUMERIC Display
The numeric display indicates the current column number during normal operation. In SET-UP mode, the numeric display may also indicate line number, baud rate, form length, etc.

LINE Light
The LINE light indicates the LA120 is on-line. Data is received only while on-line.

DSR Light
The DSR light indicates the modem is in data mode (data set ready).

PAPER OUT Light
The PAPER OUT light flashes to indicate the printer is not ready, due to one of the following conditions.

- Paper out
- Cover open
- Print head jam

SET-UP Light
The SET-UP light flashes to indicate the LA120 is in SET-UP mode.

12.3.2 Control Keys

LINE LOCAL
The LINE/LOCAL key switches the LA120 to or from line or local, as indicated by the LINE light.

BAUD RATE
The BAUD RATE key selects the baud rate and number of stop bits.

SELF TEST
The SELF TEST key selects the printing self-test feature.

PAR SEL
The PAR SEL key selects the type of parity and the number of data bits.

SHIFT
The SHIFT key, when pressed, causes the numeric display to indicate current line number. The SHIFT key is also used during SET-UP mode as a control key.

SET TAB
The SET TAB key sets a horizontal tab stop at the current column.

CLR
ALL
TABS

The CLR ALL TABS key clears all horizontal tabs.

LOC
FORM
FEED

The LOC FORM FEED key causes a form feed.

SPACE

The SPACE key generates code for a space.

FORMS
LENGTH

The FORMS LENGTH key selects the form length in lines.

PTR
NEW
LINE

The PTR NEW LINE key controls the selection of the printer's response to a received line feed or carriage return.

LOC
LINE
FEED

The LOC LINE FEED key advances the paper one line at a time.

SET
UP
LOCK

The SET-UP LOCK key, when simultaneously pressed with the SET-UP key, locks the LA120 in SET-UP mode.

MODEM

The MODEM key enables the selection of a communications protocol.

SEC
CHAN

The SEC CHAN key enables selection of a restraint mode for full duplex operation or indication of the presence of a secondary channel for half duplex operation.

S
T
A
T
U
S

The STATUS key causes a message containing the currently selected values of the SET-UP parameters to be printed.

SET-UP
The SET-UP key is used to examine or change the SET-UP parameters.

STORE
RECALL
The STORE RECALL key is pressed to recall the stored SET-UP parameters. When simultaneously pressed with the SHIFT key, the current SET-UP parameters are stored.

12.3.3 SET-UP Mode

LA120 parameters can be changed only while in the SET-UP mode. Normally four steps are required to perform SET-UP.

1. Enter SET-UP.
2. Change a parameter such as tabs, baud rate, etc.
3. Store the parameter if desired (see note).
4. Exit SET-UP.

NOTE

Storing enables the selected parameter to be stored permanently. For detailed information, refer to the storage, recall, and status description in the LA120 User Guide.

SET-UP should be performed with the LA120 in local mode.

Table 12-4 describes the two methods of entering and exiting SET-UP.

Table 12-4 Entering/Exiting SET-UP Mode

Method No.	Procedure	Indication/Comments
1	While holding SET-UP LOCK, press SET-UP; release both keys. You may now change any SET-UP feature.	SET-UP lamp flashes indicating you have entered SET-UP.
	Press SET-UP if you wish to exit SET-UP.	SET-UP lamp will stop flashing.
2	Press and hold SET-UP. You must continue to hold the SET-UP key while changing any feature.	SET-UP lamp flashes indicating you are in SET-UP.
	Release SET-UP if you wish to exit SET-UP.	SET-UP lamp will stop flashing.

12.3.4 Baud Rate (Speed)

Baud rate is the speed that data moves to the LA120. Due to the many systems the user must communicate with, a large selection of baud rates are available. Select the desired baud rate using the procedure in Table 12-5.

Table 12-5 Baud Rate Selection

Procedure	Indication/Comments
Enter SET-UP mode.	SET-UP lamp flashes indicating you are in SET-UP.
Press BAUD RATE.	Current selection of baud rate is displayed.
Continue pressing BAUD RATE to select receive baud rate as indicated by numeric display.	

