

***The Xerox
DocuPrint 4508
Desktop Laser Printer***

User Guide

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Notice

Specifications described in this publication are subject to change without notice. Use of some features may be limited by your hardware or software configuration. Contact your dealer, Xerox, or Rank Xerox for details.

Table of Contents

Chapter 1	Overview of the Printer	1-1
	Overview of the Printer Features	1-3
Chapter 2	Setting Up the Printer	2-1
	Overview	2-2
	Printer Set-up	2-3
	Unpacking the Printer	2-4
	Installing Components	2-6
	Testing the Printer	2-10
	Installing Software	2-11
	Testing the Connection	2-12
Chapter 3	Using the Front Control Panel	3-1
	Overview	3-2
	Front Panel Key and LED Functions	3-3
	Resetting the Printer	3-6
	Printing the Self Test Pages	3-6
Chapter 4	Printing Documents	4-1
	Overview	4-2

	<i>Using the Paper Tray</i>	4-2
	<i>Adjusting and Loading the Paper Tray</i>	4-6
	<i>Using Manual Feed</i>	4-7
Chapter 5	<i>Using Software Tools</i>	5-1
	<i>Status Monitor and Remote Control Panel (RCP)</i>	5-2
	<i>The Status Monitor</i>	5-3
	<i>The Remote Control Panel (RCP)</i>	5-4
Chapter 6	<i>Troubleshooting</i>	6-1
	<i>Overview</i>	6-2
	<i>Front Panel LED Messages</i>	6-2
	<i>Remote Control Panel and Status Monitor Messages</i>	6-4
	<i>Clearing Paper Jams</i>	6-8
	<i>Solving Print Quality Problems</i>	6-13
Chapter 7	<i>Maintenance</i>	7-1
	<i>Overview</i>	7-2
	<i>Printer Cartridge</i>	7-2
	<i>Adjusting the Print Density</i>	7-4
	<i>Cleaning the Printer</i>	7-5
Chapter 8	<i>Fonts</i>	8-1
	<i>Definition of Fonts</i>	8-2
	<i>Internal and Soft Fonts</i>	8-4
	<i>Selecting Fonts</i>	8-5
Appendix A	<i>Printer Commands</i>	A-1
	<i>PCL Printer Commands</i>	A-2
	<i>HP-GL/2 Printer Commands</i>	A-14
	<i>PJL Commands</i>	A-17
Appendix B	<i>Options Installation</i>	B-1
	<i>RS232C Serial Interface Option Installation</i>	B-2

<i>SIMM Memory Module Installation</i>	<i>B-6</i>
<i>250-Sheet Lower Base Installation</i>	<i>B-9</i>
Appendix C <i>Ordering Information</i>	<i>C-1</i>
Appendix D <i>Print Media Specifications</i>	<i>D-1</i>
<i>Paper and Envelope Sizes Supported</i>	<i>D-2</i>
<i>Paper Specifications</i>	<i>D-3</i>
<i>Envelope Specifications</i>	<i>D-3</i>
<i>Adhesive Label Specifications</i>	<i>D-4</i>
Appendix E <i>Printer Technical Specifications</i>	<i>E-1</i>
Appendix F <i>Environmental Specifications</i>	<i>F-1</i>
Appendix G <i>Glossary</i>	<i>G-1</i>
Index	<i>IX-1</i>



Chapter 1

Overview of the Printer

Overview of the Printer Features 1-3

Engine, Resolution and Speed

- 600 x 600 dpi (dots per inch) printing resolution
- 8 ppm (pages per minute) print speed
- Up to 6000 sheets printing for one Printer Cartridge (5% coverage)
- EconoMode to extend the Printer Cartridge life even further
- Recyclable printer cartridge for environmental protection
- Power Save mode/Energy Star
- Compact Size

Paper Handling

- Universal 250 sheet paper cassette (upgradeable to 500 with paper tray option) which accommodates variable sizes of paper, including: A4, Letter, Executive, B5, Folio and Legal paper
- Top output tray with a 125 sheet capacity (face down)
- Manual feed slot (single sheet bypass)
- Straight through paper path for transparencies, labels, etc.
- Custom media supports for labels, envelopes and post cards.

Computer Interfaces

- IEEE P-1284 compatible (bi-directional) parallel interface (Nibble, Byte and ECP)
- An optional serial interface, maximum 115200 bps (bits per second), XON/XOFF & DTR handshaking
- Automatic interface switching if serial interface is installed.

Overview of the Printer Features

Memory

- 2MB base memory which is expandable to 34MB
- Various sizes of expansion SIMM memory to increase printer efficiency and to provide capacity to print a complex page: 2MB, 4MB, 16MB, 32MB

Languages

Enhanced PCL 5e Interpreter for DOS, OS/2 and Windows users

EconoMode

To reduce your printing costs by conserving toner when you print drafts, proofs, and internal correspondence, there are four EconoModes: 1/2, 1/4, 1/6, 1/8. This feature can be selected using the Remote Control Panel on your PC. For more information, refer to *"The Remote Control Panel (RCP)"* in *Chapter 5: Using Software Tools*.

Power Save

To reduce your printing costs by reducing power consumption when printer is not active for a period of time, there are five time intervals you can choose using the Remote Control Panel.

Software Tools

Remote Control Panel (RCP) and Status Monitor (SM) features enable you to send commands to your printer from your PC, and to view printer status and help messages on your computer's screen.

Enhanced PCL 5e

Printer language features software compatibility with all previous PCL Emulations, faster printing performance, built-in type scaling technology to allow you to create thousands of fonts, built-in HP-GL/2 vector graphics (which handles Bezier curves and other complex graphics), and enhanced page formatting features.

Bi-Tronics Parallel Interface

Parallel interface for high speed two-way communication between the printer and the host computer enables you to change printer settings and view printer status messages on your computer's screen.

45 Scalable Typefaces

A versatile library of fonts is resident in the printer. This ensures a professional image for reports, memos, spreadsheets, letters, advertising literature and announcements. You can scale these typefaces from 0.25 point to 999.75 points, depending on the capabilities of your software.

Extended Fonts

110 additional fonts are available on disk, supplied with the printer.

Chapter 2

Setting Up the Printer

Overview	2-2
Printer Set-up	2-3
Physical Location	2-3
Environment	2-4
Safety Precautions	2-4
Unpacking the Printer	2-4
Installing Components	2-6
Printer Cartridge	2-6
Paper Tray	2-8
Interface Cable	2-9
Power Cord	2-9
Testing the Printer	2-10
Installing Software	2-11
Windows Setup	2-11
DOS Setup	2-11
OS/2 Setup	2-12
Testing the Connection	2-12

Overview

In this chapter, you will learn how to install the printer. You will also learn how to handle the Printer Cartridge and paper tray.

Please read and perform all the steps in this chapter before you attempt to configure and operate your printer.

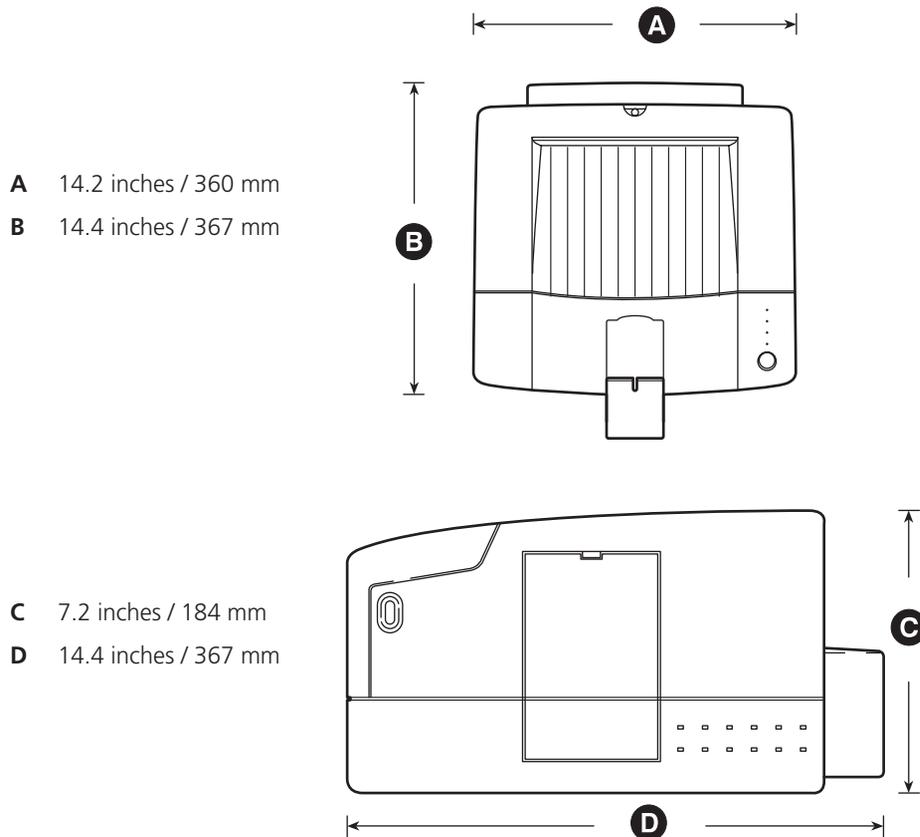
Printer Set-up

Physical Location

The printer should be installed on a smooth and flat surface. There should be enough clearance around the printer to allow air circulation around the vents to prevent the printer from overheating, and also allow you to easily:

- Open the top door.
- Open the rear door to remove any jammed paper.
- Retrieve paper from the rear face up output.

Figure 2.1 Printer dimensions



Environment

Place the printer in a well-ventilated room where:

- Room temperature is 50° to 91°F (10° to 32.8°C).
- Relative humidity is 20% to 80% with no condensation.
- There are no abrupt temperature or humidity changes.
- There is no exposure to direct sunlight, chemicals or vibration.

Safety Precautions

- Keep the printer away from water.
- Do not place any objects on top of the printer.

Unpacking the Printer

1 Set the box on a sturdy, flat, smooth surface. Remove the “Open Me First” envelope from the box.

2 Remove the User Guide, Power Cord, and Diskettes.

3 Remove the printer from its box.



Do not attempt to remove the printer by lifting it using the packaging material. Place one hand under the front of the printer and one hand under the back of the printer and lift the printer out along with the packaging material.

4 Remove the outer packing material from the printer.

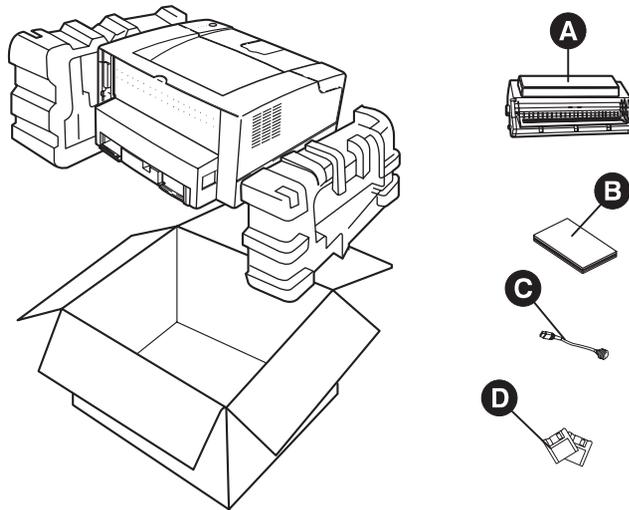
5 Remove the tape at the front side of the printer.

Check the package contents. If any of the following package contents are missing or damaged, contact your dealer, distributor, Rank Xerox, or Xerox.

- User Guide
- Power Cord
- Diskettes
- Printer Cartridge

Figure 2.2 Shipping contents

- A** Printer Cartridge
- B** User Guide
- C** Power Cord
- D** Diskettes



Installing Components

Printer Cartridge

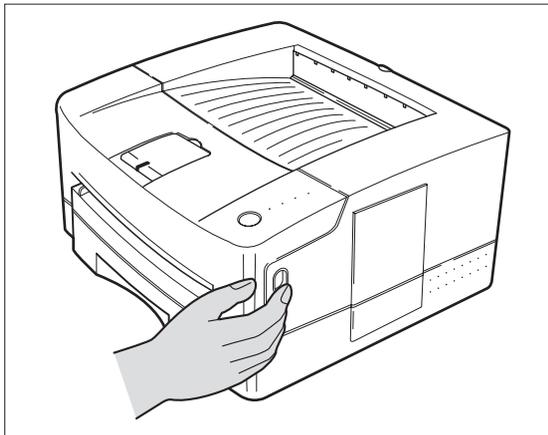
The protective materials from the Printer Cartridge must be removed before you actually begin to print. Remove the Printer Cartridge from the printer. (In some configurations, the Printer Cartridge will be packaged separately). Remove the protective materials (sponge, vinyl sheet, label tape, and plastic strip), shake it several times and slide it back into the printer.



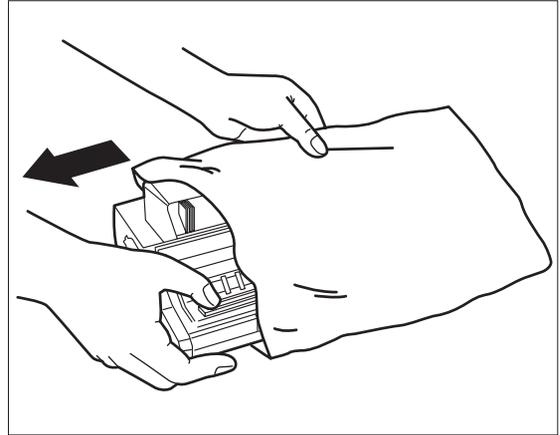
Caution

Always grasp the Printer Cartridge from the top center in order to avoid obstruction of photoreceptor shutter mechanism.

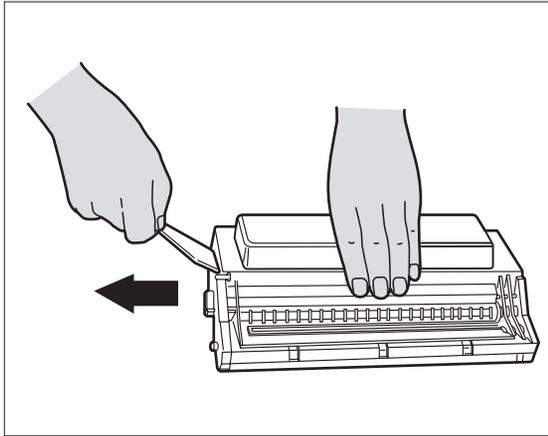
Never expose the Printer Cartridge to direct sunlight.



- 1** Press the top door release button to open the top door.

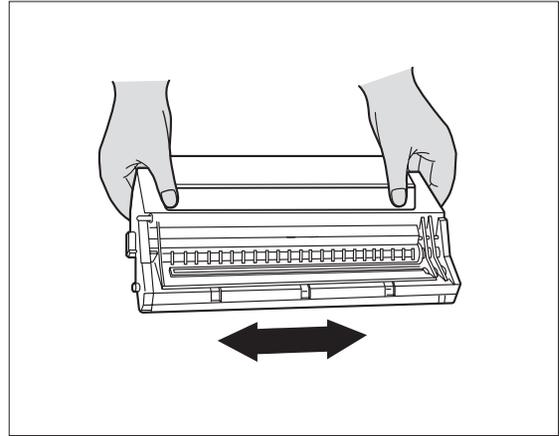


- 2** Remove the Printer Cartridge from its packaging.

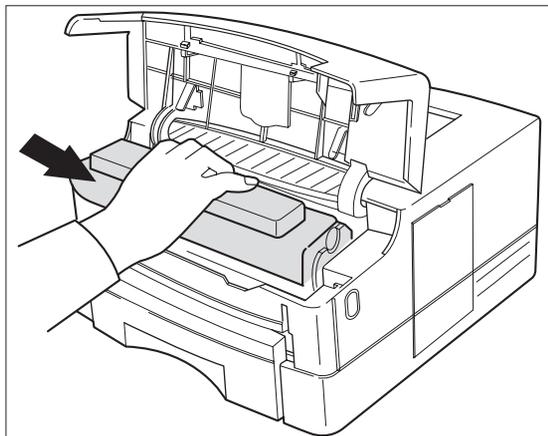


3 Remove the Plastic Strip from the Printer Cartridge.

Grasp the clear tab on top of the Printer Cartridge and pull firmly to remove the entire strip of clear sealing tape.

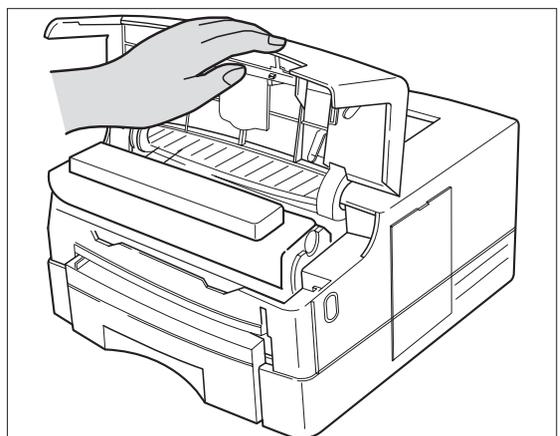


4 Shake the Printer Cartridge several times.



5 Insert the Printer Cartridge.

With one hand, hold the Printer Cartridge by the top middle (do not grasp the Printer Cartridge by the shutter wires), and slide it into the printer.



6 Close the top door.

If the door does not close easily, check that the Printer Cartridge is installed correctly.

Paper Tray

For the best print quality and to avoid misfeed and paper jams, use only quality, xerographic/photocopier grade paper.

- 1 Pull out the paper tray.**
- 2 Locate the three guides according to the paper sizes you want to use.**

Refer to the section “Adjusting and Loading the Paper Tray” in Chapter 4 for details of adjusting the tray guide.

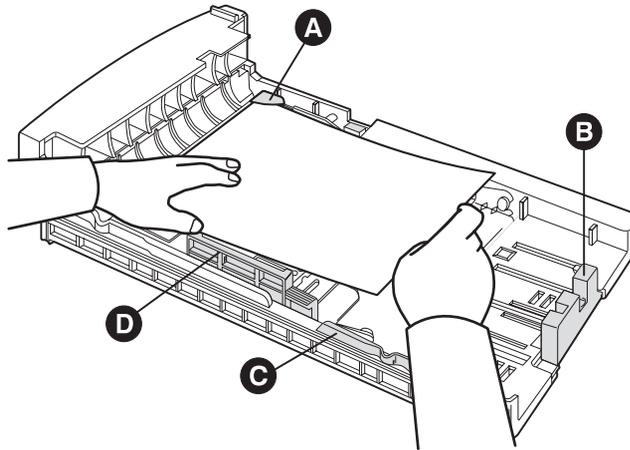
- 3 Load up to 250 sheets of paper.**

Place the paper by the rear guide first. Secure the corner of the paper stack under the metal corner at the front of the paper tray by pressing down on the stack.

- 4 Reinstall the paper tray into the printer.**

Figure 2.3 Loading paper

- A Metal corner
- B Extension guide
- C Rear Guide
- D Side Guide



Note

If you use other paper sizes (Folio, Legal, etc.), see “Adjusting and Loading the Paper Tray” in Chapter 4.

Interface Cable

Connect the interface cable to the PC and printer.



Note

An interface cable is not supplied with the printer.

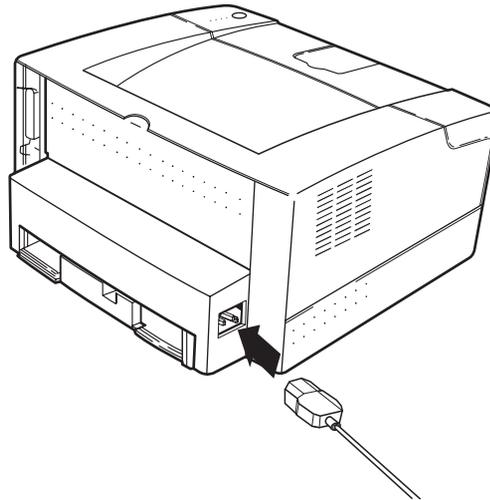
If you do not have a cable, purchase the cable separately from your supplier.

For best performance and guaranteed bi-directional communication, use a good, shielded parallel cable with the IEEE P-1284 compatible pin configuration.

Power Cord

This printer does not have a power switch. It is automatically powered on when plugged into an AC power socket. This printer is equipped with advanced energy conservation technology which reduces power consumption when it is not in active use. Plug the power cord into a 3-wire grounded power socket. The printer will power on and the READY LED will illuminate. If the READY LED does not illuminate, see Chapter 6: Troubleshooting.

Figure 2.4 Power cord



Testing the Printer

Test the printer by printing the Self Test sheets:

- 1 Hold down the Control Panel key for four seconds.**
- 2 Self Test sheets will be printed: one PCL 5e Configuration sheet and two PCL 5e Font List sheets.**

Configuration Sheet: Provides all printer setup parameters.

Font List Sheets: Provide listings of all resident printer fonts.

If the sheets do not print, see Chapter 6: Troubleshooting.

Installing Software

Windows Setup

Follow the steps below to install the Remote Control Panel (RCP), Status Monitor, printer driver, and Font Manager for Windows.

- 1** Insert the 3.5" diskette labeled "Xerox DocuPrint 4508 Software Installation Diskette" into the disk drive of your computer.
- 2** In the Program Manager, click on File, then click on Run and type:
`a:\setup or b:\setup`
Then click OK.
- 3** Follow the instructions on the screen.
- 4** Insert the 3.5" diskette labeled "Xerox Font Manager" into the disk drive of your computer. Follow steps 2 and 3.

DOS Setup

Follow the steps below to install the Remote Control Panel (RCP), Status Monitor, and printer driver software for DOS.

- 1** Insert the 3.5" diskette labeled "DOS and OS/2 Drivers" into the disk drive of your computer.
- 2** Switch to the drive in which the diskette was inserted.
Example: Type `a:` or `b:` then press the return key.
- 3** Type `README`, then press the return key.
- 4** Follow the instructions on the screen.

5 Insert the “Xerox DocuPrint 4508 Software Installation Diskette” disk in your disk drive.

6 Create a directory in which to place the DOS software (for example: DOSUTIL) and switch to that directory.

7 Type:

```
copy a:\dosutil\*.* or copy b:\dosutil\*.*
```

8 Type:

```
DOS4508
```

OS/2 Setup

Follow the steps below to install the OS/2 software.

1 Insert the 3.5” diskette labeled “DOS and OS/2 Drivers” into the disk drive of your computer.

2 Double click on the drive icon, then double click on disk icon, then double click on “INSTALL.TXT” file. Follow instructions on screen.



Note

To install the Remote Control Panel (RCP) option, use the Windows subsystem of OS/2 and follow the Windows installation instructions on the previous page.

Testing the Connection

To test the connection, make sure that the READY light is ON and print a file from a software program you are familiar with. If the printer does not respond at all when you print the file, perform the following:

- Verify that you have installed the 4508 printer driver.
- Verify that the interface cable is attached securely to both the printer and the computer.

Chapter 3

Using the Front Control Panel

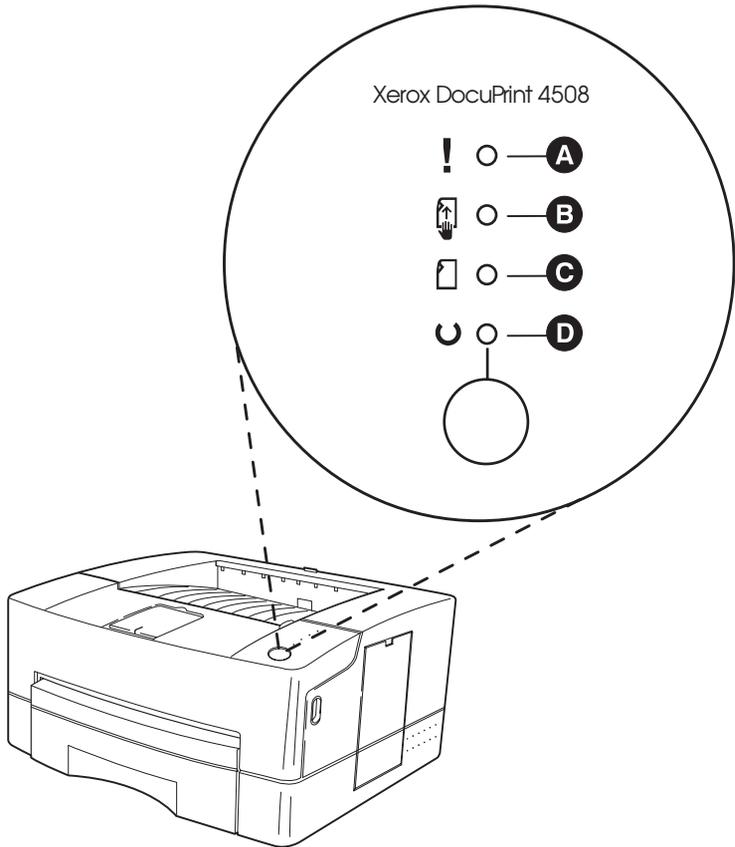
<i>Overview</i>	3-2
<i>Front Panel Key and LED Functions</i>	3-3
<i>Key Functions</i>	3-3
<i>LEDs</i>	3-4
<i>Resetting the Printer</i>	3-6
<i>Printing the Self Test Pages</i>	3-6

Overview

This printer's control panel consists of four status LEDs and one Front Panel key. The LEDs indicate the printer's status. (The Status Monitor utility displays more detailed information about the printer's status on your computer's screen.)

