

LP27/LP29 Line Printer

Installation Manual

Order Number: EK-LP279-IN-002

**Prepared by
Computer Special Systems**

Digital Equipment Corporation • Merrimack, NH 03054

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Preface

The *LP27/LP29 Line Printer Installation Manual* provides both DIGITAL™ Field Service personnel and DIGITAL customers with procedures for installing the LP27/LP29 series of line printers and the power paper stacker.

ORGANIZATION

This manual is organized in the following manner:

CHAPTER 1, INTRODUCTION — Provides an overview of the LP27 and LP29 line printers, describes the seven major subsystems, and lists the specifications and features of these printers.

CHAPTER 2, PRINTER INSTALLATION — Describes how to transport, unpack, install, level, and inspect the LP27 and LP29 line printers and describes how to power-up the printers.

CHAPTER 3, PAPER STACKER INSTALLATION — Describes how to unpack and install the power paper stacker and connect the paper stacker to power.

APPENDIX A, CHARACTER BAND INSTALLATION — Describes how to install the character band in the LP27 and LP29 line printers.

APPENDIX B, RIBBON INSTALLATION — Describes how to install the printer ribbon in the LP27 and LP29 line printers.

APPENDIX C, SETTING THE DAVFU SWITCH ON THE THE LP27 LINE PRINTER FOR DECSYSTEM-10/20 — Describes setting the DAVFU switch on the LP27 line printer when used with DECsystem-10/20.

CONVENTIONS

Where notes, cautions, and warnings are used in this document, they highlight specific types of information as follows:

NOTE

A note calls attention to any item of information that may be of special importance to the reader.

CAUTION

A caution contains information essential to avoid damage to the system.

WARNING

A warning contains information essential to the safety of personnel.

RELATED DOCUMENTATION

Title

LP27 Line Printer Pocket Service Guide

LP11/LPV11 Controller Installation Manual

LP27/LP29 Line Printer Operator's Manual

Document No.

EK-OLP27-PS

EK-LP11V-IN

EK-LP279-OM

FCC USER STATEMENT

NOTICE:

This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such radio frequency interference. Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

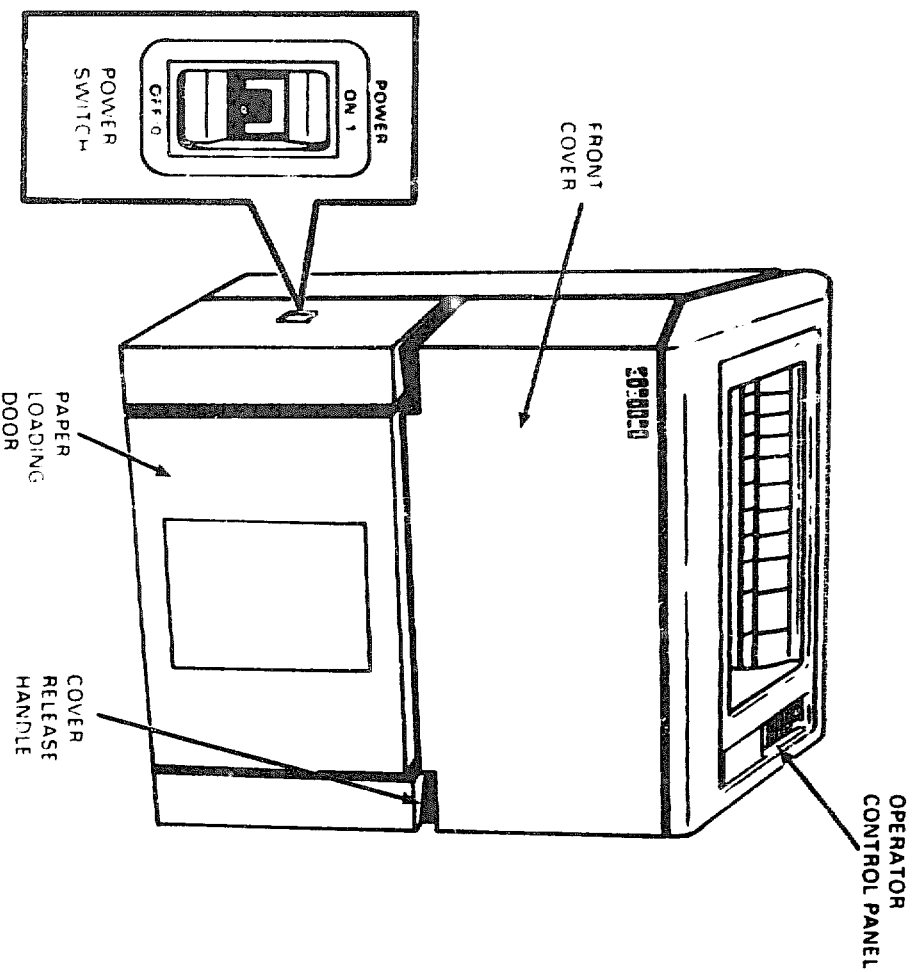
The LP27 and LP29 line printers (see Figures 1-1 and 1-2) are general-purpose, 132-column, impact line printers that use a continuous steel band font carrier. The LP27 line printer prints reliably at 1250 Lines Per Minute (LPM) using a 64-character band and 800 LPM using a 96-character band. The LP29 prints reliably at 2000 LPM using a 64 statistical character band, 1650 LPM using a standard 64-character band, and 1250 LPM using a 96-character band. The printer's electronics contain a microprocessor that controls the electrical, mechanical, and electronic functions. The electronics also provide diagnostic testing to detect and indicate malfunctions. In addition, the printer provides operator enabled self-tests with digital status display (see Figure 1-3).

The printer uses a variety of digital, analog, and electromechanical components to accomplish the following tests.

- Accept data from a DIGITAL™ processor.
- Process the data for a line of print.
- Print the data.
- Move the paper according to a programmed format.

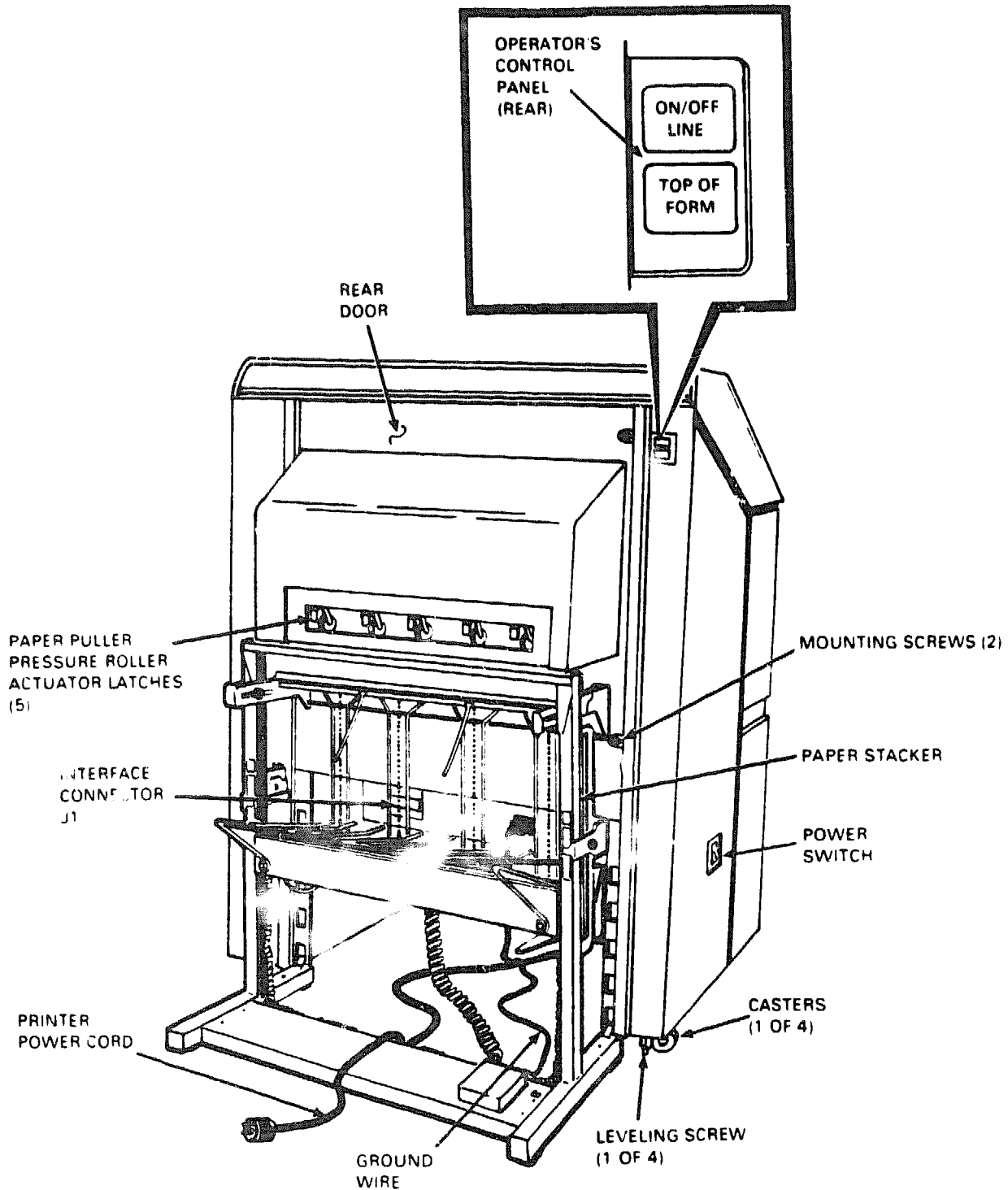
There are two versions of the LP27 line printer: a short lines version, and a long lines version. The short lines version can be up to 30 feet from the host processor, while the long lines version can be up to 1000 feet from the host processor.

The LP29 line printer incorporates only the long line version, and includes a power paper stacker.



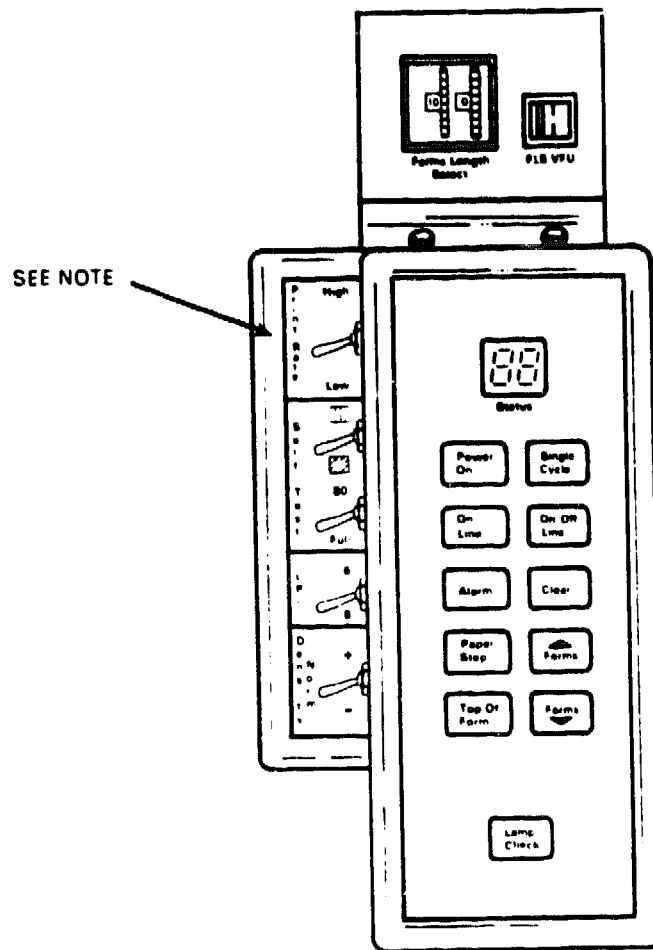
CS-6030

Figure 1-1 Line Printer, Front View



CS-6040

Figure 1-2 Line Printer, Rear View



NOTE
PRINT RATE SWITCH AVAILABLE ON LP29 LINE PRINTERS ONLY.

CS-6038

Figure 1-3 LP27/LP29 Line Printer Control Panel

1.2 PRINTER SPECIFICATIONS

Specifications for the LP27 and LP29 line printers are presented in the following subsections.

1.2.1 LP27 Line Printer Specifications

Table 1-1 summarizes the LP27 line printer specifications.

Table 1-1 LP27 Specification Summary

Item	Specification	Remarks
Power Supply:		
Input Voltage	100, 120, 127, 220, 230, 240 Vac	(+ 10%, -15%)
Frequency	47 to 63 Hz	
Power Requirements	1100 W maximum	Not frequency sensitive. Specific selection of voltage is made by jumper connections on the power supply assembly.
Temperature:		
Operating	10°C to 38°C (50°F to 100°F)	
Storage	-10°C to 50°C (14°F to 122°F)	
Transit	-40°C to 71°C (-40°F to 160°F)	
Humidity:		
Operating	20% to 80% relative humidity	Humidity (noncondensing)
Storage	10% to 90% relative humidity	10% per hour rate of change
Transit	95% maximum relative humidity	10% per hour rate of change
Printer Dimensions*:		
Weight	255.0 kg (560.0 lbs)	
Weight (shipping)	309.0 kg (680.0 lbs)	
Height	124.5 cm (49 in) 197.5 cm (78 in)	Cover closed Cover open
Width	89.0 cm (37 in)	
Depth	95.5 cm (38 in)	

* Dimensions are rounded off

1.2.2 LP29 Line Printer Specifications

Table 1-2 summarizes the LP29 line printer specifications.

Table 1-2 LP29 Specification Summary

Item	Specification	Remarks
Power Supply:		
Input Voltage	100, 120, 127, 220, 230, 240 Vac	(+ 10%, -15%)
Frequency	47 to 63 Hz	
Power Requirements	1077 W maximum	Not frequency sensitive. Specific selection of voltage is made by jumper connections on the power supply assembly.
	1000 W maximum	Printer operating
	77 W maximum	Paper stacker operating
Temperature:		
Operating	10°C to 38°C (50°F to 100°F)	
Storage	-10°C to 50°C (14°F to 122°F)	
Transit	-40°C to 71°C (-40°F to 160°F)	
Humidity:		
Operating	30% to 80% relative humidity	Humidity (noncondensing)
Storage	10% to 90% relative humidity	10% per hour rate of change.
Transit	95% maximum relative humidity	10% per hour rate of change.

Table 1-2 LP29 Specification Summary (Cont)

Item	Specification	Remarks
Printer Dimensions*:		
Weight	255.0 kg (560.0 lbs)	
Weight (shipping)	309.0 kg (680.0 lbs)	
Height	124.5 cm (49 in) 197.5 cm (78 in)	Cover closed Cover open
Width	93.9 cm (37 in)	
Depth	95.5 cm (38 in)	Printer only
Paper Stacker Dimensions:		
Weight	23.0 kg (50.0 lbs)	
Weight (shipping)	40.0 kg (88.0 lbs)	
Height	72.4 cm (28.5 in)	
Width	67.4 cm (26.5 in)	
Depth	76.5 cm (30.1 in)	

* Dimensions are rounded off

1.3 PRINTER OPTIONS

The following sections describe the various printer options available with the LP27 and LP29 line printers.

1.3.1 LP27 Line Printer Options

Table 1-3 provides line printer options for the LP27.

Table 1-3 LP27 Line Printer Options

DIGITAL Model No.	Standard Features
LP27-UA	64- and 96-character American bands (minimum: 1200/800 LPM), M7258 controller, 9.14 m (30.0 ft) cable, 120 V.
LP27-UB	64- and 96-character American bands (minimum: 1200/800 LPM), M7258 controller, 9.14 m (30.0 ft) cable, 240 V.
LP27-VA	64- and 96-character American bands (minimum: 1200/800 LPM), DMF32 controller, 9.14 m (30.0 ft) cable, 120 V.
LP27-VB	64- and 96-character American bands (minimum: 1200/800 LPM), DMF32 controller, 9.14 m (30.0 ft) cable, 240 V.
LP27-2A	64- and 96-character American bands (minimum: 1200/800 LPM), long line interface, DAVFU, LP20 controller, 30.48 m (100.0 ft) cable, 120 V.
LP27-2B	64- and 96-character American bands (minimum: 1200/800 LPM), long line interface, DAVFU, LP20 controller, 30.48 m (100.0 ft) cable, 240 V.
LP27-DA	64- and 96-character American bands (minimum: 1200/800 LPM), long line interface, M7258/LLD11-CA controller, 304.8 m (1000.0 ft) cable, 120 V.
LP27-DB	64- and 96-character American bands (minimum: 1200/800 LPM), long line interface, M7258/LLD11-CA controller, 304.8 m (1000.0 ft) cable, 240 V.
LP27-QA	64- and 96-character American bands (minimum: 1200/800 LPM), long line interface, M8027 controller, BC27A-30 cable, and cabinet kit CK-LPV1A, 120 V.
LP27-QB	64- and 96-character American bands (minimum: 1200/800 LPM), long line interface, M8027 controller, BC27A-30 cable, and cabinet kit CK-LPV1A, 240 V.

1.3.2 LP29 Line Printer Options

Table 1-4 provides line printer options for the LP29.

Table 1-4 LP29 Line Printer Options

DIGITAL Model No.	Standard Features
LP29-AA	2000 LPM band printer, 120 V.
LP29-A3	2000 LPM band printer and country kit, 240 V.
LP29-UA	2000 LPM band printer, P/N 70-18539-01, 120 V, paper stacker.
LP29-U3	2000 LPM band printer, country kit, P/N 70-18953-01, 240 V, paper stacker.
LP29-VA	2000 LPM band printer, BC27L-30 cable, 120 V, paper stacker.
LP29-SA	2000 LPM band printer, BC27L-30 cable, 120 V, LPV11-SA, paper stacker.
LP29-S3	2000 LPM band printer, BC27L-30 cable, 240 V, LPV11-SA, paper stacker.

1.4 COUNTRY KITS

The LP29 line printer country kits are available for nine countries. Table 1-5 lists the various country kits that are available.

Table 1-5 Country Kits

Part No.	Country
LP29-KD	Denmark
LP29-KE	United Kingdom
LP29-KG	Germany
LP29-KI	Italy
LP29-KM	Sweden
LP29-KP	France
LP29-KS	Spain
LP29-KV	Portugal
LP29-KJ	Japan

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CHAPTER 2

PRINTER INSTALLATION

2.1 INTRODUCTION

This chapter describes the installation of the LP27 and LP29 line printers. A separate subsection is devoted to each of the following topics:

1. Shipping configurations
2. Site preparation
3. Transporting the printer
4. Unpacking the printer
5. Leveling the printer
6. Inspection
7. Country kits
8. Installing plugs on power cable
9. Printer power-up
10. Interconnecting the printers to a system and diagnostics

2.2 SHIPPING CONFIGURATIONS

The following subsections discuss the shipping configurations of the LP27 and LP29 line printers.

2.2.1 LP27 Line Printer

The LP27 line printers are shipped in a single container. The LP27 shipaway kit is enclosed within the printer shipping container (located at the rear of the printer) and contains:

- 96-character band
- Nylon ribbon
- Single-part print sample
- Six-part print sample
- 1-inch stack of fresh paper
- Installation Manual
- Operator's Manual

2.2.2 LP29 Line Printer

The LP29 line printers are shipped in two different configurations: domestic and international.

2.2.2.1 Domestic LP29 Line Printer - The domestic LP29 line printer shipping configuration consists of two boxes that contain the following:

Printer Box

- LP29 line printer with a 64-character band installed
- Domestic Shipaway kit (see Figure 2-3, sheet 2 of 3) located at the rear of the printer, inside the shipping container containing:
 - 96-character band
 - Nylon ribbon
 - Single-part print sample
 - Six-part print sample
 - 1-inch stack of fresh paper
 - Installation Manual
 - Operator's Manual

Power Paper Stacker Box (LP29P-AA)

- Power paper stacker

2.2.2.2 International LP29 Line Printer - The International LP29 line printer shipping configuration consists of three boxes that contain the following:

Printer Box

- LP29 line printer
- International Shipaway kit (located at the rear of the printer, inside the shipping container) containing:
 - Nylon ribbon
 - Single-part print sample
 - Six-part print sample
 - 1-inch stack of fresh paper
 - Three power plugs

Country Kit Box

- Control panel overlay
- Status code label
- 96-character band
- 64-character statistical band and PROM
- Installation Manual
- Operator's Manual

Power Paper Stacker Box, LP29P-AB

- Power paper stacker

NOTE

Before unpacking the shipping cartons, inspect them for signs of shipping damage. If the shipment has been damaged, report the damage to the shipper and notify the responsible DIGITAL representative through whom the equipment was purchased.

