PRINTRONIX® PSA3

P7000 H-Series Cartridge Ribbon Printer
User's Manual

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User's Manual

P7000 H-Series Cartridge Ribbon Printer

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Table of Contents

1 *Introduction*

Printer Overview

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

Printronix P7000 H-Series Printers

Printronix® has been the global leader in industrial printing solutions for over 30 years, earning a reputation for designing and manufacturing leading edge products and delivering them to market with unsurpassed service and support.

The Printronix P7000™ Line Matrix Printing Platform extends the series of technology innovations that cement Printronix's leadership position. Line matrix printing is Printronix's flagship technology, and it remains the workhorse solution for supply-chain and back-office printing applications because of its reliability, lower cost of ownership and flexibility of printing applications.

- Most reliable printer ever – provides more up time and lower operating costs

- Ultra capacity ribbons – deliver darker image, last longer, and costs less to operate than other print technologies

- Integrated print management system – provides precise control over print quality, print costs, and job planning

- Cabinet or Pedestal styles – best user access and forms handling flexibility

- Unsurpassed ease of use – simplifies operation and enhances productivity

There are three printer configurations:

Enclosed Cabinet (P72XXH)

- The enclosed cabinet models provide for near silent operation, making these printers perfectly suitable for use in the quietest of office environments.
- Provides the best paper handling for large print runs. All paper input and output is contained inside the cabinet and protected from bumping and contamination.
- Highly effective combination of moveable fences and chains allows for precise stacking all the way up to a full box of paper.
- For tougher forms that tend not to refold well, a SureStak power stacker option is available for the enclosed cabinet models.
- Available in four print speeds – 200 line per minute, 300 line per minute, 600 line per minute, and 800 line per minute models.

Pedestal (P70XXH)

- The pedestal model has a clamshell design that allows easy access to all controls providing faster ribbon replacements and easier paper loading
- Oversized casters are standard making movement easy.
- Versatility to configure the paper path for either top or rear exit.
- Using the top paper exit, this printer is ideal for short print runs and easy access to output
- Available in four print speeds – 200 line per minute, 300 line per minute, 600 line per minute, and 800 line per minute models.

Zero Tear Pedestal (P70XXZTH)

- Special push tractor configuration enables printing from the very first to the very last line of a form and then tear-off with no forms lost
- The elimination of wasted forms between jobs can yield significant savings.
- An ideal solution for supply-chain and back-office applications.
- Available in three print speeds – 200 line per minute, 300 line per minute, and 600 line per minute models.

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   **A warning notice calls attention to a condition that could harm you.**

WARNUNG

Ein Warhinweis dieser Art weist auf Verletzungsgefahr hin.

AVISO

Las notas de adviso llaman la atención sobre una condición que puede causar lesiones.

ATTENTION

Attire votre attention sur une opération pouvant présenter un danger.

AVVERTENZA

Un'indicazione di avvertenza segnala una condizione di pericolo suscttibile causare lesioni all'operatore.

CAUTION   **A caution notice calls attention to a condition that could damage the printer.**

Related Documents

- *Quick Reference Guide* — Explains how to set up the printer for basic operation (load ribbon cartridge and media, and clear paper jams).

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

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

- LQ-1600K Emulation For The P7000 H-Series Of Line Matrix Printers Programmer's Reference Manual — Covers the host control codes for the LQ-1600K emulation.

- KS Programmer's Reference Manual — Covers the host control codes for the KS emulation.

- KSSM Programmer's Reference Manual — Covers the host control codes for the KSSM emulation.

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 7 explains how to clean the printer, and printer supplies are listed in Appendix A.

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, 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.

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 270 volts AC. 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 171 for additional power specifications.

IMPORTANT   **Printer power should be supplied from a separate AC circuit protected at 10 amperes for 100 - 120 volts or 5 amperes for 200 - 240 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 1 on page 14.

Table 1. 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 10/100Base-T	100 meters (328 feet)

Printer Dimensions
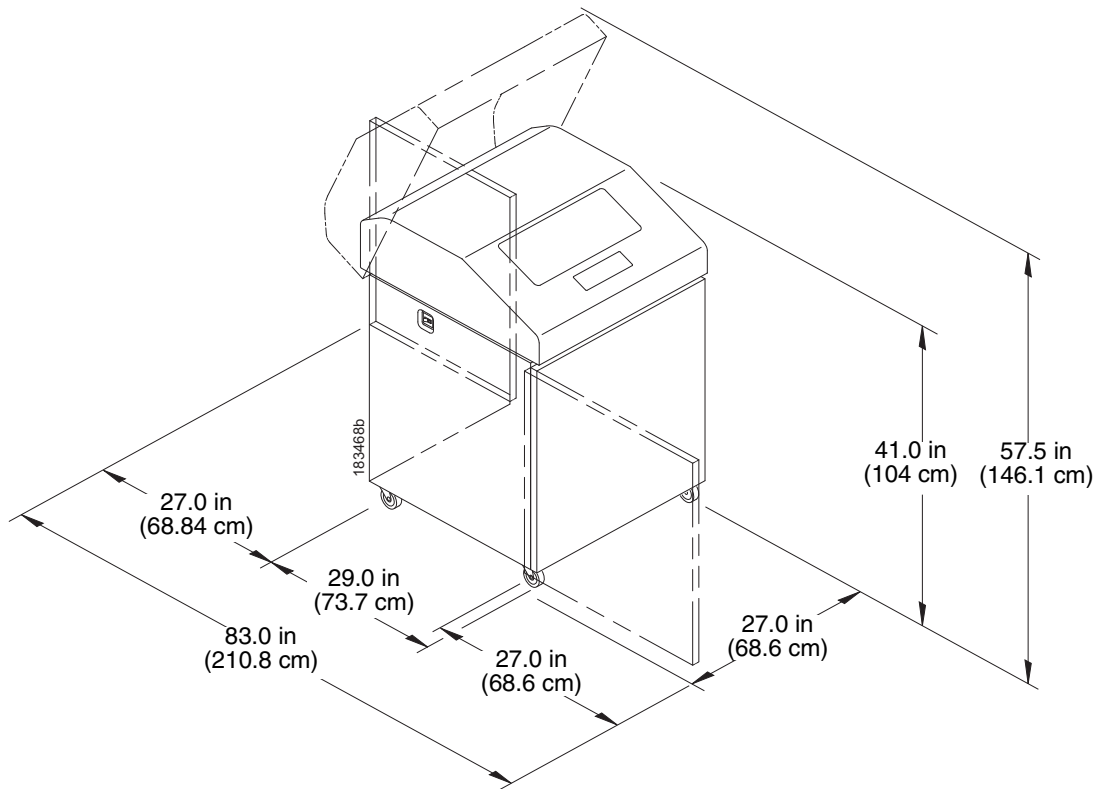
Figure 1. Printer Dimensions - Cabinet Model

183469b

27.0 in
(68.6 cm)

83.0 in
(210.8 cm)

32.5 in
(82.6 cm)

27.0 in
(68.6 cm)

27.0 in
(68.6 cm)

32.0 in
(81.3 cm)

42.5 in
(107.8 cm)

59.0 in
(149.9 cm)
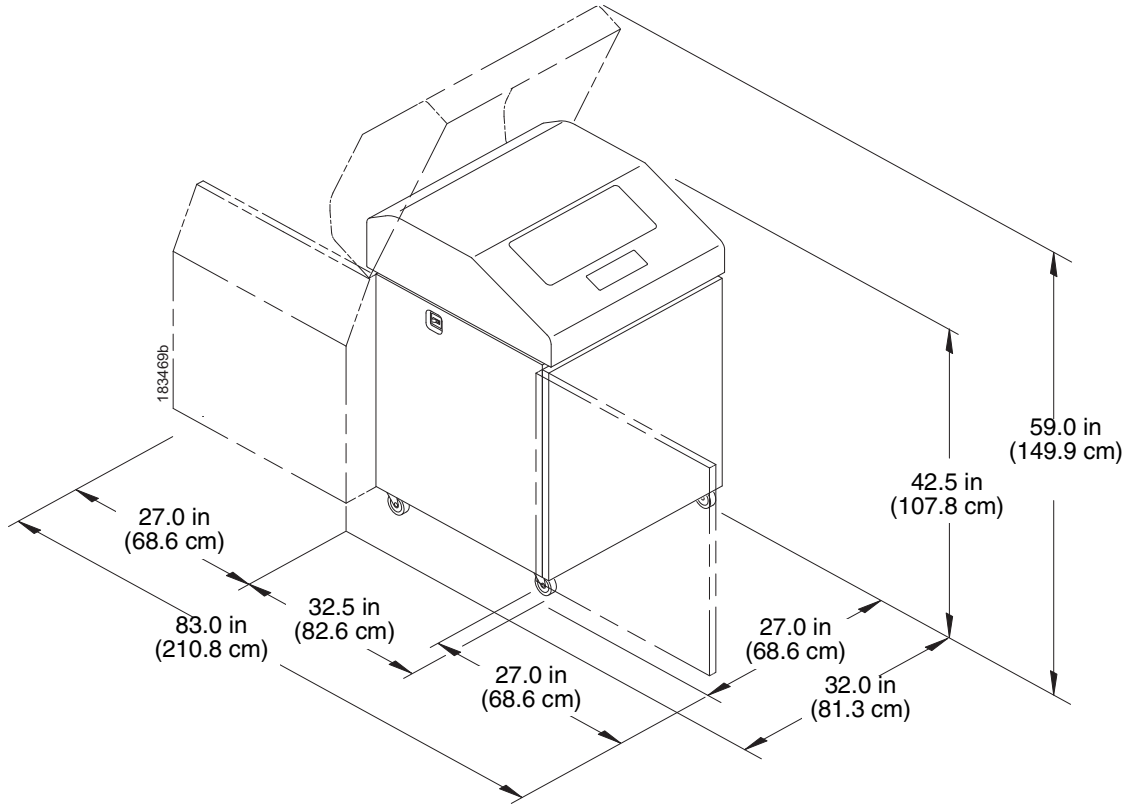
Figure 2. Printer Dimensions - Cabinet Model with Paper Stacker

25 in.
(63.5 cm)

10.5 in.
(26.67 cm.)

48.0 in.
(122 cm)

183882a

24.6 in.
(62.48 cm)

30 in.
(76.2 cm.)
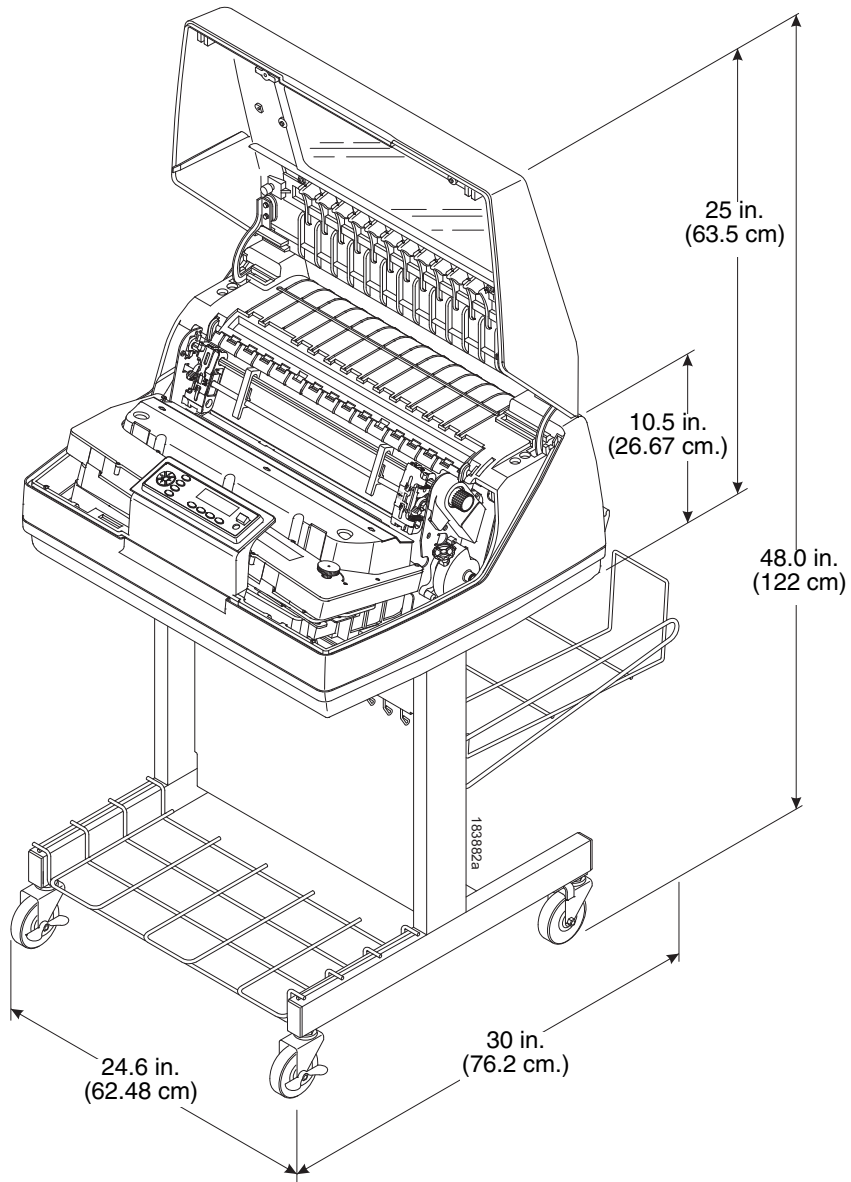
Figure 3. Printer Dimensions - Pedestal Model

Printer Component Locations

Familiarize yourself with the names and locations of the printer components, shown in Figure 4 before continuing with the rest of the installation procedures.
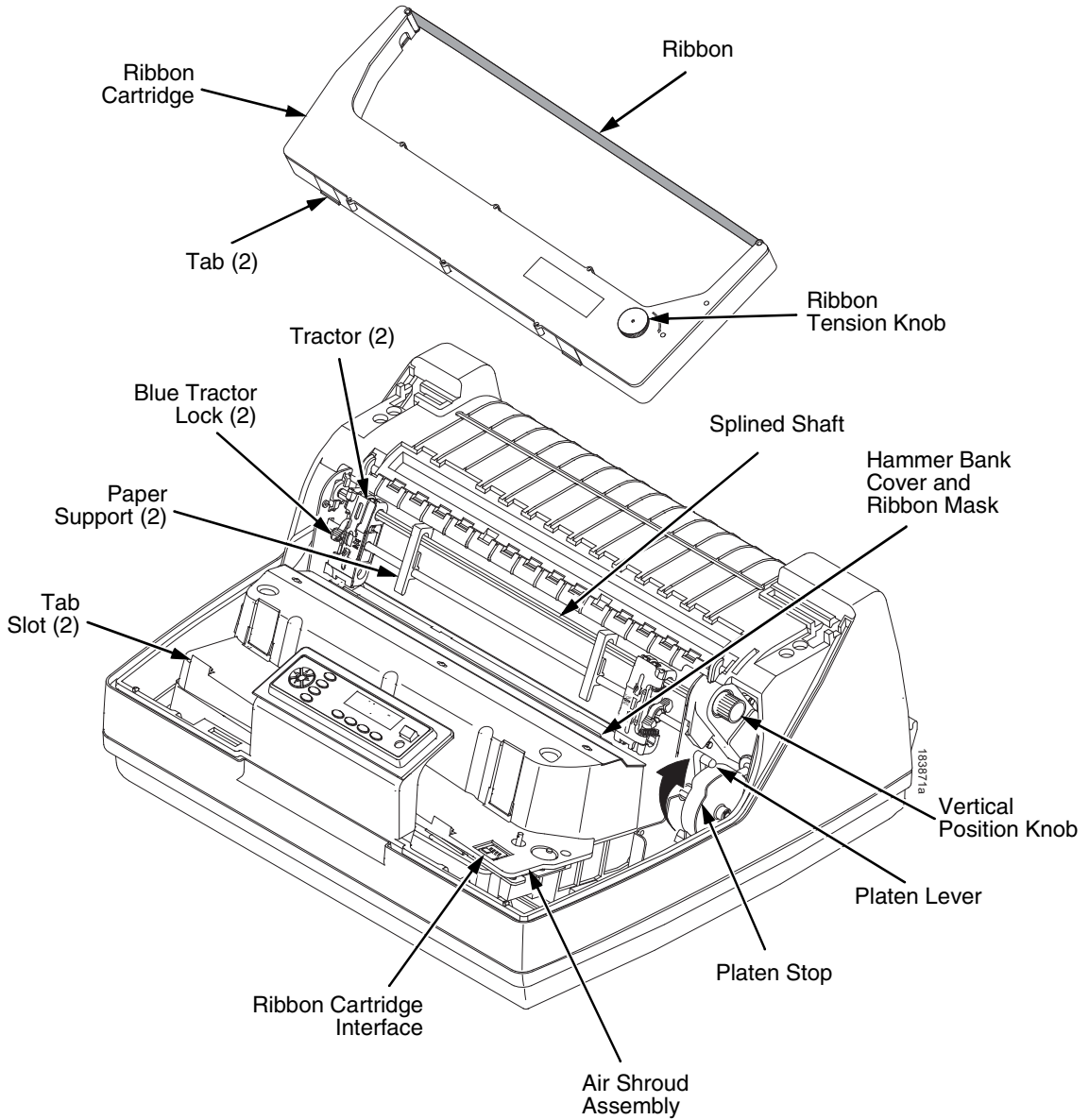
Figure 4. Printer Component Locations

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 upper right corner of the display. The ribbon life remaining is shown on the second line.

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 " LCD Message Troubleshooting Table" on page 134 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/CLEAR) key toggles the printer from online to offline mode. The status indicator is lit in online mode.

Offline. In offline mode, you can perform operator functions, such as loading paper and setting top-of-form. You can also move within the printer configuration menus. Pressing the ❚❚ (ON LINE/CLEAR) key toggles the printer from offline to online 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.

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

The Control Panel

Figure 5 shows the keys, displays, and indicators as they appear on the control panel. The following section provides the descriptions, and functions of the control panel keys.

Key combinations are indicated with the plus (+) sign. For example, "Press $\triangle$ + $\triangledown$" means to press the $\triangle$ key and the $\triangledown$ key at the same time.

Figure 5. Control Panel

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, as defined by the current active form length. The key works both online and offline.

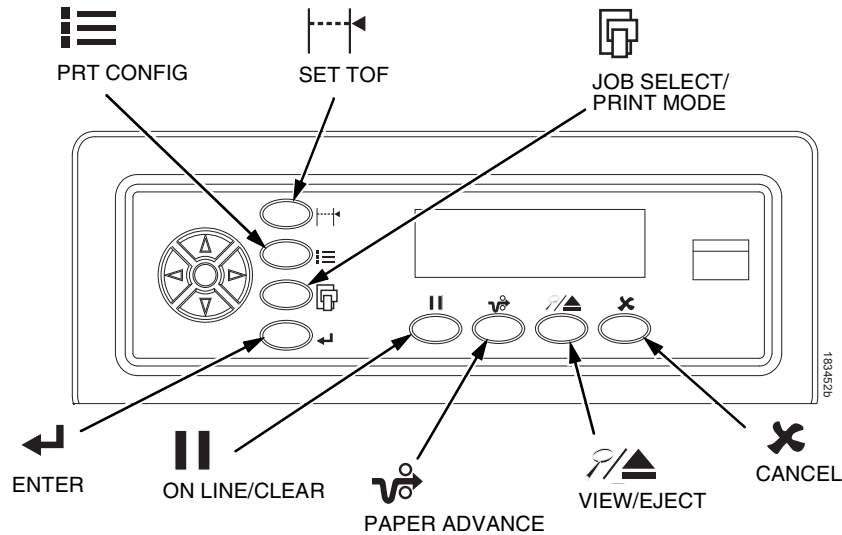- If online with data in the printer buffer, the data will print and then the paper will move to the next top-of-form.

- In the fault state, PAPER ADVANCE will advance the paper. The first press moves to the top of the next available form. All subsequent presses advances one forms length as defined by the current active forms length.

⏏ VIEW / EJECT

When the printer is online or offline, pressing this key executes the view or eject function, depending on whether the printer is a cabinet or a pedestal (or zero tear pedestal).

If online with data in the printer buffer, the data prints and the key functions as described below.

If in a fault state, this key will be ignored.

- **View Function** — for cabinet models, pressing the VIEW/EJECT key moves the last data printed to the tractor area for viewing. While in the view state, the message "Printer in View" displays, pressing the UP or DOWN arrow keys moves the paper up or down in 1/72 inch increments. This is done to align the image within a pre-printed form, for example. Refer to the UP and DOWN key functions for additional details on the microstep feature. Pressing VIEW/EJECT a second time moves the paper back to the adjusted print position.

- **Eject Function** — for pedestal models, when the VIEW/EJECT key is pressed, the bottom of the last printed form will move to the tear bar position. The message "READY TO TEAR/EJECT To Return" displays. While in this position, pressing the UP or DOWN arrow keys moves the paper up or down in 1/72 inch increments. Refer to the Up and Down key functions for additional details on the microstep feature. When the VIEW/EJECT key is pressed a second time, the printer will move the paper to enable printing on the next available form.

✖ CANCEL

In offline mode, this key cancels all data in the print buffer, if enabled in "ADVANCED USER" menu (see page 104). 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 the *Quick Setup Guide* 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, PRT CONFIG 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 41 for an explanation of configuration menus.

JOB SELECT/PRINT MODE

In offline mode, this key allows for fast selection of any of the previously stored configurations or typeface of the printer. Pressing this key causes the printer to cycle through the following messages: Load Config., Factory Config, Load Config 1, Load Config 2, Load Config 3,...,Load Config 8.

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. The ENTER key lock and unlock function can be configured to be a key combination other than ▲ + ▼ (see page 108).

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. When the printer is in offline mode, 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 108).

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 (in offline mode).

Ribbon Life Indicator

The second line of the LCD displays the remaining life of the currently installed ribbon. The default settings for this feature should match the requirements for most applications; no special user setup is needed. If your particular application requires darker printing or can tolerate lighter printing, the ribbon end point can be adjusted as appropriate. Please refer "Ribbon End Point" on page 102.

Cancel 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/CLEAR) 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 ✖ (CANCEL), 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 ✖ (CANCEL).

NOTE: You may need to enable the Cancel option on the front panel. See "ADVANCED USER" on page 104 for details.

4. Set the top-of-form. Refer to the *Quick Reference Guide*.

Operational Procedures

This section contains routine printer operating procedures on how to:

• reload paper;

• unload paper;

• cancel a print job.

Reload 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, while retaining the current top-of-form setting.

Cabinet Model   **Pedestal Model**
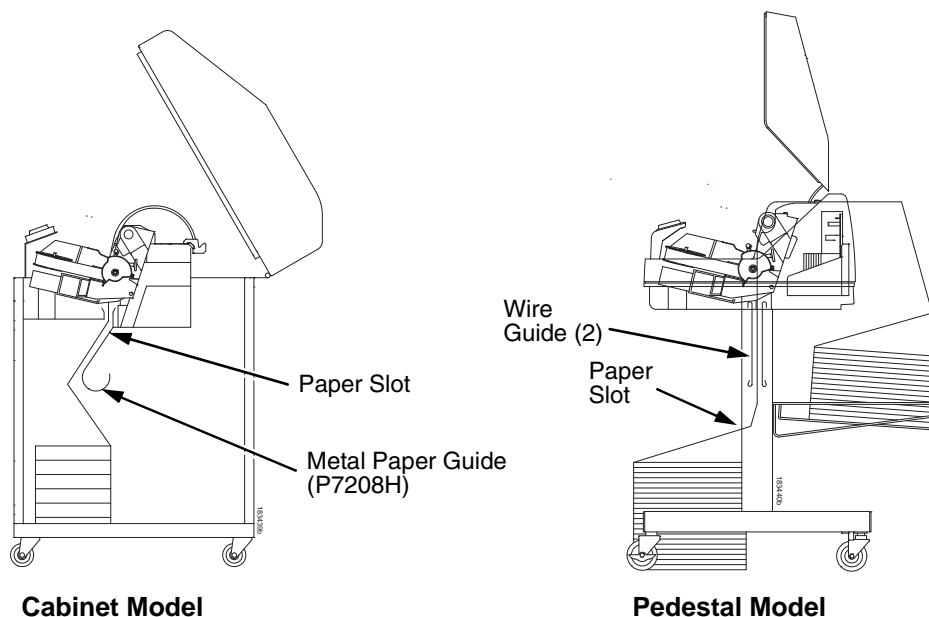
Figure 6. Paper Slot Location

1. Raise the printer cover. Raise the platen lever as far as it will go. (See "Printer Component Locations" on page 17 for the location of the lever.)

2. Press ▮▮ (ON LINE/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.

4. Feed the paper up through the paper slot (see Figure 6). 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 15.

5. Hold the paper to prevent it from slipping down and through the paper slot.

New Paper   Existing Paper
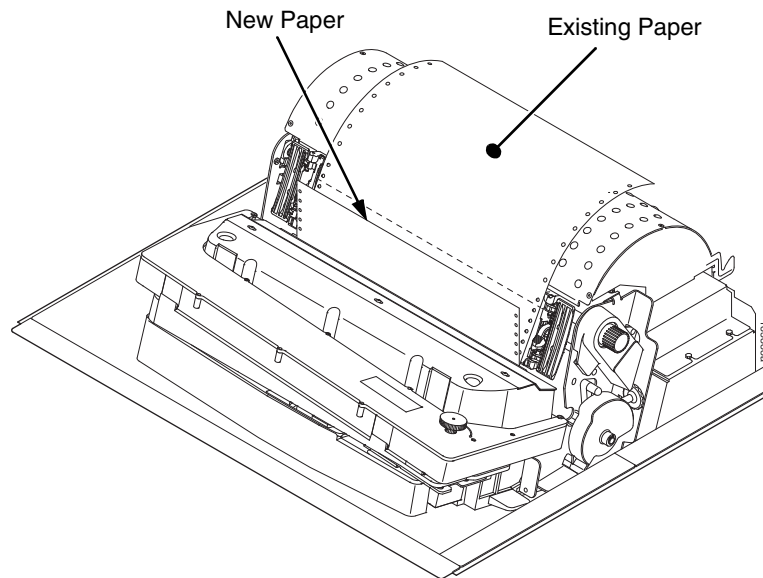
Figure 7. Loading New Paper into the Printer

6. Pull the new paper above and behind the ribbon mask, but in front of the existing paper. The ribbon mask location is shown on the ribbon path diagram. 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.

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.
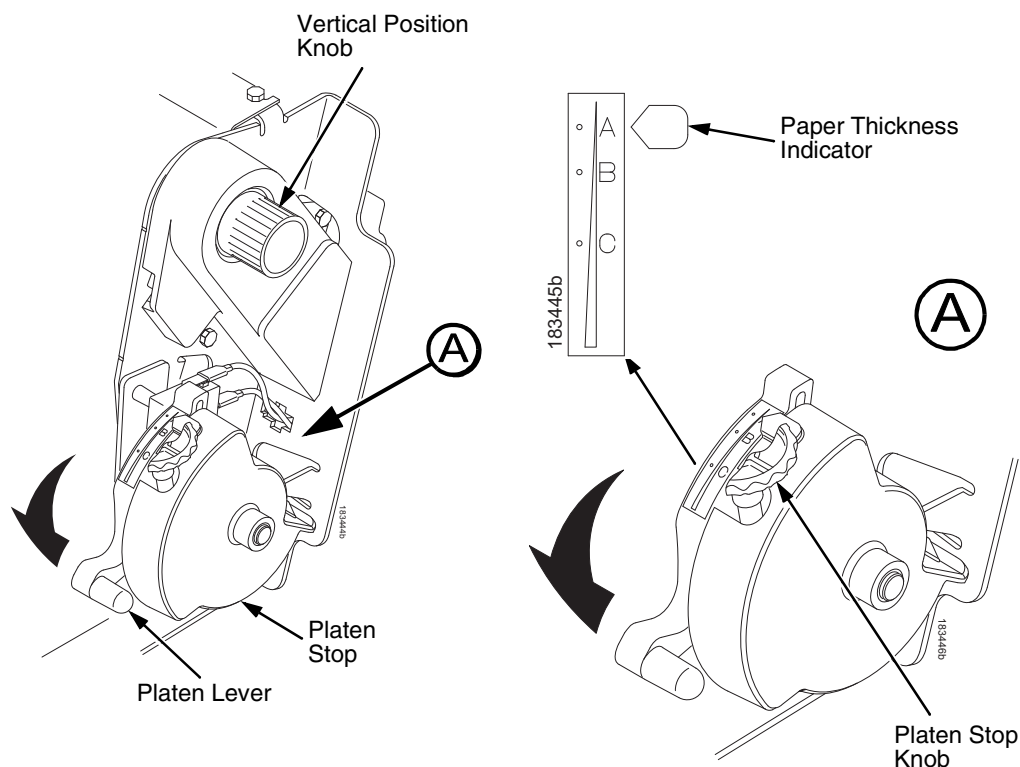
Figure 8. Setting the Platen Lever

9. Turn the platen stop knob clockwise or counterclockwise to match the paper thickness. (The A-B-C scale corresponds approximately to 1-, 3-, and 6-part paper thickness).

NOTE: If you are using the same thickness of paper, there is no need to readjust.

10. Lower the platen lever.

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

11. Press ▐▐ (ON LINE/CLEAR) to remove the "LOAD PAPER" fault message from the display.

12. 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.

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

14. Press ▐▐ (ON LINE/CLEAR) to place the printer in online mode and resume printing.

Cabinet Model

Pedestal Model

Paper Slot

Metal Paper Guide
(P7208H)

Wire
Guide (2)
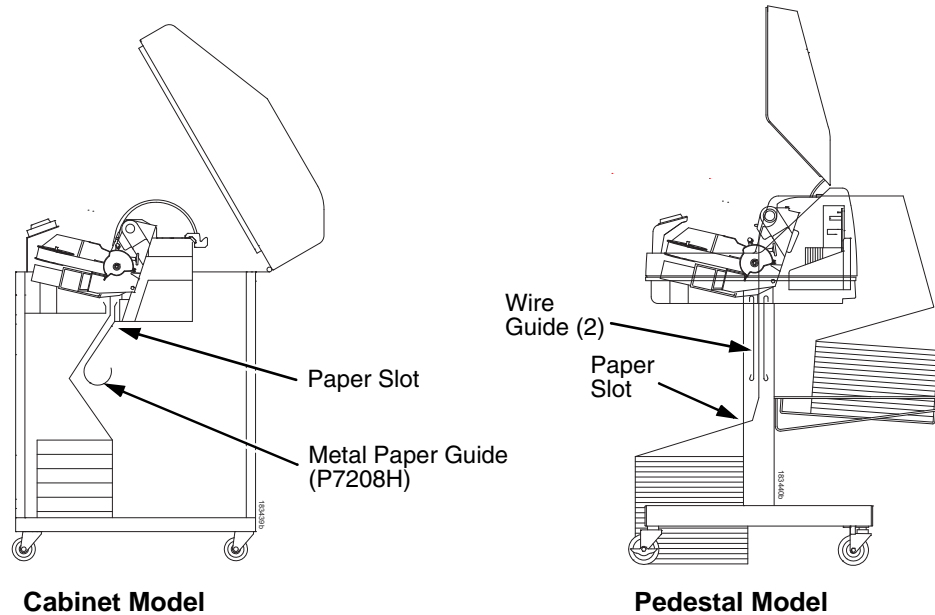
Paper
Slot

Figure 9. Paper Slots on the Printers

NOTE: Perform steps 15 through 32 only if you are unable to load the new paper over the existing paper.

15. Open both tractor doors.

16. Remove the old paper from the tractors. Allow the paper to fall into the paper supply area.

17. Feed the new paper up through the paper slot. Hold the paper to prevent it from slipping down through the paper slot.

