The Xerox 4505/4505ps and 4510/4510ps Desktop Laser Printers

User's 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.

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Chapter 1

Introduction

Overview

The Xerox 4505, 4505ps, 4510, and 4510ps Desktop Laser Printers offer the most cost-effective, best price-performance solution to single-user or networked printing of any advanced laser printer in their class.

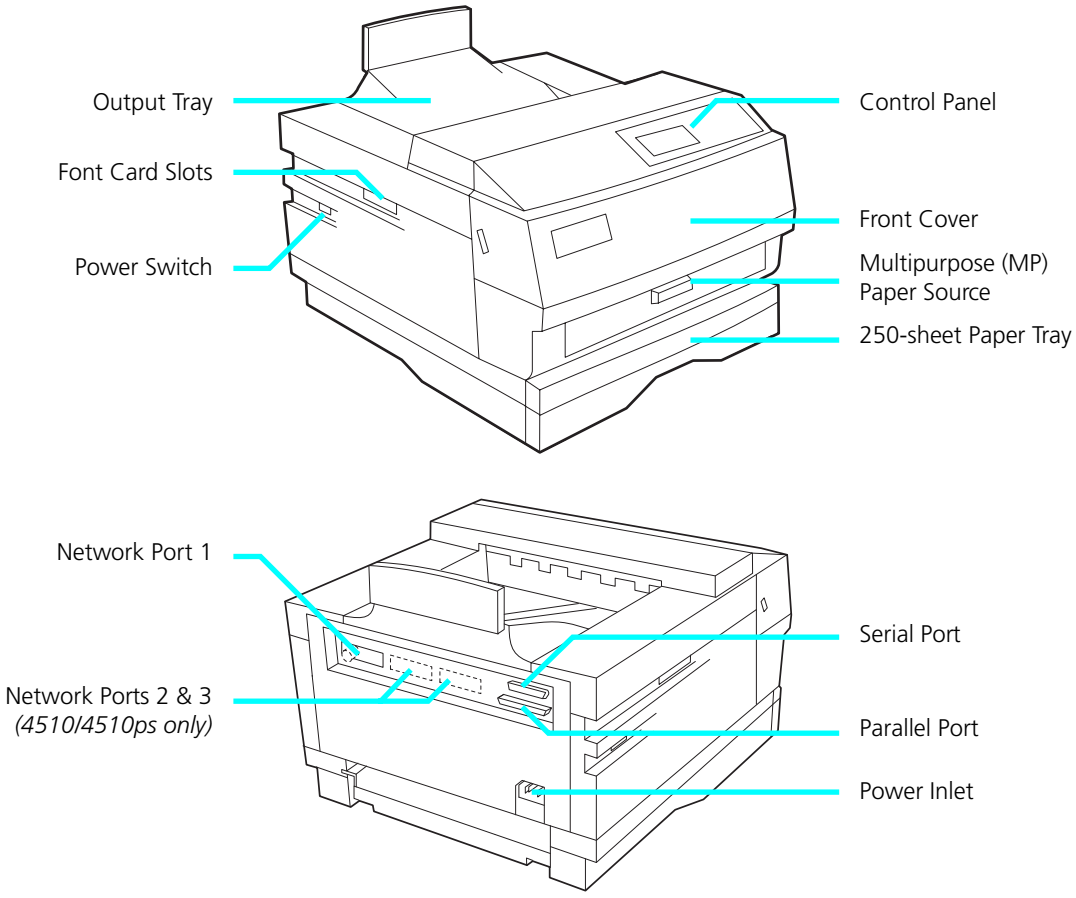
At **five** pages per minute for the 4505/4505ps and **ten** pages per minute for the 4510/4510ps, these printers provide technically advanced features to ensure the high quality Xerox printing you have come to expect:

- 600 dpi and 300 dpi resolutions
- Up to 10,000 pages per month for the 4505/4505ps
- Up to 20,000 pages per month for the 4510/4510ps
- Power saver mode
- Remote User Interface (RUI)
- TrueRes, for smooth edges and enhanced resolution
- Optional lower base with 500-sheet, 250-sheet, or 30-envelope capacity
- Optional 250-sheet trays supporting a variety of paper sizes
- Multipurpose (MP) tray for single-sheet manual feeding or small quantity specialized printing
- Memory capacity up to 16 MBytes
- Small footprint
- PCL 5e emulation and PostScript Level 2 PDLs (page description languages)
- Automatic switching between PCL emulation (hereinafter referred to as PCL) and PostScript (when the PostScript option is installed)
- Ethernet, LocalTalk, and Token Ring network options, each with a variety of protocols
- Printing from up to **three** simultaneously-active ports on the 4505/4505ps and up to **five** on the 4510/4510ps
- User installable printer and options

Printer Components

The key printer components are called out in Figure 1.1.

Figure 1.1 Key printer components



Factory Settings

The printer is controlled by numerous settings whose values are pre-set at the factory. These values are called *factory settings*.

If the factory settings do not suit the needs of your printing environment, you can select a new setting in either of two ways:

- **Control Panel** on the printer. See *Chapter 3: Using the Control Panel.*
- **Remote User Interface** on the host computer. Refer to the *Document Services for Printing Guide.*

Sharing the Printer

Particular care must be taken when changing settings for a printer being shared by users such as those on a local area network (LAN). When the printer is shared, settings must accommodate the **common** needs of users.

