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User's Manual

The Printronix P5000 series Of Line Matrix Printers
P5005B™, P5205B™, P5010™, P5210™, P5215™

PRINTRONIX®

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User's Manual

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1 *Introduction*

Printer Overview

This chapter provides a general overview of your printer and the conventions used within this manual.

The Printer Family

The Printronix® P5000 series of Line Matrix Printers consists of 500, 1000, and 1500 lines per minute (lpm) models packaged in various configurations. All of the models offer software versatility and the latest refinements in line matrix printing technology. The print mechanisms are housed in sound-insulated cabinets which make the printer family among the quietest printers in the world. Additionally, your printer has a flexible architecture that allows you to add new features and emulations as they become available.

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LinePrinter Plus® is the standard emulation. LinePrinter Plus includes the Epson® FX-1050, Printronix P-Series, P-Series XQ, Serial Matrix and Proprinter® III XL emulations. Coax/Twinax, IPDS™, ANSI® and the IGP®/PGL® and IGP/VGL graphics enhancement emulations are available as optional upgrades. No matter what emulation is installed, your printer is easy to use. The message display and lights on the control panel communicate with you directly and clearly. You can select every function on your printer at the control panel, or you can send commands from the host computer.

The printer combines the use of Flash, RAM, and nonvolatile RAM for program execution. The Flash is used for all program, font, and emulation storage. New fonts, emulations, or program updates can be downloaded to Flash memory via the parallel or serial interface, or through the PrintNet® interface. The RAM is used for buffers, print image storage, and execution variables. The non-volatile RAM stores configuration, statistics, and internal parameters.

The printer model numbers indicate printing speed and physical configuration.

- Model numbers beginning with P50 indicate pedestal models. Model numbers beginning with P52 indicate cabinet models. The final two digits in the model number refer to the printer's maximum speed in lines per minute: 05 for 500 lines per minute, 10 for 1000 lpm, and 15 for 1500 lpm.

- The P5x05B-12 models are 500 lpm models with 12 MIL (0.012 inch) tips on the print hammers instead of the normal 16 MIL (0.016 inch). This allows the printing of higher resolution graphics and barcodes.

- The P52xx-SS models have the SureStak™ Power Stacker option installed.

- The P50xx-QA models are pedestal models with the Quick-Access Cover installed.

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Refer to the following table for a complete listing of model numbers and options.

Table 1. The P5000 Family

Model Number	Print Speed	Pedestal	Cabinet	Hammer Bank	Quick Access	Power Stacker
P5005B	500 lpm	✓		Standard		
P5005B-12	500 lpm	✓		12 MIL tips		
P5005B-QA	500 lpm	✓		Standard	✓	
P5005B-12-QA	500 lpm	✓		12 MIL tips	✓	
P5205B	500 lpm		✓	Standard		
P5205B-12	500 lpm		✓	12 MIL tips		
P5010	1000 lpm	✓		Standard		
P5010-QA	1000 lpm	✓		Standard	✓	
P5210	1000 lpm		✓	Standard		
P5210-SS	1000 lpm		✓	Standard		✓
P5215	1500 lpm		✓	Standard		
P5215-SS	1500 lpm		✓	Standard		✓

Conventions In This Manual

All uppercase print indicates control panel keys.
Example: Press the CLEAR key, then press the ON LINE key.

Quotation marks (" ") indicate messages on the Liquid Crystal Display (LCD).
Example: Press the ON LINE key. "OFFLINE" appears on the LCD.

The + (plus) symbol represents key combinations.
Example: "Press ▲ + ▼" means press the ▲ (UP) key and the ▼ (DOWN) key at the same time.

Warnings And Special Information

Read and comply with all information highlighted under special headings:

WARNING	**Conditions that could harm you as well as damage the equipment.**
WARNUNG	**Achten Sie auf folgendes, um keine Personen in Gefahr zu bringen bzw. das Gerät zu beschädigen.**
AVISO	**Condiciones que pueden causar daños a personas y equipos.**
AVERTISSEMENT	**Conditions à respecter pour éviter tout danger corporel et dommage matériel.**
WARNING	**Condizioni che possono arrecare danni alle persone e alle apparecchiature.**
AVVERTIMENTO	**Conditions that could damage the printer or related equipment.**
CAUTION	**Conditions that can damage the printer or related equipment.**
IMPORTANT	**Information that is vital to the operation of the printer.**

NOTE: Information affecting printer operation.

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Related Documents

- *Maintenance Manual* — Explains how to maintain and repair the line matrix printer at the field service level of maintenance.

- *Coax/Twinax Programmer's Reference Manual* — Covers the host control codes and character sets for the coax and twinax emulations.

- *Coax/Twinax Programmer's Reference Manual for the Simple Protocol Converter Option* — Covers the host control codes and character sets for the coax and twinax Simple Protocol Converter emulations.

- *LinePrinter Plus Programmer's Reference Manual* — Covers the host control codes for the LinePrinter Plus emulations.

- *IGP/PGL Programmer's Reference Manual* — Provides information used with the optional IGP Printronix emulation enhancement feature.

- *IGP/VGL Programmer's Reference Manual* — Provides information used with the optional Code V^{TM} emulation enhancement feature.

- *ANSI Programmer's Reference Manual* — Provides host control codes and character sets for the ANSI emulation.

- *IPDS Twinax Emulation Programmer's Reference Manual* — Provides an overview of Intelligent Printer Data Stream^{TM} (IPDS) features, commands, and diagnostics.

- *Character Sets Reference Manual* — Information about and examples of the character sets available in the line matrix printers.

- *PrintNet User's Manual* — Information about network protocols, configuration, and operation.

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Graphics Enhancements

The IGP/PGL and IGP/VGL emulations allow you to create and store forms, generate logos, bar codes, expanded characters, and create other graphics. Alphanumeric and bar code data are added as the form is printed.

These emulations are available as factory-installed or field-installed options. For more information, contact your authorized service representative.

Taking Care Of Your Printer

Your printer will produce high print quality jobs if it is well taken care of. Periodic cleaning, handling the printer properly, and using the correct printer supplies such as paper and ribbons ensures optimum performance. Chapter 5 explains how to clean the printer, and printer supplies are listed in Appendix A.

Whenever it is necessary to service the printer, remember these important maintenance concepts:

- Use only the ribbons specified in Appendix A. Use of incorrect ribbons can lead to ink migration problems, degraded print quality, and expensive damage to the printer.

- Incorrect closure of the forms thickness lever can lead to smearing, degraded print quality, paper jams, and damage to the platen and shuttle assembly. Never close the forms thickness lever too tightly.

Protocols And Emulations

A *protocol* is a set of rules governing the exchange of information between the printer and its host computer. These rules consist of codes that manipulate and print data and allow for machine-to-machine communication. A printer and its host computer must use the same protocol. As used in this manual, protocol and emulation mean the same thing.

Most impact printers use single ASCII character codes to print text, numbers, and punctuation marks. Some characters, both singly and in groups of two or more, are defined as control codes. Control codes instruct the printer to perform specific functions, such as underlining text, printing subscripts, setting page margins, etc. The main difference between most printer protocols is in the characters used to create control codes and the ways in which these characters are formatted.

When the printer executes the character and control codes of a particular printer protocol, it is "emulating" that printer. If the printer uses the Proprinter XL protocol, for example, it is emulating an IBM® Proprinter XL printer. If the printer is using the Epson FX printer protocol, for example, we can also say it is in Epson FX emulation mode.

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Chapter 1 **Printer Overview**

2   *Setting Up The Printer*

Before You Begin

Read this chapter carefully before installing and operating the printer. The printer is easy to install. However, for your safety and to protect valuable equipment, perform all the procedures in this chapter in the order presented.

Power Requirements

The printer must be connected to a power outlet that supplies 88 to 135 Volts AC or 178 to 270 Volts AC at 47 to 63 Hz. The printer automatically senses and adjusts itself to conform to the correct voltage range.

Primary circuit protection is provided by the power switch, which is also a circuit breaker. Consult an electrician if printer operation affects local electrical lines. See "Electrical Characteristics" on page 245 for additional power specifications.

IMPORTANT   **It is recommended that printer power be supplied from a separate AC circuit protected at 10 amperes for 120 volts or 5 amperes for 230 volts at 50 or 60 Hertz.**

Select A Site

Select a printer site that meets all of the following requirements:

- Permits complete opening of the printer cover and doors.

- For cabinet models, allows at least three feet of clearance behind the printer. (This permits air to circulate freely around the printer and provides access to the paper stacking area.)

- Has a standard power outlet that supplies 88-135 Volts AC or 178-270 Volts AC power, at 47 to 63 Hz.

- Is relatively dust-free.

- Has a temperature range of 10° C to 40° C (50° F to 104° F), and a relative humidity from 15% to 90% non-condensing.

- Is located within the maximum allowable cable length to the host computer. This distance depends on the type of interface you plan to use, as shown in Table 2.

Table 2. Maximum Interface Connection Cable Length

Interface Type	Maximum Cable Length
Centronics Parallel	5 meters (15 feet)
Dataproducts Parallel	12 meters (40 feet)
IEEE 1284 Parallel	10 meters (32 feet)
Serial RS-232	15 meters (50 feet)
Serial RS-422	1220 meters (4000 feet)
Dataproducts Long Line	150 meters (492 feet)
Coax	1500 meters (4920 feet)
Twinax	1500 meters (4920 feet)
Twinax (Shielded cable)	1500 meters (4920 feet)
Twisted Pair / Type 3	300 meters (985 feet)
Ethernet 10Base-T	100 meters (328 feet)
Ethernet 10Base2	185 meters (607 feet)
Ethernet 10/100Base-T	100 meters (328 feet)

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Printer Dimensions
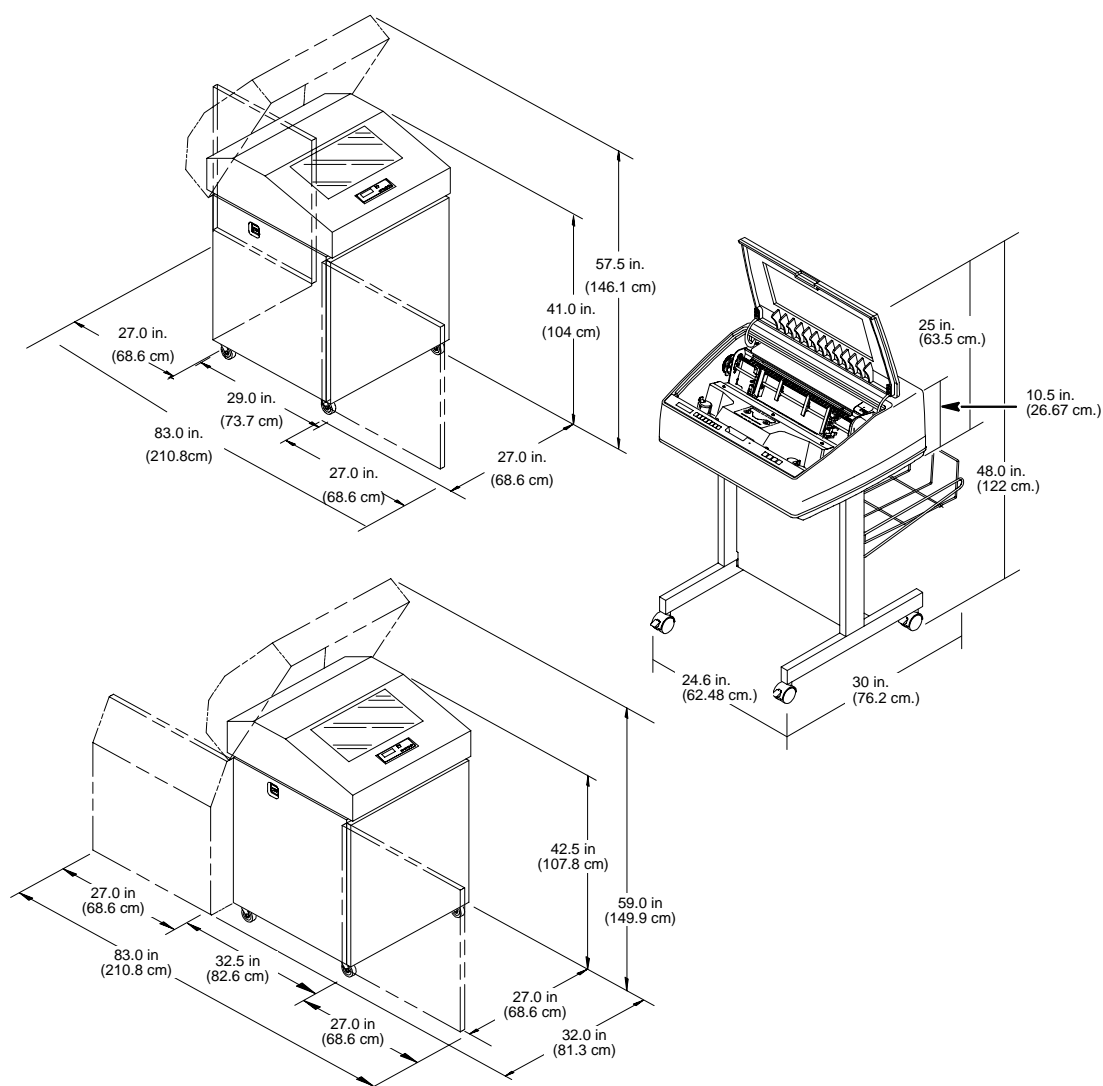
Figure 1. Printer Dimensions (clockwise from top: Cabinet Model, Pedestal Model, Cabinet Model with Stacker)

Printer Component Locations

Familiarize yourself with the names and locations of the printer components, shown in Figure 2, before continuing with the rest of the installation procedure.
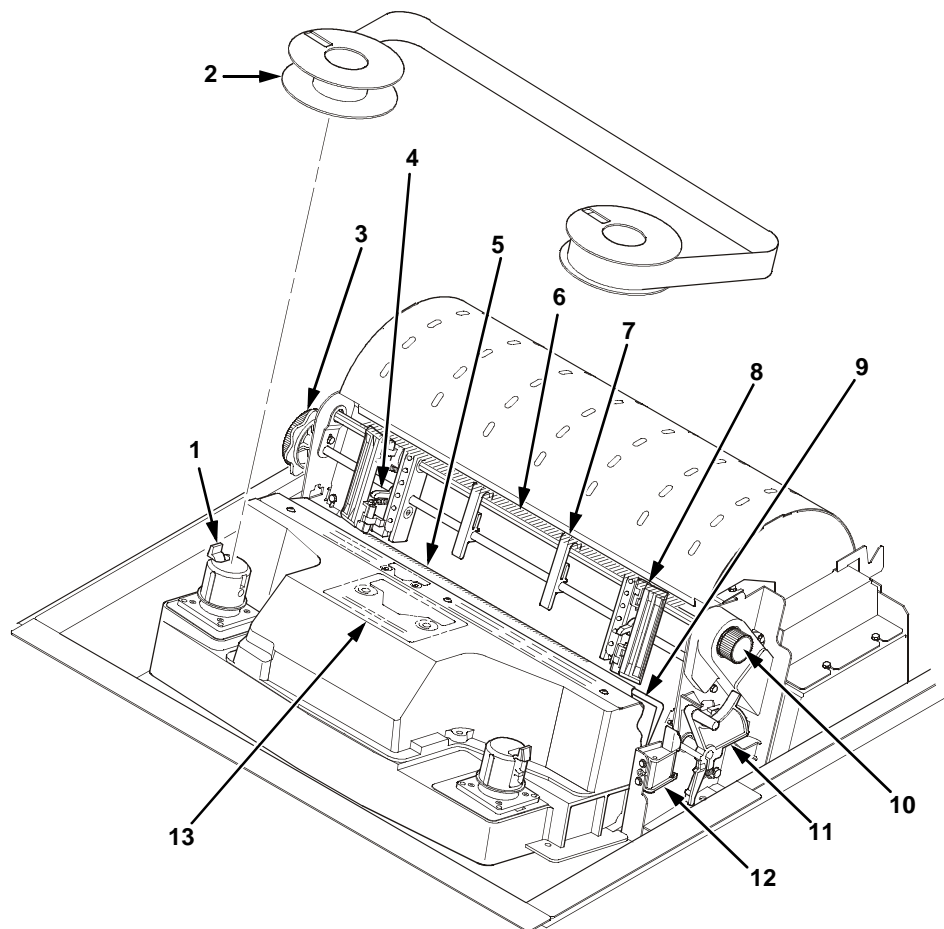
Figure 2. Printer Component Locations

Legend:

1) Hub Latch
2) Ribbon Spool
3) Horizontal Adjustment Knob
4) Tractor Lock
5) Paper Scale
6) Splined Shaft
7) Paper Support
8) Tractor
9) Hammer Bank Cover and Ribbon Mask
10) Vertical Position Knob
11) Forms Thickness Lever
12) Ribbon Guide
13) Ribbon Loading Path Diagram

Remove Packing Materials

CAUTION **To avoid shipping damage, reinstall the shipping restraints whenever you move or ship the printer.**

Save the cardboard packing, foam blocks, and bubble wrap along with the other packing materials in case you need to move the printer. If it is necessary to move the printer, reinstall the shipping restraints, reversing the steps in this section.

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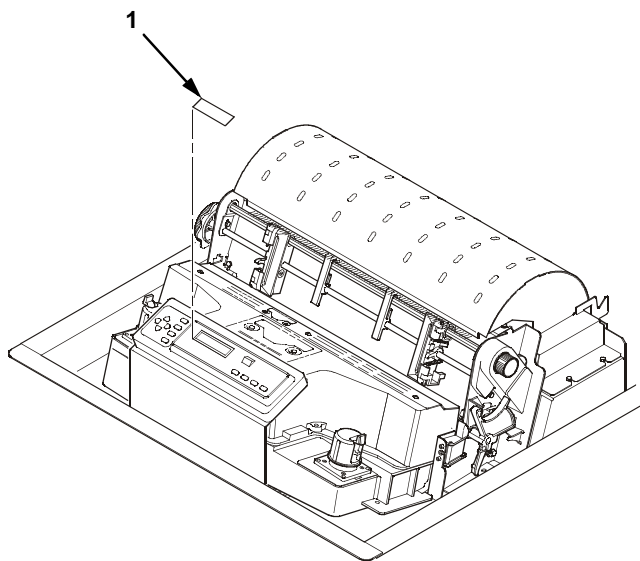
1. Raise the printer cover.
2. Carefully peel off the tape and lift the protective film off the control panel message display. (**1**)
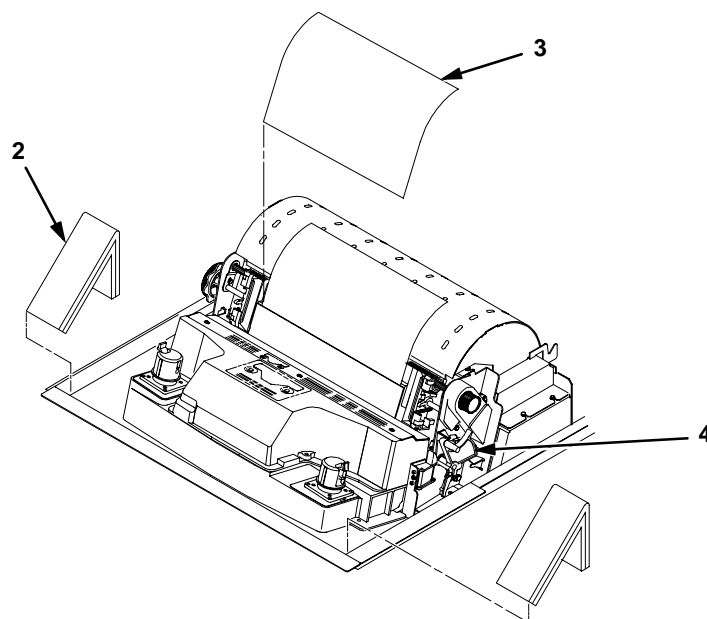
3. Remove the cardboard packing. (**2**)

4. Open the tractor doors. Push the tractor locks down. Slide the
   tractors outward as far as they will go. The forms thickness
   lever (**4**) should be in the fully open (raised) position.

5. Remove the envelope (**3**) containing the sample configuration
   printout. Store the envelope in the pouch attached to the left
   interior side of the cabinet.
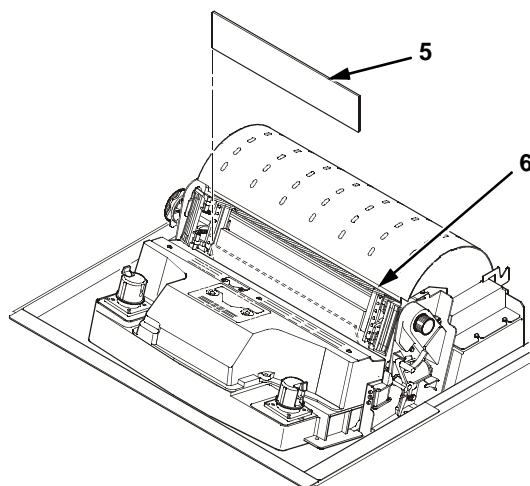
6. Slide the paper supports (**6**) outward as far as they will go. Lift the hammer bank protective foam (**5**) and remove it from between the ribbon mask and the platen.
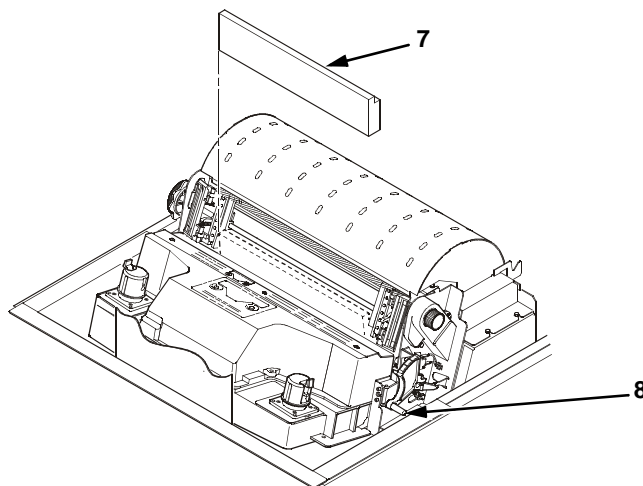
7. Rotate the forms thickness lever (**8**) downward to position "A."

8. Rotate the platen protective foam (**7**) toward the front of the printer and out from under the support shaft.
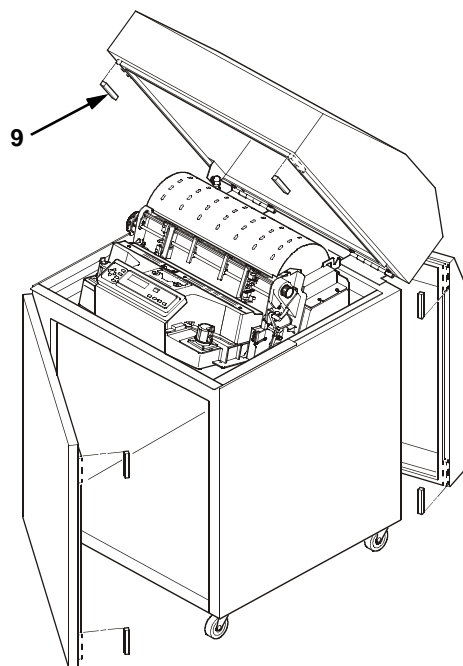
9. Remove the six wood blocks. (**9**)

10. Make sure the tape securing the wood blocks is removed entirely.

Adjust The Paper Supports
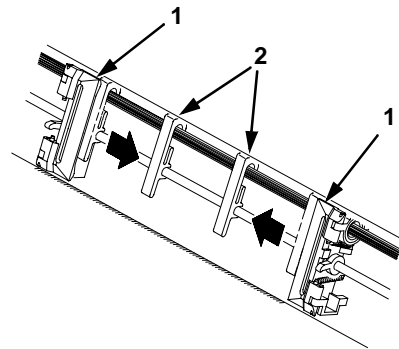
Slide the paper supports (**2**) inward until they are approximately four inches from the tractor doors (**1**).

Release The Paper Chains (Cabinet Model)
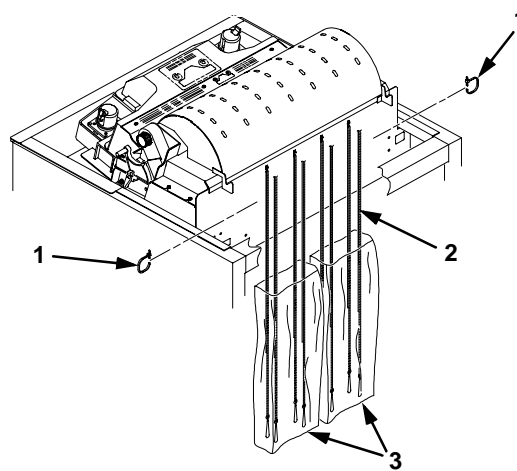
1. If you have the power paper stacker installed, skip this procedure and go to "Remove The Shipping Restraints From The Optional Power Stacker" on page 31.

2. Open the cabinet rear door.

3. Cut the tie wraps (**1**) and release the paper chains (**2**) from the bags (**3**) at the top rear of the printer frame. Remove the tie wraps and bags.

4. Make sure each chain hangs freely with no kinks or knots.

Remove Tags

Cabinet Model
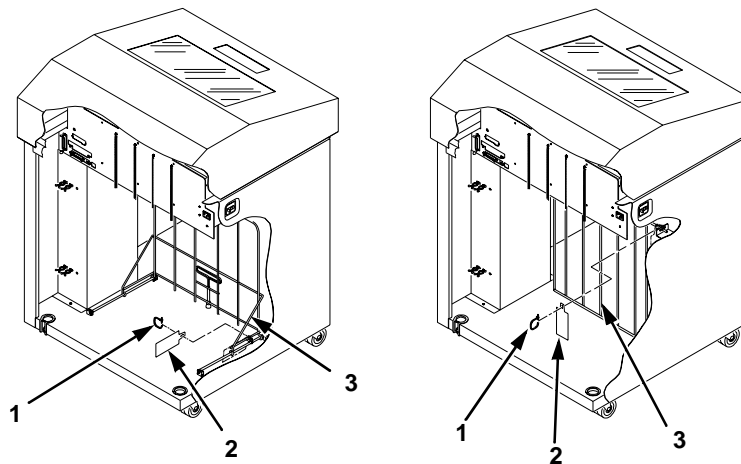
Figure 3. Removing Tags
(Left: 1000/1500 lpm models; Right: 500 lpm models)

1. If you have the power paper stacker installed, skip this procedure and go to "Remove The Shipping Restraints From The Optional Power Stacker" on page 31.

2. Remove the tie wrap (**1**) attached to the passive stacker paper fence (**3**). It is marked with a large, red tag (**2**).

3. Close the cabinet rear door.

Pedestal Model

Remove the tie wrap (**1**) attached to the output basket (**3**). It is marked with a large, red tag (**2**).

Attach The Output Basket (Pedestal Model)
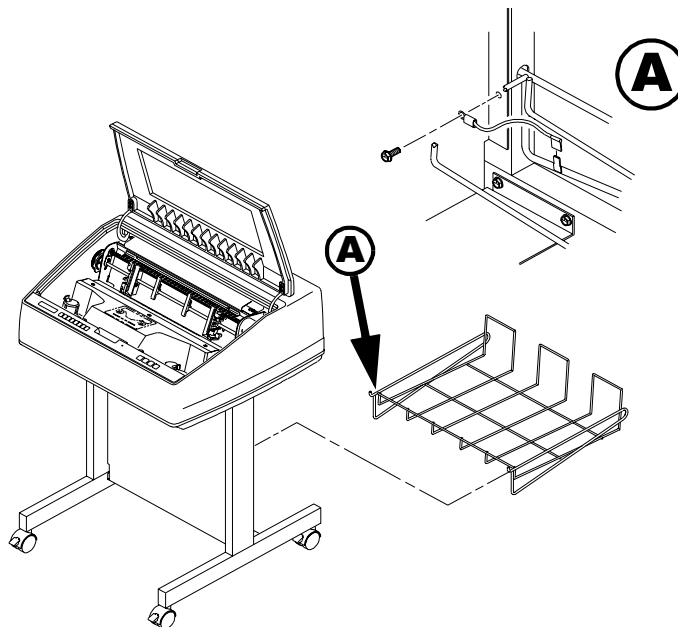
1. Place the output basket in the holes in the back of the printer.

2. Screw the ground wire attached to the output basket to the printer.

Remove The Shipping Restraints From The Optional Power Stacker

This section only applies to printers with the power stacker installed.

Special packaging protects the power stacker mechanisms from damage during shipment. This section describes how to remove the shipping restraints before you operate the printer.

Save the packaging materials. They need to be reinstalled to avoid causing damage if you decide to move or ship the printer. To reinstall the packaging materials, reverse the steps in this section.

Chapter 2 Remove Packing Materials
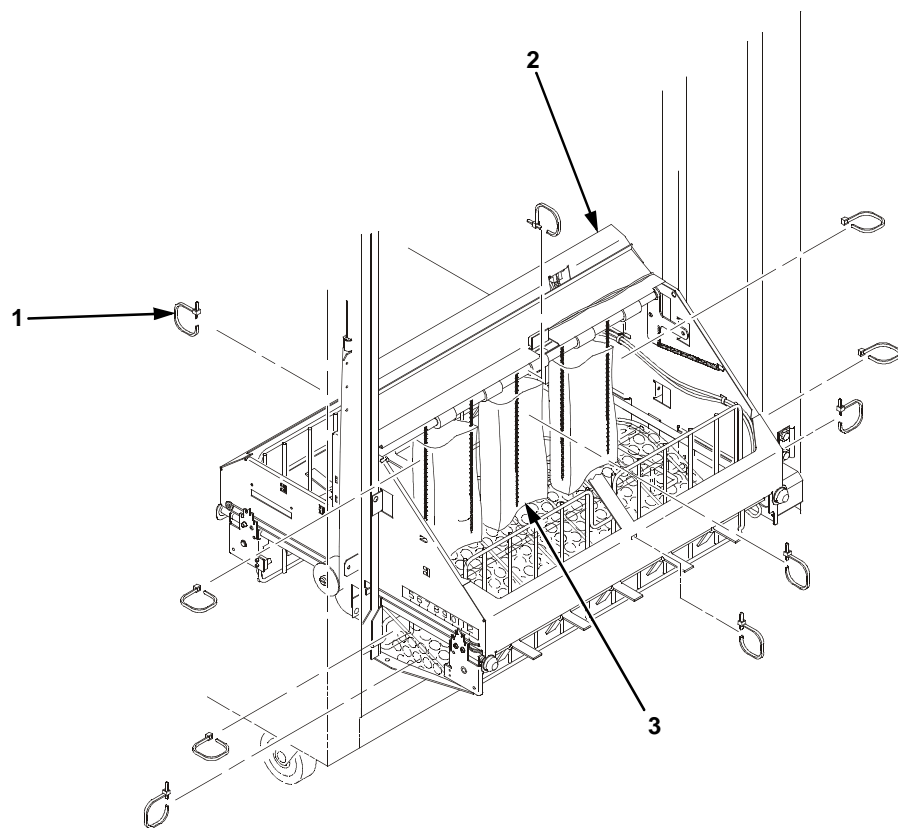
1. Open the rear door panel.

2. Remove the ten tie wraps (**1**).

3. Raise the paper guide (**2**) to its highest position by hand.

4. Remove the plastic bags (**3**) from the paper chains.
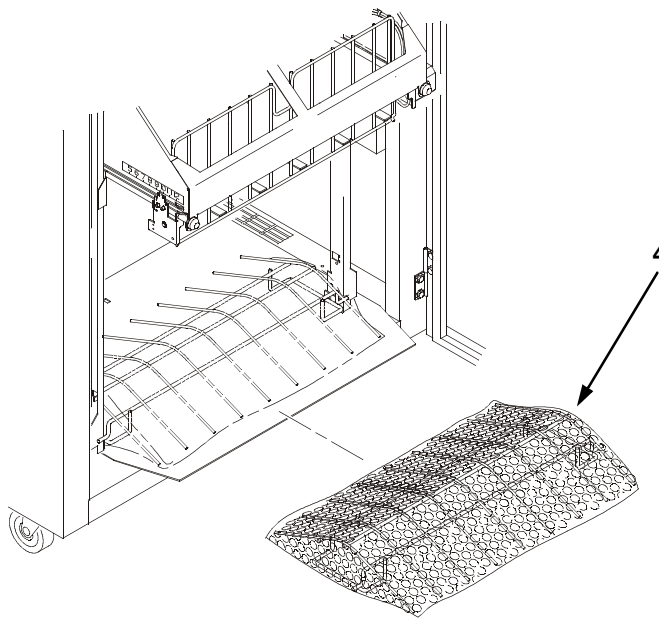
5. Remove, unwrap, and replace the paper tent. (**4**)

Connect The Interface And Power Cables

Before you connect the interface and power cables, make sure the voltage source at the printer site conforms to the requirements specified in "Power Requirements" on page 17.

Cabinet Model
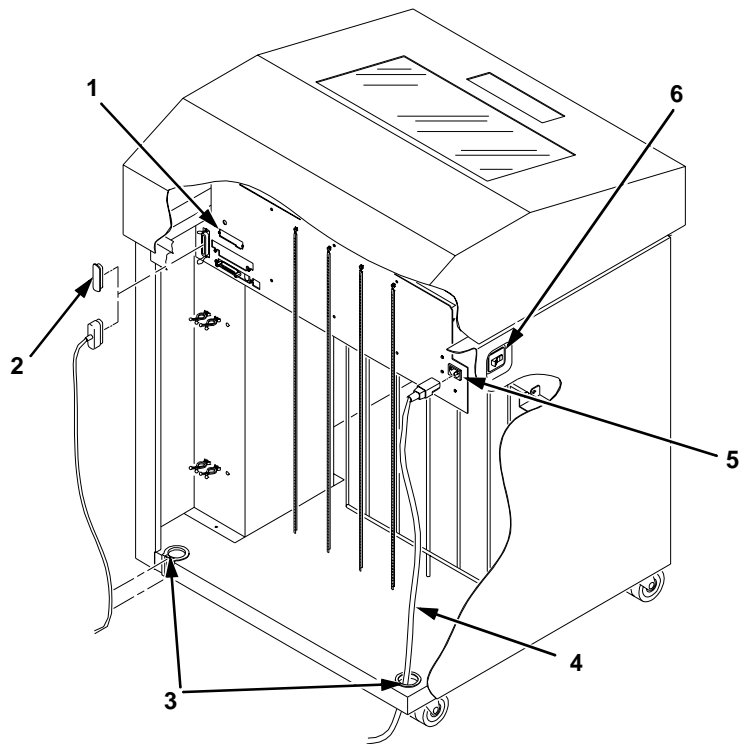
Legend:

1) Host Interface Connectors
2) I/O Cover
3) Cable-Routing Notches
4) AC Power Cable
5) AC Power Connection
6) Power Switch

Figure 4. Interface and Power Locations

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1. Make sure the printer power switch is set to O (Off).

2. Open the cabinet rear door, and remove the cover from the selected I/O connector. (See Figure 4.)

3. Locate the cable routing notch in the lower left corner of the back of the cabinet (see Figure 4).
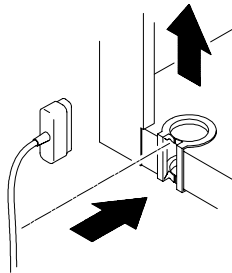
4. Hold the I/O cable below its connector and gently push the cable through the opening in the grommet seated in the notch.

5. Pull the cable up through the notch until it reaches the I/O plate. Attach the cable connector to the printer interface connector previously selected in step 2 of this section. Secure the cable to the printer using the upper and lower standoffs.
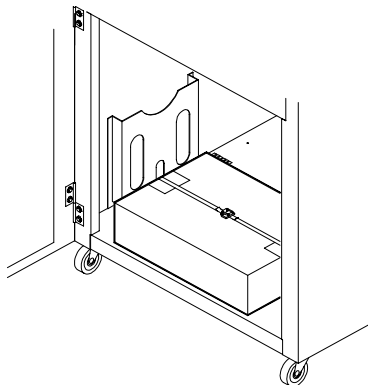
6. Open the cabinet front door and cut the strap that secures the box, which contains the power cord, printer ribbon, control panel overlay labels, and documentation.

7. Open the box and remove the power cord, overlays, and documentation.

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8. Guide the power cord up through the hole in the lower right back corner of the cabinet (see Figure 4). Thread the power cord inside the bracket where the gas spring is attached.

9. Plug the power cord into the printer AC power connector, then into the AC power outlet.

Pedestal Model
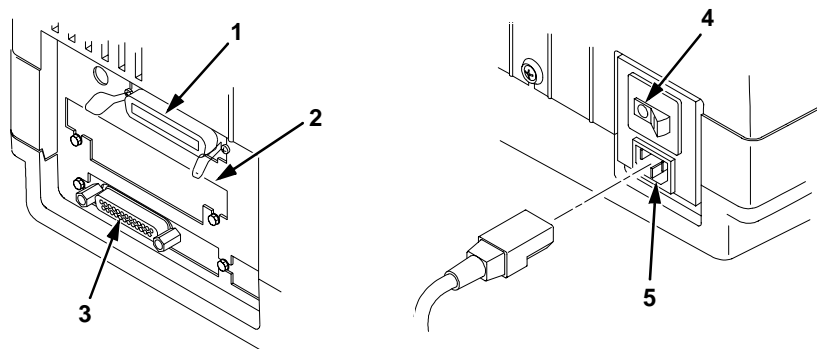
Legend:

1) Parallel Connector
2) Auxiliary I/O
3) Serial Connector
4) Power Switch
5) AC Power Connector

1. Make sure the printer power switch is set to O (OFF).

2. Remove the cover from the I/O connector you have selected.

3. Attach the I/O cable connector to the printer interface connector.

4. Plug the power cord into the printer AC power connector, then into the AC power outlet.

Interface Connections
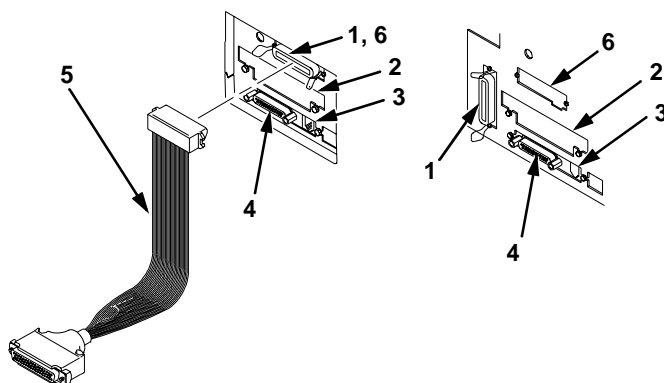
Legend:

1) Centronics (not present on Network-based pedestal models)
2) Auxiliary I/O
3) Diagnostic
4) Serial RS-232/RS-422
5) Dataproducts Standard Adapter
6) Ethernet

Figure 5. Standard Interfaces
(Left: Pedestal Model; Right: Cabinet Model)
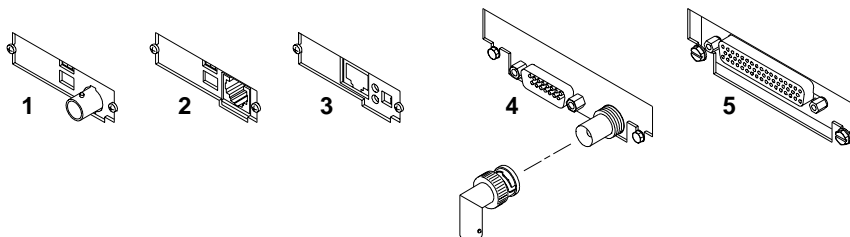
Legend:

1) Network 10Base2
2) Network 10Base-T
3) Network 10/100Base-T
4) Coax/Twinax
5) Dataproducts Long Line

Figure 6. Optional Interfaces for the Auxiliary I/O

1. Remove the cover from the I/O connector you have selected.

2. Attach the I/O cable connector to the printer interface connector.

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Install Basic Components

The following procedures describe how to attach the printed overlays to the control panel and install the printer ribbon and paper.

Attach The Control Panel Overlays

1. Choose the overlay labels in the appropriate language.

2. Cabinet Models: Open the printer cover, peel off the protective backing off the overlay, and press the overlay into place.

3. Pedestal Models: Open the printer cover and insert overlay labels by sliding them behind the control panel assembly in the appropriate place.
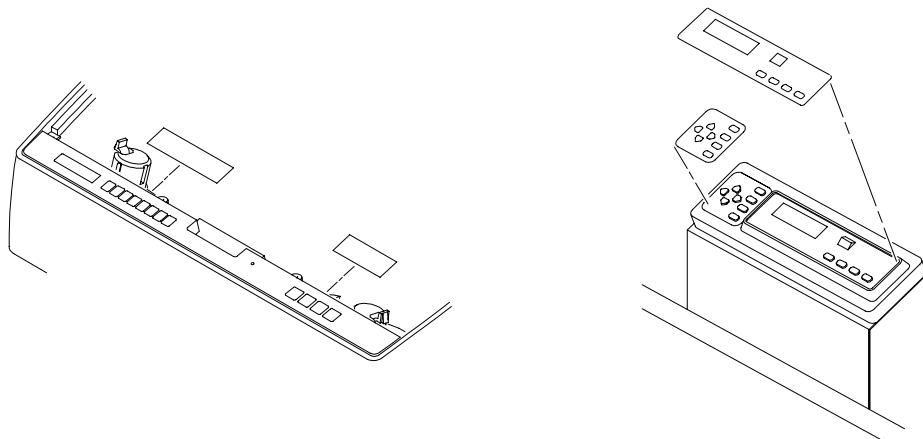
Figure 7. Attaching Control Panel Overlays
(Left: Pedestal Models; Right: Cabinet Models)

Load The Ribbon

1. Refer to the ribbon path diagram molded onto the shuttle cover (see "Printer Component Locations" on page 20).

2. Open the printer cover.
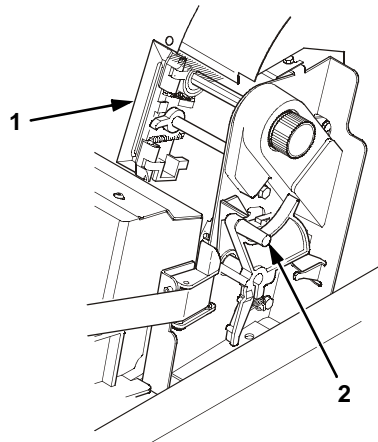
3. Raise the forms thickness lever (**2**) as far as it will go.