Baud Rate (Displayed)	Actual Baud Rate	Stop Bits
50	50	2
75	75	2
110	110	2
134	134.5	1
150	150	1
200	200	1
300	300	1
600	600	1
1200	1200	1
1800	1800	1
2400	2400	1
4800	4800	1
7200	7200	1
9600	9600	1

12.3.5 Parity and Data Bits

Parity enables data errors to be monitored and thereby verifies the correctness of data. If an error in transmission has occurred, the LA120 can detect it and indicate its presence by printing a special symbol (⁒). In addition to parity, this feature enables the selection of 7 or 8 data bits. Select the parity and data bits using the procedure in Table 12-6.

Table 12-6 Parity/Data Bits Selection

<table>
<tr><th>Procedure</th><th>Comments/Indication</th></tr>
<tr><td>Enter SET-UP mode.</td><td>SET-UP lamp flashes indicating you are in SET-UP.</td></tr>
<tr><td>Press PAR SEL.</td><td>Current selection of parity bits is displayed in numeric display.</td></tr>
<tr><td>Continue pressing PAR SEL to select parity and data bits as indicated by numeric display.</td><td>
<table>
<tr><th>Numeric Display Indicates</th><th>Data Bits</th><th>Parity Receive</th></tr>
<tr><td>1</td><td>7</td><td>Ignore</td></tr>
<tr><td>2</td><td>7</td><td>Ignore</td></tr>
<tr><td>3</td><td>7</td><td>Ignore</td></tr>
<tr><td>4</td><td>7</td><td>Ignore</td></tr>
<tr><td>5</td><td>7</td><td>Odd</td></tr>
<tr><td>6</td><td>7</td><td>Even</td></tr>
<tr><td>7</td><td>7</td><td>None</td></tr>
<tr><td>8</td><td>8</td><td>None</td></tr>
<tr><td>9</td><td>8</td><td>Odd</td></tr>
<tr><td>10</td><td>8</td><td>Even</td></tr>
</table>
</td></tr>
<tr><td>Exit SET-UP.</td><td>SET-UP lamp will stop flashing.</td></tr>
</table>

12.3.6 Setting Form Length

The LA120 measures form length in lines per form. To determine how long your form is, measure the length of the form (Figure 12-6) in inches; then multiply the length of the form by the lines per inch in memory. (Lines per inch is factory set at six.)

Form Length = Length of Form in Inches × Number of Lines per Inch in Memory.

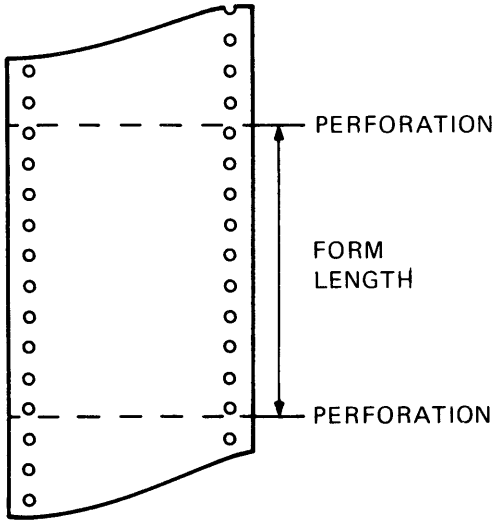


Figure 12-6 Form Length

Use the procedure in Table 12-7 to enter the number of lines per form. Your choices of form length range from 1 to 168 lines.

NOTE
Changing form length clears top and bottom margins, and sets the current line number to 1.

Table 12-7 Form Length Selection

Procedure	Indication/Comments
Enter SET-UP mode.	SET-UP lamp flashes indicating that you are in SET-UP.
Press FORMS LENGTH.	Current form length in lines is displayed by numeric display.
Repeat pressing FORMS LENGTH to change form length.	Numeric display will indicate a new value each time FORMS LENGTH is pressed. Stop when desired number of lines is displayed.
Exit SET-UP.	SET-UP lamp will stop flashing.

12.3.7 Printer New Line Character

This feature controls the way the LA120 responds to the received line feed or carriage return code. Three different responses can be selected as described in Table 12-8.