Considerations for a networked environment include the following:

- Downloading fonts and macros by individual users may consume printer memory. The sharing of downloaded fonts must be coordinated. See *Chapter 4: Using Fonts, "Downloading Fonts" (page 4-13).*
- Switching between PCL and PostScript may purge downloaded data. See *Chapter 3: Using the Control Panel*, **State Saving** (page 3-28) for PCL and **State Saving** (page 3-36) for PostScript.
- Changing settings for **Jam Recovery**, **Page Protection**, **State Saving**, or **Resolution** affect memory utilization. See *Chapter 3: Using the Control Panel, "Printer Settings that Affect Memory" (page 3-67).*
- The type of interface. (See page 3-37, *Appendix A*, and *Appendix C*.)
- **Auto Job End** should be *On*. (See page 3-43, page 3-47, page 3-53, page 3-56.)
- **Auto Continue** should be *On*. (See page 3-59.)

LANs generally require a system or network administrator, a person who orchestrates the use of the network. Refer to the installation guide packaged with your network option for more information.

Memory Considerations

In today's printing environments, technologies have advanced greatly but so have their corresponding memory requirements. To make use of specialized graphics features, fonts, and other applications on the market today, you may find it necessary to increase memory size.

From the factory, the 4505 and 4510 are equipped with 2 MB of resident base memory. The 4505ps and 4510ps are equipped with 2 MB of resident base memory plus one 4 MB SIMM (single in-line memory module) for a total of 6 MB.

Maximum memory capacity is 16 MB.

- When is more memory needed?
  - — You receive out-of-memory error messages when printing.

    See *Chapter 3: Using the Control Panel,"Printer Settings that Affect Memory" (page 3-67)* for more information on how certain printer settings may affect memory usage and performance. See also *"Minimum Memory Requirements" (page 3-69).*
  - — You determine that expanded capability for additional fonts, more complex documents, graphics, or higher resolution is needed.

    See *Chapter 4: Using Fonts, "Downloading Fonts" (page 4-13)* for more information on how fonts affect memory usage.
- How is more memory added?
  - — Install a SIMM (single in-line memory module).

    SIMMs are small circuit boards with memory chips that can be installed on the printer controller board.

    See *Chapter 5: Adding Printer Options* for more information on SIMM installation.

Chapter 2

Handling Paper

Overview

This chapter provides specific information on **paper handling**:

- Paper specifications
- Paper sources and paper trays
- Manual feeding and loading of paper, including letterhead, pre-printed stationery, envelopes, labels, and transparencies
- Paper source mapping
- Printing

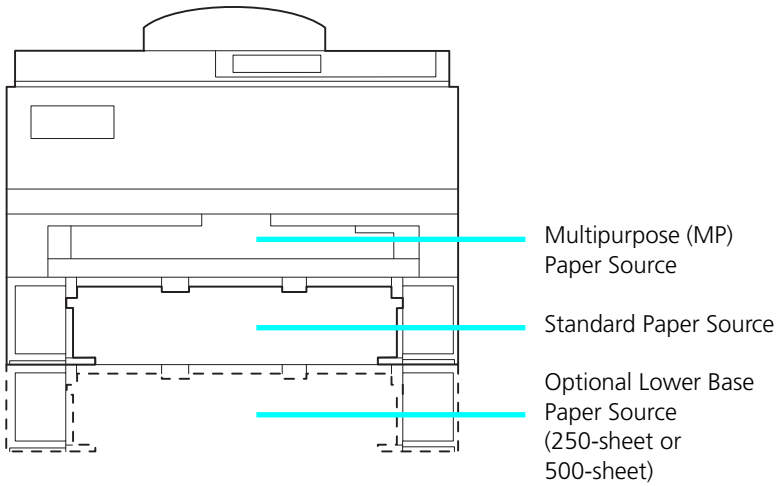
Note

In this guide, **paper source** *refers to the slot or opening where paper enters the printer.* **Paper tray** *refers to the container or device that holds the paper.*

Paper Input

Paper input sources are the slots or openings where paper enters the printer. As shown in Figure 2.1, the 4505/4505ps and 4510/4510ps printers have as many as **three** paper input sources.

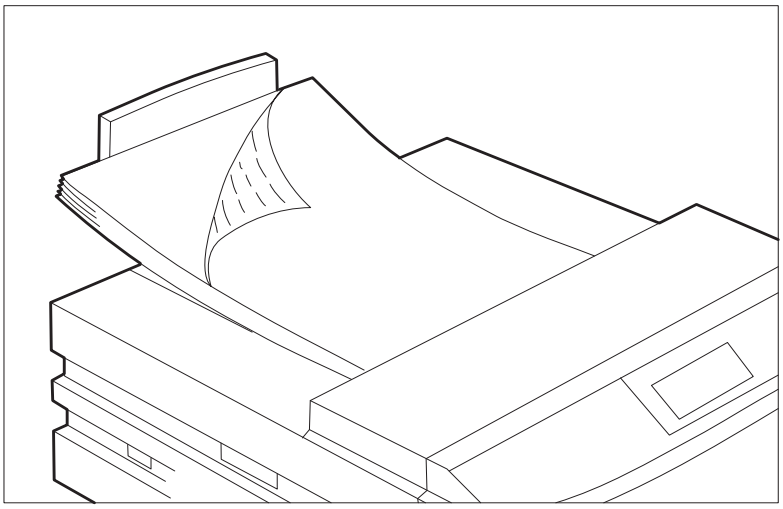
Figure 2.1 Paper input sources



Paper Output

As shown in Figure 2.2, printed output is delivered face down to the tray located on top of the printer. Output capacity is 250 sheets of standard weight paper.