4. Close the tractor doors (**1**).
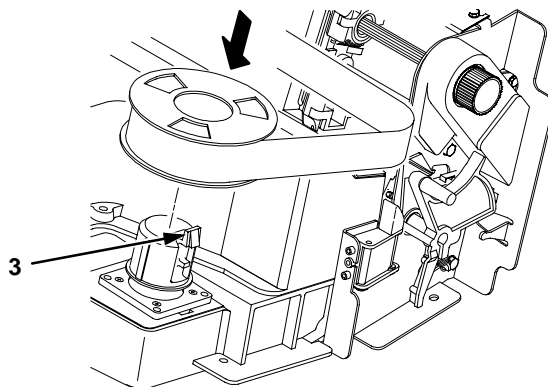
5. Squeeze the right hub latch (**3**) and place the full spool on the right hub. Be sure the ribbon feeds off the outside of the spool. Press the spool down until the hub latch snaps into place.

6. Thread the ribbon around the ribbon guide (**4**) and along the ribbon path. Be sure to thread the ribbon between the hammer bank cover and the ribbon mask.

7. Place the empty spool on the left hub. Press the spool down until the hub latch snaps into place. Turn the empty spool by hand to make sure the ribbon tracks correctly in the ribbon path and ribbon guides.

Load The Paper

When you start this procedure, verify that the printer cover is open, the forms thickness lever is raised, and the tractor doors are open. (See "Printer Component Locations" on page 20.)
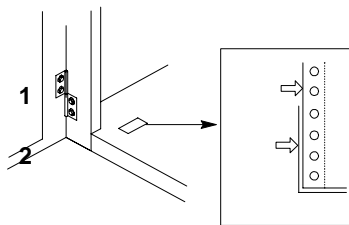
Legend:

1) Edge Of Paper
2) Box

1. For cabinet models, align the paper supply with the label on the floor. Make sure the paper pulls freely from the box.
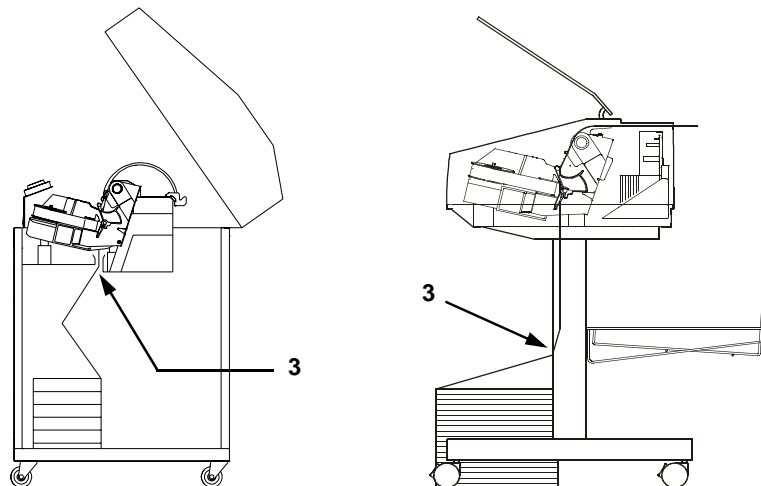
2. Feed the paper up through the paper slot (**3**). Hold the paper in place with one hand (to prevent it from slipping down through the paper slot) while pulling it through from above with your other hand.

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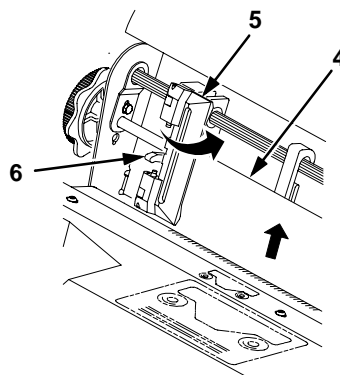
3. Pull the paper (**4**) above and behind the ribbon mask, which is a silver metal strip with a clear plastic edge protector. Load the paper on the left tractor sprockets and close the tractor door (**5**).

CAUTION **To avoid damage to the printer caused by printing on the platen, always position the left tractor unit directly to the left of the "1" mark on the paper scale.**

4. If adjustment is necessary, unlock the left tractor (**6**). Slide the tractor until it is directly to the left of the number "1" on the paper scale (**11**) and lock it. You can also use the paper scale to count columns.
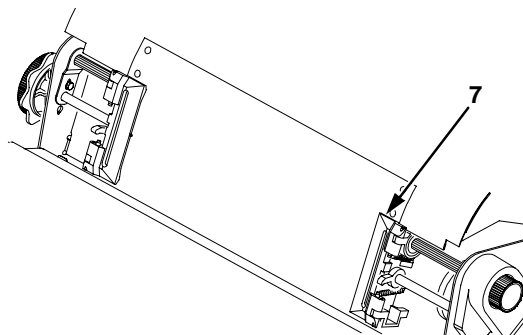
5. Unlock the right tractor (**7**). Load the paper onto the right tractor sprockets and close the tractor door.

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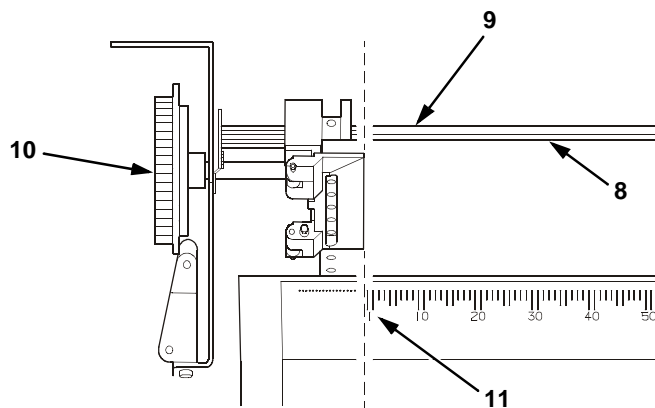
6. Make sure the leading edge of the first sheet of paper (**8**) is parallel to the tractor splined shaft (**9**). If the paper is misaligned, reload it onto the tractor sprockets until its edge is parallel to the splined shaft.

7. Slide the right tractor to remove paper slack or to adjust for various paper widths. Lock the tractor.

8. After both tractors are secured, you may use the horizontal adjustment knob (**10**) to make fine horizontal paper adjustments.
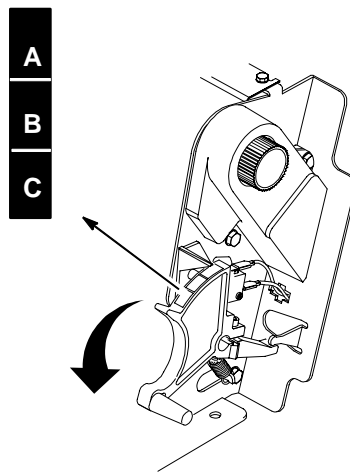
9. Lower the forms thickness lever. Set it to match the paper thickness.
(The A-B-C scale corresponds approximately to 1-, 3-, and 6- part paper thickness.)

NOTE: Do not set the forms thickness lever too tightly; excessive friction can cause paper jams, ribbon jams (with potential for ribbon damage), smeared ink, or wavy print.

10. For pedestal models with the Quick Access Cover, see "Quick Access Cover (Pedestal Model)" on page 50 for paper exiting options. For all other pedestal models, manually feed the paper through the rear paper exit by using the vertical position knob, then go to "Set The Top-of-Form" on page 51.

11. For cabinet models with the power paper stacker installed, go to "SureStak Power Paper Stacker", below. For all other cabinet models, go to "Set The Top-of-Form" on page 51.

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Install Optional Components

The following procedures describe how to install certain optional features: the SureStak™ Power Paper Stacker for the cabinet models, and the Quick Access Cover for the pedestal models. If your printer does not have either of these options, go to "Set The Top-of-Form" on page 51.

SureStak Power Paper Stacker

This section explains how to set up and use the optional SureStak Power Paper Stacker. The power stacker mechanically directs the paper from the printer to the paper stack.

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Power Stacker Component Locations

Familiarize yourself with the names and locations of the components, shown in Figure 8, before operating the paper stacker.
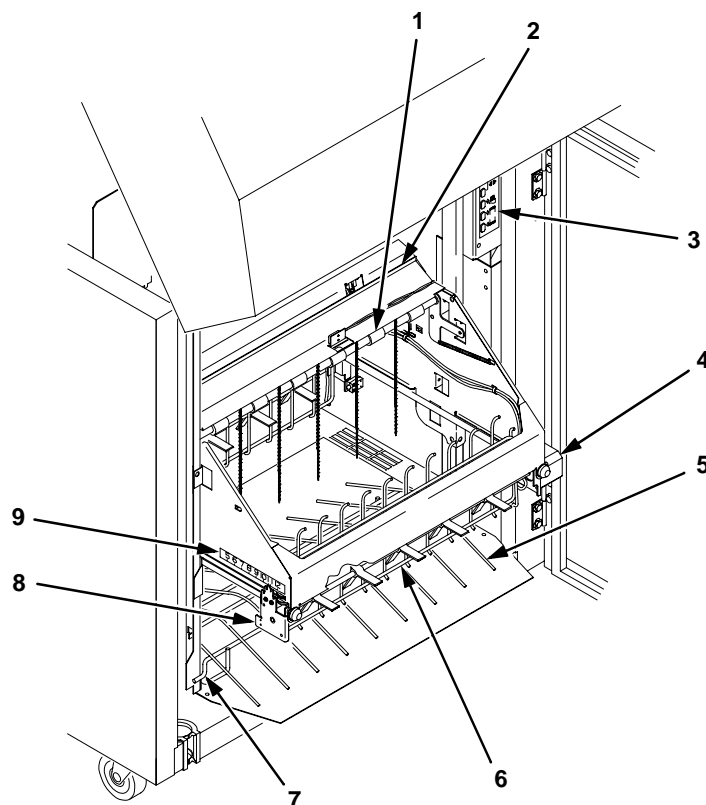
Legend:

1) Pinch Rollers
2) Paper Throat
3) Rear Control Panel
4) Motor Bracket
5) Wire Paper Tent
6) Paddle Shaft
7) Alignment Rod (2)
8) Bearing Bracket
9) Paper Length Indicator

Figure 8. Power Stacker Component Locations

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Setting Up The Power Stacker

1. Set the power switch to | (On).
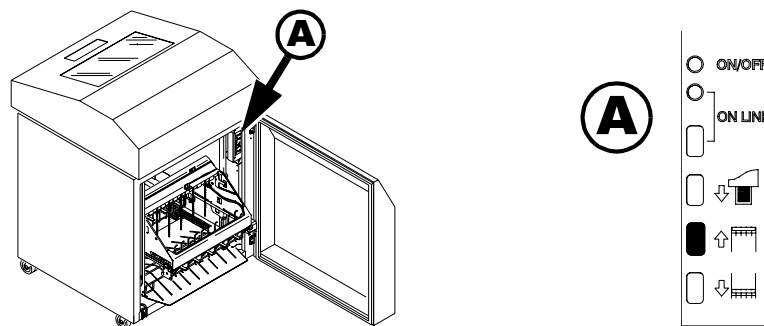
2. Using the rear control panel, press ON LINE to take the printer offline. Press STACKER UP button and wait for the stacker to reach the top of its travel.
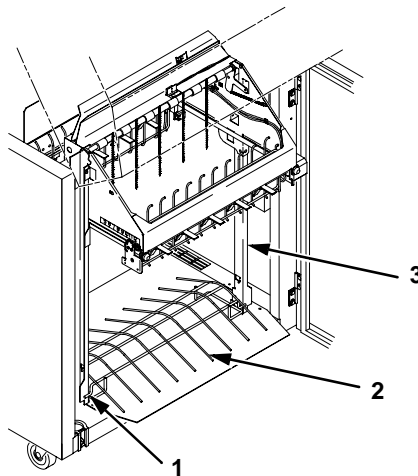
3. Make sure the wire paper tent (**2**) is in the base of the stacker with the alignment rods (**1**) against the paper stacker rails (**3**).

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4. Set the desired paper length (5-12 inch range), as follows:

    Grasping the paddle shaft (**4**), push or pull toward the front or the rear of the printer, setting the desired paper length by aligning indicator notch on the bearing bracket (**5**) with the paper length indicator (**A**).

Loading And Starting The Power Stacker

1. Using the rear control panel, press the PAPER ADVANCE key and hand feed the paper in the paper throat. Continue to advance the paper until it reaches the wire tent and there is an excess of 3-5 pages in the stacker. Be certain the paper passes through paper stacker throat.
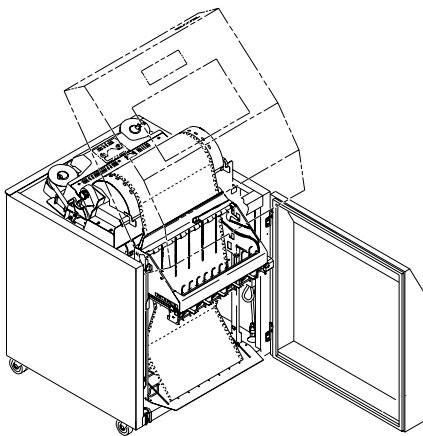
2. Stack the 3-5 sheets of paper on top of the wire paper tent, making sure the paper lies with the natural fold.
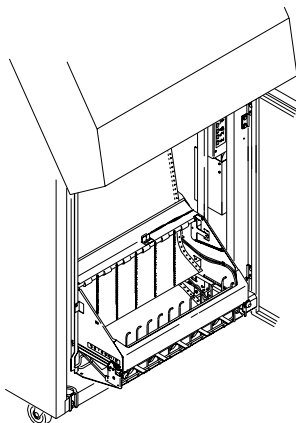
3. Press the ON LINE key, from either the front or rear panel, to put the printer in the online state. The stacker frame then returns to its proper position for printing.

4. Check that the paper is still centered between the paper guides.

5. Close the cabinet rear door.

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6. You are now ready to print. Go to "Set The Top-of-Form" on page 51.

Quick Access Cover (Pedestal Model)

If your pedestal printer is equipped with the quick access cover (**1**), you may choose how the paper exits the printer. Pushing the lever (**2**) up on the quick access cover allows the paper to exit the rear of the printer like a regular pedestal model (**3**). Pulling the lever down allows the paper to exit the top of the printer for demand printing (**4**).
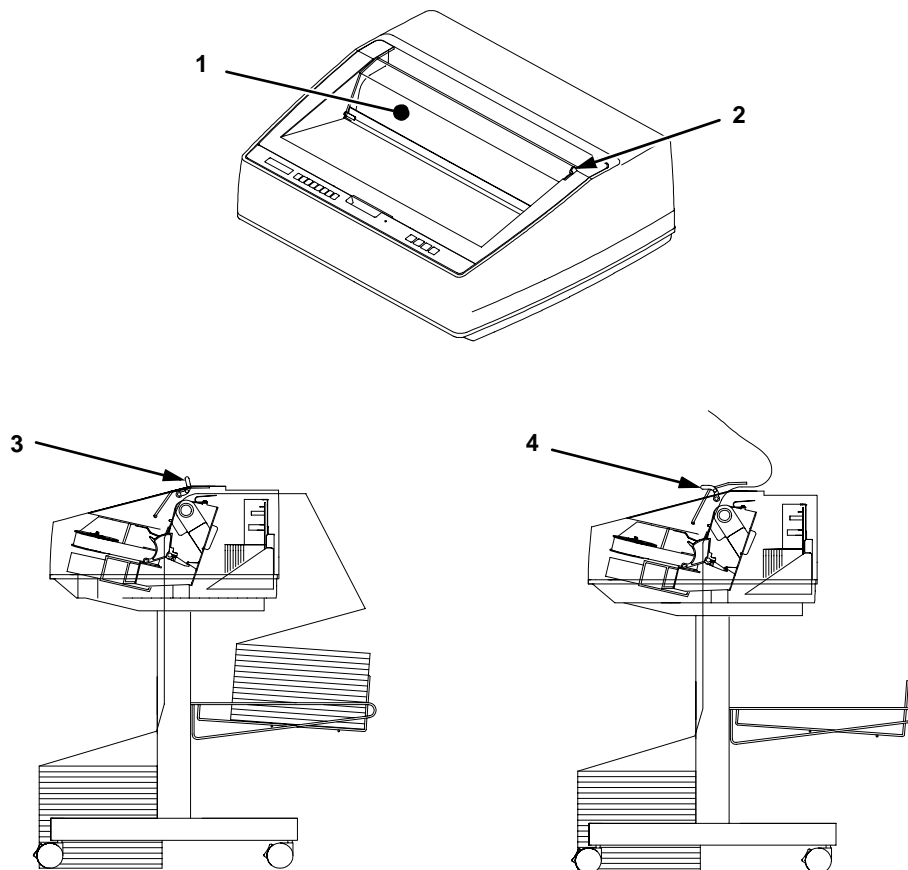
Set The Top-of-Form

Every time you load paper, you must tell the printer where the top-of-form is. This procedure must be performed the first time paper is introduced into the printer, as well as every time new paper is loaded.

Procedure

1. Be sure the forms thickness lever is lowered. If the printer is off, set the power switch to I (On).

2. Press ON LINE to place the printer in offline mode. The LCD will then display "OFFLINE / CONFIG. CONTROL."

3. Press PAPER ADVANCE several times to ensure the paper feeds properly beyond the tractors and over the lower paper path. Ensure the paper folds properly in the stacking area.
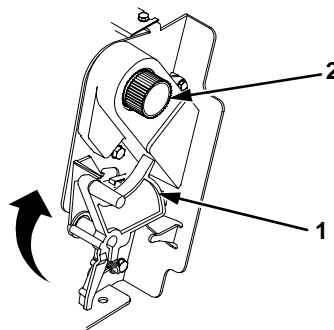
4. Raise the forms thickness lever (**1**) as far as it will go. This allows you to turn the vertical position knob (**2**) freely in order to align the top-of-form.

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5. Locate the TOF indicator (**3**). It is a small tab located on both the right and left tractor door.

6. Turn the vertical position knob (**5**) to align the top of the first print line with the TOF indicator. For best print quality, it is recommended that top-of-form be set at least 1/2 inch below the perforation (**4**).
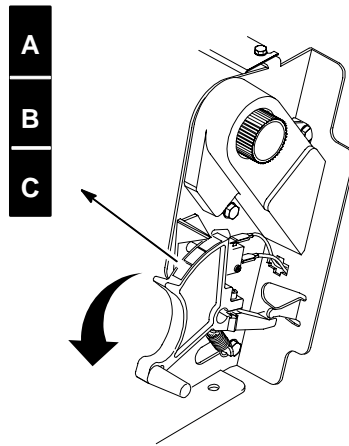
7. Lower the forms thickness lever. Set it to match the paper thickness. (The A-B-C scale corresponds approximately to 1-, 3-, and 6-part paper thickness.)

NOTE: Do not set the forms thickness lever too tightly; excessive friction can cause paper jams, ribbon jams with potential for ribbon damage, smeared ink, or wavy print.

8. Press CLEAR to remove any fault messages (such as "LOAD PAPER") from the message display.

9. Press SET TOF. The top-of-form position you have set moves down to the print position.

10. Press ON LINE to place the printer in online mode.

Chapter 2 Set The Top-of-Form

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3   *Operating The Printer*

Powering On The Printer

When you power on the printer, it executes a self-test. The default power-up state is online. When the self-test completes and the software has initialized successfully, the status indicator light turns on, indicating the printer is online. The default value of the type of emulation you have installed appears in the display.

If there is a fault during the self-test, the status indicator flashes and a specific fault message appears on the display (such as "LOAD PAPER"). The alarm also sounds if it is configured to do so. See "Troubleshooting" on page 223 for information on fault messages and solutions.

Operating Modes

Online. In online mode, the printer can receive and print data sent from the host. Pressing the ON LINE key toggles the printer from offline to online mode. The status indicator is lit in online mode.

Offline. In offline mode, you may perform operator functions, such as loading paper and setting top-of-form. You may also move within the printer configuration menus. Pressing the ON LINE key toggles the printer from online to offline mode. The status indicator is off in offline mode.

Fault. In fault mode, a condition exists which must be cleared before printing can continue. The status indicator flashes, the alarm beeps (if configured to sound), and a descriptive fault message displays.

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The current operating mode may be selected via control panel keys, or may result from routine operations such as powering on the printer.

The Control Panel

Figure 9 and Figure 10 show the keys, displays and indicators as they appear on the control panel. The following section provides descriptions of each of the control panel keys and their functions.

Key combinations are indicated with the plus (+) sign. For example, "Press ▲ + ▼" means to press the ▲ key and the ▼ key at the same time.
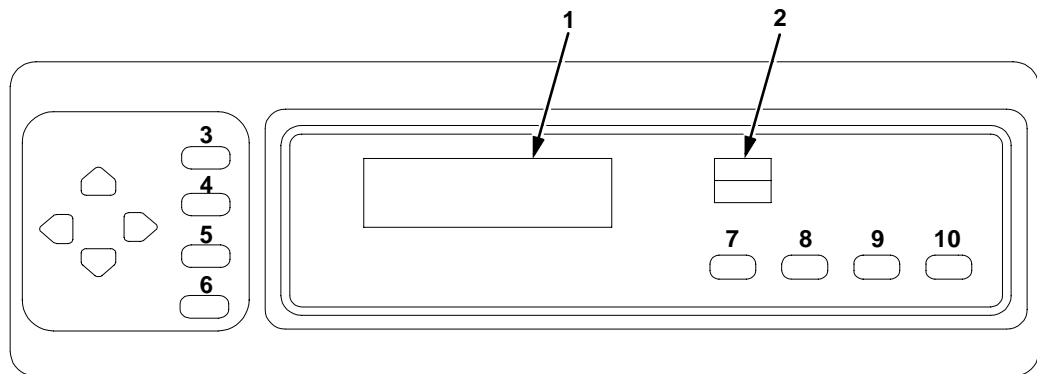
Figure 9. Control Panel, Cabinet Model
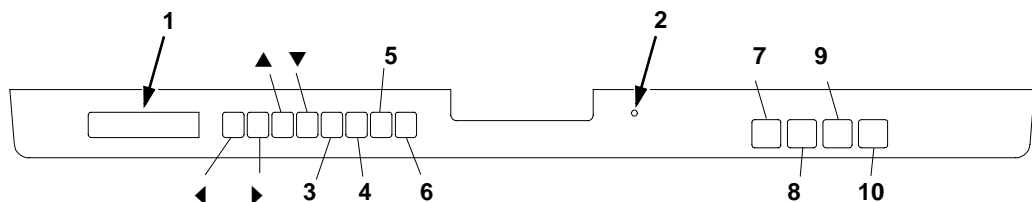
Figure 10. Control Panel, Pedestal Model

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Legend:

1) Message Display
2) Status Indicator
3) SET TOF
4) PRT CONFIG
5) JOB SELECT
6) ENTER
7) ON LINE/CLEAR
8) PAPER ADVANCE
9) VIEW/EJECT
10) CANCEL

Control Panel Keys

ON LINE / CLEAR

Toggles the printer between online and offline modes. If a fault condition exists, pressing this key will clear the fault message and return the printer from fault mode to offline mode.

NOTE: If the fault condition is not corrected *before* pressing this key, the fault message will reappear when attempting to place the printer online.

PAPER ADVANCE

Performs advance to top of form or line feed, depending on how long the key is pressed. Pressing this key quickly will perform a line feed. Holding the key down for more than 1/2 second will advance the paper to the next top-of-form. In online mode, only an advance to the next top-of-form will occur.

- If there is data in the printer buffer, the data will print and then the paper will move to the next top-of-form.

- In the fault state, PAPER ADVANCE does not advance the paper to the next top-of-form; instead, it will slew the paper 11 inches.

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VIEW / EJECT

Executes the view or eject function, depending on how long the key is pressed. When the VIEW/EJECT key is pressed quickly the view function is executed. When it is held down for longer than 1/2 second, the eject function is executed.

View Function — Press and release VIEW/EJECT quickly to move the last data printed to the tractor area for viewing. While in the view state, the ▲ or ▼ keys can be pressed to adjust the paper up or down in 1/72 inch increments. Press VIEW/EJECT a second time to move back to the adjusted print position.

Eject Function — In offline mode, holding VIEW/EJECT down for longer than 1/2 second will invoke the eject function. The amount of paper advanced is determined by the eject mode selected in the configuration menu; the standard setting will slew the paper two 11-inch pages. See page 190 for a detailed description of each of the eject functions.

NOTE: Pressing ON LINE also moves the paper back to the adjusted print position and returns the printer to online mode. If you press PAPER ADVANCE while in view or eject function, the paper will return to the adjusted print position and then perform the paper advance motion.

CANCEL

In offline mode, this key cancels all data in the print buffer, if enabled in "MAINT / MISC" on page 188. The print buffer is cleared without printing any of the data and the current paper position is set as the top-of-form. If this function is disabled, the CANCEL key will be ignored.

NOTE: Use of this key will cause loss of data.

SET TOF

Sets the top-of-form on the printer. This key is active only when the printer is offline and will not operate if the printer is in a fault condition. The paper moves down to the print position and aligns to the top-of-form. See page 51 for the complete top-of-form setting procedure.

NOTE: If there is any data in the buffer, the paper will move to the last print position.

PRT CONFIG

In offline mode, prints the current printer configuration. This key requires a confirmation with the ENTER key; pressing any other key will exit from this function. See "The Configuration Menus" on page 77 for an explanation of configuration menus.

JOB SELECT

In offline mode, allows you to change the active configuration without having to navigate the configuration menu. When pressed, the display reads "Load Config" and the name or number of the currently loaded configuration. Press JOB SELECT again until the configuration you want to load displays. Press ENTER and "Loading Saved Configuration" displays. The selected configuration is loaded into memory and becomes the active configuration. Press ON LINE twice to return to online mode.

ENTER

When navigating the configuration menus, ENTER selects the currently displayed option value as the active value. An asterisk (*) appears next to the active value on the display. ENTER is also used for starting and stopping printer tests and generating a configuration printout.

NOTE: The ENTER key must be unlocked in order to function. See UP + DOWN, below.

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NOTE: The ENTER key lock and unlock function can be configured to be a key combination other than ▲ + ▼ (see page 191).

UP or DOWN (▲ or ▼)

Moves up or down between levels in the configuration menus and makes vertical forms adjustment. After pressing VIEW, press ▲ or ▼ to adjust the paper up or down in 1/72 inch increments for fine vertical forms alignment. After pressing ON LINE, press ▲ or ▼ to move through levels in the configuration menus.

UP + DOWN (▲ + ▼)

Locks and unlocks the ENTER key.

NOTE: The ENTER key lock and unlock function can be configured to be a key combination other than ▲ + ▼ (see page 191).

PREV or NEXT (◀ or ▶)

Moves between the options on the current level of configuration menu. In the configuration menu press ◀ to scroll backward or press ▶ to scroll forward through the menu selections on the same level.

PREV + NEXT (◀ + ▶)

When both keys are pressed simultaneously, the printer will reset to the power-up configuration and reset its internal state.

▲ + ON LINE (IPDS Emulation Only)

In offline mode, press ▲ + ON LINE. If there is data in the printer buffer, the printer will be placed in online mode, print one page, and return to the offline mode. This action can be repeated until the end of a print job. Each time it prints only one page. If there is no data in the printer buffer, the printer is placed in online mode.

In the fault state, ▲ + ON LINE does not work.

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▲ + PAPER ADVANCE (IPDS Emulation Only)

In offline mode, press ▲ + PAPER ADVANCE. The printer will perform a reverse linefeed. If you hold down the ▲ + PAPER ADVANCE keys for longer than 1/2 second, the printer moves to the previous top-of-form position. If there is data in the printer buffer, the data does not print.

In the fault state, ▲ + PAPER ADVANCE does not work.

▲ + VIEW (IPDS Emulation Only)

In offline mode, press ▲ + VIEW. If there is data in the IPDS printer buffer, the printer will be placed in online mode, print one line, and return to offline mode. This action can be repeated until the end of the job. This function prints only one line of text. If the data is not text, only 1/6 inch prints. If there is no data in the printer buffer, the printer is placed in online mode for one second and then returns to offline mode.

In the fault state, ▲ + VIEW does not work.

Operational Procedures

This section contains routine printer operating procedures.

Reloading Paper

Do this procedure when "LOAD PAPER" displays. (This message occurs when the last sheet of paper passes through the paper slot.) This procedure reloads paper without removing the last sheet of the old paper supply. This action retains the current top of form setting.

1. Raise the printer cover. Raise the forms thickness lever as far as it will go. (See Figure 2 on page 20. for the location of the lever.)

2. Press CLEAR to turn off the alarm. Do not open the tractor doors or remove the existing paper.

3. For cabinet models, open the front door. Align the paper supply with the label on the floor. Ensure the paper pulls freely from the box.
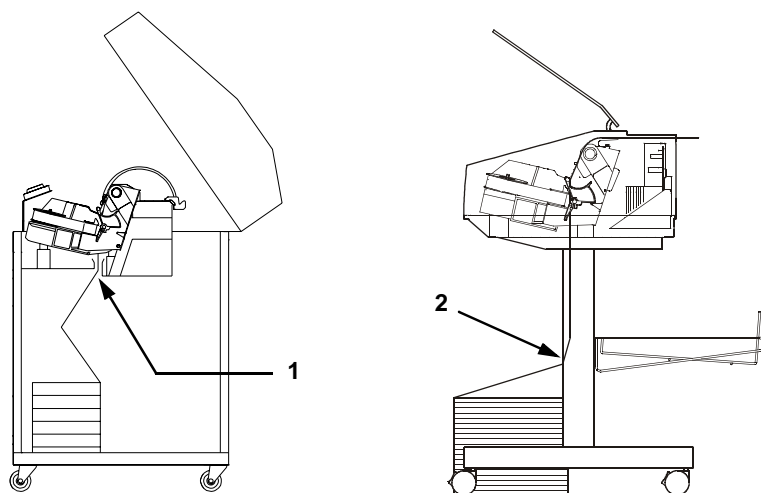
Legend:

1) Paper Slot (Cabinet Model)
2) Paper Slot (Pedestal Model; 8 inches below printer base)

Figure 11. Paper Slot Location

4. Feed the paper up through the paper slot (see Figure 11). It may be easier to feed one corner of the new paper up through the slot first. When this corner can be grasped from the top, rotate the paper back to the normal position.

NOTE: If you are using thick, multi-part forms and are unable to load the new paper over the existing paper, go to step 14.

5. Hold the paper to prevent it from slipping down and through the paper slot.
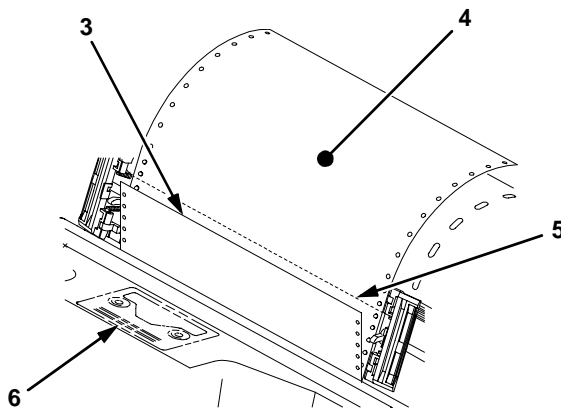
6. Pull the new paper (**3**) above and behind the ribbon mask, but in front of the existing paper (**4**). The ribbon mask location is shown on the ribbon path diagram (**6**). If necessary, gently press the existing paper back.

7. Align the top edge of the new paper with the top perforation of the existing paper (**5**).

8. Load the new paper over the existing paper.
Open and load the tractors one at a time to prevent the paper from slipping.

NOTE: Make sure that the top edge of the new paper lines up with the top horizontal perforation of the last page.
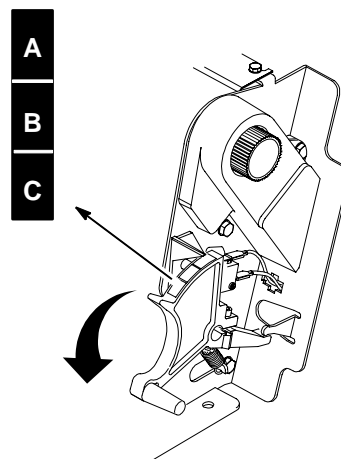
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9. Lower the forms thickness lever. Set it to match the paper thickness.
   (The A-B-C scale corresponds approximately to 1-, 3-, and 6-part paper thickness.)

NOTE: Do not set the forms thickness lever too tightly; excessive friction can cause paper jams, ribbon jams with potential for ribbon damage, smeared ink, or wavy print.

10. Press CLEAR to remove the "LOAD PAPER" fault message from the display.

11. Press PAPER ADVANCE several times to make sure the paper feeds properly beyond the tractors and over the lower paper guide. Feed sufficient paper to ensure the paper stacks correctly.

12. Close the printer cover. Close the cabinet front door.

13. Press ON LINE to place the printer in online mode and resume printing.

Perform steps 14 through 30 only if you are unable to load the new paper over the existing paper in step 4.

14. Open both tractor doors.

15. Remove the old paper from the tractors. Allow the paper to fall into the paper supply area.
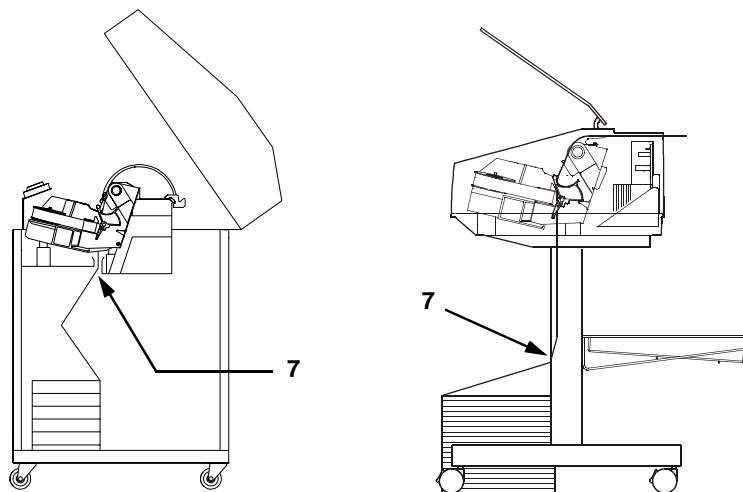
16. Feed the new paper up through the paper slot (**7**). Hold the paper to prevent it from slipping down through the paper slot.
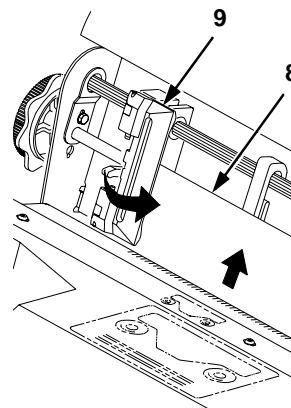
17. Pull the paper (**8**) above and behind the ribbon mask. (The ribbon mask location is shown on the ribbon path diagram.)

18. Load the paper on the left tractor and close the tractor door (**9**).
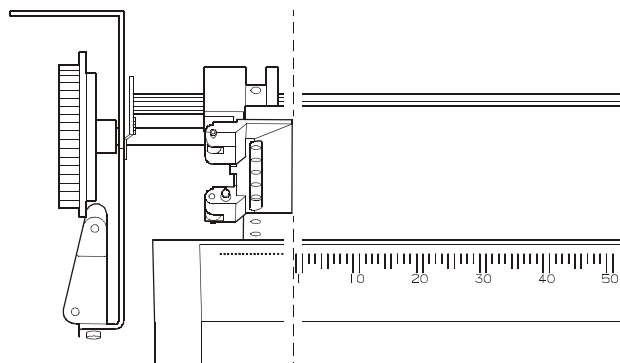
CAUTION **To avoid damage to the printer caused by printing on the platen, always position the left tractor unit directly to the left of the "1" mark on the paper scale.**

19. Normally, you should not need to adjust the position of the left tractor. If adjustment is necessary, unlock the left tractor. Slide the tractor until it is directly to the left of the number "1" on the paper scale and lock it. (You can also use the paper scale to count columns.)
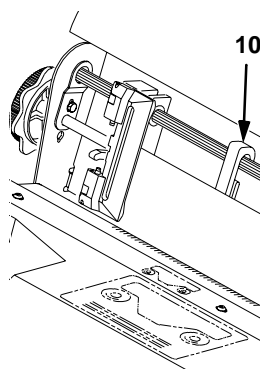
20. Move the paper supports (**10**) as necessary to support the paper between the tractors.
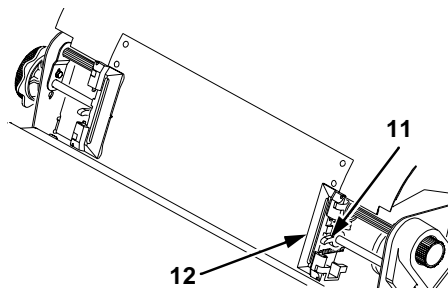
21. Unlock the right tractor (**11**). Load the paper onto the sprockets and close the tractor door (**12**). If necessary, slide the right tractor to remove paper slack or to adjust for various paper widths. Then, lock the tractor.

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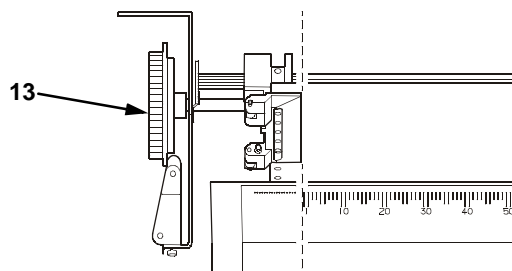
22. After both tractors are secured, you may use the horizontal adjustment knob (**13**) to make fine horizontal paper adjustments.
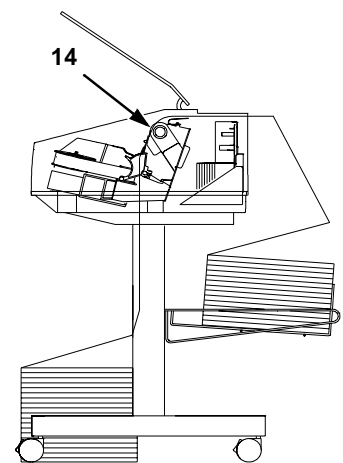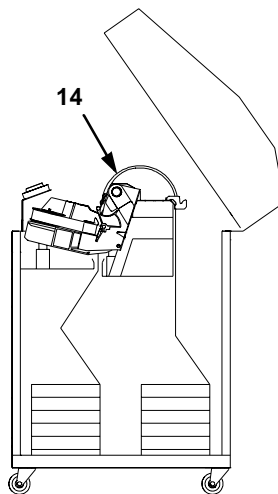
23. On pedestal models:
    Using the vertical position knob to move the paper up, guide the paper over the lower paper guide (**14**) and through the slot in the top cover. For pedestal models with the Quick Access Cover, refer to "Quick Access Cover (Pedestal Model)" on page 50 for paper exiting options.

24. Press PAPER ADVANCE several times to make sure the paper feeds properly beyond the tractors and over the lower paper guide (**14**). Feed sufficient paper to ensure the paper stacks correctly.

25. On cabinet models: Open the cabinet rear door. Make sure the paper is aligned with the label in the output area (inside the cabinet). Close the front and rear doors.
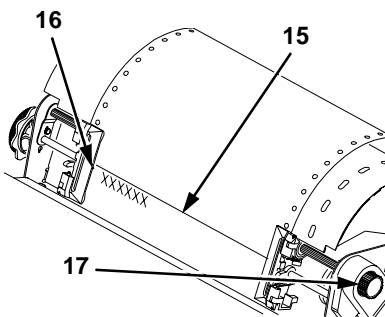
26. Align the perforation (**15**) with the TOF indicator (**16**) on the tractor by rotating the vertical position knob (**17**).
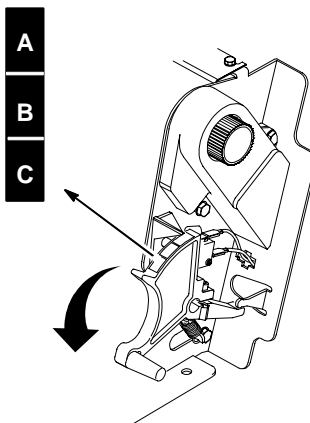
27. Lower the forms thickness lever. Set it to match the paper thickness.
    (The A-B-C scale corresponds approximately to 1-, 3-, and 6-part paper thickness. Adjust until you have the desired print quality.)

28. Press CLEAR to clear any fault messages (such as "LOAD PAPER") from the Liquid Crystal Display.

29. Press SET TOF. The top-of-form you have set moves down to the print position. If there are data in the buffer, the paper moves forward to the last print position on the next page.