2.3 SITE PREPARATION

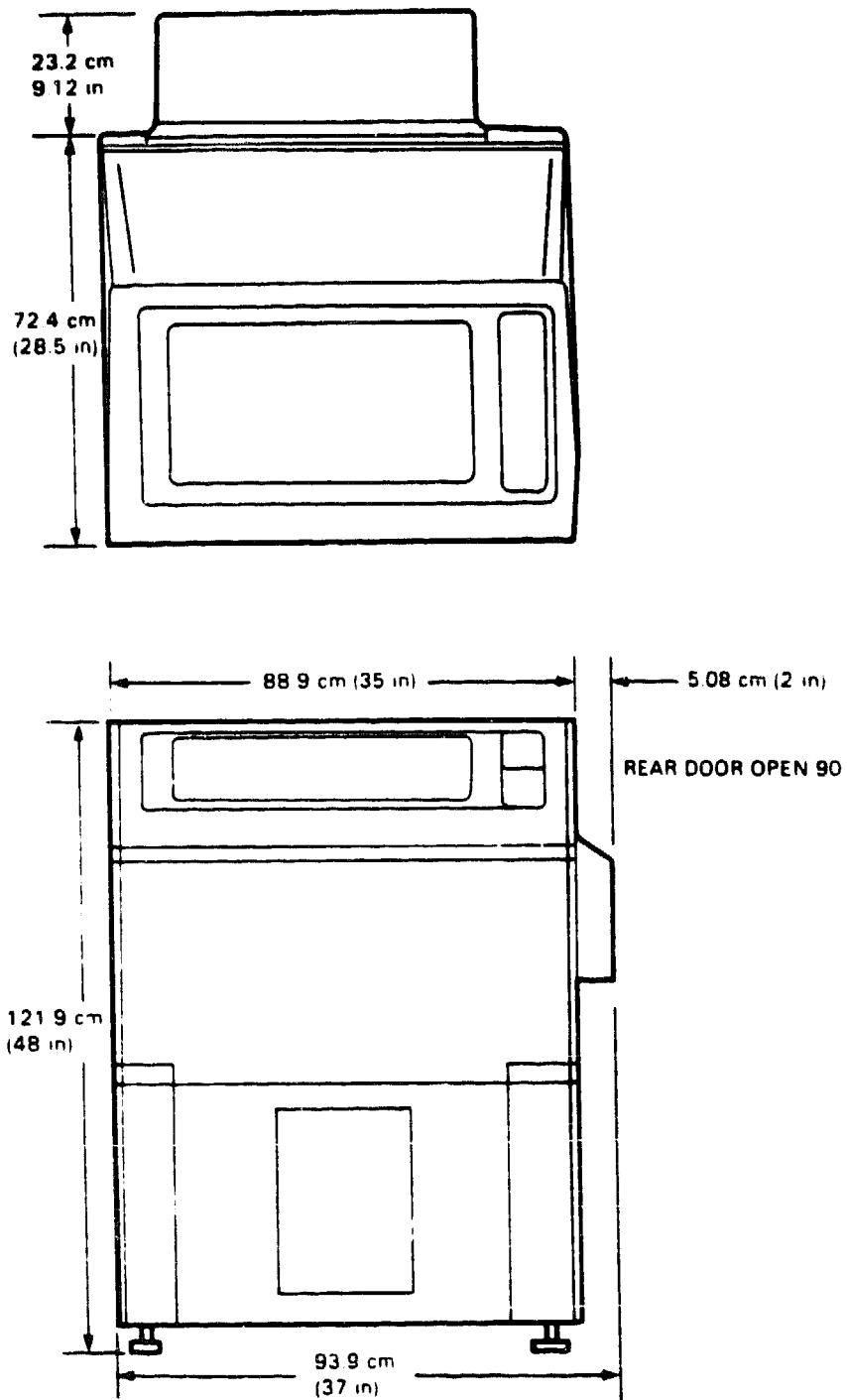
The LP27 line printer requires a 88.9.0 cm (35.0 in) wide by 201.95 cm (79.12 in) (with doors open) deep area of floor space that is capable of supporting, as a minimum, 309.0 kg (680.0 lbs) (printer and pallet).

The LP29 line printer, with the power paper stacker, requires a 88.9 cm (35.0 in) wide by 201.95 cm (79.51 in) (with doors open) deep area of floor space that is capable of supporting, as a minimum, 332.0 kg (743.0 lbs) (printer, paper stacker, and pallet).

Beyond this mounting space, the LP27 and LP29 line printers also require room for access to the cabinet, the power receptacle, and an adequate flow of cool air. Figures 2-1 and 2-2 illustrate the space requirements for the LP27 and LP29 line printers.

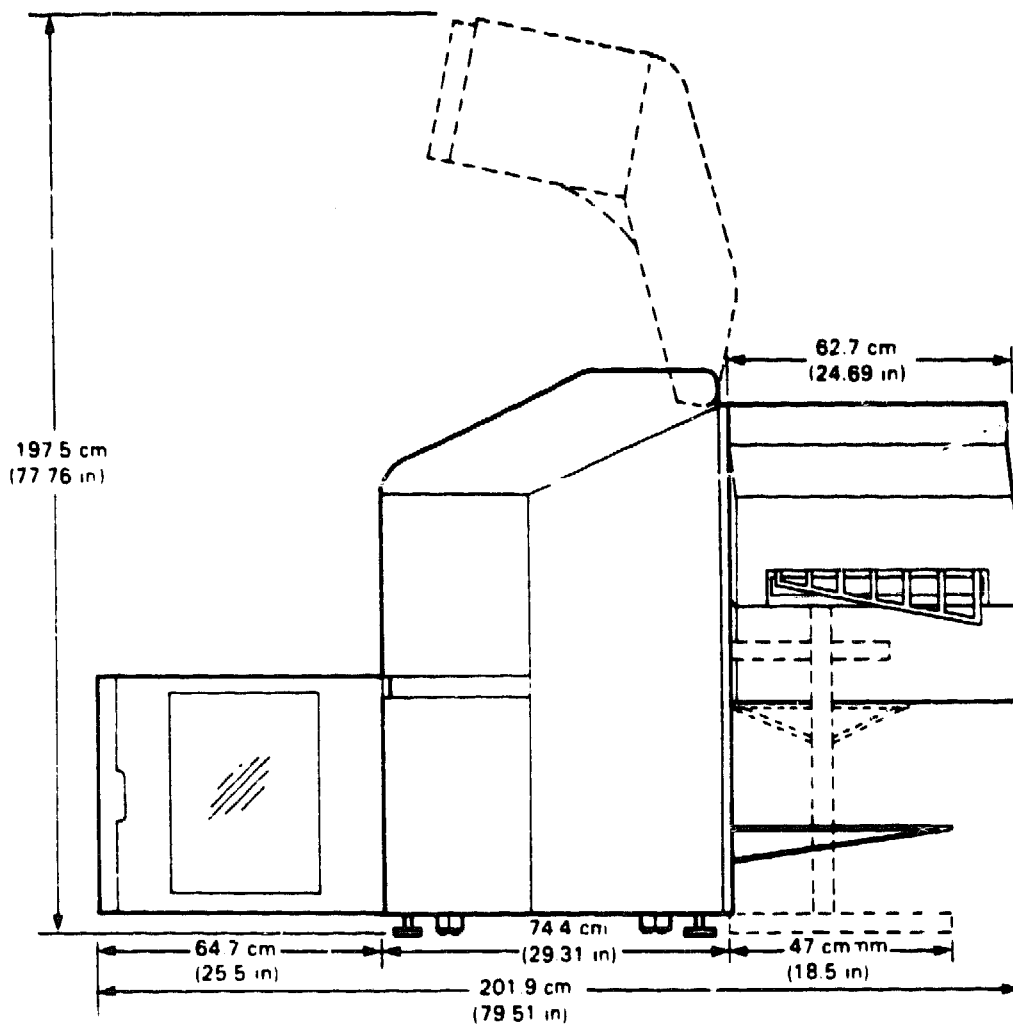
NOTE

Care should be taken to ensure that the printers are positioned so that the power switch is accessible.



CS-6378

Figure 2-1 LP27/LP29 Line Printer Clearance Dimensions



CS-6379

Figure 2-2 Line Printer Access Requirements (LP29 Printer Shown)

2.4 TRANSPORTING THE PRINTER AND PAPER STACKER

The LP27 and LP29 line printers and their shipping containers weigh 303.0 kg (680.0 lbs). The power paper stacker (for the LP29 printer) and its shipping container weigh 40 kg (88 lbs). A forklift should be used to transport either line printer and paper stacker from the receiving area to the installation site.

CAUTION

Make sure that the printer is securely attached to the pallet before lifting and transporting the pallet with printer with a forklift. Never extend the fork-lift directly under the printer.

2.5 UNPACKING THE PRINTER

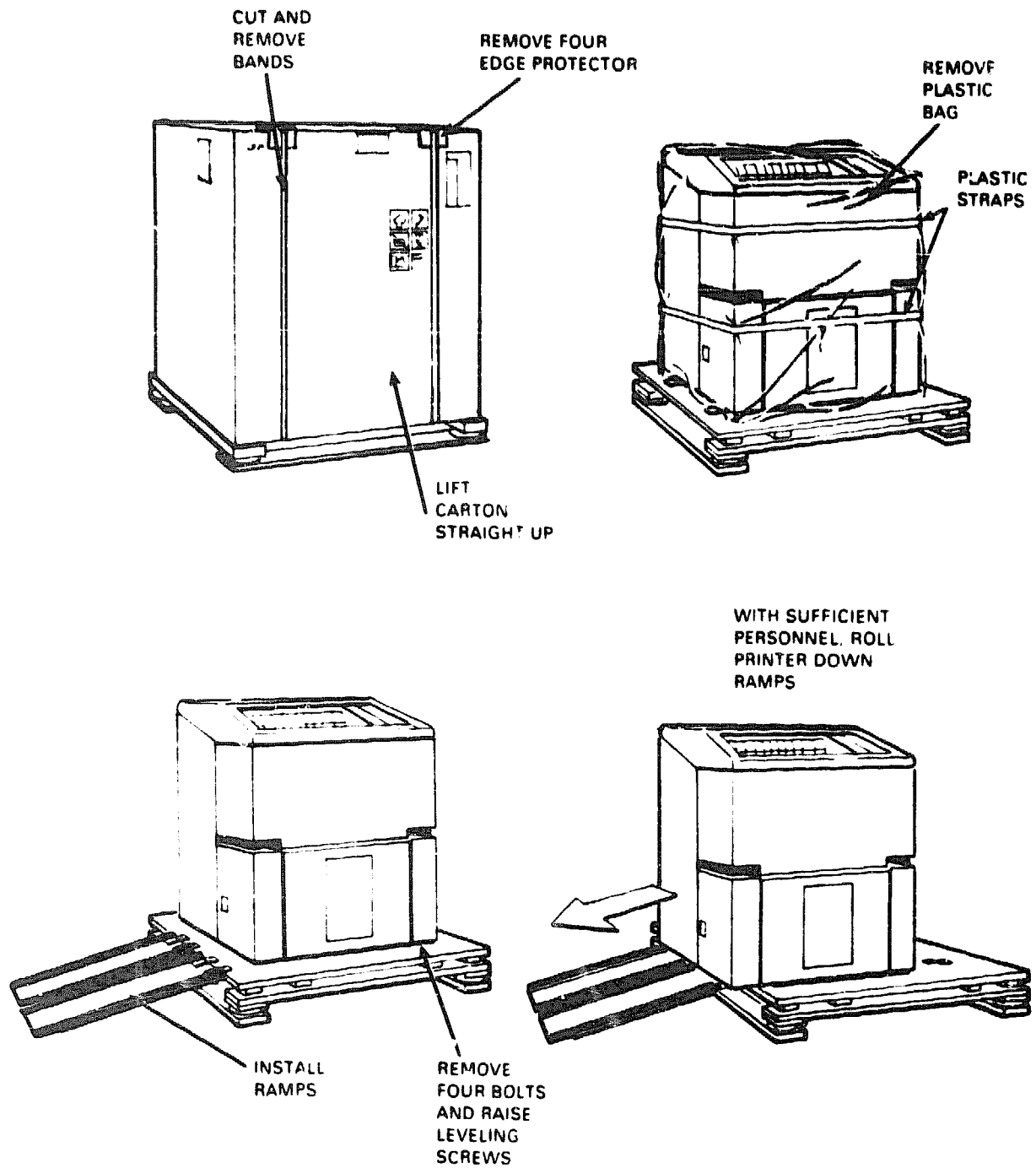
NOTE

The LP27 and LP29 line printers weigh 309.0 kg (680.0 lbs). Use sufficient personnel when moving the printer and pallet.

1. Inspect the shock-watch label on the outside of the shipping container. If the label's color has changed from yellow to red, the package and/or printer may have been damaged during shipment.
2. Cut the plastic straps securing the shipping container to the pallet and remove edge protectors (see Figure 2-3).
3. Remove the container, lifting it straight up to clear the top of the printer.
4. Cut and remove the tape from around the plastic shroud and remove the plastic shroud (see Figure 2-3).
5. Cut the straps securing the two unloading ramps to the pallet. Remove the ramps and temporarily place them to one side.
6. Remove the shipaway box from under the rear of the printer (see Figure 2-3, sheets 2 and 3).

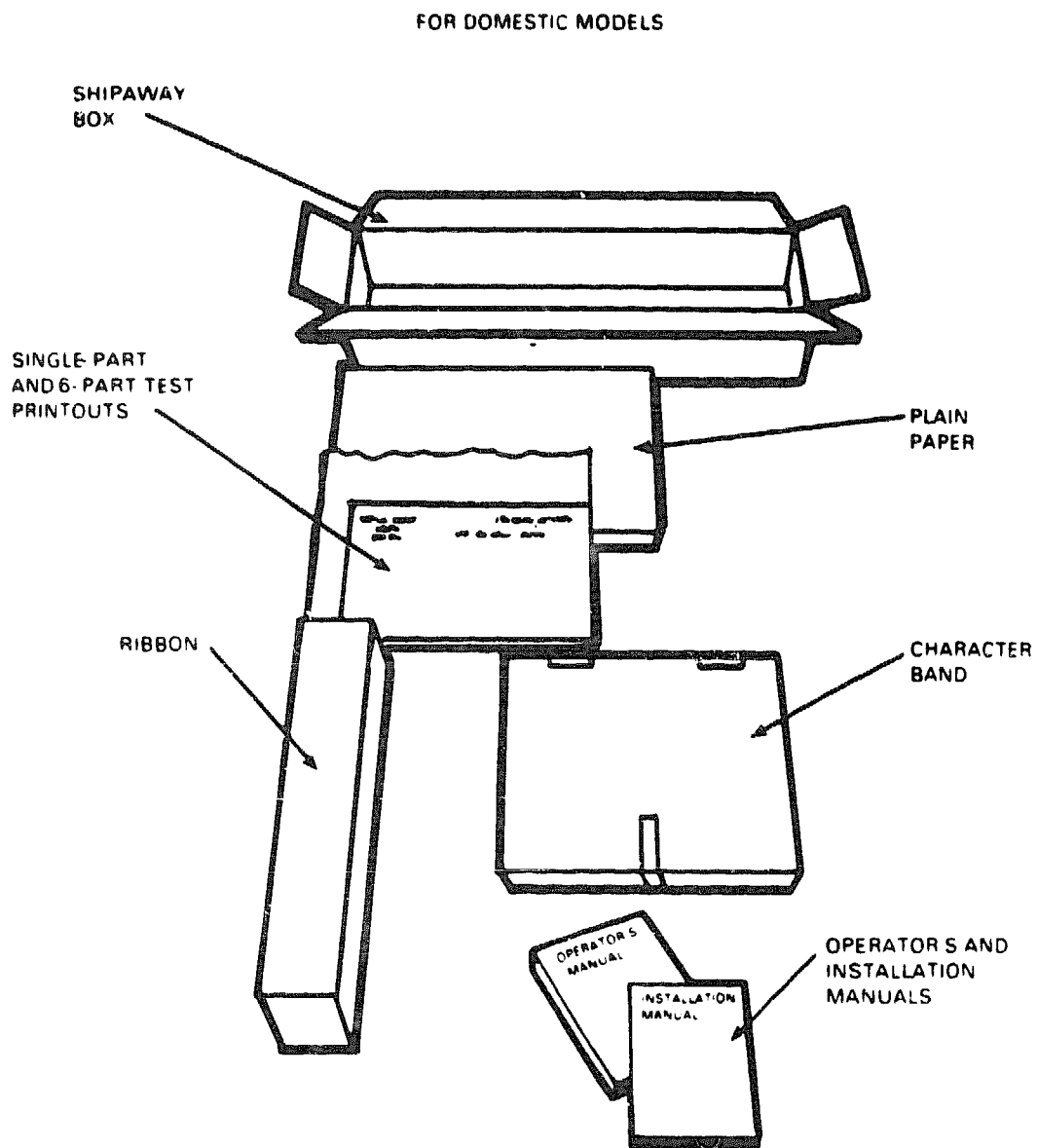
NOTE

The domestic LP29 line printers will have the 64-character statistical band installed and there will only be the 96-character band in the shipaway box. The shipaway box for the international LP29 line printers will contain both character bands and PROM.