Left Tractor Door

Paper

Left Tractor Lock

18341b
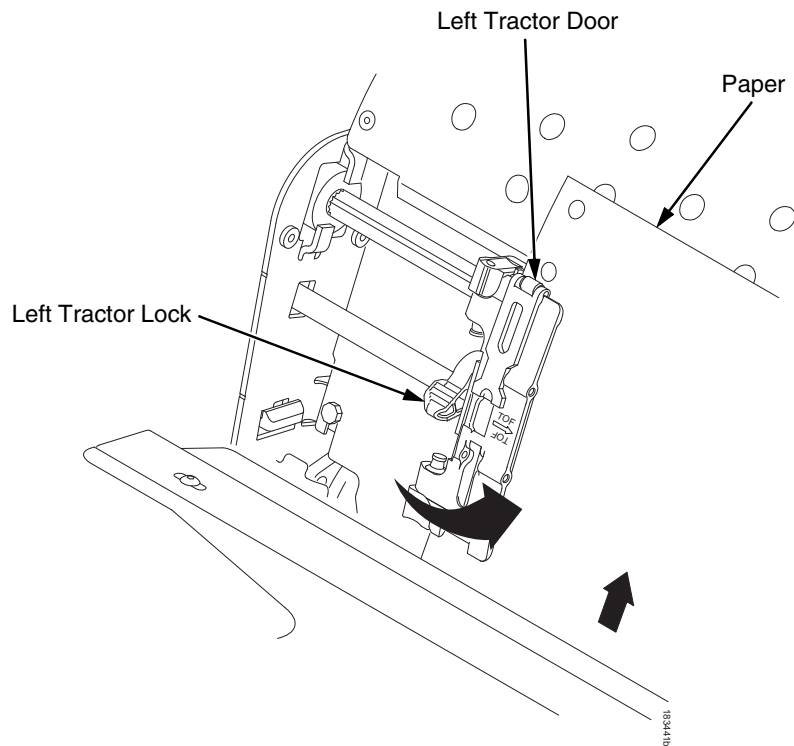
Figure 10. Loading Paper on the Left Tractor

18. Pull the paper above and behind the ribbon mask. See Figure 4 on page 17 for the ribbon mask location.

19. Load the paper on the left tractor.

20. Close the tractor door.
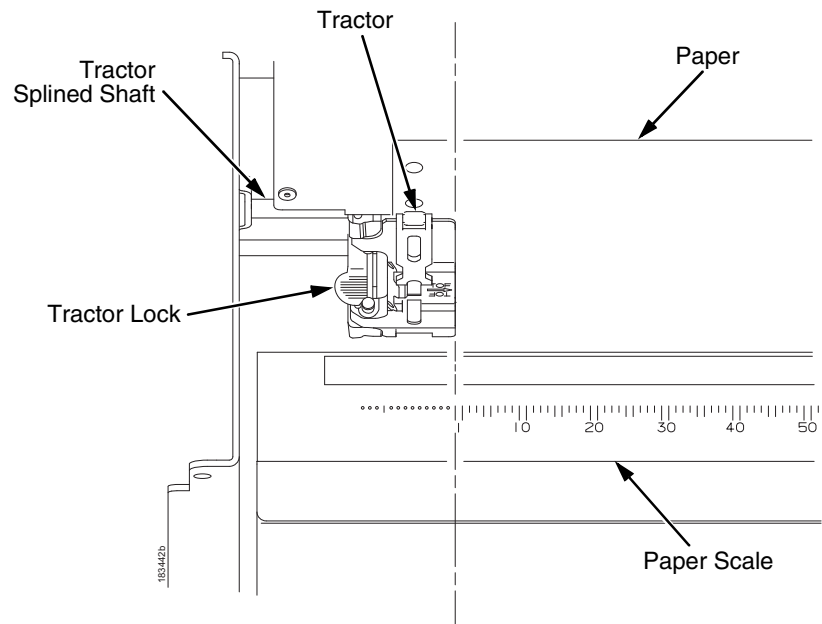
Figure 11. Positioning the Left Tractor to Avoid Damage

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.**

21. Normally, you should not need to adjust the position of the left tractor. If adjustment is necessary, unlock the left tractor by placing the tractor lock in the middle position. 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.)
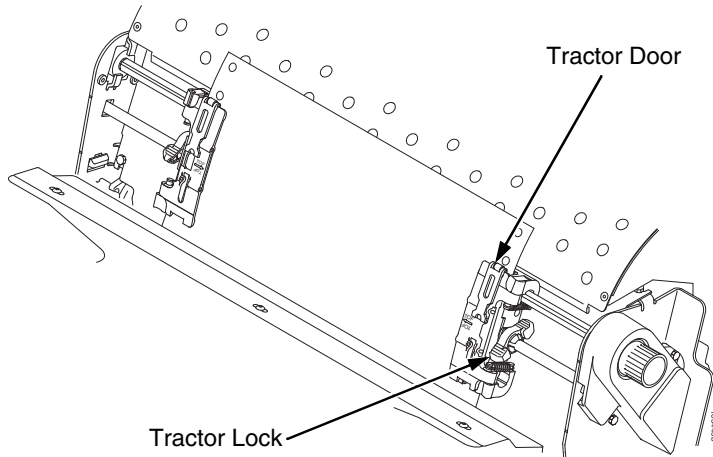
Figure 12. Loading Paper onto the Sprockets

22. Unlock the right tractor.

23. Load the paper onto the sprockets and close the tractor door.
    If necessary, slide the right tractor to remove paper slack or to adjust for
    various paper widths. Then, lock the tractor.

Cabinet Model   **Pedestal Model**
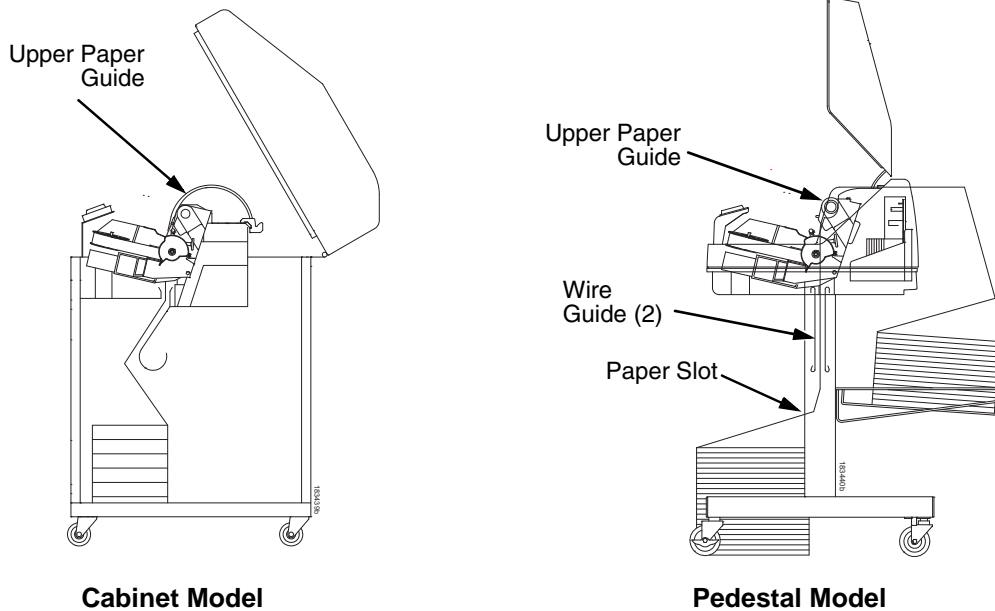
Figure 13. Using the Paper Guide to Orient the Paper

24. **Pedestal models**:
    Using the vertical position knob to move the paper up, guide the paper over the lower paper guide and through the slot in the top cover. For pedestal models with the Quick Access Cover, refer to the *Quick Setup Guide* for paper exiting options.

25. 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.

26. **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.
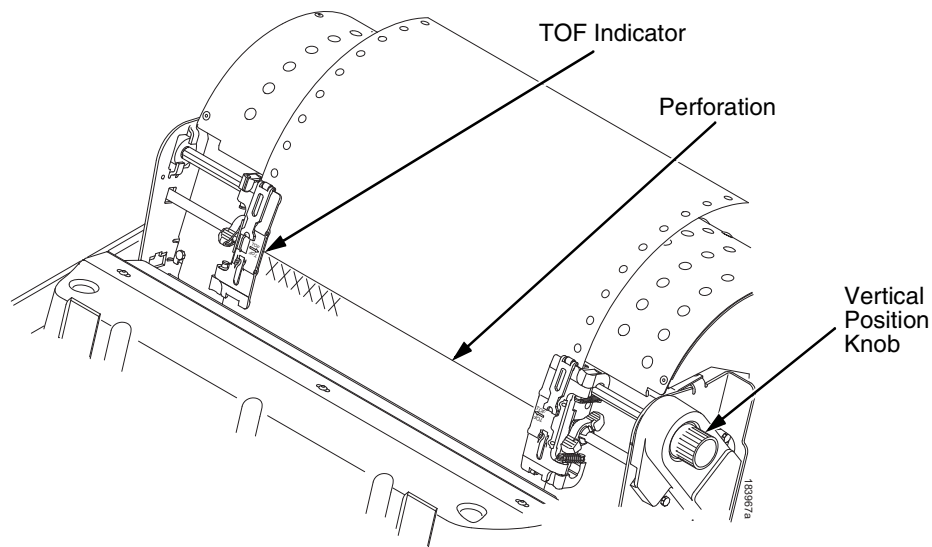
Figure 14. Aligning the Perforation with the TOF Indicator

27. Align the top of the first print line with the TOF indicator on the tractor by rotating the vertical position knob. For best print quality, set the top-of-form at least 1/2 inch below the perforation.

NOTE: For exact positioning, press the ⌇ (VIEW/EJECT) key to move the last data printed to the tractor area for viewing. While in View mode "Printer in View" displays. Press the Up or Down Arrow keys to move the paper vertically in small increments. Pressing the ⌇ (VIEW/EJECT) key a second time moves the paper back to the adjusted print position. The key owrks both online and offline provided that the printer is in View mode. (This procedure is applicable for both the cabinet and pedestal models.)
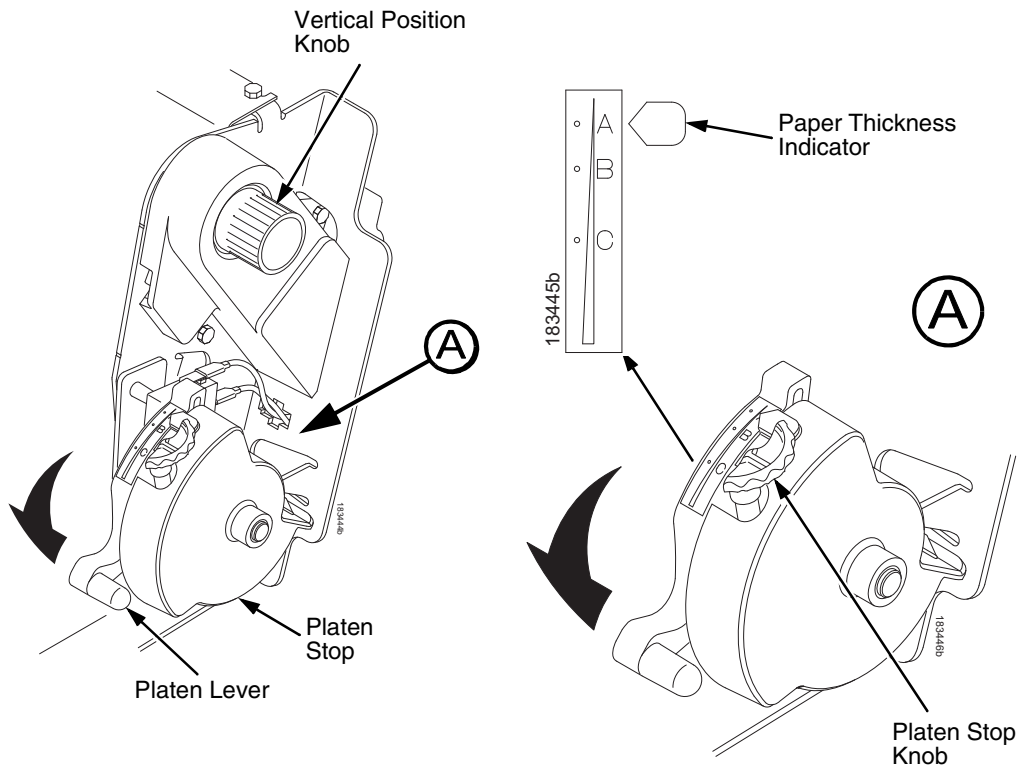
Figure 15. Adjusting the Platen Lever

28. Turn the platen stop knob clockwise or counterclockwise 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.)

NOTE: The platen stop allows you to set an optimum and consistent thickness that is not affected when opening and closing the platen lever.

29. Lower the platen lever until it stops.

30. Press ▌▌ (ON LINE/CLEAR) to clear any fault messages (such as "LOAD PAPER") from the LCD.

31. Press ⊢⊣⊦ (SET TOF). The top-of-form you have set moves down to the print position. If there is data in the buffer, the paper moves forward to the last print position on the next page.

32. Press ▌▌ (ON LINE/CLEAR) and close the printer cover.

Unload Paper

1. Press ▌▌ (ON LINE/CLEAR) 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.
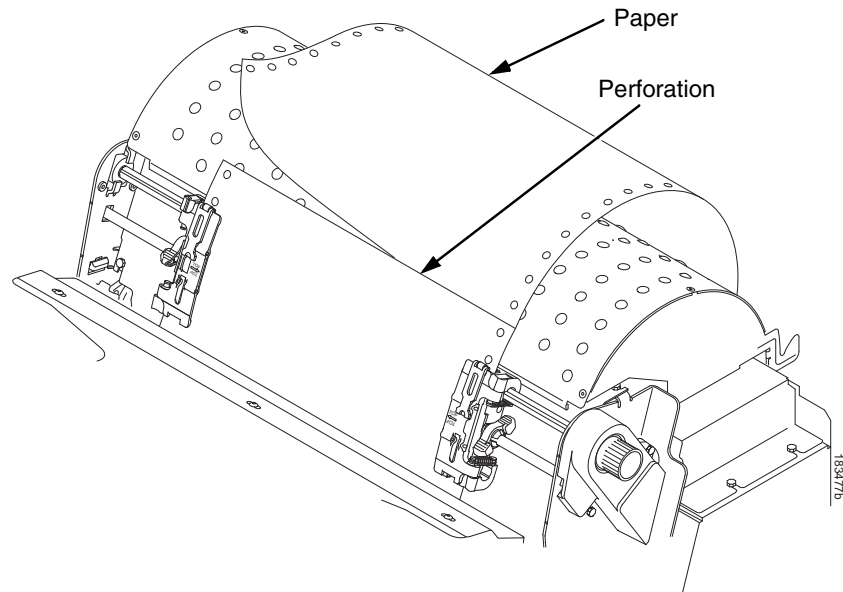
Figure 16. Unloading the Paper from the Printer

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.

Paper
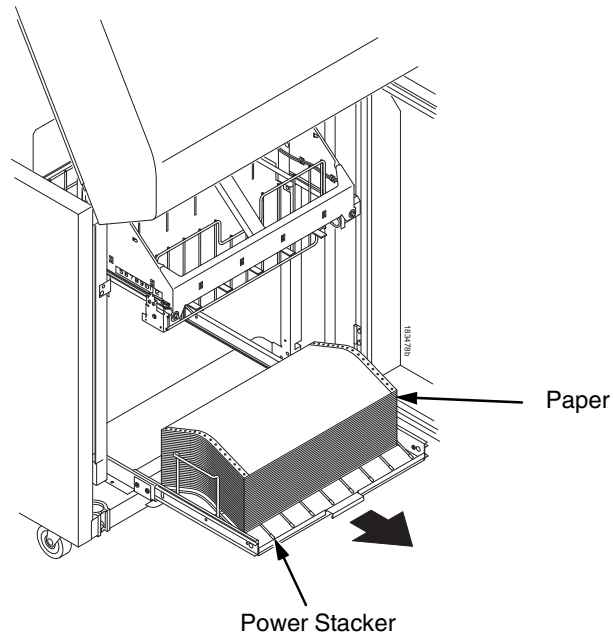
Power Stacker

Figure 17. Removing Stacked Paper from the Printer

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.

7. Close the cabinet rear door.

Tractor Door

Platen Lever

183904a
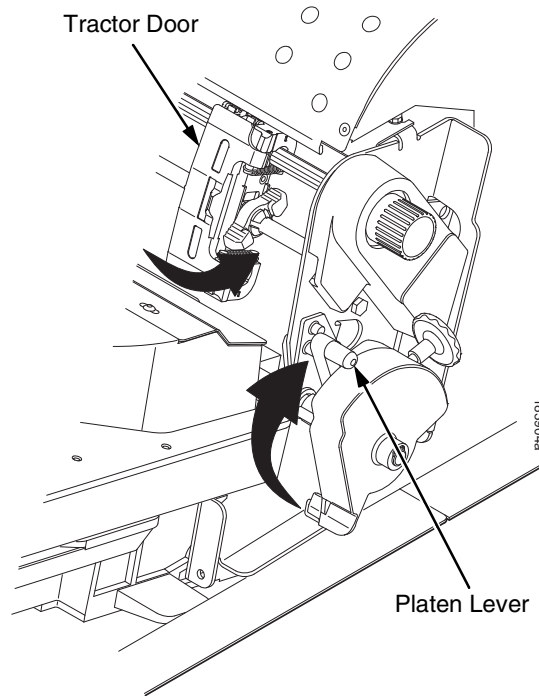
Figure 18. Completely Removing the Paper

8. To completely remove the paper from the printer:

    a. Raise the platen lever as far as it will go and open both tractor doors.

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. Open the cabinet front door.

    c. Gently pull the paper down through the paper slot. Allow the paper to fall into the paper supply area.

    d. Remove the paper from the paper supply area.

Integrated Print Management System

The P7000 has a new feature that automatically monitors and communicates the status of the ribbon life to help the operator know when to change ribbons. Using an ink delivery system called the Cartridge Ribbon System (CRS), the printer can automatically detect when a new or used ribbon is loaded, and all ribbon properties. The ribbon is contained in a plastic box (the cartridge) and feeds only in one direction. The CRS contains an interface board that allows communication between the printer and the cartridge. Using the CRS, the P7000 automatically detects when a new or used ribbon is installed and determines the ribbon's length, ink color, and expected yield. The ribbon life, starting from 100% when new and decreasing to 0% when depleted, is always displayed on the control panel. See Figure 5 on page 20.

When the ribbon life reaches 2%, a warning message "RIBBON UNDER 2%/ Change RBN soon" appears on the control panel display. The control panel status indicator lamp flashes. The printer will continue printing in this condition until the ribbon life reaches 0% at which time, printing will stop. The ribbon may be changed at any time while the printer is in the "RBN END POINT/ Change Ribbon" condition without losing data in the printer's buffer. If a new ribbon is loaded, the system automatically detects the change, clears the condition when the platen is closed, and restarts the life at 100%. If a partially used ribbon is loaded, the system continues the life at the percentage indicated for the used ribbon.

You may also resume printing for approximately two more minutes without changing the ribbon by pressing the ON LINE/CLEAR key twice. This may be done as many times as needed to complete the job in progress.

Ribbon usage information is calculated by maintaining a count of impressions (dots) that is stored on the ribbon cartridge and updated periodically so that the cartridge can be used on a different printer with the information intact. This allows the system administrator to have precise control over print quality and consumable costs. The accurate presentation of available ribbon life allows for efficient planning of print jobs. For example, if the displayed ribbon life were low, you can install a new ribbon before printing a large print job.

Output Darkness

By default the system is configured to meet most user requirements. However, some applications require that the output remains darker than the nominal set point while some applications are less critical and could tolerate a lighter final image. The system can easily adjust to this variability. A setting under the Printer Control menu is available that allows the user to adjust the final output. The range is as follows:

Normal (Default)
Darker +1 through +6
Lighter -1 through -10

The ribbon life indicator always cycles between 100% and 0%, but if a darker setting is selected, zero will be reached more quickly. If a lighter setting is selected, the system will extend the amount of printing it takes to reach zero.

Loading a Used Ribbon Cartridge

You can take the ribbon cartridge off the printer and reload it at a later time. The ribbon life gauge automatically updates to reflect the correct remaining capacity.

NOTE: Since the ribbon usage information is stored on the ribbon cartridge, you can reload a partially used cartridge onto a different printer.

Lighter Or Darker Print

The ribbon life value as determined by the Integrated Print Management System is factory set so that the image quality at the end of the ribbon life is as good as it was when the ribbon was new. You may adjust the ribbon end point for a lighter or darker image as required for your printing needs. See "PRINTER CONTROL" on page 102.

Changing Ribbon Cartridge

Before changing the ribbon cartridge, determine whether at the end of ribbon life if you want to make the print lighter (extend the ribbon life) or darker (shorten the ribbon life). If you want to make the print lighter, go to "Ribbon End Point" on page 57 and follow the procedures for adjusting the image density. If you are satisfied with the print darkness, or if you want to increase the darkness at the end of ribbon life, continue with the following steps.

NOTE: Ribbon cartridge instructions and illustrations shown in the following section are for the pedestal model. Follow the same procedures for the cabinet model.

Blue Tractor Door (2)
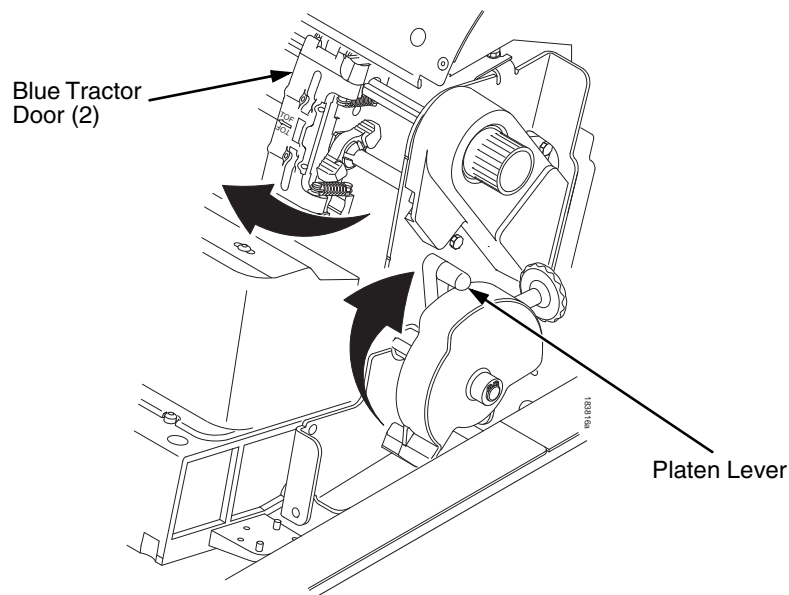
Platen Lever

Figure 19. Preparing to Load the Ribbon

1. Open the printer cover.
2. Raise the platen lever as far as it will go.
3. Close the tractor doors.
4. Remove the old ribbon cartridge and discard properly.
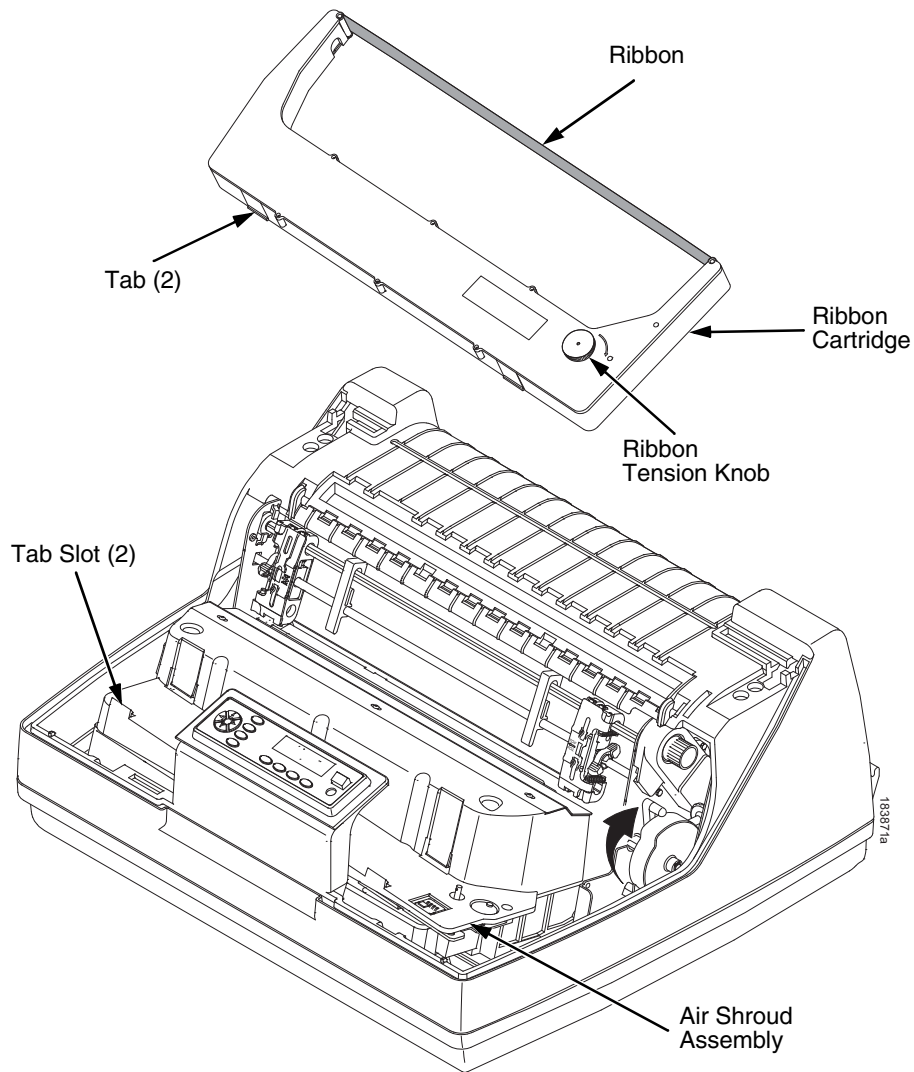
Figure 20. Installing the Ribbon Cartridge

5. Remove the ribbon slack on the new ribbon cartridge by turning the ribbon tension knob clockwise.

CAUTION   **Do not turn the ribbon tension knob counterclockwise. This could damage the ribbon cartridge.**

6. Hold the cartridge at an angle, so that the rear side nearest you is lower than the side with the ribbon. Find the two tabs on the outside of the cartridge and place them into the corresponding slots on the air shroud assembly (see Figure 20).

Ribbon
Cartridge

Ribbon Mask

Hammerbank
Cover

Ribbon

Ribbon Tension Knob
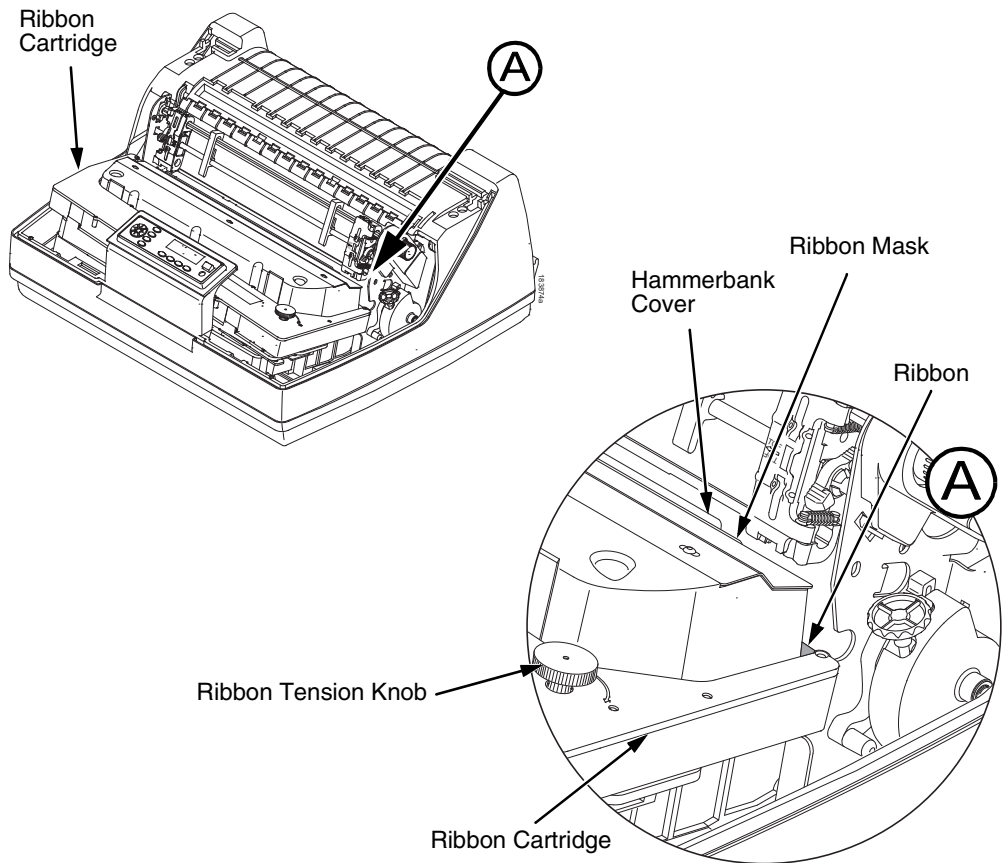
Ribbon Cartridge

Figure 21. The Ribbon Cartridge Snapped in Place

7. Rock the cartridge downward, making sure that the ribbon goes between the guide and the mask (see Figure 21). You will feel it snap into place.

CAUTION **Make sure that the ribbon does not twist or fold over.**

8. Turn the ribbon tension knob clockwise a few times to make sure the ribbon tracks correctly in the ribbon path.

9. Close the platen lever.

10. Close the printer top cover.

If you want to increase the darkness level of the ribbon at the end of life, go to "Ribbon End Point" on page 57 and follow the procedures for adjusting the image density.

If you are satisfied with the print darkness, press the ▐▐ (ON LINE/CLEAR) key twice to return the printer to operation.

4 *The Configuration Menus*

Configuration Overview

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 and includes 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.**

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 or by sending emulation control codes in the data stream from a host attached to the printer. The control panel allows you to configure the printer's resident set of configuration menus. An example procedure for using the control panel to change parameter settings begins on page 43.

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.

Saving Parameter Settings

The parameter settings that you have changed can be permanently stored in the printer's memory as a configuration. See "Auto Save Configuration" on page 46. and "Saving Your New Configuration" on page 46.

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 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 46.

Navigating The Menus

To manipulate configurations review the following instructions about navigating through the menus.

You must be offline to move within the menus.

ON LINE/CLEAR

Press to toggle between ONLINE and OFFLINE. Menus are accessed with the printer offline.

OR

Press to move up or down through the menu levels.

OR
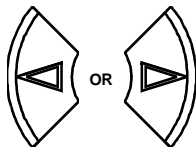
Press to scroll through the available choices on a chosen level.

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 108.)

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

Changing Parameters Example

```
┌─────────────┐
│  OFFLINE    │
└─────────────┘
       │
┌─────────────┐      ┌─────────────┐
│   QUICK     │ ...  │  PRINTER    │
│   SETUP     │      │  CONTROL    │
└─────────────┘      └─────────────┘
```

* = Factory Default

[1] Only for P7000 Pedestal Model

Ribbon End Point	Open Platen @ BOF	Tear Bar Dist.	View Function [1].
Darker +6	Disable*	7.46 in.*	Disable*
Darker +5	Enable	(4.5-10.5 in.)	Enable
Darker +4			
Darker +3			
Darker +2			
Darker +1			
Normal			
Lighter -1			
Lighter -2			
Lighter -3	Unidirectional	Display Language	Accented Char
Lighter -4	Disable*	English*	Standard*
Lighter -5	Enable		Tall
Lighter -6			
Lighter -7*			
Lighter -8			
Lighter -9			
Lighter -10			

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 Unidirectional and Accented Char options. Use these guidelines to navigate the configuration menus and change other parameters.

NOTE: When changing Ribbon End Point parameters, all changes will apply to every configuration saved. Changes to Ribbon End Point cannot be saved to an individual configuration.