30. Press ON LINE and close the printer cover.

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Unloading Paper

1. Press ON LINE to place the printer in offline mode, and open the printer cover.

2. For cabinet models, open the cabinet rear door. For models with the power stacker installed, press the STACKER UP key on the rear control panel.
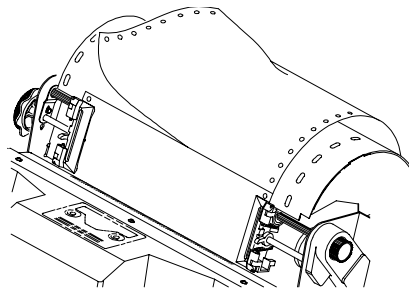
3. Tear off the paper at the perforation.

4. Allow the paper to fall to the back of the printer and into the paper stacking area.

5. For pedestal models, remove the stacked paper from the paper tray.
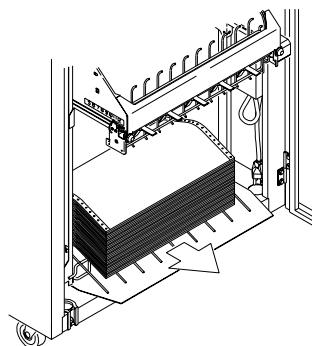
6. For cabinet models, remove the stacked paper from the rear cabinet floor. For cabinet models with the power stacker installed, remove the paper from the wire paper tent and press the STACKER DOWN key to lower the stacker mechanism. Close the cabinet rear door.

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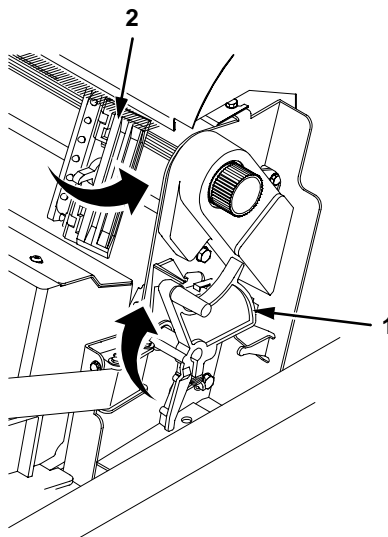
7. To completely remove the paper from the printer:

    a. Raise the forms thickness lever (**1**) as far as it will go, and open both tractor doors (**2**).

CAUTION **Be careful when pulling any paper backward through the paper path, especially when using a label stock. If you are not careful, labels can detach and adhere to the printer within the paper path, where only an authorized service representative can remove them.**

    b. Remove the paper from the tractors. For cabinet models, open the cabinet front door. Gently pull the paper down through the paper slot. Allow the paper to fall into the paper supply area.

    c. Remove the paper from the paper supply area.

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Replacing The Ribbon

1. Press ON LINE to place the printer in offline mode.

2. Open the printer cover.
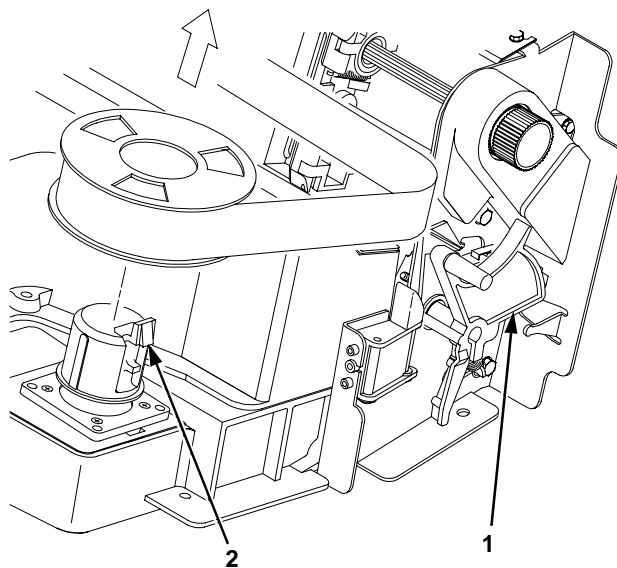
3. Remove the old ribbon:

    a. Raise the forms thickness lever (**1**) as far as it will go.

    b. Press in on the hub latches (**2**) and lift the ribbon spools off the hubs. Lift the ribbon out of the ribbon path.

4. Discard the old ribbon.

5. If necessary, clean the interior of the printer. (See "Cleaning Requirements" on page 223.)

6. Install the new ribbon:

    a. With the ribbon to the outside, place the full spool on the right hub (**3**). Press down on the spool until the hub latch snaps in place.

3   4
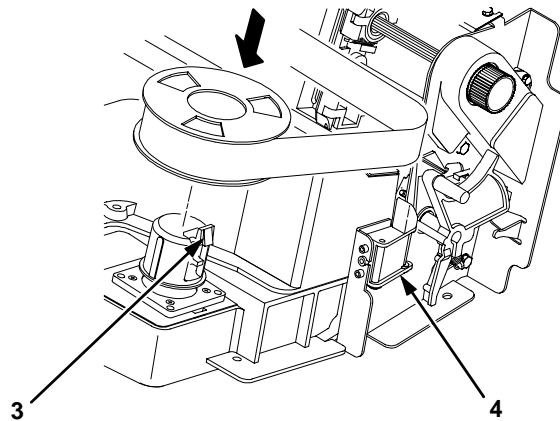
    b. Thread the ribbon around the ribbon guide (**4**) and along the ribbon path. (Refer to the ribbon path diagram on the shuttle cover.) Be sure to thread the ribbon between the hammer bank cover and the ribbon mask.

IMPORTANT   **The ribbon must not be twisted. A twisted ribbon can lower print quality, shorten ribbon life, or cause paper jams.**

    c. Place the empty spool on the left hub. Press down on the spool until the hub latch snaps into place.

    d. Hand turn the empty spool to make sure the ribbon tracks correctly in the path and ribbon guides.

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7. Lower the forms thickness lever. Set it to match the paper thickness. (The A-B-C scale corresponds approximately to 1-, 3-, and 6-part paper thickness.)

NOTE: Do not set the forms thickness lever too tightly; excessive friction can cause paper jams, ribbon jams with potential for ribbon damage, smeared ink, or wavy print.

8. Close the printer cover.

9. Press ON LINE to return the printer to online mode.

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Canceling A Print Job

The procedure to cancel a print job depends on the printer emulation and your application software. Contact your System Administrator for additional information.

1. If the printer is online, press ON LINE to place the printer in offline mode.

2. From the host system, stop the print job.

NOTE: If the print job is not stopped from the host system before pressing CLEAR + ENTER, the print job continues with data missing when the printer returns to online mode. Exercise caution to prevent unwanted data loss occurrences, as this function deletes unprinted data in the printer. This function is active only in offline mode; the purpose of this function is to eliminate the necessity of printing unwanted data when print jobs are canceled.

3. Press CLEAR + ENTER.

4. Set the top-of-form (see "Set The Top-of-Form" on page 51).

Chapter 3 Operational Procedures

4 *The Configuration Menus*

Configuration Overview

In order to print data, the printer must respond correctly to signals and commands received from the host computer. Configuration is the process of matching the printer's operating characteristics to those of the host computer and to specific tasks, such as printing labels, or printing on different sizes of paper. The characteristics which define the printer's response to signals and commands received from the host computer are called configuration parameters.

You can configure the printer using the configuration menus and the control panel, or by sending control codes in the data stream from a host computer attached to the printer. This chapter provides an introduction to configuring the printer, as well as all the configuration menus available (depending on which emulation you have installed in the printer).

IMPORTANT   **Configuration directly affects printer operation. Do not change the configuration of your printer until you are thoroughly familiar with the procedures in this chapter.**

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Chapter 4 Configuration Overview

Changing And Saving Parameter Settings

You may change a printer parameter setting, such as line spacing or forms length, either by pressing keys on the control panel to configure the printer's resident set of configuration menus, or by sending emulation control codes in the data stream from a host attached to the printer. An example procedure for using the control panel to change parameter settings begins on page 80.

When control codes are sent from a host attached to the printer, they override control panel settings. For example, if you set the line spacing to 6 lpi with the control panel, and application software later changes this to 8 lpi with a control code, the control code overrides the control panel setting.

The parameter settings that you have changed using the menus and control codes can be permanently stored in the printer's memory if you use the "Save Config." menu option. If you do not save your changes, they will be lost when the printer is powered off.

You may also save your new configurations using the PTX_SETUP command host control code. See your *LinePrinter Plus Programmer's Reference Manual* for details.

Default And Custom Configurations

A configuration consists of a group of parameter settings, such as line spacing, forms length, etc. Your printer provides a fixed default configuration and also allows you to define several custom configurations for use with particular print jobs.

The factory default configuration can be loaded, but it cannot be altered.

Eight configurations can be modified for unique print job requirements. The "Save Config." option allows you to save eight groups of parameter settings in memory as custom configurations numbered from 1 through 8. An explanation on how to save a set of parameter values as a custom configuration using the "Save Config." menu option begins on page 82.

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Navigating The Menus

To manipulate configurations it is important to understand how to navigate through the menus. Review the following instructions before you begin making changes to the printer.

You must be offline to move within the menus.
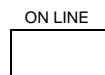
ON LINE	Press to toggle between ONLINE and OFFLINE.
OR	Press to move up or down through the menu levels.
OR	Press to scroll through the available choices on a chosen level.
ENTER	Press to confirm selection.
+	Press to lock and unlock the ENTER key. The ENTER key is locked by default, to prevent you from accidentally changing the printer configuration. The lock and unlock function can be configured to be other than ▲ + ▼ (See "Set Lock Key" on page 191.)
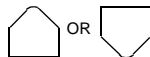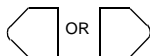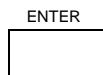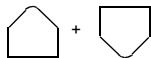
When the printer is online, the LCD displays ONLINE and the type of emulation on the second line. If the host interface is set to Auto Switching, the second line of the LCD displays also shows the active port together with the type of emulation.

To experiment with navigating the menus, follow the example on the next page as a tutorial.

Changing Parameters Example

* = Factory Default

```
              OFFLINE


 CONFIG.                    PRINTER
 CONTROL      . . .         CONTROL


    Unidirectional    PMD Fault    Open Platen    Slow Paper
                                    @ BOF           Slew

    Disable*          Enable*      Disable*       Disable*
    Enable            Disable      Enable         Enable


    Power Saver       Tear Bar      Shuttle      Bar Code
      Time            Distance      Timeout      Quality

    15* - 60 Min.     5.12 in.*     5 sec.*      Draft*
    Instant           (4.5-10.5 in.) (1-160 sec.) Dark
                                                 Recommended
```
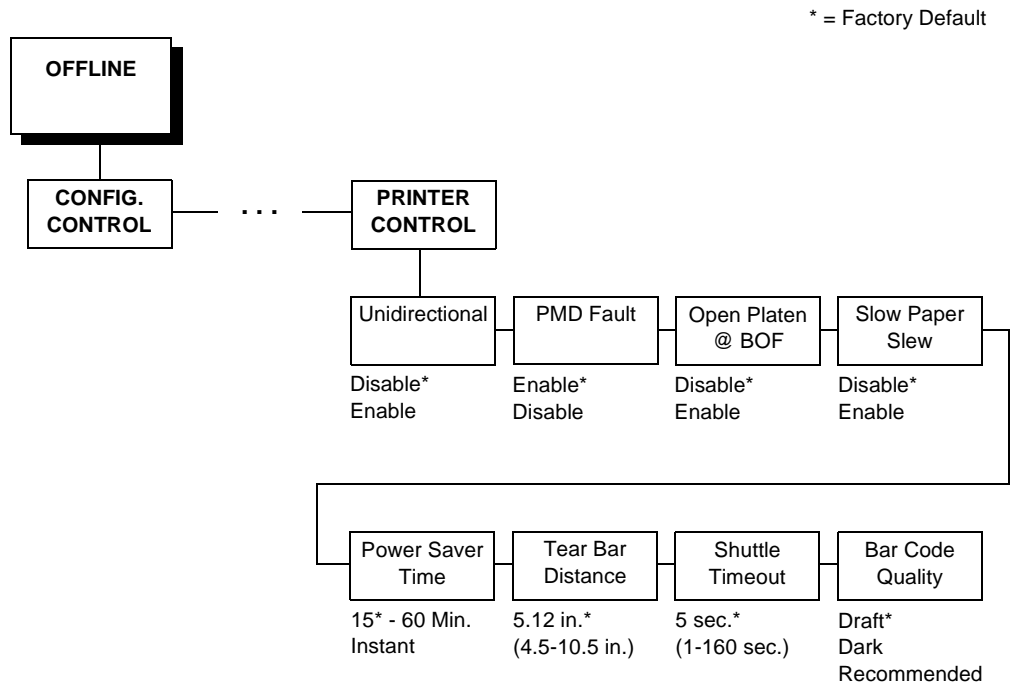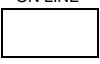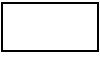
A configuration consists of several parameters. The default factory configuration has a starting set of parameters. In the configuration menu above, and in all the configuration menus in this chapter, the factory default values are indicated by an asterisk (*).
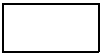
Your print jobs may require parameter values which vary from the default settings. This section provides an example procedure for changing individual parameter values.

The following procedure shows how to change and save the settings for the Slow Paper Slew and Power Saver options. Use these guidelines to navigate the configuration menus and change other parameters.

Step	Press	LCD	Notes
1.	Make sure the printer is on. Raise the printer cover.		
2.	ON LINE	OFFLINE CONFIG. CONTROL	
3.	+	ENTER SWITCH UNLOCKED OFFLINE CONFIG. CONTROL	Allows you to make configuration changes.
4.	UNTIL	OFFLINE PRINTER CONTROL	
5.		PRINTER CONTROL Unidirectional	
6.	UNTIL	PRINTER CONTROL Slow Paper Slew	
7.		Slow Paper Slew Disable*	
8.	OR	Slow Paper Slew Enable	Cycle through the choices.
9.	ENTER	Slow Paper Slew Enable*	The * indicates this choice is active.
10.		PRINTER CONTROL Slow Paper Slew	
11.	UNTIL	PRINTER CONTROL Power Saver Time	
12.		Power Saver Time 15 Minutes*	

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Step	Press	LCD	Notes
13.	OR	Power Saver Time 30 Minutes	Press until the desired parameter displays.
14.	ENTER	Power Saver Time 30 Minutes*	The * indicates this choice is active.
15.	+	ENTER SWITCH LOCKED	Locks the ENTER key.
16.	ON LINE	ONLINE LinePrinter+	Places the printer in online mode.

17. Close the printer cover. The printer is ready for operation.

The parameters you have changed will remain active as long as the printer is on. When you turn off the printer, the parameters will be erased from memory unless you save them in a configuration. If you do not save the configuration, the printer will revert to the default values next time the printer is powered on.

The next section, "Saving Your New Configuration," will explain how to save configurations.

Saving Your New Configuration

Once you have changed all of the necessary parameters, you should save them as a configuration that can be stored and loaded later for future use. If you do not save your configuration before you power off the printer, all of your parameter changes will be erased. The Save Config. option allows you to save up to eight configurations to meet different print job requirements. (Configurations 1 through 8 are empty until you save values to them using the Save Config. option.)

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Once you have saved a custom configuration using this option, it will not be lost if you power off the printer. You can load a configuration for a specific print job (see "Load Config." on page 89). You can also modify and resave it. You may want to print your configurations (see "Print Config." on page 90) and store them in a safe place, such as inside the printer cabinet.

If the Protect Configs. parameter is enabled, and you try to resave an existing configuration, the new configuration will not be saved until the existing configuration has been deleted (see page 90).

NOTE: Once you change active emulations, any changes to the previously selected emulation will be gone unless they have been saved.

Step	Press	LCD	Notes
1.	Make sure the printer is on. Raise the printer cover.		
2.	ON LINE	OFFLINE CONFIG. CONTROL	
3.	+	ENTER SWITCH UNLOCKED	Allows you to make configuration changes.
		OFFLINE CONFIG. CONTROL	
4.		CONFIG. CONTROL Load Config.	
5.	UNTIL	CONFIG. CONTROL Save Config.	
6.		Save Config. 1*	
7.	OR	Save Config. 2	Cycle through the choices.

Chapter 4 Configuration Overview

Step	Press	LCD	Notes
8.	ENTER	Save Config. 2*	The * indicates this choice is active.

NOTE: It is recommended you print the configuration. To print the configuration go to Step 9. To skip this procedure and resume printer operation, go to Step 14.

Step	Press	LCD	Notes
9.		CONFIG. CONTROL Save Config.	
10.	UNTIL	CONFIG. CONTROL Print Config.	
11.		Print Config. Current	
12.	OR	Print Config. 2	Press until the desired parameter displays.
13.	ENTER	OFFLINE CONFIG. CONTROL	The selected configuration is printed.
14.	+	ENTER SWITCH LOCKED	Locks the ENTER key.
15.	ON LINE	ONLINE LinePrinter+	

16. Close the printer cover. If you printed out the configuration, store it in a safe place. The printer is ready for operation.

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Optimizing Print Quality

You can optimize print quality for darker and sharper barcodes and characters. By doing so, however, the printer speed will decrease.

To optimize print quality, you can change the values of the following configuration parameters:

- **Bar Code Quality (Printer Control menu):** Select "Dark" or "Recommended." Recommended prints the darkest images, but at the slowest speed. Dark prints at a faster speed than Recommended, but the characters are not as dark. (See page 87 for the Configuration Main Menu, and see page 215 for a written description of Bar Code Quality.)

- **Print Quality (IGP/PGL emulation):** Select "Best" or "High." Best prints the darkest images, but at the slowest speed. High prints at a faster speed than Best, but the characters are not as dark. (See page 95 for the IGP/PGL Configuration Menu, and see page 104 for a written description of Print Quality.)

- **Print Quality (IGP/VGL emulation):** Select "High." (See page 109 for the IGP/VGL Configuration Menu, and see page 114 for a written description of Print Quality.)

Optimizing Print Speed

LP+, IGP/PGL and IGP/VGL Emulations

The printer has been configured at the factory for optimal print speed. To optimize print quality instead, you can change values for specific configuration parameters such as Barcode Quality and Print Quality. By doing so, however, the printer speed will decrease.

If you have optimized the printer for print quality, you can change it back to optimal speed by selecting the factory default values as follows:

- **Bar Code Quality (Printer Control menu):** Select "Draft." (See page 87 for the Configuration Main Menu, and see page 215 for a written description of Bar Code Quality.)

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- **Print Quality (IGP/PGL emulation):** Select "Dataprocessing." (See page 95 for the IGP/PGL Configuration Menu, and see page 104 for a written description of Print Quality.)

- **Print Quality (IGP/VGL emulation):** Select "Dataprocessing." (See page 109 for the IGP/VGL Configuration Menu, and see page 114 for a written description of Print Quality.)

Coax/Twinax Emulation

You can increase print speed by selecting the Enable mode for the Early Print Complete configuration parameter in the Coax/Twinax Emulation. However, if an error occurs while in Enable mode, you may lose data. For more information, refer to "Early Print Complete" on page 128. (For the Coax/Twinax Emulation menu, refer to page 123.)

Main Menu

[1] If installed

```
OFFLINE
```

CONFIG. CONTROL page 89	ACTIVE IGP EMUL[1] page 92	EMULATION page 122	MAINT/MISC page 188	HOST INTERFACE page 195
Load Config.	IGP/PGL	CTHI[1]	Hex Dump Mode	Twinax[1]
Save Config.	IGP/VGL	LinePrinter+	Alarm	Coax[1]
Print Config.		44/48XX-ANSI[1]	Power-up State	Auto Switching
Delete Config.		IGP/PGL[1]	Display Language	Centronics
Power-up Config.		IGP/VGL[1]	Cancel Key	Dataproducts
Protect Configs.		IPDS[1]	Eject Function	Serial
Name Configs.			Power Stacker[1]	IEEE 1284
Reset Cfg. Names			Auto Elevator[1]	Ethernet[1]
			Auto Locking	
			Set Lock Key	
			Ptx Setup Option	
			Accented Chars.	
			File System	
			Set Sharing	

ETHERNET PARAMS[1] page 212	PRINTER CONTROL page 213	DIAGNOSTICS page 216	RIBBON MINDER page 219
IP Address	Unidirectional	Printer Tests	New Ribbon
Gateway Address	PMD Fault	Test Width	Ribbon Action
Subnet Mask	Open Platen @ BOF	Paper Out Dots	Ribbon Size
MAC Address	Slow Paper Slew	System Memory	Ribbon Adjust
Novell Protocol	Power Saver Time	Print Statistics	Fault Action
NetBIOS Protocol	Tear Bar Dist.		
Novell Frame	Shuttle Timeout		
PPM Port #	Bar Code Quality		
PPM Port Timeout			

Figure 12. Configuration Main Menu

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Brief descriptions follow for the first-level configuration menu options:

- **CONFIG. CONTROL** — These options allow you to save, print, load, delete, name, and reset entire sets of configuration parameters.

- **ACTIVE IGP EMUL** — This menu allows you to select the PGL or VGL emulation from the menu if IGP is installed.

- **EMULATION** — This menu allows you to configure the options which are available for the current operating (active) emulation. For example, if LinePrinter+ is the active emulation, then the LinePrinter+ emulation options can be configured using this menu.

- **MAINT / MISC** — These options provide miscellaneous functions, such as printing a hex dump, selecting a display language, setting the lock key, and choosing whether the printer will power up in offline or online mode.

- **HOST INTERFACE** — These options allow you to select either the Serial RS-232, Serial RS-422, Centronics® parallel, Dataproducts® parallel and Long Lines, Ethernet™, IEEE® 1284 parallel, Auto Switching, Coax or Twinax interface for the printer (which must match the interface cabling you installed while setting up your printer, described in Chapter 2). This menu also allows you to configure several parameters for each interface.

- **ETHERNET PARAMS** — This option allows you to view and change the IP Address, Gateway Address, and Subnet Mask. The MAC Address may also be viewed.

- **PRINTER CONTROL** — These options allow you to select several operating parameters for the printer, such as the speed at which paper will advance when slewing.

- **DIAGNOSTICS** — These options include the diagnostic tests, system memory, and statistics of the printer.

- **RIBBONMINDER** — The options in this submenu allow you to enable the RibbonMinder™ feature and set its parameters.

CONFIG. CONTROL

The CONFIG. CONTROL menu allows you to control your printer's configurations according to the specifications necessary for your print jobs.

Menu

* = Factory Default

CONFIG. CONTROL (from page 87)					
Load Config.	Save Config.	Print Config.	Delete Config.	Power-up Config.	Protect Configs.
Factory* 1-8	1* (1-8)	Current* Factory Power-up All 1-8	1* (1-8)	Factory* 1-8	Disable* Enable

Name Configs.	Reset Cfg. Names
1* (1-8)	1* (1-8) All
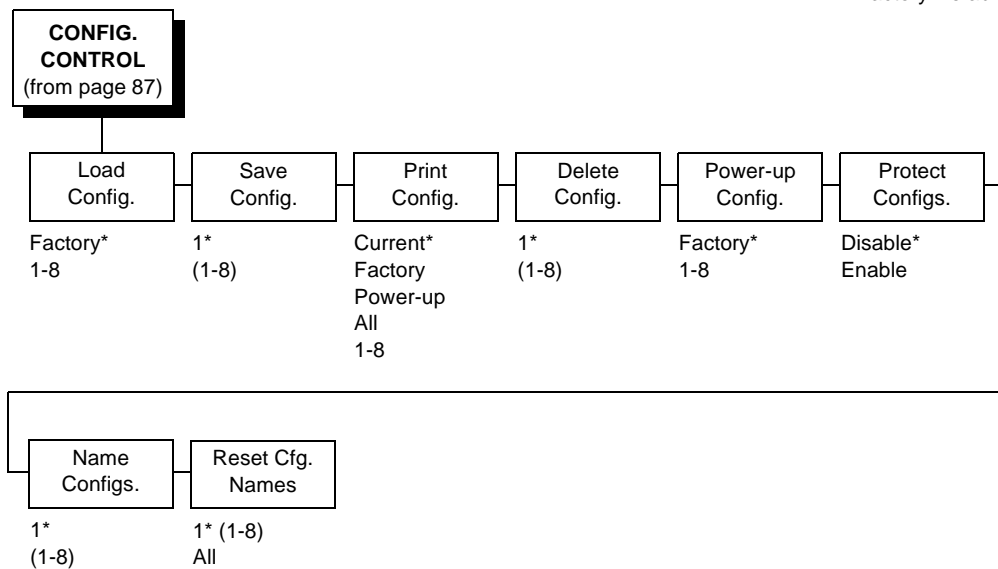
Load Config.

The printer can store numerous configurations in memory. This parameter allows you to select and load a specific configuration.

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Chapter 4 CONFIG. CONTROL

Save Config.

This option allows you to save up to eight unique configurations to meet different print job requirements. This eliminates the need to change the parameter settings for each new job. The configurations are stored in memory, and will not be lost if you turn off the printer. If the Protect Configs. parameter is enabled, the new configuration will not be saved unless the existing configuration has been deleted first. The factory default configuration cannot be changed. See "Saving Your New Configuration" on page 82 for details.

Print Config.

This option is used to print a listing of various stored printer configurations. It is recommended you store printouts of your configurations in a safe place for quick referral.

Delete Config.

You can delete one or all of your eight customized configurations. The factory default configuration cannot be deleted.

Power-Up Config.

You can specify which of the nine configurations (Factory or 1-8) will be the power-up configuration.

Protect Configs.

You can specify whether or not a new configuration should overwrite an existing configuration when you activate the Save Configs. parameter. When disabled (default), the new configuration will overwrite the existing configuration. When enabled, the new configuration will *not* overwrite the existing configuration, and the message "CONFIG. EXISTS / Delete First" displays.

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Name Configs.

You may specify a 15 character name which can be used to refer to a configuration. The name you enter for a configuration will be used in the Load Config., Save Config., Print Config., Delete Config., and Power-Up Config. menus. The names can only be cleared by using the Reset Cfg Names menu.

When you move into the Name Configs. menu, the top line of the display shows the current configuration name. The second line of the display is initially the same as the top line. You can modify the second line of the display without affecting the top line until the ENTER key is pressed, which sets the modified name.

Press the UP or DOWN (▲ or ▼) keys to cycle through the values available for that character at the cursor location. Press the NEXT (▶) key to move to the next character to be modified. Press the PREV key (◀) to go back to a character you have already modified. Continue until you have entered the name you want to give to this configuration, then press ENTER to save. The name you entered will now represent this configuration on the printer's front panel. To exit this menu without saving, press any key other than the ENTER key. The configuration name will revert to the last saved value.

Reset Cfg Names

You can reset specific configuration names back to the default value of the configuration number.

ACTIVE IGP EMUL

* = Factory Default

**ACTIVE IGP
EMUL**
(from page 87)

IGP/PGL*
IGP/VGL

This ACTIVE IGP EMUL function allows the user to activate either the PGL or the VGL emulation. There are two methods for selecting the desired emulation. The first is by selecting the emulation directly from the printer menu. The second is by sending a host command which will switch the emulation automatically (see the appropriate *Programmer's Reference Manual* for details*).*

When changing from one IGP emulation to the other, the printer will load the power-up configuration and the new emulation parameters. Thus, any configuration settings performed before selecting these emulations and not saved in NVRAM will be lost.

IMPORTANT **In order to configure an IGP emulation, the IGP emulation must be selected in the ACTIVE IGP EMUL menu. The IGP emulation that is not selected will not appear in the EMULATION menu (see "Main Menu" on page 87).**

IGP/PGL Emulation

The PGL emulation is the software based Intelligent Graphics Processor (IGP) for the line matrix family of printers. It is based upon, and is compatible with, the IGP-100/200/400 board using the PGL. The IGP graphics processing features are detailed below.

Features

On-Line Form and Label Generation makes it easy to create forms or labels with a "preprinted" look for each application. IGP programs control all graphic functions, dramatically reducing host computer programming and processing time.

Graphic capabilities include boxes, vertical and horizontal lines with user-selectable thickness, logos, and special alphanumeric print features. Forms and graphic designs can be duplicated horizontally and vertically.

Alphanumeric data can appear as prepositioned "fixed" information (entered when the form is created), be overlayed onto the form (positioned in a specific location after the form is created), or may be dynamically merged with the form.

Selectable Barcodes provide you with the appropriate barcode for your application using standard wide-to-narrow ratios. A wide selection of barcodes are available: Code 39, Interleaved 2 of 5, UPC-A, UPC-E, MSI A through D, Code 128 Subset A, B, and C, EAN/UCC-128, EAN 8, EAN 13, POSTNET, PostBar, Royal Mail, and PDF417. UPC and EAN barcodes can specify add-on data.

Expanded and Compressed Character Print attract attention where needed. Alphanumeric height and width are controlled independently for a wide range of character sizes up to 113 times the standard character size (up to 11.3 inches wide and tall). Compressed print sizes of 10, 12, 13, 15, 17 and 20 characters per inch (cpi) are available.

Logos are created using alphanumeric commands and add many print and shading features for a "customized" appearance to forms, reports, and labels.

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Rotated Alphanumerics permit new concepts in form design. Normal, expanded, and compressed character strings can be rotated 90 degrees clockwise or counterclockwise, or they can be printed upside down.

Reversed Print permits highlighting and contrasting by printing white characters on a dark background.

Automatic Increment/Decrement Capability allows batch form processing. Individual alphabetic, numeric, and barcode data fields can be identified and automatically incremented or decremented by any amount, beginning from a specified reference point.

Scaling Capability permits graphic elements, such as corners or boxes, to retain their physical shapes and sizes when printed in a horizontal and vertical density other than the base density of 60 x 72 dpi.

Multinational Character Sets provide many international character sets, each 96 characters in length. This feature also allows you to create your own character sets using characters defined and stored in memory.

Extended Character Sets provide 33 extended character sets, also containing 96 characters in length. These are also stored in memory.

Configuring The Emulation With The Control Panel

You can select PGL default parameters directly from the control panel, or by control codes as explained in the *IGP/PGL Programmer's Reference Manual.* The PGL parameters are described on the following pages. Parameters marked with an asterisk (*) indicate the default value. The printer must be offline to enter the configuration structure.

Pressing an invalid key to enter a parameter value may move you to another level in the configuration or exit the configuration menu completely. Configure the IGP/PGL according to your specific requirements.

IMPORTANT   **BEFORE you reconfigure the IGP/PGL, print a configuration sheet to see all of the current settings.**

Submenu

* = Factory Default

Barcode Options (from page 95)				
UPC Descenders	Optimized Ratio	I-2/5 Selection	AI 00 Spaces	Select SO Char
Always* Never Only with PDF	Disable* Enable	Leading Zero* Trailing Spaces X2 DPD Modulo 7 CD	Disable* Enable	14* (0-255)

Define CR Code (Carriage Return)

This parameter forces the printer to insert an automatic Line Feed code into the data stream whenever a Carriage Return code occurs. This is to be used only if the host computer does not send Line Feeds to the printer.

- **CR = CR.** Does not perform a line feed. The next print position will be print position 1 of the current line.

- **CR = CR + LF.** Performs an automatic line feed. The next print position will be print position 1 of the next line.

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* = Factory Default

EMULATION
(from page 87)

IGP/PGL

Define CR Code	Define LF Code	Autowrap	Select SFCC	PI Slew Range	CR Edit
CR = CR*	LF = LF*	Disable*	126*	16*	Disable*
CR = CR + LF	LF = CR + LF	Enable	(1-255)	15	Enable

Select Font	Slash 0	Select LPI	Auto Uppercase	Skip Cmd Prefix	Power On IGP/PGL
(see page 106)	Disable*	6*	Disable*	Enable*	Enable*
	Enable	8, 9, 10	Enable	Disable	Disable

Ext Execute Copy	Barcode Options	Host Form Length	Compressed CPI	Ignore Char	Compatbl. Mode
Disable*	(see next page)	Disable*	Disable*	Ignore Mode	None*
Enable		Enable	Light Font	Disable*	MVP
			Dark Font	Enable	L150
				Select Char	P3000
				0*	P6000
				(0-255)	P9000

Expanded Font	True Form Slew	Printer PI Line	Print Quality	Power on S-Mode	Error Report
Scalable*	Enable*	Enable*	Data Processing*	0-5	On*
Block	Disable	Disable	High		Debug Mode
Alt Block 1			Best		Fault
Alt Block 2					Off

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Define LF Code (Line Feed)

This parameter forces the printer to insert an automatic Carriage Return code into the data stream whenever a Line Feed code occurs. This can be used in most installations, but it is required if the host computer does not send Carriage Returns to the printer.

- **LF = LF.** Does not perform an automatic carriage return. The next print position will be the current print position of the next line.

- **LF = CR + LF.** Performs an automatic carriage return. The next print position will be print position 1 of the next line.

Autowrap

This parameter determines if text will wrap to the next line when the line of text exceeds the right margin.

- **Disable.** Truncates the text beyond the right margin until a CR or CR + LF is received.

- **Enable.** Automatically inserts a CR + LF after a full print line.

Select SFCC

You can specify which hex code (1-255) will be used as the Special Function Control Code (SFCC). The factory default setting is 126. The SFCC denotes that the following data is a PGL command.

PI Slew Range

You can specify how many lines the paper will feed.

- **15.** A paper slew of 1-15 will move 1-15 lines. A paper slew of 0 will move 1 line.

- **16.** A paper slew of 0-15 will move 1-16 lines.

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Chapter

CR Edit

This parameter determines if a carriage return will be followed by a line feed.

- **Disable**. The printer ignores all carriage returns that are not followed by line feeds.

- **Enable**. The printer processes all carriage returns, even for those that are not followed by line feeds.

Select Font

Select Font specifies which language is currently selected for use with the PGL. Refer to "IGP/PGL Character Set Menu" on page 106 for available selections.

Slash 0

This parameter allows you to print the numeral "0" with or without the slash. This option applies to all character sets except OCR A and OCR B.

- **Disable**. Zero is printed without a slash.

- **Enable**. Zero is printed with a slash.

Select LPI

This is the number of lines to be printed per inch. For example, at 6 lpi there is 1/6 inch from the top of one print line to the top of the next print line.

Auto Uppercase

This parameter enables the printer to print text in all uppercase when using the ALPHA command.

- **Disable**. The printer will print text in upper and lowercase.

- **Enable**. The printer will print text in uppercase only.

Skip Command Prefix

This parameter determines if the printer will print any data before a PGL command is received.

- **Enable**. The printer ignores all data on the current line before an IGP command.

- **Disable**. The printer will print all data on the current line before an IGP command.

Power On IGP/PGL

You can set the IGP feature so that it is enabled or disabled when the printer is powered on.

- **Enable**. The PGL is enabled when the printer is powered on. (The PGL feature is initialized in the Normal mode.)

- **Disable**. The PGL is disabled when the printer is powered on. (The PGL feature is initialized to the Quiet mode.)

Extended Execute Copy

- **Disable**. Dynamic data and overlay data are not allowed if the optional Form Count parameter (number of forms to print) is specified as part of the Execute command. (This setting is IGP-100 compatible.)

- **Enable**. Only dynamic data is allowed within a form in which the Form Count parameter is specified in the Execute command. In this case, the exact same form (with identical dynamic data, etc.) is printed for whatever the Form Count is. However, incremental data is not incremented since the page that is printing is exactly the same. Also, each form is printed on a separate page.

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Barcode Options

The following sub-options help define specific options regarding barcode printing.

UPC Descenders

This parameter allows you to print barcode descenders when human readable data is not present in the UPC/EAN barcodes.

- **Always**. UPC/EAN barcodes are printed with descenders, even if there is no human readable data.

- **Never**. UPC/EAN barcodes are printed without descenders if there is no human readable data.

- **Only with PDF**. UPC/EAN barcodes are printed with descenders only when the PDF command is present.

Optimized Ratio

This option selects different barcode ratios for certain barcodes including Code 39 and Interleaved 2 of 5. It is included for compatibility with the IGP-X00 printers.

- **Disable**. Use standard barcode ratios.

- **Enable**. Select the alternate barcode ratios.

Interleaved 2/5 Selection

This option is added to be compatible with a special IGP-X00 customization. Usually, if Interleaved 2/5 barcodes have an odd number of digits, a leading zero is inserted in front of the data. However, this special IGP-X00 customization gives you the option of adding a space character at the end of the barcode instead.

- **Leading Zero**. A leading zero is inserted in front of the data.

- **Trailing Space**. A space is inserted at the end of the data instead of a leading zero.

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- **X2 DPD**. When selected, an I-2/5 barcode with a X2 magnification will use the specially configured ratios 3:3:6:5 rather than 3:6:9:12 for compatibility issues.

- **Modulo 7 CD**. The I-2/5 barcode uses a modulo 7 check digit instead of the default modulo 10 check digit.

AI 00 Spaces

This option is designated for EAN/UCC-128 barcodes whose application identifier (AI) is 00.

- **Disable**. The printable data field is printed with the AI enclosed in parentheses. This is the standard EAN/UCC-128 format.

- **Enable**. The printable data field is printed with the UCC fields separated by spaces. This option is IGP-X00 compatible.

Select SO Char.

Allows you to specify a decimal code from 0 through 255 to be used in place of SO (Shift Out) as the control code which allows access for the alternate set of control function characters. See the description of the Code 128 barcodes in the *IGP/PGL Programmer's Reference Manual* for details.

Host Form Length

Determines whether the form length specified in the CREATE command changes the form length designated in the LP+ menu (see "LinePrinter Plus Emulation" on page 147) when the form is printed by the EXECUTE command.

- **Disable**. The LP+ form length is unaffected by the form being printed.

- **Enable**. The LP+ form length changes to match the length of the PGL form being printed.

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Compressed CPI

This parameter allows you to choose a compressed character (60% shorter) for 17 or 20 CPI instead of the normal height character.

- **Disable**. The PGL does not use compressed 17 or 20 CPI font.
- **Light Font**. Uses the standard compressed 17 or 20 CPI font.
- **Dark Font**. Uses a darker compressed 17 or 20 CPI font compatible with the IGP-X00 printers.

Ignore Character

Ignore Mode

This parameter instructs the PGL to ignore the character selected under the Select Character menu.

- **Disable**. The PGL does not ignore any characters.
- **Enable**. The PGL ignores the characters specified in the Select Character menu.

Select Character

Instructs the PGL which decimal character (0-255) to ignore from the host.

Compatibility Mode

This option instructs the PGL to behave similar to older versions of the IGP with respect to certain commands.

All new users with new applications should select the "None" option. Selecting this mode insures the printer will behave as described in this manual.

When replacing an older product operating with an existing application, especially those using the PMODE and SMODE commands, a compatibility mode may need to be selected. In this case, select the printer model number option that most closely matches the printer being replaced.

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Expanded Font

This option defines the type of expanded characters the PGL will select.

- **Scalable**. These expanded characters have rounded edges.

- **Block**. These are block characters compatible with the IGP-X00 printers.

- **Alt Block 1 / Alt Block 2**. Reserved block sets used only for compatibility purposes.

True Form Slew

This option is related to slewing within forms when using the PMODE command. Customers with new applications are advised to keep this option enabled.

- **Enable**. Form length is accurate according to the form length parameter in the CREATE command.

- **Disable**. Form length is IGP-X00 compatible when using PMODE.

Printer PI Line

This option enables the IGP to send PI instructions to the printer to slew the form.

- **Enable**. Send the PI instructions to the printer (LinePrinter Plus) during form slew. This is IGP-X00 compatible.

- **Disable**. Do not send PI instructions to the printer. LFs are sent instead.

Print Quality

- **High**. The emulation prints at 120 x 72 dpi, but all alphanumerics and barcodes are automatically printed in dark mode.

- **Best**. The emulation prints at 120 x 144 dpi and dark mode, which produces a higher resolution, better looking print image.

- **Data Processing**. The emulation prints at 120 x 72 dpi and lets you choose between normal alphanumerics and barcodes and dark mode alphanumerics and barcodes. This mode should be set if the highest speed is desired.

Power On S-Mode

This option instructs the PGL to behave similar to older versions of the IGP with respect to certain commands.

All new users with new applications should select "0", the default option. Selecting this mode insures the printer will behave as described in this manual.

Power On S-Mode sets the printer in an SMODE compatibility state at power-up. The default is 0 (disabled, no power-on mode). To use this feature, select a mode from 1 through 5, which puts IGP/PGL in an SMODE state according to the compatibility mode set. If the compatibility mode set is None, then MVP is assumed by default.

For more information, see the "Scaling" section of the *IGP/PGL Programmer's Reference Manual.*

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Error Report

Sets the error reporting capability for IGP/PGL forms.

- **On**. Full error boundary checking reported. Any element which falls off the current page is reported as an error.

- **Debug Mode**. The printer is put in debug mode whenever a form is defined in Create Form Mode. Each line of the Create Form is printed along with an error if one occurred. This is the same functionality as if there were a slash (/) entered before the Create Form Name.

- **Fault**. When an error occurs, the error is printed, and the message "IGP/PGL ERROR" appears on the printer front panel. The printer then stops printing and goes offline. The error must be cleared before the printer can resume normal operation.

- **Off**. No form boundary checking. Graphic elements appear clipped if they are beyond the page boundaries.