Figure 2.2 Output tray



Caution

Depending on paper weight, you may find the output tray holds fewer than 250 sheets. Paper jams may occur if output capacity is exceeded.

Paper Specifications

Factors such as embossing, special edges, and general paper quality affect paper handling.

Weight

Paper **weight** specifications include the following:

- 250-sheet and 500-sheet paper trays support paper weights of **60 gsm (16 lb)** to **105 gsm (28 lb)**.
- MP tray supports paper weights of **60 gsm (16 lb)** to **135 gsm (36 lb)**.

Note

For optimum printer performance, it is recommended that you use paper made for laser printers and transparency film made for Xerox laser printers and copiers.

Dimensions

Figure 2.3 shows paper **dimensions** in millimeters and inches.

Figure 2.3 Paper dimensions

Paper Size	Dimensions
A4	210 x 297 mm 8.27 x 11.69 inches
Letter	216 x 279 mm 8.5 x 11 inches
B5 (ISO)	176 x 250 mm 6.93 x 9.84 inches
Executive	184 x 267 mm 7.25 x 10.5 inches
A5	148 x 210 mm 5.83 x 8.27 inches
Folio	216 x 330 mm 8.5 x 13 inches

Figure 2.3 Paper dimensions *(continued)*

Paper Size	Dimensions
Legal	216 x 356 mm 8.5 x 14 inches
COM-10 Envelope	105 x 241 mm 4.13 x 9.5 inches
Monarch Envelope	98 x 191 mm 3.87 x 7.5 inches
DL Envelope	110 x 220 mm 4.33 x 8.66 inches
C5 Envelope	162 x 229 mm 6.38 x 9.02 inches

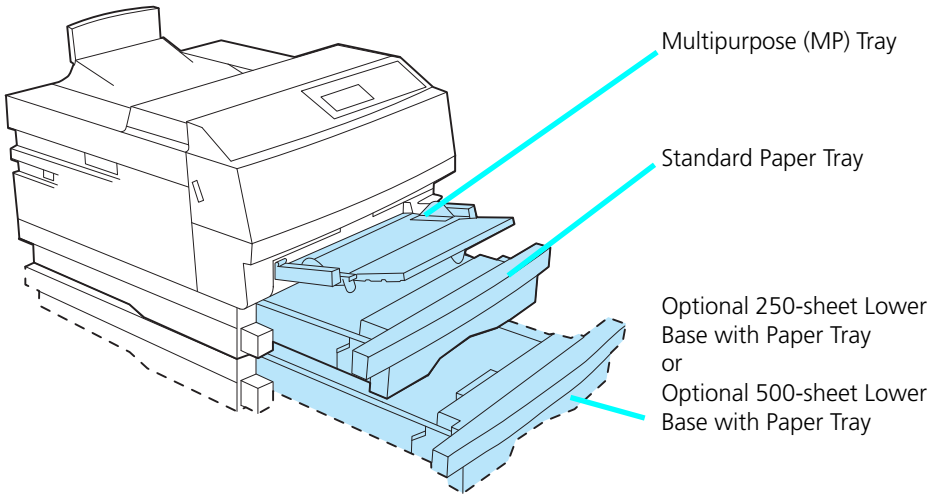
Note

The Xerox printer driver supports all paper sizes in Figure 2.3. However, if you do not install—or your application does not use—the Xerox printer driver, some of these paper sizes may not be available for your use. Refer to the Document Services for Printing Guide *for more information on the Xerox printer driver.*

Paper Trays

As shown in Figure 2.4, the 4505/4505ps and 4510/4510ps printers are packaged with one 250-sheet paper tray and one multipurpose (MP) tray. An optional lower base provides an additional tray, as shown in Figure 2.4.

Figure 2.4 Input trays



Standard Tray

The 250-sheet tray packaged with the printer is called a *universal tray* because it is adjustable to a variety of paper sizes, as shown in Figure 2.5.

Figure 2.5 Universal tray

Paper†	Capacity‡ (Sheets)
A4	250
Letter (8.5 x 11)	250
Executive	250
A5	250
OHP (Overhead Projector) Film (transparency)	10
Label paper	10

† Paper dimensions are listed on page 2-6.
‡ Tray capacity may differ based on the weight of the paper. Maximum paper stack: 25mm/1 inch.

See *"Loading Paper" (page 2-14)* for further information on the universal tray.

Two other standard trays are available for the printer, as shown in Figure 2.6.

Figure 2.6 Additional standard trays

Optional Tray	Paper†	Capacity‡ (Sheets)
Legal	Folio (8.5 x 13)	250
	Legal (8.5 x 14)	250
	Letter (8.5 x 11)	250
Envelope	COM-10	30
	Monarch	30
	DL	30
	C5	30

† Paper dimensions are listed on page 2-6.
‡ Tray capacity may differ based on the weight of the paper. Maximum paper stack: 25mm/1 inch.