43

Step	Press	LCD	Notes
1.	Make sure the printer is on.		
2.	ON LINE/CLEAR	OFFLINE QUICK SETUP	
3.	▲ + ▽	ENTER SWITCH UNLOCKED	Allows you to make configuration changes.
		OFFLINE QUICK SETUP	
4.	▷ UNTIL	OFFLINE PRINTER CONTROL	
5.	▽	PRINTER CONTROL Ribbon End Point	
6.	▷ UNTIL	PRINTER CONTROL Unidirectional	
7.	▽	Unidirectional Disable*	
8.	◁ OR ▷	Unidirectional Enable	Cycle through the choices.
9.	ENTER ↵	Unidirectional Enable*	The * indicates this choice is active.
10.	▲	PRINTER CONTROL Unidirectional	

Step	Press	LCD	Notes
11.	UNTIL	PRINTER CONTROL Accented Char	
12.		Accented Char Standard*	
13.	OR	Accented Char Tall	Press until the desired parameter displays.
14.	ENTER	Accented Char Tall*	The * indicates this choice is active.
15.	+	ENTER SWITCH LOCKED	Locks the ENTER key.
16.	ON LINE/CLEAR	ENTER = Save ONLINE = No Save	Press ENTER to automatically save configuration changes. Press ONLINE to continue without saving.
17A.	ENTER	Cfg = 1* = Power-Up Cfg	Configuration changes have been saved as Configuration 1, and will be set as the Power-Up config. The printer will then be brought online.
17B.	ON LINE/CLEAR	ONLINE Ribbon Life 100%	Places the printer online without permanently saving the configuration changes.
18.	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.

Auto Save Configuration

After any changes are made to the Factory Default configuration menu items, you will be prompted to save the changes to "Config #" when you place the printer online. "#" represents the next available unassigned configuration number. When prompted, press one of the following:

- **Enter**. Saves to Config 1 or the next available Config, and becomes the power-up config.

- **Online**. Changes will be implemented but saved only temporarily until deliberately saved as a new configuration or until you power off the printer. All changes will be lost when you power off the printer.

Saving Your New Configuration

The Save Config. option allows you to save up to eight custom configurations to meet different print job requirements. Once you have changed all of the necessary parameters, you may save them as a numbered configuration (Example 1 on page 47) or a named configuration (Example 2 on page 49) that can be stored and loaded later for future use. If you do not save your configuration using the Auto Save, or this option, all of your parameter changes will be erased when you power off the printer.

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 58). You can also modify and resave it. You may want to print your configurations (see "Print Config." on page 59) 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 "Delete Config." on page 59).

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

Example 1

This example shows how to save a configuration as a numbered configuration, then later print it.

Step	Press	LCD	Notes
1.	Make sure the printer is on.		
2.	ON LINE/CLEAR	OFFLINE QUICK SETUP	
3.	△ + ▽	ENTER SWITCH UNLOCKED	Allows you to make configuration changes.
		OFFLINE QUICK SETUP	
4.	▷ UNTIL	OFFLINE CONFIG. CONTROL	
5.	▽	CONFIG. CONTROL Load Config.	
6.	▷ UNTIL	CONFIG. CONTROL Save Config.	
7.	▽	Save Config. 1*	
8.	◁ OR ▷	Save Config. 2	Cycle through the choices.
9.	ENTER ↵	Save Config. 2*	The * indicates this choice is active.

Step	Press	LCD	Notes
NOTE:	We recommend that you print the configuration. To print the configuration go to Step 9. To skip this procedure and resume printer operation, go to Step 14.		
10.	△	CONFIG. CONTROL Save Config.	
11.	▷ UNTIL	CONFIG. CONTROL Print Config.	
12.	▽	Print Config. Current	
13.	◁ OR ▷	Print Config. 2	Press until the desired parameter displays.
14.	ENTER ↵	OFFLINE CONFIG. CONTROL	The selected configuration is printed.
15.	△ + ▽	ENTER SWITCH LOCKED	Locks the ENTER key.
16.	ON LINE/CLEAR ▮▮	ONLINE Ribbon Life 100%	
17.	If you printed out the configuration, store it in a safe place. The printer is ready for operation.		

Example 2

This example shows how to save a configuration as a named configuration.

Step	Press	LCD	Notes
1.	Make sure the printer is on.		
2.	ON LINE/CLEAR	OFFLINE QUICK SETUP	
3.	△ + ▽	ENTER SWITCH UNLOCKED OFFLINE QUICK SETUP	Allows you to make configuration changes.
4.	▷ UNTIL	OFFLINE CONFIG. CONTROL	
5.	▽	CONFIG. CONTROL Load Config.	
6.	▷ UNTIL	CONFIG. CONTROL Name Configs.	
7.	▽	Name Configs. 1	The LCD flashes.
8.	▷ UNTIL	Name Configs 2	You will rename config 2.
9.	▽	2 2*	
10.	△ UNTIL	2 T	Cycle through the choices until "T" displays.

Step	Press	LCD	Notes
11.	▷	2 T_	Saves the first character.
12.	△ UNTIL	2 TE	Cycle through the choices until "E" displays.
13.	▷	2 TE_	Saves the second character.
14.	△ UNTIL	2 TES	Cycle through the choices until "S" displays.
15.	▷	2 TES_	Saves the third character.
16.	△ UNTIL	2 TEST	Cycle through the choices until "T" displays.
17.	▷	2 TEST_	Saves the fourth character.
18.	ENTER ↵	Name Configs TEST	The configuration is renamed TEST.
19.	△	CONFIG. CONTROL Name Configs	
20.	▷ UNTIL	CONFIG. CONTROL Save Config.	
21.	▽	Save Config. 1*	

Step	Press	LCD	Notes
22.	▷	Save Config. TEST	TEST now appears as one of configuration choices.
23.	ENTER ↵	Saving Configuration	
		Save Config. TEST*	Your configuration is saved as TEST.
24.	△ + ▽	ENTER SWITCH LOCKED	Locks the ENTER key.
25.	ON LINE/CLEAR ▌▌	ONLINE Ribbon Life 100%	

Now you have the saved configuration for later use if needed.

Optimizing Print Quality

The print quality will vary according to the typeface selected. Both text and barcodes will print using the resolution of the typeface selected.

Optimizing Print Speed

The print speed will vary according to the typeface selected.

Main Menu

OFFLINE

QUICK SETUP page 54	ZTP SETTINGS [4] page 185	CONFIG. CONTROL page 58	HOST INTERFACE page 60	NETWORK SETUP [3] page 77	EMULATION page 92
Host Interface	ZTP Data Time	Load Config.	E-Net Adapter [3]	Adapter Address [3]	LinePrinter+
Adapter Address [3]	ZTP Wait Time	Save Config.	Ethernet [3]	Adapter Params [3]	Printer Protocol
Ethernet Address [3]	ZTP Tear Distance	Print Config.	Auto Switching*	Ethernet Address [3]	LQ 1600K[1]
WLAN Address [3]	ZTP Function	Delete Config.	Centronics	Ethernet Params [3]	KS[2]
ZTP Data Time [4]	ZTP Platen Open	Power-Up Config.	Dataproducts	WLAN Address [3]	KSSM[2]
ZTP Wait Time [4]		Protect Configs.	Serial	WLAN Params [3]	
ZTP TearDistance [4]		Name Configs	IEEE 1284		
Graphic Spd Up		Reset Cfg Names			
Typeface		Auto Save			
DBCS CPI					
Select LPI					
DBCS ASCII Style					
DBCS/ASCII Mode [1]					
Ribbon End Point					
Reset Cmd CFG Ld					
Load Config.					
Save Config.					
Power-Up Config.					

PRINTER CONTROL page 102	ADVANCED USER page 104	DIAGNOSTICS page 110	DATE [7] page 113	Printer MGMT page 114
Ribbon End Point	Ptx Setup Option	Printer Tests	Hour	PNE Port
Open Platen @ BOF	Hex Dump Mode	Test Width	Minute	Mgmt Protocol
Tear Bar Dist.	Power-Up State	Paper Out Dots	Year	PNE Port Number [6]
View Function [5]	Downloaded Fonts	System Memory	Month	PNE Port Timeout [6]
Unidirectional	PMD Fault	Print Statistics	Day	Status Port Numb
Display Language	Power Stacker [3]	Software Build		Mgmt Port Number
Accented Chars	Auto Elevator [3]	Feature File [8]		
	Auto Locking	Shuttle Type		
	File System			
	Set Sharing			
	Shuttle Timeout			
	Slow Paper Slew			
	Alarm			
	Power Saver Time			
	Pwr Save Control			
	Cancel Key			
	Ret. Status Port			
	Set Lock Key			
	Job Set/Typeface			
	Print Hist. Log			
	RBN Low Warn @			
	RBN Low Action			
	RBN End Action			

NOTE:

[1] Available for Hanzi and Kanji LP+ Printers Only
[2] Available for Hangul LP+ Printers Only
[3] If installed
[4] Available for Zero Tear Pedestal Printers only.
[5] Only for P7000 Pedestal Model
[6] Not available if PNE Port is set to Seria
[7] If Real Time Clock (RTC) option is installed.
[8] If a Feature File has been downloaded.

Figure 22. Main Menu Configuration

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

• **QUICK SETUP —** These options allow quick access to the main printer options used most.

• **ZTP SETTINGS** These options allow you to set parameters for zero tear pedestal printers.

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

• **HOST INTERFACE** — These options allow you to select either the Serial RS-232, Serial RS-422, Centronics® parallel, Data Products parallel, Ethernet™, IEEE® 1284 parallel, or Auto Switching interface for the printer. This menu also allows you to configure several parameters for each interface.

• **NETWORK SETUP** — This option allows you to select from Ethernet Address option and Ethernet Parameters options.

• **EMULATION** — This menu allows you to configure the options which are available for the current operating (active) emulation.

• **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.

• **ADVANCED USER** — These options allow you to select several advanced operating parameters for the printer, such as the speed at which paper will advance when slewing.

• **DIAGNOSTICS** — This menu includes the diagnostic tests, system memory, software build part number, Feature File (if one exists), the shuttle type, and statistics of the printer.

• **DATE** — This menu allows you to set the printer's real time clock. The parameters include hour, minute, year, month, and day.

• **PRINTER MGMT** — These options allow you to select the PNE port type, port number, port timeout period, status port number, and management port number.

QUICK SETUP

* = Factory Default
[1] Available for Hanzi and Kanji LP+ Printers Only
[2] Available for Hangul LP+ Printers Only
[3] If installed.
[4] Available for Zero Tear Pedestal Printers only.

QUICK SETUP (from page 52)

Host Interface	Adapter Address [3]	Ethernet Address [3]	WLAN Address [3]	ZTP Data Time [4]	ZTP Wait Time [4]
Auto Switching*	IP Address	IP Address	IP Address	.5 Sec*	2 Sec*
Centronics	Subnet Mask	Subnet Mask	Subnet Mask	1.0 - 15.0 Sec	3 - 10 Sec
Dataproducts	Gateway Address	Gateway Address	Gateway Address		1 Sec
Serial	MAC Address	MAC Address	MAC Address		
IEEE 1284	DHCP	DHCP	DHCP		
E-Net Adapters [3]					
Ethernet [3]					

ZTP TearDistance [4]	Graphics Spd-Up	Typeface	DBCS CPI	Select LPI	DBCS ASCII Style
1060/144 Inch*	Normal*	LQ	5.0 CPI	6.0 LPI*	Normal*
	Enhanced	Near LQ*	6.0 CPI	8.0 LPI	Oversize[1]
	Turbo	Normal	6.7 CPI*		OCR B
	Match Typeface	Hi-Speed	7.5 CPI		
		Super Hi-Speed	8.5 CPI [2]		
		Ultra Hi-Speed	9 CPI [2]		
			10.0 CPI [2]		
			Others CPI		

DBCS/ASCII Mode [1]	Ribbon End Point	Reset Cmd CFG Ld	Load Config.	Save Config.	Power-Up Config.
DBCS Mode*	Darker +6	Disable*	Factory*	1*	Factory*
ASCII Mode	Darker +5	Power up config	1-8	2-8	1-8
	Darker +3	Current config			
	Darker +2	Factory config			
	Darker +1				
	Normal				
	Lighter -1				
	Lighter -2				
	Lighter -3				
	Lighter -4				
	Lighter -5				
	Lighter -6				
	Lighter -7*				
	Lighter -8				
	Lighter -9				
	Lighter -10				

Host Interface

The Host Interface menu enables you to select and configure interfaces between the printer and your host computer.

Adapter Address

- **IP Address**. A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.

- **Subnet Mask**. A binary value used to divide IP networks into smaller subnetworks or subnets. This mask is used to help determine whether IP packets need to be forwarded to other subnets.

- **Gateway Address**. A gateway address is the IP address of a hardware device (gateway) that translates data between two incompatible networks, which can include protocol translation.

- **MAC Address**. This menu item is the Manufacturer's Assigned Number, and is unique for each printer. It is read-only.

- **DHCP**. You can enable/disable the DHCP protocol using this option, but consult your administrator for the appropriate setting.

Ethernet Address

- **IP Address**. A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.

- **Subnet Mask**. A binary value used to divide IP networks into smaller subnetworks or subnets. This mask is used to help determine whether IP packets need to be forwarded to other subnets.

- **Gateway Address**. A gateway address is the IP address of a hardware device (gateway) that translates data between two incompatible networks, which can include protocol translation.

- **MAC Address**. This menu item is the Manufacturer's Assigned Number, and is unique for each printer. It is read-only.

- **DHCP**. You can enable/disable the DHCP protocol using this option, but consult your administrator for the appropriate setting.

WLAN Address

- **IP Address**. A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.

- **Subnet Mask**. A binary value used to divide IP networks into smaller subnetworks or subnets. This mask is used to help determine whether IP packets need to be forwarded to other subnets.

- **Gateway Address**. A gateway address is the IP address of a hardware device (gateway) that translates data between two incompatible networks, which can include protocol translation.

- **MAC Address**. This menu item is the Manufacturer's Assigned Number, and is unique for each printer. It is read-only.

- **DHCP**. You can enable/disable the DHCP protocol using this option, but consult your administrator for the appropriate setting.

ZTP Data Time

This option sets the pause time in the data stream that the ZTP requires before moving the form to the tear bar once a print job is completed. The values range from .5 to 15 seconds. The default is .5 seconds.

ZTP Wait Time

This option sets the minimum amount of time that the form stays at the tear bar. This allows you time to remove the form before the form is retracted to print the next form. The adjustable values range from 1 to 10 seconds in increments of 1 second. The default value is 2 seconds.

ZTP TearDistance

This option sets the tear off distance from the current print position to the tear bar. Adjustable values in increments of 1/144th of an inch range from 200 to 2880. The up and down arrows adjust the display value. When you press the **Enter** key, the selected value is stored and a scale is printed to indicate the current tear off position. The default value is 1060.

NOTE: When a new value is selected, the printer will lose the current print position. You must reset the top of form to automatically save the new value.

Graphics Spd-Up

This menu is used to increase (speed up) graphic printing speed by turning on Enhanced/Turbo mode. See "Graphics Spd Up" in the Programmer's Reference manual.

Typeface

Sets the typeface of the printer. This key requires confirmation with the ENTER key.

NOTE: The factory default for the Hanzi GB and Kanji SJIS LP+ is Near LQ. The factory default for the Hangul and Hanzi Big5 LP+ is LQ.

DBCS CPI

Defines the default values for horizontal character spacing in DBCS mode. For the Hanzi and Kanji LP+ printer, select from 5.0, 6.0, 6.7, 7.5, and Others CPI. For the Hangul LP+ printer, selected from 5.0, 6.0, 6.7, 7.5, 8.5, 10, and others CPI.

NOTE: The factory default for the Hanzi LP+ printer is 6.7 cpi. The factory default for the Hangul LP+ printer is 6.0 cpi. The factory default for the Kanji LP+ printer is 7.5 cpi.

Select LPI

Defines the default values for vertical character spacing. The number of lines per inch can be 6.0 or 8.0.

NOTE: The factory default for the Hanzi and Hangul LP+ is 6.0. The factory default for Kanji LP+ is 8.0.

DBCS ASCII Style

This option specifies the appearance of the single-byte numeric characters. For the Hanzi and Kanji LP+ printer, select from Normal, Oversize and OCRB. For the Hangul LP+ printer, select from Normal, and OCRB.

DBCS/ASCII Mode

This option specifies the operating mode of the Hanzi printer. Refer to "Font Attribues" in the *LQ1600K Programmer's Reference Manual* for more information.

NOTE: Available for the Hanzi and Kanji LP+ printers only.

Ribbon End Point

This parameter adjusts the point at which the system will declare the ribbon as being expended. The life count will always be from 100% to 0%, but if a darker setting is selected 0% will be reached more quickly. If a lighter setting is selected, the system will extend the time it takes to reach 0%.

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** (default). 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.

Load Config.

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

Save Config.

This option allows you to save up to eight 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 46 for details.

Power-Up Config.

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

ZTP SETTINGS

See Appendix C, page 177.

CONFIG. CONTROL

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

* = Factory Default

```
          ┌─────────────┐
          │   CONFIG.    │
          │   CONTROL    │
          │ (from page 52)│
          └──────┬───────┘
```

Load Config.	Save Config.	Print Config.	Delete Config.	Power-Up Config.	Protect Configs.
Factory* 1-8	1* 2-8	Current Short* Current Full Factory Power-Up All 1-8	1* 2-8	Factory* 1-8	Disable* Enable

Name Configs	Reset Cfg Names	Auto Save
1-8	1* 2-8 All	Enable* Disable

Load Config.

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

Save Config.

This option allows you to save up to eight 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 46 for details.

Print Config.

This option is used to print a listing of various stored printer configurations. 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.

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 name 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.

Auto Save

- **Enable** (default). When a change has been made to a configuration menu, this option automatically prompts you to save or not save the change to config #. If you are currently in the Factory Config. menus and make a change, pressing Enter saves to Config 1 or the next available config. and becomes the Power-Up config. If the current config is Config 1 and a menu change is made, pressing Enter will save the change to Config 1.

- **Disable**. The printer will not prompt you to save any changes made.

HOST INTERFACE

* = Factory Default
[1] Available when an Ethernet is present.

[2] Available when an Adapter is present.

HOST INTERFACE (from page 52)

Auto Switching*	Centronics	Dataproducts	Serial	IEEE 1284	E-Net Adapter[2]
(see page 61)	(see page 63)	(see page 65)	(see page 68)	(see page 74)	(see page 75)

Ethernet[1]

(see page 76)
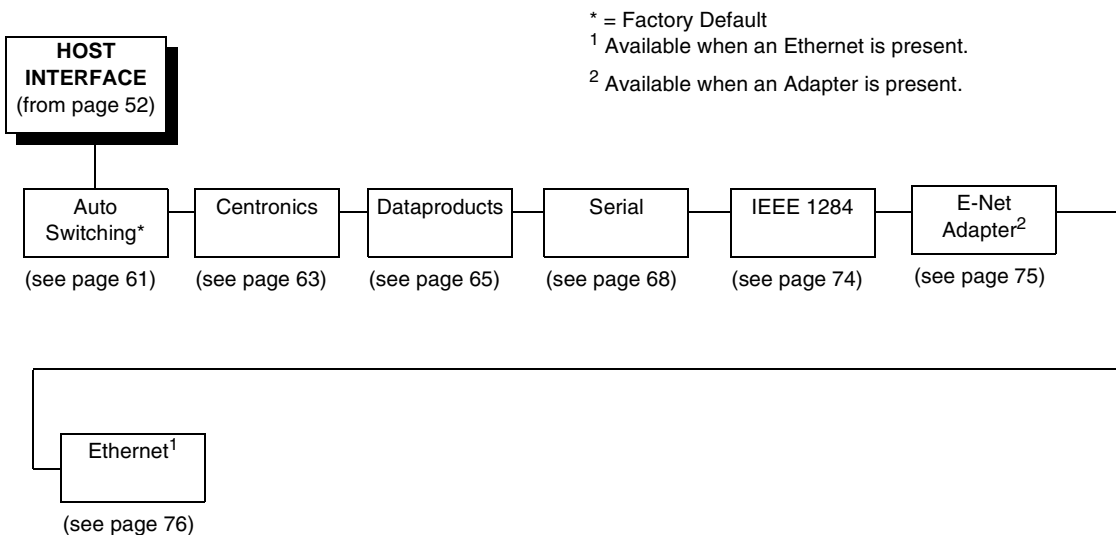
The Host Interface Menu enables you to select and configure one of many types of interfaces between the printer and your host computer. The currently selected interface is indicated with an asterisk on the control panel message display. Each interface has its own submenu with a set of interface parameters which can be configured.

Auto Switching Submenu

Auto Switching
(from page 60)

Parallel Hotport	Serial Hotport	Ethernet Hotport [1]

Parallel Hotport

Port Type
  Centronics*
  (see page 63 for options)
  Dataproducts
  (see page 65 for options)
  IEEE 1284
  (see page 74 for options)
  Disable
  E-Net Adapter
  (see page 75 for options)
Trickle Time
  1/4 sec*
  1/2 sec
  1 sec
  2 sec
  4 sec
  8 sec
  16 sec
  Off
Timeout
  10 sec.*
  (10-60)
Report Status
  Disable*
  Enable
Switch Out On
  Data Timeout*
  Session Close

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.*
  (10-60)
Report Status
  Disable*
  Enable

Ethernet Hotport [1]

Timeout
  10 sec.*
  (10-60)
Switch Out On
  Data Timeout*
  Session Close

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.

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. The user does not have 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 a certain period of time, it needs to timeout in order to service the other ports.

Report Status

- **Disable** (default). 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.

Switch Out On

- **Data Timeout** (default). Allows Autoswitching when no data has been received for the selected Time Out period.

- **Session Close**. Allows Autoswitching only when the Network Socket is closed. If the Ethernet option is not installed the Network Socket is always reported as closed and this menu option is ignored.

Centronics (Parallel) Submenu

* = Factory Default
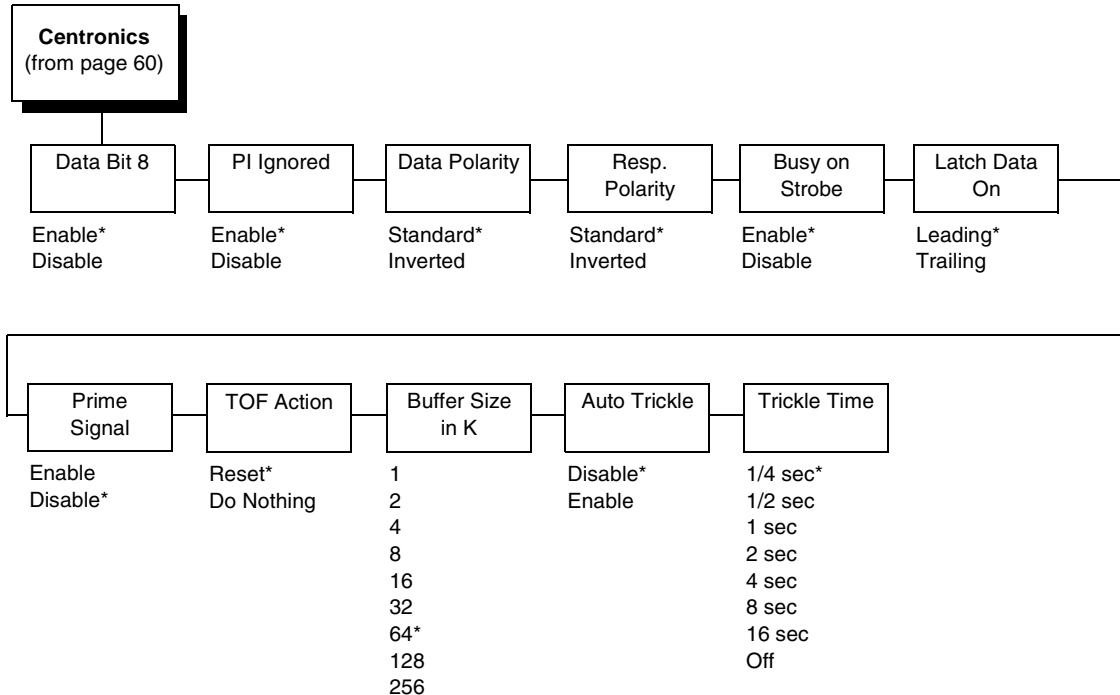
```
┌─────────────┐
│ Centronics  │
│ (from page 60)│
└──────┬──────┘
```

Data Bit 8	PI Ignored	Data Polarity	Resp. Polarity	Busy on Strobe	Latch Data On
Enable*	Enable*	Standard*	Standard*	Enable*	Leading*
Disable	Disable	Inverted	Inverted	Disable	Trailing

Prime Signal	TOF Action	Buffer Size in K	Auto Trickle	Trickle Time
Enable	Reset*	1	Disable*	1/4 sec*
Disable*	Do Nothing	2	Enable	1/2 sec
		4		1 sec
		8		2 sec
		16		4 sec
		32		8 sec
		64*		16 sec
		128		Off
		256		

Data Bit 8

- **Enable** (default). 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** (default). 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** (default). 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.

Resp. Polarity

The Resp. Polarity parameter must be set to match the response polarity of your host computer.

- **Standard** (default). Does not invert the response signal.
- **Inverted**. Inverts the response signal sent to the host computer.

Busy On Strobe

- **Enable** (default). Asserts a busy signal after each character is received.
- **Disable**. Asserts a busy signal only when the print buffers are full.

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** (default). The parallel port will not perform a warm start (reboot) if the host asserts the prime signal.

TOF Action

- **Reset** (default). 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, 2, 4, 8, 16, 32, 64, 128, and 256.

Auto Trickle

Auto Trickle is used to prevent a host computer from timing out because the parallel interface was busy for too long. When Auto Trickle is enabled and the printer's buffers are almost full, the printer will begin to trickle data in (at the rate set in the Trickle Time menu) until the buffers start to empty out.

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.

Dataproducts Submenu

* = Factory Default

Dataproducts (from page 60)					
Data Bit 8	PI Ignored	Data Polarity	Resp. 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	Auto Trickle	Trickle Time
Reset* Do Nothing	64* 1 2 4 8 16 32 128 256	Disable* Enable	1/4 sec* 1/2 sec 1 sec 2 sec 4 sec 8 sec 16 sec Off

Data Bit 8

- **Enable** (default). 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** (default). 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.

Data Polarity

The Data Polarity parameter must be set to match the data polarity of your host computer.

- **Standard** (default). 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.

Resp. Polarity

The Response Polarity parameter must be set to match the response polarity of your host computer.

- **Standard** (default). 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. The default is Middle.

Prime Signal

- **Disable** (default). The parallel port will not perform a warm start (reboot) if the host asserts the prime signal.

- **Enable**. The parallel port will perform a warm start (reboot) if the host asserts the prime signal.

TOF Action

- **Reset** (default). 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 Dataproducts parallel port buffer. You can specify between 1, 2, 4, 8, 16, 32, 64, 128, and 256 Kbytes.

Auto Trickle

Auto Trickle is used to prevent a host computer from timing out because the parallel interface was busy for too long. When Auto Trickle is enabled and the printer's buffers are almost full, the printer will begin to trickle data in (at the rate set in the Trickle Time menu) until the buffers start to empty out.
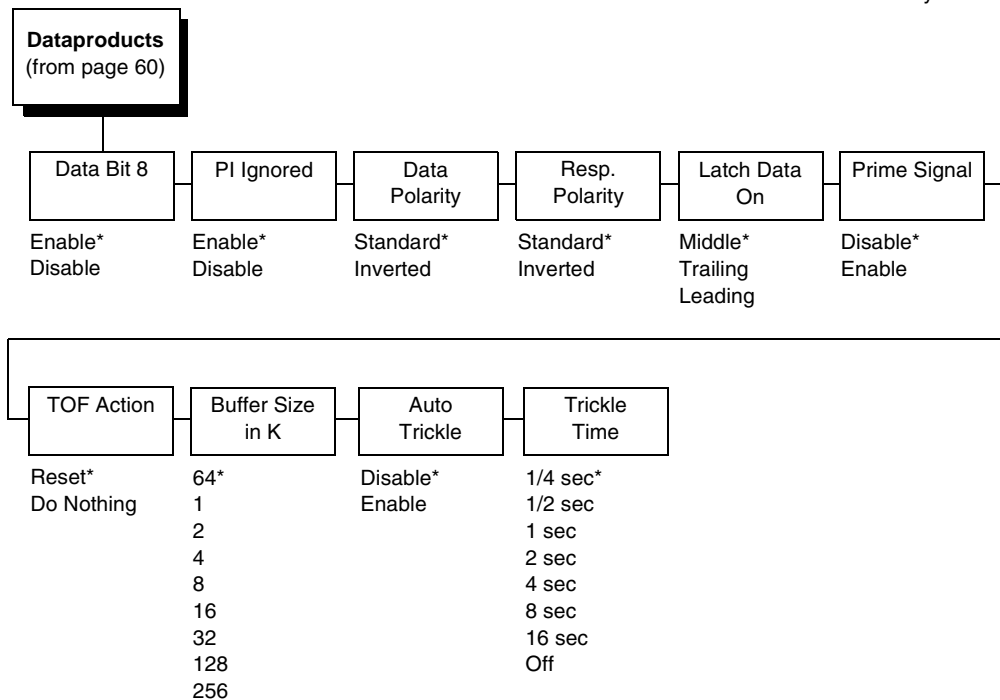
Trickle Time

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.

Serial Submenu

* = Factory Default

```
┌─────────────────┐
│     Serial      │
│ (from page 60)  │
└─────────────────┘
```

Interface Type	Data Protocol	Baud Rate	Word Length 8	Stop Bits 1	Parity
RS 232*	XON/XOFF*	9600 Baud*	8*	1*	None*
RS 422	ETX/ACK	19200 Baud	7	2	Odd
	ACK/NAK	38400 Baud			Even
	Series1 1 Char	57600 Baud			Mark
	Series1 2 Char	115200 Baud			Sense
	ENQ/ACK	600 Baud			
	DTR	1200 Baud			
		2400 Baud			
		4800 Baud			

Data Term Ready	Request to Send	Buffer Size in K	Poll Character	Poll Response	Idle Response
True*	On-Line and BNF*	1	00 Hex*	0 ms*	Disable*
On-Line and BNF	Off-Line or BF	2	(0-FF hex)	(0-30 ms)	Enable
Off-Line or BF	On-Line	4			
On-Line	False	8			
False	True	16*			
		32			
		64			
		128			
		256			

One Char Enquiry	Framing Errors
Disable*	Enable*
Enable	Disable

Interface Type

This parameter allows you to select either the RS-232 or RS-422 serial port interface. The default is RS-232.

Data Protocol

You can select one of the following serial interface protocols to meet the host interface requirements.

- **XON / XOFF** (default). 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 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 2.

Table 2. 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 3.

Table 3. 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

- **ENQ / ACK**. ENQ selects odd dot plot mode to print dots in odd numbered dot columns for normal density plotting. It defines certain data between the next and last paper motion commands as odd dot plot data. ACK selects line spacing of 1/8" or 7/72" for current line only.

- **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. The default is 9600 Baud.

NOTE: If you select a baud rate that is greater than 19200, you may need to use RS-422 or select a lower baud rate to prevent data loss. You also may need to increase the Buffer Size in K parameter from the default (16 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.

Stop Bits 1

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 Term 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** (default). 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** (default). 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.

Buffer Size in K

This option configures the amount of memory allocated for the serial port buffer. You may specify between 1, 2, 4, 8, 16, 32, 64, 128, and 256.

NOTE: If you select a baud rate that is 19200 or greater, you may need to increase the Buffer Size in K 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.

- **Disable** (default)

- **Enable**. 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 4. One Char Enquiry Response Characters

Printer State	Response (hex)
Online and Buffer Not Full	22
Online and Buffer Full	23
Offline and Buffer Not Full	20
Offline and Buffer Full	21

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.
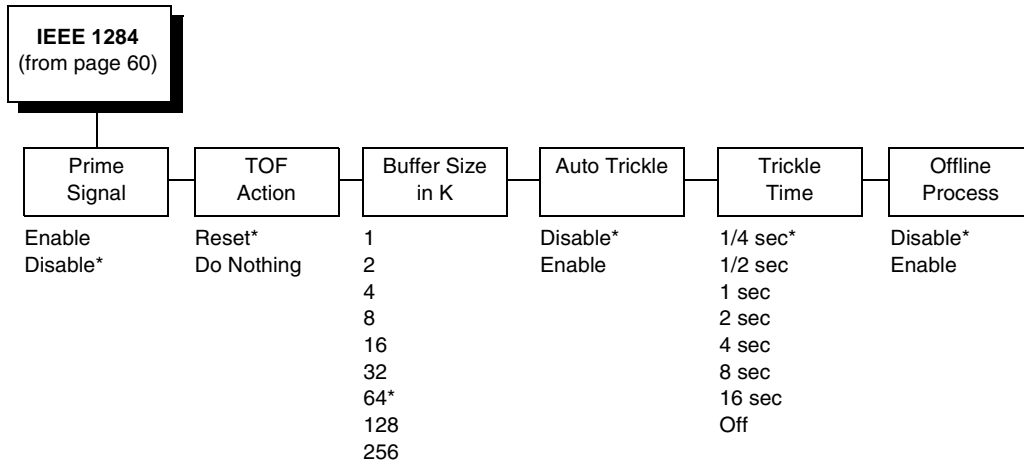
Framing Errors

Possible errors that can occur when the printer's serial interface settings do not match those of the host computer.