IGP/PGL Character Set Menu

* = Factory Default

Select Font
(see page 95)

Standard Sets*	Arabic Sets	Cyrillic Sets	European Sets	Greek Sets
0) ASCII*	ASMO 449*	Code Page 866*	Latin 2 8859-2*	DEC 256 Greek*
1) German	ASMO 449+	Cyrillic CP 437	Latin 2 852	ELOT 928 Greek
2) Swedish	ASMO 708	Cyrillic 113	Mazovia	Greek 3
3) Danish	ASMO 708+	Cyrillic 8859-5	Kamenicky	ABY Greek
4) Norwegian	MS DOS CP710	ISO 915	Roman 8	ABG Greek
5) Finnish	MS DOS CP720	Code Page 855	PC-437 Slavic	ELOT 927 Greek
6) English	Sakr CP 714	7-bit Cyrillic	Slavic 1250	Greek 851
7) Dutch	Aptec CP715	Ukrainian	Code Page 865	Greek 437
8) French	CP 786	Bulgarian	Code Page 860	Greek 8859-7
9) Spanish	Arabic CP 864		Latin 1 8859-1	
10) Italian	Arabic CP 1046		Latin 5 8859-9	
11) Turkish	Arabic Lam 1		Latin 9 8859-15	
12-23) Reserved	Arabic Lam 2		Polish POL1	
24-31) User Defined				
Code Page 437				
Code Page 850				

Hebrew Sets	Turkish Sets	Misc. Sets
Hebrew Old*	Data Gen. Turkish*	Block-set 10 cpi*
Hebrew New	DEC Turkish	Italics Set
Hebrew DEC	IBM Turkish	Scanblock 10 cpi
Latin-1 Hebrew	Siemens Turkish	
	PTT Turkish	
	IBC Turkish	
	Bull Turkish	
	AS400 Turkish	
	Unisys Turkish	
	NCR Turkish	
	PST Turkish	
	UNIS-1 Turkish	
	Code Page 853	
	INFO Turkish	

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IGP/VGL Emulation

Code V Graphics language (VGL) is an Intelligent Graphics Printing (IGP) software emulation designed for your line matrix printer. The IGP Code V emulation of the QMS$^{®}$ Code V Version II programming language produces on-line forms, barcodes, and alphanumeric text-generation. The graphics processing features are detailed below.

Features

On-Line Form and Label Generation makes it easy to create forms or labels with the "preprinted" look for each application. VGL programs control all graphics functions, dramatically reducing host computer programming and processing time. Graphics capabilities include boxes, vertical and horizontal, solid and dashed lines with a variety of thickness, logos, and special alphanumeric print features.

Variable Barcodes allow the barcode for your application to print with standard or user-defined ratios in vertical or horizontal orientations. Available barcodes are: Codabar, Code 39, Code 93, Code 128 with Subsets A, B, and C, and Code EAN/UCC 128, EAN 8, EAN 13, Interleaved 2 of 5, MSI, UPC-A, UPC-E, POSTNET, PostBar, Royal Mail, and UPC Shipping. POSTNET is available only in the horizontal direction. A dark print mode is included for darker, high-contrast barcodes. The IBARC barcode command prints barcodes in four orientations: horizontal, rotated 90, rotated 180 or rotated 270 degrees.

Expanded and Compressed Print draws attention where needed. Alphanumeric height and width are controlled independently for a tremendous range of character sizes up to 9.9 inches wide and tall. Several compressed print sizes are available: 12, 13.33, 15, 17.65, and 20 cpi (characters per inch), permitting up to 170 columns in an 8.5 inch printed area (20 cpi).

Rotated Alphanumerics permit new concepts in form design. Normal, expanded, and compressed character strings can be rotated 90 degrees clockwise, counterclockwise, or printed upside down.

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Logos are easily created using alphanumeric commands and a variety of print and shading features, providing a "customized" appearance for forms, reports, and labels. The registered trademark, copyright, TUV®, GS-Mark, UL®, and CSA® symbols are provided as standard designs on the VGL, and you can also define custom symbols.

Reverse and Shaded Print permit highlighting and contrasting by printing white characters on a dark background or white characters on a gray, shaded background. Various levels or patterns of gray shading and reverse printing may combine with the many other print features to create distinctive designs.

Automatic Increment/Decrement Capability allows batch form processing. Individual alphabetic, numeric, and barcode data fields can be identified and automatically incremented or decremented by any amount, beginning from a specified reference point.

Standard Character Sets provide you with many different character sets. Based on the Multinational Character Set, you may create your own character sets using characters defined and stored in flash memory.
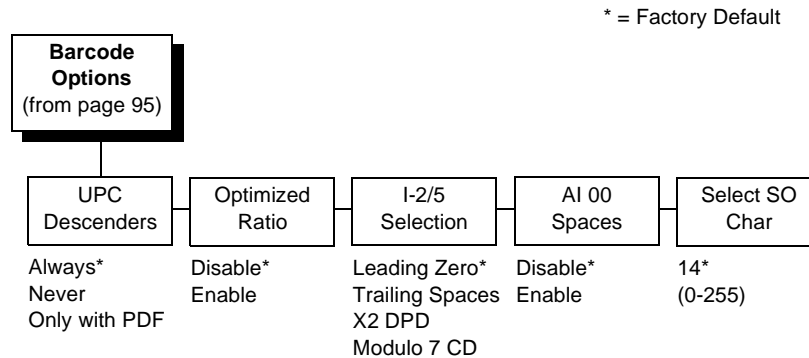
Configuring The Emulation With The Control Panel

You can select VGL default parameters directly from the control panel, or by control codes as explained in the *IGP/VGL Programmer's Reference Manual*. The VGL parameters are described on the following pages. Parameters marked with an asterisk (*) indicate the default value. The printer must be offline to enter the configuration structure.

Pressing an invalid key to enter a parameter value may move you to another level in the configuration or exit the configuration menu completely. Configure the IGP/VGL according to your specific requirements.

IMPORTANT   **BEFORE you reconfigure the IGP/VGL, print a configuration sheet to see all of the current settings.**
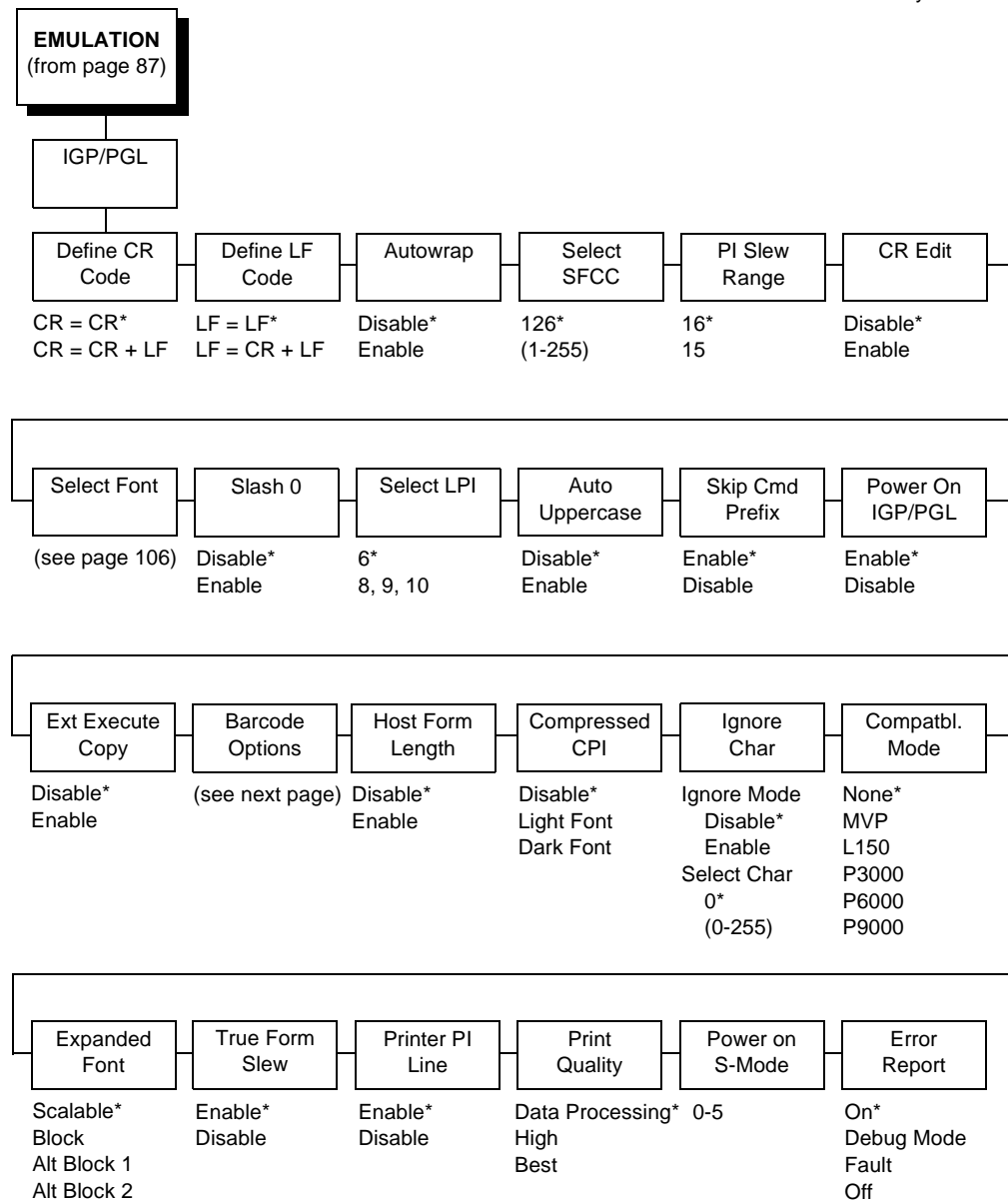
Submenu

* = Factory Default

EMULATION
(from page 87)

IGP/VGL

SFCC & Pwrup	LPI	Graphics Options	Error Handling	Ignore/DB8 Setup

SFCC
  94* (17-255)
Power Up ^X
  Disable*/Enable
Power Up ^F
  Disable*/Enable
Power Up ^PY
  Disable*/Enable

6*
7, 8, 9, 10

(see next page)

Error Msgs
  Enable*/Disable
Error Markers
  Enable*/Disable
Offpage Errors
  Disable*/Enable
Barcode Errors
  Enable*/Disable

Ignore Chars
  Disable*
  Char 1
  Char 2
  Char 1 & 2
Ignore Ch#1
  0* (0-255)
Ignore Ch#2
  0* (0-255)
Data Bit 8
  Enable*/Disable

Font Set	PI Control	Prt To Emulate

(see page 121)

Printer PI
  Disable*/Enable
Host PI
  Disable*/Enable
Max PI 16
  Enable*/Disable

Disable*
MVP/MVP 150B
L150
P3040
P6000
P9000

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* = Factory Default

Graphics Options
(from page 109)

Slash 0	Ignore Dots	Append Rotated	Truncate Alpha	True Vert 1/10	Absorb After ^PY
Disable*	Disable*	Disable*	Enable*	Disable*	Absorb Motion*
Enable	Enable	Enable	Disable	Enable	Absorb All
					Disable

UPC Descenders	Rot. Char Size	Ignore Spaces	Midline PY	Print Quality	Expanded Font
Enable*	Adjusted*	Disable*	Disable*	Data Processing*	Scalable*
Disable	Not Adjusted	Enable	Enable	High	Block

LP+ Font	MSI Check Digit	I25 Selection	Width Limit	Absorb After ^PN	IGP 110 Compatbl.
Disable*	Print*	Leading Zero*	Disable*	Disable*	Disable*
Enable	Don't Print	Check Digit	Enable	Enable	Enable

Auto FF at ^PN
Disable*
Enable

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SFCC & Pwrup

This option has several suboptions which define the SFCC and power-up configuration used with VGL.

SFCC

This option selects the Special Function Control Code. The default value is the caret ^ (decimal 94). Valid values are 17 through 255. Throughout this manual, the caret is used as the SFCC. Run a configuration printout to determine the currently selected SFCC.

Power Up ^X

- **Disable**. The default.
- **Enable**. Selects the ignore mode as the power-up default, and selects the graphics mode ^PY as the power-up default. All characters are ignored until a ^A command is received.

Power Up ^F

- **Disable**. The default.
- **Enable**. Selects free format mode as the power-up default, and selects the graphics mode ^PY as the power-up default. Free format causes the VGL to ignore carriage returns, line feeds and all characters below 20 hex sent from the host.

Power Up ^PY

- **Disable**. The default.
- **Enable**. Selects the graphics mode ^PY as the power-up default.

LPI

The number of lines to be printed per inch. For example, at 6 lpi there is 1/6 inch from the top of one print line to the top of the next print line.

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Graphics Options

Following are several options which configure printing output.

Slash 0

This parameter allows you to print the numeral "0" with or without the slash. This option applies to all character sets except OCR-A and
OCR-B.

- **Disable**. Zero is printed without a slash.

- **Enable**. Zero is printed with a slash.

Ignore Dots

- **Disable**. The default.

- **Enable**. Causes the VGL to expect position values to be specified in only 1/10ths of an inch. If the dot position is also given, it is treated as text.

Append Rotated

- **Disable**. Logos and alphanumeric strings are treated as separate elements.

- **Enable**. Appends logos to an alphanumeric string rotated in a clockwise, counterclockwise, or inverted orientation.

Truncate Alpha

When enabled, this parameter prevents the printing of Error 48 (Element Off Page Error) if alphanumeric data, including spaces, extends beyond the right side of the form.

True Vert 1/10

- **Enable**. A vertical 1/10 inch parameter is used as 1/10 inch. Rounding occurs to the nearest 1/72 inch. This can cause vertical moves that have the same value to differ by $\pm$ 1/72 inch.

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- **Disable**. A vertical 1/10 of an inch parameter is used as 7/72 of an inch. The absolute move is slightly smaller than expected. For example, a one inch move would be 70/72 of an inch. Vertical moves that have the same value will be identical in length.

Absorb after ^PY

- **Absorb Motion**. The first paper motion following a ^PY command will be ignored.

- **Absorb All**. The system ignores all the data and terminator until a host generated motion terminator is detected.

- **Disable.** System terminators following a graphics command are sent to the printer and result in paper motion.

UPC Descenders

- **Enable**. UPC/EAN barcodes are printed with descenders, even if there is no human readable data.

- **Disable**. UPC/EAN barcodes are printed without descenders if there is no human readable data.

Rot. Char Size

- **Adjusted**. Rotated (clockwise/counterclockwise), expanded characters have a different size than an unrotated character with the same size parameters.

- **Not Adjusted**. Rotated, expanded characters will be the same size as unrotated characters with the same size parameters.

Ignore Spaces

- **Disable**. Trailing spaces are not deleted from alphanumeric elements in a graphics pass.

- **Enable**. Trailing spaces are deleted from alphanumeric elements in a graphics pass.

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Midline PY (includes ^PN)

- **Disable**. The Graphics mode Enable command, ^PY, must be the first three characters of a line.
- **Enable**. The ^PY or ^PN can occur anywhere in a line.

Print Quality

- **High**. ALPHA text and barcodes are printed in dark mode at 120 x 72 dpi.
- **Data Processing**. ALPHA text and barcodes are printed in normal mode at 120 x 72 dpi. This mode should be set if the highest speed is desired.

Expanded Font

- **Scalable**. These expanded characters have rounded edges.
- **Block**. These are block characters compatible with IGP-X10 printers.

LP+ Font

- **Disable**. The IGP/VGL uses its default half-dot font, which is slightly different from the standard bitmap font used by LP+ at 12, 13, 15 and 17 cpi.
- **Enable**. The IGP/VGL uses the same font as used by LP+ at all cpi.

MSI Check Digit

- **Print**. The check digit is appended at the end of the printable data field for MSI barcodes.
- **Don't Print**. The check digit for MSI barcodes does not print.

I25 Selection

- **Leading Zero**. When you enter an odd number of data in an Interleaved 2/5 barcode, a leading zero is automatically added to the printable data field.

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- **Check Digit**. When you enter an odd number of data in an Interleaved 2/5 barcode, a check digit is automatically added to the printable data field.

NOTE: If you use an Interleaved 2/5 barcode that automatically adds the check digit (type code k or l, IBARC type code INT2/5CD or INT2/5CDA), the check digit is added regardless of how this parameter is set.

Width Limit

When enabled, the system will limit the length and width for expanded characters to a limit shown in Table 3, which shows the maximum width allowed for a specific height in the range of 00 through 40 (0.0 through 4.0 inches).

Table 3. Width Limit Table

Height Param.	Max. Width Allowed	Height Param.	Max. Width Allowed
00	99	21	51
01	99	22	53
02	3	23	56
03	6	24	58
04	8	25	61
05	11	26	63
06	13	27	66
07	16	28	68
08	18	29	71
09	21	30	73
10	23	31	76
11	26	32	78
12	28	33	81
13	31	34	83
14	33	35	86
15	36	36	88
16	38	37	91
17	41	38	93
18	43	39	96
19	46	40	98
20	48		

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Absorb After ^PN

- **Disable**. All line terminators that follow the ^PN command are sent to the printer and processed.

- **Enable**. The first motion line terminator that follows the ^PN command is ignored.

IGP 110 Compatbl.

This option instructs the VGL to behave similar to the IGP-110 with respect to certain commands. All new users with new applications should select the "Disable" option. Selecting this mode insures the printer will behave as described in this manual.

- **Disable**. The IGP does not emulate the IGP-110 mode.

- **Enable**. The IGP emulates the IGP-110 version.

Auto FF at ^PN

- **Enable**. A form feed will be generated automatically to slew to the top of the next form when the ^PN command is encountered and when the current vertical position is not at Top of Form.

- **Disable**. A form feed will not be generated automatically when the ^PN command is encountered.

Error Handling

Following are several options which define how errors are reported.

Error msgs

- **Enable**. Command syntax is checked and error messages printed when command parameters are incorrect.

- **Disable**. Error checking and error messages are suppressed.

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Error markers

- **Enable**. Prints the following error markers for those elements that print beyond the page boundaries:

  >> for elements that begin off the right side of the page;
  << for elements that begin at the indicated position but end off the page;
  ♦ for elements where the starting position of the command contains an error other than an off-page error.

Offpage Errors

- **Disable**. Does not report errors for elements that start or end beyond the right edge of the page.

- **Enable**. Reports errors for elements that start or end beyond the right edge of the page.

Barcode Errors

- **Enable**. An error message will print when invalid barcode data is encountered.

- **Disable**. VGL will not print an error for illegal barcode data; the barcode will be skipped.

NOTE: When Barcode Errors is disabled, the VGL emulation will try to make the best use of invalid data by either truncating extra digits or adding zeros to the end of barcode data to meet minimum data length requirements for some barcodes. Not all errors will be corrected.

Ignore / DB8 Setup

Following are several options which define character filtering and data bit 8.

Ignore Chars

- **Disable**. Character filtering is not enabled.

- **Char 1**. Character 1 will be filtered. Select the option "Ignore ch#1" to specify character 1.

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- **Char 2**. Character 2 will be filtered. Select the option "Ignore ch#2" to specify character 2.

- **Char 1&2**. Characters 1 & 2 will be filtered. Select the options "Ignore ch#1" and "Ignore ch#2" to specify values for these characters.

Ignore ch#1

Specifies character 1 for the character filtering option. Valid decimal values are from 0 through 255.

Ignore ch#2

Specifies character 2 for the character filtering option. Valid decimal values are from 0 through 255.

Data Bit 8

- **Enable**. The PI line is not passed directly from host to printer; all 8 bits are used for data bits, and characters in the hex 80-FF range can be accessed.

- **Disable**. When the host PI line is enabled, data bit 8 internally indicates PI line status. To use the PI line, disable data bit 8, and enable the Host PI configuration option (under the PI Control option, below).

NOTE: Data bit 8 is interpreted as either data bit 8 or PI signal, but never both. When enabled as data bit 8, data bit 8 has priority over the PI signal, and all data above hex 7F is used to access character data and not to interpret PI line data.

Conversely, when data bit 8 is disabled and the PI signal is used, data bit 8 of the data is reserved for use as the PI function, and you cannot access characters in the hex 80-FF range. Therefore, to access characters in the hex 80-FF range, data bit 8 must be enabled.

Font Set

The Font Set specifies which language is currently selected for use with the VGL. Refer to "IGP/VGL Character Set Menu" on page 121 for available selections.

PI Control

Printer PI

- **Disable**. The ASCII emulation is configured with the PI line disabled.
- **Enable**. The ASCII emulation is configured with the PI line enabled.

Host PI

- **Disable**. The host does not send PI signals.
- **Enable**. The host sends PI signals. The Data Bit 8 configuration option must be disabled to transmit the PI line to the printer.

Max PI 16

- **Enable**. A paper slew of 0-15 will move 1-16 lines.
- **Disable**. A paper slew of 1-15 will move 1-15 lines. A paper slew of 0 will always move 1 line.

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Prt To Emulate

This option allows you to select an earlier model printer/IGP board combination to emulate. When a printer emulation is selected, the scaling command causes the printer to generate a graphic image in the same density as the printer emulation chosen. Five types of printers can be emulated: MVP or MVP 150B, L150, P3040, P6000, and P9000. Once a printer emulation is selected, it remains active until the printer is turned off or another printer emulation is selected. All new users with new applications should select the "Disable" option, which insures the printer behaves as described in this manual. The other compatibility modes are required to emulate the behaviors of older printers which may be inconsistent with the documented VGL functionality. Proper use of this feature requires the printer to be equipped with high resolution hammer bank tips (12 mil).

IGP/VGL Character Set Menu

* = Factory Default

```
Select Font
(see page 109)
```

Standard Sets*	Arabic Sets	Cyrillic Sets	European Sets	Greek Sets
0) ASCII*	ASMO 449*	Code Page 866*	Latin 2 8859-2*	DEC 256 Greek*
1) German	ASMO 449+	Cyrillic CP 437	Latin 2 852	ELOT 928 Greek
2) Swedish	ASMO 708	Cyrillic 113	Mazovia	Greek 3
3) Danish	ASMO 708+	Cyrillic 8859-5	Kamenicky	ABY Greek
4) Norwegian	MS DOS CP710	ISO 915	Roman 8	ABG Greek
5) Finnish	MS DOS CP720	Code Page 855	PC-437 Slavic	ELOT 927 Greek
6) English	Sakr CP 714	7-bit Cyrillic	Slavic 1250	Greek 851
7) Dutch	Aptec CP715	Ukrainian	Code Page 865	Greek 437
8) French	CP 786	Bulgarian	Code Page 860	Greek 8859-7
9) Spanish	Arabic CP 864		Latin 1 8859-1	
10) Italian	Arabic CP 1046		Latin 5 8859-9	
11) Turkish	Arabic Lam 1		Latin 9 8859-15	
Code Page 437	Arabic Lam 2		Polish POL1	
Code Page 850				

Hebrew Sets	Turkish Sets	Misc. Sets
Hebrew Old*	Data Gen. Turkish*	Block-set 10 cpi*
Hebrew New	DEC Turkish	Italics Set
Hebrew DEC	IBM Turkish	Scanblock 10 cpi
Latin-1 Hebrew	Siemens Turkish	
	PTT Turkish	
	IBC Turkish	
	Bull Turkish	
	AS400 Turkish	
	Unisys Turkish	
	NCR Turkish	
	PST Turkish	
	UNIS-1 Turkish	
	Code Page 853	
	INFO Turkish	

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EMULATION

The EMULATION menu allows you to select the emulation to be used with your printer. The Proprinter XL, Epson FX, P-Series, P-Series XQ, and Serial Matrix emulations are all part of LinePrinter Plus. You can configure options for the active emulation via the EMULATION menu. Emulation options are further described in their corresponding Programmer's Reference Manual.

Menu

* = Factory Default
[1]Optional Emulation

EMULATION (from page 87)

CTHI[1]	LinePrinter+	44/48XX-ANSI[1]	IGP/PGL[1]	IGP/VGL[1]	IPDS[1]
page 123	page 147	page 175	page 93	page 107	page 183

P-Series*	P-Series XQ	Serial Matrix	Proprinter XL	Epson FX
page 155	page 160	page 163	page 167	page 171

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Coax/Twinax Emulation

* = Factory Default

```
┌─────────────┐
│ EMULATION   │
│(from page 87)│
└─────────────┘
       │
┌─────────────┐
│    CTHI     │
└─────────────┘
       │
┌─────────────┐                    ┌─────────────┐
│  Standard*  │────────────────────│  Simp Prot  │
└─────────────┘                    │    Conv     │
                                   └─────────────┘
┌──────────┐ ┌──────────┐    ┌──────────┐ ┌──────────┐
│  Coax    │ │  Twinax  │    │ SPC Coax │ │SPC Twinax│
│  Params  │ │  Params  │    │  Params  │ │  Params  │
└──────────┘ └──────────┘    └──────────┘ └──────────┘
  page 125     page 135        page 141     page 144
```
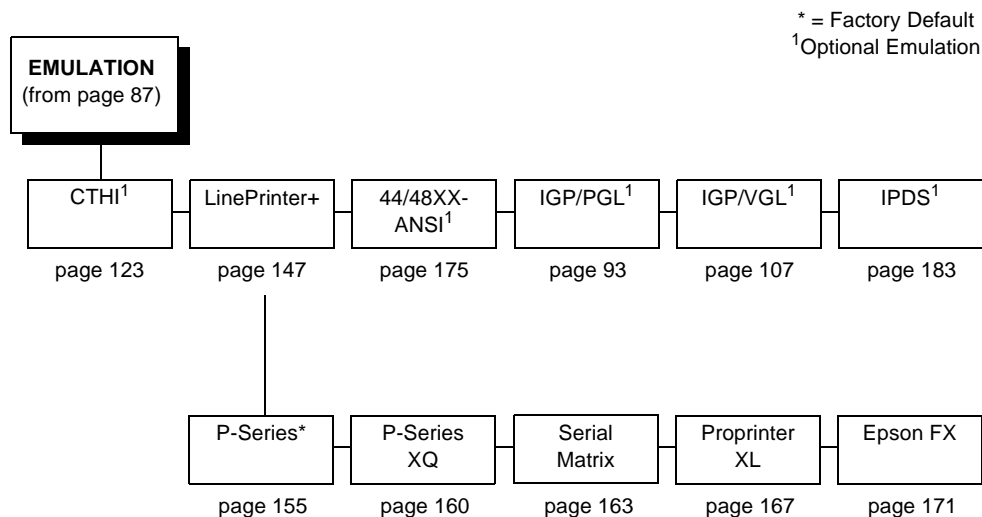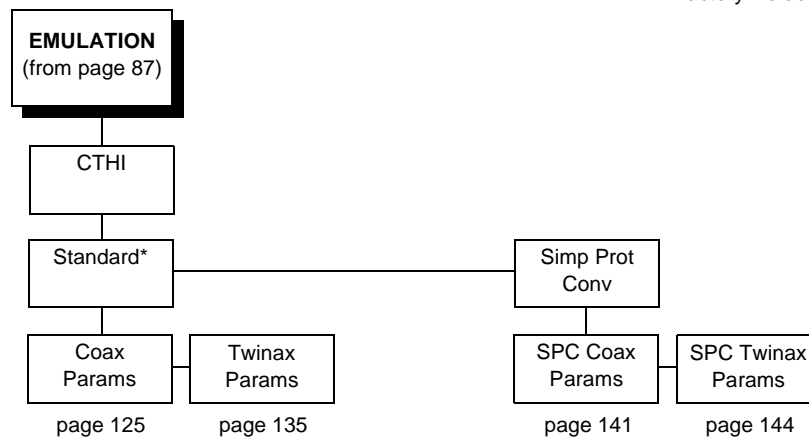
Standard C/T Interface

With a standard coax interface, the printer emulates the following
IBM coax printer models:

- 3287 Models 1 and 2

- 4234 Model 1

With a standard twinax interface, the printer emulates the following
IBM twinax printer models:

- 4234 Models 2 and 12

- 5225 Models 1, 2, 3, and 4

NOTE: The standard Coax/Twinax emulation selection will only be
available if Coax or Twinax is selected from the HOST
INTERFACE menu. See page 195.

For more information, consult the *Coax/Twinax Programmer's
Reference Manual*.

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Simple Protocol Converter

The Simple Protocol Converter (SPC) option allows those who use third party add-on coax or twinax protocol converters to produce the same output on a line matrix printer with the Coax/Twinax (CTHI) capability as done using a non-CT printer with the third party converter interfaces.

The SPC replaces the third party add-on protocol converters attached to older line matrix printers.

The SPC gives the printer the operational ability to connect to any PC, or network system supporting parallel or serial interfaces, and to three different IBM host systems:

- System 3x
- AS/400$^{®}$
- 3270 Mainframes

The SPC will support the following third party models for Twinax: MODE 219, MODE IBM, and MODE PROLINE.

The printer emulations supported by the SPC are Twinax 5225 and Coax 3287. The SPC also provides a range of interfaces available in your line matrix printer: Centronics, Dataproducts, serial, coax, and twinax. Also supported are Epson, Proprinter, P-Series, Serial Matrix, IGP/VGL, and IGP/PGL emulations.

The SPC has the ability to handle multiple print jobs concurrently through coax/twinax and parallel and serial interfaces. This is accomplished through the Auto Switching feature (see page 196). Because of hardware restrictions, coax and twinax cannot be selected together.

For more information, consult the *Coax/Twinax Programmer's Reference Manual for the Simple Protocol Converter Option*.

Coax Emulation Menu

* = Factory Default

```
        CTHI
   (from page 123)

      Standard*

        Coax
       Params
```

Char Set Select	Translation Tbl	Active Char Set	Prt Partial Line	PA1	PA2
(see next page)		Secondary Set* Primary Set	Enable* Disable		

Buffer Reprint	Device ID	Early Print Cmpl	Cancel IGP/DCU	PTX Transparent	Change Case

	4234*
	3287
		Disable*
		Enable
			Enable*
			Disable
				Lead-in Chars
				  Set 1 <%>*
				  Set 2 ¬¬$
				  Set 3 _%_
				  User Defined
				User Defined
				  Start Code 1
				    5F* (40-FF)
				  Start Code 2
				    5F* (40-FF)
				  Stop Code
				    5B* (40-FF)
				Alt. Set 80-9F
				  Printable*
				  Control Code
					Dual Case*
					Mono Case

Set Text Orientation	Image Buf Size	Intervention Req	Compatibility Options	Translate Table	Host Override
Control By Host* Left to Right Right to Left	4K 2K	Send to Host* Do Not Send	(see next page)	Default* Downloaded	Disable* Enable

Format Control	Max. Print Width	Buffer Print
Disable* Enable	13.2 inches* Print Width	Disable* Enable

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Chapter 4 **Coax/Twinax Emulation**

* = Factory Default

Char Set Select
(from page 125)

Primary Sets | Secondary Sets

Primary Sets			Secondary Sets	
0037 English US*	0289 Span. Alt	0890 Yugos. Old	English US*	Portuguese
0037 Eng Nether	0500 Swiss Bil	1097 Farsi	English UK	Portug. Alt
0285 English UK	0500 Belg. New	1025 Cyrillic	Austrian/German	Spanish
0273 Austr/Germ	0803 Hebrew Old	0905 Turk. Old	German Alt	Spanish Alt
0274 Belg. Old	0424 Hebrew	0256 Intern. 1	Belgian	Spanish Speak.
0275 Brazilian	0892 OCR A	0924 Euro Latin 9	Brazilian	Swiss French/German
0260 Canad Fren	0893 OCR B	1140 Euro Eng.	Canadian French	Old Hebrew
0277 Danish	0420 Arabic	1141 Euro Aust.	Danish/Norwegian	Hebrew
0287 Danish Alt	0880 Cyril. Old	1142 Euro Dan.	Danish Alt	Farsi/Latin
0278 Finnish	0423 Greek Old	1143 Euro Finn.	Finnish/Swedish	Greek Old
0288 Finnish Alt	0875 Greek New	1144 Euro Ital.	Finnish Alt	Greek New
0297 French	0871 Icelandic	1145 Euro Span.	French	Arabic
0500 Internat. 5	0290 Japan Kata	1146 Euro Eng.	International	Turkish
0280 Italian	0870 Latin 2	1147 Euro Fren.	Italian	Turkish Old
0281 Japan. Eng	0838 Thai	1148 Euro Swiss	Japanese Eng.	Latin2/ROECE
0282 Portuguese	1026 Turkish	1149 Euro Ice.	Japanese Katak.	Yugoslavian
0284 Span Speak				

Compatibility Options
(from page 125)

CR at MPP+1	NL at MPP+1	Position Aft FF (4234 only)	Last Char=FF	Null Suppression	FF Validity
On*	On*	Off*	On*	Off*	Off*
Off	Off	On	Off	On	On

Auto Skip at End	FF After Job	CR, EM & NL (3287 only)
Off*	Off*	On*
On	On	Off

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Char Set Select

Specifies the print language used by the printer. Character sets are shown in detail in the *Character Sets Reference Manual*.

Translation Table

Prints out SCS and DSC/DSE tables of the coax interface's current character set. This operation is valid only when the coax interface is selected as the current interface (see "HOST INTERFACE" on page 195).

Active Char Set

Selects which group of character sets (Primary or Secondary) will be active.

Prt Partial Line

- **Enable**. Forces the printer to print if a partial line is in the printer (i.e., line not ending with a LF).

- **Disable**. The last partial line of data will not be printed.

PA1

PA1 is only valid when the printer is in the offline state and the coax Systems Network Architecture Character String (SCS) data stream is active. This function displays the "PA1 ENABLED" message when the ENTER key is pressed and sends a special operator request to the host when the printer is put back in online mode. Refer to the *Coax/Twinax Programmer's Reference Manual* for more information about SCS.

NOTE: Selecting the PA1 menu item again ("PA1 DISABLED" appears on the operator panel) or selecting the PA2 menu item will reset the pending PA1 function.

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PA2

PA2 is only valid when the printer is in the offline state and the coax SCS data stream is active. This function displays the "PA2 ENABLED" message when the ENTER key is pressed and sends a special operator request to the host when the printer is put back in online mode.

NOTE: Selecting the PA2 menu item again ("PA2 DISABLED" appears on the operator panel) or selecting the PA1 menu item will reset the pending PA2 function.

Buffer Reprint

This option is valid only when the printer is printing in SCS mode. When the ENTER key is pressed, "Buffer Reprint Enabled" is displayed and an Intervention Required status is sent to the host. Pressing ENTER again cancels the Buffer Reprint function and "Buffer Reprint Disabled" is displayed.

Device ID

This parameter defines the printer emulation, as follows:

- 4234

- 3287

After the emulation has been changed, a POR status is sent to the host.

Early Print Complete

Allows the printer to send print (order) complete status to the host before the printer is actually done printing all data. This option is valid only when the printer is in DSC/DSE mode.

- **Disable**. The printer will suppress the Early Print Complete response until all printing is complete.

- **Enable**. The printer will send an acknowledgment to the host when it is able to accept more data.

NOTE: When Early Print Complete is enabled and an error occurs, you may lose data.

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Cancel IGP/DCU

- **Enable**. Cancels all buffers when a job is put on hold from the host or when the CANCEL key is pressed.

- **Disable**. Does not cancel any internal buffer in the printer when a job is put on hold from the host, or when the CANCEL key is pressed.

PTX Transparent Control

Lead-in Chars

You can enable additional printer features which are not accessible through standard coax emulations. To access these features, send text commands in the data stream. The commands must have a start and end code. Four sets are available:

- **Set 1**. start code: <%
  stop code: >

- **Set 2**. start code:¬¬
  stop code: $

- **Set 3**. start code: _%
  stop code: _

- **Set 4**. User Defined

User Defined

Select a hex value for the first and second start codes and the stop code for the User Defined option.

Alt. Set 80-9F

- **Printable**. Prints data in the range of hex 80 through hex 9F.

- **Control Code**. Interprets data in the range of hex 80 through hex 9F as a control code.

Change Case

Specifies the font as Mono or Dual case. This option is available only in non-SCS mode. The host will be notified of the change when the printer is placed ONLINE. Mono Case prints the same as Dual Case if the character set is one of the following "right to left" sets: Katak., Hebrew, Old Hebrew, and Farsi.

SCS (System Network Architecture Character String) Mode is controlled by the host computer.

Set Text Orientation

Specifies the direction in which characters are printed on the page. This allows the printer to print languages which are printed right to left instead of left to right.

- **Control By Host**. Allows printers configured as a 4234 to use the "Set Text Orientation" command from the host.

- **Left To Right**.

- **Right To Left**. When a right to left language is selected, the host will be notified of print direction changes when the printer is placed ONLINE.

Image Buf Size

Allows you to select 4K or 2K as the image buffer size. This option is only valid when the printer emulates the 3287. For the 4234 emulation, the buffer size is fixed at 4K. A POR status is sent to the host when the printer is placed ONLINE.

Intervention Req

- **Send to Host**. The printer sends a signal to the host computer when a printer fault or hold mode time-out occurs.

- **Do Not Send**. No signal will be sent to the host computer.

Compatibility Options

The Compatibility Options allow you to select special printer functions in the non-SCS mode, based on the capabilities of the printer emulated.

CR at MPP+1

MPP is Maximum Print Position, which is also known as line length. This option controls a carriage return at the end of a print line and at MPP+1.

- **On**. Produces a carriage return to the first print position of the next line.

- **Off**. Produces a carriage return to the first print position of the current line.

NL at MPP+1

Controls how many lines are skipped when the carriage returns to a new line.

- **On**. Moves to the first print position two lines down from the current position.

- **Off**. Moves to the first print position of the next print line.

Position Aft FF (4234 only)

Allows you to select the location of the print position after a form feed command is sent.

- **Off**. Sets the printer to print at print position 2 of the first print line on the next form.

- **On**. Sets the printer to print at print position 1 of the first print line on the next form.

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Last Char = FF

Determines the print line position when a form feed command is the last code encountered in the print buffer.

- **On**. Moves to the first print position on the second line of the next form.
- **Off**. Moves to the first print position on the first line of the next form.

NOTE: This option is ignored if Auto Skip At End is on.

If configured as a 3287, and a form feed occurs in the middle of a print buffer, the printer defaults to the first print position on the second line of the next form, regardless of the setting of this option.

Null Suppression

- **Off**. Ignores nulls. The print position does not move.
- **On**. Treats nulls as blank spaces.

FF Validity

Determines if the position of a form feed command affects its execution.

- **Off**. Performs a form feed only if it occurs at the first print position in a line or at Maximum Print Position +1. A form feed command at any other position is recognized as a space.
- **On**. Allows the printer to perform a form feed command anywhere in the data stream.

Auto Skip at End

Specifies whether to perform an automatic form feed at the end of a print buffer. If form feed is the last character in the print order, the form feed function is supplied by the Auto Skip At End option.

- **Off**. Sets the printer to print at print position 1 of the next line.
- **On**. Sets the printer to print at print position 1 of the first line of the next form.

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FF After Job

Determines the print position after an operator-initiated local copy (print screen function).

- **Off**. Performs an automatic new line command after completing a print buffer (unless a new line, form feed or carriage return command was the last one executed). The printer is set to print at print position 1 of the next line.

- **On**. Performs an automatic form feed command unless a form feed was the last one executed. The printer is set to print at print position 1 of the first line on the next form.

CR, EM, and NL (3287 only)

CR (Carriage Return), EM (Error Message), and NL (New Line) specify that the printer treat the CR, EM, and NL control codes either as spaces or as control codes.

- **On**. Treats the CR, EM and NL commands as control codes.

- **Off**. Treats the CR, EM and NL commands as spaces.

Translate Table

Defines which translate table to use for printing.

- **Default**. Translates data by using the default table of the current character set.

- **Downloaded**. Translates data from EBCDIC to internal code by using the downloaded translate table.

Host Override

Determines whether the printer accepts certain commands sent by the host, or continues to use the current operator panel settings.

- **Disable**. Allows these host commands to override operator panel settings: line length, forms length, lines per inch (LPI), characters per inch (CPI), print quality, and text orientation. Note the information appearing on the message display may not match the data stream setting. No values will change upon initial selection of the disable option.

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- **Enable**. The operator panel settings override the host commands.

Format Control

Enables the printer to reflect the same spacing as CTPC model printers after absolute and relative move commands are executed.

- **Disable**. Reflects distance, generated by the IGP/VGL feature, IGP/PGL feature, and Hex Transparent control code sequence, in the new position (after horizontal and vertical tabs are executed).

- **Enable**. Does not reflect distance, generated by the IGP/VGL feature, IGP/PGL feature, and Hex Transparent control code sequence, in the new position (after horizontal and vertical tabs are executed).

Max. Print Width

Set the maximum print width at either 13.2 inches or the maximum width of the printer.

Buffer Print

- **Disable**. The printer will print normally.

- **Enable**. The printer prints the EBCDIC data and control codes received from the host as hex values. Refer to page 189 for information on how to obtain a hex code printout.

NOTE: Use of this parameter may alter print attributes set by the host computer. A power cycle may be required after changing Buffer Print from enable to disable.

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Twinax Emulation Menu

* = Factory Default

CTHI
(from page 123)

Standard*

Twinax
Params

Char Set Select	Translation Tbl	Active Char Set	Prt Partial Line	Device ID	Device Address
(see next page)		Secondary Set* Primary Set	Enable* Disable	IPDS* 4234-2 5225	1* (0-6)

5225 World Trade	Cancel IGP/DCU	PTX Transparent	Graphic Chek Err	Graphic Chek Code	LAC Option

Standard Char*
Extended Char
	Enable*
	Disable
		Lead-in Chars
		  Set 1 <%>*
		  Set 2 ¬¬$
		  Set 3 _%_
		  User Defined
		User Defined
		  Start Code 1
		    5F* (40-FF)
		  Start Code 2
		    5F* (40-FF)
		  Stop Code
		    5B* (40-FF)
		Alt. Set 80-9F
		  Printable*
		  Control Code
			Enable*
			Disable
				60*
				(40-FE hex)
					Enable*
					Disable

Set Text Orientn	Host Override	Format Control	Max. Print Width	Buffer Print
Control By Host* Left to Right Right to Left	Disable* Enable	Disable* Enable	13.2 inches* Print Width	Disable* Enable

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* = Factory Default

Char Set Select
(from page 135)

Primary Sets | Secondary Sets

Primary Sets:

0037 English US*	0871 Icelandic
0037 Eng Nether	0290 Japan Kata
0500 Swiss Bil	0870 Latin 2
0500 Belg. New	0838 Thai
0273 Austr/Germ	1026 Turkish
0274 Belg. Old	0890 Yugos. Old
0275 Brazilian	1097 Farsi
0260 Canad Fren	1025 Cyrillic
0277 Danish	0256 Intern. 1
0278 Finnish	1112 Balt Mult
0297 French	0924 Euro Latin 9
0280 Italian	1122 Estonian
0281 Japan. Eng	1140 Euro Eng.
0282 Portuguese	1141 Euro Aust.
0284 Span Speak	1142 Euro Dan.
0285 English UK	1143 Euro Finn.
0892 OCR A	1144 Euro Ital.
0893 OCR B	1145 Euro Span.
0424 Hebrew	1146 Euro Eng.
0803 Hebrew Old	1147 Euro Fren.
0420 Arabic	1148 Euro Swiss
0880 Cyril. Old	1149 Euro Ice.
0423 Greek Old	0500 Internat 5
0875 Greek New	

Secondary Sets:

English US*	Spanish Speak.
Austrian/German	English UK
Belgian	Old Hebrew
Brazilian	Hebrew
Canadian French	Farsi/Latin
Danish/Norweg.	Greek Old
Finnish/Swedish	Greek New
French	Arabic
Italian	Turkish
Japanese Eng.	Latin2/ROECE
Japanese Katak.	Yugoslavian
Portuguese	Multinational
Spanish	

Char Set Select

Specifies the print language used by the printer. Character sets are shown in detail in the *Character Sets Reference Manual*.