Note

To use letterhead, pre-printed stationery, or drilled paper in the standard tray, see Figure 2.8 (page 2-20) for paper orientation. See Figure 2.9 (page 2-21) for envelope orientation.

Multipurpose Tray

The multipurpose (MP) tray provides for **manually** feeding a single sheet or loading small quantities of paper, envelopes, transparencies, or labels (see Figure 2.7).

Figure 2.7 MP tray

Paper†	Capacity‡ (Sheets)
A4	50
Letter (8.5 x 11)	50
B5 (ISO)	50
A5	50
Executive	50
Folio	50
Legal (8.5 x 14)	10
Monarch	5
Com-10	5
C5	5
DL	5
Transparencies	35
Labels	Less than 4 mm (.15 in)

† Paper dimensions are listed on page 2-6.
‡ Capacity may differ based on the weight of the paper. **The maximum paper stack size for the MP tray is 4 mm (.15 inches)**.

Typical uses of the MP tray include:

- Printing a document whose first page is to be printed on letterhead and the rest from the standard tray. See *Figure 2.8 (page 2-20)* for the orientation of headed paper in the MP tray.
- Printing documents that require pages of special paper size, color, or other attribute.

Note

To use letterhead, pre-printed stationery, or drilled paper in the MP tray, see Figure 2.8 (page 2-20) for paper orientation. See Figure 2.9 (page 2-21) for envelope orientation.

Optional Lower Base

The 4505/4505ps and 4510/4510ps printers accommodate one of two optional lower bases with a paper tray:

- The **250-sheet** lower base equipped with a universal tray

  In the 250-sheet lower base, you can also use either the legal or envelope tray shown in *Figure 2.6 (page 2-10)*.

- The **500-sheet** lower base equipped with either an A4 or Letter (8.5 x 11) tray

  There is also an additional Letter tray or A4 tray available for the 500-sheet lower base.

To order a lower base or tray option, see *Appendix D: Ordering Information*.

Note

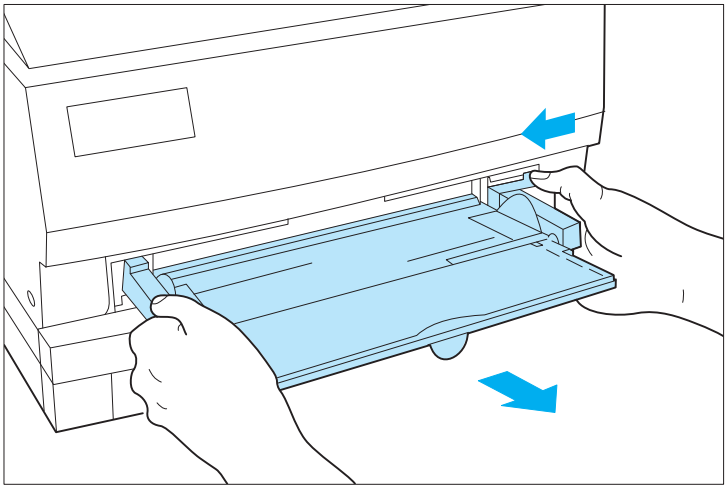
250-sheet or 30-envelope trays may be used for either the standard tray or the 250-sheet lower base.

500-sheet trays may be used in the 500-sheet lower base only.

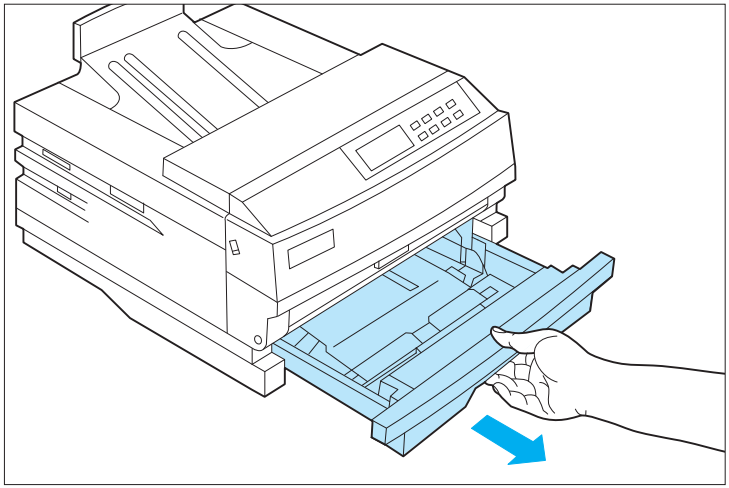
Loading Paper

Loading the Standard or Lower Paper Tray

To load paper into the standard or lower paper tray, follow the steps below.