- **Enable** (default). If a framing error occurs, a fault message will display on the control panel.

- **Disable**. If a framing error occurs, a fault message will not display on the control panel.

IEEE 1284 Parallel (Bidirectional) Submenu

* = Factory Default

```
┌─────────────┐
│  IEEE 1284  │
│(from page 60)│
└─────────────┘
```

Prime Signal	TOF Action	Buffer Size in K	Auto Trickle	Trickle Time	Offline Process
Enable	Reset*	1	Disable*	1/4 sec*	Disable*
Disable*	Do Nothing	2	Enable	1/2 sec	Enable
		4		1 sec	
		8		2 sec	
		16		4 sec	
		32		8 sec	
		64*		16 sec	
		128		Off	
		256			

The IEEE 1284 interface is faster and more versatile than Centronics and supports bidirectional communication. Configuration of this interface is controlled from the host. Refer to IEEE 1284 Παραλλελ Ιντερφαχε ον παγε 117 more details about the available modes (Compatibility, Nibble, and Byte).

Prime Signal

- **Disable** (default). The parallel port will not perform a warm start (reboot) if the host asserts the prime signal.

- **Enable**. The parallel port will perform a warm start (reboot) if the host asserts the prime signal.

TOF Action

- **Reset** (default). 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, 2, 4, 8, 16, 32, 64, 128, and 256 Kbytes. The default is 64 K.

Auto Trickle

Auto Trickle is used to prevent a host computer from timing out because the parallel interface was busy for too long. When Auto Trickle is enabled and the printer's buffers are almost full, the printer will begin to trickle data in (at the rate set in the Trickle Time menu) until the buffers start to empty out.

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.

Offline Process

*   Disable (the default). When set to disable, the printer does not process parallel/network data while offline.

*   Enable. When set to enable, the printer continues to process (but not print) the current network/parallel job while the printer is offline until the printer's buffer is full.

E-Net Adapter Submenu

* = Factory Default

E-Net Adapter
(from page 60)

Buffer Size
in K

64*
1
2
4
8
16
32
128
256
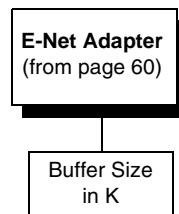
The E-Net Adapter interface allows you to locate the printer on a LAN rather than attach the host directly into the printer. The detailed configuration of this option is given in the *Network Interface Card User's Manual*.

Buffer Size in K

This option configures the amount of memory allocated for the Ethernet buffer. You can specify between 1, 2, 4, 8, 16, 32, 128, and 256 Kbytes. The default is 64 Kbytes.

Ethernet Submenu

* = Factory Default

```
┌─────────────────┐
│   Ethernet      │
│ (from page 60)  │
└─────────────────┘
         │
┌─────────────────┐
│  Buffer Size    │
│     in K        │
└─────────────────┘
      16*
      1-16
```

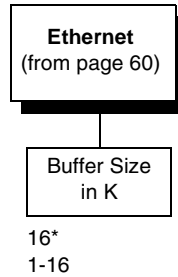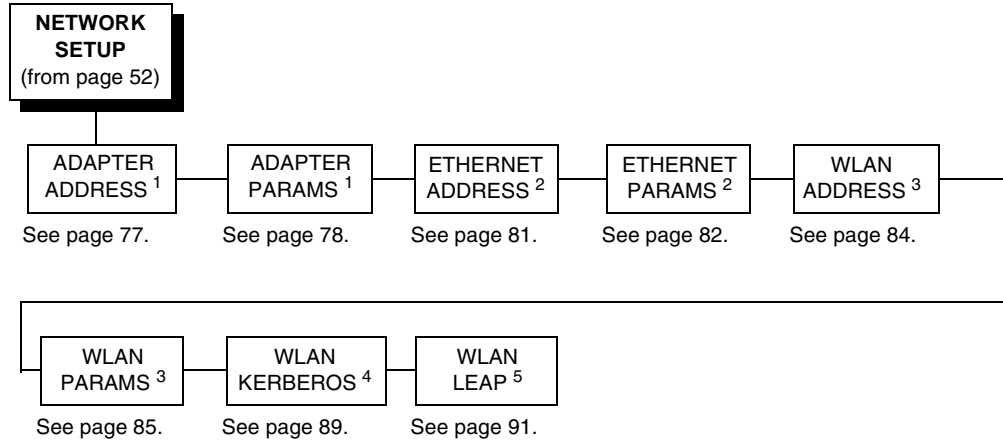The Ethernet interface allows you to locate the printer on a LAN rather than attach the host directly into the printer. The detailed configuration of this option is given in the *Network Interface Card User's Manual*.

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. The default is 16 Kbytes.

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NETWORK SETUP MENU

```
┌─────────────┐
│ NETWORK     │
│ SETUP       │
│ (from page 52)│
└─────────────┘
```

ADAPTER ADDRESS [1]	ADAPTER PARAMS [1]	ETHERNET ADDRESS [2]	ETHERNET PARAMS [2]	WLAN ADDRESS [3]
See page 77.	See page 78.	See page 81.	See page 82.	See page 84.

WLAN PARAMS [3]	WLAN KERBEROS [4]	WLAN LEAP [5]
See page 85.	See page 89.	See page 91.

[1] Only if the Ethernet Adapter feature is installed.
[2] Only if the Integrated Ethernet feature is installed.
[3] Only if the Wireless Adapter feature is installed.
[4] Only if a Symbol radio card is installed.
[5] Only if a Cisco radio card is installed.

ADAPTER ADDRESS

```
┌─────────────┐
│ ADAPTER     │
│ ADDRESS     │
│ (from page 77)│
└─────────────┘
```

* = Factory Default

IP Address	Subnet Mask	Gateway Address	MAC Address	DHCP
xxx.xxx.xxx.xxx	*xxx.xxx.xxx.xxx*	*xxx.xxx.xxx.xxx*	*hhhhhhhhhhhh*	Disable* Enable

IP Address

A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.

Subnet Mask

A binary value used to divide IP networks into smaller subnetworks or subnets. This mask is used to help determine whether IP packets need to be forwarded to other subnets.

Gateway Address

A gateway address is the IP address of a hardware device (gateway) that translates data between two incompatible networks, which can include protocol translation.

MAC Address

This menu item is the Manufacturer's Assigned Number, and is unique for each printer. It is read-only.

DHCP

You can enable/disable the DHCP protocol using this option, but consult your administrator for the appropriate setting.

The options include:

- **Disable** (default)

- **Enable**.

ADAPTER PARAMS
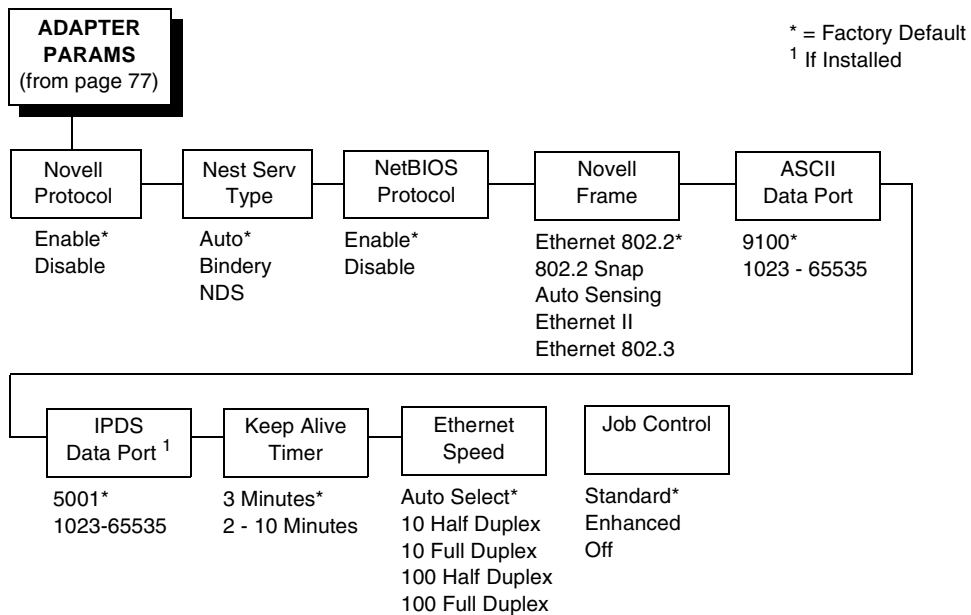
You may enable or disable the Novell or NetBIOS Protocols within this menu, as well as selecting which Novell Frame scheme to use in processing Novell signals. See the Novell chapter in the *Network Interface Card User's Manual* for more details.

Novell Protocol

This option determines whether the Novell protocol will be available. The selections are as indicated below:

- **Enable** (default). Makes the Novell protocol available with the ethernet installed.

- **Disable**. Makes the Novell protocol unavailable during printer operation.

Nest Serv Type

You can change the Nest Server using this option, but consult your administrator for the appropriate setting.

The options are Auto (default), Bindery, and NDS.

NetBIOS Protocol

This option determines whether the NetBIOS protocol will be available. The selections are as indicated below:

- **Enable** (default). Makes the NetBIOS protocol available with the ethernet installed.

- **Disable**. Makes the NetBIOS protocol unavailable during printer operation.

Novell Frame

This selection determines which framing scheme will be used in processing Novell signals.

- **Ethernet 802.2** (default)

- **802.2 Snap**

- **Auto Sensing**

- **Ethernet II**

- **Ethernet 802.3**

ASCII Data Port

This option sets the port number for ASCII print jobs. The data port number needs to match your host system setting.

- **9100** (default)

- **1023 - 65535**

IPDS Data Port

This option allows you to set the port number for IPDS print jobs only if the IPDS option is installed.

The range is 0 - 5000, and the factory default is 5001.

Keep Alive Timer

This is the time that the Keep Alive Timer will run. With the Keep Alive Timer on, the tcp connection will stay connected even after the print job has terminated.

- **3 Minutes** (default)
- **2 - 10 Minutes**

Ethernet Speed

This menu option only appears if a 10/100Base-T network interface card (NIC) is installed. The Ethernet Speed menu allows compatibility with different systems and networks. The factory default is Auto Select.
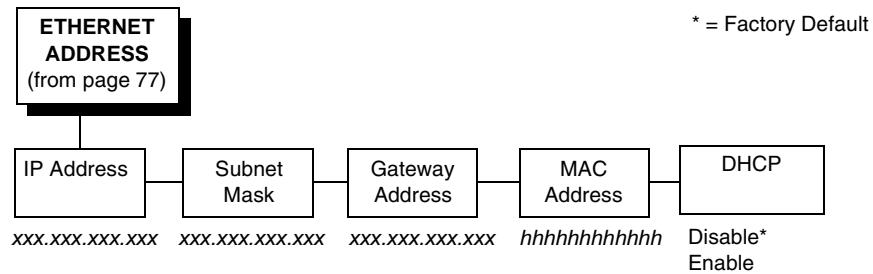
- **Auto Select**. (default) This setting tells the 10/100Base-T NIC to perform an auto detection scheme and configure itself to be 10 Half Duplex, 10 Full Duplex, 100 Half Duplex, or 100 Full Duplex.
- **10 Half Duplex**. Tells the 10/100Base-T NIC to communicate at 10 Megabits per second using half duplex.
- **10 Full Duplex**. Tells the 10/100Base-T NIC to communicate at 10 Megabits per second using full duplex.
- **100 Half Duplex**. Tells the 10/100Base-T NIC to communicate at 100 Megabits per second using half duplex.
- **100 Full Duplex**. Tells the 10/100Base-T NIC to communicate at 100 Megabits per second using full duplex.

Job Control

The job control mode has three options:

- **Standard** (default). The NIC waits for the printer to finish receiving the current job before sending another job. The status line shows "done" when the job is completely received by the NIC. This is the default.
- **Enhanced**. The NIC waits for the printer to finish receiving the current job before sending another job. The status line shows "done" when the job is fully printed.
- **Off**. No job synchonization between the NIC and the printer.

ETHERNET ADDRESS

```
┌─────────────────┐                              * = Factory Default
│   ETHERNET      │
│   ADDRESS       │
│  (from page 77) │
└─────────────────┘
        │
┌──────────┬──────────┬──────────┬──────────┬──────────┐
│IP Address│ Subnet   │ Gateway  │   MAC    │  DHCP    │
│          │  Mask    │ Address  │ Address  │          │
└──────────┴──────────┴──────────┴──────────┴──────────┘
xxx.xxx.xxx.xxx  xxx.xxx.xxx.xxx  xxx.xxx.xxx.xxx  hhhhhhhhhhhh  Disable*
                                                                 Enable
```

IP Address

A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.

Subnet Mask

A binary value used to divide IP networks into smaller subnetworks or subnets. This mask is used to help determine whether IP packets need to be forwarded to other subnets.

Gateway Address

A gateway address is the IP address of a hardware device (gateway) that translates data between two incompatible networks, which can include protocol translation.

MAC Address

This menu item is the Manufacturer's Assigned Number, and is unique for each printer. It is read-only.
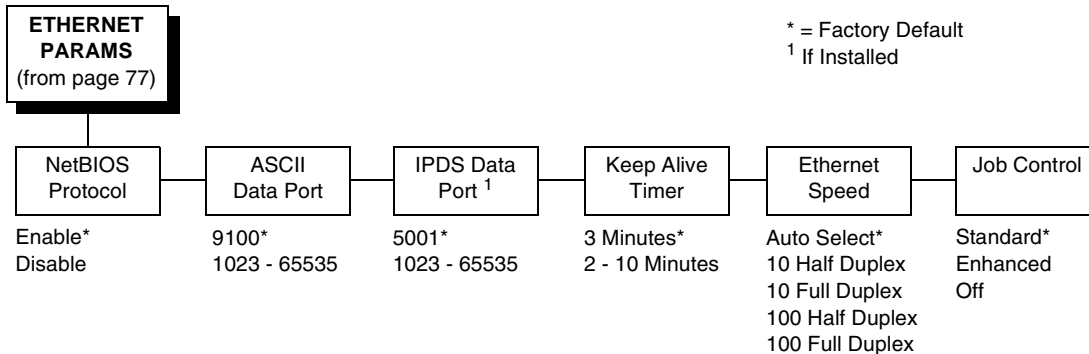
DHCP

You can enable/disable the DHCP protocol using this option, but consult your administrator for the appropriate setting.

The options include:

- **Disable** (default)
- **Enable**.

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ETHERNET PARAMS

```
┌─────────────────┐
│ ETHERNET        │
│ PARAMS          │
│ (from page 77)  │
└─────────────────┘
```

* = Factory Default
[1] If Installed

NetBIOS Protocol	ASCII Data Port	IPDS Data Port [1]	Keep Alive Timer	Ethernet Speed	Job Control
Enable* Disable	9100* 1023 - 65535	5001* 1023 - 65535	3 Minutes* 2 - 10 Minutes	Auto Select* 10 Half Duplex 10 Full Duplex 100 Half Duplex 100 Full Duplex	Standard* Enhanced Off

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 *Network Interface Card User's Manual*.

NetBIOS Protocol

This option determines whether the NetBIOS protocol will be available. The selections are as indicated below:

- **Enable** (default). Makes the NetBIOS protocol available with the ethernet installed.

- **Disable**. Makes the NetBIOS protocol unavailable during printer operation.

ASCII Data Port

This option sets the port number for ASCII print jobs. The data port number needs to match your host system setting.

- **9100** (default)

- **1023 - 65535**

IPDS Data Port

This option allows you to set the port number for IPDS print jobs only if the IPDS option is installed.

The range is 1023 - 65535, and the factory default is 5001.

Keep Alive Timer

This is the time that the Keep Alive Timer will run. With the Keep Alive Timer on, the tcp connection will stay connected even after the print job has terminated.

- **3 Minutes** (default)

- **2 - 10 Minutes**

Ethernet Speed

This menu option only appears if a 10/100Base-T network interface card (NIC) is installed. The Ethernet Speed menu allows compatibility with different systems and networks. The factory default is Auto Select.
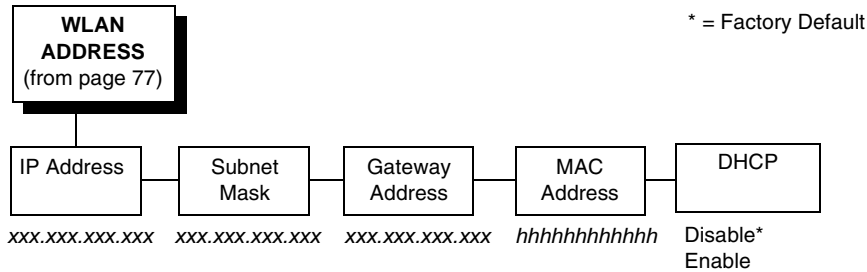
- **Auto Select**. (default) This setting tells the 10/100Base-T NIC to perform an auto detection scheme and configure itself to be 10 Half Duplex, 10 Full Duplex, 100 Half Duplex, or 100 Full Duplex.

- **10 Half Duplex**. Tells the 10/100Base-T NIC to communicate at 10 Megabits per second using half duplex.

- **10 Full Duplex**. Tells the 10/100Base-T NIC to communicate at 10 Megabits per second using full duplex.

- **100 Half Duplex**. Tells the 10/100Base-T NIC to communicate at 100 Megabits per second using half duplex.

- **100 Full Duplex**. Tells the 10/100Base-T NIC to communicate at 100 Megabits per second using full duplex.

Job Control

The job control mode has three options:

- **Standard** (default). The NIC waits for the printer to finish receiving the current job before sending another job. The status line shows "done" when the job is completely received by the NIC. This is the default.

- **Enhanced**. The NIC waits for the printer to finish receiving the current job before sending another job. The status line shows "done" when the job is fully printed.

- **Off**. No job synchonization between the NIC and the printer.

WLAN ADDRESS

```
┌─────────────┐
│    WLAN     │                              * = Factory Default
│   ADDRESS   │
│ (from page 77)│
└─────────────┘
```

IP Address	Subnet Mask	Gateway Address	MAC Address	DHCP
xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx	hhhhhhhhhhhh	Disable* Enable

IP Address

A numeric address such as 123.45.61.23 which identifies a printer or server in a LAN or WAN.

Subnet Mask

A binary value used to divide IP networks into smaller subnetworks or subnets. This mask is used to help determine whether IP packets need to be forwarded to other subnets.

Gateway Address

A gateway address is the IP address of a hardware device (gateway) that translates data between two incompatible networks, which can include protocol translation.

MAC Address

This menu item is the Manufacturer's Assigned Number, and is unique for each printer. It is read-only.

DHCP

You can enable/disable the DHCP protocol using this option, but consult your administrator for the appropriate setting.

The options include:

- **Disable** (default)
- **Enable**.

WLAN PARAMS

* = Factory Default
[1] Only when 40 Bits is selected
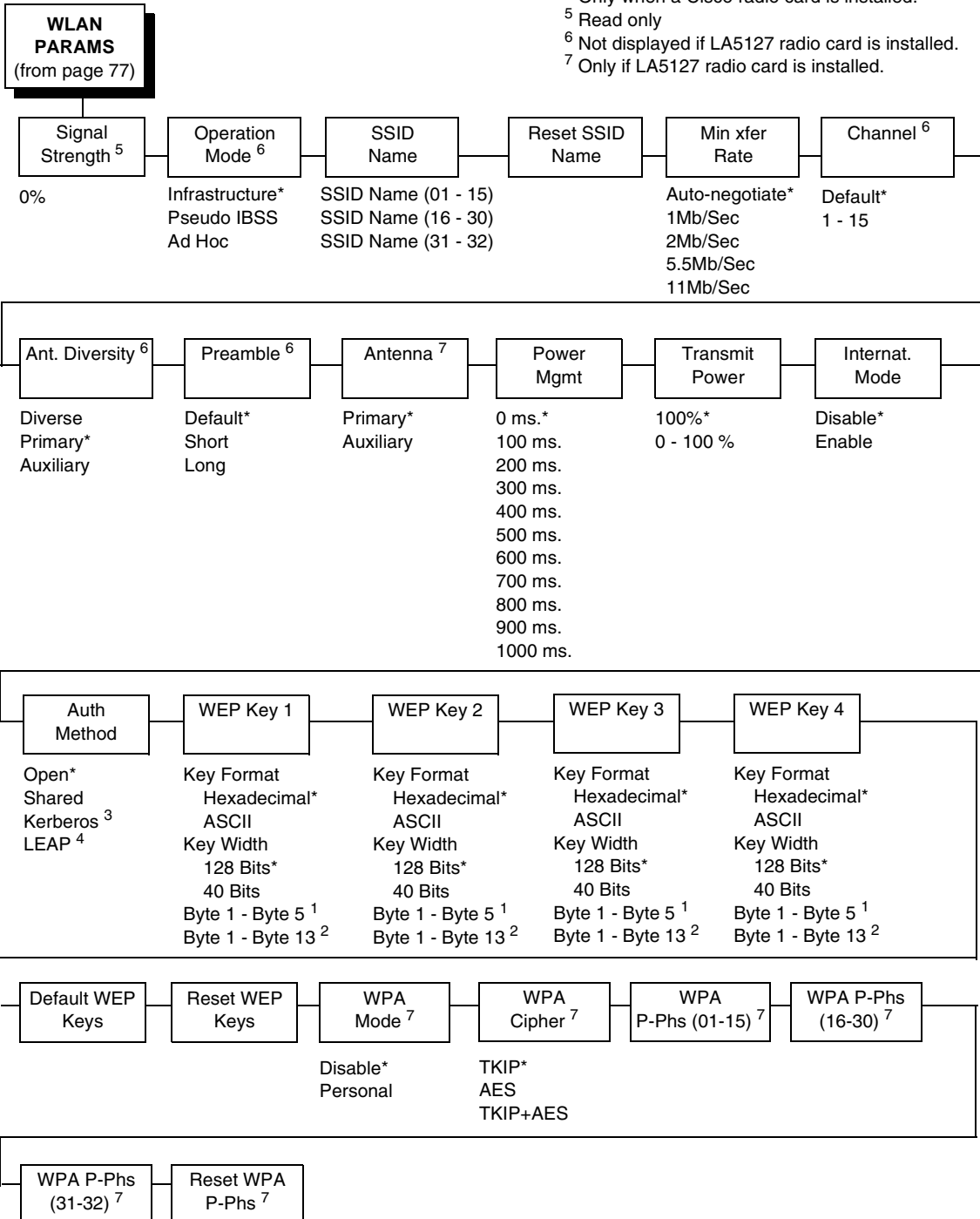[2] Only when 128 Bits is selected
[3] Only when a Symbol radio card is installed.
[4] Only when a Cisco radio card is installed.
[5] Read only
[6] Not displayed if LA5127 radio card is installed.
[7] Only if LA5127 radio card is installed.

WLAN PARAMS
(from page 77)

Signal Strength [5]	Operation Mode [6]	SSID Name	Reset SSID Name	Min xfer Rate	Channel [6]
0%	Infrastructure* Pseudo IBSS Ad Hoc	SSID Name (01 - 15) SSID Name (16 - 30) SSID Name (31 - 32)		Auto-negotiate* 1Mb/Sec 2Mb/Sec 5.5Mb/Sec 11Mb/Sec	Default* 1 - 15

Ant. Diversity [6]	Preamble [6]	Antenna [7]	Power Mgmt	Transmit Power	Internat. Mode
Diverse Primary* Auxiliary	Default* Short Long	Primary* Auxiliary	0 ms.* 100 ms. 200 ms. 300 ms. 400 ms. 500 ms. 600 ms. 700 ms. 800 ms. 900 ms. 1000 ms.	100%* 0 - 100 %	Disable* Enable

Auth Method	WEP Key 1	WEP Key 2	WEP Key 3	WEP Key 4

Open*
Shared
Kerberos [3]
LEAP [4]
	Key Format
	  Hexadecimal*
	  ASCII
	Key Width
	  128 Bits*
	  40 Bits
	Byte 1 - Byte 5 [1]
	Byte 1 - Byte 13 [2]
		Key Format
		  Hexadecimal*
		  ASCII
		Key Width
		  128 Bits*
		  40 Bits
		Byte 1 - Byte 5 [1]
		Byte 1 - Byte 13 [2]
			Key Format
			  Hexadecimal*
			  ASCII
			Key Width
			  128 Bits*
			  40 Bits
			Byte 1 - Byte 5 [1]
			Byte 1 - Byte 13 [2]
				Key Format
				  Hexadecimal*
				  ASCII
				Key Width
				  128 Bits*
				  40 Bits
				Byte 1 - Byte 5 [1]
				Byte 1 - Byte 13 [2]

Default WEP Keys	Reset WEP Keys	WPA Mode [7]	WPA Cipher [7]	WPA P-Phs (01-15) [7]	WPA P-Phs (16-30) [7]
		Disable* Personal	TKIP* AES TKIP+AES		

WPA P-Phs (31-32) [7]	Reset WPA P-Phs [7]

Signal Strength

This menu displays the strength of the wireless signal.

NOTE: This is a display value only and cannot be changed.

Operation Mode

Allows you to select the way the Wireless option communicates:

- **Infrastructure** (default). The Wireless option must go through a server.

- **Pseudo IBSS**. Proprietary, peer-to-peer communication (without a server). The two peers must be specific to one manufacturer.

- **Ad Hoc**. Standard, peer-to-peer communication (without a server). The two peers can be from different manufacturers.

SSID Name

A 1 - 32 character, case sensitive string that identifies the group the printer talks to.

NOTE: The SSID name may be edited in three parts (1-15), (16-30), and (31-32).

For each part of the SSID name, press the MICRO UP or MICRO DOWN keys to cycle through the values available for that character at the cursor location. Press the SCROLL UP key to move to the next character to be modified. Press the SCROLL DOWN key to go back to the name you want to give to this SSID name, then press ENTER to save. The name you entered will now represent this SSID name on the printer's front panel. To exit this menu without saving, press any key other than the ENTER key. The SSID name will revert to the last saved value.

Reset SSID Name

Allows you to reset the SSID name.

Min Xfer Rate

Allows you to set the minimum speed at which the Wireless Option will accept a connection (in million bits per second). The options are:

- **Auto-negotiate** (default)
- **1Mb/Sec.**
- **2Mb/Sec.**
- **5.5Mb/Sec**
- **11Mb/Sec**

Channel

Allows you to select the RF channel. The options are Default (the factory default) and 1-15.

Ant. Diversity

The type of antenna used:

*   **Diverse**. Select when you want to use the antenna with the best reception.
*   **Primary** (default). Select when you want to use the Primary antenna on the server.
*   **Auxiliary**. Select when you want to use the Auxiliary antenna on the server.

Preamble

The length of the preamble in transmit packets.

*   **Default**. The Wireless option automatically determines the length.
*   **Short**. For newer printers which can handle higher transer rate speeds.
*   **Long**. For older printers which cannot handle higher transfer rate speeds.

Antenna

*   **Primary** (default). Select when you want to use the primary antenna on the RF card.
*   **Auxiliary**. Select when you want to use the Auxiliary antenna on the RF card.

Power Mgmt

This allows you to set power-save mode and sleep time. A value specifying the sleep time in milliseconds will be provided. If set to zero, power-save mode will be disabled. The range includes:

*   **0 ms.** (default)
*   **100 ms. - 1000 ms.**

Transmit Power

The power level as a percentage of full power (0 - 100%).

Internat. Mode

When enabled, the Wireless option adapts to international frequency requirements in Europe. The options include:

*   **Disable** (default)
*   **Enable**

Auth Method

This feature allows the user to select the authentication method used for the wireless network interface.

- **Open** (the default). Selects open authentication.

- **Shared**. Selects shared key authentication.

- **Kerberos**. Selects Kerberos authentication (for use when a Symbol RF card is installed).

- **LEAP**. Selects LEAP authentication (for use with a Cisco RF card installed).

WEP Key 1 Through WEP Key 4

- **WEP Key Format**. Allows you to format the WEP keys in ASCII or hexadecimal code. The default is hexadecimal.

- **WEP Key Width**. This is the encryption strength. The options are 40 Bits and 128 Bits; 40 Bits are weaker and 128 Bits are stronger.

NOTE: If you select 40 Bits, the WEP key BYTE6 through WEP Key BYTE13 menus will not display.

The default is 128 Bits.

- **WEP Key BYTE1 through BYTE13**. These are the individual characters of the encryption key.

Default WEP Key

This feature enables you to encrypt (scramble) information for security purposes. With this feature, you can set up to four encryption keys, in either ASCII or hexadecimal format, and in either 40 or 128 bits. (The more bits you choose, the more difficult it will be to decode the information.)

NOTE: None of the WEP Key Configuration menus display on the configuration printout.

Reset WEP Keys

Allows you to reset all four WEP keys (WEP Key 1 through WEP Key 4) at one time.

WPA Mode

Selects the WPA wireless security mode.

- **Disable** (the default). WPA security is disabled.

- **Personal**. Selects personal or pre-shared key mode for WPA security.

WPA Cipher

Selects the WPA wireless security cipher setting. Options include:

- **TKIP** (the default)

- **AES**

- **TKIP+AES**

WPA P-Phs

Allows you to set the individual bytes of the WPA passphrase.

Reset WPA P-Phs

Allows you to reset all 32 bytes of the WPA passphrase at once.

WLAN KERBEROS

```
┌─────────────────┐
│  WLAN           │
│  Kerberos 1     │
│ (from page 77)  │
└─────────────────┘
```

* = Factory Default
1 = Only if a Symbol radio card is installed.

Kerberos Enable	Kerb. Passwd	Reset Kerb. Pwd	KDC Port Number	Clock Skew

Disable*
Enable
	Kerb Pwd(01-15)
	Kerb Pwd (16-30)
	Kerb Pwd (31-40)
			88*
			0-65535
				Clock Skew Units
				  Seconds*
				  Minutes
				Clock Skew (Sec)
				  300*
				  60, 65, 70, ..., 900

Ticket Lifetime	Renew Lifetime

Tckt Life Units
  Seconds*
  Minutes
  Hours
  Days
Tckt Life (SEC)
  43200*
  300, 305, 310, ..., 259200
	Renew Life Units
	  Seconds*
	  Minutes
	  Hours
	  Days
	Renew Life (SEC)
	  0*
	  0, 5, 10, ..., 604800

Kerberos Enable

- **Disable** (the default). Disables Kerberos authentication in the wireless network interface.

- **Enable**. Enables Kerberos authentication in the wireless network interface.

Kerb. Passwd

- **Kerb. Pwd (01-15)**. The first 15 characters of the Kerberos password (maximum number of characters is 40).