Table 12-8 Carriage Return/Line Feed Responses

Selections Indicated by Numeric Display	Received Carriage Return Code	Received Line Feed Code
1	LA120 performs a carriage return.	LA120 performs a line feed.
2	LA120 performs a carriage return.	LA120 performs a carriage return and line feed.
3	LA120 performs a carriage return and line feed.	LA120 performs a line feed.

NOTE
In choice 2, the LA120 also performs a carriage return when it receives vertical tab and form feed characters.

The procedure for selecting the desired response is given in Table 12-9.

Table 12-9 Selection of Carriage Return/Line Feed Responses

Procedure	Comments/Indications
Enter SET-UP mode.	SET-UP lamp flashes indicating you are in SET-UP.
Press PTR NEW LINE.	Current selection of printer new line character is displayed in numeric display.
Continue pressing PTR NEW LINE.	Numeric display indicates one of the following: 1 2 3 } (Table 12-8)
Exit SET-UP.	SET-UP lamp will stop flashing.

12.3.8 Modem

This feature enables the selection of a protocol that matches the communication requirements (see Communications Chapter in *LA120 User Guide*). Refer to Paragraph 12.3.9 (Secondary Channel) for related modem SET-UPS. Selectable protocols are listed below.

1. FDX (Full Duplex), No Modem
2. FDX, Modem
3. HDX (Half Duplex), Supervisory
4. HDX, EOT
5. HDX, EXT

Table 12-10 gives the procedure for modem selection.

Table 12-10 Modem Selection

Procedure	Comments/Indications
Enter SET-UP mode.	SET-UP lamp flashes indicating you are in SET-UP.
Press MODEM.	Current selection of modem is displayed in numeric display.
Continue pressing MODEM to change numeric display.	**Numeric Display Indicates** / **Description**: 1 — FDX, No Modem 2 — FDX, Modem 3 — HDX, Supervisory 4 — HDX, EOT 5 — HDX, ETX
Exit SET-UP.	SET-UP lamp will stop flashing.

12.3.9 Secondary Channel

This feature has two meanings. First, if modem choices 1 or 2 (full duplex) have been selected, the secondary channel feature can be used to indicate the restraint mode. The second meaning applies when half-duplex modem choices 4 or 5 have been selected. With this choice, the secondary channel feature can be used to indicate the presence of a secondary (reverse) channel. Table 12-11 gives the procedure for secondary channel selection.

Table 12-11 Secondary Channel Selection

<table>
<tr><th>Procedure</th><th>Comments/Indications</th></tr>
<tr><td>Enter SET-UP mode.</td><td>SET-UP lamp flashes indicating you are in SET-UP.</td></tr>
<tr><td>Press SEC CHAN.</td><td>Current selection of secondary channel is displayed in numeric display.</td></tr>
<tr><td>Continue pressing SEC CHAN.</td><td>
<table>
<tr><th>Numeric Display Indicates</th><th>Modem 1 or 2 Selected</th><th>Modem 4 or 5 Selected</th></tr>
<tr><td>0</td><td>Speed Control Mode</td><td>Secondary Channel - No</td></tr>
<tr><td>1</td><td>Restraint Mode</td><td>Secondary Channel - Yes</td></tr>
</table>
</td></tr>
<tr><td>Exit SET-UP.</td><td>SET-UP lamp will stop flashing.</td></tr>
</table>

12.3.10 Status

A special feature of the LA120 is a printout of all the current SET-UP values except tabs and margins. The following is a sample printout of a typical status message using the factory parameters.

REC	1200
XMT	1200
A	0
B	1
C	1
D	1
E	0
F	66
G	1
H	10
J	1
K	0
L	0
M	1
N	1
O	1
P	1
Q	0
R	1
S	0
U	1
V	6
W	1
X	1
Y	0
Z	1

Refer to the legend strip label in Figure 11-5 for interpretation of codes.

NOTE

Do not press SHIFT when printing out status message.

To obtain a status printout, follow the procedure in Table 12-12.

Table 12-12 Status Printout Procedure

Procedure	Indication/Comments
Enter SET-UP mode.	SET-UP light will flash when LA120 is in SET-UP.
Press STATUS.	Status message will be printed out.
Exit SET-UP.	SET UP light will stop flashing.