Figure 3.1 Front control panel

- A** ERROR*
- B** MANUAL*
- C** PAPER*
- D** READY*



* These are not labeled on the control panel.

Front Panel Key and LED Functions

There are four key functions. The key function is determined by the current printer's state. For instance, holding the key down for four seconds with READY LED ON causes three Self Test pages to be printed. Holding the key down for four seconds with the READY LED blinking causes the printer to print any data remaining in the printer's memory.

Key Functions

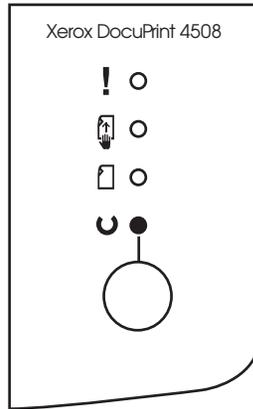
On/Off-line	Pressing the key toggles the printer's on-line and off-line state.
Self Test	When the printer is on-line and all the other LEDs are off, hold down the key for four seconds (until all LEDs are blinking). Three Self Test sheets will be printed.
Form Feed	When the printer is on-line and the READY LED is blinking, hold down the key for four seconds (until all LEDs are blinking). The printer will print any data remaining in the printer memory.
Reset	Press the key to turn the printer off-line. Hold down the key for four seconds (until all LEDs are blinking). User default reset causes the printer to clear all data from the printer's memory except permanent fonts and macros, and then restore the user default settings.



Note

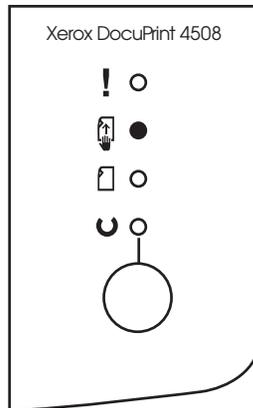
For all these functions, if the key is pressed for four seconds, all the LEDs start blinking until the key is released.

LEDs READY



- On:** The printer is on-line.
- Off:** The printer is off-line.
- Blinking:** The printer is receiving, or processing data, or printing.

MANUAL



- On:** The current paper source is manual feed slot. (READY LED is also illuminated).
- Off:** The current paper source is universal paper tray.
- Blinking:** When manual feed is selected and there is some data to print, this LED blinks for the following two cases:

Auto Continue[†] ON:

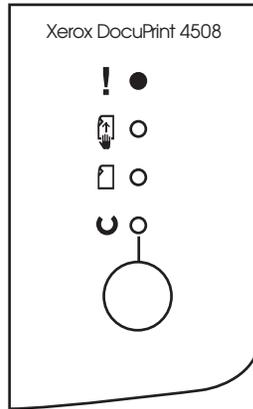
Blinks for ten seconds to wait for the user to insert the single sheet paper into manual feed slot. If the paper is not inserted after ten seconds, the printer uses the paper in cassette tray.

Auto Continue[†] OFF:

Blinks continually until the paper is inserted into manual feed slot.

[†] Auto Continue is set using the Remote Control Panel.

ERROR



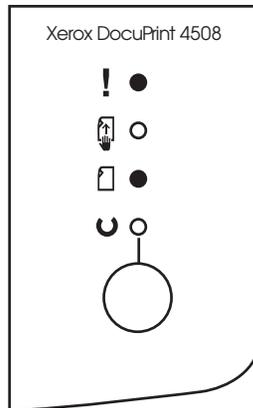
On: The printer's cover is open or printer cartridge is out.

Blinking: The printer is in "Recoverable error" state. Press button to continue or wait time out.

"Recoverable error:"

Overrun error or memory overflow error. In this case, you may need to install optional printer memory.

PAPER



On: There is a paper jam (with ERROR LED on).

Blinking: The paper tray is empty or missing.



If all LEDs are blinking, turn off the printer for a minute, then restart. If the error persists, contact your dealer for technical support.

Resetting the Printer

This function resets the printer to the original factory defaults.

Press the key to turn the printer off-line. Hold down the key for four seconds (until all LEDs are blinking). All data in the printer's memory is cleared. This will also restore user default settings for printer preferences without clearing permanent fonts and macros.

Printing the Self Test Pages

You can view the printer's status information and available fonts through the Self Test Page. This function is only available when the printer is ON-LINE and the printer has no data to print.

- 1 Make sure the READY LED is on, and all other LEDs are off.**
- 2 Hold down the key for four seconds.**
- 3 Self Test sheets will be printed: one PCL 5e Configuration sheet and two PCL 5e Font List sheets.**

Configuration Sheet: Provides all printer setup parameters.

Font List Sheets: Provide listings of all resident printer fonts.

Chapter 4

Printing Documents

Overview	4-2
Using the Paper Tray	4-2
<i>Paper Sizes Supported</i>	4-2
Adjusting and Loading the Paper Tray	4-6
Using Manual Feed	4-7
<i>When to Use Manual feed</i>	4-7
<i>Setting Up the Software</i>	4-7
<i>Selecting the Correct Manual Feed Paper Path</i>	4-8
<i>Setting Up the Printer</i>	4-9
<i>Using Priority Feed (Quick Manual Feed)</i>	4-10

Overview

In this chapter, you will learn how to select the correct paper path according to your needs and the paper sizes you will use.

Using the Paper Tray

Paper Sizes Supported

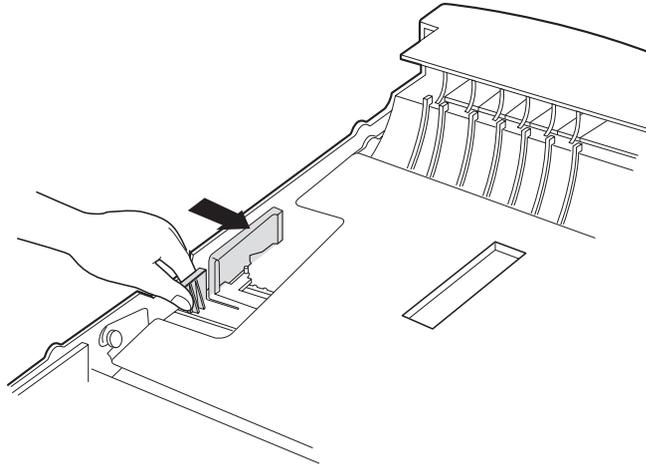
Since the paper tray is adjustable, it can hold up to 250 sheets of Executive, Letter, A4, B5, Folio or Legal sized paper. To achieve the best print quality and to avoid paper jam or damage to your printer, use only quality, xerographic/photocopier grade paper. See *Appendix D: Print Media Specifications* for more detailed paper specifications.

Use the following steps to adjust the three guides to the paper size.

Using the Side Guide

You can use both the tab hole and paper size marker to adjust the side guide. While pressing the side guide tab, push the side guide forward towards the center of the tray until the tab hole of the selected paper size is positioned to the corresponding size. However, when using B5 size paper, simply position the paper size marker to the B5 size.

Figure 4.1 Using the side guide

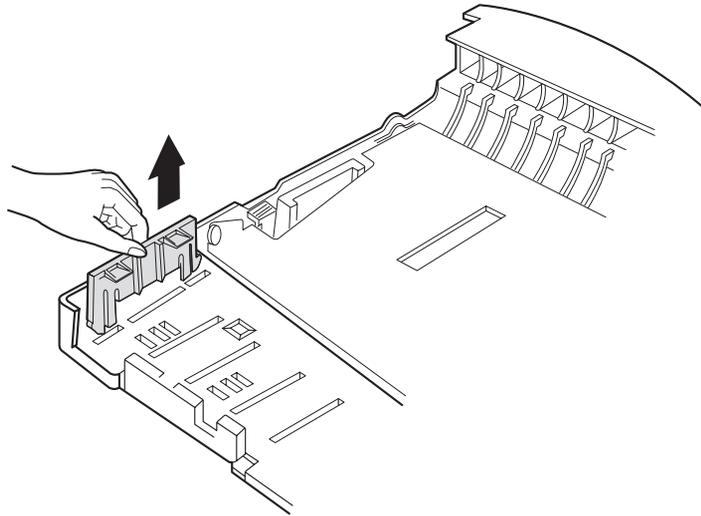


Using the Rear Guide

For the rear guide, there are four positions: three positions in the center of the rear, and one position on the side of the rear.

If you are using A4 size paper, place the rear guide in the side position. Otherwise, place the rear guide in one of the three positions in the center at the rear.

Figure 4.2 Using the rear guide

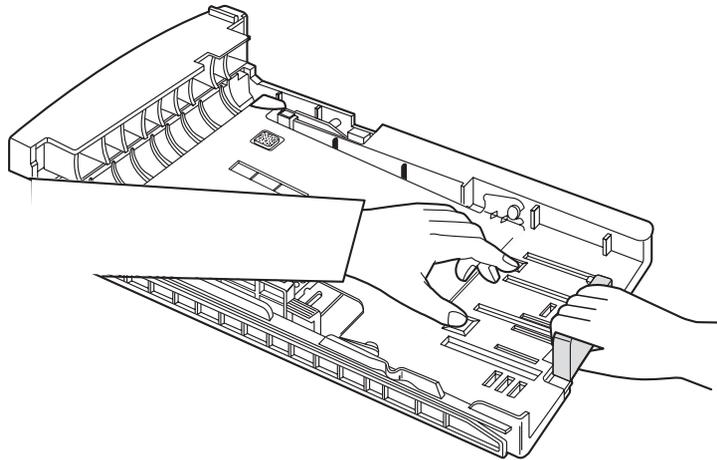


Using the Extension Guide

Unless you are using legal or folio sized paper, you do not have to adjust the extension guide at all. If you need to use legal or folio sized paper, perform the following adjustment.

While pressing the two tabs at the rear center of the paper tray, pull the extension guide to the rear until the two buttons are positioned into either the first position holes for folio or into the final position holes for legal.

Figure 4.3 Using the extension guide



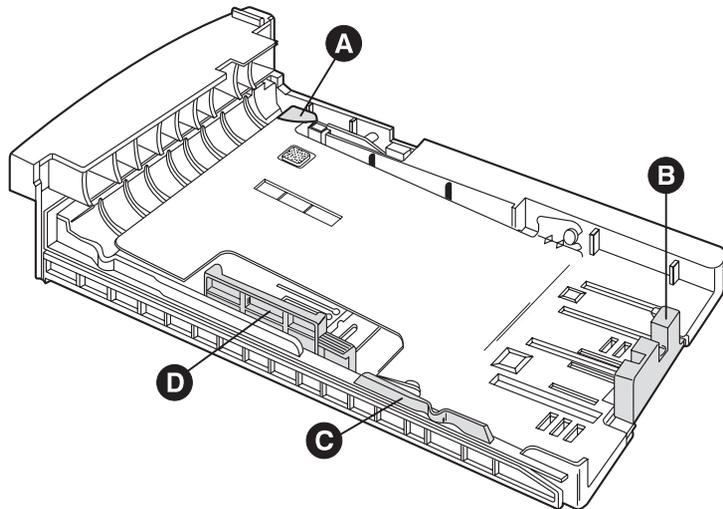
Adjusting and Loading the Paper Tray

- 1** Pull out the paper tray and remove the paper.
- 2** Using the rear guide or extension guide, adjust the tray for each paper size.
 - Extension guide: Legal, Folio
 - Rear guide: Letter, Exec, B5, A4

 *When letterhead is used, load the paper face down, with the top edge towards the front of the paper tray.*
- 3** Secure the corner of the paper stack under the metal corner at the front of the paper tray.
- 4** Adjust the side guide to the corresponding size.
- 5** Reinstall the paper tray into the printer. The green Ready LED will illuminate.

Figure 4.4 Adjustable tray view

- A** Metal corner
- B** Extension guide
- C** Rear Guide
- D** Side Guide



Using Manual Feed

When to Use Manual feed

Use the printer's manual feed option with the rear paper path cover open when printing on media that must go through a straight paper path. Following are examples of media that require the manual feed:

- Envelopes
- Adhesive Labels
- Heavy or special paper, such as a single sheet of letterhead paper
- Odd sized paper
- Transparencies



Note

The rear cover must be open to enable the straight through paper path.

Setting Up the Software

To print in manual feed mode, perform the following steps:

- 1** In your application's page setup, your print driver, or your Remote Control Panel (RCP), select "manual feed" as the paper source.



The RCP is only set after the send button is selected.

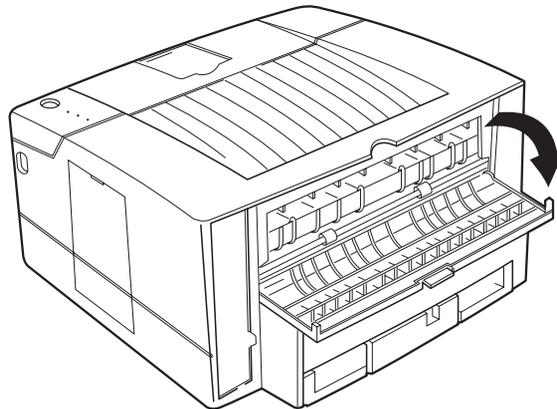
- 2** To prevent a paper jam, select the correct paper size in your software. For example, do NOT select letter size paper in your software and then try to feed legal paper into the manual feed slot.
- 3** If you are printing envelopes, insert the envelope, flap down, to the left side of the manual feed slot.

Through your software, send the command to print. The printer's MANUAL LED blinks, indicating the printer is ready to receive paper through the manual feed slot.

Selecting the Correct Manual Feed Paper Path

Use the facedown paper path (rear paper path cover closed) for normal paper. Use the faceup paper path (rear paper path cover open) for envelopes, transparencies, labels, odd sized paper, and heavier paper.

Figure 4.5 Opening Exit Cover



Setting Up the Printer

- 1** If you want to use the faceup paper path, push down the exit cover latch.
- 2** While aligning the paper to the left, gently insert the paper face up into the manual feed slot until you feel resistance on the left corner.
- 3** Leave the other end of the paper resting on the table.

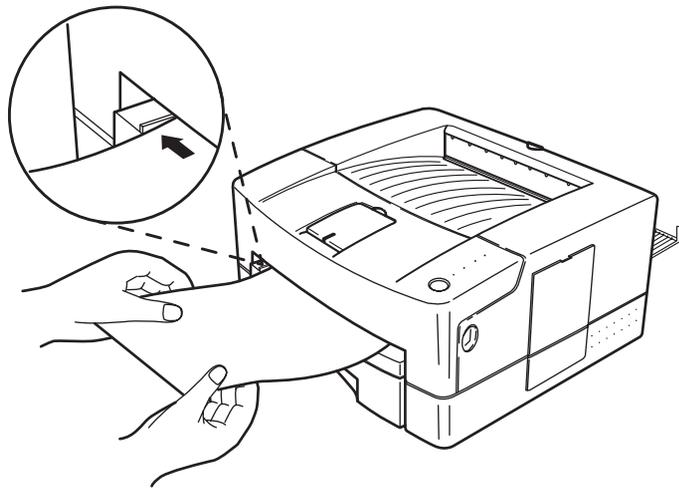


Manual feeding of materials such as C5 envelopes will require you to physically support the trailing edge of the document to prevent bending/folding of the envelope.

Through your software, send the job to the printer. After a moment, the printer prints the page.

- 4** If necessary, close the exit cover to use the facedown paper path for your next print job.

Figure 4.6 Using the Manual Feed



Using Priority Feed (Quick Manual Feed)

The printer's Priority Feed feature is a quick way to manually feed paper. If there is a sheet of paper in the manual feed slot, the printer always prints on that sheet first, then pulls the remaining pages from the paper cassette. No special software commands are required. This feature is especially helpful when the first page of your job is different from the rest.

Example: Printing multiple page letters where first page is letterhead paper.

- 1** Fill the paper tray with plain paper.
- 2** While aligning the paper to the left, gently insert the top edge of a sheet of letterhead paper into the manual feed slot face up until you feel resistance on the left corner.
- 3** Let the other end of the paper rest on the table. Send your job to the printer as if you were printing from the cassette (Do not select "manual feed"). The printer automatically selects the first page from the manual feed slot, and the remaining pages from the paper cassette.

Chapter 5

Using Software Tools

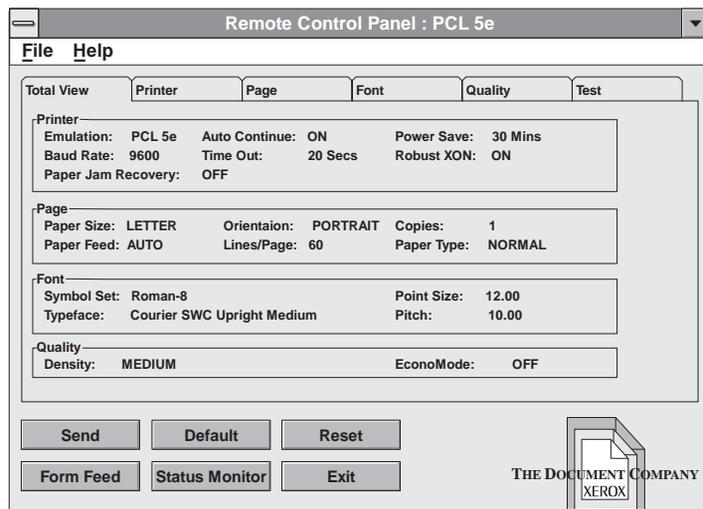
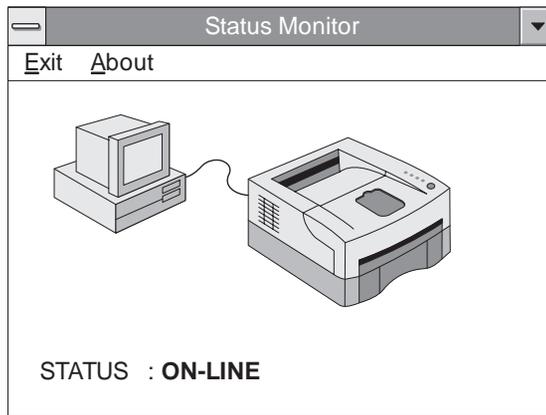
<i>Status Monitor and Remote Control Panel (RCP)</i>	5-2
<i>The Status Monitor</i>	5-3
<i>The Remote Control Panel (RCP)</i>	5-4
<i>Remote Control Panel for Windows</i>	5-4
<i>Remote Control Panel for DOS</i>	5-14
<i>Status Monitor for DOS</i>	5-15

Status Monitor and Remote Control Panel (RCP)

A Printer Driver is a software program that contains commands to activate your printer's features. It also contains information about the names, sizes and shapes of the printer's internal typefaces.

You can use the Status Monitor and Remote Control Panel software tools under DOS and Windows. The following figures are examples of the Status Monitor and Remote Control Panel for Windows.

Figure 5.1 Status Monitor and Remote Control Panel for Windows



The Status Monitor

The Status Monitor is a program that runs in background mode. When activated it will automatically display messages from the printer on your computer's screen whenever the printer's status changes.

To start up Status Monitor, double click the Status Monitor icon. This will start a background program running which will display error conditions. By double clicking the Status Monitor icon in the bottom left corner, the current status will be displayed. Status Monitor messages are listed in *"Remote Control Panel and Status Monitor Messages"* (page 6-4).



Caution

If you use the Remote Control Panel for Windows with the Print Manager enabled, the Status Monitor software may not run correctly.

The Remote Control Panel (RCP)

The Remote Control Panel lets you view and change printer settings from your computer's screen. It supplements your printer driver support to give you complete control over the printer's configuration.

Remote Control Panel for Windows

To start the Remote Control Panel for Windows, double click on the "Remote Control Panel" icon.

Description of menu items

- **Send Key**

When a change is made in the RCP, the user must select the Send Key to change the printer's configuration.

- **Default Key**

Reset all the printer's parameters to the factory default values.

- **Reset Key**

Reset all the printer's parameters to the user default values.

- **Form Feed Key**

If any data exists in the printer, the printer form feeds the current page. If not, this button is ignored.

- **Status Monitor Key**

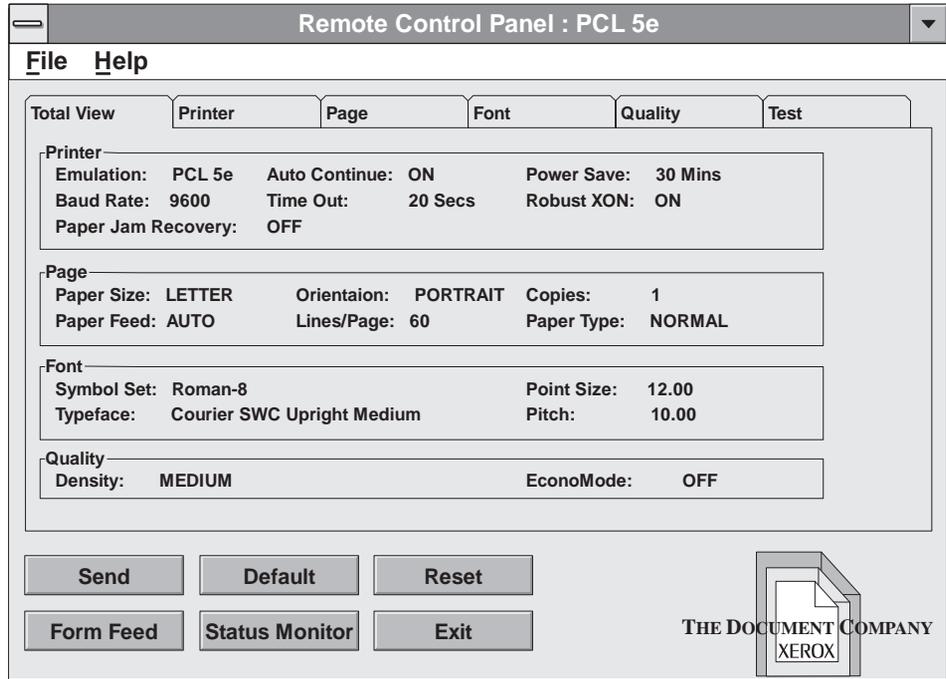
It shows current printer status. Refer to "The Status Monitor."