- **Kerb. Pwd (16-30)**. Characters 16 to 30 of the Kerberos password (maximum number of characters is 40).
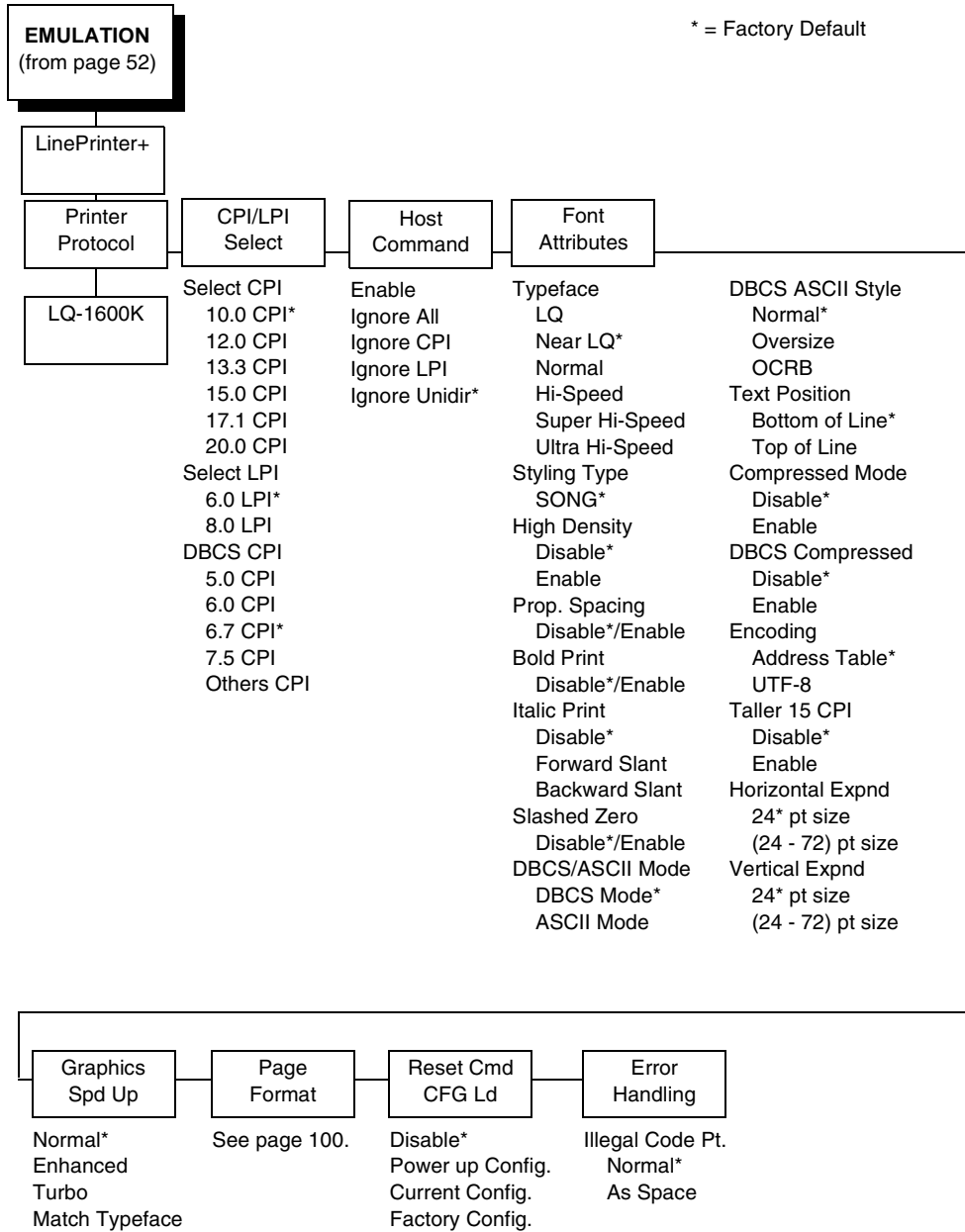
- **Kerb. Pwd (31-40)**. Characters 31 to 40 of the Kerberos password (maximum number of characters is 40).

Reset Kerb. Pwd

Resets the Kerberos password to an empty string.

KDC Port Number

KDC (Key Distribution Center) port number is the 2-byte UDP/TCP port used for Kerberos Communication.

The range is 0-65535, and the factory default is 88.

Clock Skew

Sets the maximum allowable amount of time in seconds or minutes that Kerberos authentication will tolerate before assuming that a Kerberos message is valid. The range for Seconds is 60-900, and the default is 300. The range for Minutes is 1-15, and the default is 5.

Ticket Lifetime

Sets the maximum allowable amount of time in Seconds, Minutes, Hours, or Days that a ticket obtained from the Kerberos server is valid before getting a new one.

- **Seconds**. The range is 300-259200, and the default is 43200.

- **Minutes**. The range is 5-4320, and the default is 720.

- **Hours**. The range is 1-72, and the default is 12.

- **Days**. The range is 1-3, and the default is 1.

- **Tckt Life (SEC)**. The ticket lifetime unit in seconds. The default is 43200.

Renew Lifetime

Sets the maximum allowable amount of time in Seconds, Minutes, Hours, or Days before warning that a new Kerberos password is needed.

- **Seconds**. The range is 0-604800, and the default is 0.

- **Minutes**. The range is 0-10080, and the default is 0.

- **Hours**. The range is 1-168, and the default is 0.

- **Days**. The range is 0-7, and the default is 0.

- **Renew Life (SEC)**. Renew lifetime unit in seconds. The default is 0.

WLAN LEAP
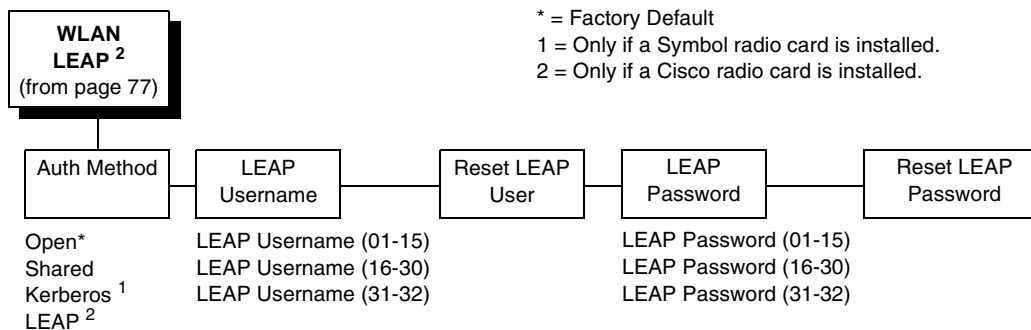
```
┌──────────────┐
│   WLAN       │
│   LEAP ²     │
│ (from page 77)│
└──────────────┘
```

* = Factory Default
1 = Only if a Symbol radio card is installed.
2 = Only if a Cisco radio card is installed.

| Auth Method | LEAP Username | Reset LEAP User | LEAP Password | Reset LEAP Password |

Open*
Shared
Kerberos [1]
LEAP [2]

LEAP Username (01-15)
LEAP Username (16-30)
LEAP Username (31-32)

LEAP Password (01-15)
LEAP Password (16-30)
LEAP Password (31-32)

Auth Method

This feature allows the user to select the authentication method used for the wireless network interface.

• **Open** (the default). Selects open authentication.

• **Shared**. Selects shared key authentication.

• **Kerberos**. Selects Kerberos authentication (for use when a Symbol RF card is installed).

• **LEAP**. Selects LEAP authentication (for use with a Cisco RF card installed).

LEAP Username

• **LEAP Username (01-15)**. The first 15 characters of the LEAP user name (maximum number of characters is 32).

• **LEAP Username (16-30)**. Characters 16 to 30 of the LEAP user name (maximum number of characters is 32).

• **LEAP User (31-32)**. Characters 31 to 32 of the LEAP user name (maximum number of characters is 32).

Reset LEAP User

Resets the LEAP user name to an empty string.

LEAP Password

• **LEAP Password (01-15)**. The first 15 characters of the LEAP password (maximum number of characters is 32).

• **LEAP Password (16-30)**. Characters 16 to 30 of the LEAP password (maximum number of characters is 32).

• **LEAP Password (31-32)**. Characters 31 to 32 of the LEAP password (maximum number of characters is 32).

Reset LEAP Password

Resets the LEAP password to an empty string.

EMULATION

The EMULATION menu allows you to select the emulation to be used with your printer. You can configure options for the active emulation via the EMULATION menu. Emulation options are further described in their corresponding Programmer's Reference Manual.

Hanzi GB LP+ Emulation

```
EMULATION
(from page 52)
```

* = Factory Default

```
LinePrinter+
```

Printer Protocol	CPI/LPI Select	Host Command	Font Attributes

```
LQ-1600K
```

Select CPI	Enable	Typeface	DBCS ASCII Style
10.0 CPI*	Ignore All	LQ	Normal*
12.0 CPI	Ignore CPI	Near LQ*	Oversize
13.3 CPI	Ignore LPI	Normal	OCRB
15.0 CPI	Ignore Unidir*	Hi-Speed	Text Position
17.1 CPI		Super Hi-Speed	Bottom of Line*
20.0 CPI		Ultra Hi-Speed	Top of Line
Select LPI		Styling Type	Compressed Mode
6.0 LPI*		SONG*	Disable*
8.0 LPI		High Density	Enable
DBCS CPI		Disable*	DBCS Compressed
5.0 CPI		Enable	Disable*
6.0 CPI		Prop. Spacing	Enable
6.7 CPI*		Disable*/Enable	Encoding
7.5 CPI		Bold Print	Address Table*
Others CPI		Disable*/Enable	UTF-8
		Italic Print	Taller 15 CPI
		Disable*	Disable*
		Forward Slant	Enable
		Backward Slant	Horizontal Expnd
		Slashed Zero	24* pt size
		Disable*/Enable	(24 - 72) pt size
		DBCS/ASCII Mode	Vertical Expnd
		DBCS Mode*	24* pt size
		ASCII Mode	(24 - 72) pt size

Graphics Spd Up	Page Format	Reset Cmd CFG Ld	Error Handling
Normal*	See page 100.	Disable*	Illegal Code Pt.
Enhanced		Power up Config.	Normal*
Turbo		Current Config.	As Space
Match Typeface		Factory Config.	

Hanzi Big5 LP+ Emulation

Hanzi Big5 LP+ Emulation

EMULATION
(from page 52)

* = Factory Default

LinePrinter+

Printer Protocol	CPI/LPI Select	Host Command	Font Attributes	

LQ-1600K

CPI/LPI Select
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
DBCS CPI
  5.0 CPI
  6.0 CPI
  6.7 CPI*
  7.5 CPI
  Others CPI

Host Command
Enable
Ignore All
Ignore CPI
Ignore LPI
Ignore Unidir*

Font Attributes
Typeface
  LQ*
  Near LQ
  Normal
  Hi-Speed
  Super Hi-Speed
  Ultra Hi-Speed
Styling Type
  MING*
High Density
  Disable*
  Enable
Prop. Spacing
  Disable*/Enable
Bold Print
  Disable*/Enable
Italic Print
  Disable*
  Forward Slant
  Backward Slant
Slashed Zero
  Disable*/Enable
DBCS/ASCII Mode
  DBCS Mode*
  ASCII Mode

DBCS ASCII Style
  Normal*
  Oversize
  OCRB
Text Position
  Bottom of Line*
  Top of Line
Compressed Mode
  Disable*
  Enable
DBCS Compressed
  Disable*
  Enable
Encoding
  Address Table*
  UTF-8
Taller 15 CPI
  Disable*
  Enable
Horizontal Expnd
  24* pt size
  (24 - 72) pt size
Vertical Expnd
  24* pt size
  (24 - 72) pt size

Graphics Spd Up	Page Format	Reset Cmd CFG Ld	Error Handling

Graphics Spd Up
Normal
Enhanced
Turbo
Match Typeface*

Page Format
See page 100.

Reset Cmd CFG Ld
Disable
Power up Config.
Current Config.*
Factory Config.

Error Handling
Illegal Code Pt.
  Normal
  As Space*
  As Square

Kanji LP+ Emulation

EMULATION
(from page 52)

* = Factory Default

LinePrinter+

Printer Protocol	CPI/LPI Select	Host Command	Font Attributes

LQ-1600K

Printer Protocol
LQ-1600K

CPI/LPI Select
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*
DBCS CPI
 5.0 CPI
 6.0 CPI
 6.7 CPI
 7.5 CPI*
 Others CPI

Host Command
Enable
Ignore All
Ignore CPI
Ignore LPI
Ignore Unidir*

Font Attributes
Typeface
 LQ
 Near LQ*
 Normal
 Hi-Speed
 Super Hi-Speed
 Ultra Hi-Speed
Styling Type
 Mincho*
High Density
 Disable*
 Enable
Prop. Spacing
 Disable*/Enable
Bold Print
 Disable*/Enable
Italic Print
 Disable*
 Forward Slant
 Backward Slant
Slashed Zero
 Disable*/Enable
DBCS/ASCII Mode
 DBCS Mode*
 ASCII Mode

DBCS ASCII Style
 Normal*
 Oversize
 OCRB
Text Position
 Bottom of Line*
 Top of Line
Compressed Mode
 Disable*
 Enable
DBCS Compressed
 Disable*
 Enable
Encoding
 Address Table*
 UTF-8
Taller 15 CPI
 Disable*
 Enable
Horizontal Expnd
 24* pt size
 (24 - 72) pt size
Vertical Expnd
 24* pt size
 (24 - 72) pt size

Graphics Spd Up	Page Format	Reset Cmd CFG Ld	Error Handling

Graphics Spd Up
Normal*
Enhanced
Turbo
Match Typeface

Page Format
See page 100.

Reset Cmd CFG Ld
Disable*
Power up Config.
Current Config.
Factory Config.

Error Handling
Illegal Code Pt.
 Normal*
 As Space

Hangul LP+ Emulation

EMULATION
(from page 52)

* = Factory Default
1 = Hangul KSSM only

LinePrinter+

Printer Protocol	CPI/LPI Select	Host Command	Font Attributes

KS*
KSSM.

Select CPI[1]
  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
DBCS CPI
  5.0 CPI
  6.0 CPI*
  6.7 CPI
  7.5 CPI
  8.5 CPI
  9.0 CPI
  10.0 CPI
  Others CPI

Enable*
Ignore All
Ignore CPI
Ignore LPI
Ignore Unidir
Ignore Pg. Fmt

Typeface
  LQ*
  Near LQ
  Normal
  Hi-Speed
  Super Hi-Speed
  Ultra Hi-Speed
Styling Type
  Myungjo*
  Gothic
High Density
  Disable*
  Enable
Bold Print
  Disable*/Enable
Italic Print
  Disable*
  Forward Slant
  Backward Slant
Slashed Zero
  Disable*/Enable
DBCS/ASCII Mode[1]
  DBCS Mode*
  ASCII Mode

DBCS ASCII Style
  Normal*
  OCRB
  Normal Thin
Text Position
  Bottom of Line*
  Top of Line
Encoding
  Address Table*
  UTF-8
Taller 15 CPI [1]
  Disable*
  Enable
Horizontal Expnd
  24* pt size
  (24 - 72) pt size
Vertical Expnd
  24* pt size
  (24 - 72) pt size

Graphics Spd Up	Page Format	Reset Cmd CFG Ld	Error Handling

Normal*
Enhanced
Turbo
Match Typeface

See page 100.

Disable*
Power up Config.
Current Config.
Factory Config.

Illegal Code Pt.
  Normal*
  As Space

Printer Protocol

For the Hanzi/Kanji LP+ printer, refer to the the LQ-1600K Programmer's Reference Manual for details. For the Hangul LP+ printer, refer to the KS or KSSM Programmer's Reference Manual for details.

CPI/LPI Select

This parameter lets you specify the characters per inch (cpi) and lines per inch (lpi) values. The defaults are 10 cpi, 6 lpi, and 6.7 cpi for the Hanzi LP+ printer. For the Hangul LP+ printer, the default is 6 cpi and 6 lpi. For the Kanji LP+ printer, the default is 15 cpi, 8 lpi, and 7.5 cpi.

Host Command

- **Enable**. Enables all host printing commands.
- **Ignore All**. This function ignores all host commands.
- **Ignore CPI**. This function ignores the CPI selection commands only (e.g., ESC M, ESC P, and ESC g).
- **Ignore LPI**. This function ignores the LPI selection commands only (e.g, ESC 2 and ESC 0).
- **Ignore Unidirectional** (the default). All unidirectional commands sent by the host are ignored by the printer.
- **Ignore Pg. Fmt**. All page format commands sent by the host are ignored by the printer. This is applicable only for Hangul LP+ printers only.

Font Attributes

Typeface

This parameter allows you to select the typeface for printing in the emulation.

- **LQ**. Default value for Hanzi Big5/Hangul.
- **Near LQ**. Default value for Hanzi GB/Kanji printer.
- **Normal**.
- **Hi-Speed**
- **Super Hi-Speed**
- **Ultra Hi-Speed**

Styling Typeface

- **SONG**. Only for Hanzi GB printer.
- **MING**. Only for Hanzi Big5 printer.
- **Mincho**. Only for Kanji printer.
- **Myungjo, Gothic**. Only for Hangul printer. Myungjo is the default value.

High Density

- **Disable** (default)
- **Enable**. Allows the LQ typeface to print in higher print density, and it will not take effect when other typefaces are selected.

Prop. Spacing

Each printed character is contained inside a character cell. The width of the character cell includes the character and the space arround the character. This parameter only works in ASCII mode. This is not applicable for Hangul printer.

- **Disable** (default). Each character cell is printed with the same width.
- **Enable**. The width of each character cell varies with the width of the character.

Bold Print

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

Italic Print

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

Slashed Zero

This parameter allows you to print the number "0" with or without the slash.

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

DBCS/ASCII Mode

- **DBCS Mode** (default). The printer is in DBCS mode. It can print double-byte characters as well as a limited number of single-byte characters.
- **ASCII Mode**. The printer is in ASCII mode. It can only print single-byte characters.

DBCS ASCII Style

This parameter allows you to specify the appearance of the single-byte alphanumeric characters in DBCS mode.

- **Normal** (default).
- **Oversize**. The alphanumeric characters will appear larger than normal single-byte characters. For example, the appearance of character "8" will be changed to "8".
- **OCRB**. The alphanumeric characters will print in OCRB style. It only takes effect on LQ typeface for Hanzi/Kanji printer.
- **Normal Thin**. The alphanumeric characters will be slightly thinner compared with Normal style. This is only applicable for Hangul printer.

Text Position

Specifies where the text will be 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 was 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
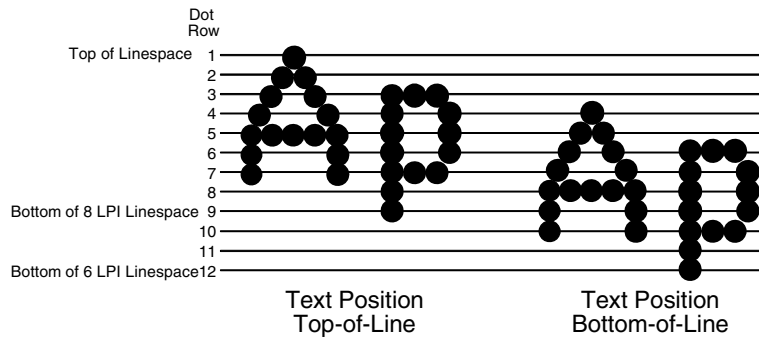
Compressed Mode

This parameter allows you to specify the appearance of ASCII/DBCS characters in ASCII mode. It is not applicable for Hangul printer.

- **Disable** (default)
- **Enable**. Prints out ASCII mode ASCII characters and half-width DBCS characters.

DBCS Compressed

This parameter allows you to specify the appearance of ASCII/DBCS characters in DBCS mode. It is not applicable for Hangul printer.

- **Disable** (default)
- **Enable**. Both the DBCS and ASCII characters will be printed as half-width of their original size.

Encoding

- **Address Table** (default). Specifies the address table supported.

    GB18030 is for Hanzi GB printer.

    BIG5 (default), **CNS**, **TCA**, **ETEN**, **IBM5550**, **TELETEXT**, **BIG5+**, **BIG5E**, and **HKSCS** are for Hanzi Big5 printer.

    KSC5601 is for Hangul printer.

    Shift-JIS is for Kanji printer.

- **UTF-8**. The printer takes in UTF-8 data stream and prints out according to Unicode format.

Taller 15 CPI

This parameter allows you to specify the appearance of ASCII characters as 15 CPI in ASCII mode.

- **Disable** (default). The characters in 15 CPI appear shorter than other CPIs such as 10 CPI.

- **Enable**. The height of 15 CPI characters is the same as other CPIs such as 10 CPI.

Horizontal Expnd

This parameter allows you to specify dot character horizontal expansion for both ASCII and DBCS characters in DBCS mode.

Vertical Expnd

This parameter allows you to specify dot character vertical expansion for both ASCII and DBCS characters in DBCS mode.

Graphics Spd Up

This menu is used to increase (speed up) graphic printing speed by turning on the Enhanced/Turbo mode.

- **Normal** (the default). The printer prints at the given input graphics resolution.

- **Enhanced**. The printer provides first-level speed up, which means the speed is faster than Normal mode.

- **Turbo**. The printer provides second-level speed up, which means the speed is faster than Enhanced mode.

- **Match Typeface**. The input 180x180 dpi graphics resolution will drop-dot to the resolution which matches the typeface selected.

Page Format

See page 100.

Reset Cmd CFG Ld

When the printer receives a host data stream reset command (ESC @) in addition to resetting printer variables, the power-up configuration will be loaded.

- **Disable** (the default). 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.

Error Handling

This command determines the way illegal DBCS characters are processed:

- **Normal** (the default). Will ignore illegal DBCS characters.

- **As Space**. Will insert two space characters (0X20, 0X20) when the data stream contains the illegal DBCS character.

- **As Square**. Will insert a black square (0xAIBD) when the data stream contains the illegal DBCS character. This is applicable for the Hanzi Big5 build only.

Page Format Submenu

```
┌─────────────────┐          * = Factory Default for Hanzi and Hangul printer
│  Page Format    │         ** = Factory Default for Kanji printer
│ (from page 92)  │
└─────────────────┘
```

Form Length	Form Width	Margins	Perforation Skip

Abs. Length IN	Abs. Width IN	Left Margin	Disable*
11.0* inches	13.6* inches	0* columns	1/2 inch
08.5** inches	(0.1-13.6)	(0-369)	2/3 inch
(0.1-24)	Abs. Width MM	Right Margin	5/6 inch
Abs. Length MM	345.4* mm	0* columns	1 inch
279.4* mm	(0.1-345.5)	(0-369)	
215.9** mm	Funct. of CPI	Bottom Margin	
(0.1-609.6)	136* Characters	0* lines	
Funct. of Lines	204** Characters	(0-451)	
66* Lines	(1-272)		
68** Lines			
(1-192)			

Page Format

Form Length.

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

Form Width

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

Margins

- **Left Margin**. Set in columns. Colum zero is defined as the far left edge of the page, and column numbering increments from left to right.

- **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.

- **Bottom Margin**. Defined in lines, starting from line zero at the bottom of the page and incrementing from the bottom up.

Perforation Skip

- **Disable** (default). Allows printing on page perforation.

- **1/2 inch, 2/3 inch, 5/6 inch, or 1inch**. For example, a skip-over margin of 1 inch allows a 1 inch margin at the bottom of the page.

PRINTER CONTROL
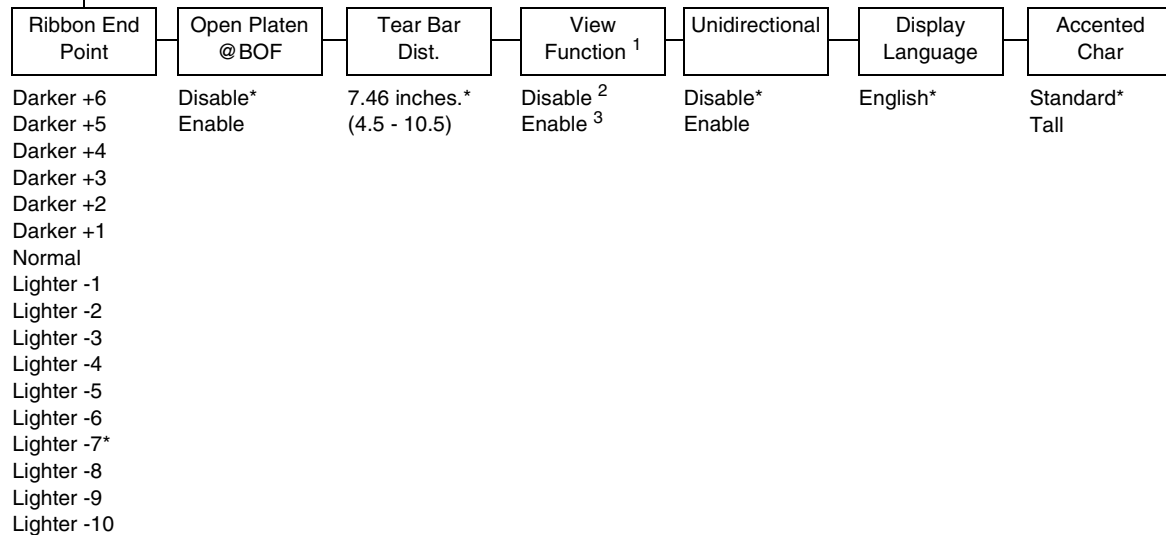
* = Factory Default
[1] Available only for P7000 pedestal model
[2] Factory default for Hanzi GB/Kanji/Hangul printer.
[3] Factory default for Hanzi Big5 printer.

Ribbon End Point	Open Platen @ BOF	Tear Bar Dist.	View Function [1]	Unidirectional	Display Language	Accented Char
Darker +6	Disable*	7.46 inches.*	Disable [2]	Disable*	English*	Standard*
Darker +5	Enable	(4.5 - 10.5)	Enable [3]	Enable		Tall
Darker +4						
Darker +3						
Darker +2						
Darker +1						
Normal						
Lighter -1						
Lighter -2						
Lighter -3						
Lighter -4						
Lighter -5						
Lighter -6						
Lighter -7*						
Lighter -8						
Lighter -9						
Lighter -10						

Ribbon End Point

This parameter adjusts the point at which the system will declare the ribbon as being expended. The life count will always be from 100% to 0%, but if a darker setting is selected 0% will be reached more quickly. If a lighter setting is selected, the system will extend the time it takes to reach 0%. The range of values are as follows:

- **Normal**

- **Darker +1 through Darker +6**

- **Lighter -1 through Lighter -10**
  (Lighter -7 is the default)

NOTE: This value can be adjusted at any time and the display will automatically adjust to show the correct percentage relative to the new end point.

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.

Tear Bar Dist. (Distance)

Allows fine and course adjustment of the tear bar position. For a pedestal model printer using the top paper exit, the default
(7.46 inches) is used. You can specify 4.5 to 10.5 inches in .01 inch increments to accommodate variations in cover and form design.

View Function

- **Disable**. Disables the View Function which allows you to press the VIEW/ EJECT key to move the last data printed to the tractor area for viewing. Default value for Hanzi Gb/Kanji/Hangul printer.

- **Enable**. Enables the View Function. Default value for Hanzi Big5 printer.

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** (default). 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.

Display Language

This parameter chooses the language that will appear on the LCD: English.

Accented Char

Selects whether the accented characters are standard or tall. See Figure 23 for an example. Selecting tall will slow print speed and may cause the printer to back up during printing.

Standard   Tall
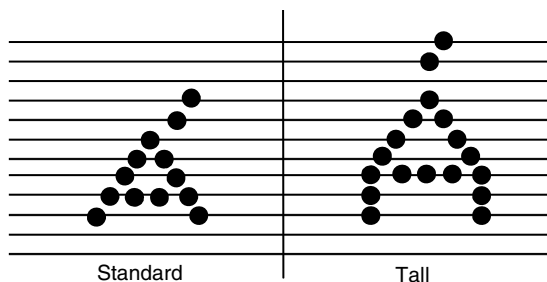
Figure 23. Accented Characters

ADVANCED USER

ADVANCED USER
(from page 52)

* = Factory Default
[1] = If Installed

PTX Setup Option

Setup Parse
Disable
Enable*
Ignore
Setup SFCC
21h*
(1-FF hex)

Hex Dump Mode

Disable*
Enable

Power-up State

Online*
Offline

Downloaded Fonts

Char Operations
  Delete frm Flash
  Load from Flash
  Save to Flash
  Delete from RAM
Ld Char at Pwrup
  Disable*
  Enable
Set Operations
  Delete frm Flash
  Load from Flash
  Save to Flash
  Delete from RAM

Ld Set at PwrUp
  Disable*
  Enable
DBCS Download
  Save to Flash
  Delete DL. Font

PDM Fault

Enable*
Disable

Power Stacker [1]

Enable*
Disable

Auto Elevator [1]

Enable*
Disable

Auto Locking

Disable*
Enable

File System

Overwrite Files
  Enable*
  Disable
View File List
Delete Files
Flash Avail.
Optimize&Reboot
Print File List

Set Sharing

Disable*
Enable

Shuttle Timeout

5 seconds*
1 - 60 seconds

Slow Paper Slew

Disable*
Enable

Alarm

On*
Cont. Beep
Off

Power Saver Time

15 minutes*
(1 min - 240 min)
Instant
(5 sec - 30 sec)

Pwr Save Control

Enable*
Disable

Cancel Key

Disable*
Enable

Ret. Status Port

Automatic*
Serial
E-Net Stat Port
IEEE 1284
Disable
E-Net Data Port

Set Lock Key

Job Sel/ Typeface

Job-Select On*
Typeface On

Print Hist. Log

RBN Low Warn @

Under 2%*
Under 5%
Under 10%
Under 20%
Under 30%

RBN Low Action

Warn & Continue*
Warn & Pause

Ribbon End Action

Stop At RBN End*
Ignore RBN End

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.

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. The options include:

- **Disable** (default)
- **Enable**

Figure 27 on page 133. shows a hex dump sample.

Power-Up State

- **Online** (default). The printer powers up in the online state.
- **Offline**. The printer powers up in the offline state.

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.
- **DBCS Download**. Allows you to save and delete downloadable DBCS characters from flash.

PMD (Paper Motion Detection) Fault

- **Enable** (default). 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.**

Power Stacker

This parameter allows you to enable or disable the power paper stacker (provided this option is installed).

Auto Elevator

This parameter exists only 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** (default). The automatic elevator on the power stacker operates normally.

- **Disable**. The stacker does not raise automatically every three minutes and is entirely dependent on the sensor. Diable is used with extremely high-quality print jobs that take a long time to print.

Auto Locking

- **Disable** (default). The ENTER key must be locked manually.

- **Enable**. The printer automatically locks the ENTER key five minutes after the last front panel key press.

File System

- **Overwrite Files**. Allows you to prevent files from being overwritten by disabling the overwrite function.

- **View File 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.

- **Flash Avail**. The amount of flash available for the user to save or download files into flash.

- **Optimize&Reboot**. Reclaims flash space from deleted flash files. After pressing ENTER, wait for the printer to reboot.

NOTE: When the Optimize&Reboot option is executed, the message, "Optimizing Flash Files" does not display before printer rebooting takes place.

- **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.

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 IGP emulation may or may not cause the other emulation to have the same set.

NOTE: The Set Sharing front panel option has no effect on the LP+ builds. The option only applies to the builds with IGP.

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.

Slow Paper Slew

- **Disable** (default). The paper 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.

Alarm

- **On** (default). An audible alarm sounds (3 beeps) when a fault occurs, such as a paper jam.

- **Cont. Beep**. A continuous audible alarm sounds when a fault occurs, which can be stopped by pressing CLEAR.

- **Off**. No audible alarm will sound.

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 depends upon the shuttle timeout value which can be set in the menu.

NOTE: Power Saver Mode will not be shown on the control panel even though the function still exists. Sending a print job to the printer will turn off Power Saver mode.

Pwr Save Control

Allows you to enable or disable the Power Save (Energy Star) mode.

- **Enable** (default). Allows you to enable the Power Save (Energy Star) mode.

- **Disable**. Allows you to disable the Power Save (Energy Star) mode.

Cancel Key

- **Disable** (default)

- **Enable**. The CANCEL key may be used to clear all data in the print buffer without printing any of the data.

Ret. Status Port

This option selects the port for the Return Status Commands (i.e., ~STATUS (PGL) and ~HS (PPI/ZGL)) to send the status data back to the Host.

The options are Automatic (factory default), Serial, E-NET Stat Port, IEEE 1284, Disable, and E-NET Data Port.

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 you can select.

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 104).

2. Press ENTER. The display reads, "Select a new lock key."

3. Press the combination of keys 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.

Job Sel/Typeface On

Allows you to customize this key to either function as Job Select or Typeface Select.

- **Job-Select On** (default). In offline mode, JOB SELECT allows you to change the active configuration without having to navigate the configuration menu. When pressed, the display reads "Load Config" with 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 to return to online mode.

- **Typeface On**. Sets the typeface of the printer. This key requires confirmation with the ENTER key.