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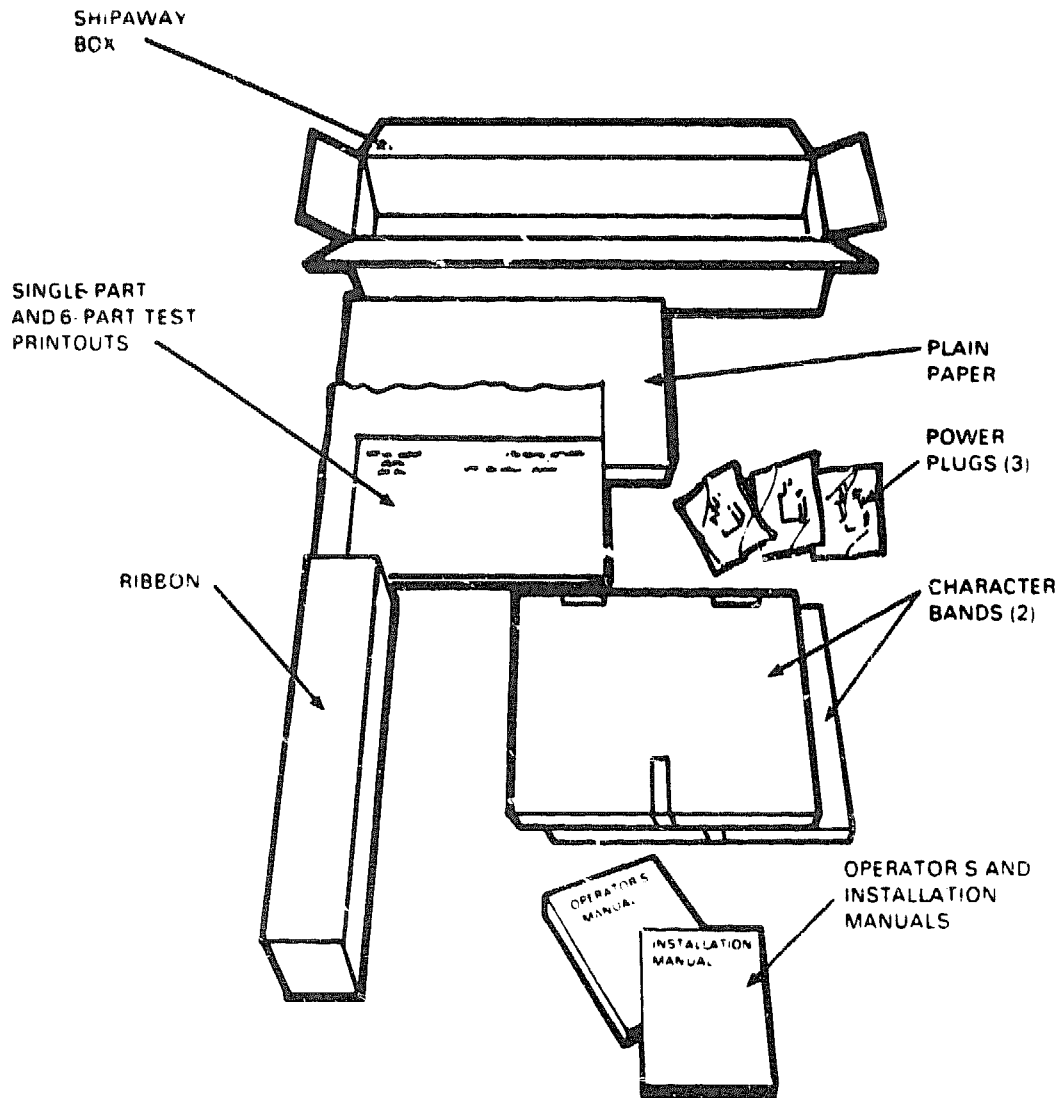
Figure 2-3 Unpacking the LP27/LP29 Line Printers (Sheet 1 of 3)



CS-6154

Figure 2-3 Unpacking the LP27/LP29 Line Printers (Sheet 2 of 3)

FOR INTERNATIONAL MODELS



CS-6380

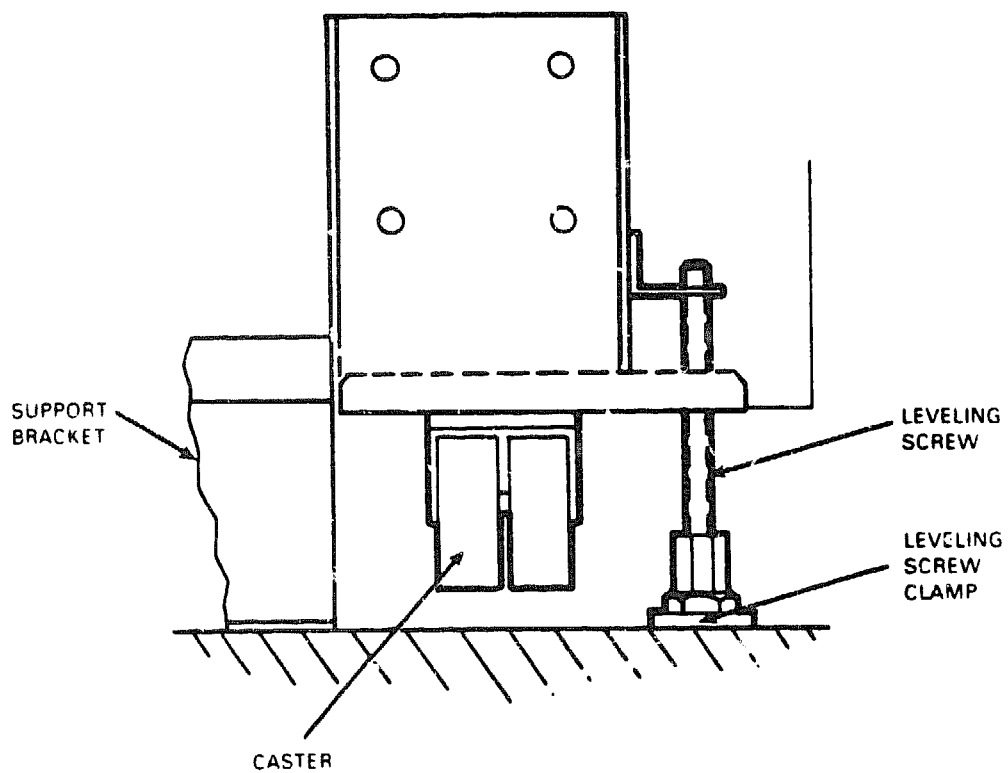
Figure 2-3 Unpacking the LP27/LP29 Line Printers (Sheet 3 of 3)

7. Unbolt the four leveling screw clamps securing the printer to the pallet and remove them (see Figure 2-4).
8. Raise the printer off its support brackets by turning the corner leveling screws clockwise, down and out from the printer base (refer to Chapter 1, Figure 1-2).
9. Remove the six bolts securing the support brackets to the pallet. Twist and slide the brackets out from under the printer (see Figure 2-5).
10. Lower the printer onto its casters by turning the four corner leveling screws counterclockwise, up and into the printer base (see Figure 2-4).
11. Find the four ramp attachment holes on the edge of the pallet's right side. Set up the unloading ramps from floor to pallet so that the ramp's four metal brackets lie adjacent to the four ramp attachment holes. Use the four bolts removed from the leveling screw clamps and position the ramps in place by putting one bolt in each hole, and tighten securely (see Figure 2-5).
12. With someone standing on the opposite side of the pallet to guard against tipping, carefully roll the printer off the pallet and down the ramps (see Figure 2-3).

NOTE

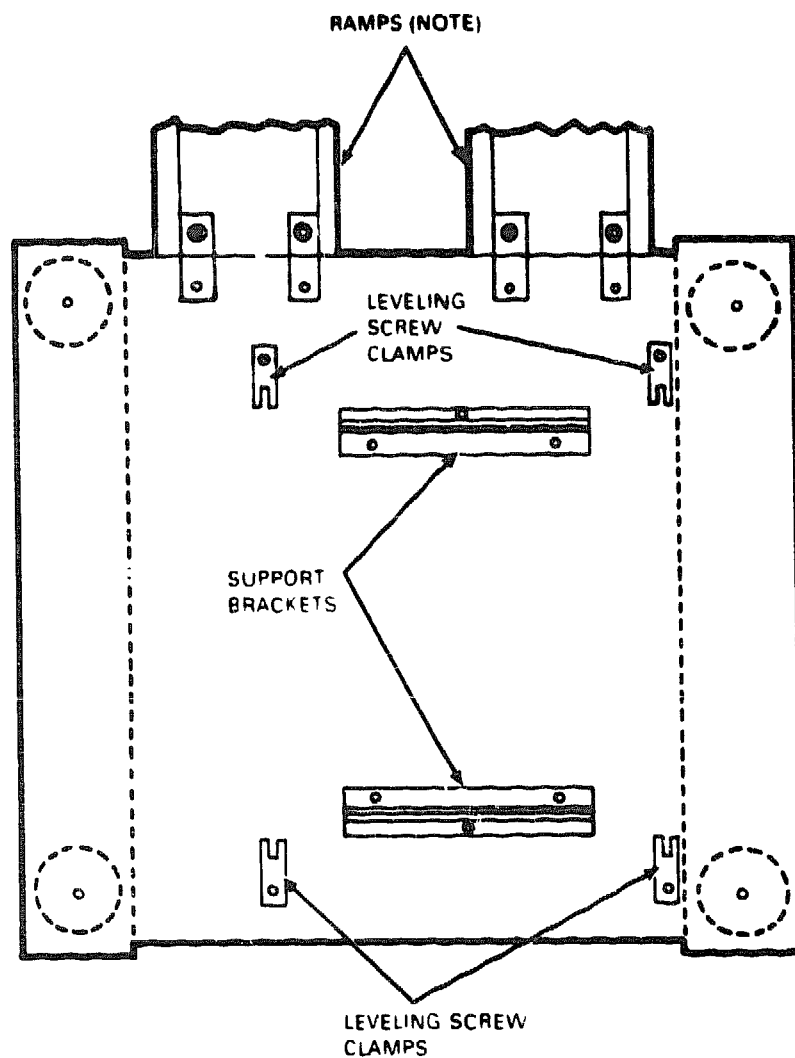
Care should be taken to ensure that the power cord will not interfere with the movement of the printer off the pallet.

13. Store the shipping pallet, ramps, hardware, and all packaging materials for possible future use in repacking.



CS-5155

Figure 2-4 Printer Leveling Screw, Clamp, and Support Bracket



NOTE
RAMPS ARE SHIPPED AND STORED
UNDER THE TOP LAYER OF THE PALLET

CS 6156

Figure 2-5 Ramps and Shipping Pallet

2.6 LEVELING THE PRINTER

The LP27 and LP29 line printers are leveled at their operating sites as follows:

1. Adjust the leveling screws (located at each corner) until the printer stands both firm and even. Each leveling screw must be extended until the entire printer is supported on the leveling screws rather than on the casters.
2. Tighten each leveling screw locknut against the printer frame.

2.7 INSPECTION

CAUTION

This on-receipt inspection must be performed before applying power to the printer.

NOTE

If the printer does not meet the following inspection requirements, notify the shipper and responsible DIGITAL representative through whom the equipment was purchased.

1. Verify that the printer's POWER switch is in the OFF position (see Chapter 1, Figure 1-1).

CAUTION

Remove the red tie wrap located inside the paper access door prior to opening the front cover (see Figure 2-6).

2. Push in and open the paper access door, cut and remove the red tie wrap (see Figure 2-6).
3. Press the cover release handle and lift the printer's front cover (see Figure 2-7). Verify that there are no obstructions.
4. Open the band gate door by pulling the band gate latch forward and swinging the band gate door open (see Figure 2-8). Verify that the band gate door assembly swings open smoothly.
5. Cut and remove the tie wraps located on the right-hand side (see Figure 2-9).
6. Inspect the printer for any damage, loose mechanical or electrical connections, or broken wires.
7. Inspect the power input cable connector and interface connector for bent or damaged pins.

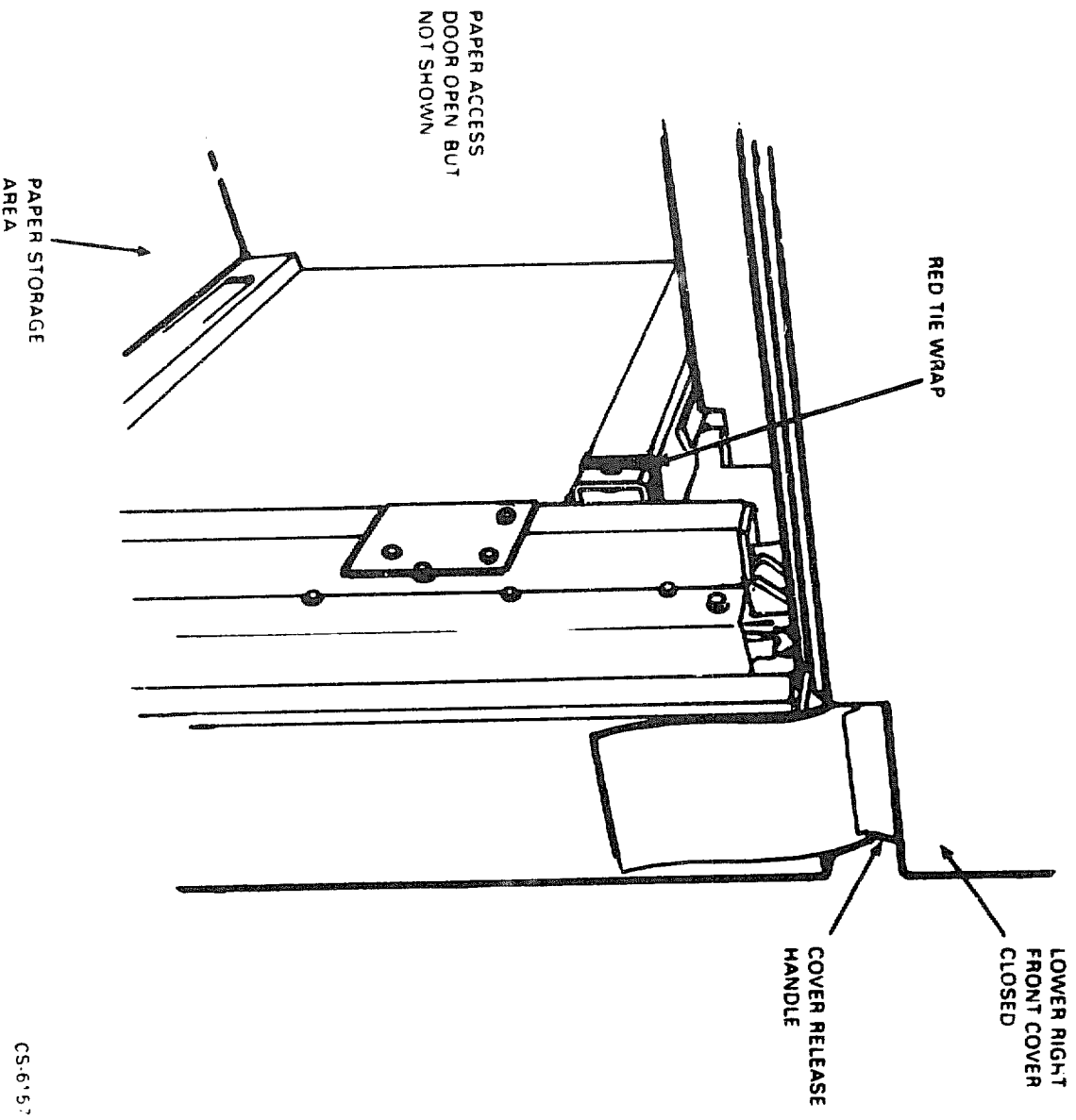
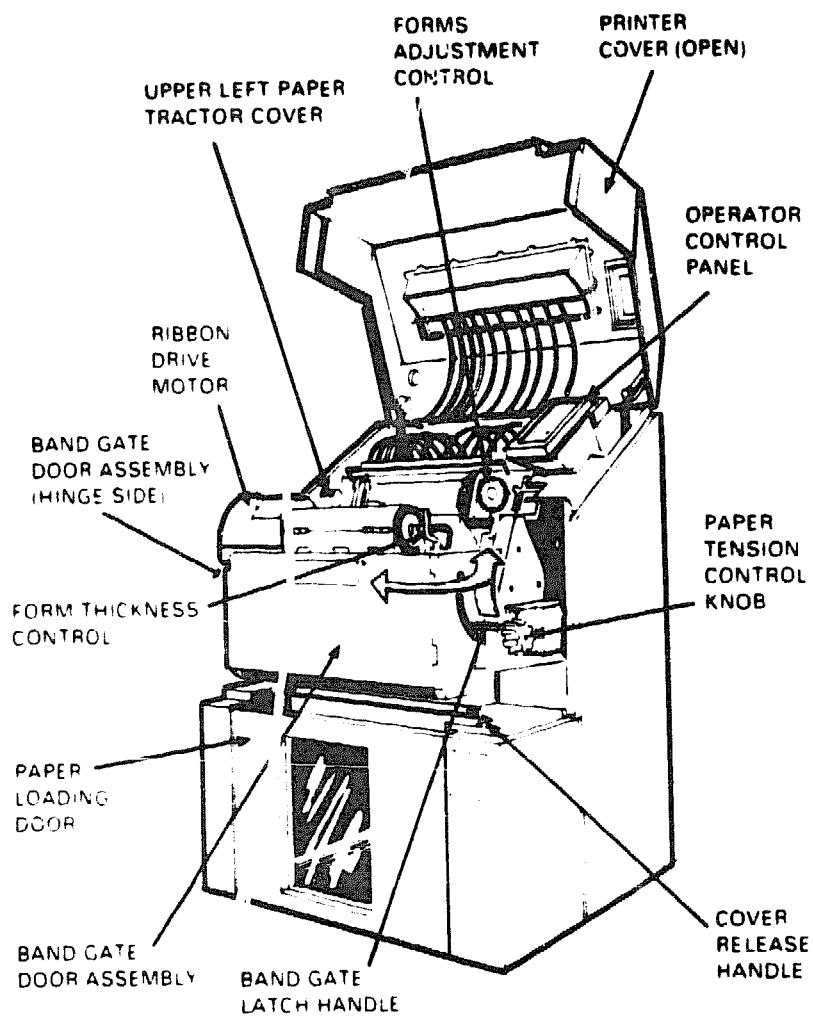
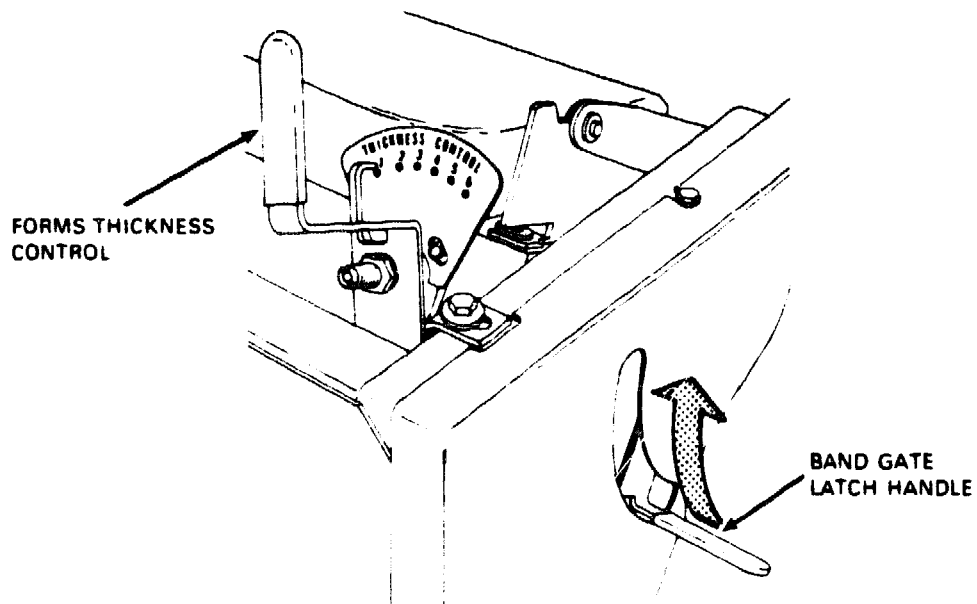


Figure 2-6 Location of Red Tie Wrap Inside Paper Access Door



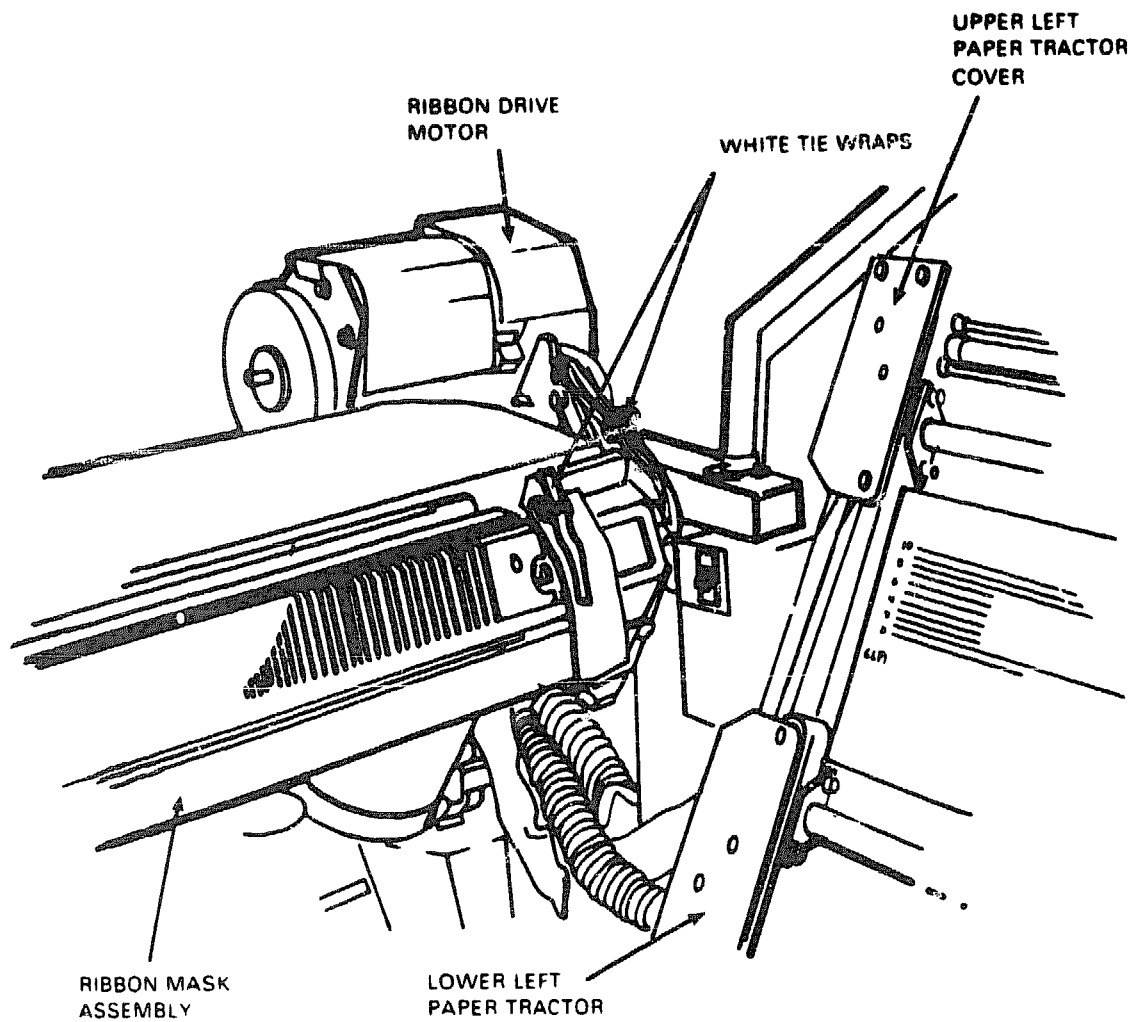
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Figure 2-7 Front View of LP29 Line Printer with Front Cover Raised