Translation Table

Prints out a table of the twinax interface's current character set. This operation is valid only when the twinax interface is the current interface (see "HOST INTERFACE" on page 195).

Active Char Set

This option selects which group of character sets (Primary or Secondary) will be active.

Prt Partial Line

- **Enable**. Forces the printer to print a partial line (i.e., line not ending with a LF) before moving to the top of form on the next page.

- **Disable**. The last partial line of data will not be printed.

Device ID

This parameter defines the printer emulation as IPDS (the default), 4234-2 or 5225. After the emulation has been changed, a POR status is sent to the host.

Device Address

Allows you to set the device address from 0 through 6. The host directs data and commands on the twinax line to a specific device based on its unique device address. After the address has been changed, a POR status is sent to the host.

5225 World Trade

The 5225 emulation has a standard multinational character set that serves as a base and 14 extended world trade character set assortments.

Cancel IGP/DCU

- **Enable**. Cancels all buffers when a job is put on hold from the host, or the CANCEL key is pressed.

- **Disable**. Does not cancel any internal buffer in the printer when a job is put on hold from the host, or the CANCEL key is pressed.

PTX Transparent

Lead-in Char.

You can enable additional features that are not available in standard Twinax emulations. To access these features, send text commands in the data stream. The commands must have a start and end code. Three sets (each containing a start and end code) are available:

- **Set 1**. start code: <%
        stop code: >

- **Set 2**. start code: ¬¬
        stop code: $

- **Set 3**. start code: _%
        stop code: _

- **Set 4**. User Defined

User Defined

Select a hex value for the first and second start codes and the stop code for the User Defined option.

Alt. Set 80-9F

- **Printable**. Prints data in the range of hex 80 through hex 9F.

- **Control Code**. Interprets data in the range of hex 80 through hex 9F as a control code.

Graphic Chek Err

Allows overriding of the host setting for the SGEA (Set Graphic Error Action) command. For more information about the SGEA command, refer to the *Coax/Twinax Programmer's Reference Manual*.

- **Enable**. The host setting for the SGEA used by the printer. If the SGEA command is requested to stop on graphic errors, the printer will stop when a graphic error is detected.

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- **Disable**. Ignores the SGEA command from the host. The printer does not stop when an error is detected; instead, it substitutes the character selected in the Graphic Chek Code parameter.

Graphic Chek Code

Specifies the replacement character to print in place of any unprintable character that is received from the host. Choose a hex character from 40 through FE. The character becomes the printer default when:

- The printer is powered off and then powered on.
- An SGEA command specifies to use the operator panel default.
- The Graphic Chek Err parameter is disabled.

LAC Option

Allows the host system to load alternate character images into the printer. This may be used for designing graphics, barcodes, and charts, or for printing in foreign languages.

- **Enable**. Prints the LAC character as defined.
- **Disable**. Ignores the LAC definition from the host and prints from the currently selected character set.

Set Text Orientn

Specifies the direction in which characters are printed on the page. This allows the printer to print languages that are printed right to left instead of left to right.

Host Override

Determines whether the printer accepts certain commands sent by the host, or continues to use the current operator panel settings.

- **Disable**. Allows these host commands to override operator panel settings: line length, forms length, lines per inch (LPI), characters per inch (CPI), print quality, and text orientation. Note the information appearing on the message display may

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not match the data stream setting. No values will change upon initial selection of the disable option.

- **Enable**. The operator panel settings override the host commands.

NOTE: Host margin and tab settings will take precedence, whether or not Host Override is enabled.

Format Control

Enables the printer to reflect the same spacing as CTPC model printers after absolute and relative move commands are executed.

- **Disable**. Reflects distance, generated by the IGP/VGL feature, IGP/PGL feature, and Hex Transparent control code sequence, in the new position (after absolute and relative move commands are executed).

- **Enable**. Does not reflect distance, generated by the IGP/VGL feature, IGP/PGL feature, and Hex Transparent control code sequence, in the new position (after absolute and relative move commands are executed).

Max. Print Width

Set the maximum print width at either 13.2 inches or the maximum width of the printer.

Buffer Print

- **Disable**. The printer will print normally.

- **Enable**. The printer prints the EBCDIC data and control codes received from the host as hex values. Refer to page 189 for information on how to obtain a hex code printout.

NOTE: Use of this parameter may alter print attributes set by the host computer. A power cycle may be required after changing Buffer Print from enable to disable.

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SPC Coax Params

* = Factory Default

```
┌─────────────┐
│    CTHI     │
│(from page 123)│
└─────────────┘
       │
┌─────────────┐
│ Simp Prot   │
│    Conv     │
└─────────────┘
       │
┌─────────────┐
│  SPC Coax   │
│   Params    │
└─────────────┘
```

Logical Buff Size	Image Buff Size	Intervention Req	Buffer Print	Translation Tbl	Column 132 Wrap
960	4K*	Send to Host*	Disable*		Disable*
1920*	2K	Do Not Send	Enable		Enable
2560					
3440					
3564					

PA1	PA2	Buffer Reprint	Null Suppression	NL @ MPP+1
			Disable*	On*
			Enable	Off

Logical Buff Size

Refers to the size of the printer buffer, which should be set the same as the host screen (buffer) size. If the host screen size is unknown, use 1920. This parameter should not be changed in the middle of a print job.

Image Buff Size

This option refers to the printer base buffer size. This size must be set to a value greater than or equal to the Logical Buffer Size.

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Intervention Req

- **Send to Host**. The printer sends a signal to the host computer when the CANCEL key is pressed or a printer fault or hold mode time-out occurs.

- **Do Not Send**. No signal will be sent to the host computer.
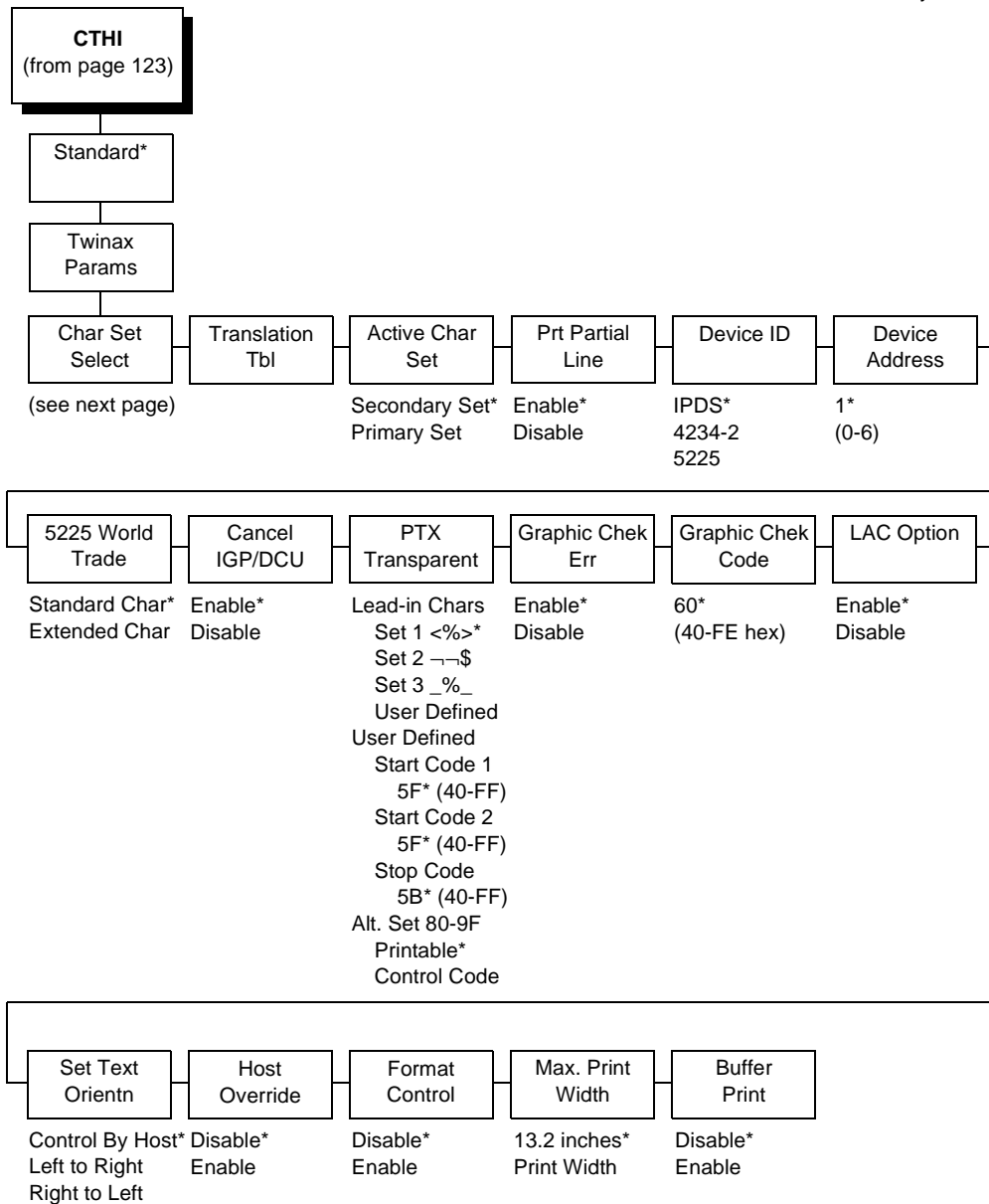
Buffer Print

- **Disable**. The printer will print normally.

- **Enable**. The printer prints the EBCDIC data and control codes received from the host as hex values. Refer to page 189 for information on how to obtain a hex code printout.

Translation Tbl

Prints out a table of the coax interface's current character set. This operation is valid only when the coax interface is selected (see "HOST INTERFACE" on page 195).

Column 132 Wrap

When enabled, this option causes the printer to line wrap at 132 characters despite the current print density allowing more characters per line.

PA1

PA1 is only valid when the printer is in the OFFLINE state and the coax Systems Network Architecture Character String (SCS) data stream is active. This function displays the "PA1 ENABLED" message when the ENTER key is pressed and sends a special operator request to the host when the printer is placed ONLINE. Refer to the *Coax/Twinax Programmer's Reference Manual* for more information about SCS.

PA2

PA2 is only valid when the printer is in the OFFLINE state and the coax SCS data stream is active. This function displays the "PA2 ENABLED" message when the ENTER key is pressed and sends a special operator request to the host when the printer is placed ONLINE.

Buffer Reprint

This option is valid only when the printer is printing in SCS mode. When the ENTER key is pressed, "Buffer Reprint Enabled" is displayed and an Intervention Required status is sent to the host. Pressing ENTER again cancels the Buffer Reprint function and "Buffer Reprint Disabled" is displayed.

Null Suppression

- **Disable**. Ignores nulls. The print position does not move.
- **Enable**. Treats nulls as blank spaces.

NL at MPP+1

Controls how many lines are skipped when the carriage returns to a new line.

- **On**. Moves to the first print position two lines down from the current position.
- **Off**. Moves to the first print position of the next print line.

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SPC Twx Params

* = Factory Default

CTHI
(from page 123)

Simp Prot
Conv

SPC Twinax
Params

Device Address	SPC Type	Translation Tbl	Buffer Print

1*
(0-6)

Disable*
Enable

MODE 219*	MODE P5000	MODE IBM

Printer Type
  Impact/P-Series*
  STD Centronics
  IGP/VGL
  IGP/PGL
SFCC Char
  Logical Not*
  Caret (^)
EVFU
  Enable*
  Disable
SPC Char Set
  Multinational*
  Austrian/German
  Belgian
  Canadian French
  Danish/Norweg.
  French
  Spanish
  English US

SPC Char Set
  0500 Internat 5*
  0037 English US
  0273 Austr/Germ
  0274 Belg. Old
  0275 Brazilian
  0260 Canad Fren
  0277 Danish
  0278 Finnish
  0297 French
  0280 Italian
  0281 Japan. Eng
  0290 Japan Kata
  0282 Portuguese
  0284 Span Speak
  0285 English UK

SPC Char Set
  0500 Internat 5*
  0037 English US
  0273 Austr/Germ
  0274 Belg. Old
  0275 Brazilian
  0260 Canad Fren
  0277 Danish
  0278 Finnish
  0297 French
  0280 Italian
  0281 Japan. Eng
  0290 Japan Kata
  0282 Portuguese
  0284 Span Speak
  0285 English UK

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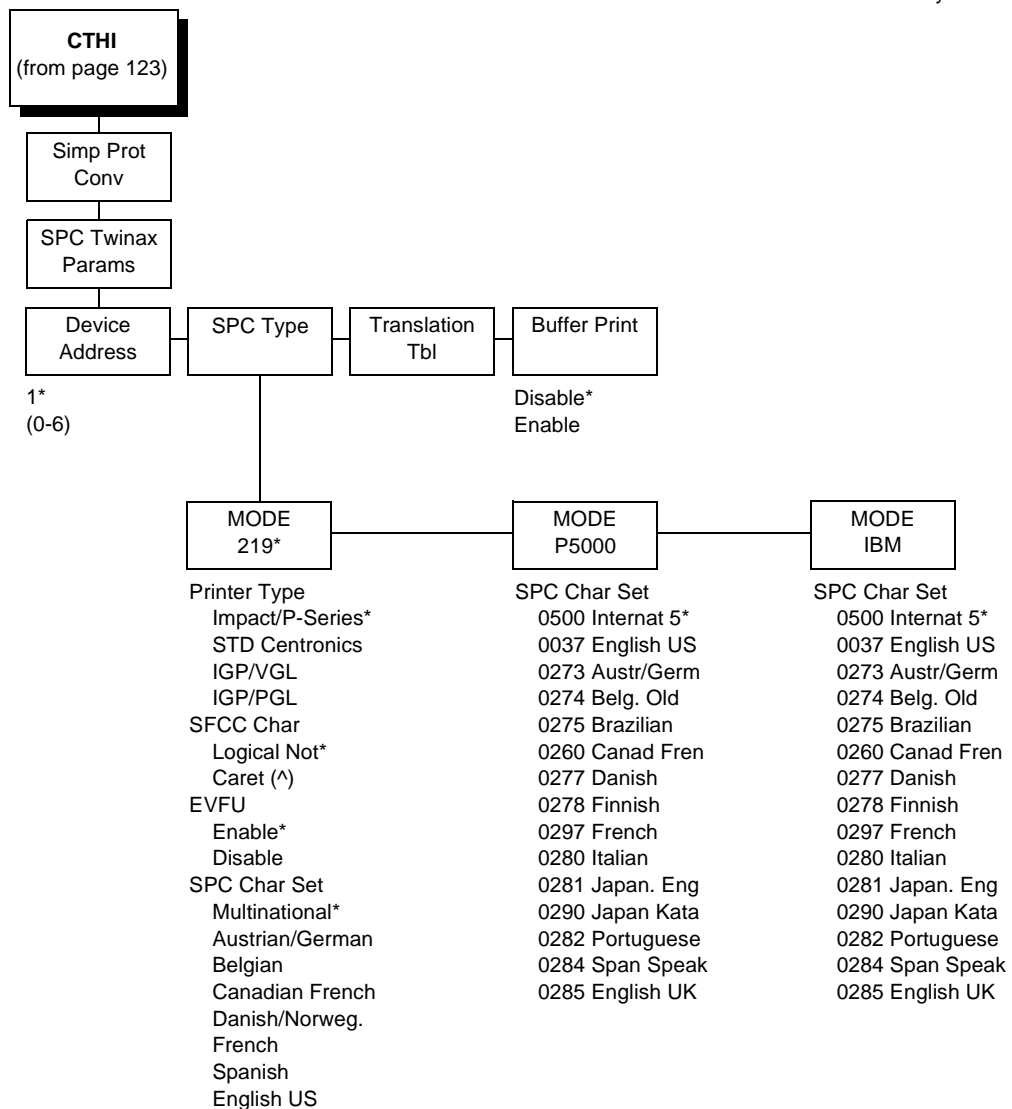
Device Address

Allows you to set the device address from 0 through 6. The host directs data and commands on the twinax line to a specific device based on its unique device address. After the address has been changed, a POR status is sent to the host.

SPC Type

Allows you to select a specific type of Simple Protocol Convertor (SPC) Twinax emulation. MODE 219 for Model 219 protocol convertor, MODE P5000 for Printronix protocol convertor, and MODE IBM for the IBM protocol convertor.

Printer Type

Determines the SPC Twinax emulation "Mode." When set to Std Centronics, IGP/VGL, or IGP/PGL, the Set Line Density and Set Print Density commands are translated into a Carriage Return (CR) and vertical format commands are ignored unless the EVFU is enabled.

SFCC Char

Determines what character is printed when an EBCDIC Logical Not character ¬ (Hex 5F) is received from the host.

EVFU

- **Enable**. The EVFU parameter allows vertical format control by the host in all four printer type modes.

- **Disable**. Vertical format control is only allowed in IMPACT/P-SERIES mode.

SPC Char Set

Allows you to select the print language character set.

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Translation Table

Prints out a table of the twinax interface's current character set. This operation is valid only when the twinax interface is selected.
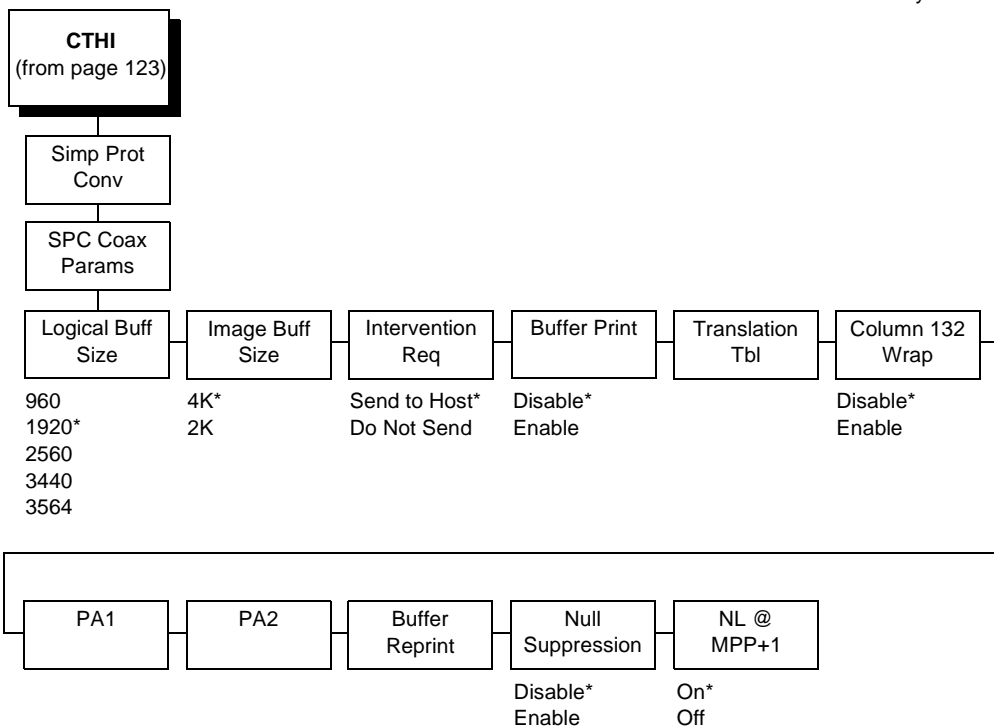
Buffer Print

- **Disable**. The printer will print normally.

- **Enable**. The printer prints the EBCDIC data and control codes received from the host as hex values. Refer to page 189 for information on how to obtain a hex code printout.

146

LinePrinter Plus Emulation

Submenus

* = Factory Default

EMULATION
(from page 122)

LinePrinter+

Printer Protocol	CPI/LPI Select	Host Command	Font Attributes	Page Format	Print Char. Set

(see next page)

Select CPI
  10.0 CPI*
  12.0 CPI
  13.3 CPI
  15.0 CPI
  17.1 CPI
  20.0 CPI
Select LPI
  6.0 LPI*
  8.0 LPI
  10.3 LPI

Enable*
Ignore All
Ignore CPI
Ignore LPI
Ignore Unidir.

(see next page)　(see page 149)

Reset Cmd CFG Ld	Downloaded Fonts

Disable*
Power-Up Config.
Current Config.
Factory Config.

Char. Operations	Ld Char at Pwrup	Set Operations	Ld Set at Pwrup	Set Substitution

Delete frm Flash
Load from Flash
Save to Flash
Delete frm RAM

Disable*
Enable

Delete frm Flash
Load from Flash
Save to Flash
Delete frm RAM

Disable*
Enable

Inactive*
Active

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Chapter 4 LinePrinter Plus Emulation

* = Factory Default

Printer Protocol (from page 147)

P-Series	P-Series XQ	Serial Matrix	Proprinter XL	Epson FX
(see page 155)	(see page 160)	(see page 163)	(see page 167)	(see page 171)

Font Attributes (from page 147)

Typeface	Prop. Spacing	Bold Print	Italic Print	Slashed Zero	Text Position
Data Process.*	Disable*	Disable*	Disable*	Disable*	Top of Line*
NLQ	Enable	Enable	Forward Slant	Enable	Bottom of Line
OCR-A			Backward Slant		
OCR-B					
High Speed					
NLQ Sans Serif					
HIgh Speed 100					
NLQ 200					
DP 200					
High Speed 64					
BARCODE 145					
BARCODE 160					

* = Factory Default
[1]These menus do not appear if the Coax or Twinax host interface is selected. See page 195.

Page Format
(from page 147)

Form Length	Form Width	Margins	Perforation Skip[1]
Abs. Length IN[1]	Abs. Width IN[1]	Left Margin[1]	Disable*
11.0* inches	13.6* inches	0* columns	1/2 Inch
(0.1-24)	(0.1-13.6)	(0-369)	2/3 Inch
Abs. Length MM[1]	Abs. Width MM[1]	Right Margin[1]	5/6 Inch
279.4* millimeters	345.4* millimeters	0* columns	1 inch
(0.1-609.6)	(0.1-345.4)	(0-369)	
Funct. of Lines	Funct. of CPI	Bottom Margin	
66* lines	136* Characters	0* lines	
(1-192)	(1-272)	(0-451)	

Printer Protocol

Select the LinePrinter+ protocol you wish to use. Refer to the *LinePrinter Plus Programmer's Reference Manual* for more information.

CPI/LPI Select

This parameter lets you specify the characters per inch (cpi) and lines per inch (lpi) values.

149

Host Command

This parameter allows you to block certain host commands from being acknowledged by the printer.

- **Enable**. All host commands are acknowledged by the printer.

- **Ignore All**. All host commands are ignored by the printer.

- **Ignore CPI**. All CPI commands sent by the host are ignored by the printer.

- **Ignore LPI**. All LPI commands sent by the host are ignored by the printer.

- **Ignore Unidir**. All Unidirectional commands sent by the host are ignored by the printer.

Font Attributes

Typefaces

- **Data Processing**. A general purpose font printing out at 120 dpi horizontally and 72 dpi vertically. The width of the font will vary with each cpi.

- **NLQ**. A high quality font printing at 180 dpi horizontally and 96 dpi vertically. This font has serifs and the width of the font varies with the cpi.

- **OCR-A / OCR-B**. Optical character recognition fonts printing at 120 dpi horizontally and 144 dpi vertically. Both fonts print only at 10 cpi.

- **High Speed**. A draft quality font printing at 120 dpi horizontally and 48 dpi vertically. The width of the font varies with the cpi.

- **NLQ Sans Serif**. A high quality font printing at 180 dpi horizontally and 96 dpi vertically. This font prints without serifs. The width of the font varies with the cpi.

- **High Speed 100**. A draft quality font printing at 100 dpi horizontally and 48 dpi vertically. When chosen from the front panel, it defaults to 10 cpi. The cpi can then be varied, but the width will not change.

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- **NLQ 200**. This NLQ font prints at 200 dpi horizontally and 96 vertically. When chosen from the front panel, it defaults to 12 cpi. The cpi can then be varied, but the width will not change.

- **DP 200**. This Data Processing font prints at 200 dpi horizontally and 72 vertically. When chosen from the front panel, it defaults to 12 cpi. The cpi can then be varied, but the width will not change.

- **High Speed 64**. This font prints at 120 dpi horizontally and 64 vertically. When chosen from the front panel, it defaults to 10 cpi. The cpi can then be varied, but the width will not change.

- **BARCODE 145**. This Data Processing font prints at 145 dpi horizontally and 72 vertically. When chosen from the front panel, it defaults to 12 cpi. The cpi can then be varied, but the width will not change.

- **BARCODE 160**. This Data Processing font prints at 160 dpi horizontally and 72 vertically. When chosen from the front panel, it defaults to 13 cpi. The cpi can then be varied, but the width will not change.

Proportional Spacing

Each printed character is contained inside a character cell. The width of the character cell includes the character and the space around the character.

- **Disable**. Each character cell is printed with the same width. Each column in the printed text will line up.

    ```
    This example is printed with
    proportional spacing disabled.
    ```

- **Enable**. The width of each character cell varies with the width of the character. For example, [i] takes less space to print than [m]. Using proportional fonts generally increases the readability of printed documents, giving text a typeset appearance.

    ```
    This example is printed with
    proportional spacing enabled.
    ```

151

Bold Print

- **Disable**. Text is printed normally.
- **Enable**. Text is printed with a heavy line thickness.

Italic Print

- **Disable**. Text is printed normally.
- **Forward Slant**. Text is printed with a forward slant.
- **Backward Slant**. Text is printed with a backward slant.

Slash Zero

This parameter allows you to print the numeral "0" with or without the slash. This option applies to all character sets except OCR-A and OCR-B.

- **Disable**. Zero is printed without a slash.
- **Enable**. Zero is printed with a slash.

Text position

Specifies where the text will positioned in the line space. When set to Top of Line, text will be positioned at the top of the line space. When set to Bottom of Line, the text will be positioned as if it were at the bottom of a 6 lpi line space. The following example shows both Top of Line and Bottom of Line text positions:

Text Position
Top of Line

Text Position
Bottom of Line

152
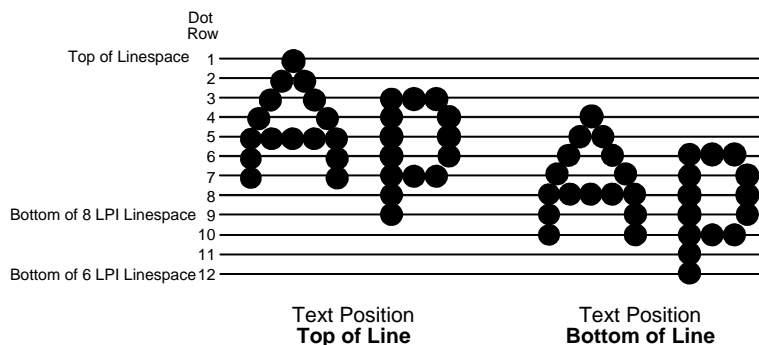
Page Format

Forms Length

Forms length is the number of lines that can be printed on a page. You can set forms length in inches, millimeters (mm), or as a function of the current LPI (lines per inch).

Forms Width

The forms width can be specified in inches, millimeters, or as a function of the current CPI (characters per inch). The forms width set should not exceed the actual paper width.

Margins

- **Right Margin**. Set in columns. Column zero is defined as the far right edge of the page, and column numbering increments from right to left.
- **Left Margin**. Set in columns. Column zero is defined as the far left edge of the page, and column numbering increments from left to right.
- **Bottom Margin**. Defined in lines, starting from line zero at the bottom of the page and incrementing from the bottom up.

Perforation Skip

- **Disable**. Allows printing on page perforation.
- You may set up a skip-over margin of 1/2 inch, 2/3 inch, 5/6 inch, or 1 inch. For example, a skip-over margin of 1 inch allows a 1 inch margin at the bottom of the page.

Print Char Set

When this selection is displayed and the ENTER key is pressed, the current character set is printed.

Reset Cmd CFG Ld

When the printer receives a host data stream reset command (ESC @ or ESC[K) in addition to resetting printer variables, the selected configuration will be loaded.

- **Disable**. The active emulation parameters are loaded when the reset command is executed.

- **Power-Up Config**. The power-up configuration is loaded when the reset command is executed.

- **Current Config**. The currently selected configuration is loaded when the reset command is executed.

- **Factory Config**. The factory installed configuration is loaded when the reset command is executed.

Downloaded Fonts

Allows you to download a substitution table to replace any character in the current character set with a different character in the same font.

- **Char Operations**. Allows you to delete a character from flash, load a character from flash, save a character to flash and delete a character from RAM.

- **Ld Char at Pwrup**. Allows you to disable or enable loading a character at power up.

- **Set Operations**. Allows you to delete a character set from flash, load a character set from flash, save a character set to flash, and delete a character set from RAM.

- **Ld Set at Pwrup**. Allows you to disable or enable loading a character set at power up.

- **Set Substitution**. When this option is activated, the character set overlay in RAM is activated. This can also be accomplished through a host command of **SFCC RX**. In either case, a flag is set indicating that the substitution table is active. If the power-up configuration has Ld Set at Pwrup and Set Substitution both enabled, the character set overlay will automatically be activated at power-up or during a soft reset. See the *LinePrinter Plus Programmer's Reference Manual* for more information.

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P-Series Emulation

* = Factory Default
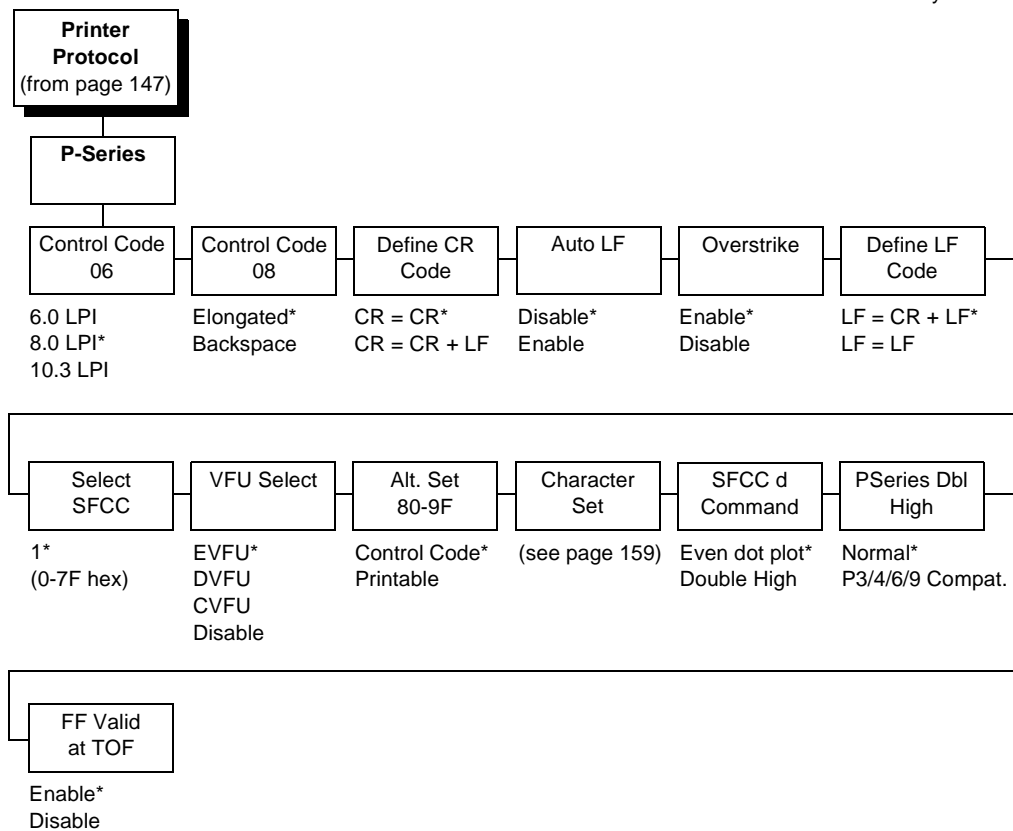
Control Code 06

Control Code 06 defines the function of ASCII code hex 06 (ACK). You can select an alternate line spacing of 6, 8 or 10.3 LPI.

Control Code 08

Control Code 08 defines the function of ASCII code hex 08 (BS). You can define the code to output an elongated character or a backspace.

155

Define CR Code

This option controls the action of the printer when it receives a Carriage Return code (hex 0D) from the host computer. If this feature is enabled, each time the printer receives a Carriage Return, it inserts an additional Line Feed code (hex 0A) into the data stream. Do not use this feature if the host computer sends Line Feeds to the printer.

- **CR = CR**. Does not insert an extra Line Feed after each Carriage Return.
- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return. The next print position will be print position 1 of the next line.

Auto LF

This option defines the printer action when print data is received past the forms width setting.

- **Disable**. Discards any data past the forms width.
- **Enable**. Performs an automatic carriage return and line feed when data is received past the forms width.

Overstrike

This option enables you to print bold characters.

- **Enable**. Turns on bold print. When enabled, overstrike printing slows down the printer.
- **Disable**. Turns off bold print.

Define LF Code

- **LF = CR + LF**. Forces an automatic carriage return with each line feed command. The next print position is print position 1 of the next line.
- **LF = LF**. Does not perform an automatic carriage return. The next print position will be the current print position of the next line.

156

Select SFCC

This parameter allows you to select which ASCII codes will function as the Special Function Control Code (SFCC) command delimiter. P-Series codes can use hex 00 through hex 7F. Options include the following:

- ESC (hex 1B)

- SOH (hex 01)

- ETX (hex 03)

- CIRCUMFLEX (hex 5E)—also called caret (^)

- TILDE (hex 7E)—(~)

NOTE: SOH, ETX and ESC are non-printables. The characters (^) and (~) are printable; however, do not use them as printables in the host data stream if either is chosen as a delimiter, or print errors will occur.

VFU Select

Controls how the printer handles vertical formatting.

- **EVFU**. Enables the VFU and selects P-Series compatible Electronic Vertical Format Unit (EVFU).

- **DVFU**. Enables the VFU and selects the Dataproducts compatible Direct Access Vertical Format Unit (DVFU).

- **CVFU**. Enables the VFU and selects the Centronics compatible Direct Access Vertical Format Unit (CVFU).

- **Disable**. Disables all VFU processing.

Alt. Set 80-9F

Determines whether the printer processes ASCII codes hex 80 through hex 9F as control codes or as printable characters.

157

Character Set

Specifies a character set as shown in the "P-Series Character Set Menu" on page 159. To use one of these sets, choose the desired group heading (such as European Sets) and press ENTER. Then choose the desired set within that group (such as Roman 8) and press ENTER. Both the group and the desired set will be starred to indicate your selection. Character sets are shown in detail in the *Character Sets Reference Manual*.

SFCC d Command

- **Even dot plot**. This option interprets SFCC d Command as even dot plot.
- **Double high**. This option interprets SFCC d Command as double high. Select this option for backward compatibility.

PSeries Dbl High

Allows printing compatibility between the current and older model printers.

- **Normal**. This is normal Double High printing for current model printers.
- **P3/4/6/9 Compat**. Where older printers printed two dot rows higher, this option allows for compatibility by raising the print two dot rows to match the current models dot row value (two dot rows lower).

FF Valid at TOF

- **Enable**. Performs a form feed when the host sends a Form Feed command and the printer is at the top of form.
- **Disable**. Will not perform a form feed when the host sends a Form Feed command and the printer is at the top of form.

158

P-Series Character Set Menu

* = Factory Default

Character Set
(from page 155)

Standard Sets*	Arabic Sets	Cyrillic Sets	European Sets	Greek Sets	Hebrew Sets
	ASMO 449* ASMO 449+ ASMO 708 ASMO 708+ MSDOS CP710 MSDOS CP720 Sakr CP 714 Aptec CP715 CP 786 Arabic CP 864 Arabic CP 1046 Arabic Lam 1 Arabic Lam 2	Cyrillic 866* Cyrillic CP 437 Cyrillic 113 Cyrillic 8859-5 ISO 915 Code Page 855 7-bit Cyrillic Ukrainian Bulgarian	Latin 2 8859-2* Latin 2 852 Mazovia Kamenicky Roman 8 PC-437 Slavic Slavic 1250 Code Page 865 Code Page 860 Latin 1 8859-1 Latin 5 8859-9 Latin 9 8859-15 Polish POL1	DEC 256 Greek* ELOT 928 Greek Greek 3 ABY Greek ABG Greek ELOT 927 Greek Greek 851 Greek 437 Greek 8859-7	Hebrew Old* Hebrew New Hebrew DEC Latin-1 Hebrew

Turkish Sets	Misc. Sets
Data Gen. Turk.* DEC Turkish IBM Turkish Siemens Turkish PTT Turkish IBC Turkish Bull Turkish AS400 Turkish Unisys Turkish NCR Turkish PST Turkish UNIS-1 Turkish Code Page 853 INFO Turkish	Block-set 10 cpi* Italics Set Scanblock 10 cpi

IBM PC*	Multinational	ECMA Latin 1	DEC Multinational

Primary Subset
  ASCII (USA)*
  French
  German
  English
  Danish
  Swedish
  Italian
  Spanish
  Japanese
  French Canadian
  Latin American
  Norwegian
  Danish II
  Spanish II
  Latin Am II
Extended Subset
  Code Page 437*
  Code Page 850
	ASCII (USA)*
	EBCDIC
		Primary Subset
		  ASCII (USA)*
		  German
		  Swedish
		  Danish
		  Norwegian
		  Finnish
		  English
		  Dutch
		  French
		  Spanish
		  Italian
		  Turkish
		  Japanese
		Extended Subset
		  Multinational*
		  Barcode 10 CPI
		  Mult. DP 10 CPI
		  Mult. DP 12 CPI
		  Mult. LQ 10 CPI
		  Greek DP 10 CPI
		  Greek DP 12 CPI
		  Greek LQ 10 CPI
		  Grap. DP 10 CPI
		  Grap. LQ 10 CPI
		  Sci. DP 10 CPI
		  Sci. DP 12 CPI
		  Sci. LQ 10 CPI
			ASCII (USA)*
			French
			German
			English
			Norweg./Danish
			Swedish
			Italian
			Spanish
			Japanese
			French Canadian
			Dutch
			Finnish
			Swiss

159

P-Series XQ Emulation

* = Factory Default

```
┌─────────────┐
│  Printer    │
│  Protocol   │
│(from page 147)│
└─────────────┘
       │
┌─────────────┐
│  P-Series   │
│     XQ      │
└─────────────┘
       │
```

Control Code 06	Define CR Code	Auto LF	Define LF Code	Compressed Print	Elong./Alt. Font
6.0 LPI	CR = CR*	Disable*	LF = CR + LF*	char 01 SOH*	Elng=BS Font=SO*
8.0 LPI*	CR = CR + LF	Enable	LF = LF	char 03 ETX	Elng=SO Font=BS
10.3 LPI				char 09 HT	

HS Print	VFU Select	Upr. Case Select	Slew Relative
char 02 STX*	EVFU*	Disable*	1-16 Lines*
char 03 ETX	DVFU	Enable	1-15 Lines
char 09 HT	CVFU		
	Disable		

Control Code 06

Control Code 06 defines the function of ASCII code hex 06 (ACK).
You can select an alternate line spacing of 6, 8 or 10.3 LPI.

Define CR Code

This option controls the action of the printer when it receives a
Carriage Return code (hex 0D) from the host computer. If this
feature is enabled, each time the printer receives a Carriage
Return, it inserts an additional Line Feed code (hex 0A) into the
data stream. Do not use this feature if the host computer sends
Line Feeds to the printer.

- **CR = CR**. Does not insert an extra Line Feed after each
  Carriage Return.

160

- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return. The next print position will be print position 1 of the next line.

Auto LF

This option defines the printer action when print data is received past the forms width setting.

- **Disable**. Discards any data past the forms width.

- **Enable**. Performs an automatic carriage return and line feed when data is received past the forms width.

Define LF Code

- **LF = CR + LF**. Forces an automatic carriage return with each line feed command received. The next print position is print position 1 of the next line.

- **LF = LF**. Does not perform an automatic carriage return when a line feed command is received. The next print position will be the current print position of the next line.

Compressed Print

Controls which host command sets compressed printing.

- CHAR 01 SOH

- CHAR 03 ETX

- CHAR 09 HT

Elong./Alt. Font

Controls which host command sets elongated (double high) fonts and extended character set.

- ELNG=BS (hex 08) FONT=SO (hex 0E)

- ELNG=SO FONT=BS

161

High Speed Print

Controls which host command sets high speed printing.