Print Hist. Log

Prints the "Font File Log Report" if a custom font is downloaded.

RBN Low Warn @

This option allows the user to select the Ribbon Life value at which point the printer will declare a ribbon low condition and display the "418 RBN INK Low/ Change RBN Soon" warning message. The default is Under 2%. See "RBN Low Action" on page 109 for details of how the printer behaves once a ribbon low condition is reached.

The values are Under 2% (default), Under 5%, Under 10%, Under 20%, and Under 30%.

RBN Low Action

This menu determines how the printer behaves once a ribbon low condition is reached.

- **Warn & Continue** (default). Once a ribbon low condition is reached the printer beeps and displays the "418 RBN INK LOW / Change RBN Soon" warning message. Printing will continue without interruption. The warning message can be cleared by pressing the ONLINE/Clear button, however the message will persist again in two minutes. This action will continue until a ribbon out (ribbon life reaches 0%) condition occurs.

- **Warn & Pause**. This setting is similar to the Warn & Continue selection with one exception. When a ribbon low condition is reached the printer will still display the "418 RBN INK LOW / Change RBN Soon" warning message, however the printer will stop printing. This is meant to get the user's attention. To resume printing the user must press the ONLINE/ Clear key.

NOTE: Printing will only stop on the first occurrence of a ribbon low condition. Once the user clears the warning message, subsequent warnings will display the warning message but printing will continue.

RBN End Action

This menu allows the user to override the normal ribbon low warning and ribbon out conditions.

- **Stop At RBN End** (default). When this factory default option is selected the printer displays a warning message when a ribbon low condition is reached and display a ribbon out fault when ribbon life reaches 0%.

- **Ignore RBN End**. When this menu option is selected it overrides the ribbon low and ribbon out conditions, i.e. no warning or fault messages is displayed and printing continues even after ribbon life reaches 0%. However, once the ribbon life reaches an excess wear condition as indicated by the fault message "420 EXC RBN WEAR / Install New RBN", printing will stop and the user must install a new ribbon before printing can resume.

NOTE: The excess ribbon wear is set below the "Lighter -10" Ribbon End Point setting.

DIAGNOSTICS

```
                                            * = Factory Default
                                            1 If installed
  ┌─────────────┐                           2 If a Feature File exists.
  │ DIAGNOSTICS │
  │(from page 52)│
  └─────────────┘

  ┌─────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐ ┌───────────┐
  │ Printer │ │Test Width│ │Paper Out │ │ System   │ │  Print    │
  │  Tests  │ │          │ │  Dots    │ │ Memory   │ │ Statistics│
  └─────────┘ └──────────┘ └──────────┘ └──────────┘ └───────────┘

  Shift Recycle*  Full Width*   76 dots*   32 Megabytes  On: 127.7 Hrs.
  All E's         80 col.       (40-112)                 Print: 8.3 Hrs
  E's + TOF                                              Print Strokes:
  All H's                                                   1370097
  All Underlines                                         Print Lines:
  All Black                                                 106441
  Shuttle Slow                                           11 inch Pages:
  Shuttle Fast                                              4265
  Shuttle Only
  Phase Printer
  Paperout Adj.
  Burnin Test
  Print Error Log
  Clear Error Log
  Adapter Test 1
  Ethernet Test 1
  Acoustics
  Dice 5
  Prnt Ribbon Log
  Checker

  ┌──────────┐ ┌──────────┐ ┌──────────┐
  │ Software │ │ Feature  │ │ Shuttle  │
  │  Build   │ │ File 2   │ │  Type    │
  └──────────┘ └──────────┘ └──────────┘

  SW P/N + Ver  P/N of File   800H
```

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.

- **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 Adj.**. 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.

- **Acoustics**. A particular test pattern that is used to measure acoustics.

- **Adapter Test**. Prints the Ethernet adapter statistics stored on the Ethernet adapter (if present).

- **Ethernet Test**. Prints the Ethernet statistics stored on the Ethernet (if present).

- **Dice 5**. Pattern used to measure print density.

- **Prnt Ribbon Log**. Prints log of cartridge installed in the printer.

- **Checker**. For factory use. This pattern helps identify marginal printhead elements, quality of edge sharpness, and uneven print quality.

Test Width

Set this parameter to run the self-tests at full width or 80 columns.

Paper Out Dots

CAUTION   **Only authorized service representatives should set this parameter.**

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.

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.

Software Build

Displays the part number and version of the printer firmware.

Feature File

Displays the part number of the file if one has been downloaded to the printer.

Shuttle Type

Displays the type of shuttle installed, i.e. 800H, 600H, or 200H.

DATE

* = Factory Default
[1] Appears only if the real time clock option is installed.

```
┌─────────────┐
│  DATE [1]   │
│             │
│(from page 52)│
└──────┬──────┘
       │
┌──────┴───┬──────────┬──────────┬──────────┬──────────┐
│   Hour   │  Minute  │   Year   │  Month   │   Day    │
└──────────┴──────────┴──────────┴──────────┴──────────┘
 00*        00*        2099*      Jan*       01*
 00 - 23    00 - 59    2000 - 2099 Jan - Dec  01 - 31
```
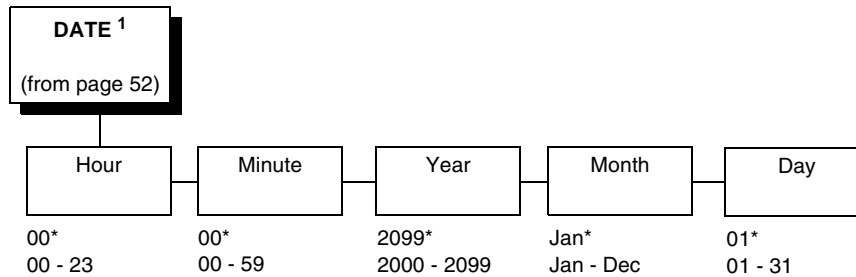
Hour

This option allows you to set the hour. The factory default is 00 and the range is from 00 to 23 hours.

Minute

This option allows you to set the minutes. The factory default is 00 and the range is from 00 to 59 minutes.

Year

This option allows you to set the year. The factory default is 2099 and the range is from the year 2000 to 2099.

Month

This option allows you to set the month. The factory default is Jan and the range is from Jan to Dec.

Day

This option allows you to set the day. The factory default is 01 and the range is from 01 to 31 days.

Printer MGMT

```
┌─────────────────┐
│ Printer MGMT    │      * = Factory Default
│ (from page 52)  │      1 Not available if PNE Port number is set at Serial.
└─────────────────┘
```

PNE Port	Mgmt Protocol	PNE Port Number [1]	PNE Port Timeout [1]	Status Port Numb	Mgmt Port Number
Ethernet* Disable Serial	UCP* PXML	3001* 1023 - 65535	100 Seconds* 1-255 Seconds	3002* 1023 - 65535	3007* 1023 - 65535
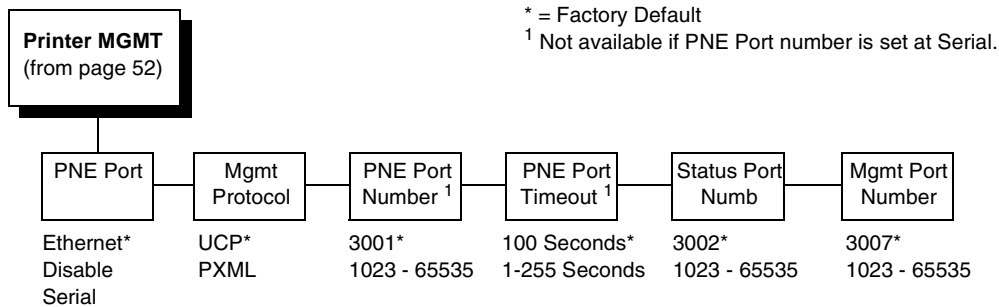
PNE Port

This menu selects which port the printer expects PNE to connect to, via Ethernet or Serial. The factory default is Ethernet.

Mgmt Protocol

Since PXML and UCP management protocols share the same Ethernet Port, only one can be active at a time. This menu selects the active Management Protocol Interface, either PXML or UCP. The factory default is UCP.

PNE Port Number

This menu selects the port number the printer expects the PNE to connect through. The factory default is 3001 and the range is from 1023 to 65535.

PNE Port Timeout

If the PNE has not communicated to the printer within a timeout period, the PNE session closes. The factory default is 100 seconds. The range is from 1 to 255 seconds.

Status Port Numb

This menu selects the port number the printer sends the emulation status. The factory default is 3001 and the range is from 1023 to 65535.

Mgmt Port Number

This menu selects the port number the printer expects the PXML or UCP to connect through. The factory default is 3007 and the range is from 1023 to 65535.

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5 *Interfaces*

Overview

This chapter describes the host interfaces provided with the printer. The printer interface is the point where the data line from the host computer plugs into the printer. The interface processes all communications signals and data to and from the host computer. Plus, with the Auto Switching feature, you can configure the printer to accept several interfaces at the same time (see "Auto Switching Submenu" on page 61).

IMPORTANT **To comply with Electromagnetic Compatibility (EMC) regulatory requirements all electrical signal interface cables connected to this printer must be of a minimal quality level, be of the correct length, and be properly installed.**

The RS-232 port and parallel port interface cables must meet the following specifications:

- **The cable design must be double shielded with a copper braid over an aluminum mylar foil and not just a conductive foil spiral wrapped around a drain wire.**

- **The shield must terminate coaxially (360 degrees) to a metal connector housing and not be terminated by just a simple wire lead.**

- **The cable length, including connectors, must be 3 meters or less.**

- **The cable connector anchor screws must be securely seated into the printer receptor hardware.**

For reference purposes only, two specific Centronics parallel port cables that have been tested and found to comply with these requirements are Belkin® part number F2A046-10 and Primelogic® part number PLU 2823224. Other electrically equivalent cables are acceptable.

This chapter describes the interfaces provided with the printer.

Standard Host Interfaces:

- IEEE 1284 parallel
- RS-232 Serial

Optional Host Interfaces:

- Ethernet 10/100BaseT
- RS-422 Serial (not available in Taiwan)

In addition to descriptions for the multi-line interfaces, this chapter also provides instructions for configuration of terminating resistors for the parallel interfaces.

Centronics Parallel Interface

Table 5. Centronics Interface Connector Pin Assignments

Input Signals		Output Signals		Miscellaneous	
Signal	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**
DATA LINE 1	2	ACKNOWLEDGE	10	CHASSIS GROUND	17
Return	20	Return	28		
DATA LINE 2	3	ONLINE	13	GROUND	30
Return	21	Return	28		
DATA LINE 3	4	FAULT	32	Spares	14
Return	22	Return	29		
DATA LINE 4	5	PAPER EMPTY	12	No Connection	34,35, 36
Return	23	Return	28		
DATA LINE 5	6	BUSY	11	+5 Volts	18
Return	24	Return	29		
DATA LINE 6	7				
Return	25				
DATA LINE 7	8				
Return	26				
DATA LINE 8	9				
Return	27				
DATA STROBE	1				
Return	19				
PAPER INSTRUCTION	15				
Return	29				
PRIME	31				
Return	30				

The length of the data cable from the host computer to the printer must not exceed 15 feet (5 meters).

Centronics Parallel Interface Signals

Data Lines 1 through 8. Provides eight standard or inverted levels from the host that specify character data, plot data, or a control code. Data Line 8 allows access to the extended ASCII character set. You may enable or disable this line via the Data Bit 8 parameter on the Centronics submenu (see page page 63).

Data Strobe. Carries a low true, 100 ns minimum pulse from the host that clocks data into the printer.

Acknowledge. A low true pulse from the printer indicating the character or function code has been received and the printer is ready for the next data transfer.

Online. A high true level from the printer to indicate the printer is ready for data transfer and the ON LINE key on the control panel has been activated. When the printer is in online mode, it may accept data from the host.

Paper Empty (PE). A high true level from the printer to indicate the printer is in a paper empty or paper jam fault.

Busy. A high true level from the printer to indicate the printer cannot receive data.

Prime. A high true level from the host to indicate the printer should perform a warm start (printer is reset to the power-up configuration values).

Paper Instruction (PI). Carries a CVFU signal from the host with the same timing and polarity as the data line.

Fault. A low true level from the printer indicates a printer fault.

IEEE 1284 Parallel Interface

The 1284 supports three operating modes, which are determined by negotiation between the printer and the host.

Compatibility Mode

This mode provides compatibility with Centronics-like host I/O (see Table 6). Data is transferred from the host to the printer in 8-bit bytes over the data lines.

Compatibility Mode can be combined with Nibble and Byte Modes to provide bidirectional communication.

Nibble Mode

Eight bits equals one byte. When a byte of data is sent to the printer, the eight bits are sent over eight data lines.

Some devices cannot send data over their eight data lines. To bypass this, the 1284 permits data to be sent as half a byte over four status lines. (Half a byte equals one nibble.) Two sequential four-bit nibbles are sent over the lines.

Data is transferred from printer to host in four-bit nibbles over the status lines, and the host controls the transmission.

Byte Mode

The printer and host send data to each other along eight data lines (one bit per line).

If bidirectional communication is supported by the printer and the host, the host will take control of the data transfer.

Signals

Table 6 lists each of the signals associated with the corresponding pins on the 1284 interface. Descriptions of the signals follow.

Table 6. 1284 Signals

Pin	Source of Data	Type of Mode		
		Compatible	**Nibble**	**Byte**
1	Host	nStrobe	HostClk	Host/Clk
2	Host/Printer	Data 1 (LSB)		
3	Host/Printer	Data 2		
4	Host/Printer	Data 3		
5	Host/Printer	Data 4		
6	Host/Printer	Data 5		
7	Host/Printer	Data 6		
8	Host/Printer	Data 7		
9	Host/Printer	Data 8 (MSB)		
10	Printer	nAck	PtrClk	PtrClk
11	Printer	Busy	PtrBusy	PtrBusy
12	Printer	PError	AckDataReq	AckDataReq
13	Printer	Select	Xflag	Xflag

Table 6. 1284 Signals (continued)

Pin	Source of Data	Type of Mode		
		Compatible	Nibble	Byte
14	Host	nAutoFd	Host Busy	HostAck
15		Not Defined		
16		Logic Grid		
17		Chassis Grid		
18	Printer	Peripheral Logic High		
19		Signal Ground (nStrobe)		
20		Signal Ground (Data 1)		
21		Signal Ground (Data 2)		
22		Signal Ground (Data 3)		
23		Signal Ground (Data 4)		
24		Signal Ground (Data 5)		
25		Signal Ground (Data 6)		
26		Signal Ground (Data 7)		
27		Signal Ground (Data 8)		
28		Signal Ground (PError, Select, nAck)		
29		Signal Ground (Busy, nFault)		
30		Signal Ground (nAutoFd, nSelectIn, nInit)		
31	Host	nInit		
32	Printer	NFault	nDataAvail	aDataAvail
33		Not Defined		
34		Not Defined		
35		Not Defined		
36	Host	nSelectIn	1284 Active	1284 Active

NOTE: The length of the data cable from the host computer to the printer should not exceed 32 feet (10 meters).

Host Clock / nWrite. Driven by host. Data transferred from host to printer. When printer sends data, two types are available. If Nibble mode, signal is set high. If Byte mode, signal is set low.

Data 1 through Data 8. These pins are host-driven in Compatibility mode and bidirectional in Byte mode. They are not used in Nibble mode. Data 1 is the least significant bit; Data 8 is the most significant bit.

Printer Clock / Peripheral Clock / Interrup. Driven by the printer. A signal from the printer indicating the character or function code has been received and the printer is ready for the next data transfer.

Printer Busy / Peripheral Acknowledge / nWait. Driven by the printer. Indicates the printer cannot receive data. (Data bits 4 and 8 in Nibble mode.)

Acknowledge Data Request / nAcknowledge Reverse. Driven by the printer. Indicates the printer is in a fault condition. (Data bits 3 and 7 in Nibble mode.)

Xflag. Driven by the printer. A high true level indicating the printer is ready for data transfer and the printer is on line. (Data bits 2 and 6 in Nibble mode.)

Host Busy / Host Acknowledge / NDStrobe. Driven by the host. Activates auto-line feed mode.

Peripheral Logic High. Driven by the printer. When the line is high, the printer indicates all of its signals are in a valid state. When the line is low, the printer indicates its power is off or its signals are in an invalid state.

nReverse Request. Driven by the host. Resets the interface and forces a return to Compatibility mode idle phase.

nData Available / nPeripheral Request. Driven by the printer. Indicates the printer has encountered an error. (Data bits 1 and 5 in Nibble mode.)

1284 Active / nAStrobe. Driven by the host. A peripheral device is selected.

Host Logic High—Driven by the host. When set to high, the host indicates all of its signals are in a valid state. When set to low, the host indicates its power is off or its signals are in an invalid state.

nInit —Resets init interface from the host.

Terminating Resistor Configurations

V6 Controller Board

For parallel interface configurations, the printer is equipped with 470 Ohm and and 1K Ohm terminating resistors on the controller board. These are suitable for most applications. See Figure 24.

If the standard terminating resistor pack is not compatible with the particular interface driver requirements of the host computer, other RP1 and RP2 values may be required. 220 Ohm and 330 Ohm alternate terminating resistors are provided with the printer. If you install the 220 Ohm resistor, you must also install the 330 Ohm resistor. Possible terminating resistor combinations are shown below.

Configuration	RP1	RP2
Factory Default	470 Ohm	1K Ohm
Alternate	220 Ohm	330 Ohm
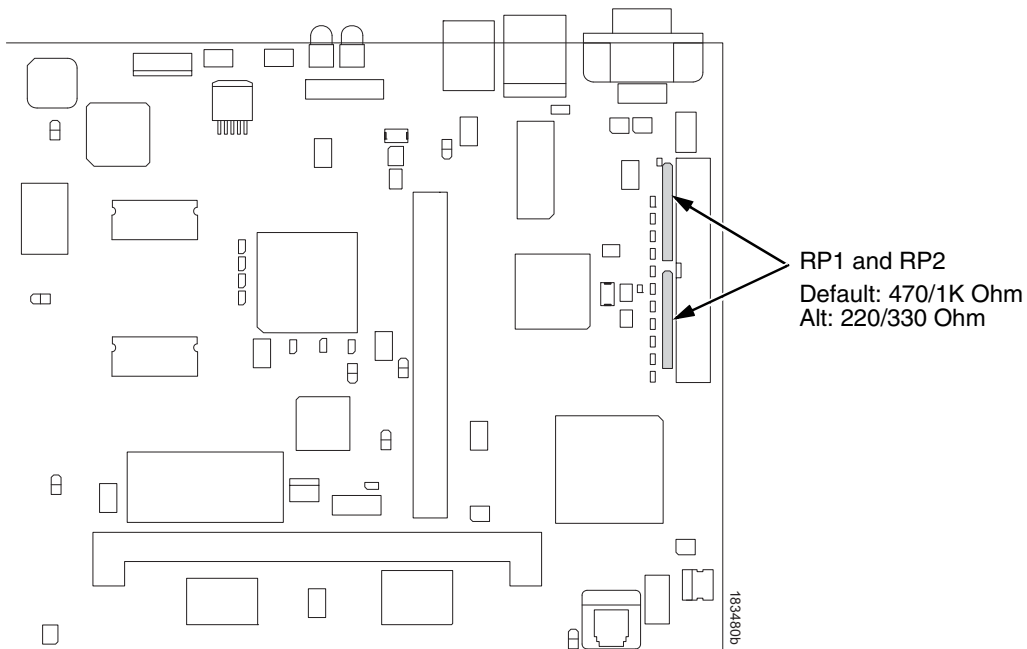
Figure 24. Terminating Resistors, V6 Controller

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Removal And Installation

The procedure for removing and installing terminating resistors is provided in your *Maintenance Manual.*

CAUTION   **This is an involved maintenance procedure. To avoid damage to the equipment, only a trained technician should perform this procedure.**

RS-232 And RS-422 Serial Interfaces

NOTE: The RS-232 and RS-422 serial interface circuit characteristics are compatible with the Electronic Industry Association Specifications EIA-232-E and EIA-422-B.

The RS-232 and RS-422 serial interfaces enable the printer to operate with bit serial devices that are compatible with an RS-232 controller. The input serial data transfer rate (in baud) is selectable from the printer's control panel. Baud rates of 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 baud rates are available.

NOTE: If you select a baud rate that is greater than 19200, you may need to use RS-422 to prevent data loss.

The length of the data cable from the host computer to the printer must not exceed 50 feet (15 meters) for RS-232 or 4000 feet (1220 meters) for RS-422. (A copper conductor, twisted-pair telephone cable with a shunt capacitance of 16 pF/foot [52.5 pF/meter] terminated in a 100 ohm resistive load must be used for the RS-422.)

RS-232

Table 7. RS-232 Serial Interface Connector Pin Assignments

Input Signals		Output Signals		Miscellaneous	
Signal	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**
Receive Data (RD)	2	Transmit Status & Control Data (TD)	3	Chassis/Signal Ground	5
Clear To Send (CTS)	8	Request To Send (RTS)	7		
Data Set Ready (DSR)	6	Data Terminal Ready (DTR)	4		
Data Carrier Detect (DCD)	1				

Receive Data (RD). Serial data stream to the printer.

Transmit Status & Control Data (TD). Serial data stream from the printer for transmitting status and control information to the host. Subject to protocol selection.

Request To Send (RTS). Control signal from the printer. Subject to configuration.

Clear To Send (CTS). Status signal to the printer indicating the host is ready to receive data/status signals from the printer.

Data Set Ready (DSR). Status signal to the printer indicating the host is in a ready condition.

Data Carrier Detect (DCD). Status signal to the printer. The ON condition is required for the printer to receive data.

Data Terminal Ready (DTR). Control signal from the printer. Subject to configuration.

RS-422

Table 8. PSA3 RS-422 Serial Interface Connector Pin Assignments

Input Signals		Output Signals		Miscellaneous	
Signal	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**
- Receive Data (-RD)	1	- Transmit Data (-TD)	3	Chassis/Signal Ground	5
+ Receive Data (+RD)	6	+ Transmit Data (+TD)	8		

+RD, -RD.Serial data stream differentially received by printer.

+TD, -TD.Differentially driven serial data stream for transmitting status and control information to the host. Subject to protocol selection.

NOTE: $\pm$**RD** and $\pm$**TD** form signal and return paths of a differential line signal.

Dataproducts Parallel Interface

**Table 9. Dataproducts Parallel Interface Connector Pin Assignments
(with a 50-pin AMP HDH-20 Data Cable Connector)**

Input Signals		Output Signals		Miscellaneous	
Signal	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**
DATA LINE 1	19	READY	22	CABLE VERIFY	45, 46
Return	3	Return	6		
DATA LINE 2	20	ONLINE	21	GROUND	39
Return	4	Return	5		
DATA LINE 3	1	DEMAND/DATA REQ.	23		
Return	2	Return	7		
DATA LINE 4	41	PARITY ERROR	27		
Return	40		11		
DATA LINE 5	34				
Return	18				
DATA LINE 6	43				
Return	42				
DATA LINE 7	36				
Return	35				
DATA LINE 8	28				
Return	44				
DATA STROBE	38				
Return	37				
PAPER INSTRUCTION	30				
Return	14				
BUFFER CLEAR	31				
Return	15				
NOTE: Pins not listed are not connected.					

The length of the data cable from the host computer to the printer must not exceed 40 feet (12 meters).

Dataproducts Parallel Interface Signals

Data Lines 1 through 8. Provides eight standard or inverted levels from the host that specify character data, plot data, or a control code. Data Line 8 allows access to the extended ASCII character set. You can enable or disable this line via the Data Bit 8 parameter on the Dataproducts submenu (see page page 65).

Data Strobe. Carries a high true pulse from the host when data is ready. The data strobe remains high until the Data Request line goes false. The active edge of the strobe signal can be configured as leading, middle (default), or trailing.

Paper Instruction (PI). Carries a DVFU signal from the host with the same timing and polarity as the data lines.

Ready. Carries a high true signal from the printer when AC power and DC voltages are present, paper is loaded properly, and the printer is not in a check condition.

Online. Carries a high true signal from the printer when the Ready Line is true and the ON LINE key on the control panel has been pressed. When the printer is in online mode, it may accept data from the host.

Demand/Data Request. Carries a high true signal from the printer when the printer is ready to accept character data from the host. This signal changes to false shortly after the leading edge of the data strobe signal.

Cable Verify. Two pins on the interface connector are jumpered together to allow the user to verify proper installation of the interface connector.

Buffer Clear. A high true level from the host to indicate the printer should perform a reboot.

Parity Error. Always carries a low false signal from the printer indicating there is no parity error.

6 *Reprogramming the Security Key*

Reprogramming The Security Key

The security key on the PSA3 controller board can be reprogrammed with a Software Program Exchange (SPX) module. The SPX is an intelligent module that plugs into the debug port on the back of printers equipped with the PSA3 "Hurricane" controller board. The SPX is used only once; it automatically overwrites itself after successfully reprogramming a security key. This allows the end user or a service technician to enable features such as new emulations without having to remove covers and install a new security key on the controller board.

The SPX is used at power-up only and is not left in the printer during normal operation. Because it is a single-use disposable item the user is not required to return it to the vendor or manufacturer.

How To Program The Security Key

1. Power off the printer.
2. On cabinet models, open the rear door. On pedestal models, refer to Figure 25 to locate the debug port at the rear of the printer.
3. Insert the SPX into the debug port as shown.
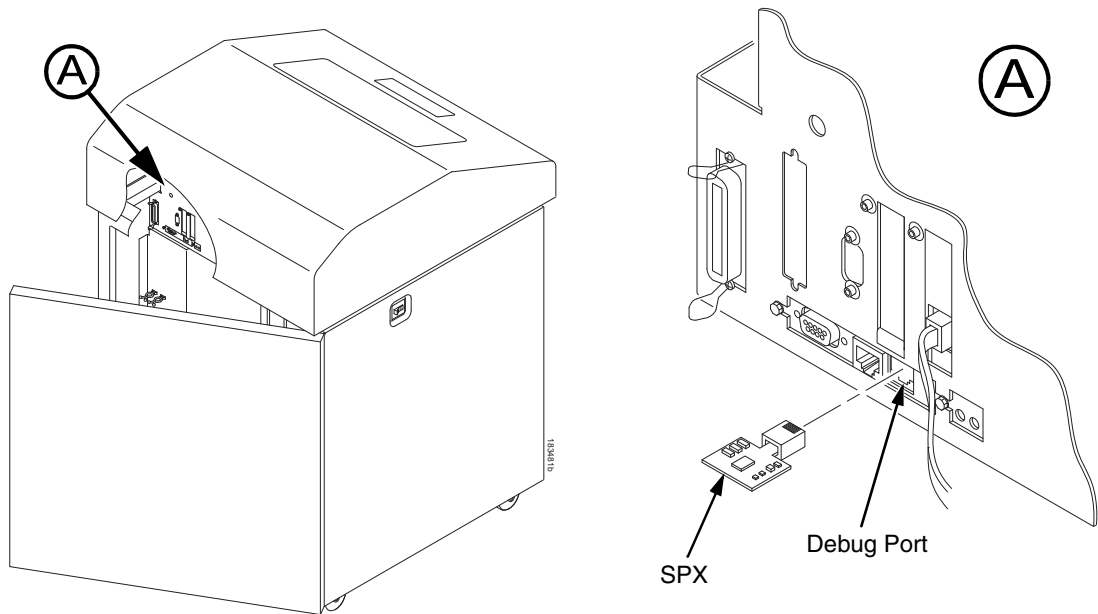
Figure 25. Inserting The SPX into the Debug Port

4. Power on the printer. The printer will begin its boot-up sequence.

5. When the printer detects a valid SPX, the control panel displays: "NEW SPX DETECTED
PRESS ENTER"

NOTE: If an error message displays, find the message in the Message List in Chapter 7 and follow the troubleshooting instructions.

6. Press the **ENTER** key to activate the reprogramming sequence. The display will read:
"PROGRAMMING. PLEASE WAIT."

7. When the security key is reprogrammed, the display will read:
"REMOVE USED SPX
THEN PRESS ENTER"

8. Remove the SPX from the debug port at the rear of the printer.

9. Press the **ENTER** key. The printer will reboot itself and you may resume normal printing.

10. You may need to download a new program file to use the new feature.

11. You may need to set additional menu parameters for any new features that have been added or enabled.

7 *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.

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.
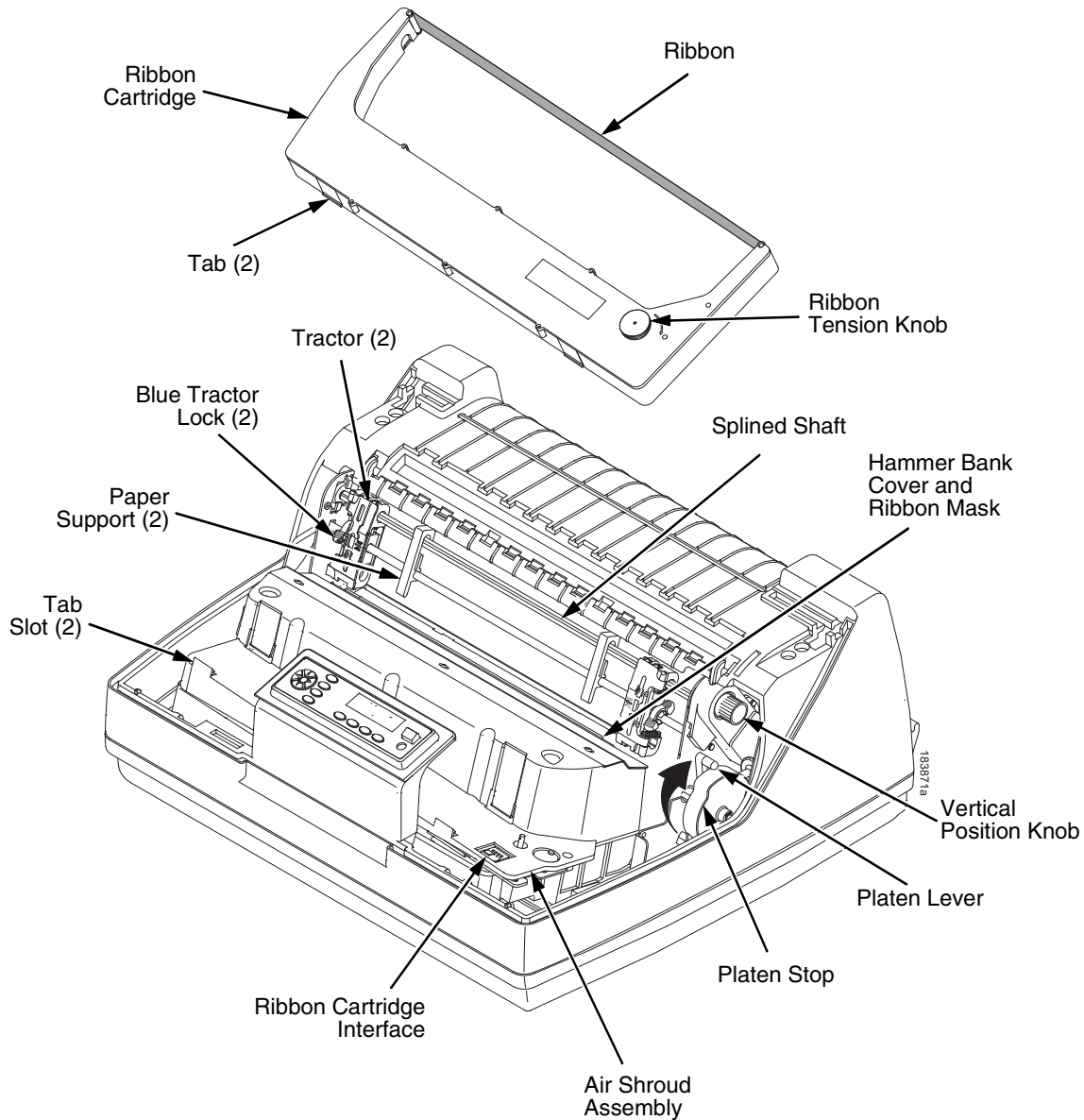
Figure 26. Interior Printer Components

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.