- **Exit Key**

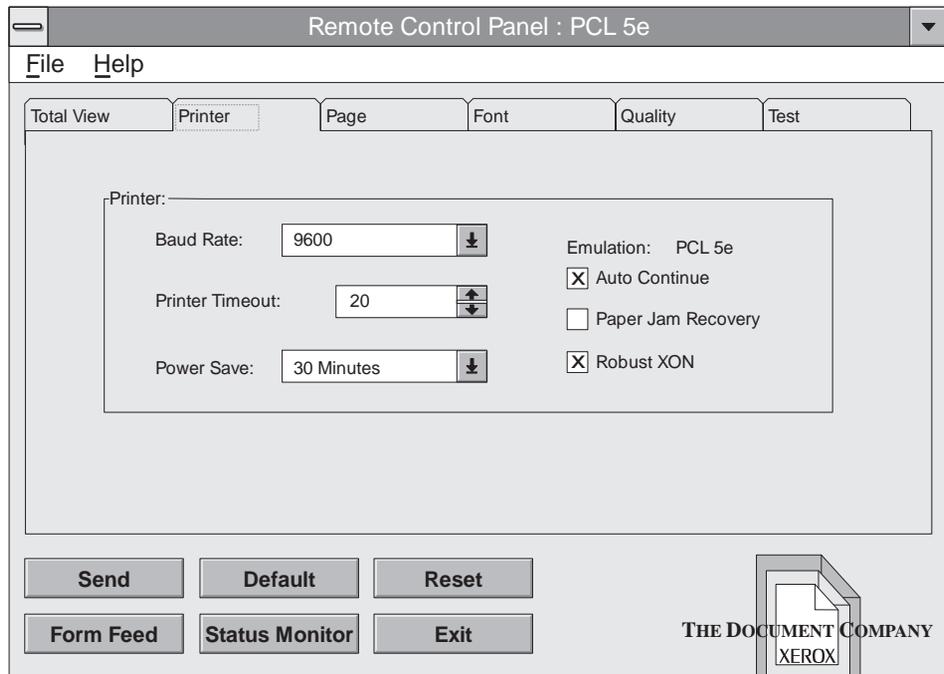
Exit the Remote Control Panel.

Total View.

Shows all the parameters in the printer.



Printer Setup



- **Emulation**

Current emulation in use.

- **Paper Jam Recovery**

When On, maintains print job in memory and reprints after paper jam is cleared. The default value is OFF.

- **Power Save**

If it is not OFF, printer goes to the power save mode according to the indicated/selected time. In the power save mode, the power consumption is under 10 watts. The default value is 30 minutes

- **Printer Timeout**

Sets the printer value for how long to wait for data to print from the current interface before accepting data through

the other interface. The default value is 20 seconds.
Active only when optional serial interface is installed.

- **Auto Continue**

It determines the printer action when the user prints a page without paper in the manual feed slot but the paper source is set to manual feed. If Auto Continue is ON, the printer picks up the paper from the tray after ten seconds. If Auto Continue is OFF, the printer waits until the user inserts paper into the manual feed slot.

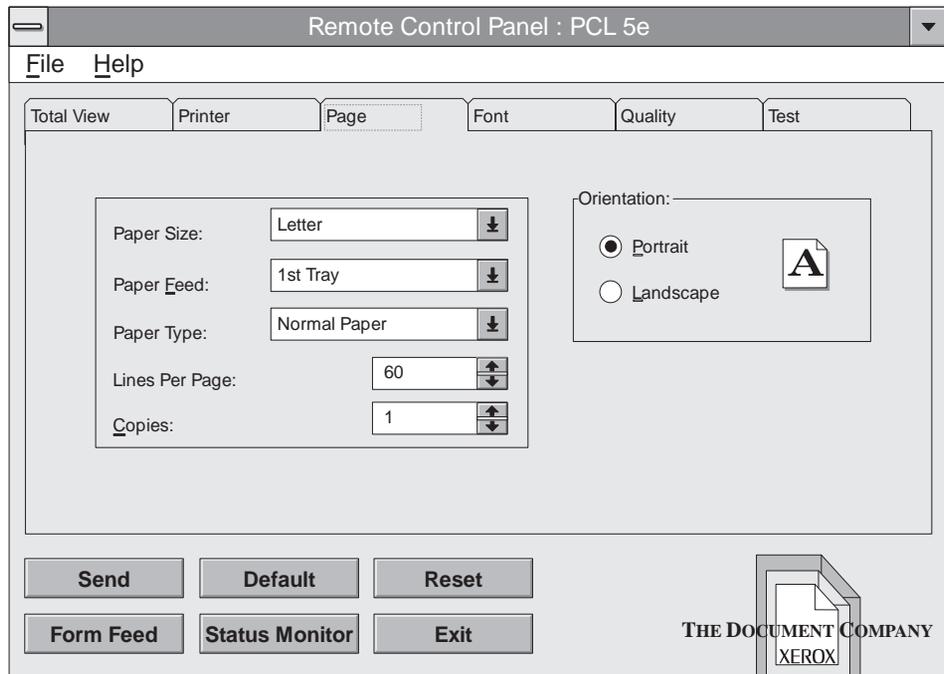
- **Baud Rate**

Sets the speed of the serial interface. The default value is 9600 BPS.

- **Robust XON**

If it is ON, the printer sends XON character every one second. The default value is ON.

Page Setup



- **Copies**

Selects the number of copies to be printed. You can select 1 to 99 copies. The default value is 1.

- **Paper Feed**

You can select the paper source: tray or manual.

- **Paper Type**

If you use thick paper with a weight of more than 90 gr (24 lb) or an envelope, you must insert paper into the manual feed slot and select "Thick Paper."

- **Lines Per Page**

Sets the number of lines on the page. The default value is 60 when the paper size is LETTER and 64 when the paper size is A4.

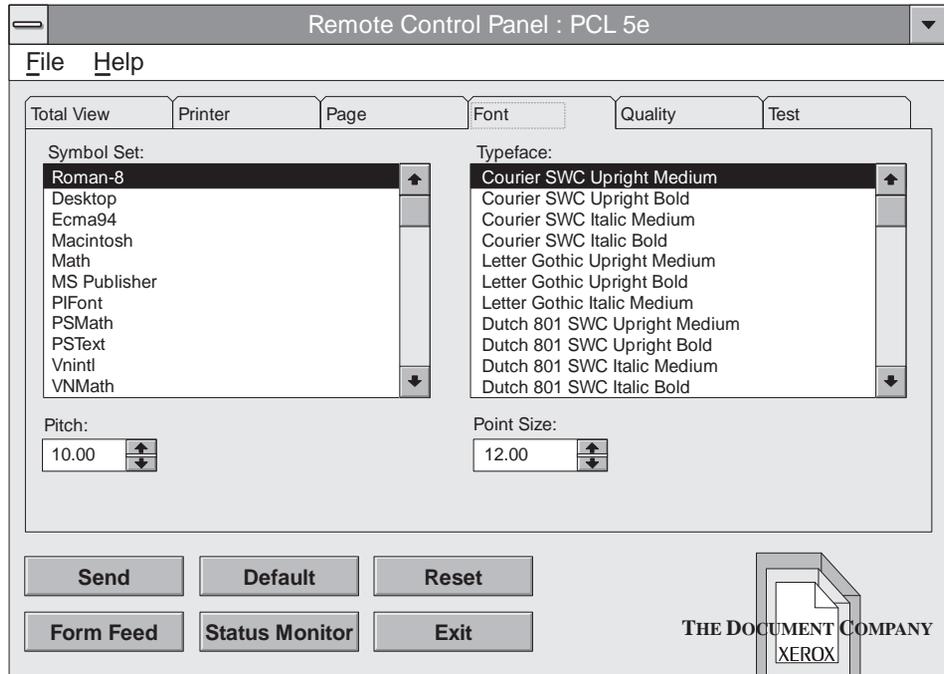
- **Paper Size**

It sets the size of the image that will print on paper and envelope. The default value is LETTER for 115V printers and A4 for 220V printers.

- **Orientation**

It determines the direction of the print on the page. The default value is PORTRAIT.

Font Setup



- **Symbol Set**

A symbol set is a unique grouping of all available characters in a font. The default value is ROMAN-8.

- **Pitch**

Available only when you select a fixed pitch outline font. It is ignored for the other fonts. The default value is 10.00.

- **Point Size**

Available only when you select a proportionally spaced outline font. It is ignored for the other fonts. The default value is 12.00.

- **Typeface**

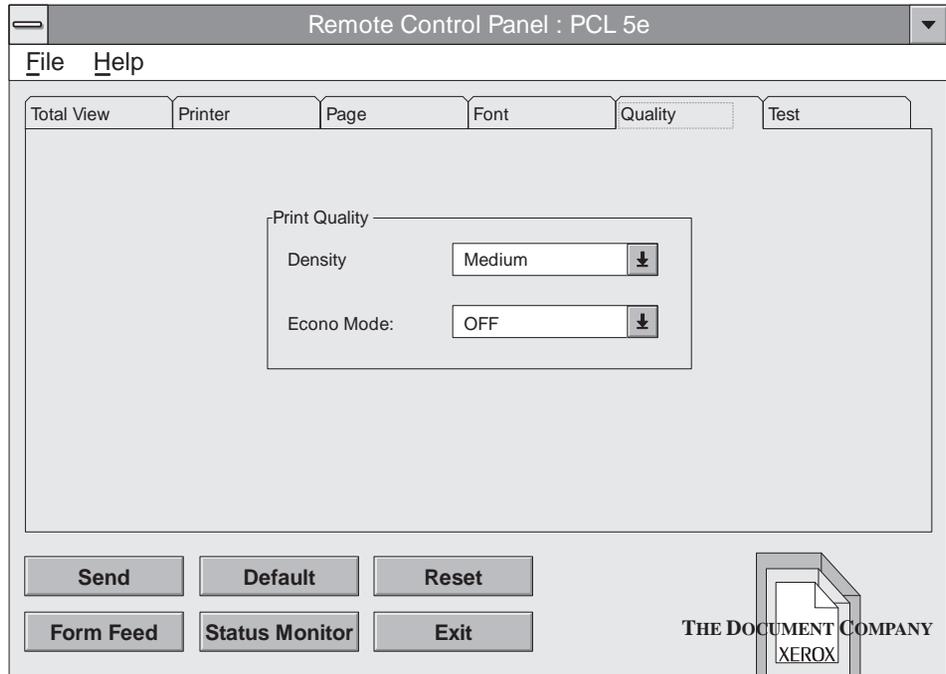
Shows the typeface of the current font. The default value is "Courier SWC Upright Medium."



Caution

All items can be adjusted automatically according to the item you have changed. "Pitch" and "Point Size" will be ignored or have no effect unless a fixed pitch font or proportionally spaced outline font is selected.

Quality Setup



- **Density**

Determines the overall darkness of the page. The default value is MEDIUM.

- **EconoMode**

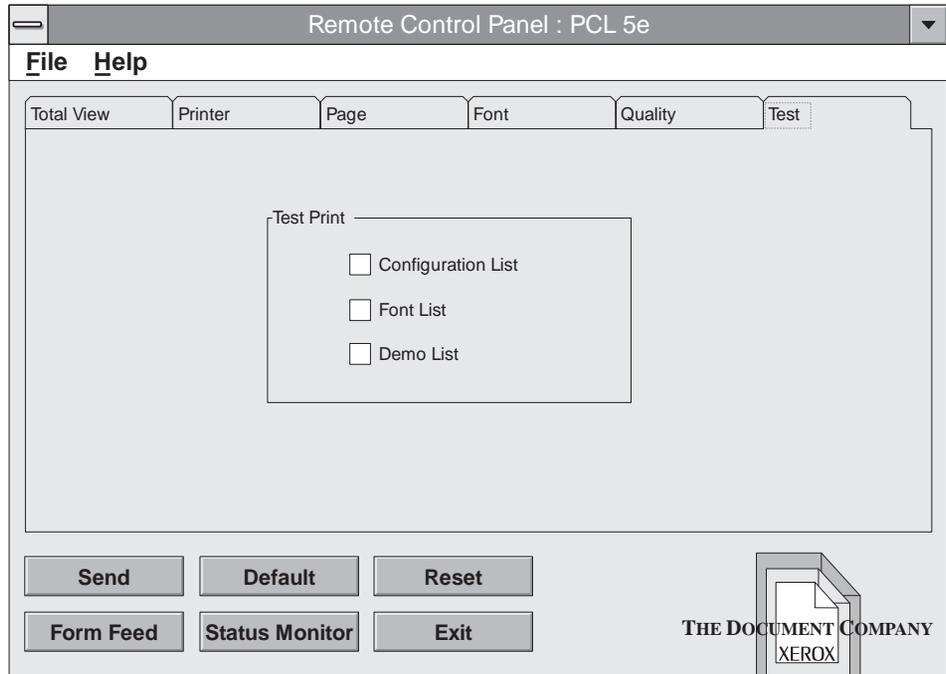
Saves toner by reducing the resolution of the print. The default value is off which denotes true 600 x 600 dpi resolution.



Note

There are four EconoMode settings that enable toner conservation (1/8, 1/6, 1/4, 1/2) when printing proofs, drafts, etc.

Test

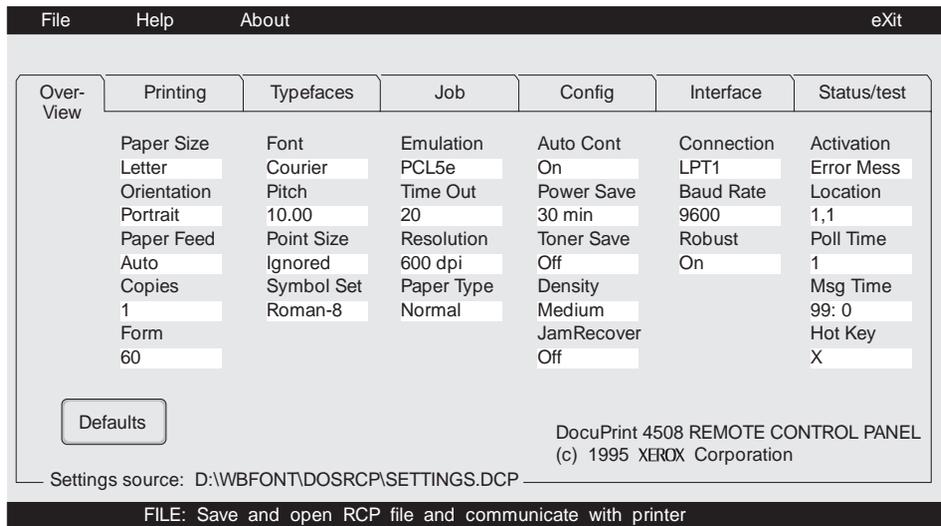


- **Configurations List**
Prints the current configuration of the printer.
- **Font List**
Prints the current available font list of the printer.
- **Demo List**
Prints the demonstration page which lists the main features of this printer.

Remote Control Panel for DOS

Switch to the directory which contains the DOS RCP (example: CD:\DOSUTIL).

- To start the Remote Control Panel for DOS, at the DOS prompt, type "DOSRCP" and press enter.
- The Remote Control Panel for DOS is somewhat different from that for Windows. If you change any item in the Remote Control Panel for DOS, you must send it to printer by selecting the "Send settings to printer" item from the File menu.
- The following figure is an example of the Remote Control Panel for DOS.



Status Monitor for DOS

Switch to the directory which contains the DOS Status Monitor.

- To Start Status Monitor for DOS, at the DOS prompt, type "DOS4508 1" and press enter.
- The Status monitor is enabled with a required numeric parameter. A maximum of two digits is accepted.

DOS4508 XX

The XX parameter value has three meanings:

— 0 deinstalls the Status Monitor TSR.

— 1-98 is the polling time period in seconds.

— 99 disables polling.

- The Status Monitor for DOS is a TSR program that automatically displays messages from the printer.
- For more information, type "DOS4508" and press enter.



Note

If you run the Status Monitor for DOS under graphic mode, it doesn't display messages. Only a beep can be heard.



Caution

Do not use the Software Tools for DOS while running DOS under Microsoft Windows.



Chapter 6

Troubleshooting

Overview	6-2
Front Panel LED Messages	6-2
Remote Control Panel and Status Monitor Messages	6-4
Clearing Paper Jams	6-8
<i>Paper Jam Causes</i>	6-8
<i>First Action</i>	6-9
<i>Checking the Paper Feed Area</i>	6-10
<i>If the Paper has Gone Completely into the Printer</i>	6-11
<i>If the Paper is Jammed in the Rear of the Printer</i>	6-12
Solving Print Quality Problems	6-13
<i>Printer Cartridge Cleaning Procedure</i>	6-16

Overview

The troubleshooting methods described in this chapter enable you to repair simple problems. For problems more complex than those described in this manual, you should consult an authorized Xerox service provider.

Front Panel LED Messages

Table 6.1 lists LED indicator problems, the possible cause, and recommended actions.

Table 6.1 LED indicator messages

LED Function Name	LED State	Problem	Corrective Action
ERROR	ON	Printer cover is open.	Close printer cover.
		Printer Cartridge is not in printer.	Install Printer Cartridge into printer.
			If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
ERROR (PAPER LED ON)	ON	Printer has a paper jam.	Refer to <i>"Clearing Paper Jams"</i> (page 6-8).
			If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
ERROR	Blinking	Recoverable Error state.	Press Front Panel key to continue.
		Overrun Error or Memory Overflow Error.	If printed job is partially broken or missing, install additional optional memory.
			If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.

Table 6.1 Page 1 of 2

Table 6.1 LED indicator messages (continued)

LED Function Name	LED State	Problem	Corrective Action
READY	OFF	Printer is in OFF-LINE state.	Press Front Panel key to place printer ON-LINE.
		Power cord not installed.	Install power cord into printer, then into wall outlet.
			If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
READY	ON	Printer is in the Ready/Operational state.	No corrective action required.
READY	Blinking	Printer is receiving or processing data, or printing a print job.	No corrective action required.
MANUAL (READY LED ON)	ON	Manual feed slot is current paper source for feeding.	No corrective action required.
MANUAL (READY LED ON)	OFF	Main and/or optional paper tray is current paper source for feeding.	No corrective action required.
MANUAL READY LED ON)	Blinking	Manual feed slot is current paper source for feeding, Auto Continue is set to OFF, and there is processed data ready to be printed.	Insert a sheet of paper into manual feed slot.
		Manual feed slot is current paper source for feeding, Auto Continue is set to ON, and there is processed data ready to be printed.	Either wait 10 seconds for printer to print job from main paper tray, or insert a sheet of paper into manual feed slot.
PAPER	Blinking	Main paper tray is empty or missing from printer.	Load main paper tray with paper or install paper tray into printer.
			If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
ALL LEDs	Blinking	Unknown printer malfunction.	Unplug printer from wall outlet for a minute, then plug printer back into wall outlet.

Table 6.1 Page 2 of 2

Remote Control Panel and Status Monitor Messages

Table 6.2 lists Remote Control Panel messages and Status Monitor messages, the possible cause, and recommended actions.



Note

The Remote Control Panel and Status Monitor only supply printer information when the parallel interface port is connected. They do not function through the serial port.

The Status Monitor does not provide printer problem messages when the RS232C Serial Interface Option is installed and the Serial Option is being used as the active port. Also, the Remote Control Panel does not allow configuring of the printer when the RS232C Serial Interface Option is installed and the parallel interface is not connected.

Table 6.2 RCP and SM messages

Message	Condition/Problem	Corrective Action
BAND ERROR	Text or vector graphics sent to the printer were too complex.	Decrease page complexity.
		Add additional printer memory SIMM.
		If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
COVER OPEN OR MISSING CARTRIDGE	The top cover is open or not properly closed.	Close the top cover.
	The Printer Cartridge is not installed properly.	Remove the Printer Cartridge, then re-install it.
		If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.

Table 6.2 Page 1 of 4

Table 6.2 RCP and SM messages (continued)

Message	Condition/Problem	Corrective Action
I/O ERROR	The printer's parallel cable does not support bi-directional communication.	Check that the ports on your PC/host are functioning and are not labeled incorrectly.
	The communication between the printer and PC/host is having problems.	Check the cable from your printer. It could be loose or damaged.
	The printer is not connected properly.	Verify the connection from the printer to the PC/host. If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
MEMORY FULL	The printer received excessive data from the computer to process and is out of available memory.	Add additional printer memory SIMM.
	You may have tried to transfer too many soft fonts, or graphic image may be too complex.	Decrease page image complexity. If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
OFF-LINE	The status of the printer is OFF-LINE.	Press the Front Panel key to place the printer in ON-LINE state.
		If the printer does not go to ON-LINE state, unplug it from the wall outlet. Wait one minute, then reconnect.
		If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
ON-LINE	Printer is ready to receive data via the parallel port.	No corrective action required.

Table 6.2 Page 2 of 4

Table 6.2 RCP and SM messages (continued)

Message	Condition/Problem	Corrective Action
PAPER JAM 0	There is paper jammed in the printer.	Clear paper jam. See "Clearing Paper Jams" (page 6-8).
	The paper jam sensors are stuck or worn.	Check for obstructions in paper path.
	The paper tray was removed while a job was printing.	Do not remove paper tray during printing process. If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
PAPER JAM 1	There is paper jammed in the printer.	Clear paper jam. See "Clearing Paper Jams" (page 6-8).
	The paper jam sensors are stuck or worn.	Check for obstructions in paper path.
	The paper tray was removed while a job was printing.	Do not remove paper tray during printing process. If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
PAPER JAM 2	There is paper jammed in the printer.	Clear paper jam. See "Clearing Paper Jams" (page 6-8).
	The paper jam sensors are stuck or worn.	Check for obstructions in paper path.
	The paper tray was removed while a job was printing.	Do not remove paper tray during printing process. If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.

Table 6.2 Page 3 of 4

Table 6.2 RCP and SM messages (continued)

Message	Condition/Problem	Corrective Action
PAPER TRAY OPEN OR EMPTY	The printer has run out of paper.	Refill the paper tray with paper.
	The paper tray is open or not installed properly.	Fully insert the paper tray into the printer.
		If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
PORT IS NOT AVAILABLE	The printer is not communicating with the PC/host.	Verify the parallel interface is connected to the correct PC/host.
		Verify the PC/host is using the parallel port to establish communications.
		If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
UNKNOWN STATUS	A printer hardware fault condition has been detected.	Unplug printer from the wall outlet. Wait one minute, then reconnect.
		If problem persists, contact your dealer or Xerox/Rank Xerox for technical support.
Table 6.2 Page 4 of 4		

Clearing Paper Jams

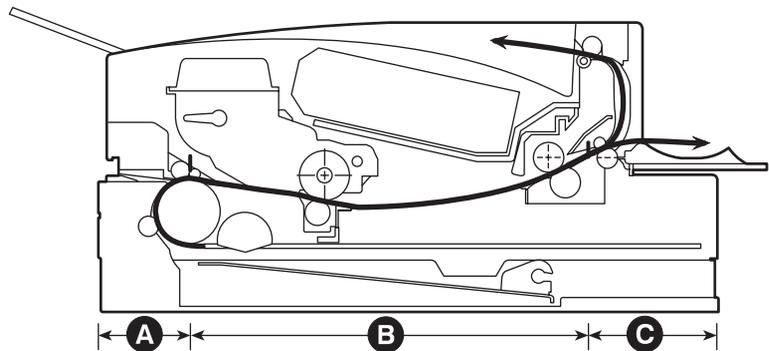
Paper Jam Causes

Following are some conditions that can cause paper jams.

- Removing the paper tray while a job is printing.
- Filling the tray too full.
- Not securing the paper stack under the metal corner of the paper tray.
- Using paper that is too coarse or too smooth.
- Using damaged or used paper.
- Storing paper incorrectly, so that it curls or contains moisture.

Figure 6.1 Paper jam positions

Paper Path Position	Reported Status
A	Jam 0
B	Jam 1
C	Jam 2



First Action

When a paper jam has occurred, first open the top door by pressing the door release button on the right side of the printer, then close it again. In most cases, this will clear the paper jam by feeding the jammed paper out of the printer. If this doesn't solve the problem, refer to the following steps.