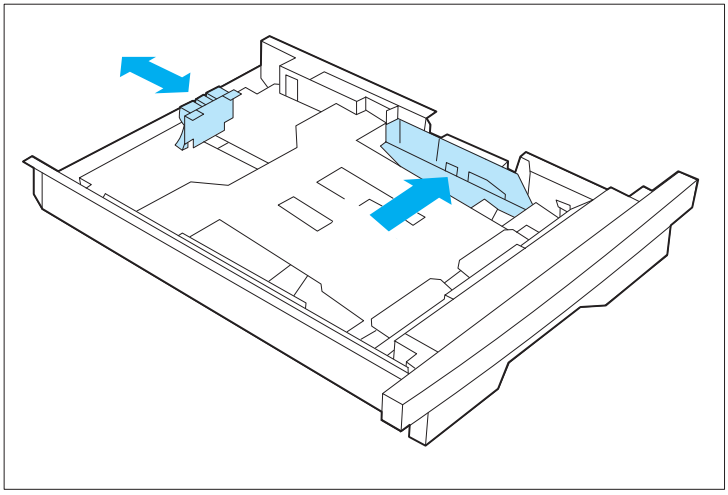


1 **When loading the standard tray, remove the multipurpose tray, if it is installed.**



2 Remove the tray from the printer.

Place the tray on a flat surface.

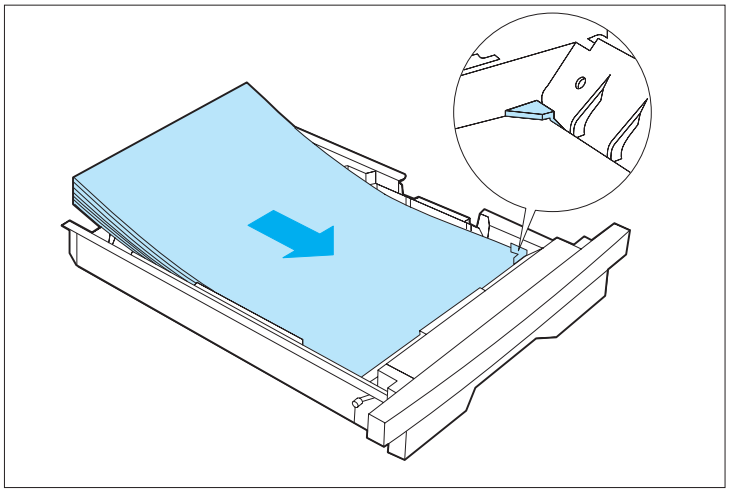


3 If necessary, adjust the end guide to the desired paper size and the side guide to its widest position.

Caution

Make sure that the end guide is positioned in the appropriate detent for the paper size installed in the tray. If the guide is not positioned in the detent, the printer may not correctly recognize the installed paper size.

See page 2-9 and page 2-13 for more information on the standard and lower paper trays.

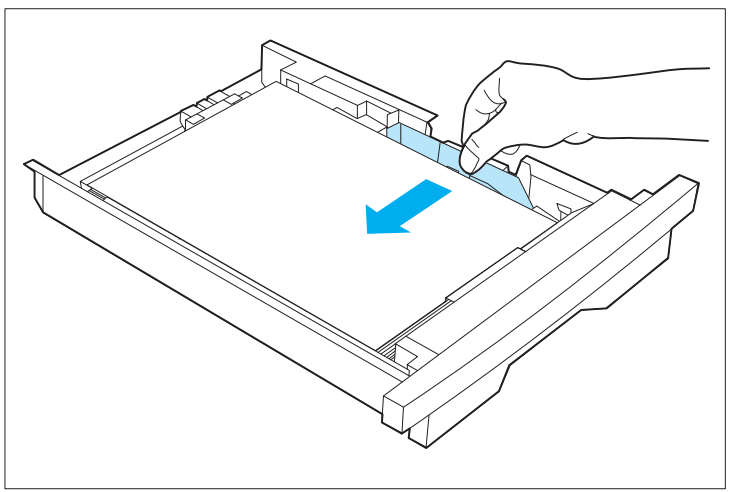


4 **Load paper in the tray, making sure the paper is tucked under the metal corners.**

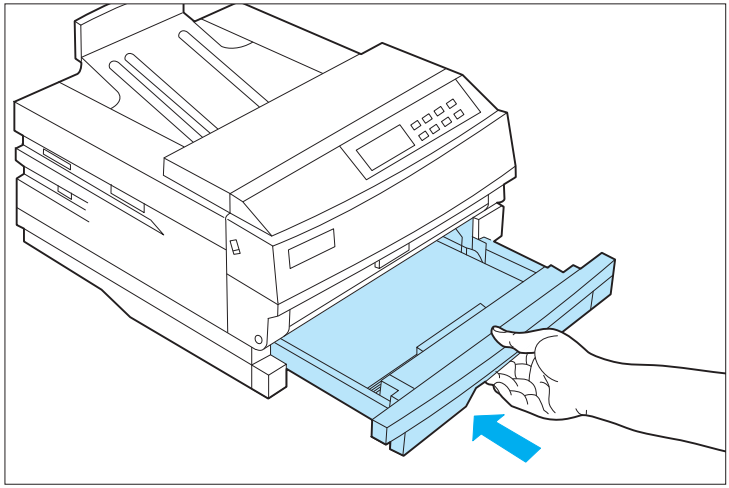
Note

For best performance, load paper with curl side up.

If you are loading letterhead, pre-printed stationery, or drilled paper, see *Figure 2.8 (page 2-20)*. If loading envelopes, see *Figure 2.9 (page 2-21)*.



5 **If necessary, adjust the side guide to the correct paper width.**



6 Insert the paper tray in the printer.

Reinstall the multipurpose tray if it was removed at Step 1.