3. Fully raise the forms thickness lever.

4. Unload the paper.

5. Remove the ribbon catridge.

6. Lift the ribbon out of the ribbon path.

7. Brush the paper dust and ribbon lint off the tractors, shuttle cover assembly, and base casting with a soft-bristled, non-metallic brush (such as a toothbrush). 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.**

8. Wipe the splined shaft with a soft cloth.

9. Check the ribbon mask and hammer bank cover for bits of torn paper or ribbon lint.

10. Remove dust and ink from the platen using a soft cloth lightly moistened with anhydrous alcohol. (The platen is the thick silver bar behind the hammer bank cover that rotates when the forms thickness lever is rotated.).

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.**

11. Brush and vacuum the accumulated dust or residue inside the lower cabinet.

12. 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.

13. Install the ribbon cartridge and load paper.

Diagnosing Problems

This section is designed to help you fix problems which may arise with normal printer operation.

Bar Code Verification

The most important consideration when printing a bar code is to ensure that 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. A high first-time read rate 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, visit their web site at **www.printronix.com/rjs**.

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 (.).

Figure 27 shows an example of a hex dump.

```
 !"#$%&'()*+,-./   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 27. Hex Dump Sample

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 10.

Displayed faults fall into one of two categories:

- Operator correctable

- Field service required

For the operator-correctable faults, follow the suggested solution in Table 10. 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 disappears, it was a false indication and no further attention is required. If the message reappears, call your authorized service representative.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
000:SHUTTLE TYPE NOT SUPPORTED*	No	The shuttle type was not detected at power-up or the shuttle installed in the printer is not supported by the firmware.	Contact your authorized service representative.[1]
06 HOST REQUEST	Yes	Host attention message.	The host computer or printer controller requires attention.
08 HOLD PRINT TIMEOUT	Yes	Printer was offline more than 10 minutes, and the "Intervention Required" parameter is set to "Send to Host."	Press ON LINE to put printer in online state.
15 COMM CHECK	Yes	A message that appears in the CT emulation meaning the line is not active on a twinax interface.	Check cable connection.
15V CTL FAIL*	No	Controller voltage failure.	Contact your authorized service representative.[1]
22 INVALID ADDR	Yes	Unit address not recognized by printer. (Twinax interface)	Ensure that printer address matches host setting.
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 and run a print test. If the message reappears, 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.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
33 PLATEN OPEN TIMEOUT	Yes	The forms thickness lever has been open for at least one minute.	Load paper, close the forms thickness lever, and press CLEAR.
34 RIBBON STALL TIMEOUT	Yes	In the CT emulation with a coax interface, the ribbon has not moved for 10 minutes after CLEAR was pressed to clear the ribbon drive fault.	Reload the ribbon.
48V PWR FAIL*	No	Internal power failure.	Contact your authorized service representative.[1]
104: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]
105:PRINTER HOT	Yes	This message indicates internal temperatures over 60° Celsius (140° Fahrenheit).	Check printer environment. If hot or dusty, relocate printer. Contact your authorized service representative if this occurs frequently.[1]
401:BUFFER OVERRUN	Yes	The print buffer has overflowed on a serial interface. The printed output may contain random * (asterisk) characters. Make a configuration printout.	Verify that the printer matches the host serial interface configuration settings for Data Protocol, Baud Rate, Data Bits, Stop Bits, Parity, Data Terminal Ready, and Request to Send. Set printer serial interface parameters to match those of the host.
402:CLEAR PAPER JAM	Yes	No paper motion.	Clear jam and reload paper. If this message recurs, contact your authorized service representative.[1]
403:CLOSE PLATEN	Yes	The platen lever is open.	Close the platen lever.
409:FRAMING ERROR	Yes	The printed output may contain random ! (exclamation point) characters.	Make a configuration printout. Set printer serial interface parameters to match host configuration settings for Data Protocol, Baud Rate, Data Bits, Stop Bits, Parity, Data Terminal Ready, and Request to Send.
410:LOAD PAPER	Yes	Printer is out of paper.	Load paper and press CLEAR.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
411:PARITY ERROR	Yes	The printed output may contain a random ? (question mark) characters.	Check your printer serial interface parameter settings; if necessary, adjust them so that they match the settings of the attached host.
414:RIBBON STALL	Yes	The controller board does not detect ribbon movement.	Check the ribbon path for jams. Turn the Ribbon Tension Knob clockwise a few rotations. If necessary, install a new ribbon.
415:SHUTTLE JAM	Yes	No shuttle movement or shuttle moving at the wrong speed.	Check for obstruction to shuttle, a twisted ribbon, or platen lever closed too tightly. If fault source is not apparent, contact your authorized service representative.[1]
416:STACKER FULL	Yes	Status message: the power paper stacker is full of paper.	Unload the stacker. If fault persists, contact your authorized service representative.[1]
417:STACKER JAM	Yes	This message is triggered if there is paper inside the throat of the stacker elevator, but the elevator is not moving.	1. Open the cabinet rear door and check for obstructions preventing elevator movement. Remove any obstructions. 2. Run the print job again. If the message appears again, contact your authorized service representative.[1]
418:RBN INK LOW Change RBN Soon	Yes	Status message indicating the Integrated Print Management System is enabled and ribbon ink level is 2%.	Install a new ribbon.
419:RBN INK OUT* Install New RBN	Yes	Integrated Print Management System software has determined that the ribbon is out of ink.	Install a new ribbon.
420:EXC RBN WEAR Install New RBN	Yes	Status message that displays when ribbon reaches end of life, whether the Integrated Print Management System is enabled or not.	Install a new ribbon.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
421:BC MISSING Install New RBN	Yes	The ribbon sensor does not detect the presence of the ribbon spool, indicating a missing label or a damaged sensor.	If label is missing, install new ribbon. If barcode label is present and undamaged, clean sensor lens using damp cloth or swab.
422:BC DAMAGED Reverse Spools	Yes	Barcode detected, but not fully decoded.	If barcode appears damaged, reverse ribbon spools. If barcode label is present and undamaged, clean sensor lens using damp cloth or swab. Check that platen gap may be too tight constricting ribbon motion. Loosen gap if needed.
423:OLD RIBBON Install New RBN	Yes	The sensor detects a ribbon that was previously declared to be at the end of its service life.	Install a new ribbon.
424:UNKNOWN RBN1 Install New RBN	Yes	The sensor detects a bar code, but the ribbon model is not permitted on this printer.	Install a new ribbon.
425:UNKNOWN RBN2 Install New RBN	Yes	The sensor detects a bar code, but the region code does not match the printer.	Install a new ribbon.
427:CRTG MISSING Install new RBN	Yes	The ribbon cartridge is missing or installed improperly.	1. Make sure a ribbon cartridge is installed in the printer. 2. Make sure the ribbon cartridge is seated properly. 3. Remove and replace the cartridge if necessary. 4. Contact your authorized customer service representative.
428:CRTG COMM ER See User Manual	No	The hardware cannot communicate properly with the cartridge.	1. Make sure the ribbon cartridge is seated properly. 2. Remove and replace the ribbon cartridge if necessary. 3. Contact your authorized service representative.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
432:CRT NOT SET	Yes	The ribbon cartridge is not correctly positioned.	1. Make sure a ribbon cartridge is installed in the printer. 2. Make sure the ribbon cartridge is seated properly. 3. Remove and replace the cartridge if necessary. 4. Contact your authorized customer service representative.
435:NO WELD See User Manual	No	The cartridge weld was not detected.	Contact your authorized service representative.
437:REG MISSING Use Correct RBN	Yes	The incorrect cartridge type is being used for the printer.	Install region X ribbon cartridge in the printer. **NOTE:** Specify the region of the printer when ordering ribbons.
438:TIP MISMATCH Use Correct RBN	Yes	The incorrect cartridge type is being used for the printer.	Install the correct ribbon cartridge type in the printer.
439:SHTL MISMATCH Use Correct RBN	Yes	This message displays when an Extended Life Ribbon is mounted on a 500 lpm printer.	Install Standard Life Ribbon.
440:RWP DOWNLOAD Please Wait	No	Status message indicating the software in the cartridge is being updated. The user must wait fo rthe update to complete.	No action is required.
602:23.5V CTL FAIL*	No	23.5 Volt Controller failed: a voltage failure on the controller board.	Contact your authorized service representative.[1]
604:48V CIRCUIT* See User Manual	No	Either the power supply is not generating a proper 48 Volts or the controller board is not detecting a 48 Volt output from the power supply board.	Contact your authorized service representative.[1]
606:Power 8.5V CHECK	No	8.5 Volt power failed. Internal power failure.	Contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
607:CTL VOLT FAIL*	No	Controller Voltage Failure. 15 V failure on the controller board.	Contact your authorized service representative.[1]
608:DRIVER CIRCUIT BAD	No	Driver Circuit Bad. The hammer coil count test failed.	Contact your authorized service representative.[1]
609:EXHAUST FAN CHECK (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 appears again, contact your authorized service representative.[1]
613: HAM. COIL BAD #, #, #, ...etc	No	Hammer coil # failed current test at power up.	Contact your authorized service representative.[1]
614:HAMMER BANK* NOT INSTALLED	No	Hammer Bank Not Installed. Self-test routines do not detect hammer coils at printer start-up.	Contact your authorized service representative.[1]
615:HAMMER FAN CHECK	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]
617:LOWER DRIVER SHORT*	No	Lower Driver Short. Circuit(s) on the hammer bank or in the hammer bank power cable shorted to ground.	Contact your authorized service representative.[1]
619:PAPER FEED DRIVER CIRCUIT* See Manual	No	Paper Feed Driver Circuit. The paper feed driver circuit on the controller board is drawing too much current.	Contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
620:POWER VOLT CHECK*	No	Power Supply Voltage. The power supply has failed.	Replace power supply board.
622:SHUTTLE DRIVER CRCUIT*	No	The shuttle driver circuit on the controller board is drawing too much current.	Contact your authorized service representative.[1]
623:STACKER FAULT	Yes	Stacker is not functioning correctly.	Check for obstructions in the stacker area. If fault persists, contact your authorized service representative.[1]
624:UPPER DRIVER SHORT*	No	Upper Driver Short. Hammer driver circuits on the boards shorted to ground.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
625:WRONG E-NET Remove NIC	Yes	Incompatible network interface card (NIC) is installed.	Install a compatible NIC to the printer then reboot. If this message still appears, contact your authorized service representative.[1]
700:A TO D OVERRUN*	No	Analog to Digital Overrun. The analog-to-digital converter overflowed.	Contact your authorized service representative.[1]
701:ACCESS NULL POINTER*	No	Access Null Pointer: The processor tried to access a pointer that contains nothing (null).	Contact your authorized service representative.[1]
702:FIRMWARE ERROR*	No	Application software tried to perform an illegal printer function or damaged memory detected on the controller board.	Contact your authorized service representative.[1]
703:ILLEGAL EXTERNAL BUS ACC*	No	Illegal External Bus Access. Firmware error on the controller board.	Contact your authorized service representative.[1]
704:ILLEGAL INSTRUCTION ACC*	No	Illegal Instruction Accessed. Firmware error on the controller board.	Contact your authorized service representative.[1]
705:ILLEGAL OPERAND ACCESS*	No	Illegal Operand Accessed. Firmware error on controller board.	Contact your authorized service representative.[1]
706:PAP BAD TABLE*	No	Paper Bad Table. The paper feed process on the controller board has a corrupted table.	Contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
707:PAPER BUSY TOO LONG*	No	Paper Busy Too Long. Firmware error on controller board.	Contact your authorized service representative.[1]
708:PAPER FIFO OVERFLOW*	No	Paper First In First Out Overflow. Firmware error on controller board.	Contact your authorized service representative.[1]
709:PAPER FIFO UNDERFLOW*	No	Paper First In First Out Underflow. Firmware error on controller board.	Contact your authorized service representative.[1]
710:PAP ILLGL ST*	No	Paper Illegal State. Firmware error on controller board.	Contact your authorized service representative.[1]
711:PAP INCMPL ENER*	No	Paper Incompletely Energized. Firmware error on controller board.	Contact your authorized service representative.[1]
712:PAP INVLD CMD*	No	Paper Invalid Command. Firmware error on controller board.	Contact your authorized service representative.[1]
713:PAP INVLD PARM*	No	Paper Invalid Parameter. Firmware error on controller board.	Contact your authorized service representative.[1]
714:PAP NOT SCHED*	No	Paper Not Scheduled. The paper feed process is not scheduling on the controller board, and the printer cannot feed paper.	Contact your authorized service representative.[1]
715:PAP NT AT SPEED*	No	Paper Not At Speed. Firmware error on controller board.	Contact your authorized service representative.[1]
716:PAP UNEXP INT*	No	Paper Unexpected Interrupt. Firmware error on controller board.	Contact your authorized service representative.[1]
717:PLAT INV CMD*	No	Platen Invalid Command. Firmware error on controller board.	Contact your authorized service representative.[1]
718:PLAT INV PARM*	No	Platen Invalid Parameter. Firmware error on controller board.	Contact your authorized service representative.[1]
719:PLAT INV STATE*	No	Platen Invalid State. Firmware error on controller board.	Contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
720:PROTECTED INSTRUCTION*	No	Protected Instruction. Firmware error on controller board.	Contact your authorized service representative.[1]
721:RIB INVLD CMD* See User Manual	Yes	Ribbon Invalid Command. Firmware error on the controller board.	Cycle power. Run the print job again. If the message appears, download the emulation software again. If the message appears again, contact your authorized service representative.[1]
723:SHUTL INV CMD*	No	Shuttle Invalid Command. Firmware error on controller board.	Contact your authorized service representative.[1]
724 SHUTL INV PARM*	No	Shuttle Invalid Parameter. Firmware error on controller board.	Contact your authorized service representative.[1]
725:SHUTL OVER SPEED*	No	The shuttle is oscillating too rapidly.	Contact your authorized service representative.[1]
727: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]
728:STACK OVERFLOW*	No	Firmware error on controller board.	Contact your authorized service representative.[1]
729:STACK UNDERFLOW*	No	Firmware error on the controller board.	Contact your authorized service representative.[1]
730:TCB CORRUPTED*	No	Task Control Block Corrupted. Firmware error on controller board.	Contact your authorized service representative.[1]
731:UNDEFINED INTERRUPT*	No	Undefined Interrupt. Firmware error on controller board.	Contact your authorized service representative.[1]
732:UNDEFINED OPCODE	No	Undefined Opcode. Firmware error on controller board.	Contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
733 DP FIFO Busy*	Yes	There is a timing problem in the Engine Controller firmware.	1. Cycle power. Run the print job again. If the message reappears, download the emulation software again. 2. Cycle power. Run the print job again. If the message reappears, contact your authorized service representative. [1]
ACTIVATE LOST	No	The printer detects a twinax protocol communication error and reports the error.	Contact your authorized service representative.[1]
B00 STATUS: SDRAM DETECTION 166MHZ	No	Status message: the printer has begun its boot-up routines and is checking for the presence of SDRAM.	No action required.
B01 STATUS: 8245 SDRAM TEST 32MB	No	Status message: printer boot-up routines are testing SDRAM.	No action required.
B10 ERROR: NO DRAM DETECTED*	No	SDRAM DIMM may not be properly installed. Boot-up routines did not detect the presence of the SDRAM DIMM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B11 ERROR: RAM TEST FAILED*	No	SDRAM failed the boot initialization test. SDRAM DIMM may not be properly installed.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B12 ERROR: PROGRAM MISSING*	Yes	The printer does not see a program in flash memory.	There is no program in printer memory. Download an emulation.
B13 ERROR: NOT COMPATIBLE*	No	Attempting to download a program that is not compatible with the printer.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B19 ERROR: DC RETURNED*	No	The message indicates an incorrectly assembled and tested machine.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
B20 STATUS :00% DOWNLOAD MODE	No	Status message informing the operator that software is being downloaded. Percentage figure indicates approximate amount loaded into the printer.	No action is required.
B21 STATUS: PRINTER RESET	No	Status message informing the operator that the printer is undergoing a system reset.	No action is required.
B22 ERROR: DECOMPRESS SIZE*	No	FLASH memory has not passed boot initialization tests.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B23 ERROR: DECOMPRESS CKSUM*	No	FLASH memory has not passed boot initialization tests.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B30 STATUS: INITIALIZING...	N/A	Status message: the printer is running its initialization routines after startup and successful memory tests.	No action is required.
B35 STATUS: WAITING FOR EC STATUS	N/A	Status message: the DC on the controller board is waiting for communication with the EC. If this message does not clear witin a few seconds there is an electrical or electronic problem on the controller board.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B40 ERROR: SDRAM EEPROM CKSUM BAD*	No	Flash memory has not passed boot initialization tests.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B41 ERROR: DIM MEMORY NOT SDRAM*	No	The DRAM DIMM installed on the controller board is not Synchronous DRAM (SDRAM).	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B42 ERROR: SDRAM ROWS NOT ALLOWED*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
B43 ERROR: SDRAM TOO MANY BANKS*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B44 ERROR: SDRAM NOT 64 BITS WIDE*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B45 ERROR: SDRAM IS WRONG VOLTAGE*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B46 ERROR: SDRAM HAS MIXED SIZES*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B47 ERROR: SDRAM LARGER THAN 256M*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B49 ERROR: SDRAM # LOGICAL BANKS*	No	Printer boot initialization tests detect incorrect SDRAM.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B50 ERROR: SDRAM LOGIC COMB BANKS*	No	SDRAM DIMM is not compatible with the computer. SDRAM DIMM may not be properly installed.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B51 STATUS: XX% LOADING...	No	Status message: printer boot-up routines are loading printer system software into flash memory and SDRAM.	No action required.
B53 ERROR: 12C NO ARBITRATION	No	There is a problem on the I^2C bus which allows the SDRAM DIMM to communicate with the GPIO or CT interface.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]
B54 ERROR: SDA LINE STUCK LOW	No	The SDRAM or a PCI card is shorting out the serial data bus on the controller board.	Cycle power to see if the message clears, if not, contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
CLEARING PROGRAM FROM FLASH	No	Status message: emulation software successfully loaded into printer RAM and the checksum matched. The old program is now being deleted from flash memory.	No action is required.
D50 Status %XX Clearing Flash	No	Status message: The printer is clearing its flash memory, where %XX represents the percentage completed.	No action is required.
D51 Status %XX Programming...	No	Status message: The printer is loading firmware, where %XX represents the percentage completed.	No action is required.
D55 Status: Send Program to EC	No	Status message: The printer is loading the engine controller program into the engine controller (EC).	No action is required.
DIAGNOSTIC PASSED	No	Status message: the printer passed its memory and hardware initialization tests.	No action is required.
DO NOT POWER OFF	No	Status message: The printer is performing an operation that must be completed before you can cycle power.	No action is required, but do not power off the printer until the operation is complete.
E00 EXE @ ADDR0 See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E01A TYPE 0x40 See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E01B TYPE 0x60 See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E02 MACHINE CHK See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E03A DSI HASH L See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E03B DSI HASH S See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E03C DSI BAT PL See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E03D DSI BAT PS See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E03E DSI CXIWX See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E03F DSI CXOWX See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E03G DSI ECXIWX See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E03H DSI ECXOWX See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E04A ISI NO TRA See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E04B ISI DIRECT See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E04C ISI PROTEC See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E06 NOT ALIGNED See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E07 ILLEGAL INS See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E08 FLOATINGPNT See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E12 SYSTEM CALL See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E13 TRACE INT See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E16 ITRANS MISS See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E17 DLOAD MISS See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E18 DSTORE MISS See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E19 BREAKPOINT See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E20 SYS MANAGE See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E30 DEBUGGER See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E31A EVENT O BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E31B EVENT 1 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E31C EVENT 2 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E31D EVENT 3 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E31E EVENT 4 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E31F EVENT 5 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E31G EVENT 6 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E31H EVENT 7 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E32A CND 0 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E32B CND 1 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E32C CND 2 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E32D CND 3 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E32E CND 4 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E32F CND 5 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E32G CND 6 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E32H CND 7 BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E33 WRITE BP See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
E34 TRACE CMPLT See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E99 UNKNOWN INT See User Manual	Yes	An illegal or unsupported instruction was attempted in the application program.	1. Cycle Power. Run the print job again. If the message appears, load the latest emulation software. 2. Cycle power. Run the print job again. If the message appears, record the display message and send it to your next higher support facility.
E Net Test Unavailable	Yes	The ethernet PCBA did not initialize correctly.	Cycle power. Wait for "E Net Ready" to display, then retry operation. If it still fails, contact your authorized service representative.[1]
ERROR: CPLD NOT PROGRAMMED	No	The Complex Programmable Logic Device (CPLD) on the controller board is not programmed. The EC cannot read the version bits in the CPLD which tell the EC which configuration version is installed.	Contact your authorized service representative.[1]
ERROR: DC PROGRAM NOT VALID	Yes	The printer cannot find the data controller program or the validation checksum is corrupt.	Download the program again. If the message appears, contact your authorized service representative.[1]

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Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
ERROR: DRAM AT ADDRESS XXXXXXXX	Yes	The printer cannot find the engine controller program or the validation checksum is corrupt.	Download the program again. If the message appears, contact your authorized service representative.[1]
ERROR: EC PROGRAM NOT VALID		The printer cannot find the engine controller program or the validation checksum is corrupt.	Download the program again. If the message occurs again, contact your authorized service representative.[1]
ERROR: EC STOPPED AT STATE XXXX	No	XXXX is a number from 0000 to 0010. The Engine Controller has stopped and is in the state identified by the number displayed.	Contact your authorized service representative.[1]
ERROR: FLASH DID NOT PROGRAM	Yes	The printer encountered an error trying to program flash memory.	Download the program again. If the message displays again, contact your authorized service representative.[1]
ERROR: FLASH NOT DETECTED	No	The printer could not find flash memory.	Contact your authorized service representative.[1]
ERROR: LOCKED SN=nnnnnnnnnnnnnnn nnnnn	No	nnnnnnnnnnnnnnnnnnnn is the serial number of the printer's security key. The SPX serial number does not match the printer's serial number and cannot be used with the printer.	Contact your authorized service representative.[1]
ERROR: NO DRAM DETECTED	No	The printer could not find any DRAM.	Contact your authorized service representative.[1]
ERROR: NVRAM FAILURE	No	The non-volatile SRAM on the controller board has failed.	Contact your authorized service representative.[1]
ERROR OCCURRED FLUSHING QUEUES*	No	An interim message that displays while the printer discards host data it cannot use because a fault condition exists.	Wait. When the asterisk (*) stops rotating, a different fault message will appear: troubleshoot the final message.
ERROR: PROGRAM NEEDS MORE DRAM	No	The printer requires more DRAM to run the downloaded program.	Contact your authorized service representative.[1]
ERROR: PROGRAM NEEDS MORE FLASH	No	The printer requires more flash memory to run the downloaded program	Contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
ERROR: PROGRAM NOT COMPATIBLE	Yes	The printer is not compatible with the downloaded program.	Use the correct emulation software options(s) for this printer model.
ERROR: PROGRAM NOT VALID	Yes	The printer does not see a program in flash memory.	There is no program in printer memory. Download the emulation.
ERROR: SECURITY KEY NOT DETECTED	No	The security key is not present or failed.	Contact your authorized service representative.[1]
ERROR: SHORT AT ADDRESS XXXX	No	Hardware failure in SDRAM or controller circuitry.	Contact your authorized service representative.[1]
ERROR: WRITING TO FLASH	No	Hardware or software fault in flash memory.	Contact your authorized service representative.[1]
ERROR: WRONG CHECKSUM	No	The printer received the complete program but the checksum did not match. The data may have been corrupted during downloading.	Contact your authorized service representative.[1]
ERROR: WRONG OEM	No	The SPX inserted in the debug port is not intended for this model printer or this OEM.	Contact your authorized service representative.[1]
ERROR: WRONG PRINTER TYPE	No	The SPX inserted in the debug port is not intended for this model printer or this OEM.	Contact your authorized service representative.[1]
ETHERNET ADAPTER BEING INITIALIZED	N/A	Status message indicating that the ethernet interface is processing the boot procedure.	No action is required.
ETHERNET DETECTED	N/A	Status message indicating that the Network Interface Card has established connection.	No action is required.
ETHERNET INITIALIZING	No	Status message: the internal Network Interface Card is processing the boot procedure. (May occur with older versions of microcode.)	No action is required.
FM HEADER ERROR*	No	Frame Header Error. Application software has violated header parameters.	Contact your system administrator.

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Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
GRF CHK ERROR PRESS STOP	Yes	Graphic Check Error: in the CT emulation over a twinax interface, the printer received a non-printable character.	Press CLEAR and then ON LINE.
H00: PCI SLOT ? See User Manual	No	The controller board is not communicating with a PCI card. This could indicate a bad PCI card, poor connection, or problem in the PCI bus.	Contact your authorized service representative.[1]
H01: PCI J12 See User Manual	No	The controller board is not communicating with the PCI card in PCI slot J12. This could indicate a bad PCI card, poor connection, or problem in the PCI bus.	Contact your authorized service representative.[1]
H02: PCI J13 See User Manual	No	The controller board is not communicating with the PCI card in PCI slot J13. This could indicate a bad PCI card, poor connection, or problem in the PCI bus.	Contact your authorized service representative.[1]
<Online, etc...> Half Speed Mode	No	Status message: The controller samples the operating temperature of key components of the print mechanism. When higher than normal temperatures are sensed, the print speed is automatically reduced by 50% and the message sent the LCD. When the components cool down, the print speed returns to 100% and the message clears.	No action is required. If the message appears often, contact your authorized service representative.[1]
HAM. COIL OPEN*	No	Hammer Coil Open. Electrical malfunction of one or more hammer coils.	Contact your authorized service representative.[1]
HAMMER SHORT* See User Manual	No	Electrical malfunction of one or more hammer coils.	Contact your authorized service representative.[1]
INTAKE FAN FAULT	Yes	Sensors cannot detect current in fan circuit.	Cycle power. If the message appears, press CLEAR. If the message does not clear, contact your authorized service representative.[1]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
INTERRUPT UNUSED VECTOR 00	No	The controller board receives an interrupt it does not understand. The problem can be created by electrical noise, by a software problem, or by a hardware problem.	Cycle power. If this message occurred once and never again, you can ignore it. If the message reappears or appears consistently, contact your authorized service representative.[1]
INVALID ACTIVATE	No	Printer detects a twinax protocol communication error.	Contact your authorized service representative.[1]
INVALID COMMAND	No	Printer detects a twinax protocol communication error and reports the error.	Contact your authorized service representative.[1]
LOADING PROGRAM FROM PORT XX%	No	Status message: the new emulation program is loading into printer RAM. XX% indicates how much of the program has loaded.	No action is required.
LOADING PROGRAM INTO FLASH	No	The printer has deleted the previous program from flash memory and is loading the new program into flash memory.	No action is required.
NEW SPX DETECTED PRESS ENTER	No	The printer detects an SPX installed at the debug port and the SPX is valid for the printer.	Contact your authorized service representative.[1]
NON VOLATILE MEMORY FAILED	No	Large emulations reduce the amount of space available for saving configurations, which means that sometimes fewer than eight configurations can be saved.	Contact your authorized service representative.[1]
ON LINE	N/A	Printer state message: printer is online and in communication with host.	No action is required.
ONLINE 28 CU NOT ENAB	Yes	Controller Unit Not Enabled. Poll time-out error. The printer was not polled for one minute across a 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]

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
ONLINE CU TIMED OUT	Yes	Controller Unit Timed Out. The printer was not enabled for one minute or more on a coax interface.	Check cable connection and host system.
PARAMETER ERROR*	No	Illegal parameter value received in command code over a coax/twinax interface.	Contact your system administrator.
PLEASE WAIT... RESET IN PROGRESS	N/A	Status message: the printer finished loading the program into flash memory and is automatically resetting itself.	No action is required.
PRINTER UNDER REMOTE CONTROL	No	Status message: The printer is under the control of PrintNet Enterprise (PNE) remote management software.	No action is required.
QUEUE OVERRUN	No	In CT twinax emulation, the print buffer has overflowed.	Contact your authorized service representative.[1]
REMOVE USED SPX THEN PRESS ENTER	No	Status message: An SPX is depleted because it has successfully reprogrammed the security key on the controller board.	Contact your authorized service representative.[1]
RESTORING BOOT CODE	No	Normal download initialization message.	No action is required.
SCS COMMAND ERROR*	No	In the CT emulation, the printer received undefined control character (hex 40).	Contact your system administrator.
SECURITY 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]
SECURITY KEY NOT DETECTED	No	The security key is not present or has failed.	Contact your authorized service representative.[1]
SENDING PROGRAM TO EC PROCESSOR	No	Status message: the printer is loading the engine controller program into the engine controller.	No action is required.
SF ERROR	No	Structured Field Error. Application software has violated structured data field parameters.	Not a printer problem. Have the system administrator correct applications data or configuration.

Table 10. LCD Message Troubleshooting Table

Displayed Message	Can User Correct?	Explanation	Solution
SHUTTLE STALL	Yes	The shuttle is not moving. See "415:SHUTTLE JAM" on page 136.	Set the platen lever to match the thickness of paper, but not too tightly. Check and adjust the platen gap. Inspect the ribbon mask for deformation that snags and interferes with shuttle movement. If fault source is not apparent, contact your authorized service representative.[1]
SPX FOUND, ERROR: KEY NOT DETECTED	No	The controller board does not have a security key.	Contact your authorized service representative.[1]
SPX NOT NEEDED OPTIONS ENABLED	No	The user has attempted to use the SPX to turn on printer options that are already enabled.	Contact your authorized service representative.[1]
TCP PORT BUSY	Yes	Error message reported by the Printer Manager when ethernet interface option is installed. The network address given in the printer properties was reached, but the printer port is busy.	Refer to the *Printronix P7000 Maintenance Manual*.
WAITING FOR ETHERNET ADAPTER	N/A	Status message: Appears when the printer is first powered on if the optional Network Interface Card is installed.	No action is required.

[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.

A *Printer Specifications*

Ribbon Cartridge Specifications

P/N	Europe	North America	South America	M.E. & Asia	China & India
255048 Ext Life ASCII	(-401) 4 Pack	(-402) 4-Pack	(-403) 4-Pack	(-403) 4-Pack	(-404) 4-Pack
255049 Std Life ASCII	(-401) 4 Pack (-101) Single	(-402) 4-Pack (-102) Single	(-403) 4-Pack (-103) Single	(-403) 4-Pack (-103) Single	(-404) 4-Pack (-104) Single
255050 Ext Life HD/HANZI	(-401) 4 Pack	(-402) 4-Pack	(-403) 4-Pack	(-403) 4-Pack	(-404) 4-Pack
255041 Std life HD/ HANZI	N/A	N/A	(-103) Single	(-403) 4-Pack (-103) Single	(-404) 4-Pack (-104) Single

Paper Specifications

Type: Edge-perforated, fan-fold, 3 to 17 inches (7.62 to 43.18 cm) wide, 2 to 12 inches (5.08 to 30.48 cm) long.

SureStak Power Stacker option works with forms 5 to 12 inches (12.7 to 30.48 cm) long and up to 16 inches (41 cm) wide without the paper tent or 15.5 inches (39.5 cm) wide with the paper tent installed.

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.

> **NOTE:** A 16 inch rear door is needed for the cabinet model. 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)

Printer Weight And Dimensions

Cabinet Type	Dimensions			Weight	
	Height	**Width**	**Depth**	**Unpacked**	**Packaged**
Floor Cabinet	42.5 inches	27 inches	29 inches*	225 lbs.	285 lbs.*
Pedestal	35 inches**	26 inches	21 inches	105 lbs.**	115 lbs.**

* With a power stacker, the weight increases by 21 lbs. and the depth increases by 4.75 inches for a deeper rear door.

** With the ZTP option, the weight increases by 12 lbs. and the height is increased by 7 inches.

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)

Acoustic Noise Level

Acoustic Noise Levels per ISO 9296	Cabinet Models	Pedestal Models
Printing	50 dB (200 lpm) 52 dB (300 lpm) 55 dB (600/800 lpm)	65 dB 65 dB NA
	6.8 Bel	8.0 Bel
Standby	48 dB	50 dB
	6.3 Bel	6.5 Bel

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.

Electrical Characteristics

Input Voltage

	Voltage (+/-10%)	Freq (+/-10%)	Amps	Watts	BTU/Hr
P7003H P7003HZT	AC 100-120V	50/60 Hz	3.5	300	1025
	AC 200-240V	50/60 Hz	1.6	300	1025
P7006H P7006HZT	AC 100-120V	50/60 Hz	4.5	430	1469
	AC 200-240V	50/60 Hz	1.9	430	1469
P7008H	AC 100-120V	50/60 Hz	5.5	540	1844
	AC 200-240V	50/60 Hz	2.1	540	1844
P7203H	AC 100-120V	50/60 Hz	3.5	350	1195
	AC 200-240V	50/60 Hz	1.6	350	1195
P7206H	AC 100-120V	50/60 Hz	5	460	1571
	AC 200-240V	50/60 Hz	2	460	1571
P7208H	AC 100-120V	50/60 Hz	5.5	540	1844
	AC 200-240V	50/60 Hz	2.1	540	1844

Power Consumption

Operating Mode	Units	Power Consumption		
		200 LPM	300 LPM	600/800 LPM
Standby[1]	Watts	30 (60)	45 (80)	85
	BTU/Hour	100 (205)	154 (273)	289
Nominal[2]	Watts	220	310	450
	BTU/Hour	750	1058	1531
Maximum[3]	Watts	315	440	650 - 900
	BTU/Hour	1075	1500	2211 - 3062

[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.

Interfaces

Type: Standard: IEEE 1284 Parallel, RS-232 serial

                Optional: Ethernet 10/100Base-T,
                                   RS-422 serial (not available in Taiwan)

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

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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.

B *ASCII Character Set*

KEY

BITS B7 B6 B5		
B4 B3 B2 B1	0 0	1
1 0 1 1 ESC	33 — OCTAL equivalent 27 — DECIMAL equivalent 1B — HEX equivalent	

— ASCII Character Name

Each cell below shows: **Character** with OCTAL / DECIMAL / HEX equivalents.

BITS B4 B3 B2 B1 / ROW	COLUMN 0 (000)	1 (001)	2 (010)	3 (011)	4 (100)	5 (101)	6 (110)	7 (111)
0000 / 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
0001 / 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
0010 / 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
0011 / 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
0100 / 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
0101 / 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
0110 / 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
0111 / 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
1000 / 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
1001 / 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
1010 / 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
1011 / 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
1100 / 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
1101 / 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
1110 / 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
1111 / 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

Appendix B

C *Zero Tear Pedestal*

Overview

The P7000 Zero Tear Pedestal (ZTP) printer can print a form and present it for tear off without losing a form between print jobs. The printer automatically presents the current print line to the tear bar when it finishes printing and no data are being sent to the printer. When it receives more data from the host computer, the printer pulls the form down to the print station and resumes printing.

The ZT printer is available:

- as a 200 lpm, 300 lpm, and 600 lpm H-Series (DBCS) printer
- with HD printers.

Position The Paper Input And Adjust The Paper Guides

Outer Paper
Guide Leaf (2)   Center Paper
                   Guide Leaf

Front Paper
Guide Leaf (3)
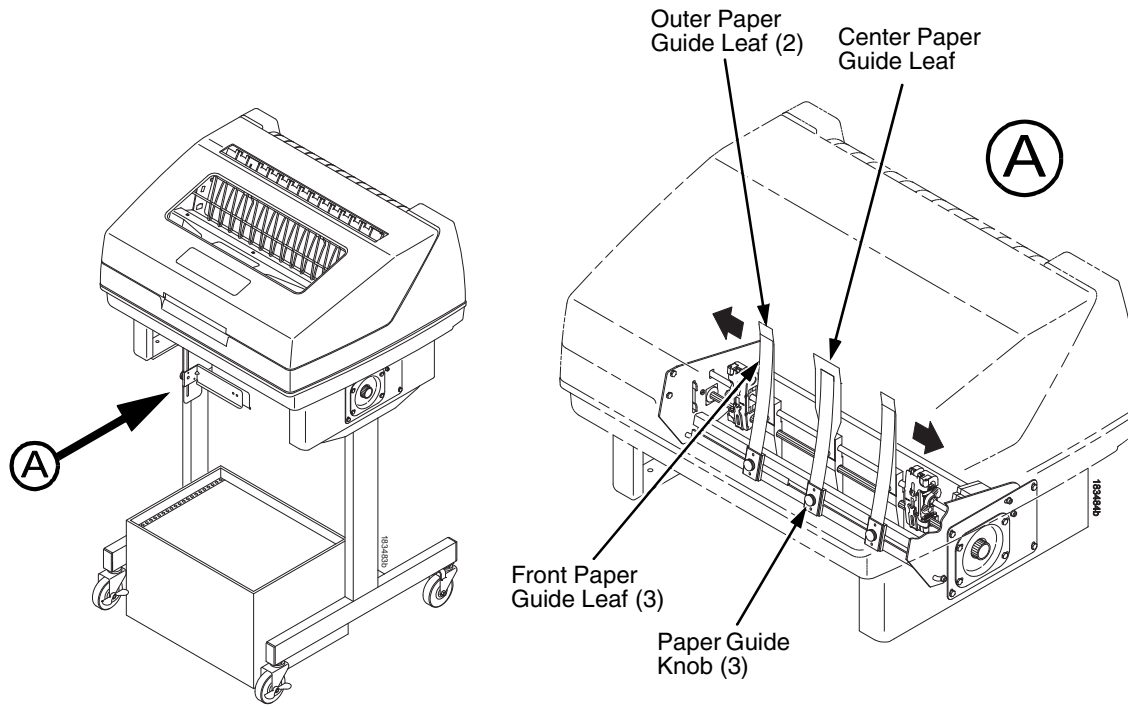
Paper Guide
Knob (3)

Figure 28. Adjusting The Paper Guides

NOTE: Ensure that the paper guides are not damaged.

1.   Remove the left paper guide knob and the left, front paper guide leaf.
     (See Figure 28.)

2.   Remove the right paper guide knob and the right, front paper guide leaf.

3.   Remove the center paper guide knob and the center, front paper guide
     leaf.
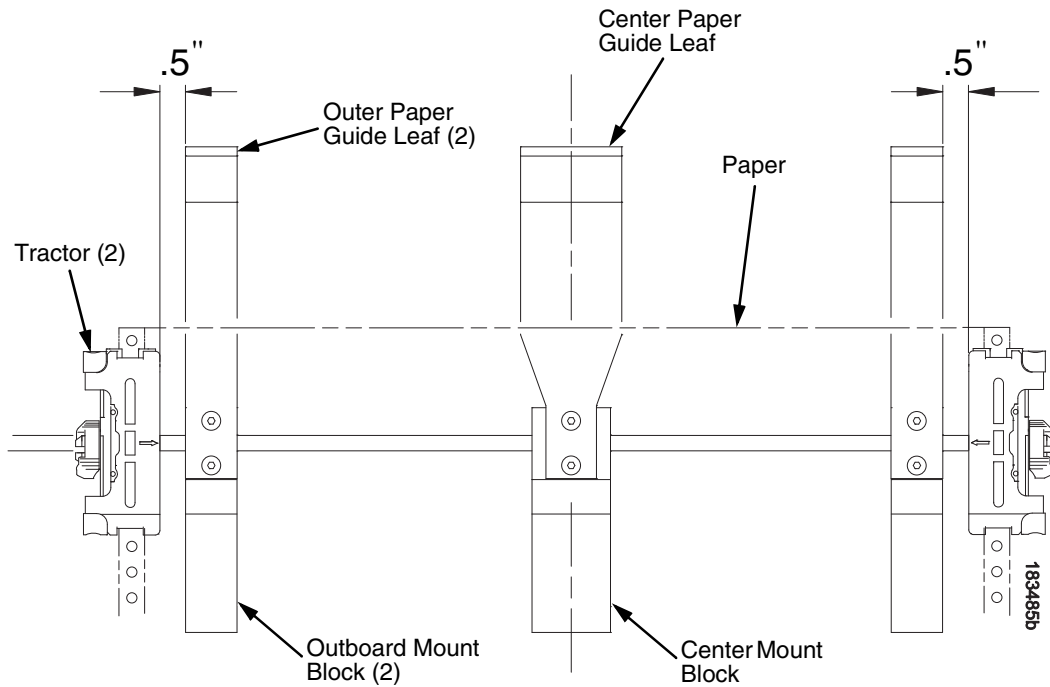
Figure 29. Adjusting Paper Guide Leaves

4. Slide the left outboard mount block so that the left outer paper guide leaf is .5 inches from the left tractor. (See Figure 29).

5. Slide the right outboard mount block so that the right outer paper guide leaf is .5 inches from the right tractor.

6. Slide the center mount block so that the center paper guide leaf is centered between the left and right outer paper guide leaves.

7. Install the paper guide knobs and front paper guide leaves. (See Figure 28.)

Load Paper
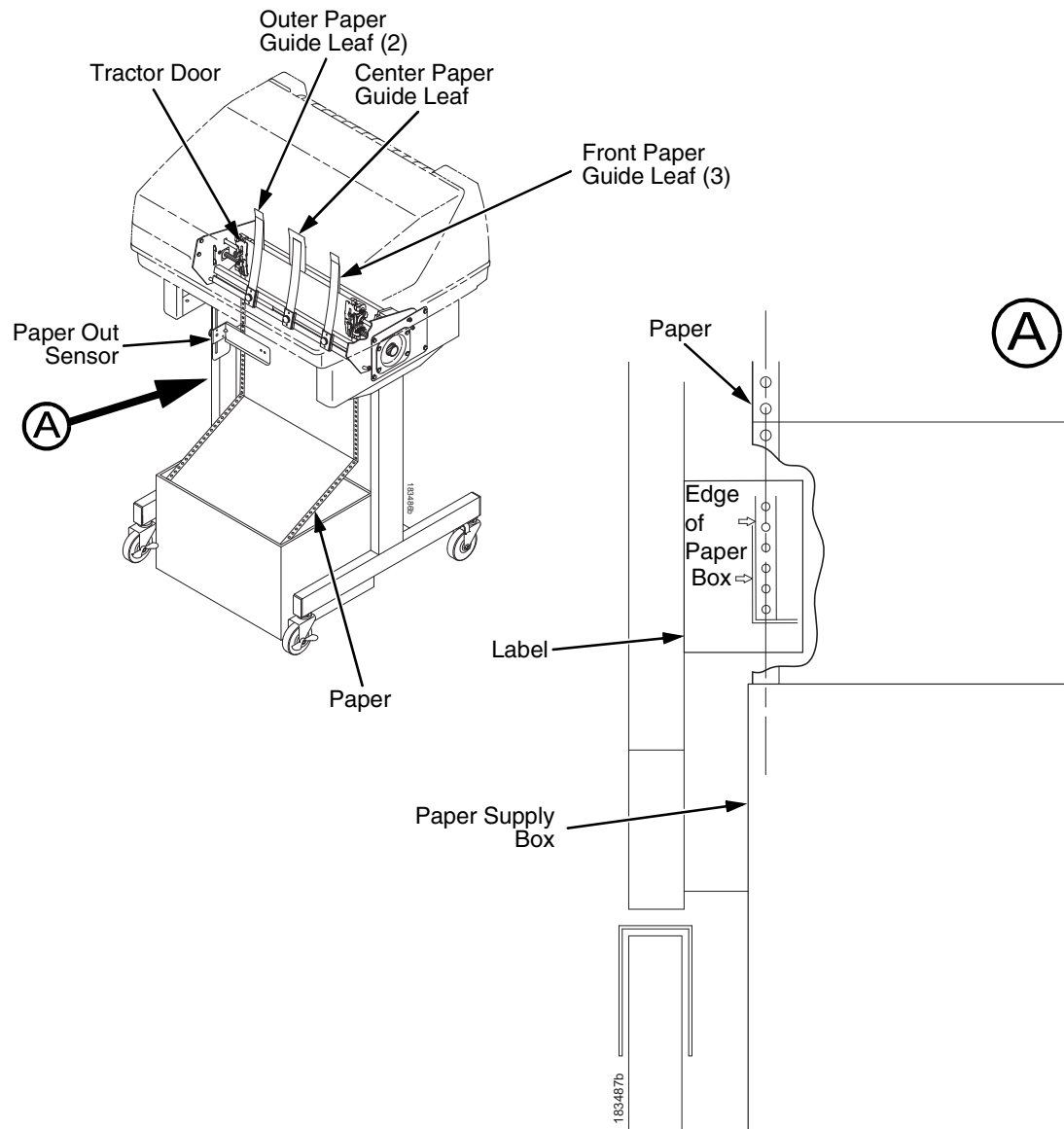
Figure 30. Loading Paper Onto The Printer

1. Align the paper supply box with the label on the bottom left side of the modesty panel. (See Figure 30 on page 180.)

2. Unlock and open the tractor doors and slide the paper from below, through the black paper out sensor slot on the left side, and up between all front and rear paper guides.

3. Load the paper on the left tractor sprockets and close the tractor door.

4. Load the paper onto the right tractor sprockets and close the tractor door.
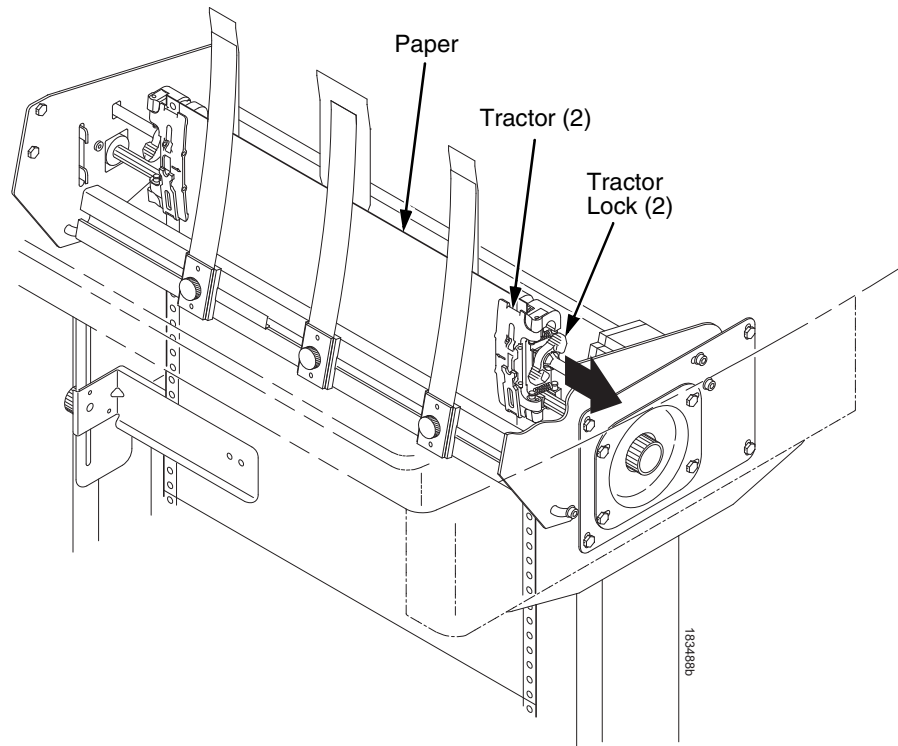
Figure 31. Adjusting the Horizontal Paper Tension

5. Adjust the paper web tightness by sliding the right tractor to remove slack or to adjust for various paper widths. (See Figure 31.)

6. Lock the tractors in position by pressing down on the tractor locks.
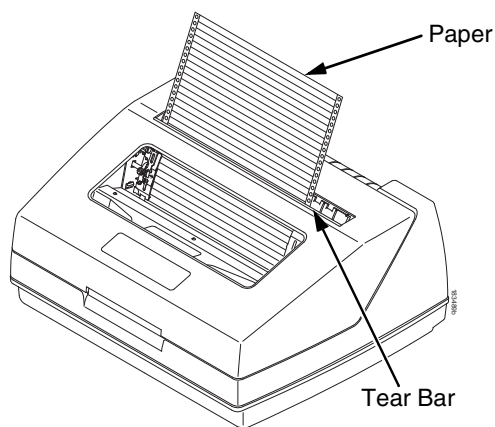
Figure 32. Paper Exiting the Top of the Printer

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Position The Paper Out Sensor
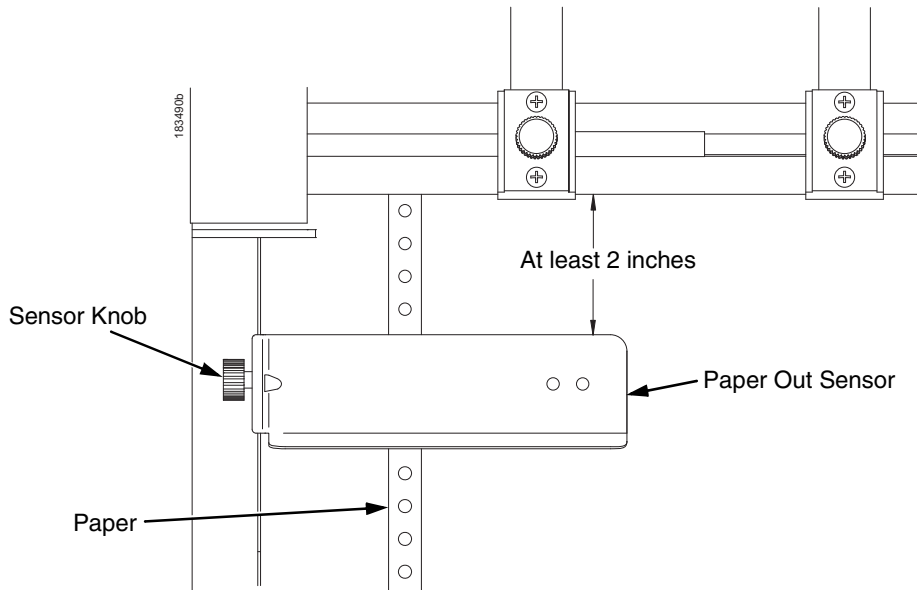
Figure 33. The Paper Out Sensor

The paper out sensor indicates when the printer runs out of paper. (The sensor does not work with black backed forms.) Unlike the standard pedestal printer, the ZT printer requires you to load the paper through the paper out sensor slot (Figure 30 and Figure 33). Correct positioning of the paper out sensor ensures that the last form the printer prints will be properly presented to the tear bar. To position the paper out sensor, do the following:

1. Position the paper properly at the tear bar (page 184).

2. Loosen the paper out sensor by turning the sensor knob counterclockwise.

3. Position the paper out sensor so that there are at least 2 inches between the bottom of the aluminum extrusion bar and the top of the paper out sensor.

IMPORTANT   **For optimal performance, 2 inches is recommended for 11 inch forms. For shorter forms, position the paper out sensor so that there are at least 2 inches between a perforation and the top of the paper out sensor.**

4. Tighten the paper out sensor by turning the sensor knobs clockwise.

5. Press **ONLINE/CLEAR**. When the first print job is sent to the printer, the paper is drawn into the printer, the top of form aligns with the print station, and the print job begins.

Set The Tear Bar Distance

To set the tear bar distance, do the following steps:

1. Make sure the printer is offline.

2. Press **ENTER** key to enter the menu.

3. Press the right arrow ▷ until "OFFLINE/ZTP Menu" displays.

4. Press the down arrow ▽. "ZTP Data Time" displays.

5. Press the right arrow ▷ until "ZTP TearDistance" displays.

6. Press the down arrow ▽. "ZTP TearDistance/xx/144 Inch" displays.

7. Press the left arrow ◁ or right arrow ▷ to decrease or increase the tear bar distance in increments of 1/144th of an inch.

8. Press **ENTER** to select the desired value. An asterisk appears next the selected value and a scale prints to indicate the tear bar distance in relation to the tear bar. For correct tear bar distance, the zero should align with the tear bar. See Figure 34.
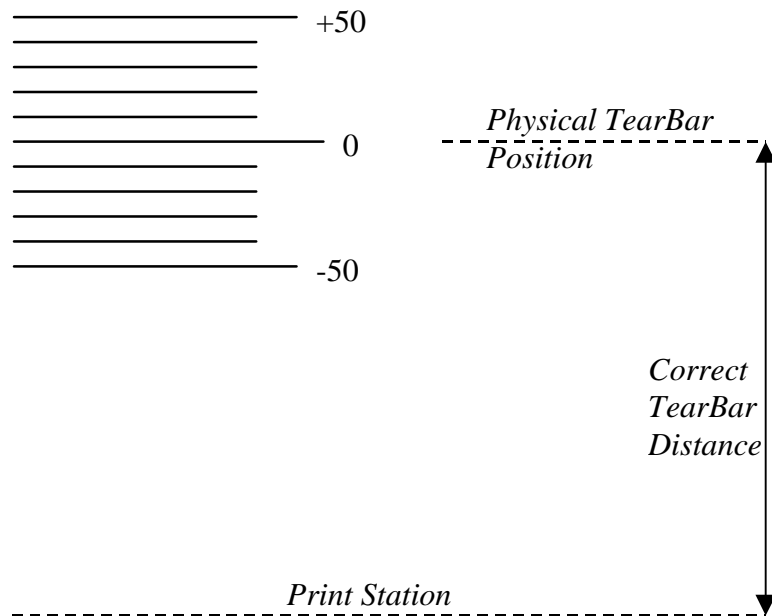
Figure 34. Correct Tear Bar Distance

NOTE: When a new ZTP Tear Bar Dist value is selected, the printer will lose the current print position until you reset the top of form to automatically save the new value.

9. Reset the top of form using the procedure on page 184.

Set The Top Of Form
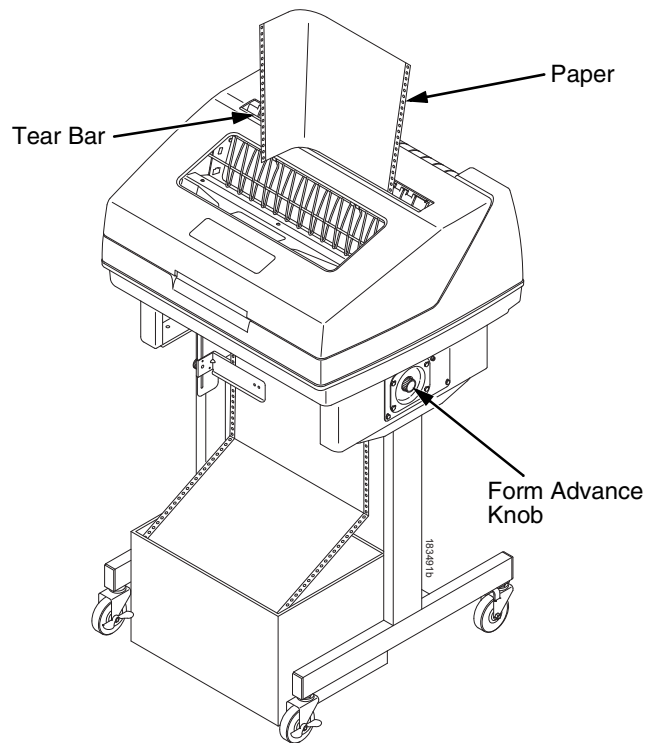
Figure 35. Setting The Tear Off Position

The ZT printer uses the tear bar as the reference point for setting the tear off position. To set the position of the forms perforation to the tear bar, use the **SET TOF** button as follows:

1. Make sure the paper guides are adjusted correctly and the paper is properly loaded.

2. Press the **SET TOF** button on the control panel. The printer display will read "Align at TearBar/Then Press TOF".

3. Use the form advance knob to move the top of the form to the tear off bar.

4. Position the perforation so it aligns with the tear off bar.

NOTE: This is easily done by advancing one complete sheet above the tear off bar and folding it over at the perforation.

5. Position the fold exactly at the tear bar.

6. Tear the sheet off to ensure proper positioning.

NOTE: If you do not want to lose a form, position the top of the form at the tear bar. Run a finger along the back of the form along the tear bar to ensure the perforation is presented at the tear off point.

7. Press the **SET TOF** button again. The printer display will read "Top Of Form Set/Press ONLINE". The printer will then be brought OFFLINE and the top of form will be set.

8. Press the **ONLINE/CLEAR** key to bring the printer online.

ZTP SETTINGS Menu

The ZTP SETTINGS menu includes the ability to enable and disable features unique to the Zero Tear printer (ZTP), set the tear bar distance, set the auto present data time, and set the auto present wait time. This section defines these options.

* = Factory Default
[1] Available for Zero Tear Pedestal printers only.