Figure 6.2 Opening the top door

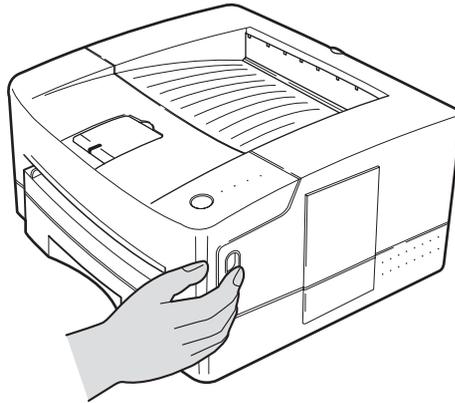
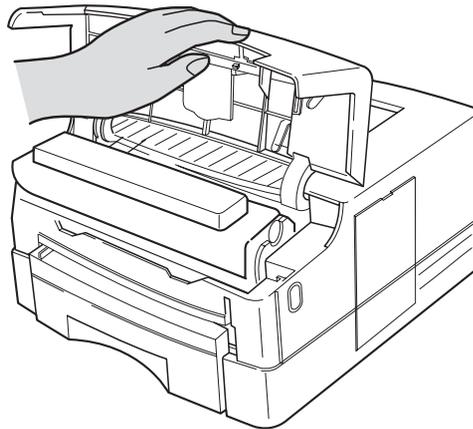


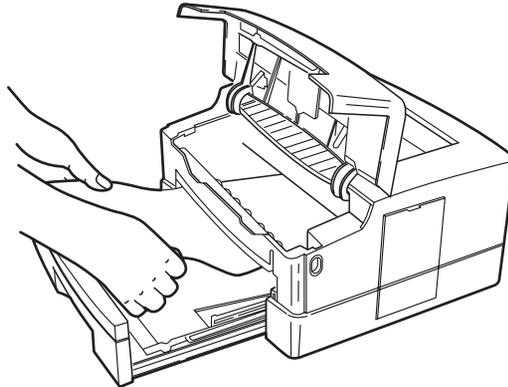
Figure 6.3 Closing the top door



Checking the Paper Feed Area

- Open the top door.
- Take out the Printer Cartridge.
- Pull out the paper tray.
- If paper is in the paper feed area, pull the paper to the right to release it from the feed roller. Then pull the paper straight out. If the paper has gone completely into the printer, see the next page.
- If the previous step clears the jam, replace the paper tray and the Printer Cartridge, then close the top and rear doors. The printer should return to the READY state. If it does not clear the jam, check the top and rear areas of the printer.

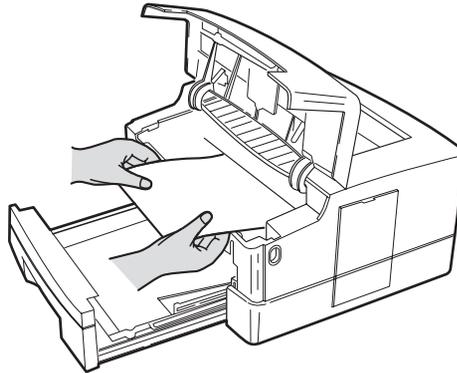
Figure 6.4 Clearing paper jams



If the Paper has Gone Completely into the Printer

- While holding the printer steady, carefully pull the jammed paper toward you to remove it.
- Do not pull the paper straight up when removing it. The toner on the paper can contaminate the paper transportation system and affect the print quality. Remove paper horizontally.
- If it is too difficult to remove the paper, open the printer's rear access door and pull the paper straight out toward you.
- Replace the paper tray and the Printer Cartridge, then close the top and rear doors.
- The printer should return to the READY state. If it does not, try one of the following:
 - Check to see if there is more jammed paper in the printer.
 - Open and close the printer's top door or press the front panel button briefly.

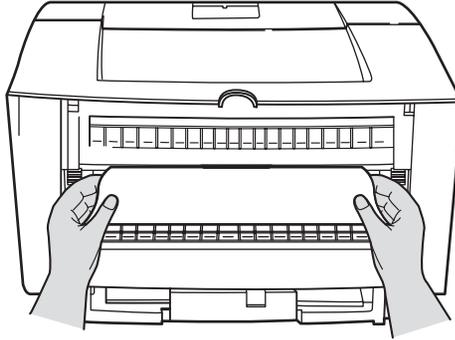
Figure 6.5 Pulling the jammed paper



If the Paper is Jammed in the Rear of the Printer

- Open the rear access door.
- Pull out the paper.
- Remember to close the rear access door again.

Figure 6.6 Clearing paper jams



Note

If the paper jam light continues to be lit, open and close the top door again. This should clear the paper jam message.

Solving Print Quality Problems

The following table lists common print quality problems, the possible cause, and recommended actions.

Table 6.3 Solving print quality problems

Problem	Possible Cause(s)	Corrective Action(s)
Light/faint prints Overall image is lighter than normal	EconoMode turned on	Turn off EconoMode
	Density set incorrectly	Reset to Medium
	Toner level low/empty	Remove Printer Cartridge, shake it several times, then reinstall
Blank prints Entire printer page is blank with no visible print	If just installed, the Printer Cartridge insert (tape) may still be in place	Remove the tape insert
	Defective Printer Cartridge or low on toner	Replace Printer Cartridge
	Multiple sheets are being fed from the paper tray at the same time	Remove paper from paper tray and fan it. Ensure that paper is correctly loaded in tray with edges under metal corners
	No printable data received from computer	Print a Self-Test page. If the Self-Test page is normal, check the following: <ul style="list-style-type: none"> • Interface cable between computer and printer • Printer setup and application software If the Self-Test page is blank, contact your dealer or Xerox/Rank Xerox

Table 6.3 Page 1 of 4

Table 6.3 Solving print quality problems (continued)

Problem	Possible Cause(s)	Corrective Action(s)
Black prints The page is entirely black	Defective Printer Cartridge, or the Printer Cartridge is at its end of life	Replace Printer Cartridge (Perform the Printer Cartridge cleaning procedure discussed on page 6-16 before replacing the Printer Cartridge)
	Printer power supply has failed	Contact your dealer or Xerox/ Rank Xerox
Spot deletions Areas of the print are extremely light or missing	Damp paper stock	Replace paper stock
	Defective Printer Cartridge, or the Printer Cartridge is at its end of life	Replace Printer Cartridge
Vertical line deletions Localized print deletions forming narrow lines running in the direction of the paper movement	Printer Cartridge not installed correctly.	Remove or reinstall the Printer Cartridge
	Defective paper stock, creases, folds, etc.	Replace paper stock
	Defective Printer Cartridge, or the Printer Cartridge is at its end of life	Replace Printer Cartridge
Horizontal line deletions Localized print deletions appearing as bands running across the page perpendicular to the direction of paper movement	Defective paper stock, creases, folds, etc.	Replace paper stock
	Page too complex	Decrease page complexity or add printer memory
Vertical dark streaks Black lines running across the print in the direction of paper movement	Contaminated paper path	Clean paper path. Print several blank sheets of paper to remove any toner accumulations
	Defective Printer Cartridge, or the Printer Cartridge is at its end of life	Replace Printer Cartridge (Perform the Printer Cartridge cleaning procedure discussed on page 6-16 before replacing the Printer Cartridge)

Table 6.3 Page 2 of 4

Table 6.3 Solving print quality problems (continued)

Problem	Possible Cause(s)	Corrective Action(s)
Repetitive horizontal dark streaks Black lines running across the page perpendicular to the direction of paper movement	Contaminated paper path	Clean paper path. Print several blank sheets of paper to remove any toner accumulations
	Defective Printer Cartridge, or the Printer Cartridge is at its end of life	Replace Printer Cartridge (Perform the Printer Cartridge cleaning procedure discussed on page 6-16 before replacing the Printer Cartridge)
Dark spots/marks	Contaminated paper path	Clean paper path. Print several blank sheets of paper to remove any toner accumulations
	Defective Printer Cartridge	Replace Printer Cartridge (Perform the Printer Cartridge cleaning procedure discussed on page 6-16 before replacing the Printer Cartridge)
Unfused or partially fused image The printed image is not fully fused to the paper and easily rubs off	Damp paper stock	Replace paper stock
	Heavy or unusual paper stock	Use only approved paper/media Use thick paper setting for heavy stock
	Defective Fuser Module	Contact your dealer or Xerox/Rank Xerox
Wrinkled prints Prints are wrinkled, creased, or torn	Poor paper condition	Inspect/replace paper stock
	Paper is damp	Replace paper stock
	Fuser module is at its end of life	Contact your dealer or Xerox/Rank Xerox
Blurred prints Image is blurred at the edges	Poor paper condition	Inspect/replace paper stock
	Paper is damp	Replace paper stock
	Contaminated Printer Cartridge	Replace Printer Cartridge (Perform the Printer Cartridge cleaning procedure discussed on page 6-16 before replacing the Printer Cartridge)

Table 6.3 Page 3 of 4

Table 6.3 Solving print quality problems *(continued)*

Problem	Possible Cause(s)	Corrective Action(s)
Random deletions Random light areas and deletions	Poor paper condition	Inspect/replace paper stock
	Paper is damp	Replace paper stock
	Contaminated Printer Cartridge	Replace Printer Cartridge (Perform the Printer Cartridge cleaning procedure discussed below before replacing the Printer Cartridge)
Table 6.3 Page 4 of 4		

Printer Cartridge Cleaning Procedure

This procedure is used to clean any toner/ink contamination which may be present on or in the Printer Cartridge and is found on printed pages.

To initiate the procedure, follow these instructions:

- 1 Power ON the Printer and allow the "READY" LED to light and stay lit.**
- 2 Press and hold down on the Front Panel Key until all four LED's on the Control Panel remain lit (NOT BLINKING) and the Printer begins to cycle up (STARTS TO FEED PAPER), then release pressure on key.**

The Printer will produce one page with Toner/Ink contamination and background. Once is usually sufficient to clean the Printer Cartridge, but heavy contamination may require that this procedure be repeated.

Chapter 7

Maintenance

- Overview** 7-2
- Printer Cartridge** 7-2
 - Replacing the Printer Cartridge 7-2
- Adjusting the Print Density** 7-4
 - Print Density 7-4
 - EconoMode 7-4
- Cleaning the Printer** 7-5

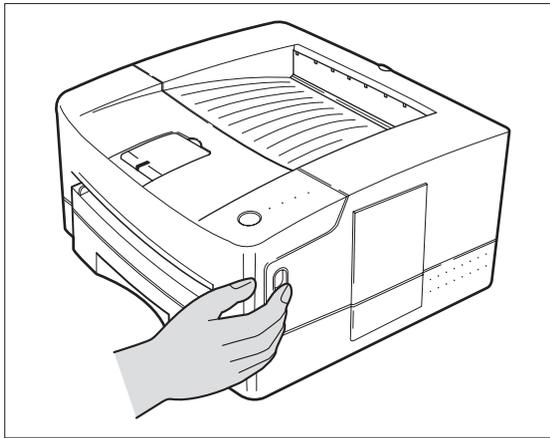
Overview

In this chapter, you will learn how to replace the Printer Cartridge and how to adjust the print density.

Printer Cartridge

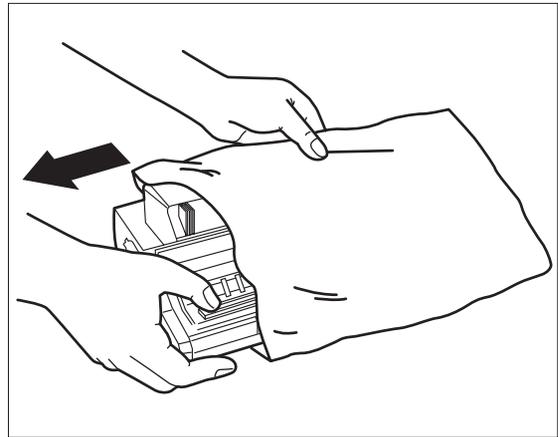
Replacing the Printer Cartridge

Refer to the following steps for Printer Cartridge replacement.



- 1 Press the top door release button to open the top door.**

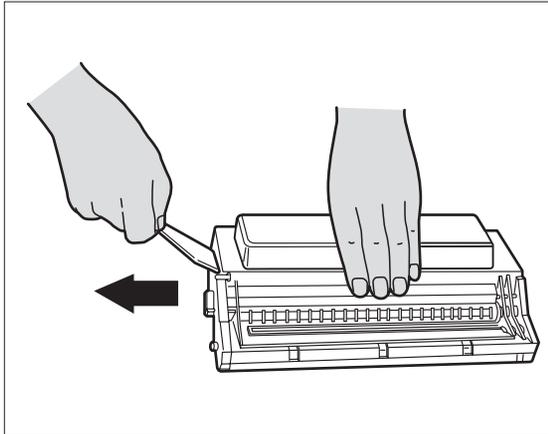
Remove the old Printer Cartridge.



- 2 Remove the new Printer Cartridge from its packaging.**

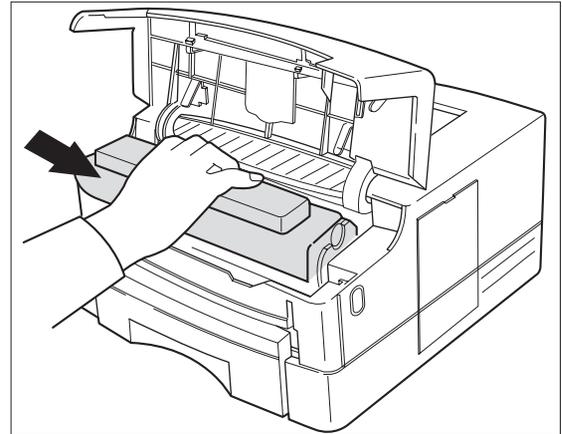


Please remember to recycle the used Printer Cartridge by following the instructions enclosed in the new Printer Cartridge packaging.



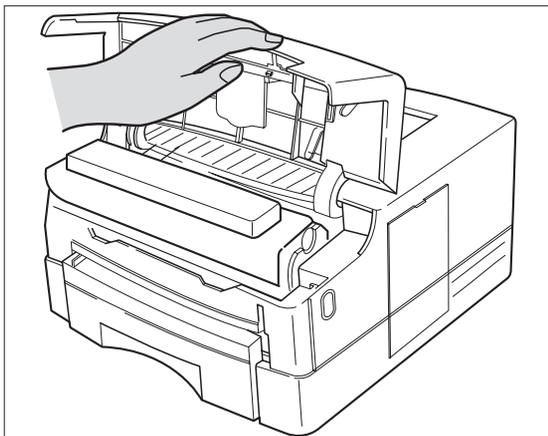
3 Remove the Plastic Strip from the Printer Cartridge.

Grasp the clear tab on top of the Printer Cartridge and pull firmly to remove the entire strip of clear sealing tape. Discard the tape, shake the Printer Cartridge side to side to distribute the toner evenly inside the cartridge.



4 Insert the Printer Cartridge.

With one hand, hold the Printer Cartridge by the top middle (do not grasp the Printer Cartridge by the shutter wires), and slide it into the printer.



5 Close the top door.

If the door does not close easily, check that the Printer Cartridge is installed correctly.

Adjusting the Print Density

Print Density

The print density of this printer can be selected through the Remote Control Panel. Refer to *Chapter 5: Using Software Tools*. The three different print densities available are dark, medium and light. The medium setting is the factory default.

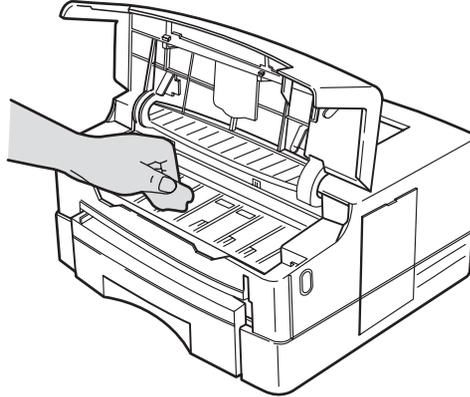
EconoMode

With one Printer Cartridge, you can print up to 6000 sheets of normal documents (5% coverage). You can extend the life of your Printer Cartridge even further by utilizing the EconoMode. While you are printing for an intermediate draft review, you can select the EconoMode to print. For the final draft, you can switch back to normal printing. Refer to the section *“The Remote Control Panel (RCP)”* (page 5-4) for the EconoMode setting procedure.

Cleaning the Printer

To prevent excessive wear and to preserve the print quality, keep the printer free of dust and debris.

Figure 7.1 Cleaning the printer



Before cleaning the printer, disconnect the printer from its power source.

- 1** Clean the outside of the printer with a slightly damp cloth (Use water only).



Do NOT use ammonia-based cleaners on or around your printer.

- 2** Clean the inside of the printer with a dry lint-free cloth. Remove all dust, spilled toner, and particles of paper.
- 3** Clean the ridges of the rear printer door with a dry lint-free cloth or brush.

Chapter 8

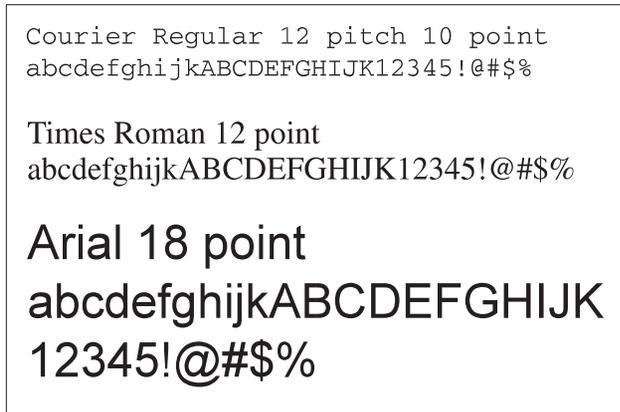
Fonts

<i>Definition of Fonts</i>	8-2
<i>Internal and Soft Fonts</i>	8-4
<i>Internal Fonts</i>	8-4
<i>Soft Fonts</i>	8-4
<i>Selecting Fonts</i>	8-5

Definition of Fonts

A font is a group of characters and symbols that have similar characteristics.

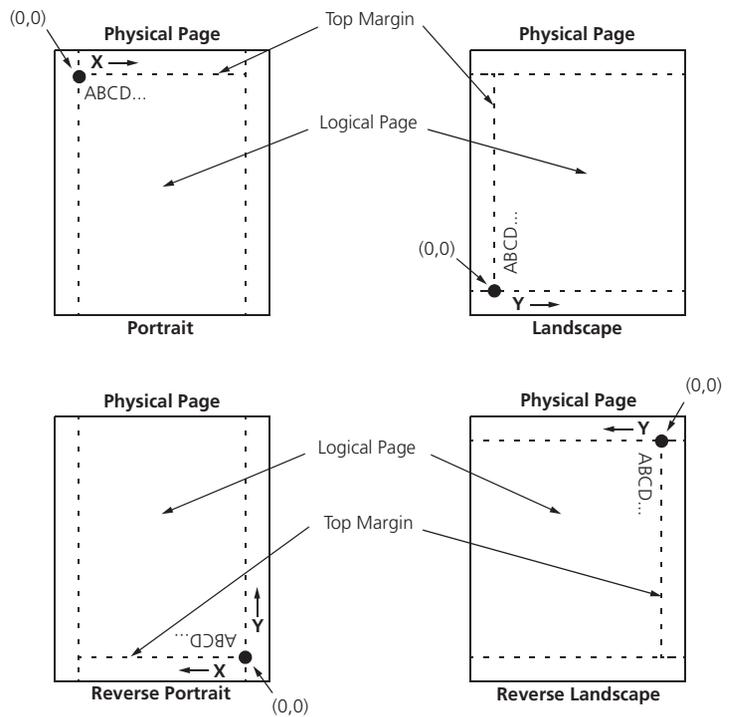
Figure 8.1 Font samples



- **Symbol Set**
A unique subgrouping of the available alphabetic, numeric, and special characters in a font.
- **Spacing**
The character width.
Fixed pitch font characters have the same width.
The width of a proportional font character is variable.
- **Pitch**
The number of characters that can be printed in one horizontal inch.
- **Height (Point Size)**
Units of measurement that identify the height of a font.
72 points per inch.
- **Style**
A stylistic variation of a font, such as bold or italic.

- Stroke Weight
The thickness of the character.
- Typeface
The name of the design of characters and symbols.
- Orientation
The position of the logical page with respect to the physical page.

Figure 8.2 Examples of orientation



Internal and Soft Fonts

Internal Fonts

Depending on the capability of your software, you can size the proportionally spaced internal typeface from 0.25 point to 999 point, in quarter-point increments.

The printer automatically rotates any font from portrait to landscape depending on the page orientation.

When the printer is ON-LINE and the READY LED is on, you can print the list of currently available fonts for the printer by depressing the key for 4 seconds.

Soft Fonts

Downloading is the process of transferring soft fonts from a host computer to the printer's memory.

Figure 8.3 Examples of soft fonts (TrueType scalable)



Note

Once downloaded, a soft font occupies a portion of printer memory (RAM)

Selecting Fonts

You can select fonts by using the font selection features of your software application by sending printer commands through the software program or by using the Remote Control Panel program.

The factory default font is Courier, 12 point, 10 pitch, portrait orientation, upright medium weight font with the Roman8 symbol set.

When the printer looks for a requested font, it checks the font source in the following order:

1. Soft font.
2. Internal font.





Appendix A

Printer Commands

<i>PCL Printer Commands</i>	A-2
<i>HP-GL/2 Printer Commands</i>	A-14
<i>PJL Commands</i>	A-17

PCL Printer Commands

Table A.1 PCL printer commands

Function	Parameter	Command	Decimal Value	Hexadecimal Value
JOB CONTROL COMMANDS				
Reset				
Universal Exit Language (ULE)	—	E _C %-12345X	027 037 045 049 050 051 052 053 088	1B 25 2D 31 32 33 34 35 58
Reset	—	E _C E	027 069	1B 45
Number Of Copies	# of Copies	E _C &l#X (x)	027 038 108 # ... # 088 (120)	1B 26 6C # ... # 58 (78)
Long Edge (Left) Offset Registration	# of Decipoints (1/720")	E _C &l#U (u)	027 038 108 # ... # 085 (117)	1B 26 6C # ... # 55 (75)
Short Edge (Top) Offset Registration	# of Decipoints (1/720")	E _C &l#Z (z)	027 038 108 # ... # 090 (122)	1B 26 6C # ... # 5A (7A)
Unit Of Measure	# = Number of units per inch	E _C &u#D (d)	027 038 117 # ... # 068 (100)	1B 26 75 # ... # 44 (64)
PAGE CONTROL COMMANDS				
Page Length and Size				
Paper Source	Eject Page	E _C &l0H (h)	027 038 108 048 072 (104)	1B 26 6C 30 48 (68)
	Paper Tray	E _C &l1H (h)	027 038 108 049 072 (104)	1B 26 6C 31 48 (68)
	Manual Feed	E _C &l2H (h)	027 038 108 050 072 (104)	1B 26 6C 32 48 (68)
	Manual Envelope Feed	E _C &l3H (h)	027 038 108 051 072 (104)	1B 26 6C 33 48 (68)
	Optional Paper Tray (Lower)	E _C &l4H (h)	027 038 108 052 072 (104)	1B 26 6C 34 48 (68)
Page Size	Executive	E _C &l1A (a)	027 038 108 049 065 (97)	1B 26 6C 31 41 (61)
	Letter	E _C &l2A (a)	027 038 108 050 065 (97)	1B 26 6C 32 41 (61)
	Legal	E _C &l3A (a)	027 038 108 051 065 (97)	1B 26 6C 33 41 (61)
	A4	E _C &l26A (a)	027 038 108 050 054 065 (97)	1B 26 6C 32 36 41 (61)
	Monarch	E _C &l80A (a)	027 038 108 056 048 065 (97)	1B 26 6C 37 31 41 (61)
	COM 10	E _C &l81A (a)	027 038 108 056 049 065 (97)	1B 26 6C 38 31 41 (61)
	DL	E _C &l90A (a)	027 038 108 057 048 065 (97)	1B 26 6C 39 30 41 (61)
	C5	E _C &l91A (a)	027 038 108 057 049 065 (97)	1B 26 6C 39 31 41 (61)
	Folio	E _C &l3001A (a)	027 038 108 051 048 048 049 065 (97)	1B 26 6C 33 30 30 31 41 (61)
B5	E _C &l100A (a)	027 038 108 049 048 048 065 (97)	1B 26 6C 31 30 30 41 (61)	
Page Length	# of Lines (5-128)	E _C &l#P (p)	027 038 108 #...# 080 (112)	1B 26 6C #...# 050 (70)