CS 2589

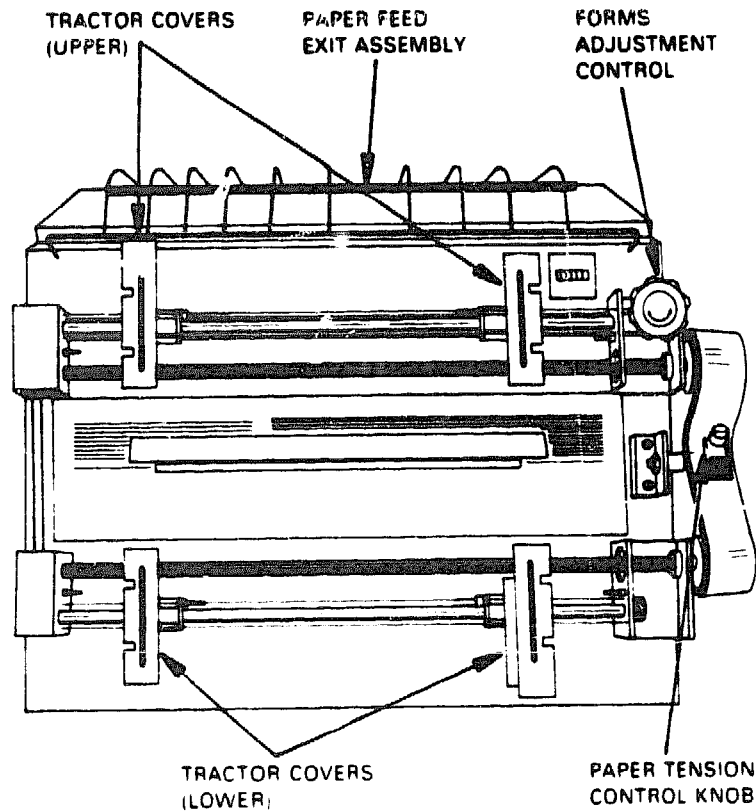
Figure 2-8 Band Gate Door Assembly (Front Right Hand Side of Printer with Cover Raised)



CS-6158

Figure 2-9 Location of White Tie Wraps on Band Gate Door Assembly (Hinge Side, Door Open)

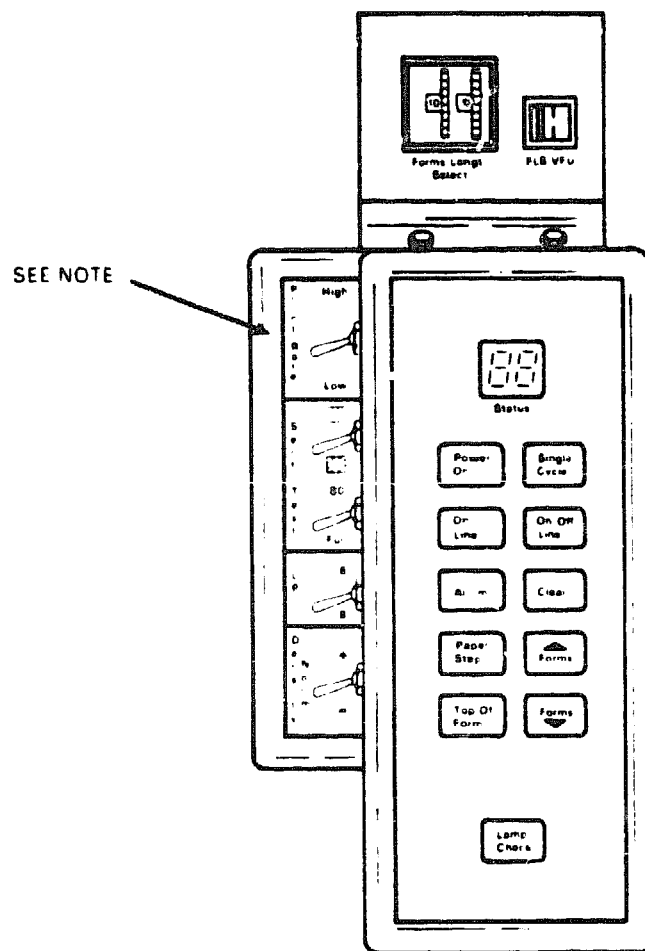
8. Rotate the FORMS ADJUSTMENT knob (see Figure 2-10) in its two positions; first for right tractors only, then for right and left tractors together. Verify that the tractors move freely.
9. Verify that the main power circuit breaker (CB1) (see Chapter 1, Figure 1-1) mechanically locks in both the ON and OFF positions.



CS 260C

Figure 2-10 FORMS ADJUSTMENT Knob on the LP27 Line Printer

10. Verify that the 6/8 LPI switch and 80/FULL switches lock in each of two positions (see Figure 2-11).
11. Move the SELF TEST switch from the center to the up and down positions, and verify that it mechanically locks in each position (see Figure 2-11).
12. Leave the main power circuit breaker set to OFF and the 6/8 LPI switch set to 6 LPI (see Figure 2-11).



NOTE
PRINT RATE SWITCH AVAILABLE ON LP29 LINE PRINTERS ONLY

CS-6038

Figure 2-11 LP29 Line Printer Operator's Control Panel

2.8 COUNTRY KIT

There are nine country kits available. The following countries need to install the control panel overlay contained in the country kits:

- Denmark
- United Kingdom
- Germany
- Italy
- Sweden
- France
- Spain
- Portugal
- Japan

Each country kit contains:

- 64-character statistical band and PROM
- 96-character standard band
- Control panel overlay
- Status code label
- Installation Manual
- Operator's Manual

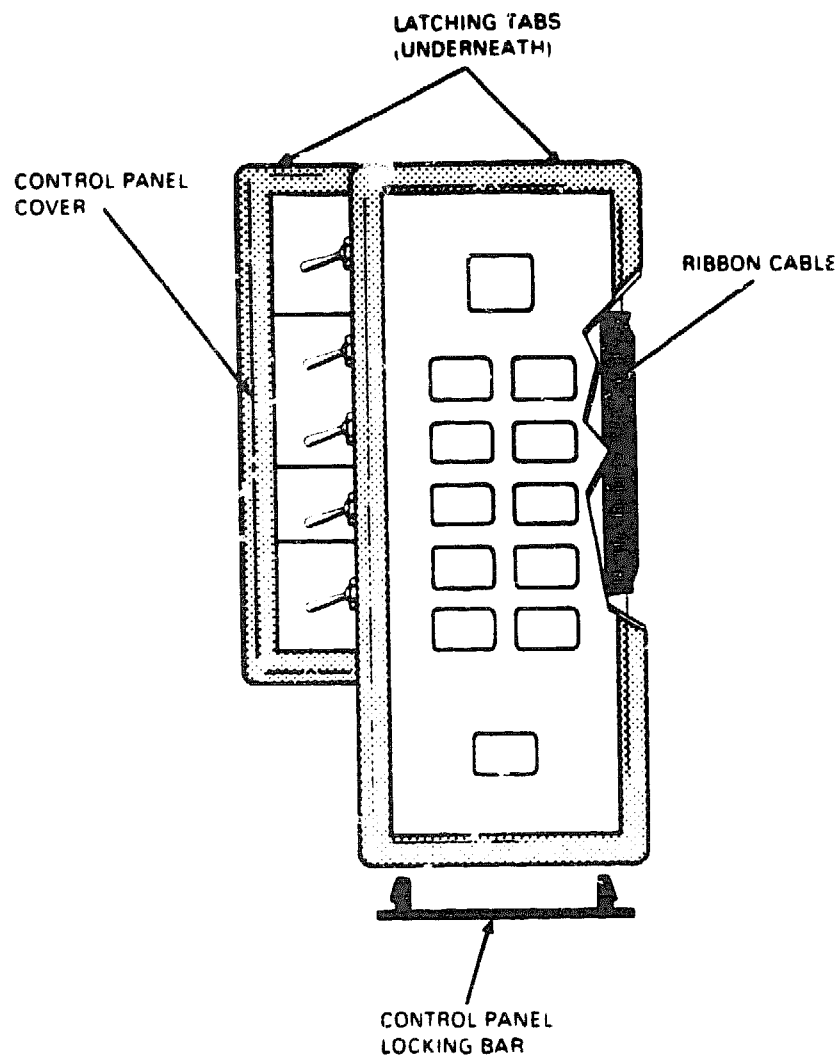
2.8.1 Installing the Control Panel Decal

To install the international control panel decal found in the country kit, proceed as follows.

NOTE

Before performing this installation procedure, ensure that the line printer is turned off, and that the power cord is removed from the power source.

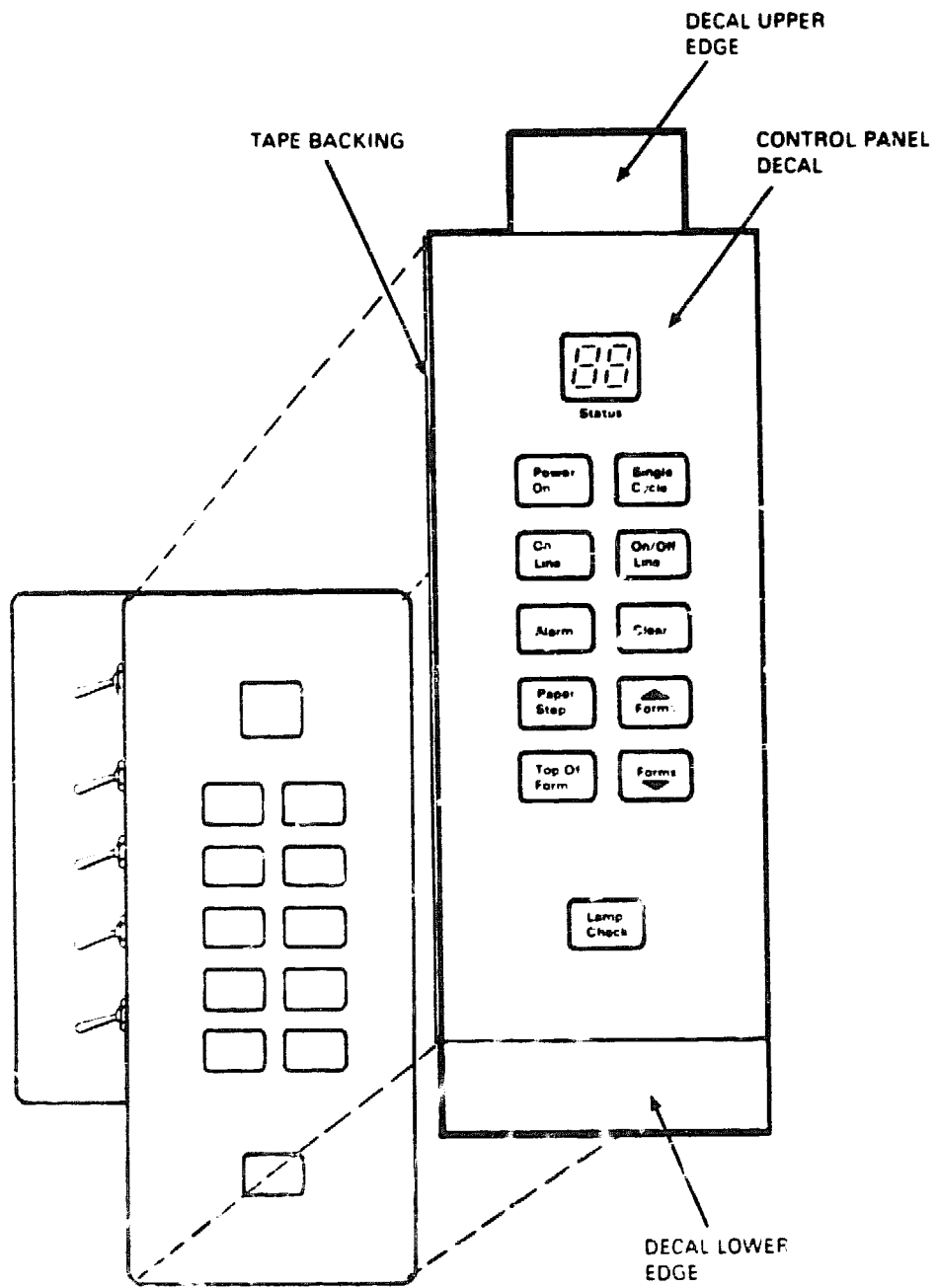
1. Unlatch and raise the printer cover.
2. Pull out the control panel locking bar located at the bottom edge of the control panel assembly (see Figure 2-12).
3. Lift the control panel cover upwards and release the two upper cover latching tabs from the control panel assembly (see Figure 2-12). Remove the cover from the printer.
4. Lift the control panel up slightly and slide the control panel to the right. Disconnect the control panel assembly ribbon cable (see Figure 2-12).



CS-6381

Figure 2-12 Control Panel Assembly

5. Remove the tape backing from the replacement control panel decal (see Figure 2-13).
6. Align and attach the control panel decal onto the control panel assembly. Press the decal surface evenly across the control panel to secure the decal in place.
7. Fold and press down the upper and lower decal edges under the control panel assembly (see Figure 2-13).
8. Insert the control panel ribbon cable into the control panel connector (see Figure 2-12).
9. Install the control panel assembly to the upper and lower housing studs.
10. Place the control panel cover onto the control panel assembly. Push the cover up and down to latch the upper cover latching tabs into the housing frames (see Figure 2-12).
11. Install the cover locking bar (see Figure 2-12).
12. Close and latch the printer cover.



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Figure 2-13 Control Panel Decal

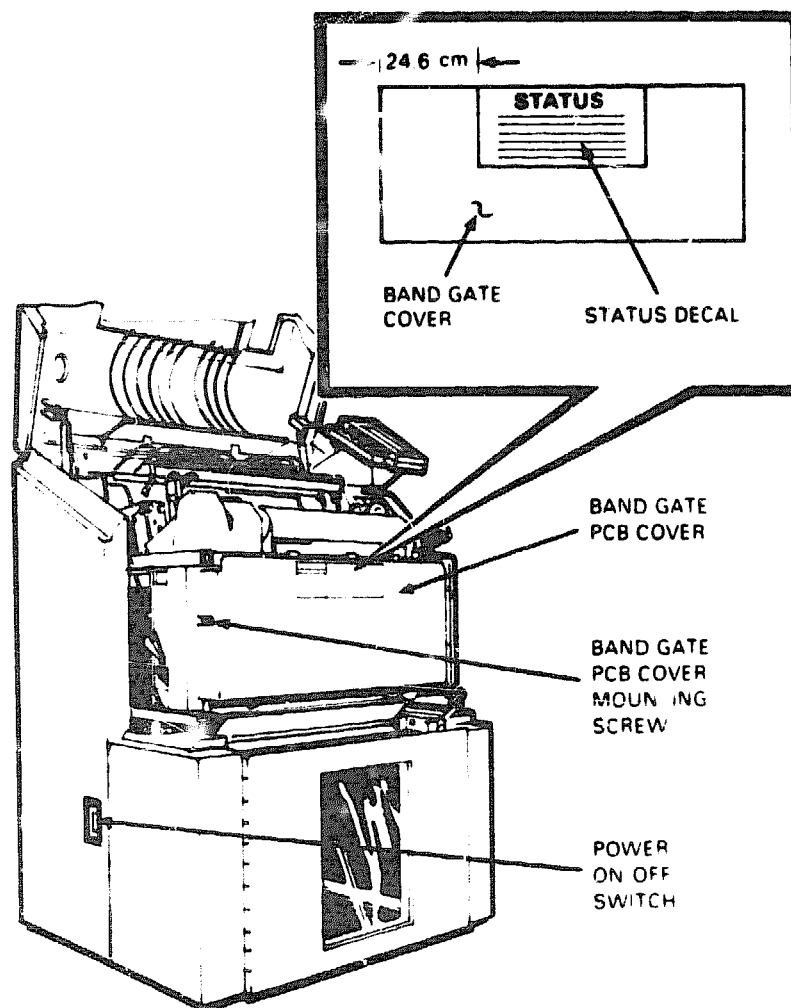
2.8.2 Installing the Status Code Decal

To install the international status code decal found in the country kit, proceed as follows.

NOTE

Before performing this installation procedure, ensure that the line printer is turned off, and that the power cord is removed from the power source.

1. Unlatch and raise the printer cover.
2. Using a dry cloth and some isopropyl alcohol, clean the surface of the band gate cover (see Figure 2-14).
3. Measure and mark 24.6 cm (9.69 in) from the left side of the band gate cover (see Figure 2-14).
4. Remove the tape backing from the status code decal.
5. Place the top left corner of the status code decal over the measured mark on the front surface of the band gate cover.
6. Press evenly across the surface of the decal to secure the decal in place.
7. Close and latch the printer cover.



CS-6383

Figure 2-14 Installing the Status Code Decal

2.9 INSTALLING PLUGS ON POWER CABLE

2.9.1 LP27 Power Plugs

In the event that the standard LP27 line printer three-prong plug is not suitable for connection to the ac power source of a foreign country, the following procedure must be performed prior to the printer power-up.

1. Cut off the existing three-prong plug from the main ac power cord on the printer.
2. If a suitable plug is available, connect the plug to the cable in accordance with the area and local electrical codes. Proceed to Section 2.10 (Printer Power-Up). Refer to Table 2-1 for proper wire color code connections.
3. If a suitable plug is not available, the printer power cord must be permanently wired to an electrical box according to the area and local electrical codes. Proceed to Section 2.10 (Printer Power-Up). Refer to Table 2-1 for proper wire color code connections.

Table 2-1 Power Cord Connections

Wire Color	Description
Brown	Phase conductor on "Hot" lead
Blue	Neutral lead
Green/Yellow	Protective earth ground only

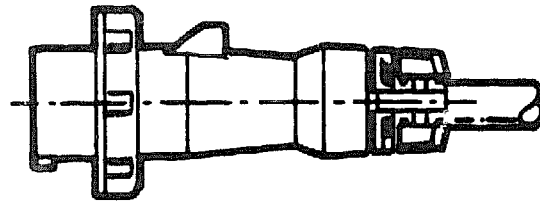
2.9.2 LP29 Power Plugs

The international models of the LP29 line printers are shipped with one end of the power cord connected to the printer. The other end of the power cord is equipped with a Schuko type connector. The Schuko type connector is used for the following countries:

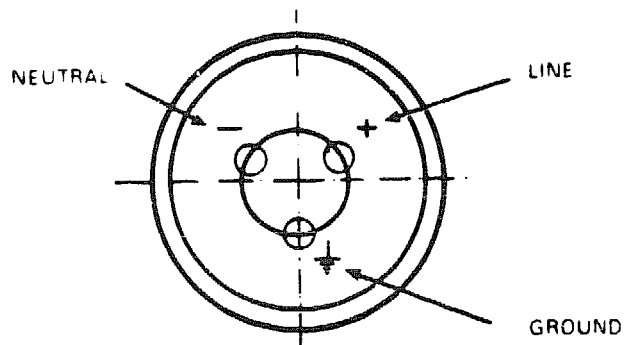
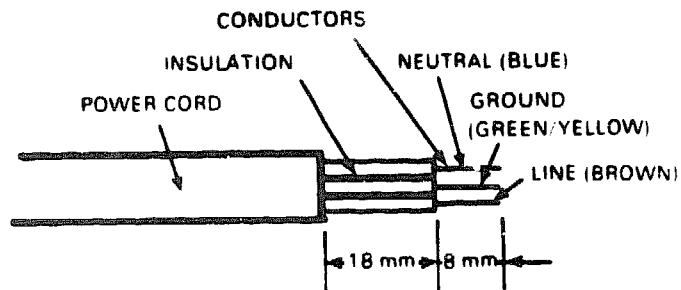
- France
- Germany
- Portugal
- Spain
- Sweden

For the LP29 line printer shipped to Denmark, the United Kingdom and Italy, the Schuko type connector must be removed, and the appropriate plug found in the international shipaway kit must be installed (refer to Section 2.2.2).