- CHAR 02 STX
- CHAR 03 ETX
- CHAR 09 HT

VFU Select

Controls how the printer handles vertical formatting. Choices are:

- **EVFU**. Enables the VFU and selects P-Series compatible Electronic Vertical Format Unit (EVFU).
- **DVFU**. Enables the VFU and selects the Dataproducts compatible Direct Access Vertical Format Unit (DVFU).
- **CVFU**. Enables the VFU and selects the Centronics compatible Direct Access Vertical Format Unit (CVFU).
- **Disable**. Disables all VFU processing.

Upper Case Select

Controls how the printer handles lowercase characters it receives from the host computer. When enabled, all characters will be printed in uppercase.

- **Disable**. Prints lowercase characters received from the host computer as lowercase, and uppercase characters received from the computer as uppercase.
- **Enable**. Prints lowercase characters received from the host computer as their corresponding uppercase equivalents; uppercase characters received from the computer are printed as uppercase.

Slew Relative

"Slewing" is rapid vertical paper movement. This parameter determines the number of lines slewed (either 1-15 lines or 1-16 lines) when an EVFU Slew Relative command is received.

162

Serial Matrix Emulation

* = Factory Default

```
┌──────────────┐
│   Printer    │
│  Protocol    │
│(from page 147)│
└──────────────┘
       │
┌──────────────┐
│    Serial    │
│    Matrix    │
└──────────────┘
       │
┌────────────┬────────────┬────────────┬────────────┬────────────┬────────────┐
│Control Code│ Define CR  │  Auto LF   │ Overstrike │ Define LF  │  Printer   │
│     06     │    Code    │            │            │    Code    │   Select   │
└────────────┴────────────┴────────────┴────────────┴────────────┴────────────┘
 6.0 LPI      CR = CR*      Enable*      Enable*      LF = LF*      Disable*
 8.0 LPI*     CR = CR + LF  Disable      Disable      LF = CR + LF  Enable
 10.3 LPI

┌────────────┬────────────┬────────────┐
│  Alt. Set  │ Character  │   Esc d    │
│   80-9F    │    Set     │  command   │
└────────────┴────────────┴────────────┘
 Control Code* (see page 166) Even dot plot*
 Printable                    Double high
```

Control Code 06

Control Code 06 defines the function of ASCII code hex 06 (ACK).
You can select an alternate line spacing of 6, 8 or 10.3 LPI.

Define CR Code

This option controls the action of the printer when it receives a
Carriage Return code (hex 0D) from the host computer. If this
feature is enabled, each time the printer receives a Carriage
Return, it inserts an additional Line Feed code (hex 0A) into the
data stream. Do not use this feature if the host computer sends
Line Feeds to the printer.

- **CR = CR**. Does not insert an extra Line Feed after each
  Carriage Return.

163

- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return. The next print position will be print position 1 of the next line.

Auto LF

The Auto LF option defines the printer actions when print data is received past the forms width setting.

- **Enable**. Performs an automatic carriage return and line feed when data is received past the forms width.
- **Disable**. Discards any data past the forms width.

Overstrike

This option enables you to print bold characters.

- **Enable**. Turns on bold print. When enabled, overstrike printing slows down the printer.
- **Disable**. Turns off bold print.

Define LF Code

- **LF = LF**. Does not perform an automatic carriage return when a line feed command is received. The next print position will be the current print position of the next line.
- **LF = CR + LF**. Forces an automatic carriage return with each line feed command received. The next print position is print position 1 of the next line.

Printer Select

- **Disable**. Ignores the ASCII DC1 and DC3 control codes.
- **Enable**. Disables the printer when a DC1 control code is received, and enables the printer when a DC3 control code is received.

164

Alternate Set 80-9F

- **Control Code**. Interprets data in the range of hex 80 through hex 9F as a control code.

- **Printable**. Prints data in the range of hex 80 through hex 9F.

Character Set

Specifies a character set as shown in the "Serial Matrix Character Set Menu" on page 166. To use one of these sets, choose the desired group heading (such as European Sets) and press ENTER. Then choose the desired set within that group (such as Roman 8) and press ENTER. Both the group and the desired set will be starred to indicate your selection. Character sets are shown in detail in the *Character Sets Reference Manual*.
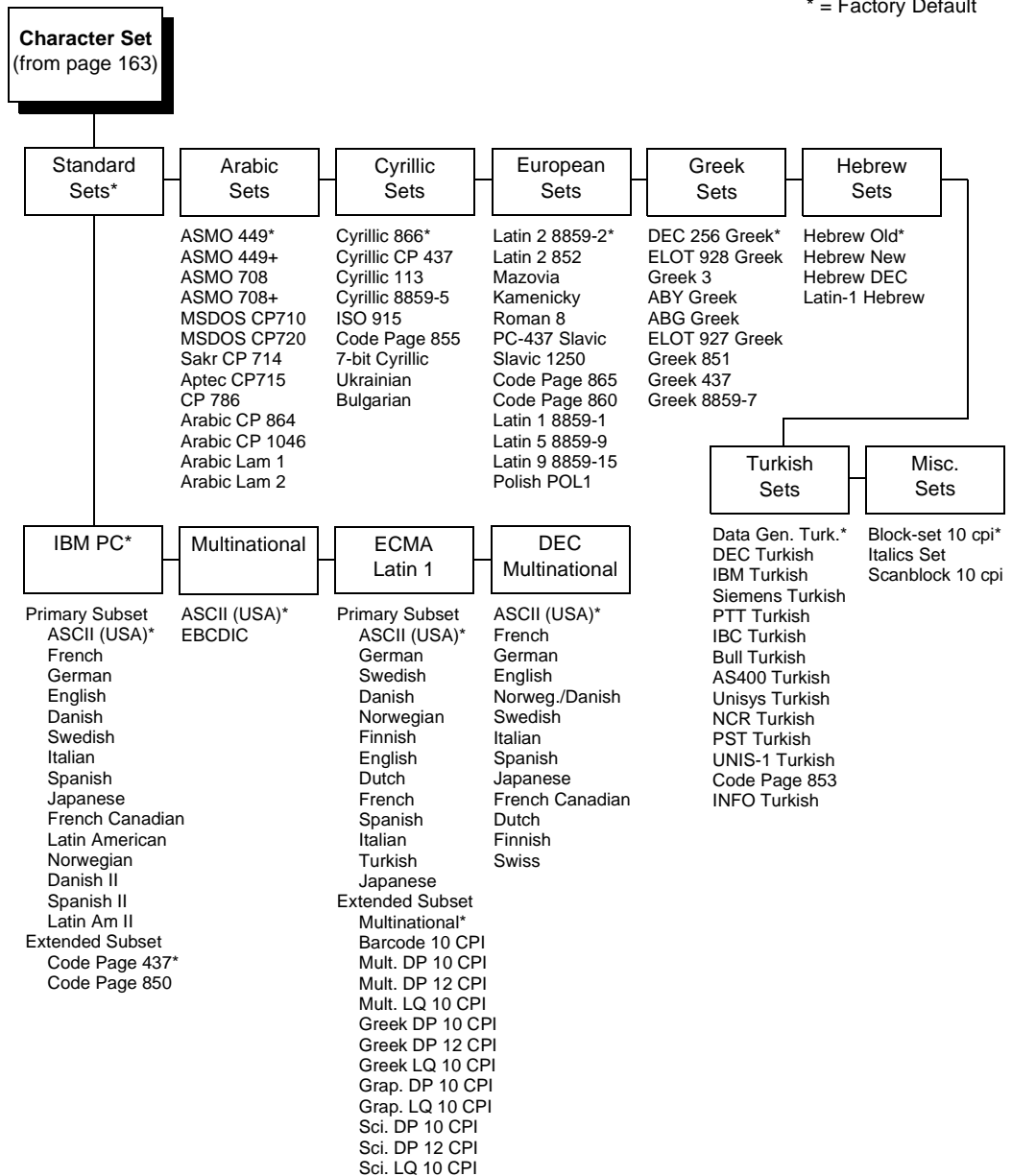
ESC d Command

- **Even dot plot**. Interprets the ESC d command as even dot plot.

- **Double high**. Interprets the ESC d Command as double high. Select this option for backward compatibility.
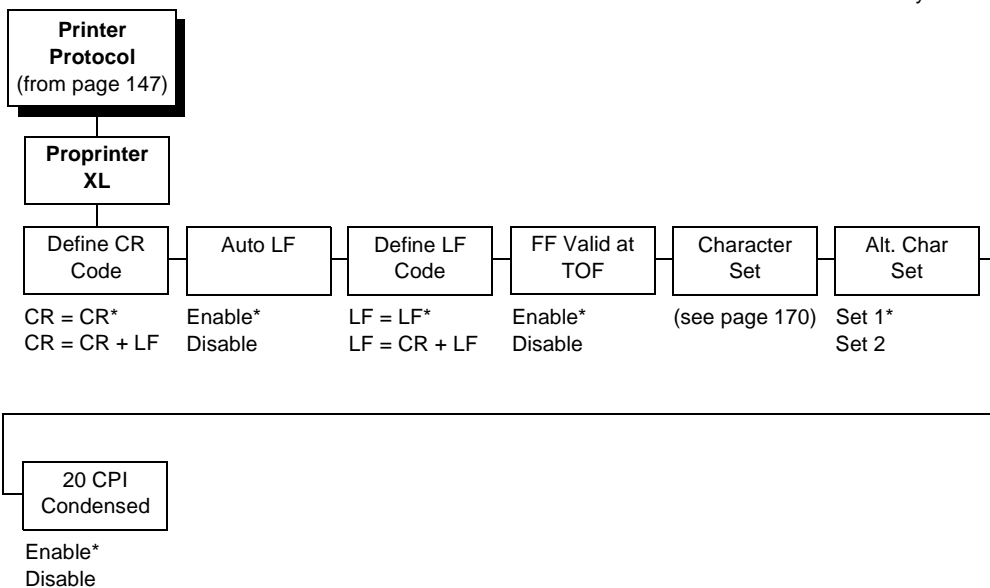
Serial Matrix Character Set Menu

* = Factory Default

Character Set
(from page 163)

Standard Sets*	Arabic Sets	Cyrillic Sets	European Sets	Greek Sets	Hebrew Sets

Arabic Sets
ASMO 449*
ASMO 449+
ASMO 708
ASMO 708+
MSDOS CP710
MSDOS CP720
Sakr CP 714
Aptec CP715
CP 786
Arabic CP 864
Arabic CP 1046
Arabic Lam 1
Arabic Lam 2

Cyrillic Sets
Cyrillic 866*
Cyrillic CP 437
Cyrillic 113
Cyrillic 8859-5
ISO 915
Code Page 855
7-bit Cyrillic
Ukrainian
Bulgarian

European Sets
Latin 2 8859-2*
Latin 2 852
Mazovia
Kamenicky
Roman 8
PC-437 Slavic
Slavic 1250
Code Page 865
Code Page 860
Latin 1 8859-1
Latin 5 8859-9
Latin 9 8859-15
Polish POL1

Greek Sets
DEC 256 Greek*
ELOT 928 Greek
Greek 3
ABY Greek
ABG Greek
ELOT 927 Greek
Greek 851
Greek 437
Greek 8859-7

Hebrew Sets
Hebrew Old*
Hebrew New
Hebrew DEC
Latin-1 Hebrew

Turkish Sets	Misc. Sets

Turkish Sets
Data Gen. Turk.*
DEC Turkish
IBM Turkish
Siemens Turkish
PTT Turkish
IBC Turkish
Bull Turkish
AS400 Turkish
Unisys Turkish
NCR Turkish
PST Turkish
UNIS-1 Turkish
Code Page 853
INFO Turkish

Misc. Sets
Block-set 10 cpi*
Italics Set
Scanblock 10 cpi

IBM PC*	Multinational	ECMA Latin 1	DEC Multinational

IBM PC
Primary Subset
  ASCII (USA)*
  French
  German
  English
  Danish
  Swedish
  Italian
  Spanish
  Japanese
  French Canadian
  Latin American
  Norwegian
  Danish II
  Spanish II
  Latin Am II
Extended Subset
  Code Page 437*
  Code Page 850

Multinational
ASCII (USA)*
EBCDIC

ECMA Latin 1
Primary Subset
  ASCII (USA)*
  German
  Swedish
  Danish
  Norwegian
  Finnish
  English
  Dutch
  French
  Spanish
  Italian
  Turkish
  Japanese
Extended Subset
  Multinational*
  Barcode 10 CPI
  Mult. DP 10 CPI
  Mult. DP 12 CPI
  Mult. LQ 10 CPI
  Greek DP 10 CPI
  Greek DP 12 CPI
  Greek LQ 10 CPI
  Grap. DP 10 CPI
  Grap. LQ 10 CPI
  Sci. DP 10 CPI
  Sci. DP 12 CPI
  Sci. LQ 10 CPI

DEC Multinational
ASCII (USA)*
French
German
English
Norweg./Danish
Swedish
Italian
Spanish
Japanese
French Canadian
Dutch
Finnish
Swiss

166

Proprinter XL Emulation

* = Factory Default

```
┌──────────────┐
│   Printer    │
│  Protocol    │
│ (from page 147)│
└──────┬───────┘
       │
┌──────┴───────┐
│  Proprinter  │
│     XL       │
└──────┬───────┘
```

Define CR Code	Auto LF	Define LF Code	FF Valid at TOF	Character Set	Alt. Char Set
CR = CR*	Enable*	LF = LF*	Enable*	(see page 170)	Set 1*
CR = CR + LF	Disable	LF = CR + LF	Disable		Set 2

20 CPI Condensed
Enable*
Disable

Define CR Code

This option controls the action of the printer when it receives a Carriage Return code (hex 0D) from the host computer. If this feature is enabled, each time the printer receives a Carriage Return, it inserts an additional Line Feed code (hex 0A) into the data stream. Do not use this feature if the host computer sends Line Feeds to the printer.

- **CR = CR**. Does not insert an extra Line Feed after each Carriage Return.

- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return.

167

Auto LF

This option defines the printer actions when print data is received past the forms width setting.

- **Enable**. Performs an automatic carriage return and line feed when data is received past the forms width.

- **Disable**. Discards any data past the forms width.

Define LF Code

- **LF = LF**. Does not perform an automatic carriage return when a line feed command is received. The next print position will be the current print position of the next line.

- **LF = CR + LF**. Forces an automatic carriage return with each line feed command received. The next print position is print position 1 of the next line.

FF Valid at TOF

- **Enable**. Performs a form feed when the host sends a Form Feed command and the printer is at the top of form.

- **Disable**. Will not perform a form feed when the host sends a Form Feed command and the printer is at the top of form.

Character Set

Specifies a character set as shown in the "Proprinter XL Character Set Menu" on page 170. To use one of these sets, choose the desired group heading (such as European Sets) and press ENTER. Then choose the desired set within that group (such as Roman 8) and press ENTER. Both the group and the desired set will be starred to indicate your selection. Character sets are shown in detail in the *Character Sets Reference Manual*.

168

Alternate Char Set

This option determines if data in the range of hex 80 through hex 9F should be interpreted as a control code or as a printable character.

- **Set 1**. Interprets data in the range of hex 80 through hex 9F as a control code.

- **Set 2**. Prints data for the characters at hex locations 03, 04, 05, 06, 15 and 80 through 9F.
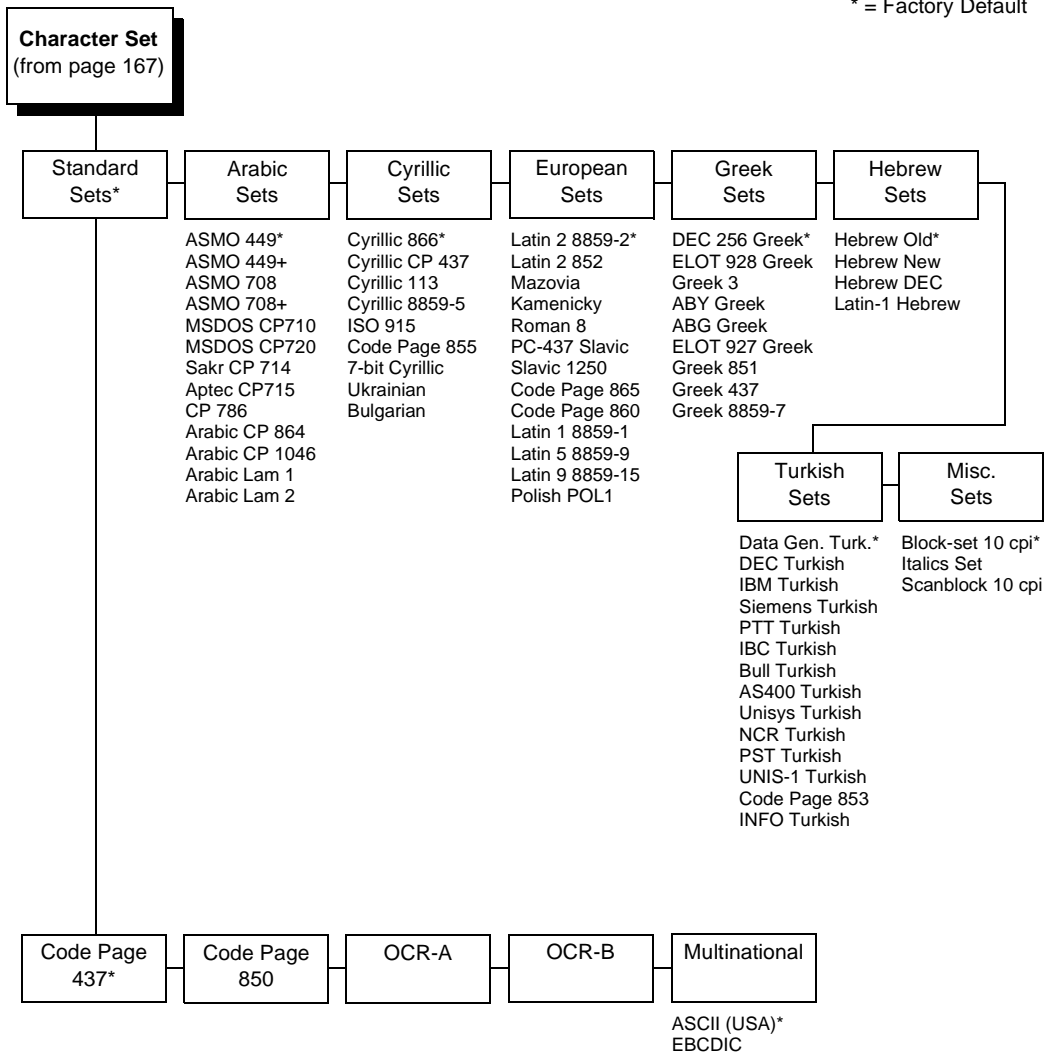
20 CPI Condensed

Compressed print characters are narrower than the normal character set. This is helpful for applications where you need to print the maximum amount of information on a page.

- **Enable**. Prints characters about 60 percent the width of normal characters when compressed print is chosen by the host computer.

- **Disable**. Does not compress print widths, even if condensed print is chosen by the host.

Proprinter XL Character Set Menu

* = Factory Default

Character Set
(from page 167)

Standard Sets*	Arabic Sets	Cyrillic Sets	European Sets	Greek Sets	Hebrew Sets
	ASMO 449* ASMO 449+ ASMO 708 ASMO 708+ MSDOS CP710 MSDOS CP720 Sakr CP 714 Aptec CP715 CP 786 Arabic CP 864 Arabic CP 1046 Arabic Lam 1 Arabic Lam 2	Cyrillic 866* Cyrillic CP 437 Cyrillic 113 Cyrillic 8859-5 ISO 915 Code Page 855 7-bit Cyrillic Ukrainian Bulgarian	Latin 2 8859-2* Latin 2 852 Mazovia Kamenicky Roman 8 PC-437 Slavic Slavic 1250 Code Page 865 Code Page 860 Latin 1 8859-1 Latin 5 8859-9 Latin 9 8859-15 Polish POL1	DEC 256 Greek* ELOT 928 Greek Greek 3 ABY Greek ABG Greek ELOT 927 Greek Greek 851 Greek 437 Greek 8859-7	Hebrew Old* Hebrew New Hebrew DEC Latin-1 Hebrew

Turkish Sets	Misc. Sets
Data Gen. Turk.* DEC Turkish IBM Turkish Siemens Turkish PTT Turkish IBC Turkish Bull Turkish AS400 Turkish Unisys Turkish NCR Turkish PST Turkish UNIS-1 Turkish Code Page 853 INFO Turkish	Block-set 10 cpi* Italics Set Scanblock 10 cpi

Code Page 437*	Code Page 850	OCR-A	OCR-B	Multinational
				ASCII (USA)* EBCDIC

170

Epson FX Emulation

* = Factory Default

```
┌─────────────┐
│   Printer   │
│  Protocol   │
│(from page 147)│
└─────────────┘
      │
┌─────────────┐
│  Epson FX   │
└─────────────┘
```

Define CR Code	Auto LF	Define LF Code	Printer Select	Character Set	20 CPI Condensed
CR = CR*	Enable*	LF = LF*	Disable*	(see page 174)	Enable*
CR = CR + LF	Disable	LF = CR + LF	Enable		Disable

Alt. Set 80-9F
Control Code*
Printable

Define CR Code

The Define CR Code option controls the action of the printer when it receives a Carriage Return code (hex 0D) from the host computer. If this feature is enabled, each time the printer receives a Carriage Return, it inserts an additional Line Feed code (hex 0A) into the data stream. Do not use this feature if the host computer sends Line Feeds to the printer.

- **CR = CR**. Does not insert an extra Line Feed after each Carriage Return.

- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return.

171

Auto LF

This option defines the printer actions when print data is received past the forms width setting.

- **Enable**. Performs an automatic carriage return and line feed when data is received past the forms width.

- **Disable**. Discards any data past the forms width.

Define LF Code

The Define LF Code option controls the action of the printer when it receives a Line Feed code (hex 0A) from the host computer. If this feature is enabled, each time the printer receives a Line Feed, it inserts an additional Carriage Return code (hex 0D) into the data stream. This feature is required if the host computer does not send Carriage Returns to the printer.

- **LF = LF**. Does not add a Carriage Return with a Line Feed.

- **LF = CR + LF**. Adds an extra Carriage Return with each Line Feed.

Printer Select

- **Disable**. Ignores the ASCII DC1 and DC3 control codes.

- **Enable**. Disables the printer when a DC1 control code is received, and enables the printer when a DC3 control code is received.

Character Set

This parameter selects a character set for the Epson emulation, as shown in the "Epson FX Character Set Menu" on page 174. Note that when OCR-A or OCR-B is selected as the print language, the Font Attribute Typeface option under the LinePrinter Plus menu (page 150) is changed to OCR-A or OCR-B, respectively.

172

To use one of these sets, choose the desired group heading (such as European Sets) and press ENTER. Then choose the desired set within that group (such as Roman 8) and press ENTER. Both the group and the desired set will be starred to indicate your selection. Character sets are shown in detail in the *Character Sets Reference Manual*.

20 CPI Condensed

Compressed print characters are narrower than the normal character set. This is helpful for applications where you need to print the maximum amount of information on a page.

- **Enable**. Prints about 60 percent of the width of normal characters when compressed print is chosen by the host computer. For example, a 12 CPI Draft font will compress to 20 CPI.

- **Disable**. Does not compress print widths, even if condensed print is chosen by the host.

Alternate Set 80-9F

- **Control Code**. Interprets data in the range of hex 80 through hex 9F as a control code.

- **Printable**. Prints data in the range of hex 80 through hex 9F.

173

Epson FX Character Set Menu

* = Factory Default

Character Set
(from page 171)

Standard Sets*	Arabic Sets	Cyrillic Sets	European Sets	Greek Sets	Hebrew Sets

Arabic Sets
ASMO 449*
ASMO 449+
ASMO 708
ASMO 708+
MSDOS CP710
MSDOS CP720
Sakr CP 714
Aptec CP715
CP 786
Arabic CP 864
Arabic CP 1046
Arabic Lam 1
Arabic Lam 2

Cyrillic Sets
Cyrillic 866*
Cyrillic CP 437
Cyrillic 113
Cyrillic 8859-5
ISO 915
Code Page 855
7-bit Cyrillic
Ukrainian
Bulgarian

European Sets
Latin 2 8859-2*
Latin 2 852
Mazovia
Kamenicky
Roman 8
PC-437 Slavic
Slavic 1250
Code Page 865
Code Page 860
Latin 1 8859-1
Latin 5 8859-9
Latin 9 8859-15
Polish POL1

Greek Sets
DEC 256 Greek*
ELOT 928 Greek
Greek 3
ABY Greek
ABG Greek
ELOT 927 Greek
Greek 851
Greek 437
Greek 8859-7

Hebrew Sets
Hebrew Old*
Hebrew New
Hebrew DEC
Latin-1 Hebrew

Turkish Sets	Misc. Sets

Turkish Sets
Data Gen. Turk.*
DEC Turkish
IBM Turkish
Siemens Turkish
PTT Turkish
IBC Turkish
Bull Turkish
AS400 Turkish
Unisys Turkish
NCR Turkish
PST Turkish
UNIS-1 Turkish
Code Page 853
INFO Turkish

Misc. Sets
Block-set 10 cpi*
Italics Set
Scanblock 10 cpi

Epson Set*	OCR-A	OCR-B

Epson Set
ASCII (USA)*
French
German
English
Danish I
Swedish
Italian
Spanish I
Japanese
Norwegian
Danish II
Spanish II
Latin Am I
French Canadian
Latin Am II

Multinational	Code Page 850	IBM PC

Multinational
ASCII (USA)*
EBCDIC

174

ANSI Emulation

Menu

* = Factory Default

```
EMULATION
(from page 122)
```

```
44/48XX-ANSI
```

CPI/LPI Select	Font Attributes	Page Format	Define CR Code	Auto LF	Define LF Code

Select CPI
  10.0* CPI
  12.0 CPI
  13.3. CPI
  15.0 CPI
  16.7 CPI
  17.1 CPI
Select LPI
  3.0 LPI
  4.0 LPI
  6.0* LPI
  8.0 LPI
	(see next page)	(see next page)	CR = CR*
			CR = CR + LF
				Disable*
				Enable
					LF = CR + LF*
					LF = LF

Character Set	Printer Select	ESC c Sequence	Received CR	Received DEL	Private Mode
(see next page)	ON=DC1/ OFF=DC3* Disable	Enable* Disable	Observe* Ignore	Observe* Ignore	Set 2* Set 1

Pos. on BC/OvrSz	BC Check Digit	Barcode Darkmode	PUM Default	Truncate PI Slew
Set to top* Set to bottom	By host* By printer	Enable* Disable	Decipoints* Lines/columns	Truncate at TOF* Disable

175

MPI

* = Factory Default

Font Attributes
(from page 175)

Typeface	Prop. Spacing	Bold Print	Slashed Zero
Data Processing*	Disable*	Disable*	Disable*
Gothic NLQ	Enable	Enable	Enable
Char. Graphics			
High Speed			
Italics NLQ			
Courier NLQ			
OCR-A			
OCR-B			

Character Set
(from page 175)

Latin 1 8859-1*	Latin 9 8859-15
Cyrillic 8859-5	USA
IBM PC-2 CP437	German
IBM PC-2 CP850	French A
Slavic CP852	French B
Cyrillic CP855	French Canadian
Fr. Can. CP863	Dutch Netherlds
Russian CP866	Italian
Greek CP851	United Kingdom
Turkish CP853	Spanish
Portug. CP860	Danish/Norw. A
Arabic CP864	Danish/Norw. B
Nordic CP865	Danish/Norw. C
Latin 2 8859-2	Danish/Norw. D
Latin 3 8859-3	Swed./Finnish A
Latin 4 8859-4	Swed./Finnish B
Lat. Ara. 8859-6	Swed./Finnish C
Lat. Gre. 8859-7	Swed./Finnish D
Lat. Heb. 8859-8	Swiss
Latin 5 8859-9	USA
Turkish2 CP867	Yugoslavian
Pol. Maz. CP8576	United Kingdom A
Turkish CP8577	Turkish
Greek CP8573	Greek
Italian CP23	DEC Mult.
Spanish CP24	Roman 8

Page Format
(from page 175)

Margins	Form Length	Form Width
Left Margin 0 columns* (0-369)	Funct. of lines 66 lines* (1-192)	Function of CPI 136 Characters* (1-272)
Right Margin 0 columns* (0-369)		
Top Margin 0 lines* (0-451)		
Bottom Margin 0 lines* (0-451)		

CPI/LPI Select

Defines the default values for the horizontal and vertical character spacing. The number of characters per inch can range from 10.0 up through 17.1. The number of lines per inch can range from 3.0 through 8.0.

Font Attributes

Typefaces

Choose a typeface from the available options.

Proportional Spacing

Each printed character is contained inside a character cell. The width of the character cell includes the character and the space around the character.

- **Disable**. Each character cell is printed with the same width. Each column in the printed text will line up.

```
This example is printed with
proportional spacing disabled.
```

- **Enable**. The width of each character cell varies with the width of the character. For example, [i] takes less space to print than [m]. Using proportional fonts generally increases the readability of printed documents, giving text a typeset appearance.

```
This example is printed with
proportional spacing enabled.
```

Bold Print

- **Disable**. Text is printed normally.
- **Enable**. Text is printed with a heavy line thickness.

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Slash Zero

This parameter allows you to print the numeral "0" with or without the slash. This option applies to all character sets except OCR-A and OCR-B.

- **Disable**. Zero is printed without a slash.
- **Enable**. Zero is printed with a slash.

Page Format

Margins

- **Left Margin**. Defines where the first print column is located. The left margin is specified as the number of characters from the left edge of the form.
- **Right Margin**. Defines where the last print column is located. The right margin is specified as the number of characters from the right edge of the form.
- **Top Margin**. Defines the location of the first print line on the page. The top margin is specified as the number of lines from the top of the form's position.
- **Bottom Margin**. Defines the location of the last print line on the page. The bottom margin is specified as the number of lines from the bottom of the form's position.

Form Length

Specifies the form length in lines. The maximum form length in lines depends on the current LPI setting; it is equal to the maximum form length in inches multiplied by the current LPI setting. For example, at 6 LPI the maximum form length is 6 LPI x 24 inches = 144 lines.

Only valid form length values will be accepted. If you select a length that is larger than the maximum length for the current LPI, the maximum length will be used. If you need a longer page length, you must first change the LPI.

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IMPORTANT **If the form length is set in lines and you change the LPI, the effective page length changes to the form length in characters divided by the new LPI.**

> **NOTE:** Receipt of a data stream control code which changes the form length overrides the form length previously specified via the operator panel.

Form Width

Allows you to input the form width in characters from 1 through 272. The maximum form width in characters depends on the current CPI setting; it is equal to the maximum form width in inches multiplied by the current CPI setting.

Only valid form width values will be accepted. If a width is selected that is larger than the maximum width for the current CPI, then the maximum width will be used. If a larger width value is desired, then the CPI value must be changed first.

Table 4 lists the maximum number of characters that can be printed for a given Characters Per Inch (CPI) setting.

IMPORTANT **If the form width is set in characters and the CPI is changed, the effective page width is changed to be equal to the form width in characters divided by the new CPI.**

Table 4. Form Width

CPI Setting	Maximum form Width (in characters)
10.0	136
12.0	163
13.3	181
15.0	204
16.7	227
17.1	272

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Define CR Code

The Define CR Code option controls the action of the printer when it receives a Carriage Return code (hex 0D) from the host computer. If this feature is enabled, each time the printer receives a Carriage Return, it inserts an additional Line Feed code (hex 0A) into the data stream. Do not use this feature if the host computer sends Line Feeds to the printer.

- **CR = CR**. No extra Line Feeds are inserted.
- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return.

Auto LF

Defines the printer actions when print data is received past the form width setting.

- **Disable**. Discards any data past the form width.
- **Enable**. Performs an automatic carriage return and line feed when data is received past the form width.

Define LF Code

Controls the action of the printer when it receives a Line Feed code (hex 0A) from the host computer. If this feature is enabled, each time the printer receives a Line Feed, it inserts an additional Carriage Return code (hex 0D) into the data stream. This feature can be used in most installations, but it is required if the host computer does not send Carriage Returns to the printer.

- **LF = CR + LF**. Adds an extra Carriage Return with each Line Feed.
- **LF = LF**. Does not add a Carriage Return with a Line Feed.

Character Set

This parameter selects a character set for the ANSI emulation. Note that when 0876 OCR-A or 0877 OCR-B is selected as the print language, the Font Attributes Typeface parameter is changed to OCR-A or OCR-B, respectively. Character sets are shown in detail in the *Character Sets Reference Manual*.

Printer Select

- **ON = DC1/OFF = DC3**. Disables the printer when a DC1 control code is received, and enables the printer when a DC3 control code is received.

- **Disable**. Ignores the DC1 and DC3 control codes.

ESC c Sequence

- **Enable**. An ESC c code received from the host resets the printer parameters to the factory defaults.

- **Disable**. An ESC c code received from the host is ignored.

Received CR

- **Observe**. A CR code received from the host is handled as a Carriage Return.

- **Ignore**. A CR code received from the host is ignored.

Received DEL

- **Observe**. A DEL code received from the host is handled as a Delete command.

- **Ignore**. A DEL code received from the host is ignored.

Private Mode

Determines the default type of character set (Set 1 or Set 2). This can also be set by ESC sequences ESC [>5h and ESC [>5l. Refer to these descriptions in the *ANSI Programmer's Reference Manual* for further details.

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Pos. on BC/OvrSz

- **Set to top**. The paper is fed back to the top of barcodes or oversized characters after they are printed. This allows printing on the same line.

- **Set to bottom**. The printer will continue printing without backing up.

BC Check Digit

- **By host**. The host calculates the barcode check digit and sends it along with the barcode. The check digit is not verified by the printer, but printed as it was received.

- **By printer**. The barcode is sent without the check digit, and the printer calculates and adds it in.

Barcode Darkmode

- **Enable**. The barcodes are printed at a higher resolution.

- **Disable**. The barcodes are printed at lower resolution but at a higher speed.

PUM Default

This is the Unit Of Measure (UOM) as it is used within the ANSI emulation. Coordinates received in ESC sequences can be sent in two UOM's: Decipoints, which is a unit of 1/720 inch, or in lines or columns using the current LPI and CPI values. The UOM used is determined by this configuration setting.

Truncate PI Slew

- **Truncate At TOF**. The slew is terminated when the next Top-of-Form is reached. (This function applies to the ANSI EVFU only.)

- **Disable**. PI slews will be completed independent of their length.

182

IPDS Emulation

* = Factory Default

EMULATION (from page 122)

IPDS

Font Size	Graphics Quality	Barcode Quality	Barcode Speed	Barcode Size	Early Print Comp
Select By Host*	High*	High*	High*	4234*	Off*
Standard	Select By Host	Select By Host	Select By Host	67XX	On
Compressed	Low	Low	Low	64XX	
Char 01 SOH*				4224	
Char 03 ETX					
Char 09 HT					

Graphics Scaling	Graphic Charsize	I 2/5 Checksum
Rounded*	4234*	Standard (1/3)*
Exact	67XX	Special (4/9)

Default Code Page		Code Page Subset	Default Font	
INTERNAT. SET 5*	TURKISH LATIN 5	Thai	DRAFT 10*	DP 18
ENGLISH/USA/CAN	LATIN 2/ROECE	Version 0*	DRAFT 12	NLQ 10
AUSTRIAN/GERMAN	CYRILLIC OLD	Version 1	DRAFT 13	NLQ 12
BELGIAN OLD	THAI	Version 2	DRAFT 15	NLQ 13
BRAZILIAN	HEBREW		DRAFT 17	NLQ 15
CANADIAN FRENCH	FARSI		DRAFT 18	NLQ 17
DANISH/NORW.	YUGOSLAVIAN		DP 10	NLQ 18
FINNISH/SWEDISH	LATIN 9		DP 12	IPDS_FONT_OCRA
FRENCH AZERTY	EURO US/CAN.		DP 13	OCRB
ITALIAN	EURO AUST/GERM.		DP 15	PSM
JAP. ENGLISH	EURO DAN/NORW.		DP 17	
KATAKANA	EURO FIN/SWED.			
PORTUGUESE	EURO ITALIAN			
SPANISH	EURO SPANISH			
SPANISH SPEAK.	EURO UK/IRELAND			
ENGLISH (UK)	EURO FRENCH			
ARABIC	EURO INTERNAT.			
GREEK	EURO ICELANDIC			
ICELANDIC				

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Your IPDS printer emulates the IBM 4234 twinax models 008 and 012.

IPDS Twinax printers can only print IPDS data streams and nothing else. Even a simple job, such as a screen print, is IPDS data in a twinax attachment. Because the printer definition on a twinax host is either set automatically (by auto configuration) or manually, the printer type is already known.

NOTE: A general discussion about starting and stopping IPDS can be found in the IBM 4234 Product and Programming Reference Manual (GC31-3879). Sending a non-IPDS data stream to an IPDS printer and vise versa will result in a hung spool file or writer.

Font Size

This parameter chooses the font size which will be used by IPDS.

- **Select By Host**. The font ID is only affected by host commands.

- **Standard**. The font ID is converted to a decompressed font ID.

- **Compressed**. The font ID is converted to a compressed font ID.

Graphics Quality

This parameter chooses the print quality of graphics.

- **High**. Graphics is printed at 144 dot rows per inch.

- **Select By Host**. The application decides the quality of the graphics.

- **Low**. Graphics is printed at 72 dot rows per inch.

Barcode Quality

This parameter chooses the horizontal print quality of barcode labels.

- **High**. Label is printed at 144 dots per inch.
- **Select By Host**. The application decides the quality of the labels.
- **Low**. Label is printed at 72 dots per inch.

Barcode Speed

This parameter chooses the vertical print quality of barcode labels.

- **High**. Barcodes are printed with less vertical dots, increasing printing speed, but decreasing print quality.
- **Select By Host**. The application decides the quality of the labels.
- **Low**. Barcodes are printed with more vertical dots, decreasing printing speed, but increasing print quality.

Barcode Size

This parameter will emulate the barcode sizes of the selected printer model.

- **4234**. IBM 4234
- **67XX**. Decision Data 67XX
- **64XX**. IBM 6400 series
- **4224**. IBM 4224

Early Print Complete

This parameter chooses when to send a Print Complete to the controller.

- **Off**. Print Complete is sent if page is printed completely.
- **On**. Print Complete is sent immediately. The next page will be created. This improves the print performance when starting the next page.

NOTE: When Early Print Complete is enabled and an error occurs, you may lose data.

Graphics Scaling

This parameter chooses the scaling factor for graphics when the Mappin. Control option of the IPDS Write Graphics Control command is SCALE TO FIT:

- **Rounded**. Calculations are rounded up in the desired output resolution.

- **Exact**. Graphics will be scaled as accurate as possible.

Graphic CharSize

This parameter will emulate the graphic character size of the selected printer model.

- **4234**. IBM 4234

- **67XX**. Decision Data 67XX

I-2/5 Checksum

This parameter defines the printer checksum calculation method for Interleaved 2 of 5 barcodes.

- **Standard (3/1)**. The odd numbers will be multiplied by 3 and the even numbers by 1 for calculation of the checksum.

- **Special (4/9)**. The odd numbers will be multiplied by 4 and the even numbers by 9 for calculation of the checksum.

NOTE: "Odd" refers to the 1st, 3rd, 5th... character in the barcode, while "even" refers to the 2nd, 4th, 6th... character in the barcode.

Default Code Page

Choose which code page to use with the IPDS emulation. This option is independent of the Character Set selection in the CTHI emulation.

Code Page Subset

When the Thai code page is selected as the default, either from the front panel or by a host command, you may choose from three different versions.

Default Font

Choose a font quality and size from the available selections. All fonts in the Default Font menu are available in standard and compressed vertical resolution (see page 183).

MAINT / MISC

* = Factory Default
[1] If you have the CT option, Enable is the default value, otherwise it is Disable.
[2] If installed

MAINT/MISC
(from page 87)

Hex Dump Mode	Alarm	Power-up State	Display Language	Cancel Key[1]	Eject Function
Disable* Enable	On* Cont. Beep Off	Online* Offline	English* German French Italian Spanish	Disable* Enable	Standard* Simple Tear Form Saver Disable

Power Stacker[2]	Auto Elevator[2]	Auto Locking	Set Lock Key	PTX SETUP Option	Accented Characters
Enable* Disable	Enable* Disable	Disable* Enable		Setup Parse Disable* Enable Setup SFCC 21* (1-FF hex)	Standard* Tall

File System	Set Sharing
Overwrite Files Enable* Disable View Files List File 1 File 2 etc. Delete Files File 1 File 2 etc. Optimize & Reboot Print File List	Disable* Enable

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Hex Dump Mode

A hex code printout (or hex dump) translates all incoming data to hexadecimal equivalents. A hex dump lists each ASCII data character received from the host computer, together with its corresponding two-digit hexadecimal code. Hex dumps can be used to troubleshoot some types of printer data reception problems. Figure 14 on page 227. shows a hex dump sample.

Alarm

- **On**. An audible alarm sounds (3 beeps) when a fault occurs, such as a paper jam.
- **Continuous**. A continuous audible alarm sounds when a fault occurs, which can be stopped by pressing CLEAR.
- **Off**. No audible alarm will sound.

Power-Up State

- **Online**. The printer powers up in the online state.
- **Offline**. The printer powers up in the offline state.

Display Language

This parameter chooses the language that will appear on the LCD: English, Spanish, French, Italian, or German.

Cancel Key

When enabled, the CANCEL key may be used to clear all data in the print buffer without printing any of the data.

Eject Function

Enables and defines the eject function to be used. When activated, the function is used by holding down the VIEW/EJECT key for more than one second in offline mode.

- **Standard**. Slews the paper two 11" pages when VIEW/EJECT is pressed for more than one second. Pressing VIEW/EJECT a second time retracts two pages.