Table A.1 Page 1 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command		Decimal Value		Hexadecimal Value	
Orientation							
Orientation	Portrait	$E_C \&l10O$	(o)	027 038 108 048 079	(111)	1B 26 6C 30 4F	(6F)
	Landscape	$E_C \&l1I0$	(o)	027 038 108 049 079	(111)	1B 26 6C 31 4F	(6F)
	Reverse Portrait	$E_C \&l2O$	(o)	027 038 108 050 079	(111)	1B 26 6C 32 4F	(6F)
	Reverse Landscape	$E_C \&l3O$	(o)	027 038 108 051 079	(111)	1B 26 6C 33 4F	(6F)
Print Direction	# Degrees of Rotation	$E_C \&a\#P$		027 038 097 # ... # 080	(112)	1B 26 61 # ... # 50	(70)
Margins and Text Length							
Top Margin	# of Lines	$E_C \&l\#E$	(e)	027 038 108 # ... # 069	(101)	1B 26 6C # ... # 45	(65)
Text Length	# of Lines	$E_C \&l\#F$	(f)	027 038 108 # ... # 070	(102)	1B 26 6C # ... # 46	(66)
Left Margin	# of Columns	$E_C \&a\#L$	(l)	027 038 097 # ... # 076	(108)	1B 26 61 # ... # 4C	(6C)
Right Margin	# of Columns	$E_C \&a\#M$	(m)	027 038 097 # ... # 077	(109)	1B 26 61 # ... # 4D	(6D)
Clear Horizontal Margins	—	$E_C 9$		027 057		1B 39	
Perforation Skip Mode							
Perforation Skip	Disable	$E_C \&l0L$	(l)	027 038 108 048 076	(108)	1B 26 6C 30 4C	(6C)
	Enable	$E_C \&l1L$	(l)	027 038 108 049 076	(108)	1B 26 6C 31 4C	(6C)
Horizontal Column Spacing							
Horizontal Motion Index (HMI)	# of 1/120" Increments	$E_C \&k\#H$	(h)	027 038 107 # ... # 072	(104)	1B 26 6B # ... # 48	(68)
Vertical Line Spacing							
Vertical Motion Index (VMI)	# of 1/48" Increments	$E_C \&l\#C$	(c)	027 038 108 # ... # 067	(99)	1B 26 6C # ... # 43	(63)
Line Spacing (Lines per inch)	1 line/inch	$E_C \&l1D$	(d)	027 038 108 049 068	(100)	1B 26 6C 31 44	(64)
	2 lines/inch	$E_C \&l2D$	(d)	027 038 108 050 068	(100)	1B 26 6C 32 44	(64)
	3 lines/inch	$E_C \&l3D$	(d)	027 038 108 051 068	(100)	1B 26 6C 33 44	(64)
	4 lines/inch	$E_C \&l4D$	(d)	027 038 108 052 068	(100)	1B 26 6C 34 44	(64)
	6 lines/inch	$E_C \&l6D$	(d)	027 038 108 054 068	(100)	1B 26 6C 36 44	(64)
	8 lines/inch	$E_C \&l8D$	(d)	027 038 108 056 068	(100)	1B 26 6C 38 44	(64)
	12 lines/inch	$E_C \&l12D$	(d)	027 038 108 049 050 068	(100)	1B 26 6C 31 32 44	(64)
	16 lines/inch	$E_C \&l16D$	(d)	027 038 108 049 054 068	(100)	1B 26 6C 31 36 44	(64)
24 lines/inch	$E_C \&l24D$	(d)	027 038 108 050 052 068	(100)	1B 26 6C 32 34 44	(64)	
48 lines/inch	$E_C \&l48D$	(d)	027 038 108 052 056 068	(100)	1B 26 6C 34 38 44	(64)	

Table A.1 Page 2 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command		Decimal Value	Hexadecimal Value
CURSOR POSITIONING					
Vertical and Horizontal					
Vertical Position	# of Rows	E _C &a#R	(r)	027 038 097 # ... # 082 (114)	1B 26 61 # ... # 52 (72)
	# of Units	E _C *p#Y	(y)	027 042 112 # ... # 089 (121)	1B 2A 70 # ... # 59 (79)
	# of Decipoints	E _C &a#V	(v)	027 038 097 # ... # 086 (118)	1B 26 61 # ... # 56 (76)
Horizontal Position	# of Columns	E _C &a#C	(c)	027 038 097 # ... # 067 (99)	1B 26 61 # ... # 43 (63)
	# of Units	E _C *p#X	(x)	027 042 112 # ... # 088 (120)	1B 2A 70 # ... # 58 (78)
	# of Decipoints	E _C &a#H	(h)	027 038 097 # ... # 072 (104)	1B 26 61 # ... # 48 (68)
Half Line Feed		E _C =		027 061	1B 3D
End-of-Line Termination					
Line Termination	CR=CR; LF=LF; FF=FF	E _C &k0G	(g)	027 038 107 048 071 (103)	1B 26 6B 30 47 (67)
	CR=CR+LF; LF=LF; FF=FF	E _C &k1G	(g)	027 038 107 049 071 (103)	1B 26 6B 31 47 (67)
	CR=CR; LF=CR+LF; FF=CR+FF	E _C &k2G	(g)	027 038 107 050 071 (103)	1B 26 6B 32 47 (67)
	CR=CR+LF; LF=CR+LF; FF=CR+FF	E _C &k3G	(g)	027 038 107 051 071 (103)	1B 26 6B 33 47 (67)
Push/Pop Position					
Push/Pop Position	Push	E _C &f0S	(s)	027 038 102 048 083 (115)	1B 26 66 30 53 (73)
	Pop	E _C &f1S	(s)	027 038 102 049 083 (115)	1B 26 66 31 53 (73)
FONT SELECTION					
Symbol Set Selection					
Primary Symbol Set	ISO 60: Norwegian 1	E _C (0D)		027 040 048 068	1B 28 30 44
	ISO 4: United Kingdom	E _C (1E)		027 040 049 069	1B 28 31 45
	Windows 3.1 Latin 2	E _C (9E)		027 040 057 069	1B 28 39 45
	ISO 69: French	E _C (1F)		027 040 049 070	1B 28 31 46
	ISO 21: German	E _C (1G)		027 040 049 071	1B 28 31 47
	ISO 15: Italian	E _C (0I)		027 040 048 073	1B 28 30 49
	Microsoft Publishing	E _C (6J)		027 040 054 074	1B 28 36 4A
	DeskTop	E _C (7J)		027 040 055 074	1B 28 37 4A
	PS Text	E _C (10J)		027 040 049 048 074	1B 28 31 30 4A
MC Text	E _C (12J)		027 040 049 050 074	1B 28 31 32 4A	

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	Ventura International	E _C (13J)	027 040 049 051 074	1B 28 31 33 4A
	Ventura US	E _C (14J)	027 040 049 052 074	1B 28 31 34 4A
	Wingdings	E _C (579L)	027 040 053 055 057 076	1B 28 35 37 39 4C
	PS Math	E _C (5M)	027 040 053 077	1B 28 35 4D
	Ventura Math	E _C (6M)	027 040 054 077	1B 28 36 4D
	Math-8	E _C (8M)	027 040 056 077	1B 28 38 4D
	Symbol	E _C (19M)	027 040 049 057 077	1B 28 31 39 4D
	ISO 8859-1 (ECMA-94) Latin 1	E _C (0N)	027 040 048 078	1B 28 30 4E
	ISO 8859-2 Latin 2	E _C (2N)	027 040 050 078	1B 28 32 4E
	ISO 8859-9 Latin 5	E _C (5N)	027 040 053 078	1B 28 35 4E
	ISO 11: Swedish	E _C (0S)	027 040 048 083	1B 28 30 53
	ISO 17: Spanish	E _C (2S)	027 040 050 083	1B 28 32 53
	Windows 3.1 Latin 5	E _C (5T)	027 040 053 084	1B 28 35 54
	PC Turkish	E _C (9T)	027 040 057 084	1B 28 39 54
	ISO 6: ASCII	E _C (0U)	027 040 048 085	1B 28 30 55
	Legal	E _C (1U)	027 040 049 085	1B 28 31 55
	Roman-8	E _C (8U)	027 040 056 085	1B 28 38 55
	Windows 3.0 Latin 1	E _C (9U)	027 040 057 085	1B 28 39 55
	PC-8	E _C (10U)	027 040 049 048 085	1B 28 31 30 55
	PC-8 D/N	E _C (11U)	027 040 049 049 085	1B 28 31 31 55
	PC 850	E _C (12U)	027 040 049 050 085	1B 28 31 32 55
	Pi Font	E _C (15U)	027 040 049 053 085	1B 28 31 35 55
	PC-852	E _C (17U)	027 040 049 055 085	1B 28 31 37 55
	Windows 3.1 Latin 1 (ANSI)	E _C (19U)	027 040 049 057 085	1B 28 31 39 55

Table A.1 Page 4 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Spacing				
Primary Spacing	Fixed	$E_C(s0P)$ (p)	027 040 115 048 080 (112)	1B 28 73 30 50 (70)
	Proportional	$E_C(s1P)$ (p)	027 040 115 049 080 (112)	1B 28 73 31 50 (70)
Pitch				
Primary Pitch	# Characters/ inch	$E_C(s\#H)$ (h)	027 040 115 # ... # 072 (104)	1B 28 73 # ... # 48 (68)
Set Pitch Mode	10.0	$E_C\&k0S$ (s)	027 038 107 048 083 (115)	1B 26 68 30 53 (73)
	Compressed (16.5-16.7)	$E_C\&k2S$ (s)	027 038 107 050 083 (115)	1B 26 68 32 53 (73)
	Elite (12.0)	$E_C\&k4S$ (s)	027 038 107 052 083 (115)	1B 26 68 34 53 (73)
Point Size				
Primary Height	# Points	$E_C(s\#V)$ (v)	027 040 115 # ... # 086 (118)	1B 28 73 # ... # 56 (76)
Style				
Primary Style	Upright (Solid)	$E_C(s0S)$ (s)	027 040 115 048 083 (115)	1B 28 73 30 53 (73)
	Italic	$E_C(s1S)$ (s)	027 040 115 049 083 (115)	1B 28 73 31 53 (73)
	Condensed	$E_C(s4S)$ (s)	027 040 115 052 083 (115)	1B 28 73 34 53 (73)
	Condensed Italic	$E_C(s5S)$ (s)	027 040 115 053 083 (115)	1B 28 73 35 53 (73)
	Compressed (Extra Condensed)	$E_C(s8S)$ (s)	027 040 115 056 083 (115)	1B 28 73 38 53 (73)
	Expanded	$E_C(s24S)$ (s)	027 040 115 050 052 083 (115)	1B 28 73 32 34 53 (73)
	Outline	$E_C(s32S)$ (s)	027 040 115 051 050 083 (115)	1B 28 73 33 32 53 (73)
	Inline	$E_C(s64S)$ (s)	027 040 115 054 052 083 (115)	1B 28 73 36 34 53 (73)
	Shadowed	$E_C(s128S)$ (s)	027 040 115 049 050 056 083 (115)	1B 28 73 31 32 38 53 (73)
	Outline Shadowed	$E_C(s160S)$ (s)	027 040 115 049 054 048 083 (115)	1B 28 73 31 36 30 53 (73)

Table A.1 Page 5 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Stroke Weight				
Primary Font Stroke Weight	Ultra Thin	$E_C(s-7B)$ (b)	027 040 115 045 055 066 (98)	1B 28 73 2D 37 42 (62)
	Extra Thin	$E_C(s-6B)$ (b)	027 040 115 045 054 066 (98)	1B 28 73 2D 36 42 (62)
	Thin	$E_C(s-5B)$ (b)	027 040 115 045 053 066 (98)	1B 28 73 2D 35 42 (62)
	Extra Light	$E_C(s-4B)$ (b)	027 040 115 045 052 066 (98)	1B 28 73 2D 34 42 (62)
	Light	$E_C(s-3B)$ (b)	027 040 115 045 051 066 (98)	1B 28 73 2D 33 42 (62)
	Demi Light	$E_C(s-2B)$ (b)	027 040 115 045 050 066 (98)	1B 28 73 2D 32 42 (62)
	Semi Light	$E_C(s-1B)$ (b)	027 040 115 045 049 066 (98)	1B 28 73 2D 31 42 (62)
	Medium (book or text)	$E_C(s0B)$ (b)	027 040 115 048 066 (98)	1B 28 73 30 42 (62)
	Semi Bold	$E_C(s1B)$ (b)	027 040 115 049 066 (98)	1B 28 73 31 42 (62)
	Demi Bold	$E_C(s2B)$ (b)	027 040 115 050 066 (98)	1B 28 73 32 42 (62)
	Bold	$E_C(s3B)$ (b)	027 040 115 051 066 (98)	1B 28 73 33 42 (62)
	Extra Bold	$E_C(s4B)$ (b)	027 040 115 052 066 (98)	1B 28 73 34 42 (62)
	Black	$E_C(s5B)$ (b)	027 040 115 053 066 (98)	1B 28 73 35 42 (62)
	Extra Black	$E_C(s6B)$ (b)	027 040 115 054 066 (98)	1B 28 73 36 42 (62)
Ultra Black	$E_C(s7B)$ (b)	027 040 115 055 066 (98)	1B 28 73 37 42 (62)	
Primary Typeface Family				
Typeface Family	Albertus	$E_C(s4362T)$ (t)	027 040 115 052 051 054 050 084 (116)	1B 28 73 34 33 36 32 54 (74)
	Antique Olive	$E_C(s4168T)$ (t)	027 040 115 052 049 054 056 084 (116)	1B 28 73 34 31 36 38 54 (74)
	Coronet	$E_C(s4116T)$ (t)	027 040 115 052 049 049 054 084 (116)	1B 28 73 34 31 31 36 54 (74)
	Courier	$E_C(s4099T)$ (t)	027 040 115 052 048 057 057 084 (116)	1B 28 73 34 30 39 39 54 (74)
	Letter Gothic	$E_C(s4102T)$ (t)	027 040 115 052 049 048 050 084 (116)	1B 28 73 34 31 30 32 54 (74)
	CG Times	$E_C(s4101T)$ (t)	027 040 115 052 049 048 049 084 (116)	1B 28 73 34 31 30 31 54 (74)
	Univers	$E_C(s4148T)$ (t)	027 040 115 052 049 052 056 084 (116)	1B 28 73 34 31 34 38 54 (74)
	Wingdings (Intellifont version)	$E_C(s6826T)$ (t)	027 040 115 054 056 050 054 084 (116)	1B 28 73 36 38 32 36 54 (74)
Font Default				
Font Default	Primary Font	$E_C(3@)$	027 040 051 064	1B 28 33 40
	Secondary Font	$E_C(3@)$	027 041 051 064	1B 29 33 40
Underline				
Underline	Enable Fixed	$E_C&d0D$ (d)	027 038 100 048 068 (100)	1B 26 64 30 44 (64)
	Enable Floating	$E_C&d3D$ (d)	027 038 100 051 068 (100)	1B 26 64 33 44 (64)
	Disable	$E_C&d@$	027 038 100 064	1B 26 64 40

Table A.1 Page 6 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Transparent Print				
Transparent Print Data	# of Bytes	E _C &p#X[Data]	027 038 112 # ... # 088	1B 26 70 # ... # 58
FONT MANAGEMENT				
Assign Font ID	Font ID #	E _C *c#D (d)	027 042 099 # ... # 068 (100)	1B 2A 63 # ... # 44 (64)
Font and Character Control	Delete all Fonts	E _C *c0F (f)	027 042 099 048 070 (102)	1B 2A 63 30 46 (66)
	Delete all temporary fonts	E _C *c1F (f)	027 042 099 049 070 (102)	1B 2A 63 31 46 (66)
	Delete last font ID specified	E _C *c2F (f)	027 042 099 050 070 (102)	1B 2A 63 32 46 (66)
	Delete last character specified	E _C *c3F (f)	027 042 099 051 070 (102)	1B 2A 63 33 46 (66)
	Make font temporary	E _C *c4F (f)	027 042 099 052 070 (102)	1B 2A 63 34 46 (66)
	Make font permanent	E _C *c5F (f)	027 042 099 053 070 (102)	1B 2A 63 35 46 (66)
	Copy/Assign the currently invoked font as temporary	E _C *c6F (f)	027 042 099 054 070 (102)	1B 2A 63 36 46 (66)
Soft Symbol Set Management/Creation				
Set Symbol Set	ID #	E _C *c#R (r)	027 042 099 # ... # 082 (114)	1B 2A 63 # ... # 52 (72)
Define Symbol Set	# of Bytes	E _C (f#W[Data])	027 040 102 # ... # 087	1B 28 66 # ... # 57
Symbol Set Control	Delete all symbol sets	E _C *c0S (s)	027 042 099 048 083 (115)	1B 2A 63 30 53
	Delete all temporary symbol sets	E _C *c1S (s)	027 042 099 049 083 (115)	1B 2A 63 31 53 (73)
	Delete current soft symbol set (last ID #)	E _C *c2S (s)	027 042 099 050 083 (115)	1B 2A 63 32 53 (73)
	Make current soft symbol set temporary	E _C *c4S (s)	027 042 099 052 083 (115)	1B 2A 63 34 53 (73)
	Make current soft symbol set permanent	E _C *c5S (s)	027 042 099 053 083 (115)	1B 2A 63 35 53 (73)
Font Selection by ID Number				
Select Font (with ID #)	ID # primary font	E _C (#X)	027 040 # ... # 088	1B 28 # ... # 58
	ID # secondary font	E _C)#X	027 041 # ... # 088	1B 29 # ... # 58

Table A.1 Page 7 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Soft Font Creation				
Font Descriptor (font header)	# of bytes	E_C s#W[Data]	027 041 115 # ... # 087	1B 29 73 # ... # 57
Download character	# of bytes	E_C (s#W[Data]	027 040 115 # ... # 087	1B 28 73 # ... # 57
Character code	Character code # (decimal)	E_C *c#E (e)	027 042 099 # ... # 069 (101)	1B 2A 63 # ... # 45 (65)
GRAPHICS				
Raster Graphics				
Raster Resolution	75 dots/inch	E_C *t75R (r)	027 042 116 055 053 082 (114)	1B 2A 74 37 35 52 (72)
	100 dots/inch	E_C *t100R (r)	027 042 116 049 048 048 082 (114)	1B 2A 74 31 30 30 52 (72)
	150 dots/inch	E_C *t150R (r)	027 042 116 049 053 048 082 (114)	1B 2A 74 31 35 30 52 (72)
	300 dots/inch	E_C *t300R (r)	027 042 116 051 048 048 082 (114)	1B 2A 74 33 30 30 52 (72)
Raster Graphics Presentation	Follows orientation	E_C *r0F (f)	027 042 114 048 070 (102)	1B 2A 72 30 46 (66)
	Follows physical page	E_C *r3F (f)	027 042 114 051 070 (102)	1B 2A 72 33 46 (66)
Start Raster Graphics	Left Raster Graphics Margin	E_C *r0A (a)	027 042 114 048 065 (97)	1B 2A 72 30 41 (61)
	Current Cursor	E_C *r1A (a)	027 042 114 049 065 (97)	1B 2A 72 31 41 (61)
Raster Y Offset	# of Raster Lines of vertical movement	E_C *b#Y (y)	027 042 098 # ... # 089 (121)	1B 2A 62 # ... # 59 (79)
Set Raster Compression Mode (Method)	Unencoded	E_C *b0M (m)	027 042 098 048 077 (109)	1B 2A 62 30 4D (6D)
	Run-Length Encoded	E_C *b1M (m)	027 042 098 049 077 (109)	1B 2A 62 31 4D (6D)
	Tagged Image File Format	E_C *b2M (m)	027 042 098 050 077 (109)	1B 2A 62 32 4D (6D)
	Delta Row	E_C *b3M (m)	027 042 098 051 077 (109)	1B 2A 62 33 4D (6D)
	Adaptive compression	E_C *b5M (m)	027 042 098 053 077 (109)	1B 2A 62 35 4D (6D)
Transfer Raster Data by row	# of Bytes	E_C *b#W[Data]	027 042 098 # ... # 087	1B 2A 62 # ... # 57
End Raster Graphics	Old version	E_C *rB (b)	027 042 114 066 (98)	1B 2A 72 42 (62)
	Preferred	E_C *rC (c)	027 042 114 067 (99)	1B 2A 72 43 (63)
Raster Height	# Raster Rows	E_C *r#T (t)	027 042 114 # ... # 084 (116)	1B 2A 72 # ... # 54 (74)
Raster Width	# Pixels of the Specified Resolution	E_C *r#S (u)	027 042 114 # ... # 083 (115)	1B 2A 72 # ... # 53 (73)

Table A.1 Page 8 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command		Decimal Value		Hexadecimal Value	
THE PRINT MODEL							
Imaging							
Select Current Pattern	Solid Black (default)	E _C *v0T	(t)	027 042 118 048 084	(116)	1B 2A 76 30 54	(74)
	Solid White	E _C *v1T	(t)	027 042 118 049 084	(116)	1B 2A 76 31 54	(74)
	HP-defined Shading Pattern	E _C *v2T	(t)	027 042 118 050 084	(116)	1B 2A 76 32 54	(74)
	HP-defined Cross-Hatched Pattern	E _C *v3T	(t)	027 042 118 051 084	(116)	1B 2A 76 33 54	(74)
	User-defined pattern	E _C *v4T	(t)	027 042 118 052 084	(116)	1B 2A 76 34 54	(74)
Source Transparency Mode	Transparent	E _C *v0N	(n)	027 042 118 048 078	(110)	1B 2A 76 30 4E	(6E)
	Opaque	E _C *v1N	(n)	027 042 118 049 078	(110)	1B 2A 76 31 4E	(6E)
Pattern Transparency Mode	Transparent	E _C *v0O	(o)	027 042 118 048 079	(111)	1B 2A 76 30 4F	(6E)
	Opaque	E _C *v1O	(o)	027 042 118 049 079	(111)	1B 2A 76 31 4F	(6E)
Rectangle Dimensions							
Rectangle Width (Horizontal Size)	# of dots	E _C *c#A	(a)	027 042 099 # ... # 065	(97)	1B 2A 63 # ... # 41	(61)
	# of decipoints	E _C *c#H	(h)	027 042 099 # ... # 072	(104)	1B 2A 63 # ... # 48	(68)
Rectangle Height (Vertical Size)	# of dots	E _C *c#B	(b)	027 042 099 # ... # 066	(98)	1B 2A 63 # ... # 42	(62)
	# of decipoints	E _C *c#V	(v)	027 042 099 # ... # 086	(118)	1B 2A 63 # ... # 56	(76)
Fill Rectangular Area	Solid Black	E _C *c0P	(p)	027 042 099 048 080	(112)	1B 2A 63 30 50	(70)
	Erase (solid white fill)	E _C *c1P	(p)	027 042 099 049 080	(112)	1B 2A 63 31 50	(70)
	Shaded Fill	E _C *c2P	(p)	027 042 099 050 080	(112)	1B 2A 63 32 50	(70)
	Cross-hatched Fill	E _C *c3P	(p)	027 042 099 051 080	(112)	1B 2A 63 33 50	(70)
	User-Defined Current Pattern	E _C *c4P E _C *c5P	(p)	027 042 099 052 080 027 042 099 053 080	(112) (112)	1B 2A 63 34 50 1B 2A 63 35 50	(70) (70)
Pattern ID	% of Shading or Type of Pattern or User Pattern ID	E _C *c#G	(g)	027 042 099 # ... # 071	(103)	1B 2A 63 # ... # 47	(67)