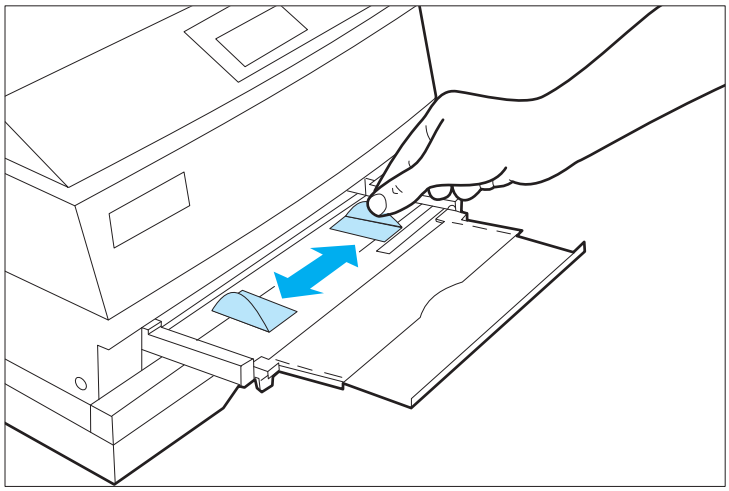
Caution

With a lower base installed, do not remove the standard tray while the printer is feeding from the lower tray.

Feeding the Multipurpose Paper Tray

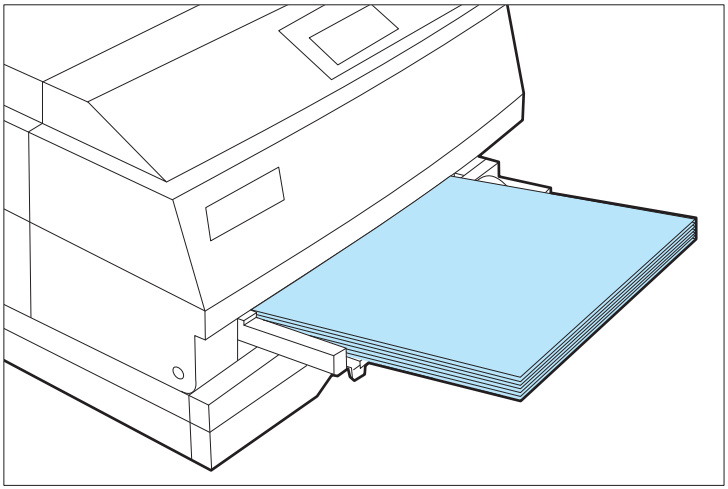
To feed paper into the multipurpose (MP) tray, follow the steps below.

It is assumed the MP tray has already been installed. If not, install it by referring to the *Setting Up Guide* packaged with the printer.



1 Adjust the side guides to the desired paper size.

See "*Multipurpose Tray" (page 2-11).*



2 Feed paper or envelopes into the MP tray.

If you are loading letterhead, pre-printed stationery, or drilled paper, see *Figure 2.8 (page 2-20)*. See *Figure 2.9 (page 2-21)* for envelopes.

Caution

Whenever you open the front cover, you must first remove the MP tray. Reinsert it once you have closed the front cover.

Loading Letterhead, Pre-printed, Drilled, or Label Paper

Figure 2.8 illustrates the paper orientation needed to print headed, pre-printed, drilled, or label paper.

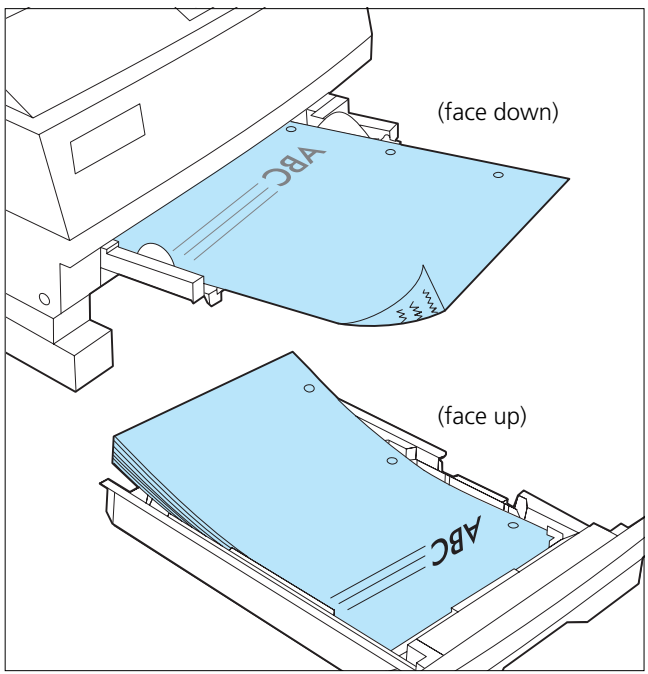
Of course, you may need to adjust your software application's printing margins to:

- Prevent overwriting the letterhead or pre-printed images.
- Prevent overwriting the drilled holes.
- Accommodate an individual label size.

Note

Label paper may be loaded in the universal or MP tray only.