Instructions for installing the power plugs on the power cable are provided in Figures 2-15 through 2-17.



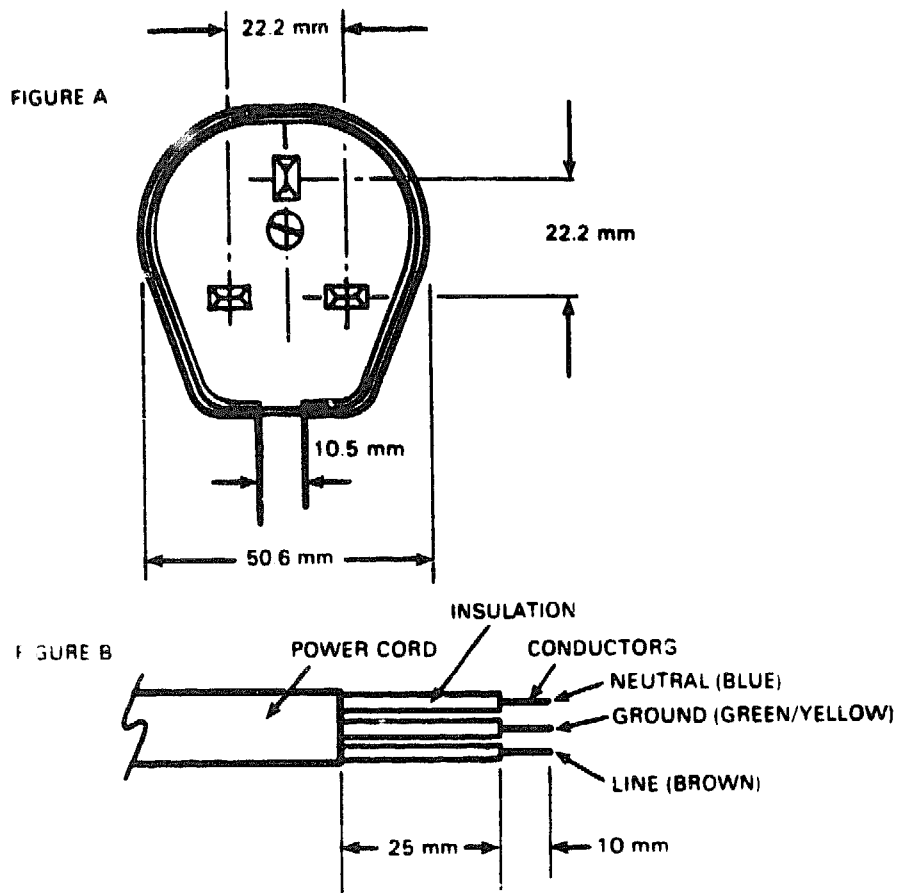
CONNECTOR (SIDE VIEW)



PIN	WIRE COLOR
LINE	BROWN
NEUTRAL	BLUE
GROUND	GREEN/YELLOW

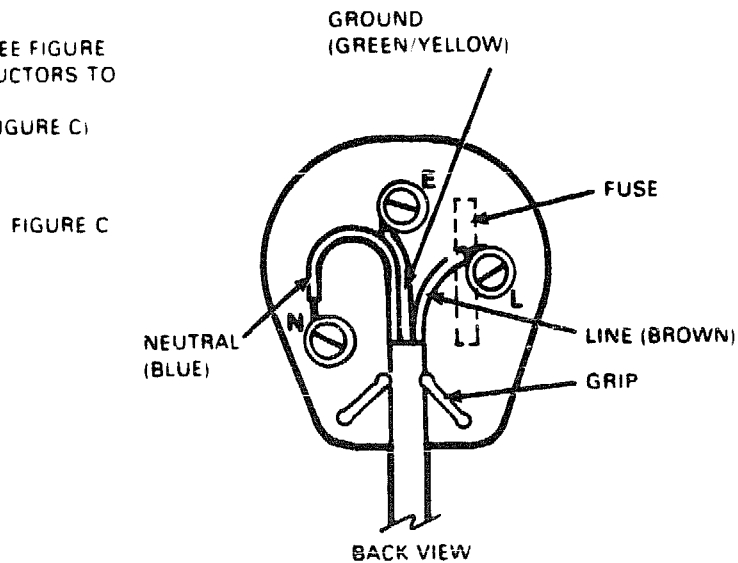
CS-6471

Figure 2-15 Danish Power Plug Installation



ASSEMBLY INSTRUCTIONS

- 1 OPEN BACK
- 2 STRIP ALL THREE WIRES AS SHOWN IN FIGURE B
- 3 REMOVE FUSE (SEE FIGURE C)
- 4 PRESS CORD BETWEEN GRIP (SEE FIGURE C) BEFORE CONNECTING CONDUCTORS TO TERMINALS
- 5 CONNECT CONDUCTORS (SEE FIGURE C)
- 6 REPLACE FUSE (SEE FIGURE C)
- 7 REPLACE BACK



CS-6160

Figure 2-16 United Kingdom Power Plug Installation

FIGURE A

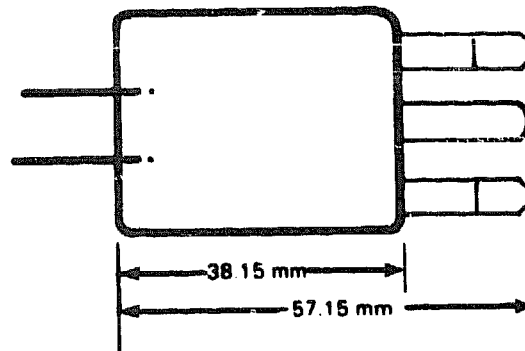


FIGURE B

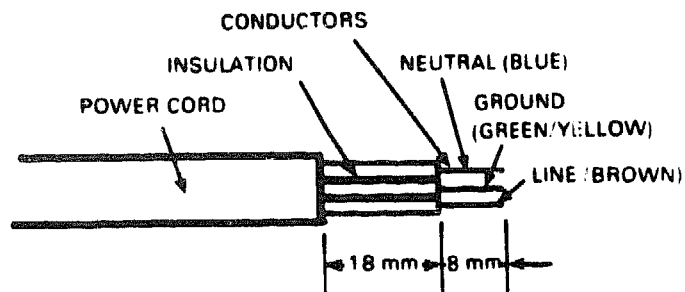
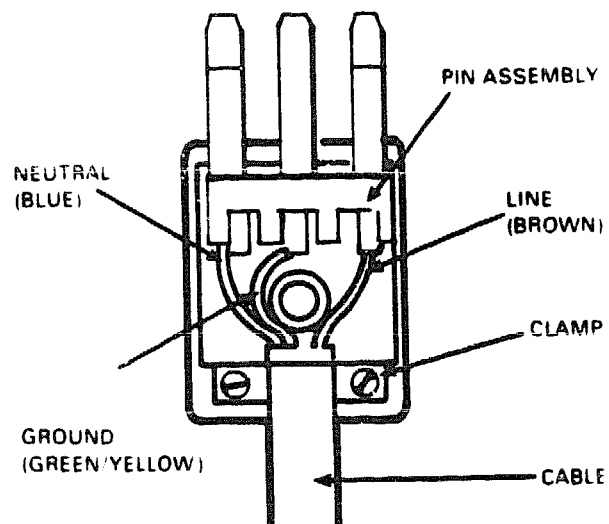


FIGURE C

ASSEMBLY INSTRUCTIONS

- 1 OPEN PLUG
- 2 TAKE PIN ASSEMBLY OUT OF PLUG BODY
- 3 PREPARE CABLE (SEE FIGURE B)
- 4 OPEN CLAMP
- 5 CONNECT CONDUCTORS
- 6 REPLACE PIN ASSEMBLY IN PLUG BODY
- 7 FASTEN CLAMP OVER CABLE
- 8 REASSEMBLE PLUG



NOTE THIS PLUG IS NOT POLAR D

CS-6162

Figure 2-17 Italian Power Plug Installation

2.10 PRINTER POWER-UP

CAUTION

A qualified Field Service representative must ensure that the specific input power configuration selected corresponds to the available power at the operating site. Severe damage will occur if the printer is operated with incorrect power supply voltage.

WARNING

When checking input power configuration, ensure that the printer is turned off and that the power cord is unplugged from service outlet.

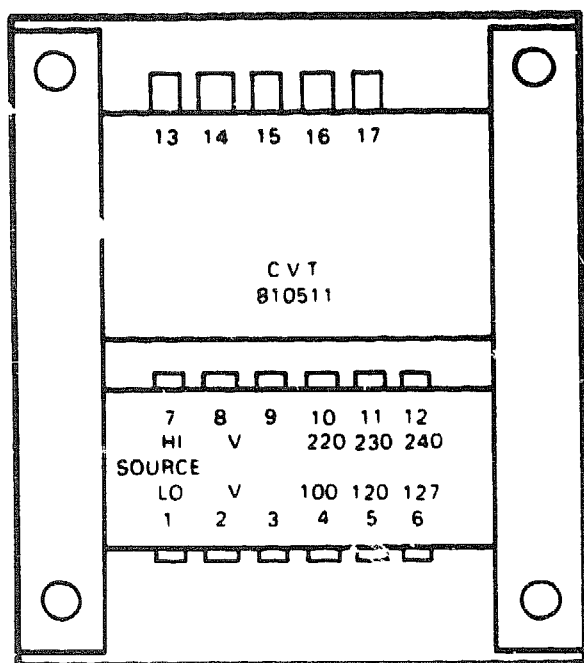
NOTE

The printer power-up procedure assumes that the ribbon and character band are properly installed, and all printer doors and latches are locked. If the ribbon or the character band are not installed, refer to Appendix A for Character Band Installation procedures and Appendix B for Ribbon Installation.

The printer power supply is not frequency sensitive. It is configured to operate in the frequency range from 47 to 63 Hz and with nominal inputs of 100, 120, 127 Vac $\pm 10\%$, -15% in the low voltage range, or 220, 230, or 240 Vac $\pm 10\%$, -15% in the high voltage range.

2.10.1 Domestic Line Printer Voltage Configurations

On the domestic models of the LP29 line printer, the operating voltages are selected by proper connection of the transformer jumper wire. For the low voltage range, the jumper wire is connected between the transformer terminal 3 (LO V source) and either terminal 4 (100 V), terminal 5 (120 V), or terminal 6 (127 V). In the high voltage range, the jumper wire connects terminal 9 (HI V source) to either terminal 10 (220 V), terminal 11 (230 V), or terminal 12 (240 V). The transformer terminal locations and the jumper wire configurations for the domestic model of the LP29 line printer are shown in Figure 2-18.



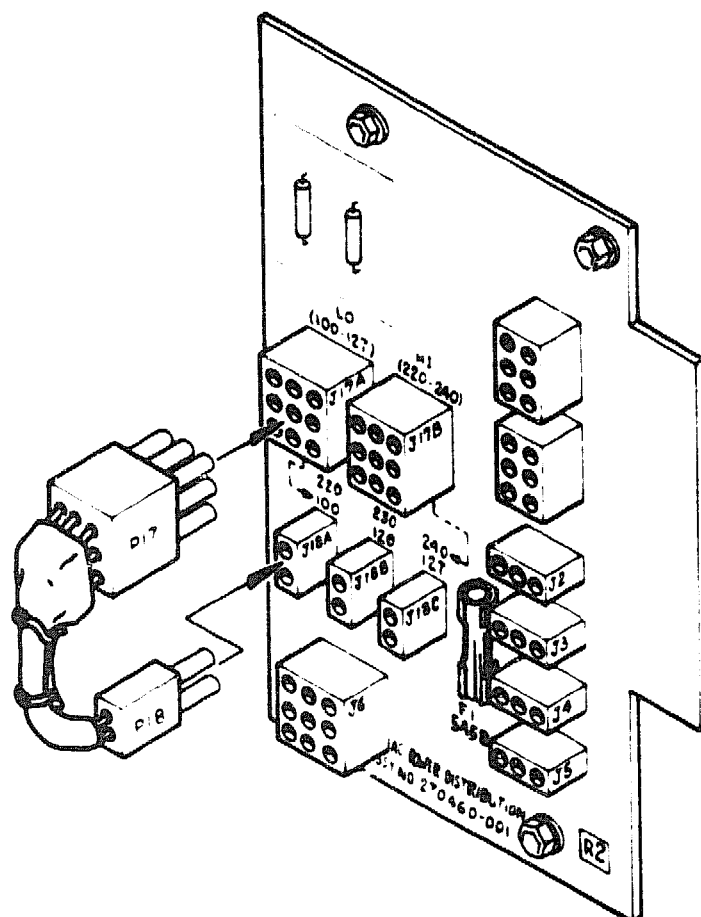
INPUT VOLTAGE	FROM PIN	TO PIN
100	(LOV) 3	4 (100V)
120	(LOV) 3	5 (120V)
127	(LOV) 3	6 (127V)
220	(HIV) 9	10 (220V)
230	(HIV) 9	11 (230V)
240	(HIV) 9	12 (240V)

CS-6163

Figure 2-18 Domestic Voltage Configurations

2.10.2 International Line Printer Voltage Configurations

On the international models of the LP29 line printer, the operating voltages are selected by proper connection of the small power supply harness to the various connectors on the power supply printed circuit board (see Figure 2-19). Figure 2-19 also shows the high and low voltage range interconnections.



INPUT VOLTAGE	CONNECT HARNESS P17	CONNECT HARNESS P18
100	J17-A	J18-A
120	J17-A	J18-B
127	J17-A	J18-C
220	J17-B	J18-A
230	J17-B	J18-B
240	J17-B	J18-C

CS-6385

Figure 2-19 International Voltage Configurations

2.10.3 Printer Power-Up Procedure

1. With the printer's circuit breaker (CB1) in the OFF (down) position, unwind the power cable and plug it into the proper ac receptacle. Then turn the printer's circuit breaker to the ON (up) position (refer to Chapter 1, Figure 1-1).
2. Ensure that the POWER ON indicator on the operator control panel is illuminated (see Figure 2-11).
3. Unlatch and raise the printer cover to its fully open position (see Figure 2-2).
4. Open the band gate latch and swing the band gate fully open (see Figure 2-8).

WARNING

The character band may still be rotating. Keep clear until the character band stops.

5. Turn the FORMS ADJUSTMENT control knob in the *counterclockwise* direction until both upper and lower left-side tractors have reached their limit against the stops (see Figure 2-10).
6. Pull out and turn the FORMS ADJUSTMENT control knob in a clockwise direction until both upper and lower right-side tractors have reached their limit against the stops (see Figure 2-10).
7. Open both the upper and lower tractor covers (see Figure 2-10).
8. Open paper loading door and install box of line printer paper. Center box of paper in its storage area (see Chapter 1, Figure 1-1).
9. Load paper by sliding the first sheet part way through the paper feed exit assembly (see Figure 2-10).
10. Align the form feed holes in the paper over the upper left-hand sprocket pins.
11. Close the upper left-hand tractor cover.
12. Pull out and turn the FORMS ADJUSTMENT control knob to align the right-hand sprocket pins to the form feed holes in the paper (see Figure 2-10).
13. Close the upper right-hand tractor cover.

NOTE

Over tension of the paper feed sprockets will be indicated by excessive elongation of the form feed holes. Under tensioning will result in poor print registration.

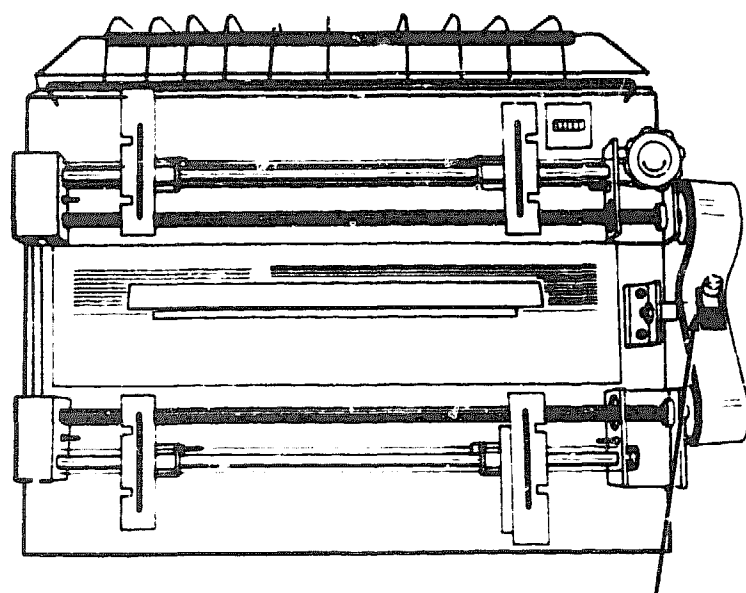
14. Turn the paper tension control knob to align the lower tractor feed pins to the form feed holes (see Figure 2-20 for LP27 and Figure 2-21 for LP29).
15. Press the TOP-OF-FORM switch on the operator control panel (see Figure 2-11) to set the electronics to the Top-of-Form condition.
16. Close both lower sprocket covers.
17. Press the appropriate FORMS switch on the control panel to physically position the paper to the desired starting point (see Figure 2-11).

18. Close and latch the band gate.
19. Set the FLS/VFU switch to FLS (see Figure 2-11).
20. Set the FORMS LENGTH SELECT thumbwheels to the desired forms length (see Figure 2-11).
21. Select either the 6 or 8 LPI setting using the 6/8 LPI switch (see Figure 2-11).

NOTE

TOP-OF FORM must be reset when 6/8 LPI setting is changed.

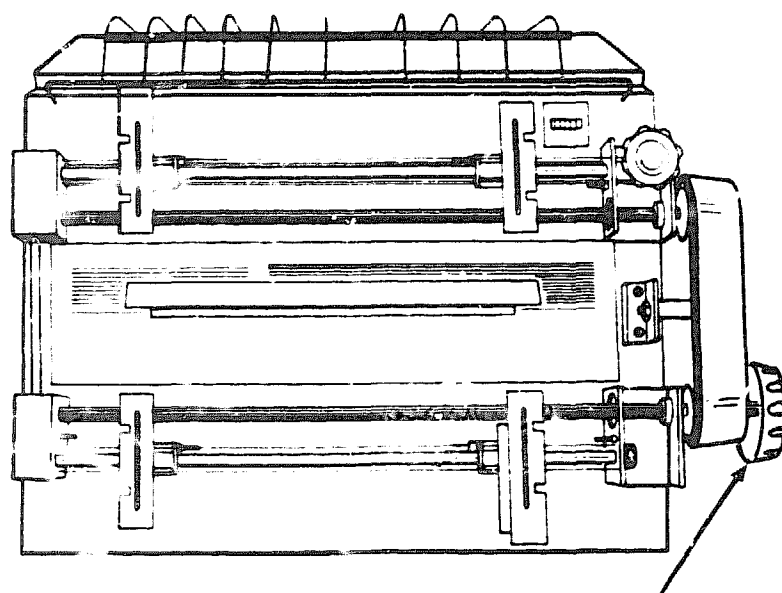
22. Set the SELF TEST switch in the down or sliding pattern position (see Figure 2-11).
23. Set the FORMS THICKNESS CONTROL lever to the correct setting for the number of forms being printed (see Figure 2-8).
24. Momentarily press the TOP-OF-FORM switch (see Figure 2-11) (the form should slew to the top paper position of the next form with no tearing or wrinkling).
25. Press the ON/OFF LINE switch to start the print cycle (see Figure 2-11) (the ON LINE indicator must also illuminate at this time).
26. Allow a sufficient number of lines to be printed to determine vertical and horizontal registration. Note that each character on the band is printed.
27. Press the ON/OFF LINE switch (see Figure 2-11) to halt the print cycle (the ON LINE indicator should go off).
28. Check the forms printed to ensure that all letters and symbols are legible and that all columns have been printed.
29. Set the SELF TEST switch to the up or fixed character pattern (see Figure 2-11).
30. Press the ON/OFF LINE switch to start the print cycle. ON LINE should be displayed (see Figure 2-11).
31. Set the DENSITY control to the lowest setting that allows the best print quality for the thickness of forms being printed (see Figure 2-11).
32. Press the ON/OFF LINE switch to halt the print cycle (see Figure 2-11).
33. Set the SELF TEST switch to the center (or OFF) position (see Figure 2-11).
34. Close and latch the printer cover.