Table A.1 Page 9 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Shading	2% Gray	E_C*c2G (g)	027 042 099 050 071 (103)	1B 2A 63 32 47 (67)
	10% Gray	E_C*c10G (g)	027 042 099 049 048 071 (103)	1B 2A 63 31 30 47 (67)
	15% Gray	E_C*c15G (g)	027 042 099 049 053 071 (103)	1B 2A 63 31 35 47 (67)
	30% Gray	E_C*c30G (g)	027 042 099 051 048 071 (103)	1B 2A 63 33 30 47 (67)
	45% Gray	E_C*c45G (g)	027 042 099 052 053 071 (103)	1B 2A 63 34 35 47 (67)
	70% Gray	E_C*c70G (g)	027 042 099 055 048 071 (103)	1B 2A 63 37 30 47 (67)
	90% Gray	E_C*c90G (g)	027 042 099 057 048 071 (103)	1B 2A 63 39 30 47 (67)
	100% Gray	$E_C*c100G$ (g)	027 042 099 049 048 048 071 (103)	1B 2A 63 31 30 30 47 (67)
Pattern	1 Horiz. Line	E_C*c1G (g)	027 042 099 049 071 (103)	1B 2A 63 31 47 (67)
	2 Vert. Lines	E_C*c2G (g)	027 042 099 050 071 (103)	1B 2A 63 32 47 (67)
	3 Diagonal Lines	E_C*c3G (g)	027 042 099 051 071 (103)	1B 2A 63 33 47 (67)
	4 Diagonal Lines	E_C*c4G (g)	027 042 099 052 071 (103)	1B 2A 63 34 47 (67)
	5 Square Grid	E_C*c5G (g)	027 042 099 053 071 (103)	1B 2A 63 35 47 (67)
	6 Diagonal Grid	E_C*c6G (g)	027 042 099 054 071 (103)	1B 2A 63 36 47 (67)
USER-DEFINED PATTERN/MANAGEMENT CREATION				
Define Pattern	# of bytes	$E_C*#W[Data]$	027 042 099 # ... # 087 (119)	1B 2A 63 # ... # 57 (77)
User-Defined Pattern Control	Delete all patterns	E_C*c0Q (q)	027 042 099 048 081 (113)	1B 2A 63 30 51 (71)
	Delete all temporary patterns	E_C*c1Q (q)	027 042 099 049 081 (113)	1B 2A 63 31 51 (71)
	Delete current pattern	E_C*c2Q (q)	027 042 099 050 081 (113)	1B 2A 63 32 51 (71)
	Make pattern temporary	E_C*c4Q (q)	027 042 099 052 081 (113)	1B 2A 63 34 51 (71)
	Make pattern permanent	E_C*c5Q (q)	027 042 099 053 081 (113)	1B 2A 63 35 51 (71)
Set Pattern Reference	Rotate with orientation	E_C*p0R (r)	027 042 112 048 082 (114)	1B 2A 70 30 52 (72)
Point	Follow physical page	E_C*p1R (r)	027 042 112 049 082 (114)	1B 2A 70 31 52 (72)

Table A.1 Page 10 of 12

Table A.1 PCL printer commands (continued)

Function	Parameter	Command		Decimal Value		Hexadecimal Value	
MACROS							
Macro ID	Macro ID #	E _C &f#Y	(y)	027 038 102 # ... # 089	(121)	1B 26 66 # ... # 59	(79)
Macro Control	Start Macro Def.	E _C &f0X	(x)	027 038 102 048 088	(120)	1B 26 66 30 58	(78)
	Stop Macro Def.	E _C &f1X	(x)	027 038 102 049 088	(120)	1B 26 66 31 58	(78)
	Execute Macro	E _C &f2X	(x)	027 038 102 050 088	(120)	1B 26 66 32 58	(78)
	Call Macro	E _C &f3X	(x)	027 038 102 051 088	(120)	1B 26 66 33 58	(78)
	Enable Overlay	E _C &f4X	(x)	027 038 102 052 088	(120)	1B 26 66 34 58	(78)
	Disable Overlay	E _C &f5X	(x)	027 038 102 053 088	(120)	1B 26 66 35 58	(78)
	Delete Macros	E _C &f6X	(x)	027 038 102 054 088	(120)	1B 26 66 36 58	(78)
	Delete All Temp. Macros	E _C &f7X	(x)	027 038 102 055 088	(120)	1B 26 66 37 58	(78)
	Delete Macro ID	E _C &f8X	(x)	027 038 102 056 088	(120)	1B 26 66 38 58	(78)
	Make Temporary	E _C &f9X	(x)	027 038 102 057 088	(120)	1B 26 66 39 58	(78)
	Make Permanent	E _C &f10X	(x)	027 038 102 049 048 088	(120)	1B 26 66 31 30 58	(78)
STATUS READBACK							
Set Status Readback Location Type	Invalid Location	E _C *s0T	(t)	027 042 115 048 084	(116)	1B 2A 73 30 54	(74)
	Currently Selected	E _C *s1T	(t)	027 042 115 049 084	(116)	1B 2A 73 31 54	(74)
	All Locations	E _C *s2T	(t)	027 042 115 050 084	(116)	1B 2A 73 32 54	(74)
	Internal	E _C *s3T	(t)	027 042 115 051 084	(116)	1B 2A 73 33 54	(74)
	Downloaded	E _C *s4T	(t)	027 042 115 052 084	(116)	1B 2A 73 34 54	(74)
	Cartridge	E _C *s5T	(t)	027 042 115 053 084	(116)	1B 2A 73 35 54	(74)
	User-Installed ROM (SIMMs)	E _C *s7T	(t)	027 042 115 055 084	(116)	1B 2A 73 37 54	(74)
Set Status Readback Location Unit	All entities of the Location Type	E _C *s0U	(u)	027 042 115 048 085	(117)	1B 2A 73 30 55	(75)
	Entity 1 or Temporary	E _C *s1U	(u)	027 042 115 049 085	(117)	1B 2A 73 31 55	(75)
	Entity 2 or Permanent	E _C *s2U	(u)	027 042 115 050 085	(117)	1B 2A 73 32 55	(75)
Inquire Status Readback Entity	Font	E _C *s0I	(i)	027 042 115 048 073	(105)	1B 2A 73 30 49	(69)
	Macro	E _C *s1I	(i)	027 042 115 049 073	(105)	1B 2A 73 31 49	(69)
	User-defined Pattern	E _C *s2I	(i)	027 042 115 050 073	(105)	1B 2A 73 32 49	(69)
	Symbol Set	E _C *s3I	(i)	027 042 115 051 073	(105)	1B 2A 73 33 49	(69)
	Font Extended	E _C *s4I	(i)	027 042 115 052 073	(105)	1B 2A 73 34 49	(69)

Table A.1 PCL printer commands (continued)

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Flush All Pages	Flush All complete pages	$E_C \&r0F$ (f)	027 038 114 048 070 (120)	1B 26 72 30 46 (66)
	Flush All Page Data	$E_C \&r1F$ (f)	027 038 114 049 070 (120)	1B 26 72 31 46 (66)
Free Memory Space	—	$E_C *s1M$ (m)	027 042 115 049 077 (109)	1B 2A 73 31 4D (6D)
Echo	# = Echo value (-32767 to 32767)	$E_C *s\#X$ (x)	027 042 115 # ... # 088 (120)	1B 2A 73 # ... # 58 (78)
PCL VECTOR GRAPHICS SWITCHING/SET-UP PICTURE FRAME				
Enter PCL Mode	Use previous PCL cursor position	$E_C \%0A$	027 037 048 065	1B 25 30 41
	Use current HP-GL/2 pen position for cursor position	$E_C \%1A$	027 037 049 065	1B 25 31 41
Enter HP-GL/2 Mode	Use Previous HP-GL/2 pen position	$E_C \%0B$	027 037 048 066	1B 25 30 42
	Use current PCL cursor position	$E_C \%1B$	027 037 049 066	1B 25 31 42
HP-GL/2 Plot Horizontal Size	Horizontal size in inches	$E_C *c\#K$ (k)	027 042 099 # ... # 075 (107)	1B 2A 63 # ... # 4B (6B)
HP-GL/2 Plot Vertical Size	Vertical size in inches	$E_C *c\#L$ (l)	027 042 099 # ... # 076 (108)	1B 2A 63 # ... # 4C (6C)
Set Picture Frame Anchor Point	Set anchor point to cursor position	$E_C *c0T$ (t)	027 042 099 048 084 (116)	1B 2A 63 30 54 (74)
Picture Frame Horizontal Size	Decipoints	$E_C *c\#X$ (x)	027 042 099 # ... # 088 (120)	1B 2A 63 # ... # 58 (78)
Picture Frame Vertical Size	Decipoints	$E_C *c\#Y$ (y)	027 042 099 # ... # 089 (121)	1B 2A 63 # ... # 59 (79)

Table A.1 Page 12 of 12

HP-GL/2 Printer Commands

Table A.2 HP-GL/2 Context Printer Commands

Command	Mnemonic	Parameters
DUAL CONTEXT EXTENSIONS		
Enter PCL Mode	Esc%#A	0 - Retain previous PCL cursor position 1 - Use current HP-GL/2 pen position
Reset	EscE	None
Primary Font	F1	Font_ID
Secondary Font	FN	Font_ID
Scalable Or Bitmapped Fonts	SB	0 - Scalable fonts only 1 - Bitmapped fonts allowed
PALETTE EXTENSIONS		
* Parameters in brackets are optional.		
Transparency Mode	TR	0 - Off (opaque) 1 - On (transparent)
Screened Vectors	SV	[screen_type[,shading[,index]]]
VECTOR GROUP		
* Parameters in brackets are optional.		
Arc Absolute	AA	x_center, y_center, sweep_angle [,chord_angle];
Arc Relative	AR	x_increment, y_increment, sweep_angle [,chord_angle];
Absolute Arc Three Point	AT	x_inter, y_inter, x_end, y_end [,chord_angle];
Bezier Absolute	BZ	x1y1x2y3y3...[x1y1x2y2x3y3]
Bezier Relative	BR	x1y1x2y3y3...[x1y1x2y2x3y3]
Plot Absolute	PA	[x,y . . . [,x,y]];
Plot Relative	PR	[x,y . . . [,x,y]];
Pen Down	PD	[x,y . . . [,x,y]];
Pen Up	PU	[x,y . . . [,x,y]];
Relative Arc Three Point	RT	x_incr_inter, y_incr_inter, x_incr_end, y_incr_end [,chord_angle];
Polyline Encoded	PE	[flag[val]]coord_pair . . . [flag[val]]coord_pair];
POLYGON GROUP		
* Parameters in brackets are optional		
Circle	CI	radius [,chord_angle];
Fill Rectangle Absolute	RA	x_coordinate, y_coordinate;
Fill Rectangle Relative	RR	x_increment, y_increment;

Table A.2 Page 1 of 3

Table A.2 HP-GL/2 Context Printer Commands (continued)

Command	Mnemonic	Parameters
Edge Rectangle Absolute	EA	x_coordinate, y_coordinate;
Edge Rectangle Relative	ER	x_increment, y_increment;
Fill Wedge	WG	radius, start_angle, sweep_angle [,chord_angle];
Edge Wedge	EW	radius, start_angle, sweep_angle [,chord_angle];
Polygon Mode	PM	polygon_definition;
Fill Polygon	FP	0 - Odd/Even 1 - non-zero winding
Edge Polygon	EP	None
CONFIGURATION AND STATUS GROUP * Parameters in brackets are optional		
Scale	SC	[x1, x2, y1, y2 [,type [,left, bottom]]]; or [x1,xfactor,y1,yfactor,2];
Input Window	IW	[xLL,yLL,xUR,yUR];
Input P1 and P2	IP	[p1x, p1y [,p2x, p2y]];
Input Relative P1 and P2	IR	[p1x, p1y [,p2x, p2y]];
Default Values	DF	None
Initialize	IN	[n];
Rotate Coordinate System	RO	[angle];
Comment	CO	"text ... text:
CHARACTER GROUP * Parameters in brackets are optional		
Select Standard Font	SS	
Select Alternate Font	SA	
Absolute Direction	DI	[run, rise];
Relative Direction	DR	[run, rise];
Absolute Character Size	SI	[width, height];
Relative Character Size	SR	[width, height];
Character Slant	SL	[tangent_of_angle];
Extra Space	ES	[width [,height]]
Standard Font Definition	SD	[kind, value . . . [,kind, value]];
Alternate Font Definition	AD	[kind, value . . . [,kind, value]];
Character Fill Mode	CF	[fill_mode [,edge_pen]];
Label Origin	LO	[position];
Label	LB	[char . . . [char]]1bterm
Define Label Terminator	DT	[1bterm [,mode]];
Character Plot	CP	[spaces, lines];

Table A.2 HP-GL/2 Context Printer Commands (continued)

Command	Mnemonic	Parameters
Transparent Data	TD	[mode];
Define Variable Text Path	DV	[path [,line]];
LINE AND FILL ATTRIBUTES GROUP		
* Parameters in brackets are optional		
Line Type	LT	[line_type [,pattern_length [,mode]]];
Line Attributes	LA	[kind, value . . . [,kind, value]];
Pen Width	PW	[width [,pen]];
Pen Width Unit Selection	WU	[type];
Select Pen	SP	[pen]; <i>(required, 1 for black (recommended) or 0 for white)</i>
Symbol Mode	SM	[char];
Fill Type	FT	[fill_type [,option1 [,option2]]];
Anchor Corner	AC	[x_coordinate, y_coordinate];
Raster Fill Definition	RF	[index [,width, height, pen_nbr . . . pen_nbr]]; <i>(width and height must be less than 255)</i>
User Defined Line Type	UL	[index [,gap1 . . . gapn]];

Table A.2 Page 3 of 3

PJL Commands

Table A.3 PJL Commands

Command	Command Description	Parameters	Example
COMMENT	Causes PJL to accept the command line as a comment.		ESC % - 12345X@PJL(CR/LF) @PJL COMMENT(CR/LF) * * Beginning of JOB * * (CR/LF) ESC % - 12345X
DEFAULT	Sets default value for environment variables.	PAPER, ORIENTATION, MANUALFEED, SYMSET, PITCH, POINTSIZ, COPIES, FORMLINES, AUTOCONT, TONERSAVE, POWERSAVE, BAUDRATE, ROBUS, TYPEFACE	ESC % - 12345X@PJL(CR/LF) @PJL DEFAULT=A4(CR/LF) ESC % - 12345X
INFO	Requests a specified category of printer information, such as printer model number, printer memory available, configuration, status, environment variables, and unsolicited status variables.	ID, MEMORY, VARIABLES, ENGINE, CONFIG	ESC % - 12345X@PJL(CR/LF) @PJL INFO ID(CR/LF) ESC % - 12345X
ECHO	Returns the <words> portion of the command to the host computer.		ESC % - 12345X@PJL(CR/LF) @PJL ECHO(CR/LF) This is Echo Test(CR/LF) ESC % - 12345X
INITIALIZE	Resets current variables to factory default values.		ESC % - 12345X@PJL(CR/LF) OPJL INITIALIZE(CR/LF) ESC % - 12345X
RESET	Resets current variables to user defined values.		ESC % - 12345X@PJL(CR/LF) @PJL RESET(CR/LF) ESC % - 12345X
UEL/SPJL	Exits current printer language and returns control to PJL.		ESC % - 12345X



Appendix B

Options Installation

RS232C Serial Interface Option Installation	B-2
Serial Interface Specifications	B-2
Installing the RS232C Serial Option	B-3
SIMM Memory Module Installation	B-6
Available SIMM Options	B-6
Installing the SIMM Module	B-7
250-Sheet Lower Base Installation	B-9

RS232C Serial Interface Option Installation

Serial Interface Specifications

The RS232C serial option module lets you communicate with the computer up to a maximum speed of 115,200 bps (bits per second).

The data format used in serial transmission is fixed at 8 data bits, 1 stop bit and no parity.

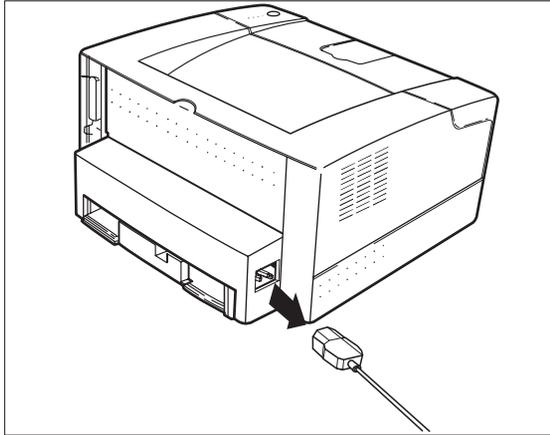
The flow control can be either of the following:

- DTR signal (hardware handshake)
- XON/XOFF (software handshake).

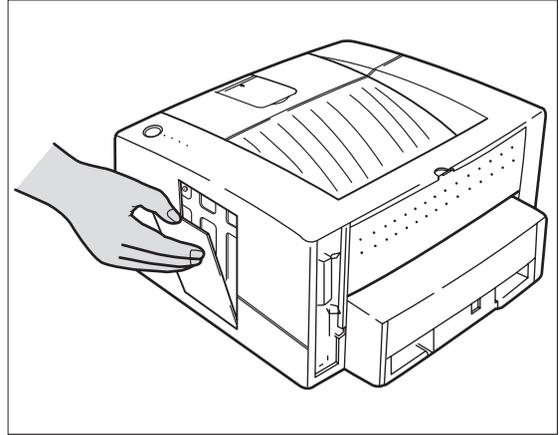
Apart from the XON/XOFF flow control, you can select whether you will be using robust XON protocol which lets the printer keep sending the XON signal repeatedly within a preset interval (e.g. every one second).

The transmission speed and robust XON can be selected in the Remote Control Panel.

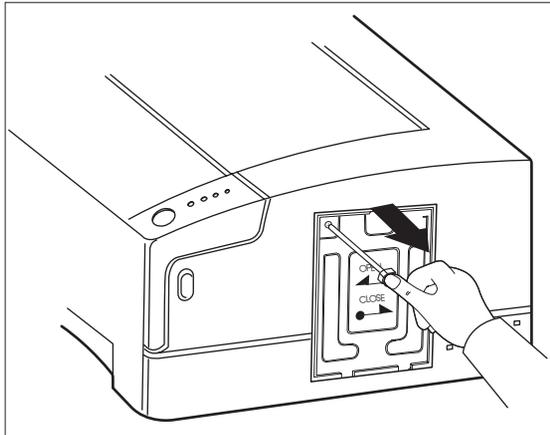
Installing the RS232C Serial Option



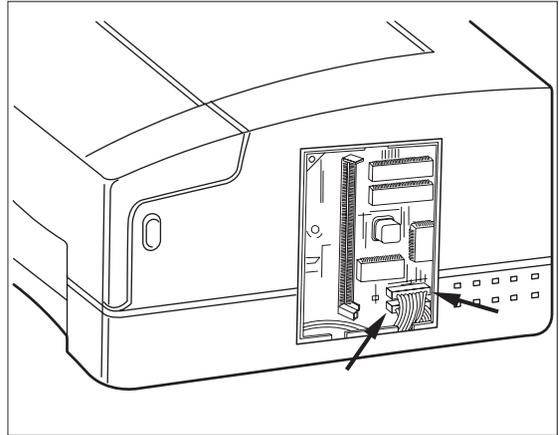
- 1** Remove the power cord from the printer power receptacle.



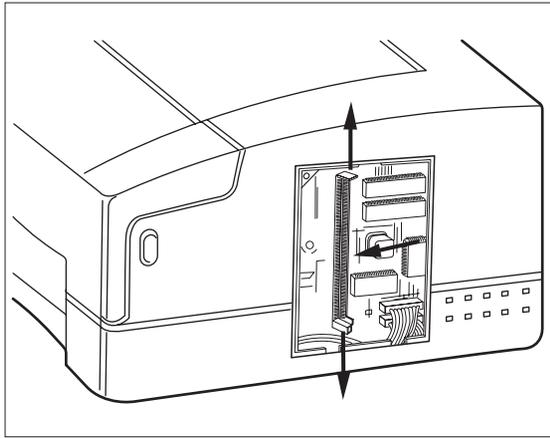
- 2** Remove the panel cover on the right side by pushing the latch down and pulling it out and up.



- 3** Remove the screw and the metal cover.

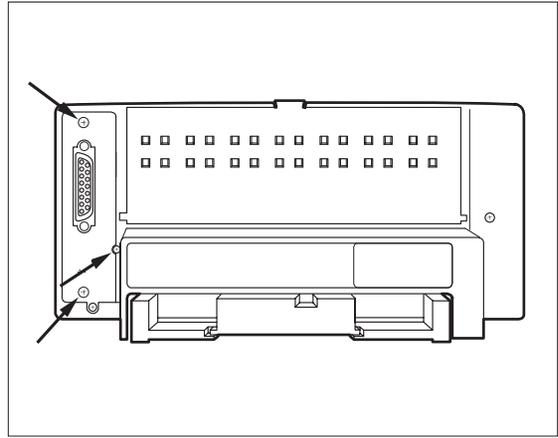


- 4** Disconnect the two ribbon cable connectors from the controller.

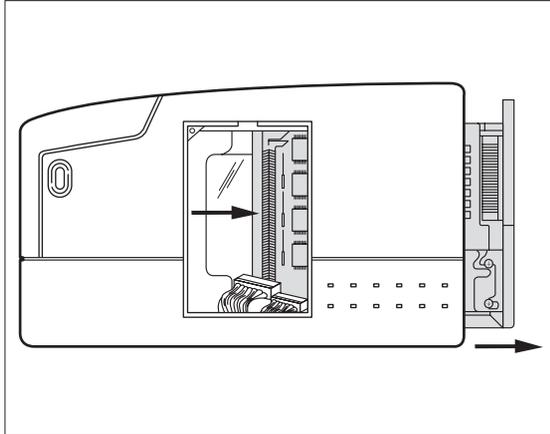


5 If the controller has an additional SIMM installed, remove it.

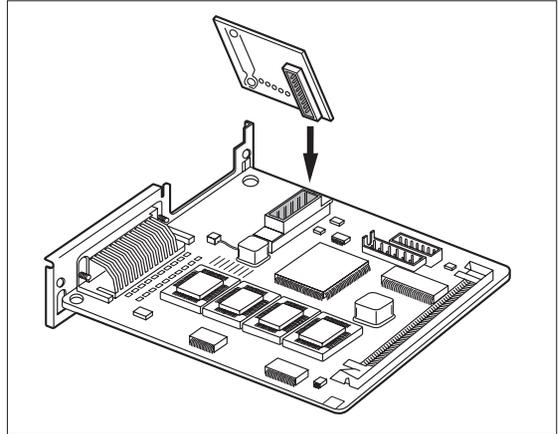
Spread the clips on each end of the SIMM connector and tilt the SIMM to the left. Pull the SIMM board away from the controller and out of the printer.



6 Unscrew the three screws securing the system controller board and discard the metal plate.



7 Slide the system controller out of the printer and put it on a flat surface.



8 Install the serial board.



Ensure that the connector for the serial board is fully seated in the system controller.

- 9** Reinstall removed components.
- 10** Connect the serial interface.
You can use the standard one-to-one DCE type serial cable to connect the printer to the computer. Table B.1 defines the serial pinout configuration for the printer.
- 11** With the Serial Interface Setup in the Remote Control Panel, select the appropriate serial transmission speed for your application.



Confirm serial option setup for your printer matches your PC values.

Table B.1 Printer serial pinout

Pin #	Signal Name
1	Request to Send (RTS)
2	Transmit Data (TXD)
3	Receive Data (RXD)
4	Data Set Ready (DSR)
5	Ground (GND)
6	Data Terminal Ready (DTR)
7	Not Connected (NC)
8	Data Terminal Ready (DTR)
9	Not Connected (NC)

SIMM Memory Module Installation

This printer is equipped with 2MB of resident base memory which is expandable to a total of 34MB. You may expand resident base memory size by installing additional SIMM (single in-line memory module) memory. By doing this, you can increase the size of the receive buffer, increase the size of the font download buffer or print a more complex page.

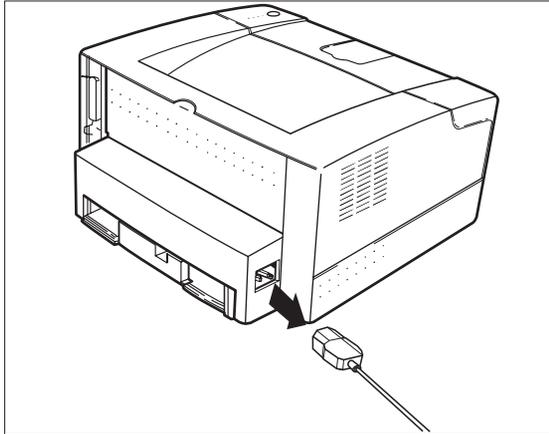
Available SIMM Options

The system controller board contains one SIMM slot dedicated to increase the printer memory. There are four available SIMM options you can choose from to increase the printer memory up to a total of 34MB. All the SIMMs are industry standard 72-pin 32-bit memory (no parity, 70ns), and are of sizes of 2MB, 4MB, 16MB, 32MB.

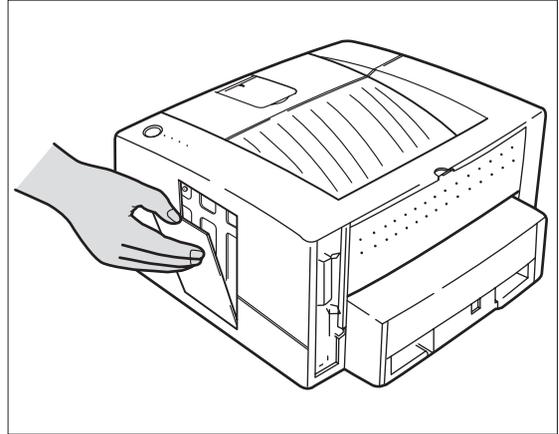
Simply choose an appropriate size of memory, and install it into the SIMM slot. The controller can automatically detect the SIMM memory and increase the printer buffer size.