12.3.11 Store/Recall

Normally, setting up the LA120 is a one-time job. This is due to a unique feature that stores all the settings in a permanent memory. Thus, the LA120 can be turned off without losing the following settings:

Horizontal tab stop
Vertical tab stops
Left margin
Right margin
Top margin
Bottom margin
Line/local status
Baud rate
Answerback
Buffer control
Printer character set
Auto disconnect
Local echo
Form length
Horizontal Pitch
Auto new line
Key click
Auto line feed
Modem
Keyboard and printer character set
HDX initial calling state
Auto repeat
Secondary channel
XON/XOFF
Alternate keypad mode
Auto view
Printer new line character
Alternate character set
Break action

When the LA120 is turned on it will automatically enter the last settings stored by the operator.

NOTE
Setups must be stored to be saved.

Tables 12-13 and 12-14 contain the procedures for respectively storing and recalling LA120 settings.

Table 12-13 LA120 Store Procedure

Procedure	Comments/Indication
Enter SET-UP mode.	SET UP light will start flashing indicating you are in SET-UP.
Press and hold SHIFT and press STORE RECALL.	All settings in the operating memory are stored in nondestructive memory. Numeric display will go blank for a few seconds.
Exit SET-UP.	SET-UP lamp will stop flashing.

Table 12-14 LA120 Recall Procedure

Procedure	Comments/Indication
Enter SET-UP mode.	SET UP light will start flashing indicating you are in SET-UP.
Press STORE RECALL.	Settings stored in permanent memory will be recalled. Numeric display will go blank for a few seconds.
Exit SET-UP.	SET-UP lamp will stop flashing.

APPENDIX A
LA120 OPERATOR REFERENCE CARD

digital DECWRITER III

LA120 OPERATOR REFERENCE CARD

SET-UP

KEY	FUNCTION/COMMENTS
CTRL and SET-UP	Locks LA120 in set-up mode. SET-UP light flashes.
	To exit set-up mode press SET-UP
SET-UP	Places LA120 in set-up mode while SET-UP is held down. SET-UP light flashes.
	To exit set-up mode release SET-UP

NOTES:

1. **LA120 must be in set-up mode to set the following features.**
2. **Do not use SHIFT unless specified.**

FORMS

KEY	FUNCTION/COMMENTS
SHIFT	Display current line number Releasing SHIFT returns display to current column number
1	Set horizontal tab at current column
SHIFT and 1	Set vertical tab at current line
2	Clear horizontal tab at current column
SHIFT and 2	Clear vertical tab at current line
3	Clear all horizontal tabs
SHIFT and 3	Clear all vertical tabs
4 or SHIFT and 4	Establish top of form (TOF)
5	Set minimum column number (left margin)
SHIFT and 5	Set minimum line number (top margin)
6	Set maximum column number (right margin)
SHIFT and 6	Set maximum line number (bottom margin)
7	Clear left and right margins
SHIFT and 7	Clear top and bottom margins
F	Form Length NOTE: Changing form length clears top and bottom margins and establishes TOF.

DISPLAY

1 thru 168 } Lines per form

FORMS (CONT)

KEY	FUNCTION/COMMENTS
[H]	Horizontal pitch (Characters per inch)

NOTE: Changing horizontal pitch clears left and right margins.

DISPLAY	PITCH
5	5.00 CPI
6	6.00 CPI
7	6.60 CPI
8	8.25 CPI
10	10.0 CPI
12	12.0 CPI
13	13.2 CPI
16	16.5 CPI

[V] Vertical pitch (Lines per inch)

NOTE: Changing vertical pitch clears top and bottom margins.