Figure 2.8 Loading letterhead, pre-printed, drilled, or label paper



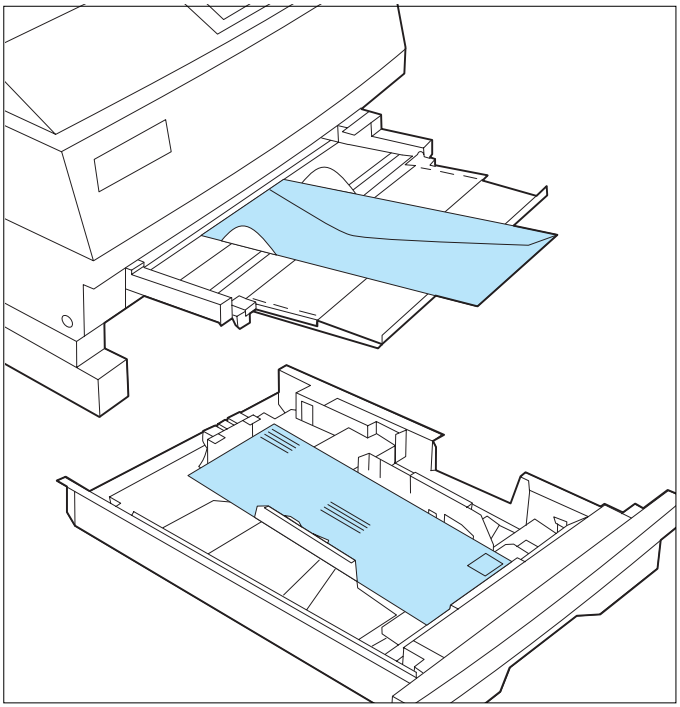
Loading Envelopes

Figure 2.9 illustrates the envelope orientation needed to print COM-10, Monarch, DL, or C5 envelopes in the 30-envelope tray and the MP tray.

Note

Envelopes may **only** *be loaded in the standard* **30-envelope tray** *or the* **MP tray**. *See Figure 2.6 (page 2-10) for more information on the envelope tray.*

Figure 2.9 Loading envelopes



Selecting a Paper Source

For a print job, your software application sends information, called the Printer Command Language (PCL), to the printer to communicate paper source and page size. How the printer interprets the PCL command for paper source and page size depends on the printer menu settings for **Source Mapping** and **MP Tray Size**. If PCL commands for paper source and page size are not sent to the printer, the printer menu settings for **Paper Size** and **Default Source** are used. See *Chapter 3: Using the Control Panel* for further information on these and all PCL Menu settings (page 3-18).

Note

PostScript functions differently than PCL. Refer to the PostScript Installation Instructions for more information.

PCL Paper Sources

Paper source is a term that describes the tray, feeder, or slot from which the printer feeds paper.

PCL, and therefore your printer, recognizes the six paper sources shown in Figure 2.10, which may, or may not, appear in your software application.

Figure 2.10 Six PCL paper sources

PCL Paper Source	Alternate Names
Standard	Upper, Paper Tray, Paper Cassette
Manual	Manual, Manual Feed
Manual Envelope	Envelope Manual Feed
Lower	
Large Capacity	Paper Deck
Envelope Feeder	

Printing a Page

When a print job is received by the printer, the sequence to select the paper tray for each page is as follows:

1. Page size is established.

   If page size is not sent by the application, the PCL Menu setting called **Paper Size** is used.

2. Paper source is established.

   If a paper source is sent by the application, it will be one of the six PCL paper sources listed in *Figure 2.10 (page 2-22)*.

   If paper source is not sent by the application, the PCL Menu setting called **Default Source** is used. Some software applications have a paper source called “Auto Select” or “Auto Sheet Feed.” When used, this results in a PCL paper source being omitted from the print job.

3. When the printer is ready to print the page, tray sequence is established.

   For the paper source chosen in the second step above, a tray or sequence of trays is taken from the PCL Menu **Source Mapping** setting for that source. For settings, see *Figure 2.11 (page 2-25)*.

4. The printer searches in the tray or in any tray in the tray sequence for the correct page size from the first step above.

   In a tray sequence, the trays are searched left to right as they appear in the **Source Mapping** setting. For example, for sequence “Std-Low-MP”, the standard tray is searched first, the lower tray second, and the MP tray third. The MP paper size is taken from the PCL Menu setting called **MP Tray Size**.

5. If a tray with the correct paper size is found, the page is printed from that tray.

   If no tray with the correct paper size is found, the tray sequence and paper size are displayed on the Control

Panel along with a message to load the correct paper size. Printing halts.

— Put paper of the requested size in a tray in the tray sequence and the page will be printed.

— Or, press **Enter** * to print from the first tray in the tray sequence, regardless of paper size. If that tray becomes empty, the next tray with the same paper size will be used. This source and size will be used until the printer receives a new page containing a PCL paper source, page size, or reset command.

Source Mapping Settings

For each of the six PCL paper sources listed in *Figure 2.10 (page 2-22)*, a **Source Mapping** setting from Figure 2.11 is used. You may change settings depending on your printing needs. For details, see *"Factory Source Mapping Settings" (page 2-26)*, *"Source Mapping Examples" (page 2-27)*, and **Source Mapping** (page 3-22).