For proper functioning of SIMM memory use SIMMs of an access time faster than or equal to 70ns.

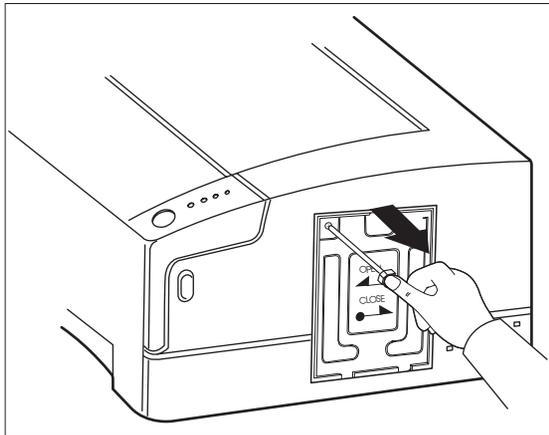
Installing the SIMM Module



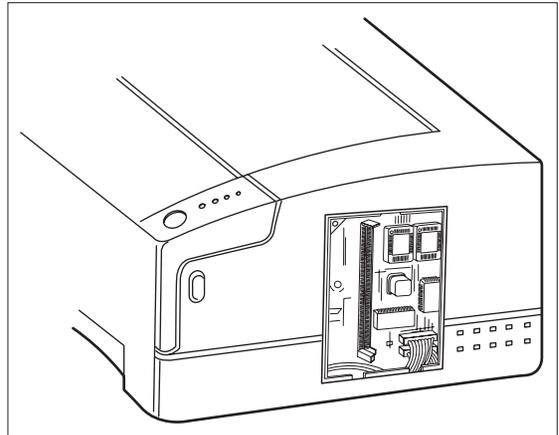
- 1** Remove the power cord from the printer power receptacle.



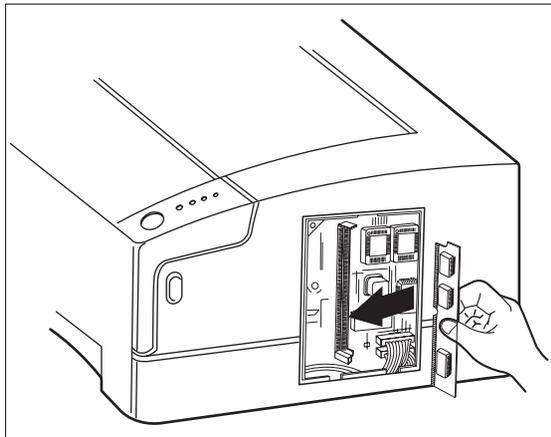
- 2** Remove the panel cover on the right side by pushing the latch down and pulling it out and up.



- 3** Remove the screw and the metal cover.



- 4** Locate the SIMM slot on the system controller board.



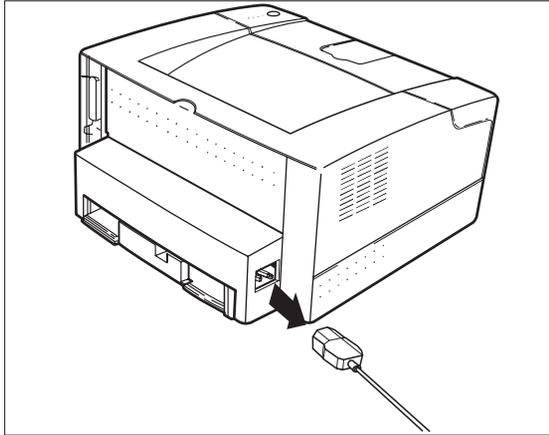
- 5** Position the SIMM module with notch on the top.
 - A** Hold the SIMM module at a vertical 30 degree angle and firmly push it with your thumbs into the slot. Push the module into the back of the slot to fully seat it.
 - B** Rotate the module to the right until the clips on the edges of the slot snap into place (you will feel and hear a “click”).
- 6** Reverse order to reinstall metal cover and panel cover.



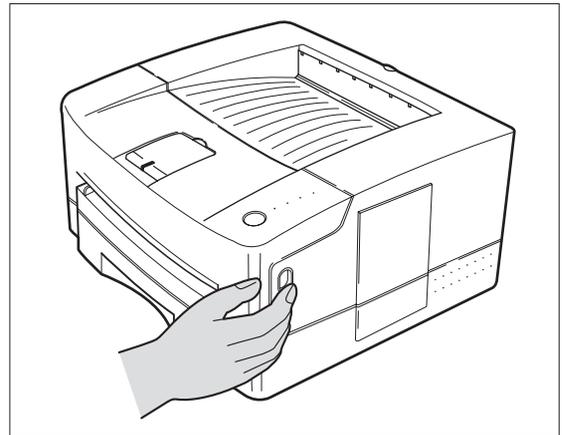
Note

Not every SIMM is compatible with our printer. Consult your dealer for the correct part number when you want to expand your memory. Refer to Chapter 15 for ordering information.

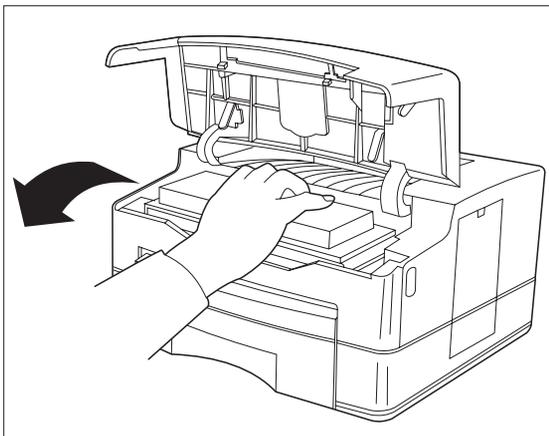
250-Sheet Lower Base Installation



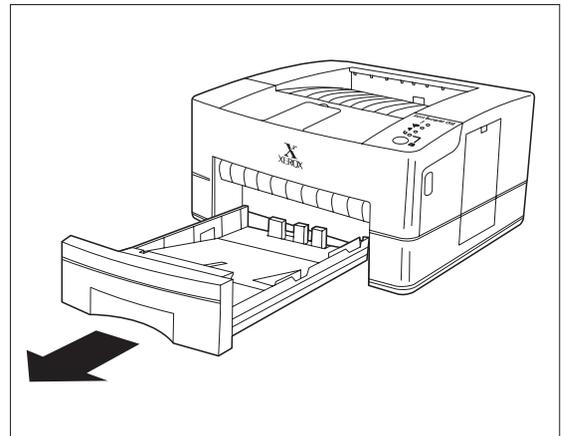
- 1** Remove the power cord from the printer power receptacle.



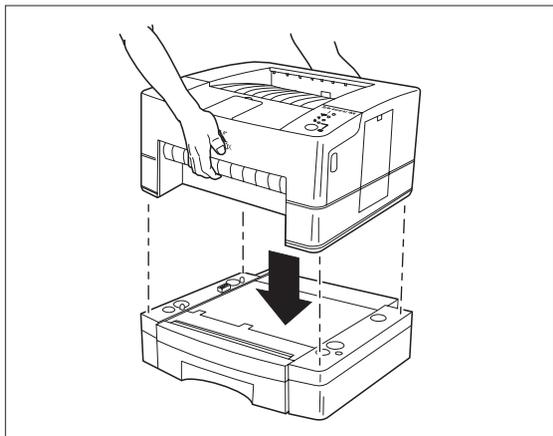
- 2** Press the top door release button to open the top door.



- 3** Remove the Printer Cartridge from the printer and close the top door.



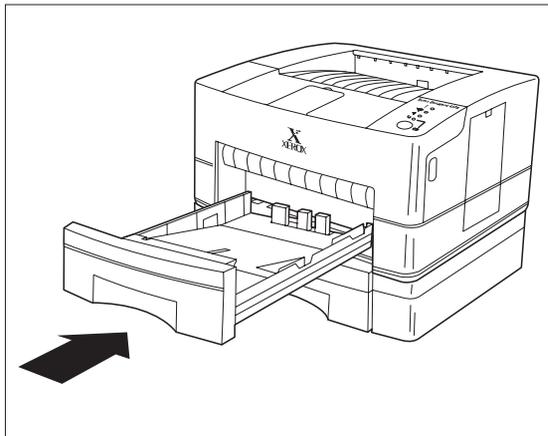
- 4** Remove the main paper tray from the printer.



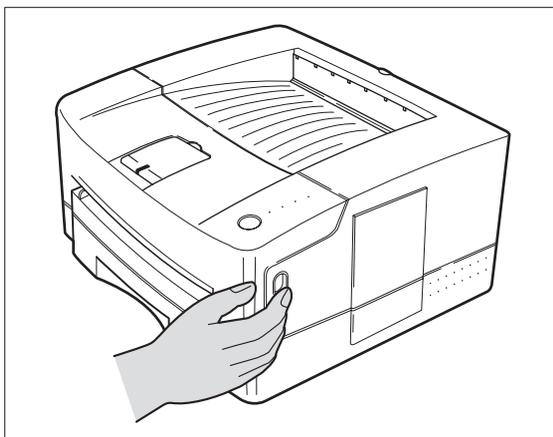
- 5** Lift the printer and place it on top of the Lower Base, as shown.



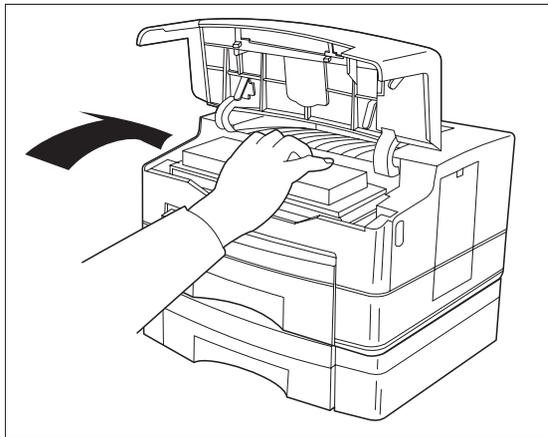
Verify that the printer is properly aligned to the Lower Base.



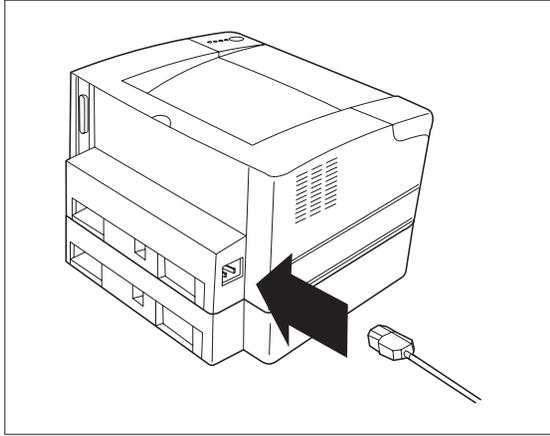
- 6** Reinstall the main paper tray.



- 7** Press the top door release button to open the top door.



- 8** Reinstall the Printer Cartridge and close the top door.



9 Reinstall the power cord.

10 Print the three Self Test Sheets. Verify that the Lower Base is identified on the Configuration Sheet.



Appendix C

Ordering Information

Option/Part Number	Description	Comments
Printer Memory (SIMM) 97K26500 97K15280 97K15300 97K22330	2 MB SIMM 4 MB SIMM 16 MB SIMM 32 MB SIMM	To install, refer to User Guide, Chapter 11. SIMM requirements: <ul style="list-style-type: none"> • No Parity • 70 nanosecond access time • 8 bits • One-sided It is recommended that you use a SIMM manufactured by Xerox/Rank Xerox. However, other SIMMS are widely available. Be sure you purchase the correct SIMM configuration.
97K26350	Serial Port	To install, refer to the installation instructions packaged with the option.
97K26360	250 sheet paper feeder	To install, refer to the installation instructions packaged with the option.
113R00123	Printer Cartridge	To install, refer to User Guide, Chapter 7.
97K27790	Xerox/Agile X/TRA Interface Converter	To install, refer to the installation instructions packaged with the option.
97K26430	Xerox/Agile 6287 Interface Converter	To install, refer to the installation instructions packaged with the option.

Appendix D

Print Media Specifications

<i>Paper and Envelope Sizes Supported</i>	<i>D-2</i>
<i>Paper Specifications</i>	<i>D-3</i>
<i>Envelope Specifications</i>	<i>D-3</i>
<i>Adhesive Label Specifications</i>	<i>D-4</i>

Paper and Envelope Sizes Supported

The following paper and envelope sizes are supported by this printer's paper tray and manual feed slot.

Medium	Name	Paper Source	Dimensions
Paper	Letter	Tray and Manual Feed	8.5 x 11 inches, 216 x 279 mm
Paper	Legal	Tray and Manual Feed	8.5 x 14 inches, 216 x 356 mm
Paper	Executive	Tray and Manual Feed	7.25 x 10.5 inches, 184 x 267 mm
Paper	A4	Tray and Manual Feed	210 x 297 mm
Envelope	Com-10, Monarch, DL, C5	Manual Feed Only	Min. - 4 x 6 inches, 90 x 145 mm
Paper	Folio	Tray and Manual Feed	8.5 x 13 inches, 216 x 340 mm
Paper	B5	Tray and Manual Feed	176 x 250 mm

Paper Specifications

To achieve the best possible print quality and avoid paper jams, follow these guidelines for selecting and storing paper:

- Use only high quality, xerographic/photocopier grade paper. Avoid paper with embossed lettering, perforations, or texture that is too smooth or too rough.
- Colored paper should be of the same high quality as white paper. The pigments must withstand the printer's fusing temperature of 392°F (200°C) for 0.1 second without deterioration. Do not use paper with a colored coating that was added after the paper was produced.
- Preprinted forms must be printed with non-flammable, heat resistant inks that do not melt, vaporize, or release hazardous emissions when subject to the printer's approximately 392°F (200°C) fusing temperature for 0.1 second.
- Paper weights of 16-36 lbs are supported.

Envelope Specifications

Choose envelopes that are well-constructed. They should lay flat and should not be wrinkled, nicked or otherwise damaged.

Envelopes with a peel-off adhesive strip, or more than one fold-over flap to seal, must use adhesives compatible with the heat and pressure of the printer's fusing process.

Adhesive Label Specifications

Use the following guidelines when selecting labels:

- The top sheet (printing surface), must be of printer/copier quality and provide good toner adhesion.
- The carrier sheet must be compatible with the temperatures and pressure of the fusing process, and must be coated for easy release of the top sheet.
- The adhesives must be stable at the 392°F (200°C) temperatures encountered for 0.1 second in the printer's fusing process, and must not produce emissions that exceed exposure levels or threshold limits established by OSHA and other safety agencies. Adhesives must not come into direct contact with any part of the printer.

Appendix E

Printer Technical Specifications

The specifications of this printer are as follows:

Printing Speed

8 ppm (pages per minute)

Printing Technology

Method: Electrophotography

Resolution: 600 x 600 Dots Per Inch

Standard Emulations

HP LJ4 ® (PCL 5e) compatible

Printer Status Display/Controls

On screen printer set up and status for DOS, OS/2 & Windows 3.1

Operating Panel: 1 Key, 4 LEDs

PCL 5e Drivers

Paper Handling

Input: 250 sheets universal cassette with 20 lb (80 g/m²)
paper

Single sheet manual feed

Output: 125 sheets face down

Single sheet face up

Types: A4, Letter, Legal, Envelopes, B5, Folio, Executive

Noise Level

Printing: 47dB

Stand-by: Background noise level

Power Requirements

100/120V(±10%) 50/60Hz(±3Hz)

220/240V(±10%) 50/60Hz(±3Hz)

Maximum Input Current

7 Amps (100V)

4 Amps (220V)

Power Consumption

Printing: 150 Watts (average)

Power Saver: Under 10 Watts

Printer Cartridge

One piece integrated Printer Cartridge

6000 pages (5% coverage) per kit

Toner saving EconoMode to extend the toner life

Warm Up Time

Up to 20 seconds (at 25°C/77°F room temperature)

Operating Environment

Temperature: 50° to 90° F (10° to 32.5°C)

Humidity: 20 to 80%

Shipping and Handling Environment

Temperature: 32° F to 95°F (0° to 35°C)

Humidity: 10 to 90%

Standard Fonts

35 Intellifont

10 TrueType

1 Bitmap

Weight

Under 9 kg/20 lbs (Net)

Size (W x D x H)

360 x 367 x 184 mm (14.2 x 14.4 x 7.2 inches)

Communication Interfaces

Parallel: IEEE 1284 (Nibble, Byte & ECP)

Serial: Optional RS232C

AIS (Auto Interface Switching)

Memory

Standard: 2 MB

Optional: 2, 4, 16, 32 MB SIMM

Appendix F

Environmental Specifications

The Xerox Commitment to Environmental Quality

Xerox Corporation is committed to an international program to safeguard our environment by diverting certain products and materials from the solid waste stream. We do this by reusing serviceable components and remanufacturing selected products.

To support this effort, we have made it easy for you to return selected printer equipment and empty Printer Cartridges to Xerox. We recondition the Printer Cartridges and refill them with Xerox toner and developer. All products we manufacture meet our stringent performance standards.

The world-wide effort to remanufacture printer equipment and recall Printer Cartridges benefits the environment and conserves our natural resources by reducing waste going into our landfills. Besides, it makes good sense for Xerox and Xerox customers. Please join us in this effort.

Acoustic Noise Figures

On Standby: Background noise level

Under operation: Continuous sound: 47 dB

FCC Compliance Statement for United States Users

Class B:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/television technician for help.

Shielded cables must be used with this equipment to maintain compliance with FCC regulations.

Caution: Changes or modifications not expressly approved by Xerox Corporation could void the user's authority to operate the equipment.

Compliance Statement for International Users

Canadian EME Regulations:

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Mark:

"The CE marking applied to this product symbolizes Rank Xerox Declaration of Conformity with the following applicable Directives of the European Union as of the dates indicated.

January 1, 1995 - Council Directive 73/23/EEC amended by Council Directive 93/68/EEC, approximation of the laws of the member states related to low voltage equipment.

January 1, 1996 - Council Directive 89/336/EEC, approximation of the laws of the member states related to electromagnetic compatibility.

A full declaration, defining the relevant Directives and referenced standards can be obtained from your Rank Xerox representative."

WARNING: In order to allow this equipment to operate in proximity to Industrial, Scientific and Medical (ISM) equipment, the external radiation from ISM equipment may have to be limited or special mitigation measures taken.

Operational Safety

Your Xerox equipment and supplies were designed and tested to meet strict safety requirements. These include safety agency examination, approval, and compliance with established environmental standards.

Attention to the following notes ensures the continued safe operation of your equipment.

Always connect the equipment to a properly grounded power source receptacle. If in doubt, have the receptacle checked by a qualified electrician.

WARNING: Improper connection of the equipment grounding conductor can result in electrical shock.

Always follow all warnings and instructions marked on, or supplied with, the equipment.

Always place the equipment on a solid support surface with adequate strength for the weight of the machine.

Always exercise care in moving or relocating the equipment.

Always place the equipment in an area which provides adequate room area for ventilation and servicing.

Always use the materials and supplies specifically designed for your Xerox equipment. Use of unsuitable materials may result in poor performance and, possibly, a hazardous situation.

Never use a ground adaptor plug to connect the equipment to a power source receptacle that lacks a ground connection terminal.

Never attempt any maintenance function that is not specifically described in this documentation.

Never obstruct ventilation openings. These are provided to prevent overheating.

Never install the equipment near a radiator or any other heat source.

Never override or "cheat" electrical or mechanical interlock devices.

Never push objects of any kind into the ventilation openings.

Never operate the equipment if you notice unusual noises or odors. Disconnect the power cord from the power source receptacle and contact your dealer or Xerox/Rank Xerox to correct the problem.

If you need any additional safety information concerning the equipment or materials, contact your dealer or Xerox/Rank Xerox.

WARNING: Use of controls, adjustments, or performance of procedures other than those specified herein may result in a hazardous radiation exposure.

This product will produce less than 0.1 ppm ozone during normal operation. The ozone produced is dependent on copy volume and is heavier than air. Providing the proper environmental parameters as specified by Xerox will ensure that concentration levels meet safe limits.

If additional information concerning ozone is needed, request the Xerox publication (600P83222), "Ozone", by calling in the USA 1-800-828-6571.

Laser Safety

WARNING: Use of controls or adjustments or performances of procedures other than those specified herein may result in hazardous light exposure.

This equipment complies with appropriate safety standards.

With specific regard to lasers, the equipment complies with laser product performance standards set by governmental, national, and international agencies as a Class 1 laser product. It does not emit hazardous light as the beam is totally enclosed during all phases of customer operation and maintenance.

When performing various operator functions, laser danger labels may be visible. These labels are for your dealer or service technician and are placed on or near panels, or shields, which require a tool for removal. THESE PANELS ARE NOT TO BE REMOVED BY USERS OF THE PRINTER. THERE ARE NO USER SERVICEABLE AREAS INSIDE THESE COVERS.

Laser Safety Warning for Finland and Sweden

Luokitus on tehty standardin EN 60825 mukaisesti Klassningen är gjord i enlighet med standarden EN 60 825.

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

VAROITUS!

Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING!

Om apparaten används på annat sätt än i denna bruksansvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

FCC Compliance Notice

This equipment has been tested and is in compliance with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables and I/O cords must be used for this equipment to comply with the relevant FCC regulations.

Changes or modifications not expressly approved in writing by Xerox may void the user's authority to operate this equipment.

The Federal Communications Commission has developed a useful booklet entitled, "How to Identify and Resolve Radio/TV Interference Problems". This booklet is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

IC Compliance Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations of ICES-003.

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement ICES-003 sur le Matériel brouilleur du Canada.

CDRH Regulations

This printer is certified as a "Class 1" laser product under the U.S. department of health and human services(DHHS) radiation performance standard according to the radiation control for health and safety act of 1968.

This product complies with FDA radiation performance standard, 21 CFR subchapter J.

Since radiation emitted inside this printer is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

Laser Statement (Laserturvallisuus)

WARNING: Never operate and service the printer with the protective cover removed from laser/scanner assembly. The reflected beam, although invisible, can damage your eyes.

Class 1 laser product

Luokan 1 laserlaite

Klass 1 laswer apparat

Allonpituus 770-795nm

Teho 0.40mw +/-0.04mw



CAUTION : Avoid exposure to invisible laser radiation
when the development unit is not installed.

Power Saver

This printer contains advanced energy conservation technology which reduces power consumption when it is not in active use.

When the printer does not receive data for an extended period of time, power consumption is automatically lowered. For potentially faster printing of the first page, you may turn the power saver off from the user menu setting.



The energy star emblem does not represent EPA endorsement of any product or service.

Ozone Emission

UL Standards for Ozone

A standard for ozone emissions has been established by Underwriters Laboratory (UL). This printer meets this standard when shipped from the factory to our customers.

Safety Information

Safety and Regulatory Listing for this printer

PRODUCT SAFETY

USA	UL 1950 (UL listing)
CANADA	CSA C22.2-950 (CSA Certification)
EEC (Europe)	IEC 950/EN 60950 (TÜV GS Certification)
CB	IEC 950

LASER SAFETY

EEC (Europe)	HD 194. & EN60825
USA	21 CFR, Chapter 1, Subchapter (CDRH Certified)



Appendix G

Glossary

- A**
- Abort** A procedure to terminate execution of a program when an irrecoverable error, mistake, or malfunction.
- Access time** The time interval between the instant at which data are requested to be stored and the instant at which storage is started.
- Accounting File** The file SMS generates for storing printer and job statistics. An accounting file is created for each Service Coordinator when DS/P Authorization is set ON in SETUP. "PRINTER.LOG" is the name of the SMS accounting file.
- ACK** See Acknowledgment.
- Acknowledgment** In parallel data transmission. A character confirmation bit that is set when the printer has received a byte of data from the computer.
- Acoustic coupler** A device which provides the facility to transmit and receive messages using the standard telephone handset as the coupling to the phone line.
- Active file** A file that is being used in which entries or references are made on a current basis.
- Alert Message** A message SMS sends to the client that notifies user of an event at the printer.
- Attach** The term used in SMS for logging into a file server.
- ANSI** American National Standards Institute. A standards institute that organizes committees formed of computer users, manufacturers, etc., in order to develop and publish industry standards for computers, communications, and etc.
- ASCII** American Standard Code for Information Interchange. A digital coding system used to represent characters or control functions electronically, each character being represented by either 7 or 8 bits.
- Auto job end** A switch that is set in the interface menu that invokes automatic ending of a print job that does not finish.
- Auto Emulation** See Language Sensing.