PAPER TENSION
CONTROL KNOB

CS-6164

Figure 2-20 LP27 Paper Tension Control Knob



PAPER TENSION
CONTROL KNOB

CS-6165

Figure 2-21 LP29 Paper Tension Control Knob

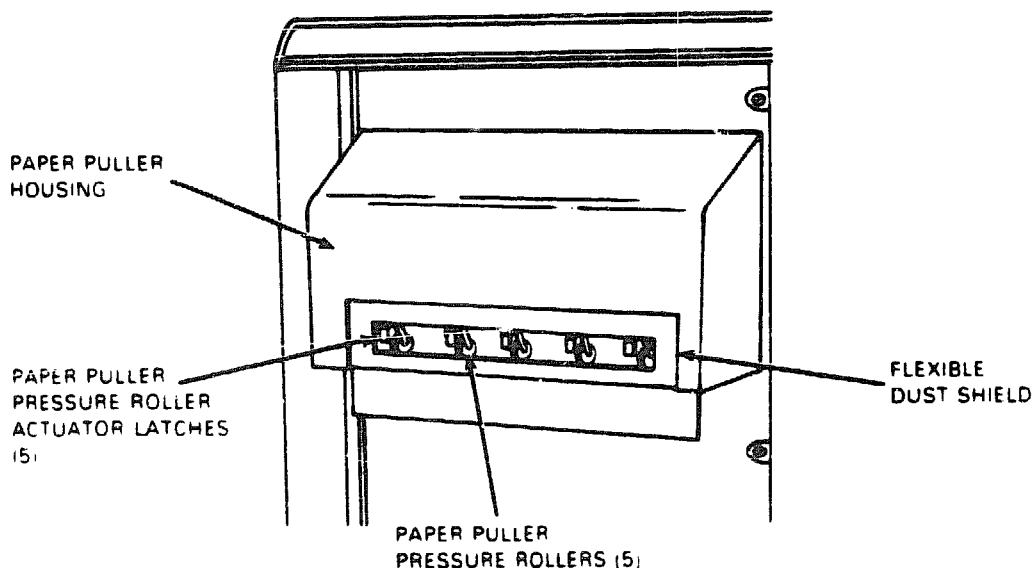
2.11 PAPER PULLER OPERATION

The number of pressure roller latches (located at the rear of the LP27 and LP29 line printers) to be actuated is dependent upon the paper type and the print speed.

To engage the pressure rollers with the drive rollers, push in the pressure roller actuator latches located at the rear of the printer (see Figure 2-22).

NOTE

Engage the minimum number of pressure rollers necessary to provide uniform pull to keep paper bounce at a minimum above the upper paper feed tractors, and to provide the required amount of drive for smooth paper slew operation.



CS 2613

Figure 2-22 Paper Roller Actuator Latches and Pressure Rollers

2.12 INTERCONNECTING THE PRINTERS TO A SYSTEM AND DIAGNOSTICS

The LP27 and LP29 line printers can be operated with various VAX systems. The LP27 can also be operated with the DECsystem-10/20. To learn how to interconnect these printers to the various systems, and how to perform the appropriate diagnostic, refer to the *LP11/LPV11 Controller Installation Manual* (refer to the Preface, Related Documentation).

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CHAPTER 3

PAPER STACKER INSTALLATION

3.1 INTRODUCTION

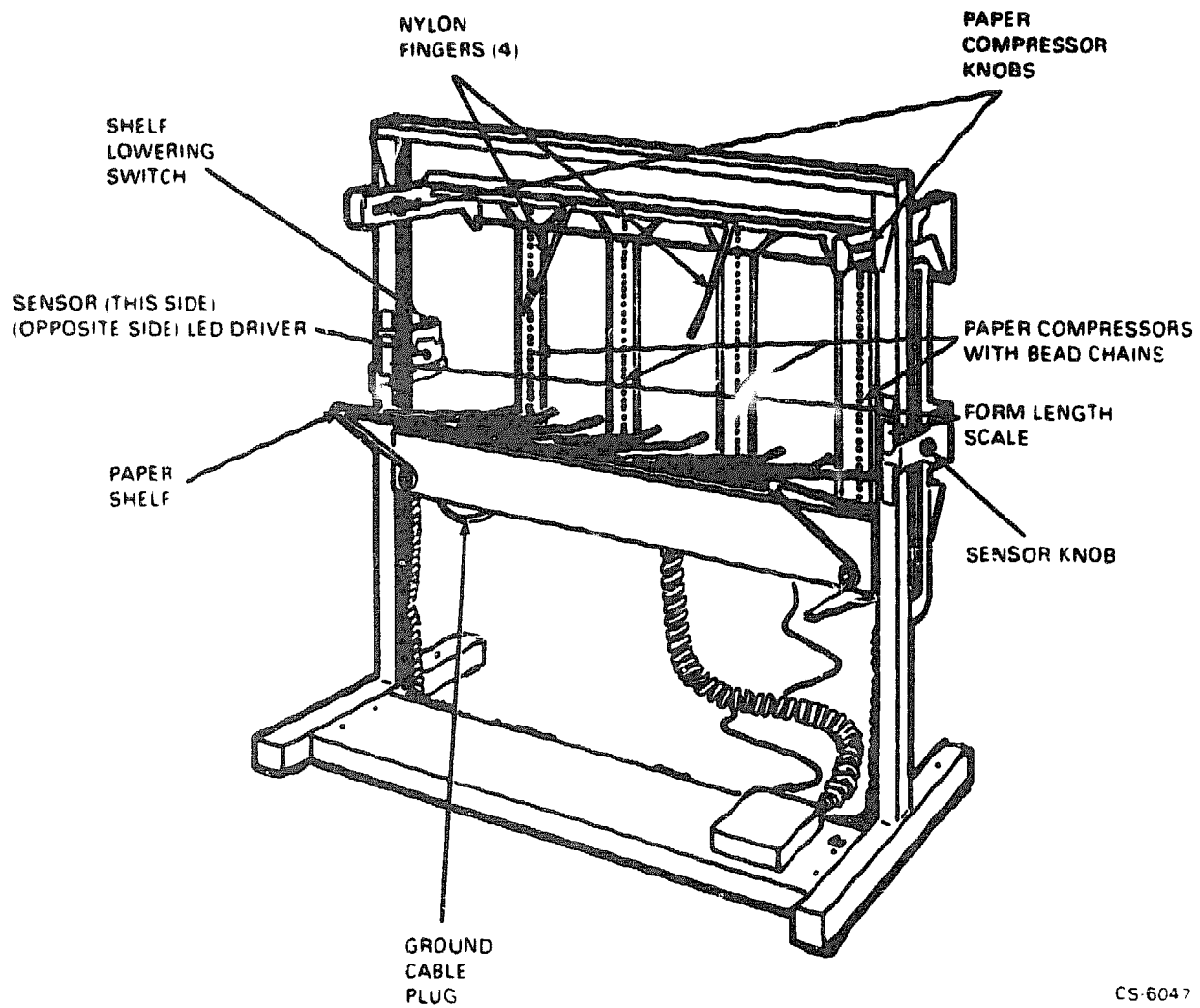
The paper stacker (see Figure 3-1) facilitates the rapid stacking of fanfold paper forms as they exit the printer with a minimum of operator assistance. The stacker can hold one box of forms of varying lengths and widths, and will accommodate all paper forms compatible with the LP29 line printer.

The stacker is placed in position at the printer's paper exit, and the paper shelf is manually raised into position. As paper exits the printer, it fanfolds itself onto the paper stacker shelf. Sensors monitor the height of the folded paper forms, and as the height of the stack increases, the paper stacker shelf will automatically lower itself. A bead chain compressor, rotating on an eccentric crankshaft, helps compress the printed paper forms as they stack on the shelf.

This chapter describes the unpacking and installation of the paper stacker to the LP29 line printer.

NOTE

Before unpacking the shipping carton, inspect it for signs of shipping damage. If the shipment has been damaged, report the damage to the shipper and notify the responsible DIGITAL representative through whom the equipment was purchased.



CS-6047

Figure 3-1 Packer Stacker

3.2 UNPACKING THE PAPER STACKER

Perform the following steps to unpack the paper stacker:

1. Remove the two straps securing the shipping container to the base (see Figure 3-2).
2. Remove the shipping container by lifting the carton straight up (see Figure 3-2).
3. Remove the foam pad from the top of the paper stacker, and remove the tape and the polyethylene bag covering the paper stacker (see Figure 3-2).

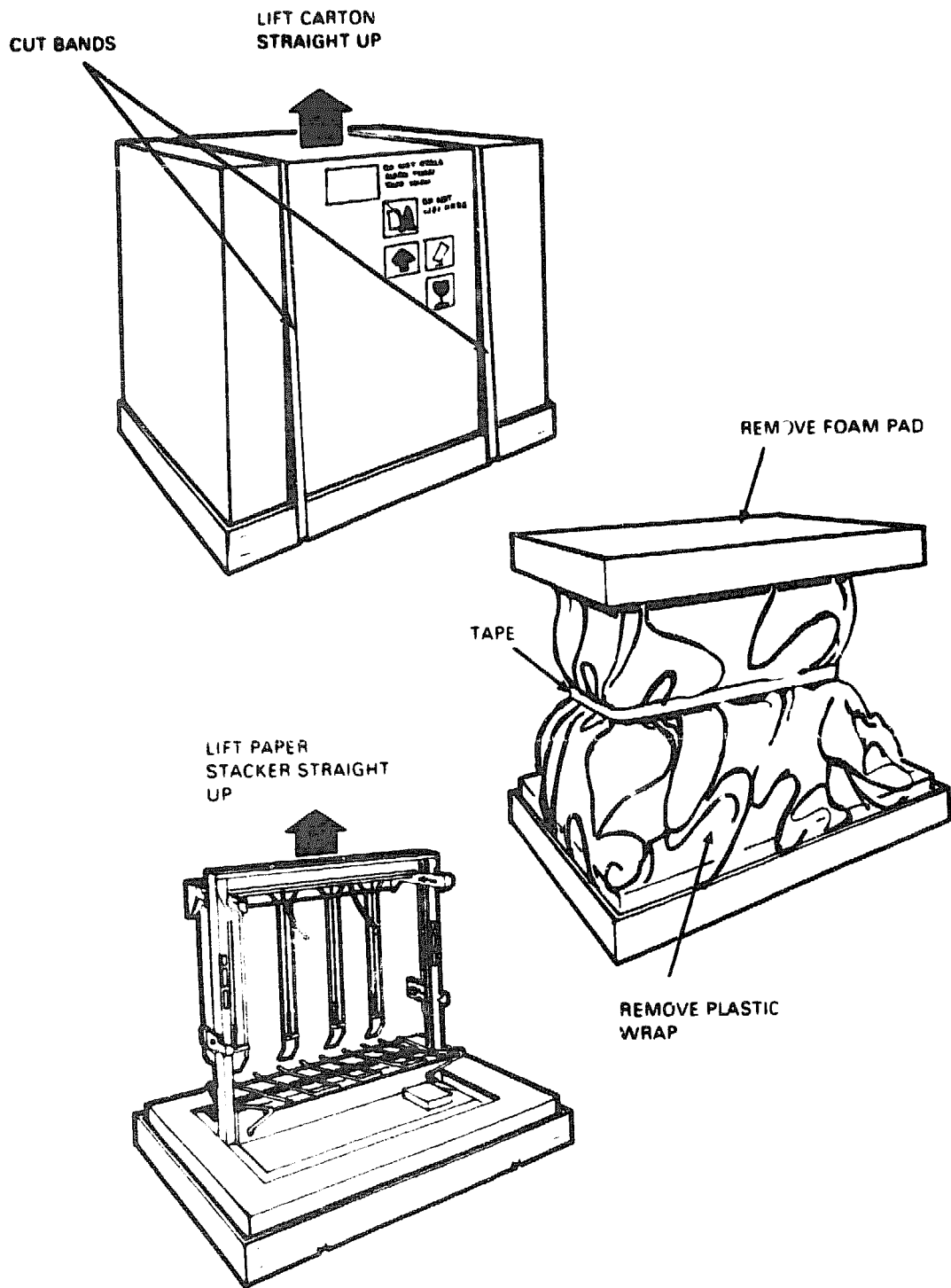
NOTE

The paper stacker weighs 50 lbs. Use sufficient personnel when lifting the paper stacker.

CAUTION

The underside of the top bar on the paper stacker may be sharp. It is recommended that a glove be worn when lifting the paper stacker by this bar.

4. With one foot placed lightly on the foam support in the base of the shipping container, lift the paper stacker straight up and place it to one side.



CS-6166

Figure 3-2 Unpacking the Paper Stacker

3.3 INSTALLING THE PAPER STACKER

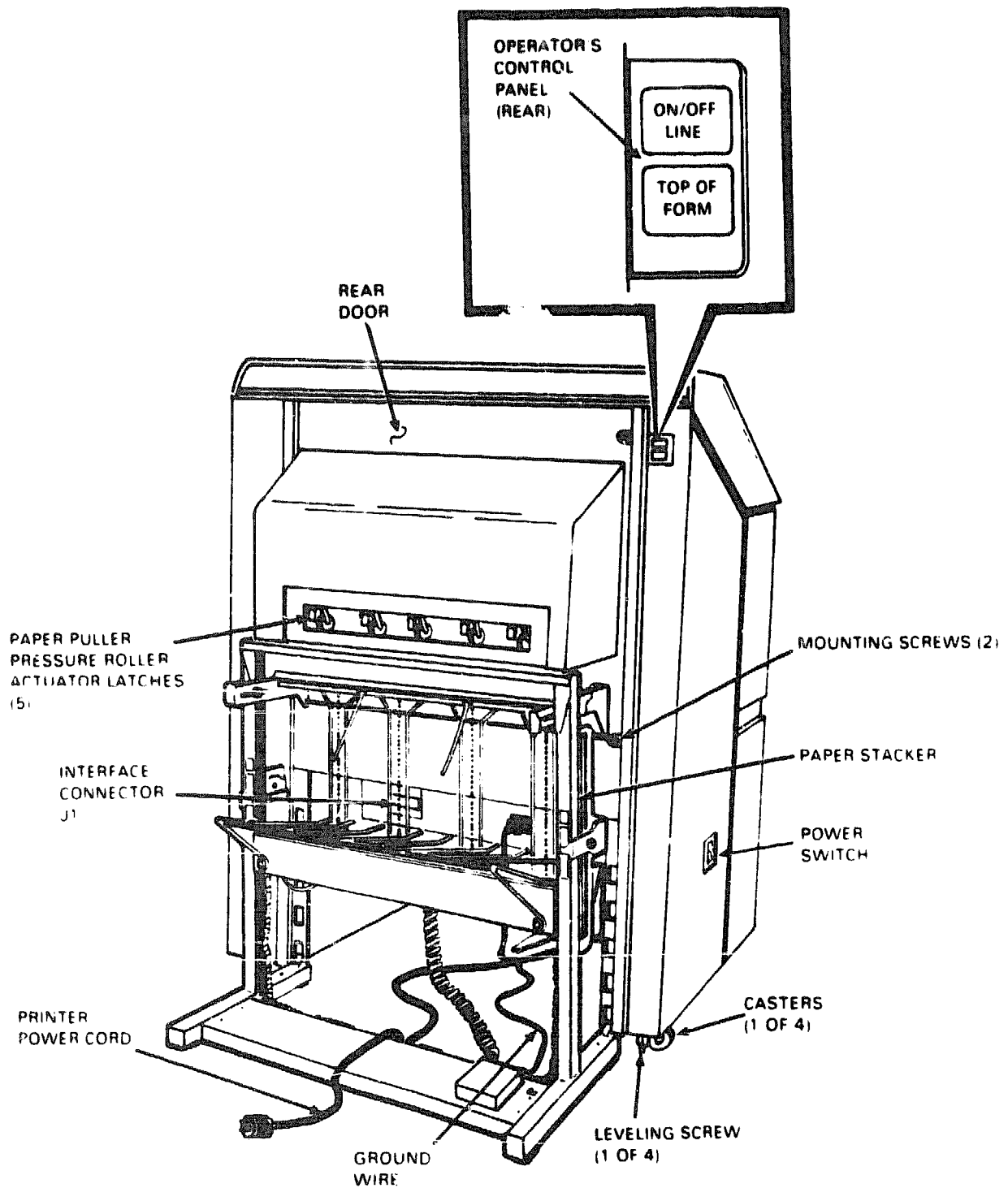
Perform the following steps to install the paper stacker:

1. Remove the standard printer stacker shelf, if installed.
2. Place the power paper stacker in position at the printer's paper exit.

NOTE

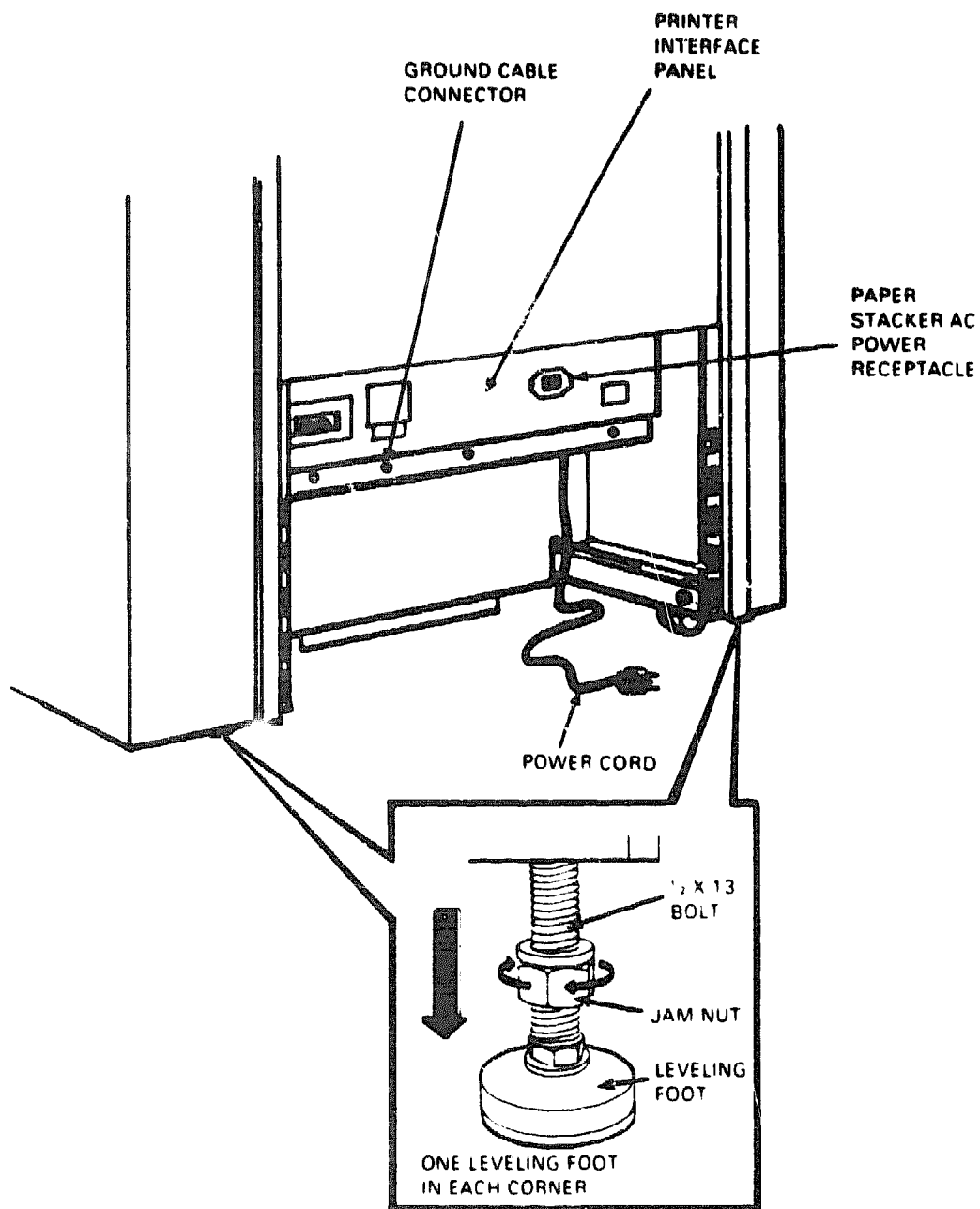
It may be necessary to raise the rear of the printer by adjusting the two rear leveling screws, to properly position the stacker against the printer.