- **Simple Tear**. Allows demand printing for specially designed forms which require a header of at least 2.66 inches in height. This leader prevents the paper from falling out of the tractors when the demanded sheet is removed. Press the VIEW/EJECT key. The printer slews the bottom of the last printed form to the tear position. Tear the paper, then press the VIEW/EJECT button again. The paper reverses the exact amount of paper it slewed, placing the print position to the next available page. See "Demand Printing" on page 247 for detailed information on Simple Tear.

- **Form Saver**. Allows near demand printing for forms that do not have pre-printed headers or special application designs. At least one blank page is required to load the paper so that it does not slip out of the tractors. For shorter form lengths, two or more blank pages may be necessary. When you press VIEW/EJECT, the bottom of the printed page is slewed to the tear position. When pressed again, the paper moves to the top of the next printable page available. See "Demand Printing" on page 247 for detailed information on Form Saver.

- **Disable**. Prevents the use of the eject function.

Power Stacker

This parameter allows you to enable or disable the power paper stacker (provided this option is installed).

Auto Elevator

This parameter only exists on printers with the power paper stacker installed. The power stacker has a sensor which detects paper movement and raises the stacker as the printed paper stack grows. If the printer has been printing for three minutes continually and the sensor has not detected any growth in the paper stack, the stacker raises itself 1/4 inch automatically.

- **Enable**. The automatic elevator on the power stacker operates normally.

- **Disable**. For use with extremely high-quality print jobs that take a long time to print. The stacker does not raise automatically every three minutes, and is entirely dependent on the sensor.

Auto Locking

- **Disable**. The ENTER key must be locked manually.

- **Enable**. The printer automatically locks the ENTER key five minutes after the last front panel key press.

Set Lock Key

Normally, to lock or unlock the printer menu, the UP and DOWN keys are pressed at the same time. The Set Lock Key parameter lets you choose different keys to lock or unlock the printer menu. You may choose almost any group of keys as the new lock and unlock keys. You cannot use the ENTER key or any key combinations which are already used for another function. There is no limit to how many keys can be selected.

To set the new lock key, follow these steps:

1. Work your way through the configuration menu until the display reads "Set Lock Key" (follow the menu structure on page 188).

2. Press ENTER. The display reads, "Select a new lock key."

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3. Press the combination of keys that you want to be the new lock key. Make sure you press all keys selected at the same time.

4. If the selection is valid, the display will read, "Enter the new lock key again." If the selection is invalid, the display will read, "Invalid key selection." Return to step 2 and start over.

5. Press the same combination of keys a second time. If the new lock key combination is entered again correctly, the display will read, "Lock key has been changed." If it was entered incorrectly, the display will read "Verification failed." Start over at step 2.

6. After entering the new lock combination successfully, press the ON LINE key to put the printer back online.

NOTE: The new lock combination will remain even if the printer is powered off and back on.

PTX SETUP Option

Selects the Special Function Control Code for the PTX_SETUP command and functions.

• **Setup Parse**. Disables or enables the PTX_SETUP command.

• **Setup SFCC**. Allows you to choose the hex value of the ASCII character you wish to use as the SFCC for the PTX_SETUP command. Valid hex values are 01-FF. The default value is hex 21, which corresponds to the "!" character.

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Accented Characters

Selects whether the accented characters are standard or tall. See Figure 13 for an example. Selecting tall will slow print speed and may cause the printer to back up during printing.

Standard   Tall
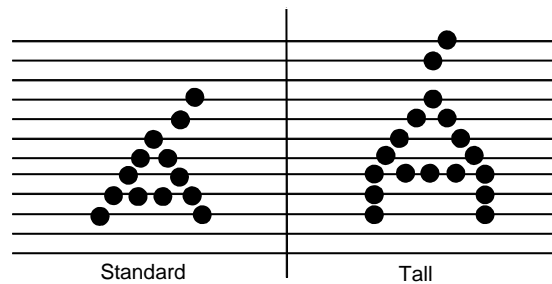
Figure 13. Accented Characters

File System

- **Overwrite Files**. Allows you to prevent files from being overwritten by disabling the overwrite function.

- **View Files List**. Displays the list of files in the file system. Pressing the DOWN key displays the file size.

- **Delete Files**. Displays the list of files in the file system. Pressing the ENTER key deletes the file displayed on the front panel.

- **Optimize & Reboot**. Reclaims flash space from deleted flash files. After pressing ENTER, wait for the printer to reboot.

- **Print File List**. Prints a summary of the files stored in flash memory and several statistics on File System usage.

IMPORTANT   **Do not turn the printer off until it has completely rebooted and is either back online or offline.**

Set Sharing

This option allows character sets to be shared between the active LP+ protocol and the active IGP emulation. If CT is installed and active, choosing a character set in the CT activates that character set in the active IGP and LP+ protocols. (These changes will not be visible on the front panel.) If Set Sharing is not selected, only the LP+ will share the CT's character set.

Switching host interfaces from CT to Centronics when the Set Sharing is enabled will cause the LP+ character set to be activated to the same character set of the active IGP, if possible.

In a non-CT system, changing characters sets in LP+ causes the active IGP to change to the same character set if the selected set exists in IGP. If the active IGP has no access to the selected set, no changes are made. Selecting a new character set in the active IGP causes the LP+ to change to the same character set if the selected character set exists in the active LP+ protocol. Not all sets are shared between emulations in the Standard group of character sets. As a result, selecting a set in the Standard group of LP+ or either IGP emulation may or may not cause the other emulation to have the same set.

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HOST INTERFACE

* = Factory Default
[1] Available when an Ethernet Adapter is present.

```
┌─────────────────┐
│      HOST       │
│   INTERFACE     │
│  (from page 87) │
└─────────────────┘
```

Twinax	Coax	Auto Switching	Centronics*	Dataproducts	Serial
(Available with CT Option)	(Available with CT Option)	(see page 196)	(see page 198)	(see page 201)	(see page 203)

IEEE 1284	Ethernet[1]
(see page 209)	(see page 211)
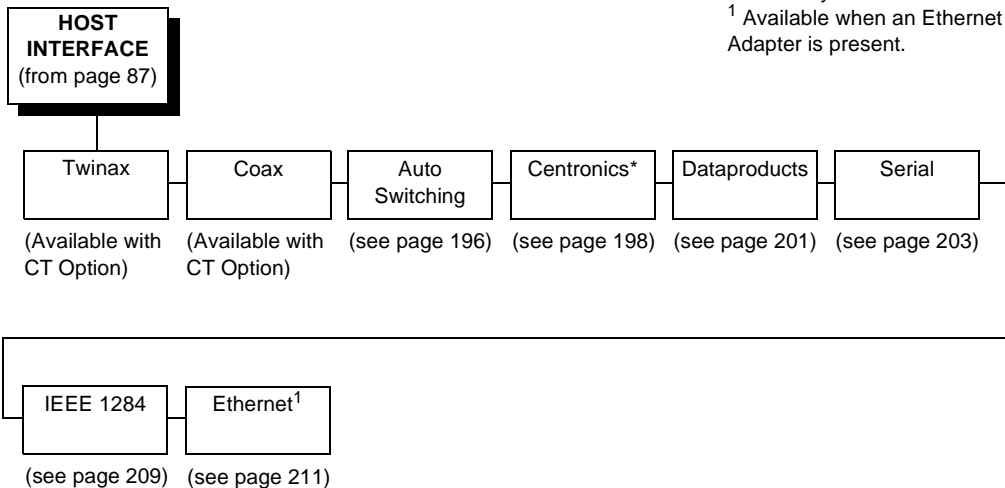
The Host Interface Menu enables you to select and configure one of many types of interfaces between the printer and your host computer. The currently selected interface is indicated with an asterisk on the control panel message display. Each interface has its own submenu with a set of interface parameters which can be configured.

IMPORTANT **When switching between Twinax, Coax, or Auto Switching, the printer will load the power-up configuration and the new interface parameters. Any settings made and not saved before selecting these interfaces are lost.**

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Auto Switching Submenu

* = Factory Default
[1]If Installed

```
Auto Switching
(from page 195)
```

| Parallel Hotport | Serial Hotport | C/T Hotport[1] |

Parallel Hotport

Port Type
   Centronics*
   (see page 198 for options)
   Dataproducts
   (see page 201 for options)
   IEEE 1284
   (see page 209 for options)
   Ethernet
   (see page 211 for options)
   Disable
Trickle Time
   1/4 sec.*
   1/2 sec.
   1 sec.
   2 sec.
   4 sec.
   8 sec.
   16 sec.
   Off
Timeout
   10 sec.*
   (1-60)
Report Status
   Disable*
   Enable

Serial Hotport

Port Type
   RS-232*
   RS-422
   Disable
Trickle Time
   1/4 sec.*
   1/2 sec.
   1 sec.
   2 sec.
   4 sec.
   8 sec.
   16 sec.
   Off
Timeout
   10 sec.*
   (1-60)
Report Status
   Disable*
   Enable

C/T Hotport[1]

Port Type
   Twinax*
   Coax
   Disable
Timeout
   10 sec.*
   (1-60)
Report Status
   Disable*
   Enable

Auto Switching

Gives the printer the ability to handle multiple data streams sequentially. With Auto Switching, the printer can service hosts attached to the serial, parallel, coax and twinax ports as if they were the only interface connected.

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For example, if the host computer sends one print job to the RS-232 serial port and a separate print job to the IEEE 1284 parallel port, the printer's Auto Switching is able to handle both jobs, in the order they were received, without the user having to reconfigure the selected interface between jobs.

Port Type

Select the types of parallel, serial and/or C/T interfaces which are connected to the printer. For example, if your printer is attached to one host with a Centronics connection and a second host with an RS-422 serial connection, you would select Centronics under the Parallel Hotport menu, RS-422 under the Serial Hotport menu, and Disable under the C/T Hotport menu.

Trickle Time

When the printer is printing data from a host and a second job is received by the printer from a different host, Trickle Time prevents the second host from timing out while it is waiting for its data to be printed. In order to support this feature, the port has to be able to accept data from the host and store it for future use.

For example, if the printer is printing a job from the serial port, and then receives a second print job from the parallel port, the data from the parallel port will "trickle" bit by bit into the printer buffer to prevent a timeout error from being sent back to the host connected to the parallel port.

The selected value is the time that the printer waits before getting the next byte of data from the host. The Trickle Time value should be less than the host time out value, but not too much shorter or else the printer fills up its buffer too fast. This function is not applicable for C/T hotport.

Timeout

This is the value used by the printer to time out from the current port and check the other selected Port Types for data to print. When the printer has not received data from the host after certain period of time, it needs to Timeout in order to service the other ports.

Report Status

- **Disable**. When a fault occurs on the printer, only the active port reports the fault to the host.

- **Enable**. The port will report any fault even when it is not the current active port.

Centronics (Parallel) Submenu

* = Factory Default

Centronics (from page 195)					
Data Bit 8	PI Ignored	Data Polarity	Resp. Polarity	Busy On Strobe	Latch Data On
Enable* Disable	Enable* Disable	Standard* Inverted	Standard* Inverted	Enable* Disable	Leading* Trailing

Prime Signal	TOF Action	Buffer Size in K
Enable* Disable	Reset* Do Nothing	1* (1-16)

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Data Bit 8

- **Enable**. Allows access to the extended ASCII character set.
- **Disable**. The printer interprets bit 8 of each incoming data character as a zero, regardless of its actual setting.

PI Ignored

The PI (Paper Instruction) signal is used to control vertical paper motion.

- **Enable**. Ignores the PI signal and treats the data as characters or control codes.
- **Disable**. Causes the printer to interpret the eight data lines as VFU commands when the PI signal is true.

Data Polarity

The Data Polarity parameter must be set to match the data polarity of your host computer.

- **Standard**. Does not expect the host computer to invert the data.
- **Inverted**. Expects the data received on the data lines from the host computer to be inverted. Ones become zeros, and vice versa.

Response Polarity

The Response Polarity parameter must be set to match the response polarity of your host computer.

- **Standard**. Does not invert the response signal.
- **Inverted**. Inverts the response signal sent to the host computer.

Busy on Strobe

- **Enable**. Asserts a busy signal after each character is received.
- **Disable**. Asserts a busy signal only when the print buffers are full.

199

Latch Data On

Specifies whether the data is read on the leading or trailing edge of the data strobe signal.

Prime Signal

- **Enable**. The parallel port will perform a warm start (reboot) if the host asserts the Prime Signal.

- **Disable**. The parallel port will not perform a warm start (reboot) if the host asserts the Prime Signal.

TOF Action

- **Reset**. A form feed is performed before a warm start when the prime signal is asserted from the host. This setting is used only if the Prime Signal parameter is enabled.

- **Do Nothing**. Nothing occurs before a warm start when the prime signal is asserted from the host.

Buffer Size in K

Configures the amount of memory allocated for the Centronics parallel port buffer. You can specify between 1 and 16 Kbytes, in 1-Kbyte increments.

Dataproducts (Standard & Long Lines) Submenu

* = Factory Default
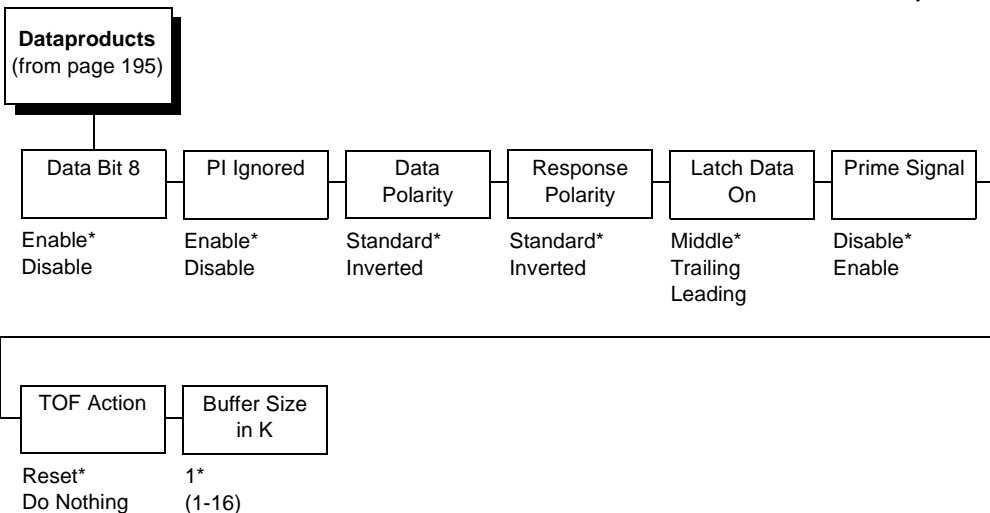
Dataproducts (from page 195)

Data Bit 8	PI Ignored	Data Polarity	Response Polarity	Latch Data On	Prime Signal
Enable* Disable	Enable* Disable	Standard* Inverted	Standard* Inverted	Middle* Trailing Leading	Disable* Enable

TOF Action	Buffer Size in K
Reset* Do Nothing	1* (1-16)

Data Bit 8

- **Enable**. Allows access to the extended ASCII character set.

- **Disable**. The printer interprets bit 8 of each incoming data character as a zero, regardless of its actual setting.

PI Ignored

The PI (Paper Instruction) signal is used to control vertical paper motion.

- **Enable**. Causes the printer to interpret the eight data lines as DVFU commands when the PI signal is true.

- **Disable**. Ignores the PI signal and treats the data as characters or control codes.

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Data Polarity

The Data Polarity parameter must be set to match the data polarity of your host computer.

- **Standard**. Does not expect the host computer to invert the data.

- **Inverted**. Expects the data received on the data lines from the host computer to be inverted. Ones become zeros, and zeros become ones.

Response Polarity

The Response Polarity parameter must be set to match the response polarity of your host computer.

- **Standard**. Does not invert the response signal.

- **Inverted**. Inverts the response signal sent to the host computer.

Latch Data On

Specifies whether the data is read on the leading, middle, or trailing edge of the data strobe signal.

Prime Signal

- **Enable**. The parallel port will perform a warm start (reboot) if the host asserts the Prime Signal.

- **Disable**. The parallel port will not perform a warm start (reboot) if the host asserts the Prime Signal.
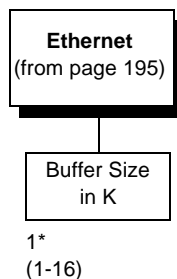
TOF Action

- **Reset**. A form feed is performed before a warm start when the prime signal is asserted from the host. This setting is used only if the Prime Signal parameter is enabled.

- **Do Nothing**. Nothing occurs before a warm start when the prime signal is asserted from the host.
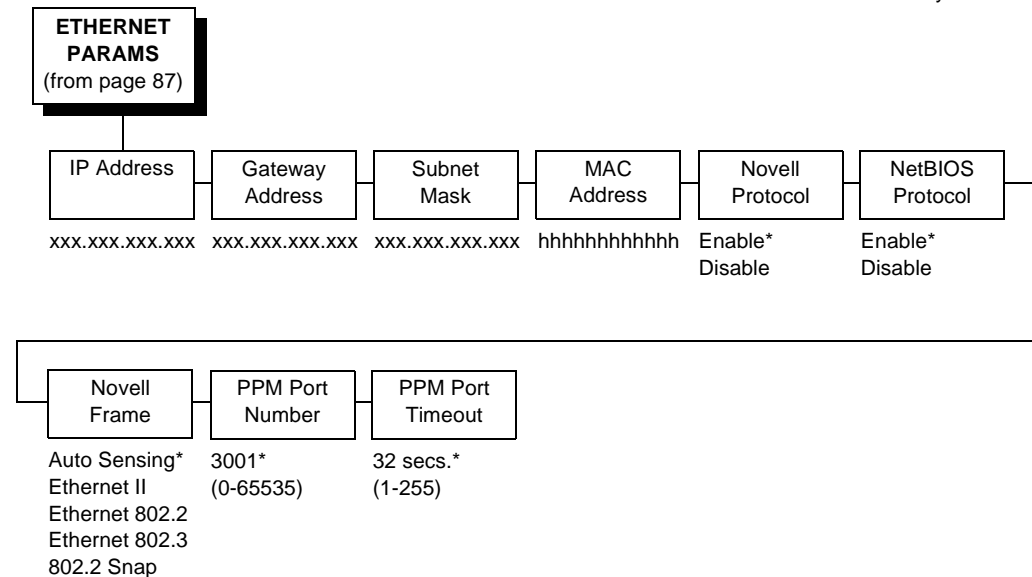
202

Buffer Size in K

Configures the amount of memory allocated for the Dataproducts parallel port buffer. You can specify between 1 and 16 Kbytes, in 1-Kbyte increments.

Serial Submenu

* = Factory Default

Serial (from page 195)					
Interface Type	**Data Protocol**	**Baud Rate**	**Word Length**	**Stop Bits**	**Parity**
RS-232*	XON/XOFF*	600	8*	1*	None*
RS-422	ETX/ACK	1200	7	2	Odd
	ACK/NAK	2400			Even
	Series1 1 Char	4800			Mark
	Series1 2 Char	9600*			Sense
	DTR	19200			
		38400			
		57600			
		115200			

Data Term Ready	**Request To Send**	**Buffer Size in K**	**Poll Character**	**Poll Response**	**Idle Response**
True*	Online and BNF*	1*	0*	0*	Disable*
Online and BNF	Offline or BF	(1-16)	(0-FF hex)	(0-30 ms)	Enable
Offline or BF	Online				
Online	False				
False	True				

One Char Equity
Disable*
Enable

203

Interface Type

This parameter allows you to select either the RS-232 or RS-422 serial port interface.

Data Protocol

You can select one of the following serial interface protocols to meet the host interface requirements.

- **XON / XOFF**. The printer controls the flow of communication from the host by turning the transmission on and off. In some situations, such as when the buffer is full or the timing of signals is too slow or too fast, the printer will tell the host to stop transmission by sending an XOFF character. An XOFF character is sent when the number of empty bytes in the buffer is less than or equal to 25 percent of the buffer size. If the host keeps sending data after an XOFF is sent, the printer firmware will continue to send an XOFF for every 16 characters received. When cleared, the printer will resume receiving data (XON). The data does not have any End of Text codes; XON / XOFF is a non-block protocol.

- **ETX / ACK**. End of Text / Acknowledge. The host controls the flow of communication to the printer by sending a block of data and ending the block with an End of Text (ETX) signal. When the printer receives the ETX signal, it will acknowledge the ETX, thereby acknowledging it has received the entire block of data.

- **ACK / NAK**. ACK means acknowledge; the device acknowledges it has accepted a transmission. NAK means negative acknowledge; the device did not receive the transmission.

- **SERIES1 1 CHAR**. The printer controls the flow of communication from the host by turning the transmission on and off using response characters sent to the host. If the number of valid bytes in the buffer reaches 75 percent of the buffer size, the online or offline and buffer full response character is sent. If the buffer is completely full, an online or offline buffer full response is sent every time a character is sent

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from the host. Whenever the printer state changes to online or offline, the appropriate response character is sent. If the idle response option is enabled, the printer will send a response character every two seconds while the number of valid bytes in the buffer is less than 75 percent of the buffer size. If a poll character is received (configurable from the Poll Character xx Hex option on the front panel from hex 0 through FF), the printer will send a response character n milliseconds later (configurable from the Poll Character xx MS on the front panel from 0 through 30). This n milliseconds is called the poll delay. The poll character will be removed from the input data stream and will not be processed. This may cause problems with the transmission of binary data (e.g., control codes, bit image, etc.). If a poll delay is started due to the receipt of a poll character and another poll character is received, the second poll character has no effect, and is removed from the input data stream. If a transition (from buffer full to empty or online to offline) occurs during a poll delay, the new printer state will be sent at the end of the poll delay.

The response characters are described in Table 5.

Table 5. Series1 1 Char Response Characters

Printer State	Response
Online and Buffer Empty	CR
Online and Buffer Full	3
Offline and Buffer Empty	0
Offline and Buffer Full	2

- **SERIES1 2 CHAR**. This protocol behaves exactly the same as the Series1 Char except there is a two-character response to the host. The response characters are described in Table 6.

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Table 6. Series1 2 Char Response Characters

Printer State	Response
Online and Buffer Empty	1 CR
Online and Buffer Full	3 CR
Offline and Buffer Empty	0 CR
Offline and Buffer Full	2 CR

- **DTR**. The printer controls the data flow by sending this hardware signal to the host. If there is enough room in the printer buffer, the printer will send a high signal; if the buffer is full the printer will send a low signal. DTR tells the host if it is safe to send more data. (If the host sends data during an unsafe condition, data will be lost.) DTR is not available when RS-422 is selected.

Baud Rate

Sets the baud rate of the serial interface in the printer. Baud rate is the speed at which serial data is transferred between the host computer and the printer. The choices for the RS-232 and RS-422 interfaces are 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud.

NOTE: If you select a baud rate that is greater than 19200, you may need to use RS-422 to prevent data loss. You also may need to increase the Buffer Size in K parameter from the default (1 Kbyte) to improve performance.

Word Length

Sets the length of the serial data word. The length of the data word can be set to 7 or 8 bits, and must match the corresponding data bits setting in the host computer.

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Stop Bits

Sets the number of stop bits in the serial data word. Either one or two stop bits can be selected. The setting must match the corresponding stop bit setting in the host computer.

Parity

Set for odd parity, even parity, mark, sense, or no parity. The setting must match the corresponding parity setting in the host computer.

Data Terminal Ready

This configuration is part of hardware flow control and determines when the Data Terminal Ready (DTR) signal is generated. This signal indicates if the printer is ready to receive data.

- **True**. Continuously asserts the DTR signal.

- **On-Line and BNF (buffer not full)**. Asserts the DTR signal when the printer is online and the internal serial buffer is not full.

- **Off-Line or BF (buffer full)**. Asserts the DTR signal when the printer is offline or the internal serial buffer is full.

- **On-Line**. Asserts the DTR signal when the printer is online.

- **False**. Never asserts the DTR signal.

Request to Send

This configuration is part of hardware flow control and determines when the Request to Send (RTS) signal is generated. This signal indicates whether or not the printer is ready to receive data.

- **On-Line and BNF**. Asserts the RTS signal when the printer is online and the internal serial buffer is not full.

- **Off-Line or BF**. Asserts the RTS signal when the printer is offline or the internal serial buffer is full.

- **On-Line**. Asserts the RTS signal when the printer is online.

- **False**. Never asserts the RTS signal.

- **True**. Continuously asserts the RTS signal.

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Buffer Size in K

This option configures the amount of memory allocated for the serial port buffer. You may specify between 1 and 16 Kbytes, in 1-Kbyte increments.

NOTE: If you select a baud rate that is 19200 or greater, you may need to increase the Buffer Size in K parameter from the default to 16 Kbytes to improve performance.

Poll Character

This option is for the Series1 protocol. Whenever the printer receives this character, it sends a response to the host indicating the current state of the printer (see Series1 protocol). It may be configured from 0 through FF hexadecimal.

Poll Response

This option is for the Series1 protocol. After receiving a poll character, the printer will wait the poll response time in milliseconds before sending the response. It may be configured from 0 through 30.

Idle Response

This option is for the Series1 protocol. When enabled, the printer will send a response character every two seconds while the number of valid bytes in the buffer is less than 75 percent of the buffer size.

One Char Enquiry

The One Char Enquiry mode uses the Poll Character to detect a request from the host and sends a response back to the host. This option also allows you to turn on and off this feature.

Table 7. One Char Enquiry Response Characters

Printer State	Response (hex)
Online and Buffer Not Full	20
Online and Buffer Full	21
Offline and Buffer Not Full	22
Offline and Buffer Full	23

The Poll Character is removed from the data stream. If the Data Protocol is set to ETX/ACK, ACK/NAK, or Series 1, One Char Enquiry is automatically disabled.

IEEE 1284 Parallel (Bidirectional) Submenu

* = Factory Default
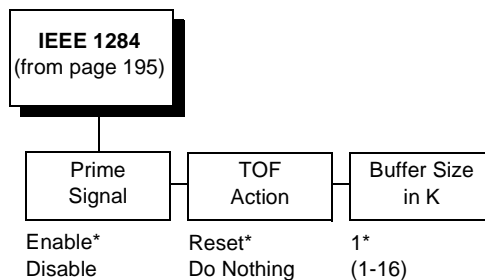
The IEEE 1284 interface is faster and more versatile than Centronics and supports bidirectional communication. Chapter 5 discusses the available modes (Compatibility, Nibble, and Byte) in more detail. Configuration of this interface is controlled from the host.

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Prime Signal

- **Enable**. The parallel port will perform a warm start (reboot) if the host asserts the Prime Signal.

- **Disable**. The parallel port will not perform a warm start (reboot) if the host asserts the Prime Signal.

TOF Action

- **Reset**. A form feed is performed before a warm start when the prime signal is asserted from the host. This setting is used only if the Prime Signal parameter is enabled.

- **Do Nothing**. Nothing occurs before a warm start when the prime signal is asserted from the host.

Buffer Size in K

This option configures the amount of memory allocated for the IEEE 1284 parallel port buffer. You can specify between 1 and 16 Kbytes, in 1-Kbyte increments.

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MPI

Ethernet Submenu

* = Factory Default

```
        Ethernet
      (from page 195)
           │
           │
      Buffer Size
         in K
         1*
        (1-16)
```

The Ethernet interface allows you to locate the printer on a LAN rather than attach the host directly into the printer. The detailed configuration of this option is given in the *PrintNet User's Manual*.

Buffer Size in K

This option configures the amount of memory allocated for the Ethernet buffer. You can specify between 1 and 16 Kbytes, in 1-Kbyte increments.

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ETHERNET PARAMETERS

Menu

* = Factory Default

```
ETHERNET
PARAMS
(from page 87)
```

IP Address	Gateway Address	Subnet Mask	MAC Address	Novell Protocol	NetBIOS Protocol
xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx	hhhhhhhhhhhh	Enable* Disable	Enable* Disable

Novell Frame	PPM Port Number	PPM Port Timeout
Auto Sensing* Ethernet II Ethernet 802.2 Ethernet 802.3 802.2 Snap	3001* (0-65535)	32 secs.* (1-255)

The ETHERNET PARAMS menu helps your printer communicate on a network.

For information on assigning the IP Address, Gateway Address, Subnet Mask and MAC Address, refer to the *PrintNet User's Manual*.

You may also enable or disable the Novell or NetBIOS Protocols within this menu, as well as selecting which Novell Frame scheme is used in processing Novell signals. See the Novell chapter in the *PrintNet User's Manual* for more details.

If the printer is connected to a Printer Manager utility, the PPM Port number and PPM Port Timeout settings must match the settings in the Printer Manager program. See the appropriate Printer Manager manual for details.

PRINTER CONTROL

* = Factory Default

```
┌──────────────┐
│   PRINTER    │
│   CONTROL    │
│ (from page 87)│
└──────────────┘
```

Unidirectional	PMD Fault	Open Platen @ BOF	Slow Paper Slew	Power Saver Time	Tear Bar Distance
Disable*	Enable*	Disable*	Disable*	15 mins.*	5.12 in.*
Enable	Disable	Enable	Enable	(5 sec.-60 min.)	(4.5 - 10.5)
				Instant	

Shuttle Timeout	Bar Code Quality
5 sec.*	Draft*
(1-60)	Dark
	Recommended
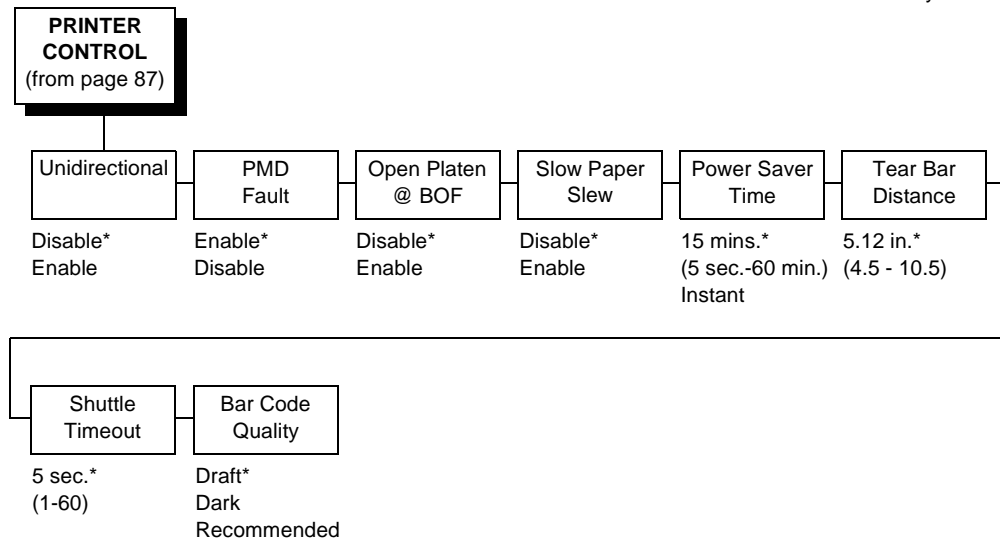
Unidirectional

The Unidirectional feature affects both print quality and printing speed. By setting this feature, you can configure the printer to print in both directions of the shuttle sweep (bidirectional), or to print in one direction only (unidirectional).

- **Disable**. The printer will print all data in both directions of the shuttle sweep (bidirectional printing). This choice produces higher printing speed.

- **Enable**. The printer will print all data in only one direction of the shuttle sweep (unidirectional printing). Although enabling this feature reduces print speed, it enhances the vertical alignment of dots and produces cleaner, sharper barcodes and text.

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PMD (Paper Motion Detection) Fault

- **Enable**. In the event of a paper jam, an audible alarm beeps, "CLEAR PAPER JAM" appears on the message display, and the printer stops printing.

- **Disable**. You should disable PMD only if special paper requires it.

CAUTION   **Once PMD is disabled, paper motion is not monitored. If a paper jam occurs, the printer ignores the condition and continues to print, possibly causing damage to the printer.**

Open Platen @ BOF (Bottom of Form)

Some special forms have perforation areas that are too thick to pass through the print station. This parameter, when enabled, opens and closes the platen when the perforations move across the platen. When enabling this parameter, you must set the forms length to match the physical distance between perforations.

Slow Paper Slew

- **Disable**. The printer will slew and stack paper at maximum speed.

- **Enable**. Causes the paper to stack at a slower rate. This ensures that certain forms will stack neatly.

Power Saver Time

The time interval you specify for this parameter sets the amount of idle time before the printer goes into Power Saver mode. When Instant is chosen, the printer goes into Power Saver mode as soon as it is able to stop the shuttle properly. The time allotted to perform this function is dependent on the shuttle timeout value which can be set in the menu.

Pressing any key will remove the power saver message from the control panel. Sending a print job to the printer will turn off power saver mode.

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Tear Bar Distance

Allows fine and course adjustment of the tear bar position. For a pedestal model printer with a quick access cover using the front paper exit, the default (5.12 inches) is used. You can specify 4.5 to 10.5 inches in .01 inch increments to accommodate variations in cover and form design. If the printer is not equipped with a quick access cover, or when rear paper exit is desired, the tear distance should be set to accommodate the rear position. This requires setting the Tear Bar Distance to 9.92 inches.

Shuttle Timeout

The amount of time the shuttle continues moving after no data is received. If your host is slow, setting the number to a higher value will prevent the printer from spending time shuttling up and down between data bursts.

Bar Code Quality

Determines the bar code resolution for all emulations, except IPDS. (See "IPDS Emulation" on page 183 to set the bar code quality for IPDS.)

- **Draft**. Bar code resolution is set at 60 x 72.

- **Dark**. Bar code resolution is set at 120 x 72.

- **Recommended**. Bar code resolution is set at 120 x 144 in unidirectional mode.

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DIAGNOSTICS
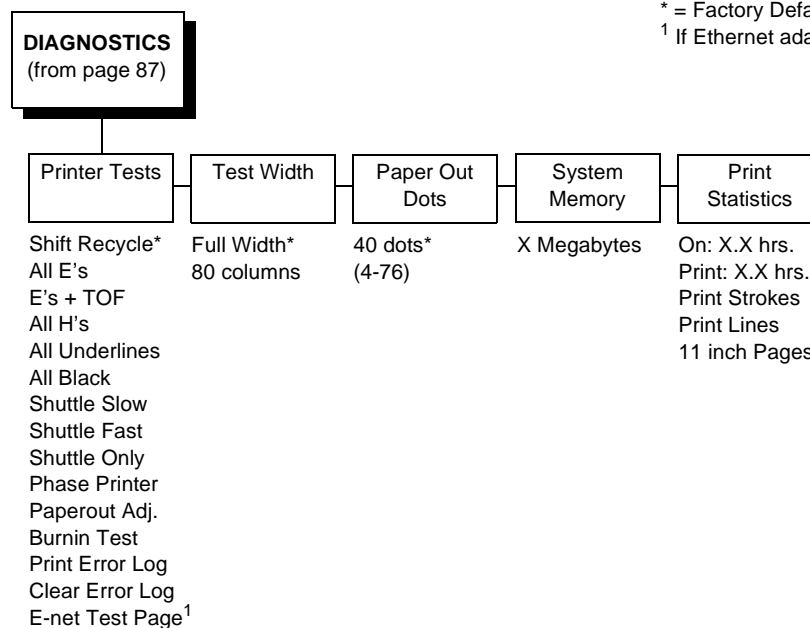
* = Factory Default
[1] If Ethernet adapter is present.

```
┌──────────────┐
│ DIAGNOSTICS  │
│ (from page 87)│
└──────────────┘
```

Printer Tests	Test Width	Paper Out Dots	System Memory	Print Statistics
Shift Recycle*	Full Width*	40 dots*	X Megabytes	On: X.X hrs.
All E's	80 columns	(4-76)		Print: X.X hrs.
E's + TOF				Print Strokes
All H's				Print Lines
All Underlines				11 inch Pages
All Black				
Shuttle Slow				
Shuttle Fast				
Shuttle Only				
Phase Printer				
Paperout Adj.				
Burnin Test				
Print Error Log				
Clear Error Log				
E-net Test Page[1]				

Printer Tests

These tests are used to check the print quality and operation of the printer.

NOTE: Your authorized service representative will typically run the tests. They are described in more detail in the *Maintenance Manual*.

- **Shift Recycle**. A sliding alphanumeric pattern which identifies missing or malformed characters, improper vertical alignment, or vertical compression.

- **All E's**. A pattern of all uppercase E's which identifies missing characters, misplaced dots, smeared characters, improper phasing problems, or light/dark character variations.

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- **E's + TOF**. A pattern of all E's followed by a form feed to the next page top-of-form, which identifies paper motion or feeding problems.

- **All H's**. A pattern of all uppercase H's used to detect missing characters, misplaced dots, smeared characters, or improper phasing.

- **All Underlines**. An underline pattern useful for identifying hammer bank misalignment.

- **All Black**. A condition where all dot positions are printed, creating a solid black band.

- **Shuttle Slow**. Verifies proper operation by exercising shuttle and ribbon motion at low speed.

- **Shuttle Fast**. Verifies proper operation by exercising shuttle and ribbon motion at fast speed.

- **Shuttle Only**. Exercises only the shuttle at fast speed.

- **Phase Printer**. Checks for wavy print. The initial phase value is set in the factory. Run the test and check the quality. (The phase value prints on the left margin.) If the print looks too wavy, change the Phase Value parameter while the test is running. While the phase printer test runs, press the DOWN key. To change the value, press the PREV or NEXT key until the desired value displays and then press ENTER.

- **Paperout Adjust**. Verifies the current Paper Out Dots setting, which determines where the last line of text will print when there is a paper out condition. Setting this parameter correctly prevents printing on the platen.

- **Burnin Test**. Reserved for factory use.

- **Print Error Log**. Prints the current log of errors. Most non-routine faults (ribbon stall, voltage faults) are stored in the error log.

- **Clear Error Log**. Clears entries in the error log.

- **E-net Test Page**. Prints the Ethernet statistics stored on the Ethernet adapter (if present).

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Test Width

Set this parameter to run the self-tests at full width or 80 columns.

Paper Out Dots

This parameter is used to adjust the paper out distance from the perforation; you can specify where the last line on the page will print when there is a paper out condition. Setting this parameter correctly prevents printing on the platen.

CAUTION   **Only authorized service representatives should set this parameter.**

System Memory

Displays the amount of RAM installed.

Print Statistics

You can view various printer statistics and refer to them for preventive maintenance purposes. Printer statistics accumulate continuously; they do not reset when you turn off the printer. All of the printer statistics are set to zero at the factory after burn-in testing.

- **On**. The cumulative time in hours the printer has been powered on. The range is 0 to 30,000 hours.

- **Print**. The cumulative time in hours the printer has actually been printing. The range is 0 to 30,000 hours.

- **Print Strokes**. The cumulative number of back-and-forth shuttle strokes the printer has printed during normal printer operation. The range is 0 to 2,147,483,647 shuttle strokes.

- **Print Lines**. The cumulative number of lines the printer has printed. The range is 0 to 2,147,483,647 print lines.

- **11 inch Pages**. The cumulative number of pages the printer has printed. The range in print pages is 0 to 2,147,483,647 total inches of paper movement divided by 11.

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RIBBONMINDER

RibbonMinder is a user-definable software feature which notifies the user when a ribbon should be changed. It does this by monitoring ink consumption and alerts you when the print quality falls below a level you designate. This is especially important if you are printing barcodes to be scanned.

```
ON LINE      100%
 <printer emulation>
```

As printing continues, the percentage of usable ink in the ribbon decreases.

```
ON LINE       74%
 <printer emulation>
```
Ribbon ink being consumed

```
ON LINE        8%
 <printer emulation>
```
Ribbon life approaching end

When 0% usable ink appears, the printer is typically configured to stop printing and display the following message:

```
RIBBON INK OUT
CHANGE RIBBON
```

NOTE: Once you have set up options for RibbonMinder, it works without attention. When you begin printing with RibbonMinder enabled, the message display shows a ribbon life value of 100%. The ribbon life decreases as the ink is consumed.

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Chapter **4** **RIBBONMINDER**

* = Factory Default

```
┌─────────────┐
│   RIBBON    │
│   MINDER    │
│ (from page 87)│
└─────────────┘
```

New Ribbon	Ribbon Action	Ribbon Size	Ribbon Adjust	Fault Action
Press ENTER to reset ribbon life to 100%. A new ribbon must be installed after setting the ribbon life to 100%.	Disable* Display Fault	60 yards* (1-255)	0%* (-99% to 99%)	New Ribbon* Do Nothing
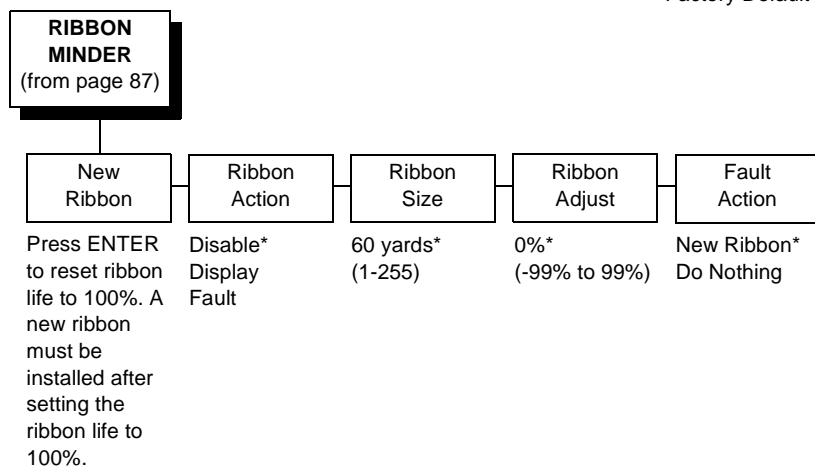
New Ribbon

Whenever you install a new ribbon, you must reset the ribbon life to 100%.

Once you install the new ribbon, work your way through the configuration menus until "New Ribbon" appears on the LCD. Press the ENTER key to reset the ribbon life to 100%.