DISPLAY	PITCH
2	2 LPI
3	3 LPI
4	4 LPI
6	6 LPI
8	8 LPI
12	12 LPI

OPERATOR COMFORT

KEY	FUNCTION/COMMENTS
[G]	Bell volume 0 = Low Volume 1 = High Volume
[K]	Key click 0 = Off 1 = On
[R]	Auto repeat 0 = Off 1 = On
[Z]	Last character view 0 = Manual 1 = Auto

COMMUNICATION

KEY	FUNCTION/COMMENTS
[A]	Auto answerback 0 = Off 1 = On
[B]	Buffer control 0 = Small 1 = Large
[C]	Printer character set 1 = United States 2 = United Kingdom
[D]	Auto disconnect 0 = Off 1 = On
[E]	Local echo 0 = Off 1 = On

COMMUNICATION (CONT)

KEY	FUNCTION/COMMENTS
[J]	Auto new line at right margin 0 = Off 1 = On
[L]	Auto line feed (Return key) 0 = Off 1 = On
[M]	Modem 1 = FDX, No Modem 2 = FDX, Modem 3 = HDX, Supervisory 4 = HDX, EOT 5 = HDX, ETX
[N]	Keyboard and printer character set 1 = United States 2 = United Kingdom
[O] (letter)	Alternate character set 0 = OFF 1 = ON
[P]	Parity and data bits

DISPLAY	DATA BITS	PARITY REC	PARITY XMT
1	7	IGNORE	MARK
2	7	IGNORE	SPACE
3	7	IGNORE	ODD
4	7	IGNORE	EVEN
5	7	ODD	ODD
6	7	EVEN	EVEN
7	7	NONE	NONE
8	8	NONE	NONE
9	8	ODD	ODD
10	8	EVEN	EVEN

[Q]	HDX initial calling state 0 = Transmit 1 = Receive
[S]	Secondary channel

DISPLAY	FDX * MODE	HDX * REV.CH.
0	Speed	No
1	Restraint	Yes

* See M Key, Modem

[U]	Break enabled 0 = No 1 = Yes
[W]	Printer new line character 1 = None 2 = Line feed (LF) 3 = Return (CR)
[X]	XON/XOFF 0 = No 1 = Yes
[Y]	Alternate keypad mode 0 = No 1 = Yes

COMMUNICATION (CONT)

KEY	FUNCTION/COMMENTS
[0] (number)	Selects receive and transmit baud rates and number of stop bits.

BAUD RATE (DISPLAYED)	STOP BITS
50	2
75	2
110	2
134	1
150	1
200	1
300	1
600	1
1200	1
1800	1
2400	1
4800	1
7200	1
9600	1

[SHIFT] and [0] — Selects split baud rates: [0] selects receive baud rate; [SHIFT] and [0] then offers a choice of three transmit baud rates.

RECEIVE BAUD RATE (NOT DISPLAYED)	TRANSMIT BAUD RATE (DISPLAYED)	TRANSMIT STOP BITS
600	75	2
	150	1
	600	1
1200	75	2
	150	1
	1200	1
2400	300	1
	600	1
	2400	1
4800	300	1
	600	1
	4800	1

STORE RECALL AND STATUS

KEY	FUNCTION/COMMENTS
[I] (letter)	Select factory set-up parameters
[8]	Print status message
[9]	Recall set-up parameters
[SHIFT] and [9]	Store set-up parameters

SELF TEST

KEY	FUNCTION/COMMENTS
[T]	Initiate printing self test
[SHIFT] and [>]	Initiate non-printing self test NOTE: Type any character in set-up mode to stop self test.

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APPENDIX B
FACTORY PARAMETER SETTINGS

The initial settings of the LA120 parameters made at the factory prior to shipment are given below.

Parameter	Setting
Horizontal tab stops	1, 9, 17, 25, 33, 41, 49, 57, 65, 73, 81, 89, 97, 105, 113, 121, 129, 137, 145, 153, 161, 169, 177, 185, 193, 201, 209, 217
Vertical tab stops	1, 9, 17, 25, 33, 41, 49, 57, 65, 73, 81, 89, 97, 105, 113, 121, 129, 137, 145, 153, 161
Left margin	1
Right margin	132
Top margin	1
Bottom margin	66
Line/Local Status	On-line
REC	1200
XMT	1200
A	0
B	1
C	1
D	1
E	0
F	66
G	1
H	10
J	1
K	0
L	0
M	1
N	1
O	1
P	1
Q	0
R	1
S	0
U	1
V	6
W	1
X	1
Y	0
Z	1

LA120
TECHNICAL MANUAL
EK-LA120-TM-001

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