- B** **Baud Rate** The data transfer rate between the computer and the printer; set only if the serial port is used. The computer and the printer must be configured at the same baud rate (between 300 and 57.6 KB depending on the type of computer used).
- Best Fit Feature** A feature available within the SMS function of DS/P which allows you to locate a printer whose features support the needs of your print job(s). For example, if your print job requires 11" x 17" paper and printing resolution of 600 dpt, this feature finds the printers that provide the requirements.
- Bindery** A data structure on each file server that shows the existence and status of printers on a Novell network.
- Bit** Binary digit. The smallest unit of information in a digital computer. A bit can take on the value of either 1 or 0.
- Bitmap** A pattern of bits representing the dots in a printed image.
- Bitmapped Fonts** Digitized images of each character in a font. Bitmapped fonts generally require more memory than scalable fonts. If you want to change to a different size or style (like italics), you have to download a separate bitmapped font.
- Black Prints** The printed page is entirely black.
- Blank Prints** Entire printer page is blank with no visible signs of print.
- Blurred Prints** Image is blurred (out of focus) at the edges of the printed page.
- Boot** To restart a computer without turning off the power. Also referred to as a soft start.
- Byte** A unit of 8 consecutive bits. A byte is used to represent a character or control function.

- C** **Capture** A Novell command used to redirect output from a client to a print queue.
- Character set** The collection of characters contained in a font. Each character set has been designed for a special purpose. Some sets include all printable characters found on most standard computer keyboards, while others are intended for such applications as math, foreign language, typesetting, or law.
- Chargeback** See User Chargeback.
- Client** A PC attached to a Novell network.
- Client Software** See SMS Client Software.
- Configuration file** The file that stores the relationship between the SMS Service Coordinator and the printer. "XDSP.NLM" is the name of the SMS configuration file.
- Context Saving** See State Saving.
- Controller board** The printer's system controller, with firmware to direct all printer operations and slots for adding optional cards. The controller board is accessed through the back panel of the printer.
- Control Panel** An LCD display to show status messages, prompts, and menu items; indicator lights to show the condition and status of the printer; and keys for accessing the printer settings. The Control Panel is on the face of the printer.
- D** **Data String** The term used to identify textual data—data that reads as text. SMS accounting export data files present data strings enclosed within quotation marks.
- Default** A printer setting that is used in the absence of any other setting or command from the user. (See also Factory-set Default.)
- Default Font** The font that the printer will use if the user or the software application does not specify otherwise.

Deletions - Horizontal Localized print deletions appearing as bands running across the printed page perpendicular to the direction of paper movement.

Deletions - Random Random light areas and/or deletions on a printed page.

Deletions - Spot Areas of the printed page are extremely light or missing.

Deletions - Vertical Localized print deletions forming narrow lines on the printed page running parallel to the direction of paper movement.

Description A setting the supervisor defines in the DS/P UTILITY to specify a printer's uniqueness. SMS users can locate a printer by its description using the Best Fit feature.

Detach The term used in SMS for logging off a file server.

Direct-Connect Printer A printer tied to a Novell network via its internal network interface card.

Document One or more pages forming a logical whole.

DOS (Disk Operating System) The operating system software that controls PC systems. Refer to the DOS manual packaged with your PC system.

Downloaded Fonts See Downloading.

Downloading The process of transferring fonts or other data from computer to the printer memory. Permanently downloaded data will be stored in the printer until it is turned off.

DPI Dots per inch. A measure of the resolution of a printed image. Laser printers use dots to form images. The greater the dpi, the finer the resolution.

DS/P Document Services for Printing. The name of XEROX printer utility package comprised of SETUP, DS/P UTILITY, RUI (Remote User Interface), SMS (Service & Management Services), and printer drivers.

DS/P UTILITY The software that allows NetWare supervisors to rename direct-connect printers, to assign them to SMS Service Coordinators, and to set SMS usage parameters.

E Emulation Imitating the operational functionality of a program or language with equaling or surpassing functionality.

EP Cartridge The XEROX electronic printing cartridge that contains microfine toner and the imaging roller drum.

EPROM/ROM Acronyms for Erasable Programmable Read Only Memory and Read Only Memory, which describe a type of computer chip used in the printer. EPROM/ROM is where the firmware and internal fonts reside.

Error Messages 1) Messages that appear on the Control Panel display when the printer has encountered some difficulty. 2) Messages sent to the SMS client when either the printer, the SMS Service Coordinator, or Novell has encountered some difficulty.

Escape Character A control code or control character represented by ASCII 27 (1B in Hexadecimal) which must be placed in front of a printer command. The Escape character tells the printer to execute, rather than print, the character sequence following it.

Escape Sequence A sequence of characters beginning with an escape code and comprising a printer command.

F Factory-set default The settings that are programmed into the XEROX printer before it is shipped from the manufacturer. These settings are in use unless you permanently override them using either the printer Control Panel or the Remote User Interface. Commands from a software application temporarily override factory defaults.

File Server A network storage device often used to store master copies of applications software. It is also used for

exchanging and accessing files without having to copy them to a floppy diskette.

Firmware The programs stored in EPROM/ROM chips on the printer's controller board.

Font A collection of characters with a consistent style. Different fonts can be selected for printing. Fonts can refer to the printer's internal fonts, or fonts stored in optional font cards or on your computer.

Font card Small, thin credit card size electronic devices that contain fonts.

Font characteristics Font orientation, character height, stroke weight, and typeface. What a printed font looks like.

Fuser roller Used to bond dry ink to the page.

H Handshaking An exchange of signals between two devices in a computer network, prior to the transfer of data. The purpose of handshaking is to determine the readiness of each device to exchange data.

Horizontal deletions See Deletions - Horizontal.

Horizontal streaks See Streaks - Dark horizontal.

Host The source of data or the input device for the printer. It may be a personal computer or network device.

Hot Key Keystroke combinations used to activate and exit the DOS version of SMS.

I I/O (Input/Output) The communication between the printer and the host computer.

I/O port Input/Output port, where data is received and transmitted.

IVD See Integrated Visual Display

Integrated Visual Display Also referred to as IVD, this is the user-interface portion of SMS which displays printer and job

status information. It is from the IVD that the user initiates SMS functions.

Intellifonts Scalable fonts developed by Agfa Compugraphics and licensed to Hewlett Packard.

Internal fonts The fonts that come with the printer, residing in permanent memory: EPROM/ROM.

L Language Sensing The ability of a port to sense the PDL (Page Description Language) of the incoming job and then switch to that PDL if necessary.

Light/faint prints Overall Image is lighter than normal.

Load balancing An SMS accounting term used for describing the ability to generate printer usage statistics for each selected user.

Local printer A printer that is connected to a network client through a serial or parallel cable. Only the client user has access to a local printer.

Lower Base The optional base for the 4505/4505ps and 4510/4510ps printers that comes in two sizes: 250-sheet and 500-sheet.

M Manual Tray See MP tray.

Menu Choices of settings and controls. There are menus for the printer's Control Panel, RUI (Remote User Interface), SMS (Status & Management Services), and for many software applications.

Memory The space in a device where information is stored, or the ability of a device to keep information until needed. (See also RAM, ROM.)

MP Tray Multipurpose tray. The MP tray comes with the 4505/4505ps and 4510/4510ps printers and fits into the multipurpose paper source on the front of the printer. Also referred to as the "manual tray."

- N**
- NetWare** This is the network operating system (NOS) developed by Novell for use with its networks.
- NetWare Loadable Module** Also referred to as NLM, this is a NetWare program which runs on the network operating system.
- NetWare Supervisor** A user with access to NetWare functionality and control over and above that of normal users. For example, only users with supervisor privileges can create and delete print queues.
- Network Operating System** Also referred to as NOS. The NOS runs on the file server and serves to control the network.
- Network-Indirect Printer** A printer connected to either: 1) a server running PSERVER.NLM or PSERVER.EXE; or 2) a network client running RPRINTER.EXE.
- NIC** An abbreviation for Network Interface Card. The optional card that attaches to the controller board for interfacing with a network. (See also XNIC-E'NET, XNIC-L'TALK, XNIC-T'RING.)
- NLM** See NetWare Loadable Module.
- NOS** See Network Operating System.
- NVM** Nonvolatile Memory. Memory that is not corrupted when power is removed, usually due to battery backup; used to store printer settings while the printer is powered off.
- NVRAM** Nonvolatile Random Access Memory.
- O**
- Offline** When the printer is offline, it does not accept data from the computer.
- Online** When the printer is online, it is able to accept data from the computer.
- Orientation** Choice of printing portrait (vertically) or landscape (horizontally) on a page.

Output tray Where printed material is delivered. The output tray on the 4505/4505ps and 4510/4510ps is located on the top of the printer.

P Paper jam When paper becomes wedged somewhere along the paper path.

Paper source Paper can feed into the printer, via a paper tray or other paper feeding device. Also, the setting in a software application that specifies from where paper will feed for printing. (The paper source is mapped to a physical tray or a sequence of trays or a slot/opening where paper enters the printer.)

Paper tray Refers to the container or device that holds the paper.

Parallel port A type of port in which data is transmitted and received in bytes rather than bits. Typically used for local printing over short distances.

Parity The addition of one or more redundant bits of information used to verify its accuracy.

Partially Fused Print The printed image is not fully fused (fixed) to the paper and easily rubs off.

PC Personal Computer; specifically, an IBM PC or compatible.

PCL During a print job, your software application sends printer control information, called the Printer Control Language.

PCL 5e Hewlett Packard Printer Control Language Level 5e.

PCONSOLE A Novell utility that provides, for example, the user with the ability to create and delete queues, or to display a list of jobs currently in the print queue.

PDL Page Description Language. The set of rules that describe a fully formatted page, independent of the device

used for printing. PCL and PostScript are examples of page description languages.

Permanent fonts Also called permanently downloaded fonts. These are fonts set up in an application so that when the application is loaded, the fonts are downloaded to the printer's memory. They then do not have to be downloaded for every print job. Permanent fonts remain downloaded until the printer is powered OFF.

Pitch The number of characters to the inch (10 pitch is 10 characters per inch). Typically thought of as "horizontal" measurement.

Point Type height is traditionally measured in points. One point is approximately 1/72 inch. Typically thought of as "vertical" measurement.

Polling A method to control the data coming into the printer through the I/O ports, which can include the parallel, serial, and optional network ports. The printer looks at each port in succession for incoming data, then transfers it to the print buffer where it waits for processing. The print buffer is shared among the ports, so data can arrive for different jobs continuously.

PostScript A PDL developed by Adobe Systems in 1987.

Print density The relative darkness of print on the page.

Print queue A subdirectory on the server to which print jobs are redirected. Jobs are released from the queue and sent to the printer when the printer is ready to accept jobs.

Print server A computer system attached to a local area network that provides shared printing among network clients. The print server draws files from print queues on the file server. Typically the print server is dedicated only to that function—it is not used to run other end-user software.

Printer description See Description.

Printer driver A program that communicates between the printer and the software application. The printer driver

interprets special format codes so the printer can print a page that matches what you created on the screen. XEROX desktop laser printers have their own printer drivers so you can take full advantage of the printer's features.

Printer macro Used by the page description language to send often-repeated commands and specifications, such as linefeed and carriage return information. (Printer macros are transparent to the user.)

Printer name The default name assigned to each XEROX NIC, for example, XNExxxxxx_1, or another valid printer name the user chooses and assigns when running SETUP. See Valid Printer Name.

Printer reset See Reset.

Protocol A set of rules governing the exchange of data between data processing devices.

PSERVER emulation Software that runs on a file server or a network interface card and that enables the file server or printer to function as a print server.

Q Queue See Print Queue.

R Radio button A type of feature selection device found in the RUI and SMS Client Software. The radio button is used for selecting one option among a group of mutually exclusive options.

RAM Random Access Memory—read and write memory. This is commonly referred to as just “memory.” RAM is available on RAM chips and holds information that is used by the printer. The information may be discarded at the end of a print job, when you exit an application, or when the printer is reset, depending on what kind of information it is: incoming data for printing, downloaded soft fonts or printer macros for the current PDL.

Random Deletions See Deletions - Random.

Reset To restore the printer to all or some of its default settings.

ROM Read-Only Memory.

RPRINTER emulation Software run on a client PC (connect to a network-indirect printer) or a XEROX network interface card that identifies the printer as a remote printer.

RUI Remote User Interface. The RUI is a DS/P component that runs on a PC and allows the user to select printer settings from the PC rather than at the printer's Control Panel.

S Scalable fonts Fonts described by formulae that produce a font outline. The formulae can be used to scale the font up or down (by point size).

SDF See Standard Data File.

Serial port A type of port in which data is transmitted and received in bits rather than bytes. Typically used for printing over longer distances.

Server A special-purpose computer system (typically a PC using a 80386 or 80486 CPU, or another processor based on the Motorola 68000 CPU) that is connected to the local area network and controls shared peripherals (PCs, printers, etc.).

Service Coordinator The NLM portion of SMS that obtains job and status information from direct-connect printers and reports it to users running SMS Client Software. The Service Coordinator also acquires and stores accounting data generated by the printer assigned to it during SETUP. (The relationship between the printer and the Service Coordinator is stored in the Configuration File.)

SIMM Single In-line Memory Module. A SIMM has several connected memory chips and connects to a slot on the printer controller board to increase the available RAM on the printer. The 4505/4505ps and 4510/4510ps printers have two SIMM slots and will accept SIMMs with 4 MB or 16 MB of memory, running at 70 ns (nanoseconds).

SMS Status & Management Services. A DS/P component that resides on the client PC and the file server. SMS features include, but are not limited to, the ability to view the status of various network printers and jobs in their queue, find the best printer for the job, and generate accounting reports.

SMS Client Software The Integrated Visual Display (IVD) portion of SMS the end-user runs on the PC.

Spooling A portion of memory (in this case on the printer) that will hold documents to be processed by the printer. This frees up the computer to go on with other work.

Spot deletions See Deletions - Spot.

Stand-alone Not connected, directly or indirectly, to a network. A stand-alone printer is connected to a PC through a serial or parallel cable.

Standard Data File A data file format that can be read by many software applications. SDF files contain data elements delimited by any special character, typically the comma. Each logical record in an SDF file is terminated by a carriage return. SMS accounting export data files are stored in SDF format.

State Saving A PCL Menu option that enables you to save permanent fonts and macros when jobs switch between PCL and PostScript.

Streaks - Dark horizontal Black lines running across the page perpendicular to the direction of paper movement.

Streaks - Dark vertical Black lines running across the page parallel to the direction of paper movement.

String See Data String.

Supervisor See NetWare Supervisor.

T Temporary fonts These are PCL fonts downloaded with a particular print job and cleared from memory when the job is finished.

Toner A dry powdered substance used in the printing process. The toner supply for the printer is contained in the recyclable EP (electronic printing) cartridge.

TrueRes Smoothing A PCL capability that smooths curves in text and graphics to improve print quality.

TrueType fonts A font standard developed by Apple Computer as an alternative to Adobe Postscript. TrueType fonts are scalable and can print in both PostScript and PCL page description languages.

TSR Terminate and Stay Resident. The SMS TSR is a program that is loaded into the PC's memory each time the user starts the PC. The SMS TSR is responsible for routing status information to the IVD, and displaying alert messages on the client's monitor.

Typeface The design of a set of characters and symbols—all uppercase and lowercase letters, Arabic numerals, and common punctuation and symbols. Typefaces often bear the name of the person who designed them, like Bodoni and Garamond.

U **Unfused print** The printed image is not fully fused (fixed) to the paper and easily rubs off.

Universal paper tray Called "universal" because it adjusts to a variety of paper sizes.

User chargeback An SMS accounting term defining the ability to generate user printing costs typically calculated by multiplying the number of pages printed by the cost-per-page value.

V **Valid printer name** A printer name that does not begin with the letters "DSP" and that terminates with the characters "_1".

Vertical deletions See Deletions - Vertical.

Vertical streaks See Streaks - Dark vertical.

W **Wrinkled prints** Prints are wrinkled, creased, or torn upon exiting the printer.

X **XNIC-E'NET** XEROX Network Interface Card-Ethernet.
(See also NIC.)

XNIC-L'TALK XEROX Network Interface Card-LocalTalk.
(See also NIC.)

XNIC-T'RING XEROX Network Interface Card-Token Ring.
(See also NIC.)

Index

A

Auto Continue
RCP Printer Setup 5-7

B

Baud Rate
RCP Printer Setup 5-7
Bi-Tronics parallel interface 1-4
Blinking LEDs
See LEDs

C

Cleaning 7-5
Configuration Sheet 3-6
Configurations List
RCP Test 5-13
See also Configuration Sheet
Control panel 3-2 to 3-6
Also see Front panel key
Also see LEDs
Copies
RCP Page Setup 5-8

D

Default key

Using in RCP 5-4

Demo List
RCP Test 5-13

Density
RCP Quality Setup 5-12
See also Print Density

DocuPrint 4508
Cleaning 7-5
Control panel, see Control
panel
Locating 2-3 to 2-4
Overview 1-2 to 1-4
Interfaces 1-2
Languages 1-3
Memory 1-3
Paper handling 1-2
Resolution 1-2
Speed 1-2
Typefaces 1-4
Paper sizes 4-2
Powering on/off 2-9
Printer Cartridge, see Printer
Cartridge
Resetting 3-6
Self Test sheets 3-6
Technical specifications E-2
to E-4
Testing 2-10, 2-12
Unpacking 2-4 to 2-5

DOS

- Software installation 2-11 to 2-12
- Using RCP 5-14
- Using Status Monitor 5-15

E

EconoMode 1-2, 1-3, 7-4

- RCP Quality Setup 5-12

Emulation

- RCP Printer Setup 5-6

Energy Star (Energy saving) 1-2

Envelopes

- Sizes D-2
- Specifications D-3

Error LED 3-5, 6-2

- Blinking 6-2
- On 6-2

Exit key

- Using in RCP 5-4

Extension guide 4-5

F

Font List

- Defined 3-6
- RCP Test 5-13

Font Manager

- DOS installation 2-11 to 2-12
- Windows installation 2-11

Font Setup

- Pitch 5-10
- Point Size 5-10
- Symbol Set 5-10
- Typeface 5-11
- Using in RCP 5-10 to 5-11

Fonts

- Defined 8-2 to 8-3
- Internal 8-4
- Selecting 8-5
- Soft 8-4

Form Feed key

- Using in RCP 5-4

Front panel key 3-3

- Form Feed 3-3
- On/Off-line 3-3
- Reset 3-3

Self Test 3-3

H

HP-GL/2 1-4

- Printer commands A-14 to A-16

L

Labels

- Specifications D-4

LEDs

- All blinking 6-3
- Error 3-5, 6-2
 - Blinking 6-2
 - On 6-2
- Manual 3-4, 6-3
 - Blinking 6-3
 - Off 6-3
 - On 6-3
- Paper 3-5, 6-3
 - Blinking 6-3
- Ready 3-4, 6-3
 - Blinking 6-3
 - Off 6-3
 - On 6-3

Lines Per Page

- RCP Page Setup 5-8

Locating printer

- see DocuPrint 4508, Locating

Lower Base

- Installation B-9 to B-11

M

Manual LED 3-4, 6-3

- Blinking 6-3
- Off 6-3
- On 6-3

Manual paper feed 4-7 to 4-10

- Using Priority Feed 4-10

Memory 1-3, E-4

- Installing SIMMs B-7 to B-8
- Options B-6

Messages 6-4 to 6-7

O

Orientation

- RCP Page Setup 5-9

OS/2
 Software installation 2-12

P

Page Setup

Copies 5-8
 Lines Per Page 5-8
 Orientation 5-9
 Paper Feed 5-8
 Paper Size 5-9
 Paper Type 5-8
 Using in RCP 5-8 to 5-9

Paper

Feeding manually 4-7 to 4-10
 Loading into tray 2-8
 Sizes 4-2, D-2
 Specifications D-3
 Using Priority Feed 4-10

Paper Feed

RCP Page Setup 5-8

Paper Jam Recovery

RCP Printer Setup 5-6

Paper jams

Causes 6-8
 Clearing 6-9 to 6-12

Paper LED 3-5, 6-3

Blinking 6-3

Paper Size

RCP Page Setup 5-9

Paper tray

Extension guide 4-5
 Loading 2-8
 Rear guide 4-4
 Side guide 4-3
 Using 4-2 to 4-6

Paper Type

RCP Page Setup 5-8

Parallel interface 1-4, E-4

PCL 5e emulation 1-4

Printer commands A-2 to A-13

Pitch

RCP Font Setup 5-10

PJL

Printer commands A-17

Point Size

RCP Font Setup 5-10

Power cord 2-9

Power Save 1-2, 1-3

RCP Printer Setup 5-6

Print density

Adjusting 7-4

Print quality

Problems 6-13 to 6-16

Printer Cartridge

Cleaning 6-16
 Installing 2-6 to 2-7
 Replacing 7-2 to 7-3

Printer driver

DOS installation 2-11 to 2-12
 Windows installation 2-11

Printer Setup

Auto Continue 5-7
 Baud Rate 5-7
 Emulation 5-6
 Paper Jam Recovery 5-6
 Power Save 5-6
 Printer Timeout 5-6
 Robust XON 5-7
 Using in RCP 5-6 to 5-7

Printer Timeout

RCP Printer Setup 5-6

Priority Feed 4-10

Q

Quality Setup

Density 5-12
 EconoMode 5-12
 Using in RCP 5-12

R

RCP 1-3

DOS installation 2-11 to 2-12
 Messages 6-4 to 6-7
 OS/2 installation 2-12
 Using under DOS 5-14
 Using under Windows 5-4 to 5-13
 Default key 5-4
 Exit key 5-4
 Font Setup 5-10 to 5-11
 Form Feed key 5-4
 Page Setup 5-8 to 5-9

- Printer Setup 5-6 to 5-7
- Quality Setup 5-12
- Reset key 5-4
- Send key 5-4
- Status Monitor key 5-4
- Test 5-13
- Windows installation 2-11
- Ready LED 3-4, 6-3
 - Blinking 6-3
 - Off 6-3
 - On 6-3
- Rear guide 4-4
- Remote Control Panel
 - See RCP
- Reset key
 - Using in RCP 5-4
- Resetting 3-6
- Robust XON
 - RCP Printer Setup 5-7
- RS232C Serial Interface Option
 - Installing B-3 to B-5
 - Specifications B-2

S

- Self Test sheets 3-6
 - Configuration Sheet 3-6
 - Font List 3-6
- Send key
 - Using in RCP 5-4
- Serial interface
 - See RS232C Serial Interface Option
- Side guide 4-3
- SIMMs
 - See Memory
- Software installation 2-11 to 2-12
 - DOS 2-11 to 2-12
 - OS/2 2-12
 - Windows 2-11
- Status Monitor 1-3
 - DOS installation 2-11 to 2-12
 - Messages 6-4 to 6-7
 - OS/2 installation 2-12
 - Using under DOS 5-15
 - Using under Windows 5-2 to 5-3
 - Windows installation 2-11

- Status Monitor key
 - Using in RCP 5-4
- Symbol Set
 - RCP Font Setup 5-10

T

- Test
 - Configurations List 5-13
 - Demo List 5-13
 - Font List 5-13
 - Using in RCP 5-13

- Toner
 - See Printer Cartridge

- Typeface
 - RCP Font Setup 5-11

- Typefaces 1-4

U

- Unpacking
 - See DocuPrint 4508, Unpacking

W

- Windows
 - Software installation 2-11
 - Using RCP 5-4 to 5-13
 - Using Status Monitor 5-2 to 5-3