```
┌──────────────┐
│     ZTP      │
│  SETTINGS 1  │
│ (from page 52)│
└──────────────┘
       │
   ┌───┴────┬──────────┬──────────┬──────────┐
┌──────┐ ┌──────────┐ ┌────────┐ ┌──────────┐ ┌───────────┐
│ ZTP  │ │   ZTP    │ │  ZTP   │ │   ZTP    │ │   ZTP     │
│Function│ │TearDistance│ │Data Time│ │Wait Time │ │Platen Open│
└──────┘ └──────────┘ └────────┘ └──────────┘ └───────────┘
```

ZTP Function	ZTP TearDistance	ZTP Data Time	ZTP Wait Time	ZTP Platen Open
Enable*	1060/144 Inch*	.5 Sec*	2 Sec*	Enable*
Disable		1.0 - 15.0 Sec	3 - 10 Sec	Disable
			1 Sec	
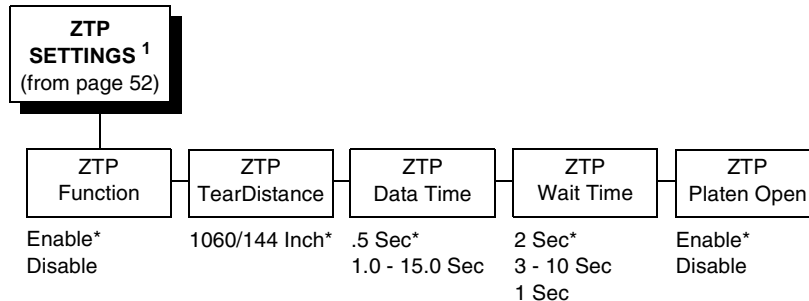
ZTP Function

This option enables or disables all unique ZTP functions. The default is Enable.

NOTE: When the ZTP Function is enabled, the View/Eject key is disabled and Slow Paper Slew is enabled.

ZTP TearDistance

This option sets the tear off distance from the current print position to the tear bar. Adjustable values in increments of 1/144th of an inch range from 200 to 2880. The up and down arrows adjust the display value. When you press the **Enter** key, the selected value is stored and a scale is printed to indicate the current tear off position. The default value is 1060.

NOTE: When a new value is selected, the printer will lose the current print position. You must reset the top of form to automatically save the new value.

ZTP Data Time

This option sets the pause time in the data stream that the ZTP requires before moving the form to the tear bar once a print job is completed. The values range from .5 to 15 seconds. The default is .5 seconds.

ZTP Wait Time

This option sets the minimum amount of time that the form stays at the tear bar. This allows you time to remove the form before the form is retracted to print the next form. The adjustable values range from 1 to 10 seconds in increments of 1 second. The default value is 2 seconds.

ZTP Platen Open

This option allows the user to have the platen open whenever forms are reversed. Enabled is the default, used for most papers and labels. The feature can be disabled as required by some multi-part forms.

Performance Limitations

Forms Type

The paper feed tractors on the ZT printer push the paper up through the print station instead of pulling it through, as in the standard pedestal printer. This limits the variety of forms the ZT printer can use. If the forms do not fall within the range specified in Table 11, dot compression and line separation may occur. The user should match the media to the application to ensure acceptable print quality. Also, because paper is pushed from below the print station, the last form in the tractors may not print fully or may not be presented to the printer exit for retrieval.

All paper used in the ZT printer requires standard half inch spaced tractor feed holes. Cut sheet and continuous friction fed paper is not supported. The forms specified in Table 11 can have no more than one form per page horizontally.

Table 11. Forms Type

Description	Length	Width (edge to edge)
One to three part, continuous, with carbon, fan-folded, edge-perforated paper forms	3 to 12 inches	7 to 16.5 inches
One to four part, continuous, with carbon, fan-folded, edge-perforated paper forms	3 to 12 inches	7 to 12 inches
One to four part, continuous, carbonless, fan-folded, edge-perforated paper forms	3 to 12 inches	7 to 16.5 inches
One to six part, continuous, carbonless, fan-folded, edge-perforated paper forms	3 to 12 inches	7 to 12 inches
Forms with a paper weight of 20 to 100 pounds and a maximum thickness of 0.025 inches	3 to 12 inches	7 to 16.5 inches
Forms with a paper weight of 18 to 100 pounds and a maximum thickness of 0.025 inches	3 to 12 inches	7 to 12 inches
Forms with all approved types of interleaf edge attachment except those using metallic or other hard devices		

NOTE: If you use forms outside these limits, the print quality may not be optimum, the printer may lose top-of-form, or the frequency of paper jams will increase.

Paper Jams

Printer jams can occur if you tear off the form incorrectly. If you experience two or more paper jams per box of forms, follow these guidelines to help reduce jams:

• Position the lower paper guides properly

• Align the paper web tightness properly

• Position the form perforation against the tear bar

• Time the tear, while the paper is not moving

• Direct the tear force toward the user and across the tear bar, not upward.

To Clear Paper Jams

1. Raise the platen lever to open the platen.

2. Open the left and right tractor doors.

3. Pull the paper upward through the top of the printer.

NOTE: DO NOT pull the paper downwards from the bottom. This could cause the paper guides to bend.

4. Reload the paper (see page 180).

D *Customer Support*

Printronix Customer Support Center

IMPORTANT **Please have the following information available prior to calling the Printronix Customer Support Center:**

- Model number
- Serial number (located on the back of the printer)
- Installed options (i.e., interface and host type if applicable to the problem)
- Configuration printout:

  Line Matrix Printer
  Press PRT CONFIG on the control panel, then press Enter.

- Is the problem with a new install or an existing printer?
- Description of the problem (be specific)
- Good and bad samples that clearly show the problem (faxing or emailing of these samples may be required)

Americas	(714) 368-2686
Europe, Middle East, and Africa	(31) 24 6489 311
Asia Pacific	(65) 6548 4114
China	(86) 800-999-6836

http://www.printronix.com/support.aspx

Printronix Supplies Department

Contact the Printronix Supplies Department for genuine Printronix supplies.

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Europe, Middle East, and Africa	33 (0) 1 46 25 19 07
Asia Pacific	(65) 6548 4116 or (65) 6548 4182
China	(86) 400-886-5598
India	(800) 102-7869

http://www.printronix.com/supplies-parts.aspx

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6546 AS Nijmegen
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Changi South Industrial Estate
Singapore 486763
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Fax: (86-21) 5138 0564

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E Communication Notices

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Note!

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Communication Statements

Federal Communications Commission (FCC) Statement

This equpment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Fules. These limits are designed to provide 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 instructions, 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 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 Fules. 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.

European Union (EU) Conformity Statement

CE   Hereby, Printronix declares that this product is in compliance with the essential requirements and other relevent provisions of Directive 1999/5/EC.

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.

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 devices.

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.

Properly shielded and grounded cables and connectors must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Printronix cannot accept responsibility for any interference caused by using other than recommended cables and connectors.

Industry Canada Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A conform á la norme NMB-003 du Canada.

Statement of CISPR 22 Compliance

Attention: 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.

Japanese VCCI Class A

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German Conformity Statement

Handbuchtexte: FCC class A entspricht: EMVG Klasse A

Text Für alle in Deutschland vertriebenen EN 55022 Klasse A Geräte:

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 18. September 1998 (bzw. der EMC EG Richtlinie 89/336):

Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die:
Printronix GmbH
Goethering 56
D-63067 Offenbach Germany

Informationen in Hinsicht EMVG Paragraph 4 Abs. (1) 4:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden: "Warnung: 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 aufzukommen."

EN 55024 Hinweis:
Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 55024 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu öergrvßern.

Anmerkung:
Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Printronix Handbüchern angegeben, zu installieren und zu betreiben.

China

Declaration:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical actions.

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。

Altitude and Non-Tropical Climate Statement

仅适用于海拔 2000m 一下地区安全使用

仅适用于非热带气候条件下安全使用

Taiwan

Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user will 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。

CAUTION:

This product is equipped with a 3-wire power cord and plug for the user's safety. Use this power cord in conjunction with a properly grounded electrical outlet to avoid electrical shock.

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