Ribbon Action

- **Disable**. Removes the ink consumption display. RibbonMinder will continue to monitor how much ink is left in the ribbon.

- **Display**. Activates the RibbonMinder ink consumption display. Allows you to continually monitor the percentage of ink left in the ribbon.

- **Fault**. Activates a fault message when the display reaches 0%.

Ribbon Size

The standard ribbon size is 60 yards for the pedestal model and 100 yards for the cabinet model. These are the factory default settings. You can use the Ribbon Size option to specify the ribbon length in one-yard increments, with a maximum of 255 yards.

Ribbon Adjust

Adjust the number of pages printed before the display reaches 0%. If the ribbon normally prints 1000 pages before reaching 0%, configuring the Ribbon Adjust to 20% will print 200 more pages than normal before reaching 0%. A Ribbon Adjust setting of -20% will cause the display to reach 0% after 200 fewer pages than normal. The setting can range from -99% through 99%.

Fault Action

- **New Ribbon**. Changing the ribbon while in the RIBBON INK OUT / CHANGE RIBBON fault mode will reset the ribbon life to 100%, just as if the New Ribbon menu option was executed.

- **Do Nothing**. The ribbon life may only be reset through the New Ribbon menu option.

RibbonMinder Fault

When the RIBBON INK OUT / CHANGE RIBBON fault message appears on the LCD, press the CLEAR key to remove the fault message, then follow the "Replacing the Ribbon" procedure on page 72. If you need to complete a current print job before replacing the ribbon, press ON LINE. This allows the printer to continue printing for an additional two minutes. After the two-minute period has elapsed, the fault will reoccur if the Ribbon Action parameter remains set on Fault. If Ribbon Action is changed to Disable or Display within the two-minute period, the fault will not recur; disable RibbonMinder if you do not want to change the ribbon at this time. The fault message will reappear once the function is enabled again, and the printer status indicator will flash until the ribbon is changed.

Chapter **4** RIBBONMINDER

5 *Troubleshooting*

Cleaning Requirements

Clean the printer every six months or after every 1000 hours of operation, whichever occurs first. If the printer is located in a dusty area or is used for heavy duty printing, clean it more often.

WARNING **Disconnect the power source before cleaning the printer.**

Vor dem Säubern des Druckers ist die Netzverbindung zu unterbrechen.

Débranchez l'alimentation avant de nettoyer l'imprimante.

Desconecte la fuente de energía antes de limpiar la impresora.

Staccare la fonte di energia prima della pulitura della stampante.

Exterior Cleaning

Clean the outside of the cabinet with a soft, lint-free cloth and mild detergent soap. (Dishwashing liquid works well.) Do not use abrasive powders or chemical solvents. Clean the windows with plain water or mild window cleaner. Always apply the cleaning solution to the cloth; never pour cleaning solution directly onto the printer.

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Interior Cleaning

Over time, particles of paper and ink accumulate inside impact printers. This is normal. Paper dust and ink build-up must be periodically removed to avoid degraded print quality. Most paper dust accumulates around the ends of the platen and ribbon path.
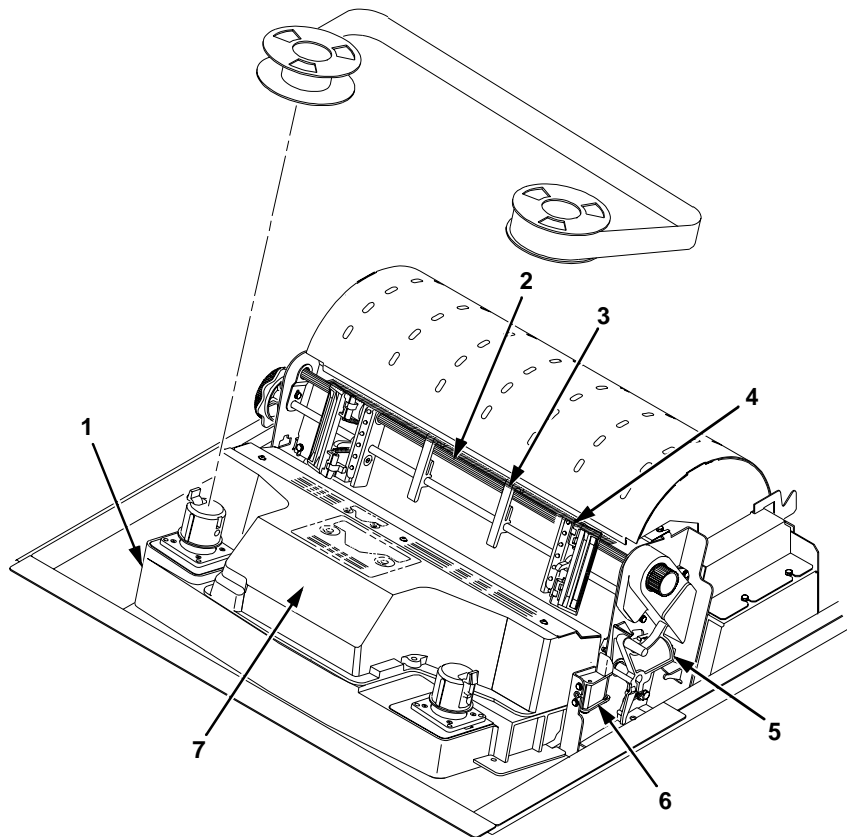
Legend:

1) Base Casting
2) Splined Shaft
3) Paper Support (2)
4) Tractor
5) Forms Thickness Lever
6) Ribbon Guide (2)
7) Shuttle Cover Assembly

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To clean the interior of the printer perform the following steps.

1. Power off the printer and unplug the printer power cord.

2. Open the printer cover. Fully raise the forms thickness lever. Unload paper.

3. Unlatch both ribbon spools and carefully lift them off the hubs. Raise the ribbon out of the ribbon path.

4. Using a soft-bristled, non-metallic brush (such as a toothbrush), brush paper dust and ribbon lint off the tractors, shuttle cover assembly, base casting, and ribbon guides. Vacuum up the residue.

CAUTION   **Vacuum carefully around the hammer bank and surrounding area to avoid damage. To avoid corrosion damage, use only alcohol when cleaning the printer mechanical elements. Solutions used to clean mechanical elements must contain no water.**

5. Wipe the splined shaft with a soft cloth.

6. Check the ribbon mask and hammer bank cover for bits of torn paper or ribbon lint.

7. Using a soft cloth lightly moistened with anhydrous alcohol, remove dust and ink from the platen. (The platen is the thick silver bar behind the hammer bank cover that rotates when the forms thickness lever is rotated.) Clean the ribbon guides.

CAUTION   **When cleaning the platen, be very careful not to get any alcohol in the hammer bank, because alcohol will cause severe damage to the hammer bank. Only a trained service technician should clean the shuttle assembly.**

8. Brush and vacuum up dust or residue that has accumulated inside the lower cabinet.

9. Wipe the lower cabinet interior with a clean, lint-free cloth dampened (not wet) with water and mild detergent or window cleaning solution. Dry the lower cabinet interior by wiping it down with a clean, lint-free cloth.

10. Install the ribbon and load paper.

Diagnosing Problems

This section is designed to help the user recover from any problems which may arise with normal printer operation.

Bar Code Verification

The single most important consideration when printing a bar code is to ensure the bar code will be scanned properly. Incorporating a bar code quality procedure in the printing process is the best way to ensure that bar codes are being printed correctly. A properly implemented verification procedure will increase overall bar code quality, reduce waste from misprinted bar codes, and achieve high first-time read rates, which is an increasingly important factor in newer, more efficient systems where manually entered data is not acceptable as a backup function. Verification also minimizes the costs of returned products due to poor reading or unaccountable bar codes.

RJS designs and manufactures the world's most complete line of bar code verification products, including their portable Inspector and Laser Inspector models, On-Line Inspector and AutoScan II series. For more information on RJS bar code verifiers, contact their corporate headquarters at 562-994-0930, or visit their web site at **www.rjs1.com**.

Printing A Hex Dump

A hex code printout (or hex dump) is a translation of all host interface data to its hexadecimal equivalent, listing all ASCII character data received from the host computer with their corresponding two-digit hexadecimal codes. Hex dumps are used to troubleshoot printer data reception problems.

Printable characters print as the assigned symbol; nonprintable characters are indicated by a period (.).

For instructions on how to enable and disable Hex Dump mode, see page page -189. Figure 14 shows an example of a hex dump.

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```
 !"#$%&'()*+,-./  20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
0123456789:;<=>?  30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
@ABCDEFGHIJKLMNO  40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
PQRSTUVWXYZ[\]^_  50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
`abcdefghijklmno  60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
pqrstuvwxyz{|}~   70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 20
!"#$%&'()*+,-./0  21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30
123456789:;<=>?@  31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 40
ABCDEFGH..!"#$%&  41 42 43 44 45 46 47 48 0D 0A 21 22 23 24 25 26
'()*+,-./0123456  27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36
789:;<=>?@ABCDEF  37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46
GHIJKLMNOPQRSTUV  47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56
WXYZ[\]^_`abcdef  57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66
ghijklmnopqrstuv  67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76
wxyz{|}~ !"#$%&'  77 78 79 7A 7B 7C 7D 7E 20 21 22 23 24 25 26 27
()*+,-./01234567  28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37
89:;<=>?@ABCDEFG  38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47
HI.."#$%&'()*+,-  48 49 0D 0A 22 23 24 25 26 27 28 29 2A 2B 2C 2D
./0123456789:;<=  2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D
>?@ABCDEFGHIJKLM  3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D
NOPQRSTUVWXYZ[\]  4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D
^_`abcdefghijklm  5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D
nopqrstuvwxyz{|}  6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D
~ !"#$%&'()*+,-.  7E 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E
/0123456789:;<=>  2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E
?@ABCDEFGHIJ..#$  3F 40 41 42 43 44 45 46 47 48 49 4A 0D 0A 23 24
%&'()*+,-./01234  25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34
56789:;<=>?@ABCD  35 36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44
EFGHIJKLMNOPQRST  45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
UVWXYZ[\]^_`abcd  55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64
efghijklmnopqrst  65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74
uvwxyz{|}~ !"#$%  75 76 77 78 79 7A 7B 7C 7D 7E 20 21 22 23 24 25
&'()*+,-./012345  26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35
6789:;<=>?@ABCDE  36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45
FGHIJK..$%&'()*+  46 47 48 49 4A 4B 0D 0A 24 25 26 27 28 29 2A 2B
,-./0123456789:;  2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B
<=>?@ABCDEFGHIJK  3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B
LMNOPQRSTUVWXYZ[  4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B
\]^_`abcdefghijk  5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B
lmnopqrstuvwxyz{  6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B
|}~ !"#$%&'()*+,  7C 7D 7E 20 21 22 23 24 25 26 27 28 29 2A 2B 2C
```

Figure 14. Hex Dump Sample

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Fault Messages

If a fault condition occurs in the printer, the status indicator on the control panel flashes on and off and the message display indicates the specific fault. Fault messages are summarized in Table 8.

Displayed faults fall into one of two categories:

- Operator correctable
- Field service required

For the operator-correctable faults, follow the suggested solution in Table 8. After correcting the displayed fault, press the CLEAR key to clear the error message and status indicator and resume printing. If the fault message reappears, contact your authorized service representative.

NOTE: The *Maintenance Manual* provides more detailed information and procedures for resolving fault conditions. However, many of the procedures described there must be performed only by your authorized service representative.

Fault Messages Requiring Field Service Attention

If a fault is not correctable by the operator, the fault message is followed by an asterisk (*). This usually indicates that an authorized service representative is needed. You may try two steps to clear the fault before calling your authorized service representative:

1. Set the printer power switch to O (off), wait 15 seconds, then turn the printer on again. Run your print job again. If the message does not appear, it was a false indication and no further attention is required.

2. If the message reappears, press the CLEAR key. If the message goes away, it was a false indication and no further attention is required. If the message reappears, call your authorized service representative.

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Table 8. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
8.5V PWR FAIL*	No	Internal power failure.	Contact your authorized service representative.[1]
15V CTL FAIL*	No	Controller voltage failure.	Contact your authorized service representative.[1]
23.5V CTL FAIL*	No	Controller voltage failure.	Contact your authorized service representative.[1]
48V PWR FAIL*	No	Internal power failure.	Contact your authorized service representative.[1]
ACCESS NULL PTR*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
ACTIVATE LOST	No	Printer detects twinax protocol communication errors.	The printer reports the error.
A TO D OVERRUN*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
BUFFER OVERFLOW	Yes	Host sends data after the printer buffer is full (serial interface).	Check your serial host interface parameter settings; if necessary, adjust them so that they match the settings of the attached host.
BUFFER OVERRUN	Yes	Receive overrun (serial interface).	Check printer serial port configuration setup. Ensure the baud rate and data protocol match both host and printer settings.

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Chapter 5 Diagnosing Problems

Table 8. LCD Message Troubleshooting Table (continued)

CAUTION PPM HAS REMOTE CONTROL	Yes	Another user is accessing the printer remotely through the Printer Manager.	Wait until the remote user has finished their Printer Manager session, or press any key to disable the Printer Manger and gain control of the printer.
CLEAR PAPER JAM	Yes	No paper motion.	Clear jam and reload paper. If this message recurs, contact your authorized service representative.[1]
CLOSE PLATEN	Yes	The forms thickness lever is open.	Close the forms thickness lever.
COIL HOT	Yes	One or more hammer coils are hot.	Check printer environment. If too hot or dusty, relocate printer. May occur normally on graphically intense print jobs.
15 COMM CHECK	Yes	Line not active (twinax interface).	Check cable connection.
CTL VOLT FAIL*	No	Controller voltage failure.	Contact your authorized service representative.[1]
DRVR CIR BAD*	No	Hammer coil count test failed.	Contact your authorized service representative.[1]

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Table 8. LCD Message Troubleshooting Table (continued)

EXHAUST FAN FLT (Cabinet model only)	Yes	Sensors cannot detect current in fan circuit.	Power off the printer and remove the paper path (see *Maintenance Manual).* Check that the fan cable connector is connected. Check for obstruction of vents and fan airway, and remove any obstructions. Check for items beneath the printer blocking cabinet vents. Power back on the printer. If this message recurs, contact your authorized service representative.[1]
FIRMWARE ERROR*	No	Application software tried to perform an illegal printer function or damaged memory detected on board.	Contact your authorized service representative.[1]
FM HEADER ERROR*	No	Applications software has violated header parameters.	Contact your system administrator.
FRAMING ERROR	Yes	Serial framing error (serial interface).	Check your serial host interface parameter settings; if necessary, adjust them so that they match the settings of the attached host.
GRF CHK ERROR PRESS STOP	Yes	Printer has received a non-printable character.	Press CLEAR and then ON LINE.

Table 8. LCD Message Troubleshooting Table (continued)

HAM. COIL OPEN*	No	Electrical malfunction of one or more hammer coils.	Contact your authorized service representative.[1]
HAMMER COIL BAD* #, #, #	No	Hammer coil # failed current test at power up.	Contact your authorized service representative.[1]
HMR BANK FAN FLT	Yes	Sensors cannot detect current in fan circuit.	Check that fan cable is connected. Check for obstruction of vents and fan airway; remove any obstructions. Check for items beneath the printer blocking cabinet vents. Power back on the printer. If this message recurs, contact your authorized service representative.[1]
08 HOLD PRINT TIMEOUT	Yes	Printer was off-line more than 10 minutes and the "Intervention Required" parameter is set to "Send to Host."	Press ON LINE to put printer in online state.
HB NOT INSTALLD*	No	Self-test does not detect hammer coils.	Contact your authorized service representative.[1]
06 HOST REQUEST	Yes	Host attention message.	The host computer or printer controller requires attention.
ILL EXT BUS ACC*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]

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Table 8. LCD Message Troubleshooting Table (continued)

ILLGL OPR ACCSS*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
ILL INST ACCSS*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
INTAKE FAN FAULT	Yes	Sensors cannot detect current in fan circuit.	See description for HMR BANK FAN FLT.
INVALID ACTIVATE	No	Printer detects twinax protocol communication errors.	The printer reports the error.
22 INVALID ADDR	Yes	Unit address not recognized by printer. (Twinax interface)	Ensure that printer address matches host setting.
INVALID COMMAND	No	Printer detects twinax protocol communication errors.	The printer reports the error, host action is required.
LO DRV. SHORT *	No	Circuit(s) on the hammer bank or in the hammer bank power cable shorted to ground.	Contact your authorized service representative.[1]
LOAD PAPER	Yes	Printer is out of paper.	Load paper.
ONLINE CU TIMED OUT	Yes	Enable poll timeout, The printer was not enabled for one minute. (Coax interface)	Check cable connection and host system.

Table 8. LCD Message Troubleshooting Table (continued)

ONLINE 28 CU NOT ENAB	Yes	Poll timeout error. The printer was not polled for one minute. (Coax interface)	Check cable connection and host system.
ONLINE 8344 FAILED*	No	Link-level code test detects hardware failure.	Contact your authorized service representative.[1]
PAP BAD TABLE*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP BSY TOO LNG*	No	Fatal firmware error on controller board.	Contact authorized service representative.[1]
PAP FIFO OVERFL*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP FIFO UNDRFL*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP ILLGL ST*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP INCMPL ENER*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP INVLD CMD*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP INVLD PARM*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP NOT SCHED*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PAP NT AT SPEED*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]

Table 8. LCD Message Troubleshooting Table (continued)

PAP UNEXP INT*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
32 PAPER JAM TIMEOUT	Yes	A timeout message is sent to the host if no paper motion has occurred for 10 minutes after CLEAR was pressed to clear the jam fault.	Clear paper jam and reload paper.
31 PAPER OUT TIMEOUT	Yes	A timeout message is sent to the host if paper is not loaded 10 minutes after CLEAR was pressed to clear the paper out fault.	Load paper.
PARAMETER ERROR*	No	Illegal parameter value received in command code.	Contact your system administrator.
PARITY ERROR	Yes	Parity error (serial interface)	Check your serial host interface parameter settings; if necessary, adjust them so that they match the settings of the attached host.
POWER SUPPLY HOT	Yes	Power supply sensors report high temperatures.	Check printer environment. If hot or dusty, relocate printer. Contact your authorized service representative if this occurs frequently.[1]
PROTECTED INSTR*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]

Table 8. LCD Message Troubleshooting Table (continued)

33 PLATEN OPEN TIMEOUT	Yes	Forms thickness lever has been open for at least one minute.	Close forms thickness lever.
PLAT INV PARM*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PLAT INV CMD*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
PLAT INV STATE*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
POWER SAVER MODE	N/A	Status message: printer is in low-energy idle state, all fans and higher voltages are off, only +5Vdc logic circuits are active.	No action required.
PRINTER HOT	Yes	Controller board sensors report high temperatures on the board.	Check printer environment. If hot or dusty, relocate printer. Contact your authorized service representative if this occurs frequently.[1]
PWR SUPP VOLT *	No	Power supply failed.	Replace power supply board.
RIB INVLD STATE*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
RIBBON DRIVE*	No	CMX controller does not detect ribbon drive motor.	Contact your authorized service representative.[1]

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Table 8. LCD Message Troubleshooting Table (continued)

34 RIBBON STALL TIMEOUT	Yes	A timeout message is sent to the host if no ribbon motion has occurred for 10 minutes after CLEAR was pressed to clear the jam fault.	Clear ribbon jam and reload ribbon.
RIBBON INK OUT CHANGE RIBBON	Yes	The RibbonMinder program is warning that the amount of ink in the ribbon has reached 0%.	Replace ribbon or press CLEAR for two additional minutes of printing before the fault displays again. See "RIBBONMINDER" on page 219.
RIB INVLD CMD*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
SCS COMMAND ERROR*	No	Printer received undefined control character.	Contact your system administrator.
SECURITY CODE VIOLATION*	No	Security code of PAL on controller board does not match code of firmware on the controller board.	Contact your authorized service representative.[1]
SF ERROR*	No	Application software has violated structured data field parameters.	Contact your system administrator.
SHUTL INV CMD*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]

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Table 8. LCD Message Troubleshooting Table (continued)

SHUTL INV PARM*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
SHUTTLE JAM	Yes	No shuttle movement or shuttle moving at wrong speed.	Check for obstruction to shuttle, a twisted ribbon, or forms thickness lever closed too tightly. If fault source is not apparent, contact your authorized service representative.
SOFTWARE ERROR *	No	Application software tried to perform illegal printer function, or damaged logic circuits found on controller board.	Contact your authorized service representative.[1]
STACK OVERFLOW*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
STACKER FAULT	Yes	Stacker is not functioning correctly.	Check for obstructions in the stacker area. If fault persists, contact your authorized service representative.[1]
STACKER FULL	Yes	Power stacker is full of paper.	Remove paper.
STACKER JAM	Yes	Paper is jammed in the power stacker area.	Remove Paper.
TCB CORRUPTED*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
UNDEF INTERRUPT*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]

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Table 8. LCD Message Troubleshooting Table (continued)

UNDFNED OPCODE*	No	Fatal firmware error on controller board.	Contact your authorized service representative.[1]
UP DRV. SHORT*	No	Hammer drive circuits on the boards shorted to ground.	Contact your authorized service representative.[1]
[1] Before contacting an authorized service representative, power off the printer, wait 15 seconds, then power it back on and rerun your print job. If the message reappears, press CLEAR. If the fault message still displays, then contact your authorized service representative.			

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Chapter 5 Diagnosing Problems

A *Printer Specifications*

Ribbon Specifications

Extended Life Text Ribbon Kit (60 yards)	P/N 107675-001
Extended Life Text Ribbon Kit (100 yards)	P/N 107675-007
Bar Code Ribbon Kit (60 yards)	P/N 107675-005
Bar Code Ribbon Kit (100 yards)	P/N 107675-008

NOTE: Only cabinet models support 100-yard ribbons. Pedestal models must use 60-yard ribbons. Each kit contains six ribbons.

Appendix A   **Paper Specifications**

Paper Specifications

Type:	Edge-perforated, fan-fold, 3 to 17 inches (7.62 to 43.18 cm) wide, 2 to 16 inches (5.08 to 40.64 cm) long. Power Paper Stacker option is 5 to 12 inches (12.7 to 30.48 cm) long.
Thickness:	Single-part: 15 to 100 pound (6.80 to 45.36 kg) stock; Multi-part: 1- to 6-part forms (maximum 12 lb [5.44 kg] ply of upper plies)
Sheet Thickness:	0.025 inch (0.064 cm) maximum
Drive:	Adjustable tractors (6-pin engagement)

Labels

On Backing:	One-part continuous perforated fanfold back form. Labels must be placed at least 1/6 inch (0.42 cm) from the fan-fold perforation. Backing adhesive must not be squeezed out during printing.
Sheet Size:	3 to 17 inches (7.62 to 43.18 cm) wide, including the two standard perforated tractor feed strips. A maximum sheet length of 16 inches (40.64 cm) between top and bottom perforations. Power Paper Stacker option is 5 to 12 inches (12.7 to 30.48 cm) long.
Thickness:	Not to exceed 0.025 inch (0.064 cm) (including backing sheet)

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Printer Dimensions

Cabinet Model:

Height:	42.5 inches (108 cm)
Width:	27 inches (68.6 cm)
Depth:	29 inches (73.7 cm)
Weight:	225 lbs. (102.1 kg) unpackaged 285 lbs. (129.3 kg) packaged

Cabinet Model with Power Stacker Option:

Height:	42.5 inches (108 cm)
Width	27 inches (68.6 cm)
Depth:	32.5 inches (82.5 cm)
Weight:	246 lbs. (112 kg) unpackaged 306 lbs. (139 kg) packaged

Pedestal Model:

Height:	35 inches (88.9 cm)
Width:	24.6 inches (62.5 cm)
Depth:	20.7 inches (52.6 cm)
Weight:	105 lbs. (47.6 kg) unpackaged 115 lbs. (52.2 kg) packaged

Environmental Characteristics

Temperature:

Operating:	50° to 104° F (10° to 40° C) up to 5000 feet (1524 meters) 50° to 90° F (10° to 32° C) up to 8000 feet (2438 meters)
Storage:	-40° to 158° F (- 40° to 70° C)

Relative Humidity

Operating:	15% to 80% (noncondensing)
Storage:	15% to 90% (noncondensing)

Energy Star

The printers described in this *User's Manual* comply with the requirements of the ENERGY STAR® Office Equipment Program of the U.S. Environmental Protection Agency.

When in the reduced-power idle state, the printer displays "Power Saver Mode."

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Electrical Characteristics

Input Voltage

Line Voltage Design Range	Line Frequency	500/1000 LPM	1500 LPM
88-135 V RMS	47-63 Hz	6A @ 100 V	8A @ 100 V
178-270 V RMS	47-63 Hz	3A @ 200 V	5A @ 200 V

Power Consumption

Operating Mode	Units	Power Consumption		
		500 LPM	1000 LPM	1500 LPM
Standby[1]	Watts	30 (60)	30 (60)	45 (80)
	BTU/Hour	100 (205)	100 (205)	154 (273)
Nominal[2]	Watts	180	220	310
	BTU/Hour	615	750	1058
Maximum[3]	Watts	270	315	440
	BTU/Hour	920	1075	1500

[1]Numbers represent consumption in Power Saver Mode.
Numbers in parenthesis represent standby mode.
[2]Nominal power measured at 120 VAC while printing ASCII Shift-Recycle.
[3]Maximum power measured at 120 VAC while printing Black Plot.

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Interfaces

Type:	Standard:	IEEE 1284 Parallel, Centronics Parallel, RS-232/RS-422 serial, Dataproducts Parallel
	Optional:	Coax, Twinax, Dataproducts Long Line, Ethernet 10Base-T, Ethernet 10Base2, Ethernet 10/100Base-T.
Logic Levels:		TTL/EIA®-232E/EIA-422B
Transfer Rates		Up to 200 Kilobytes on parallel interface. Up to 19.2K baud on RS-232 serial interface. Up to 115.2K baud on RS-422 serial interface

Printing Rates

The printing speed of text is measured in lines per minute (lpm), and is a function of the selected font and the vertical dot density. Printing speed is independent of the number of characters configured in the character set repertoire. Print rates for lines containing attributes such as bold or emphasized printing, superscripts, subscripts, or elongated attributes will decrease to not less than half the rates of the font without such attributes. The exact print rate of lines containing these attributes depends on the specific print job, but software maximizes the throughput by dynamically determining which dot rows contain adjacent dots and must be printed in two strokes.

The reverse paper feed capability allows the printing of multiple densities on a single line. This is useful in printing forms and text together or in mixing different fonts on a print line. Use of multiple densities and reverse paper feed also affects throughput.

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B Demand Printing

Overview

There are a few general parameters to determine before using the VIEW/EJECT print options:

- For pedestal models, you must determine if the printer has a quick access cover where paper is ejected from the top, or a regular cover where paper is ejected from the rear.

- The tear position needs to be set. The default of 5.12 inches is adequate for the quick access cover. For the standard cover, 9.92 inches should be selected. These measurements are general guidelines and can be adjusted as necessary.

- The proper form height must be set. This will allow the printer to know where the end of a page is.

- The top of form setting needs to be entered.

Simple Tear

The Simple Tear Mode requires special form layout and application design. It allows demand printing without losing any forms. To activate Simple Tear mode, see page page -188.

When the VIEW/EJECT key is pressed for more than 1/2 second in offline mode, the printer slews the bottom of the last printed form to the tear position.

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Appendix B   **Simple Tear**

When the VIEW/EJECT key is pressed a second time, the paper reverses the exact distance it slewed. For Simply Tear mode to work properly:

- The form length must be set correctly.

- The Top-of-Form must be set to the actual top of form.

- There must be a space of at least 2.66 inches from the top of form (which can be used for pre-printed headers) to prevent the paper from falling out of the tractors when reversing. The paper motion is shown in Figure 15.

The form must have a minimum header of 2.66 inches.

The forms are printed, skipping the header area at the top of each page.

NOTE: It is possible to have the printer print the header information.

Figure 15. Simple Tear Mode

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Header
Pre-Printed

First Line
Last Line

Page 1

Tear Position

Header
Pre-Printed

Print Position

Page 2
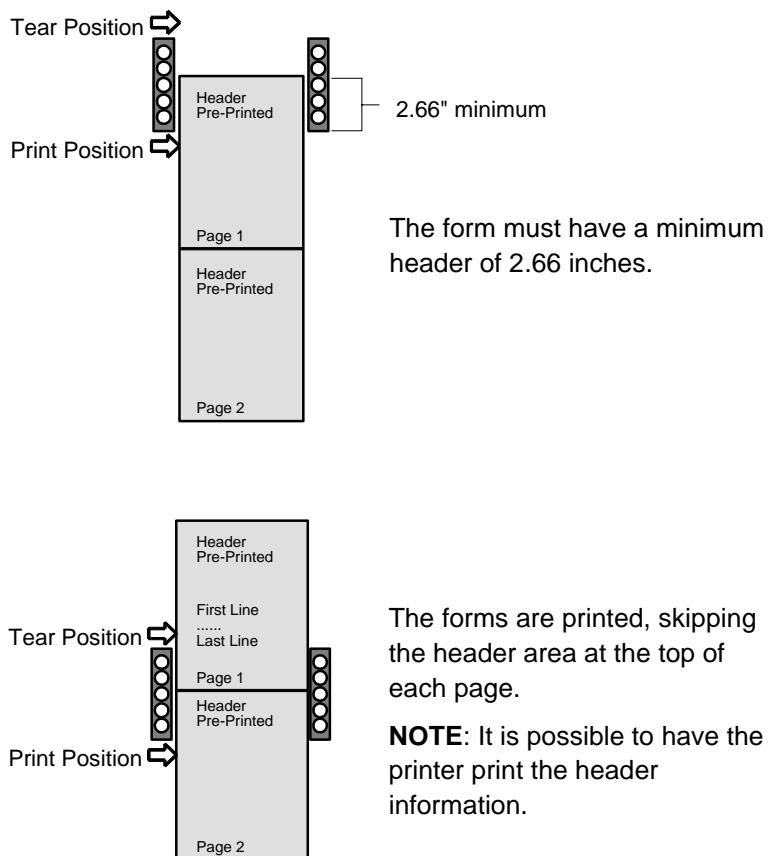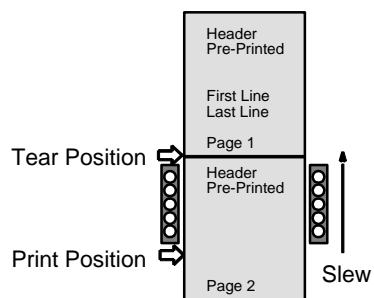
Slew

Press the VIEW/EJECT key and the printer slews the paper to position the bottom of the last form printed at the tear bar.

NOTE: The printer knows what line it is on and how far it must move.

The display indicates:

```
Ready for tear
Eject to return
```

Header
Pre-Printed

First Line
Last Line

Page 1

Tear Position

Header
Pre-Printed

Print Position

Page 2

Tear off form.

Tear Position

Header
Pre-Printed

Print Position

Page 2
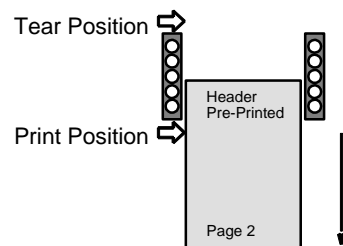
Press VIEW/EJECT again and paper slews back the same distance it slewed forward. The display returns to its previous message.

Figure 15. Simple Tear Mode (continued)

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Form Saver Mode

The Form Saver Mode does not require any special forms or applications. Instead, the printer determines the proper motion to allow demand printing with the least amount of lost forms. Only the form length needs to be set. To activate Form Save Mode, see page -188.

When the VIEW/EJECT key is pressed for more than 1/2 second in offline mode, the printer slews the bottom of the last printed form to the tear position. When the VIEW/EJECT is pressed a second time, the paper reverses to the top of the first possible form available for printing.

This mode may act differently depending on the form length. In all cases, the printer keeps form loss to a minimum. Figure 16 shows an example using long forms, and Figure 17 shows an example using short forms.
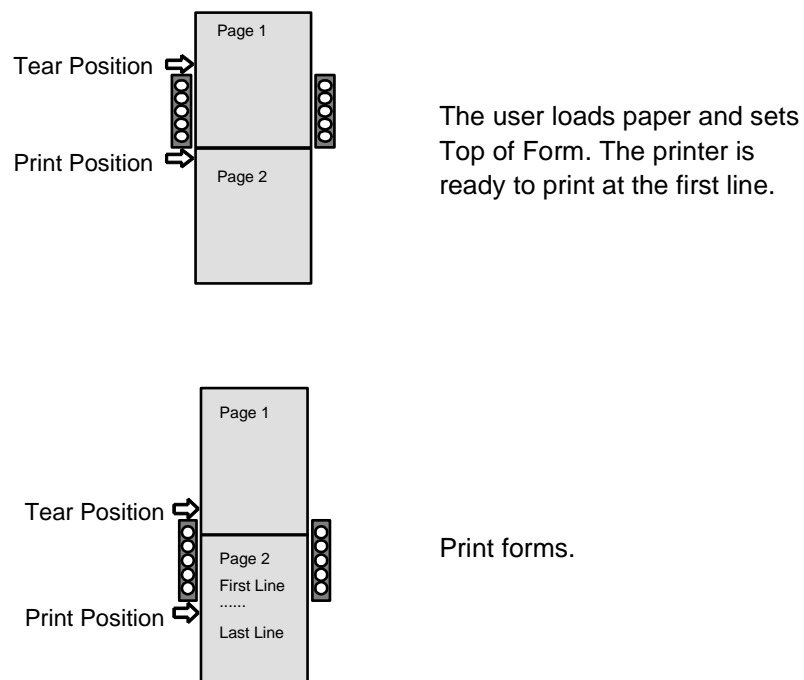
Tear Position

Print Position

Page 1

Page 2

The user loads paper and sets Top of Form. The printer is ready to print at the first line.

Tear Position

Print Position

Page 1

Page 2
First Line
......
Last Line

Print forms.

Figure 16. Form Saver Mode, Long Form Example

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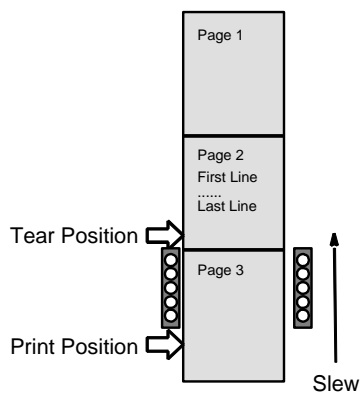
Press the VIEW/EJECT key and the printer slews the bottom of the last page to the tear position. The printer knows the distance. The display indicates:

```
Ready for tear
Eject to return
```
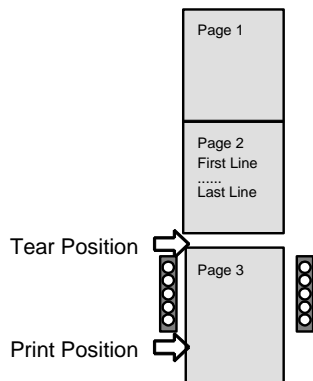
Tear off form.
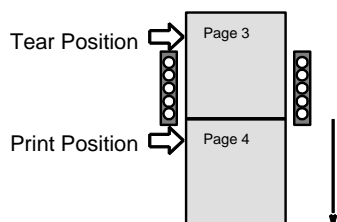
Press VIEW/EJECT and the printer positions the paper to be ready to print at the top of the first form available. The display returns to its previous message.

Figure 16. Form Saver Mode, Long Form Example (continued)

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Appendix B Form Saver Mode
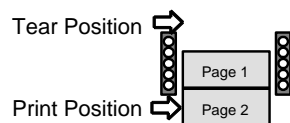
Tear Position — Print Position

Page 1
Page 2

The user loads paper and sets Top of Form.

Tear Position — Print Position

Page 1
Print Line Page 2
Page 3

Print forms.

Page 1
Print Line Page 2
Tear Position — Page 3
Page 4
Print Position — Page 5
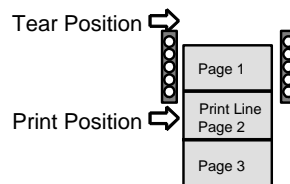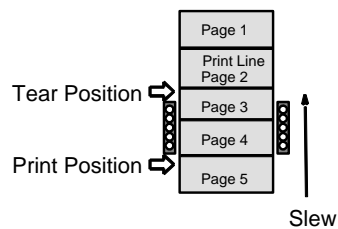
Slew

Press the VIEW/EJECT key and the printer slews the bottom of the last printed page to the tear position. The printer knows the distance. The display indicates:

```
Ready for tear
Eject to return
```

Page 1
Print Line Page 2
Tear Position — Page 3
Page 4
Print Position — Page 5

Tear off form.

Tear Position — Print Position

Page 3
Page 4
Page 5

Press VIEW/EJECT and the printer positions the paper to be ready to print at the top of the first form available.

Figure 17. Form Saver Mode, Short Form Example

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C ASCII Character Set

KEY

B7 B6 B5	0 0 1
BITS B4 B3 B2 B1	
1 0 1 1	ESC — 33 ← OCTAL equivalent
	27 ← DECIMAL equivalent
	1B ← HEX equivalent

ASCII Character Name

B7 B6 B5 / BITS B4 B3 B2 B1 ROW	0 0 0 COLUMN 0	0 0 1 1	0 1 0 2	0 1 1 3	1 0 0 4	1 0 1 5	1 1 0 6	1 1 1 7
0 0 0 0 0	NUL 0 0 0	DLE 20 16 10	SP 40 32 20	0 60 48 30	@ 100 64 40	P 120 80 50	` 140 96 60	p 160 112 70
0 0 0 1 1	SOH 1 1 1	DC1 (XON) 21 17 11	! 41 33 21	1 61 49 31	A 101 65 41	Q 121 81 51	a 141 97 61	q 161 113 71
0 0 1 0 2	STX 2 2 2	DC2 22 18 12	" 42 34 22	2 62 50 32	B 102 66 42	R 122 82 52	b 142 98 62	r 162 114 72
0 0 1 1 3	ETX 3 3 3	DC3 (XOFF) 23 19 13	# 43 35 23	3 63 51 33	C 103 67 43	S 123 83 53	c 143 99 63	s 163 115 73
0 1 0 0 4	EOT 4 4 4	DC4 24 20 14	$ 44 36 24	4 64 52 34	D 104 68 44	T 124 84 54	d 144 100 64	t 164 116 74
0 1 0 1 5	ENQ 5 5 5	NAK 25 21 15	% 45 37 25	5 65 53 35	E 105 69 45	U 125 85 55	e 145 101 65	u 165 117 75
0 1 1 0 6	ACK 6 6 6	SYN 26 22 16	& 46 38 26	6 66 54 36	F 106 70 46	V 126 86 56	f 146 102 66	v 166 118 76
0 1 1 1 7	BEL 7 7 7	ETB 27 23 17	' 47 39 27	7 67 55 37	G 107 71 47	W 127 87 57	g 147 103 67	w 167 119 77
1 0 0 0 8	BS 10 8 8	CAN 30 24 18	(50 40 28	8 70 56 38	H 110 72 48	X 130 88 58	h 150 104 68	x 170 120 78
1 0 0 1 9	HT 11 9 9	EM 31 25 19	) 51 41 29	9 71 57 39	I 111 73 49	Y 131 89 59	i 151 105 69	y 171 121 79
1 0 1 0 10	LF 12 10 0A	SUB 32 26 1A	* 52 42 2A	: 72 58 3A	J 112 74 4A	Z 132 90 5A	j 152 106 6A	z 172 122 7A
1 0 1 1 11	VT 13 11 0B	ESC 33 27 1B	+ 53 43 2B	; 73 59 3B	K 113 75 4B	[133 91 5B	k 153 107 6B	{ 173 123 7B
1 1 0 0 12	FF 14 12 0C	FS 34 28 1C	, 54 44 2C	< 74 60 3C	L 114 76 4C	\ 134 92 5C	l 154 108 6C	| 174 124 7C
1 1 0 1 13	CR 15 13 0D	GS 35 29 1D	- 55 45 2D	= 75 61 3D	M 115 77 4D	] 135 93 5D	m 155 109 6D	} 175 125 7D
1 1 1 0 14	SO 16 14 0E	RS 36 30 1E	. 56 46 2E	> 76 62 3E	N 116 78 4E	^ 136 94 5E	n 156 110 6E	~ 176 126 7E
1 1 1 1 15	SI 17 15 0F	US 37 31 1F	/ 57 47 2F	? 77 63 3F	O 117 79 4F	_ 137 95 5F	o 157 111 6F	DEL 177 127 7F

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Appendix C

D Communication Notices

Federal Communications Commission (FCC) Statement: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provided reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Printronix is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by any unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Appendix D

Canadian Department of Communications Compliance Statement: This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformite aux normes du ministere des Communcations du Canada: Cet appareil numerique de la classe A est conform á norme NMB-003 du Canada.

European Community (EC) Conformity Statement:
This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Printronix cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-Printronix option cards.

German Conformity Statement:
Zulassungsbescheinigung Gesetz über die elektromagnetische Verträglichkeit von Geraten (EMVG) vom 30. August 1995

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen das EG-Konformitätszelchen - CE - zu führen.

Der Außteller der Konformitätserklärung ist die Printronix......(1)

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte bedürfen folgender Hinweise:

Nach dem EMVG: "Geräte dürfen an Orten, für die sie nicht asreichend entstört sind, nur mit besonderer Genehmigung des Bundesminesters für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs. 4) Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Nach der EN 55022: "Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzkommen."

Anmerkung: Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Handbüchern angegeben, zu installieren und zu betreiben.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

注意
　この装置は、第一種情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。　　　　　VCCI-A

　　　此为A级产品。在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

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