3. Slide the stacker in toward the printer so that the spring-loaded latching levers go under and into the printer framework, and then release, locking the stacker in place (see Figure 3-3).
4. Connect the stacker ground cable connector into the jack provided at the rear of the printer.
5. Connect the short ac power cord on the paper stacker to the ac receptacle at the rear of the printer (see Figure 3-4).
6. Manually raise the paper stacker shelf slightly above the sensor assemblies, and release. After approximately four seconds, the optical sensor will operate and automatically lower the shelf to the correct position (see Figure 3-1).
7. Set FORMS length the distance between perforations, for the forms being used. Improper setting will result in paper misfeed.



CS 6041

Figure 3-3 Rear of Line Printer Showing Paper Stacker Installed



CS 6167

Figure 3-4 LP29 Line Printer Showing the Interface Panel, Ground Cable, and Paper Stacker Power Connector

3.4 PAPER STACKING PROCEDURE

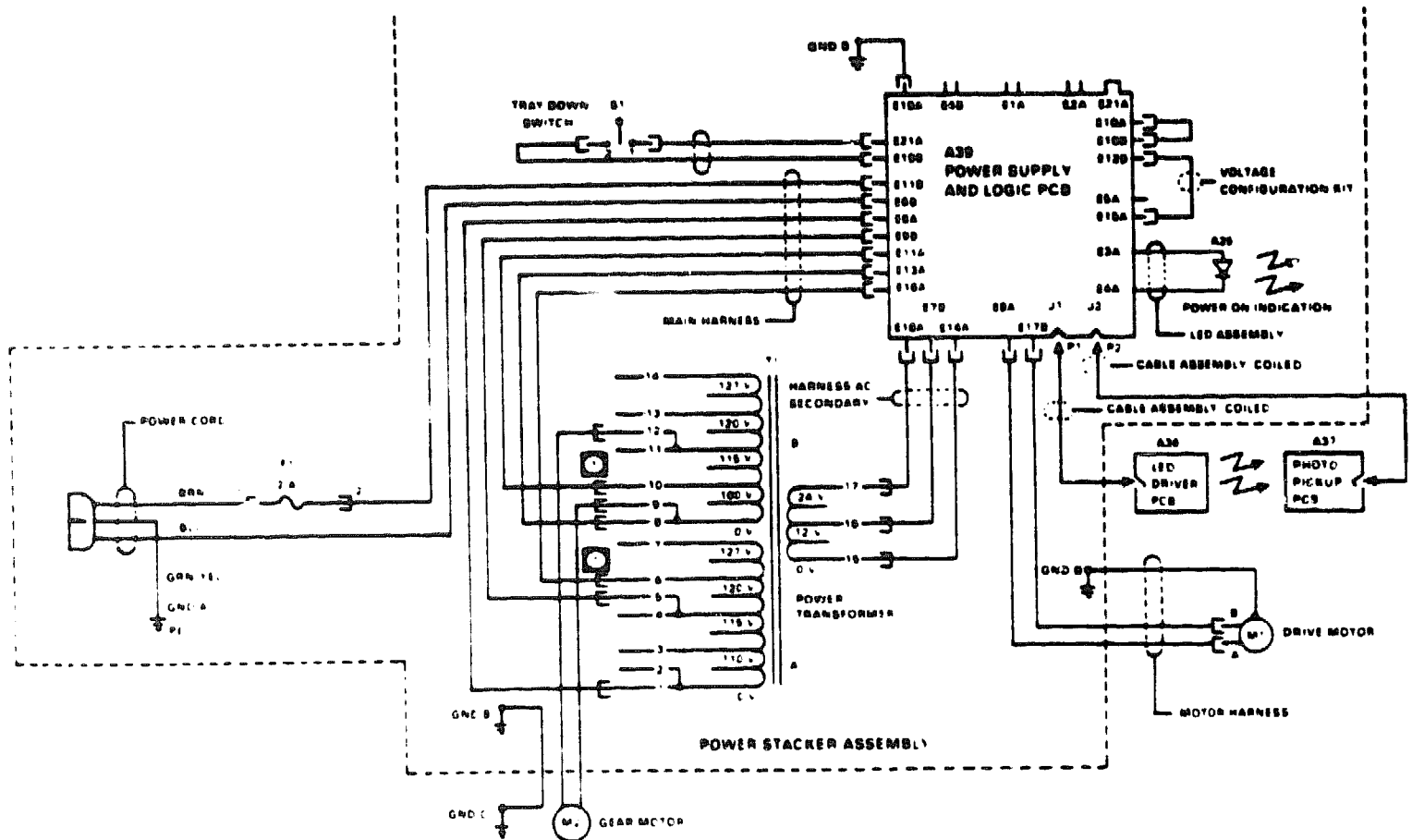
Perform the following procedure for stacking paper:

1. Loosen the sensor locking knobs and adjust the sensor assemblies up or down, so that the indicator pointer is adjacent to the number on the Forms Length scale for the forms folding length being used (see Figure 3-1).
2. Advance a sufficient number of forms out of the printer paper exit to start the paper form folding correctly on the paper stacker shelf. Forms should fold in the same direction as they were folded in the box for best stacking results.
3. The paper compressor assembly is adjustable to accommodate different form lengths. For forms over nine inches in length, loosen the paper compressor knobs and position the assembly at its outwardmost position. Then tighten the knobs (see Figure 3-1).
4. For form lengths of nine inches and under, loosen the paper compressor knobs and slide the assembly inward, so that the forms are centered with respect to the printer paper exit.
5. Slide the four nylon fingers (two on each side of the forms) in or out so that they are approximately one or two inches inside the edges of the form being used (see Figure 3-1).
6. Manually raise the paper stacker shelf slightly above the sensor assemblies and release. After a short delay, the shelf will automatically lower itself to its proper operating position.
7. When the printer is on-line and printing, as the first forms are fan-folded on the stacker shelf, lightly press the forms against the compressor bead chains (see Figure 3-1).
8. When unloading paper from the paper stacker such as a full load, support the paper stack at the front and back, turn the paper stack, and lift out.

3.5 INSTALLING POWER

The paper stacker is plugged into the ac power receptacle located at the rear of the LP29 line printer using a short power cord from the paper stacker (see Figure 3-4).

Figure 3-5 shows the paper stacker wiring and input power diagram and power configurations.



- 1 FOR 110 120 125 VAC CONFIGURATION POSITION JUMPERS
E10B TO E15A
D12B TO E5A
- 2 CONFIGURATION SHOWN IS FOR 220 VAC
REFER TO CHART FOR OTHER VOLTAGE CONFIGURATIONS

INPUT VOLTAGE
TRANSFORMER CCA CONNECTIONS*

INPUT AC VOLTAGE	POWER SUPPLY AND LOGIC CCA*	
	E16A	E11A
100 VOLTS	T1-10	T1-3
120 VOLTS	T1-13	T1-6
127 VOLTS	T1-14	T1-7
220 VOLTS	T1-6	T1-10
230 VOLTS	T1-4	T1-11
240 VOLTS	T1-6	T1-13

* JUMPER POWER SUPPLY AND LOGIC PCB TERMINALS TO THE CORRECT TRANSFORMER TERMINALS SHOWN IN THE CHART FOR THE INPUT VOLTAGE BEING USED

CS-6386

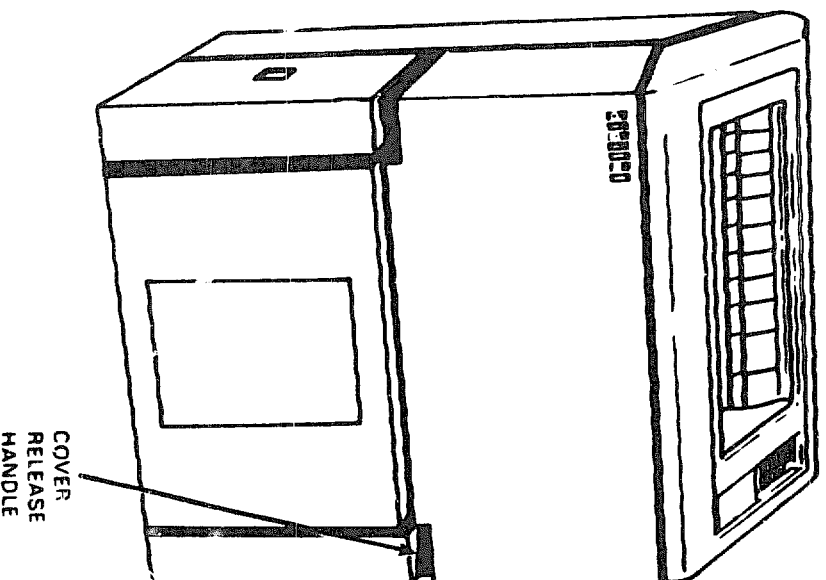
Figure 3-5 Paper Stacker Wiring Input Power Diagram, and Voltage Configurations

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APPENDIX A CHARACTER BAND INSTALLATION

After unpacking and installing the LP27 or LP29 line printers, perform the following procedure to install the character band if the line printer does not have a character band installed.

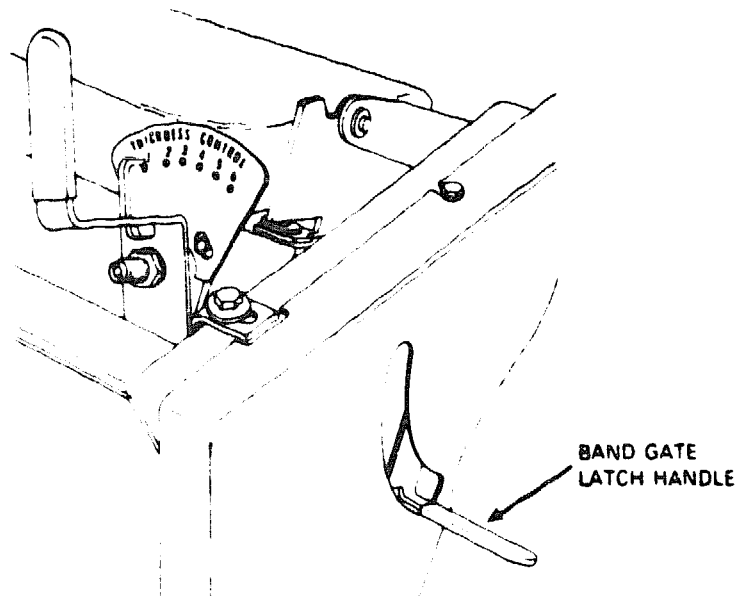
1. Place the printer off-line, and set the POWER switch to the OFF/O position.
2. Release the cover latch and raise the printer cover to its fully open position (see Figure A-1).



CS-6168

Figure A-1 Line Printer Cover Release Handle

3. Open the band gate latch and swing the band gate fully open (see Figure A-2).



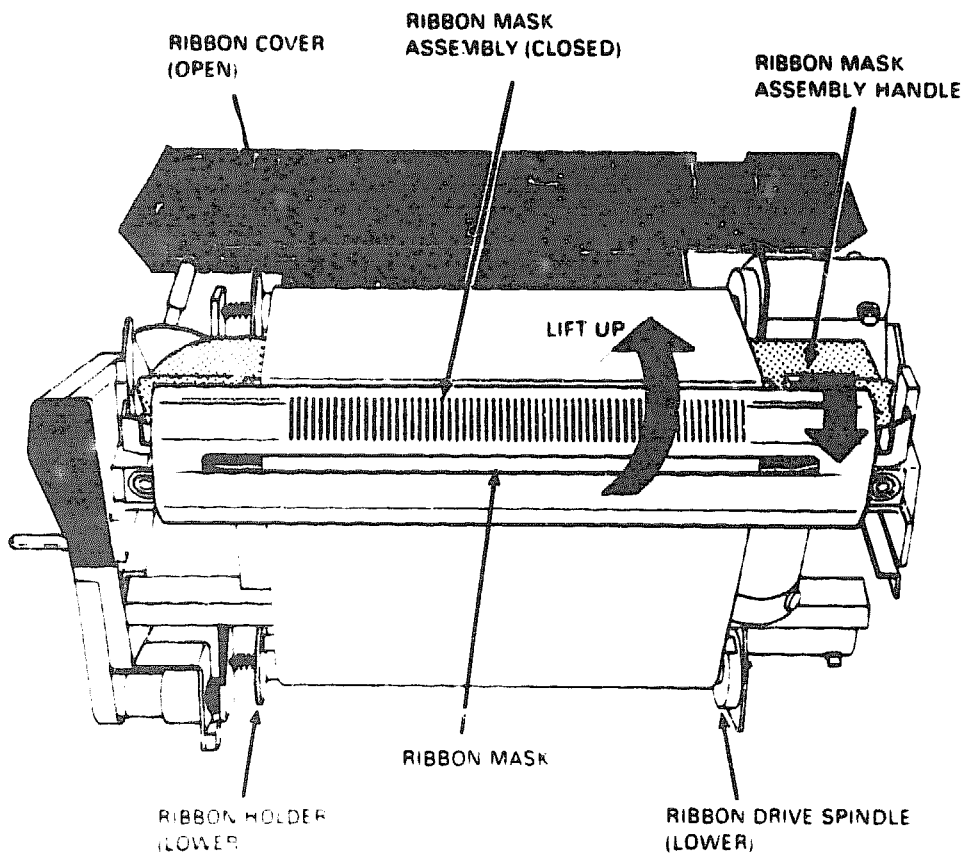
CS-6169

Figure A-2 Band Gate Door Assembly (Front Right Hand Side of Printer with Cover Raised)

WARNING

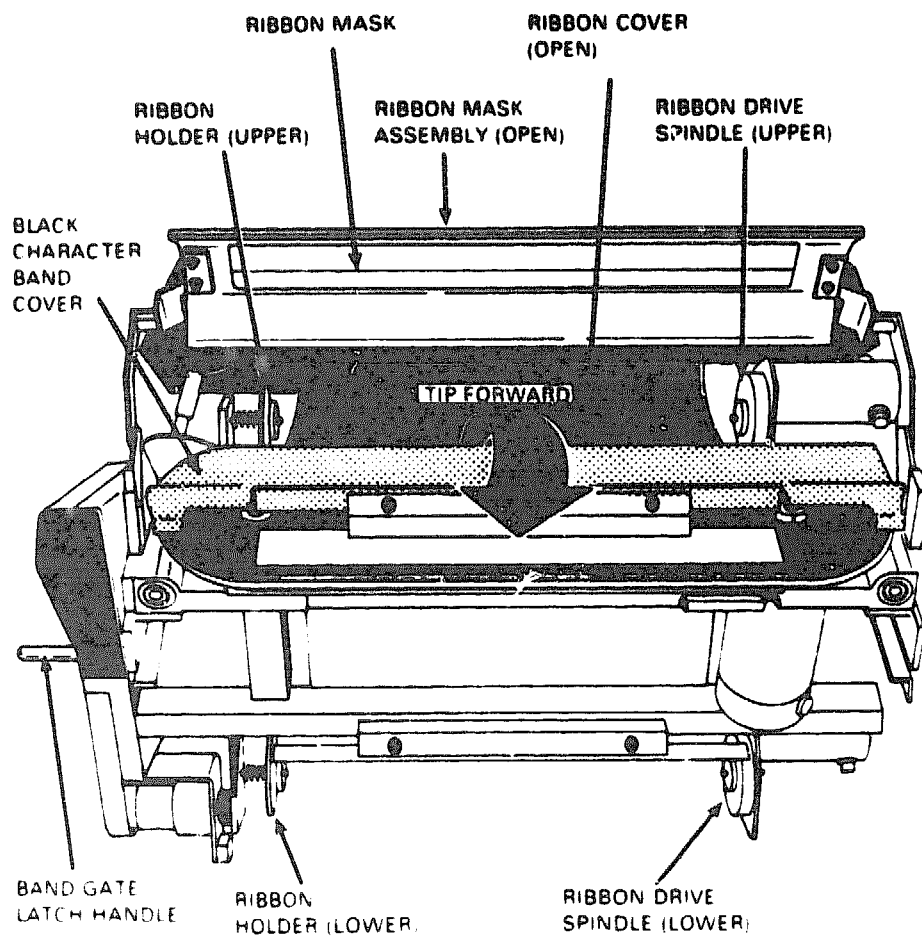
Rotating parts. Keep clear until character band stops.

4. Raise the ribbon mask assembly to the fully open position by pulling the ribbon mask handle forward and lifting the ribbon mask assembly (see Figures A-3 and A-4).
5. Lift open the character black band cover by tipping the character band cover forward (see Figure A-4).



CS-6045

Figure A-3 Ribbon Mask Assembly, Closed (Rear of Band Gate Assembly)



CS 262.

Figure A-4 Ribbon Mask Assembly, Open (Rear of Band Gate Assembly)

6. Ensure that the character band release handle is in the up position (see Figure A-5).
7. Place the band in position with the timing marks (equally spaced lines) at the top, allowing the band to rest on top of the (right) drive band pulley.
8. Place the band around the (left) idler band pulley.
9. While holding the band in position, slide it over the (right) driver band pulley, ensuring that it is positioned between the band sensors and the pulley (see Figure A-5).
10. Position the band flush with the top edge of both band pulleys, then move the band release handle down to tension the band. Manually rotate the pulleys a few turns to seat the band. Lower the character band release handle.
11. Close the black character band cover.

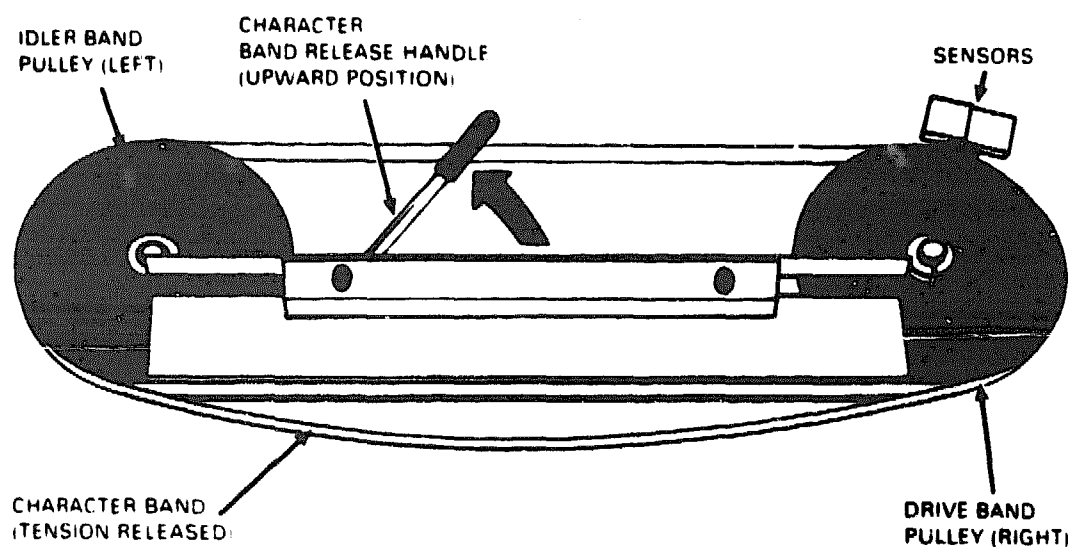
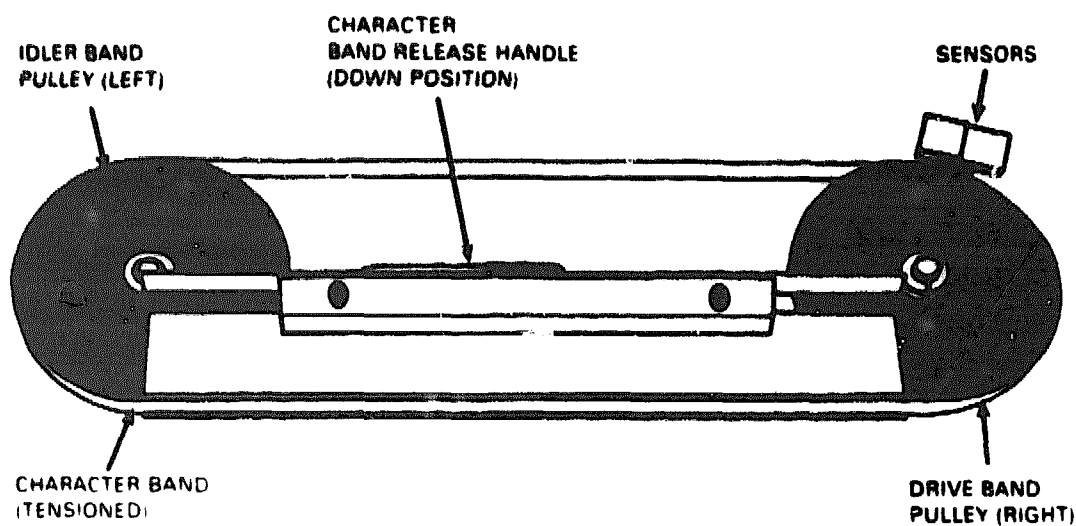
NOTE

Wear plastic gloves when installing the ribbon.

12. Install the ribbon following the ribbon installation procedure (refer to Appendix B).
13. Close the ribbon mask assembly.
14. Close and latch the band gate.
15. Close and latch the printer cover.

NOTE

When the printer is powered up, the character band will position itself properly.



CS-6046

Figure A-5 Character Band Assembly

[illegible][illegible]

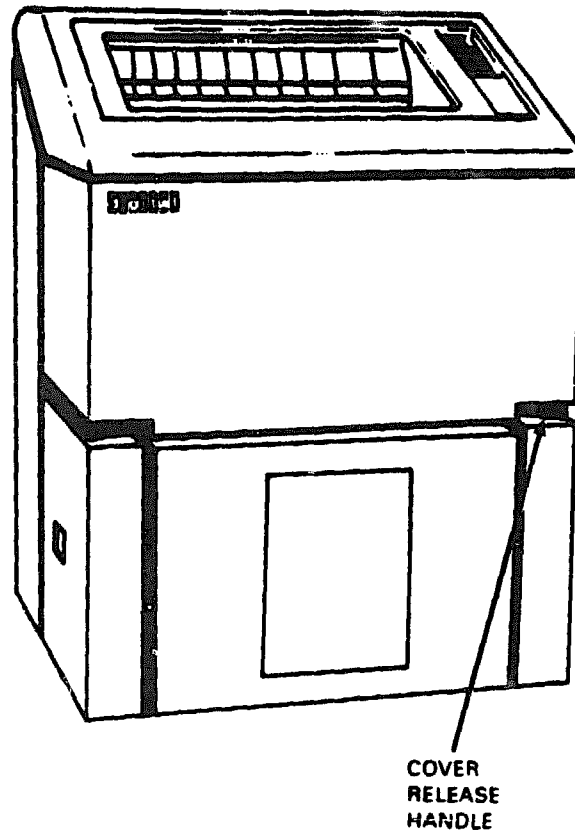
APPENDIX B RIBBON INSTALLATION

NOTE

Install ribbon only after character band has been installed (refer to Appendix A for character band installation).

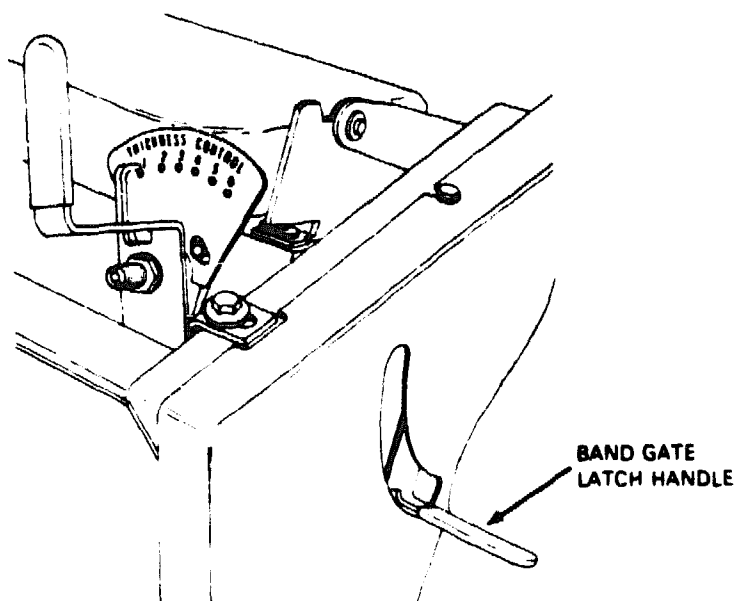
After unpacking and installing the LP27 or LP29 line printers, perform the following procedure to install the ribbon.

- 1. Place the printer off-line.**
- 2. Release the cover latch (see Figure B-1) and raise the printer cover to the fully open position.**
- 3. Open the band gate latch and swing the band gate fully open (see Figure B-2).**



CS-6168

Figure B-1 Line Printer Cover Release Handle



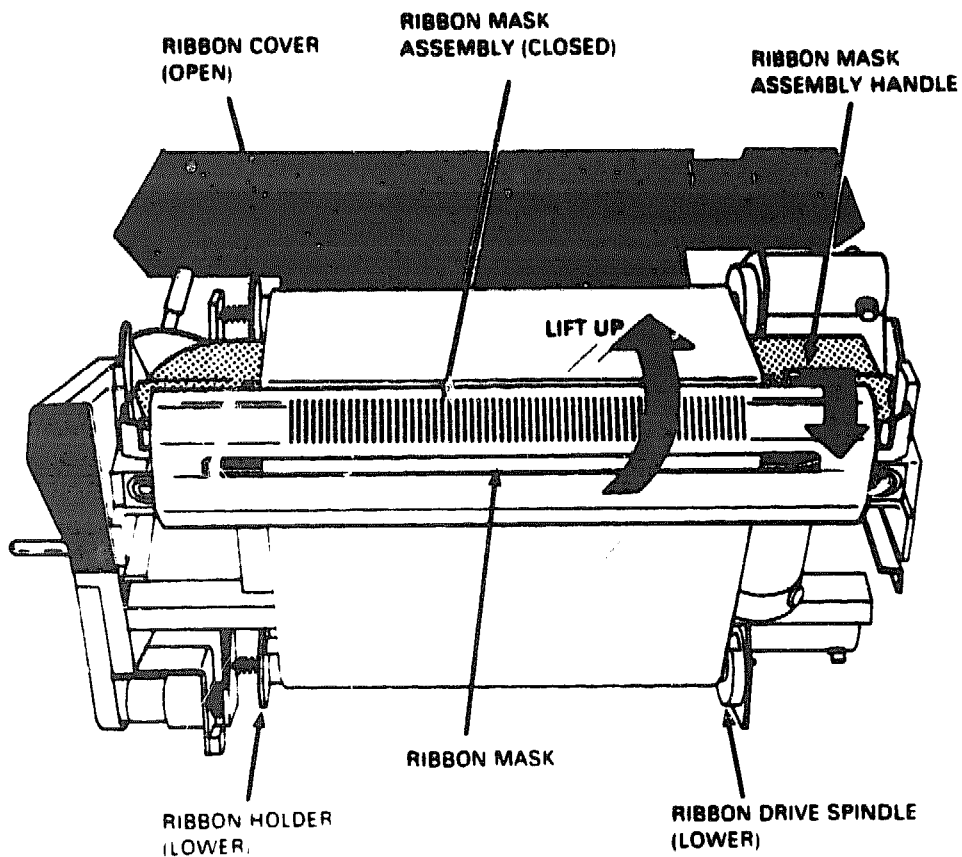
CS-6169

Figure B-2 Band Gate Door Assembly (Front Right Hand Side of Printer with Cover Raised)

WARNING

Rotating parts. Keep clear until character band stops moving.

4. Raise the ribbon cover.
5. Raise the ribbon mask assembly to the fully open position by pulling the ribbon mask handle forward with one hand and lifting the assembly up with the other hand (see Figures B-3 and B-4).
6. Hold the ribbon cores together and remove from box.

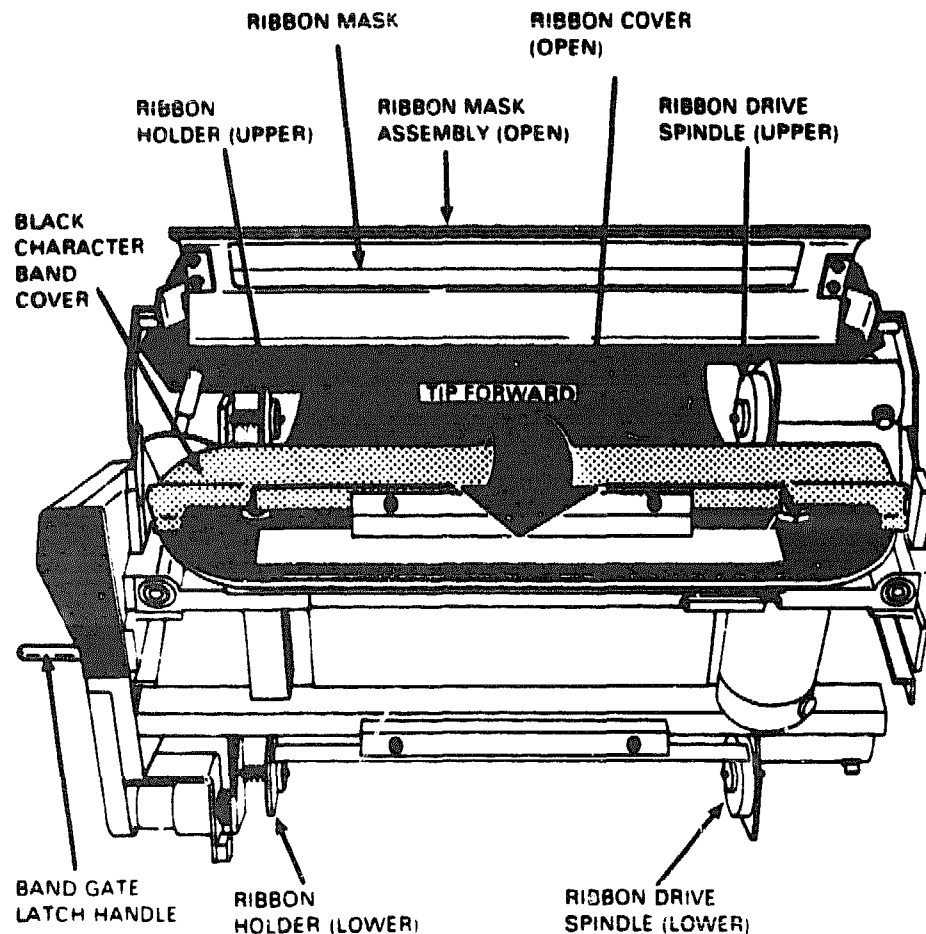


CS-6045

Figure B-3 Ribbon Mask Assembly, Closed (Rear of Band Gate Assembly)

NOTE

Wear plastic gloves supplied with ribbon when installing the ribbon.



CS 2622

Figure B-4 Ribbon Mask Assembly, Open

7. Place the fully wound ribbon core over the spring-loaded upper ribbon holder assembly, with the ribbon unwinding from the top of the spool (see Figure B-5, and also refer to the ribbon loading decal on the band gate cover).
8. Push against the ribbon holder assembly and place the opposite ribbon core end onto the ribbon drive spindle, ensuring that the ribbon guide pin slips into the slot on the core end.
9. Unwind the fully wound ribbon core enough to bring the ribbon to the lower ribbon holder assembly.
10. Place the ribbon core over the lower spring-loaded ribbon holder assembly.
11. Push against the ribbon holder assembly and place the opposite ribbon core end onto the ribbon drive spindle, ensuring that the ribbon guide pin slips into the slot on the ribbon core.

12. Close the ribbon mask assembly.
13. Close the ribbon cover.
14. Close and latch the band gate.
15. Close and latch the printer cover.

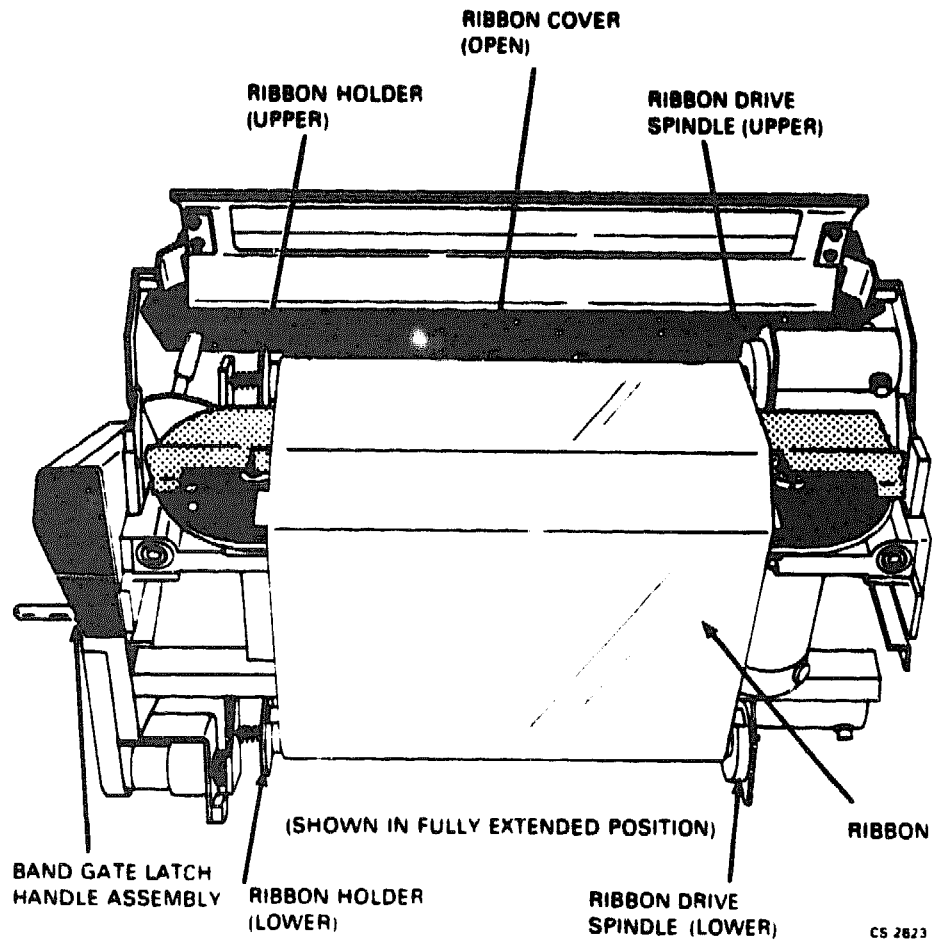


Figure B-5 Ribbon Replacement

APPENDIX C

SETTING THE DAVFU SWITCH ON THE LP27 LINE PRINTER

The LP27 line printers shipped with a Short Line Interface PCB are factory set with the Direct Access Vertical Form Unit (DAVFU) function disabled. This appendix describes how to enable the DAVFU function and also specifies the systems and software product supporting it.

The DAVFU function is supported on VAX/VMS systems by means of a software layered product called the VAX Vertical Forms Printing for VMS. The DAVFU function is NOT supported on PDP-11 systems.

To enable the DAVFU printer function, set switch S8-1 on the Short Line Interface PCB as follows:

1. Open the rear door of the printer by unscrewing the two screws (refer to Chapter 1, Figure 1-2).
2. Set switch S8-1 to OFF (see Figure C-1 for switch location).
3. Close the printer rear door and fasten the two screws.

The VAX Vertical Forms Printing for VMS is a utility that simplifies the interfacing between the user and the printer by enabling the user to create printer independent files. These files contain printer specific page formatting commands for programming the VFU memory in the printer.

The utility may be obtained using Order Number QA-VZEAA-H* (the * represents a character that varies depending on the media type). For more information on this utility, call 1-800-832-6277.

For information on how to set up the LP27 or LP29 printer for use with the utility, refer to the *VAX Vertical Forms Printing for VMS Reference Guide*, EK-LNVFU-RM.

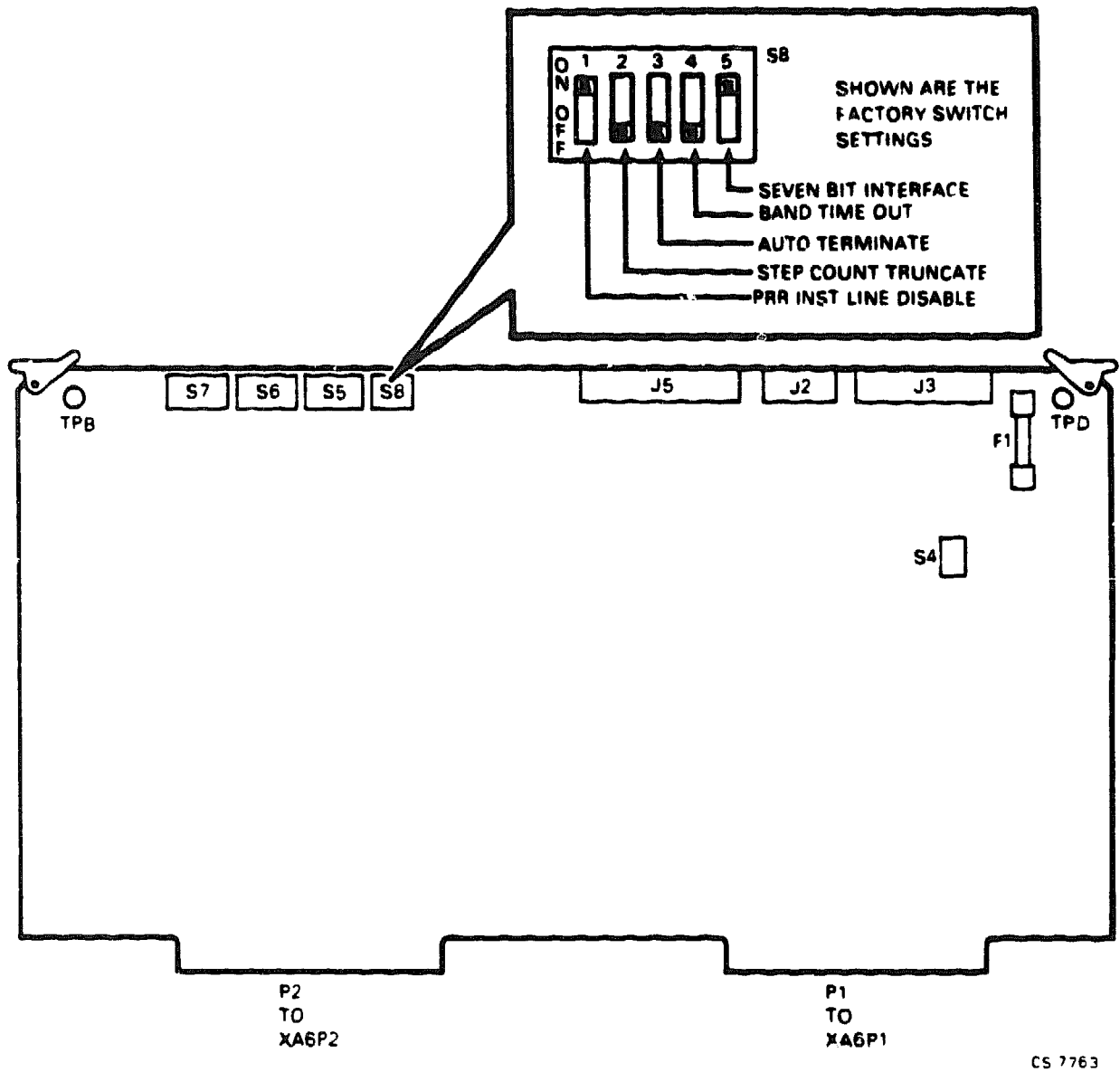


Figure C-1 Short Line Interface PCB