Figure 2.11 Source Mapping settings

Source Mapping setting	Description
Standard MP Tray Standard-MP MP-Standard†	Tray or tray sequence to be used for each of the six PCL paper sources.
Lower Standard-Lower Lower-Standard Lower-MP Std-Low-MP Low-Std-MP MP-Lower† MP-Std-Low† MP-Low-Std†	Additional settings that appear only when a lower base (page 2-13) is installed.

† Use sequences starting with MP to print the first pages of a print job on special paper stock by placing the required number of special stock sheets in the MP tray (page 2-11).

Factory Source Mapping Settings

Figure 2.12 shows the factory **Source Mapping** settings for the six PCL paper sources, and how the settings change when the optional lower base is installed and Reset Menus is implemented. See *Chapter 3: Using the Control Panel, "Reset Menu" (page 3-65).*

Figure 2.12 Factory settings for Source Mapping

PCL Paper Source	Without Lower Base	With Lower Base
Standard	Standard	Standard-Lower
Manual	MP Tray	MP Tray
Manual Envelope	MP Tray	MP Tray
Lower	Standard	Lower-Standard
Large Capacity	Standard	Lower-Standard
Envelope Feeder	MP Tray	MP Tray

Note

Only the Xerox printer driver allows access to the entire range of PCL paper source and source mapping settings specifically designed for the 4505/4505ps and 4510/4510ps printers. Refer to the Document Services for Printing Guide.

Source Mapping Examples

Review the following **Source Mapping** examples to take full advantage of the 4505/4505ps and 4510/4510ps capabilities.

All examples assume that **Default Source** is set to *Standard*.

Example 1

You do not have a lower base installed. You want to load as much paper in the printer as possible. You use only one size of paper. You do not do manual feeding.

1. Load the standard and MP trays with regular paper stock.
2. Set **Source Mapping** for "Standard" to "Standard-MP."
3. Set **MP Tray Size** to the same size as the regular stock.
4. In either your software application or the Xerox printer driver, set paper source to the standard tray.

The printer will pull paper from the standard tray until it is empty, then from the MP tray. When the standard tray is reloaded, the printer will pull paper from it again.

Note

The Source Mapping setting determines from where the printer pulls paper.

For the paper sources you intend not to use, always set Source Mapping to the same setting as that used for your regular paper stock. You will avoid unexpected results if those paper sources are used by mistake.

Note

The examples suggest using specific PCL paper sources but generally you may substitute any source to fit your printing needs.

Caution

To avoid a paper jam, do not remove the standard or lower tray while the printer is feeding paper.

Example 2

You have a lower base installed. You want to load as much paper in the printer as possible. You use only one size of paper. You do not do manual feeding.

1. Load the standard, lower, and MP trays with regular paper stock.
2. Set **Source Mapping** for "Standard" to "Low-Std-MP."
3. Set **MP Tray Size** to the same size as the regular stock.
4. In either your software application or the Xerox printer driver, set paper source to the standard tray.

The printer will pull paper from the lower tray until it is empty, then from the standard tray until it is empty, then from the MP tray. When either the lower or standard tray is reloaded, the printer will pull paper from it again.

Example 3

You do not have a lower base installed. You want to print mostly on Letter (8.5 x 11) paper but sometimes on Legal (8.5 x 14). You do not intend to do manual feeding.

1. Load the standard tray with Letter paper stock.
2. Load the MP tray with Legal paper stock.
3. Set **Source Mapping** for “Standard” to “Standard.”
4. Set **Source Mapping** for “Manual” to “MP Tray.”
5. Set **MP Tray Size** to “Legal (8.5x14).”
6. In either your software application or the Xerox printer driver, set paper source to:
   - — Standard tray for Letter pages.
   - — Manual (MP Tray) for Legal pages.

The printer will pull Letter paper from the standard tray. It will pull Legal paper from the MP tray.

Alternatively, you could set **Source Mapping** for “Standard” to “Standard-MP” and set your application paper source to the standard tray for both Letter and Legal size pages. **The printer will automatically switch between the trays according to the paper size requested**. The disadvantage is that Control Panel messages may be misleading. Whether alerting you to load Letter or Legal paper, the Control Panel will always display “Standard-MP” as the location to load that paper size. You must know which paper size goes into which tray.

Example 4

You have a lower base installed. You also have the optional standard legal tray (page 2-10). You want to print mostly on Letter (8.5 x 11) paper but sometimes on Legal (8.5 x 14). You intend to do manual feeding.

1. Load the lower tray with Letter paper stock.
2. Load the standard tray with Legal paper stock.
3. Empty the MP tray.
4. Set **Source Mapping** for "Standard" to "Standard."
5. Set **Source Mapping** for "Lower" to "Lower."
6. Set **Source Mapping** for "Manual" to "MP Tray."
7. Set **Default Source** to "Lower" to take care of print jobs that do not contain a paper source selection.
8. In either your software application or the Xerox printer driver, set paper source to:
   - — Lower tray for Letter pages.
   - — Standard tray for Legal pages.
   - — Manual (MP Tray) for pages to be manually fed.

The printer will pull Letter pages from the lower tray. It will pull Legal pages from the standard tray. For each manual page, the printer halts and the Control Panel displays a message requesting the correct size paper to be manually placed in the MP tray. Place one page in the MP tray and it will feed if the requested paper size is the same size as **MP Tray Size**. If it is not, you must press **Enter** *

Alternatively, you could set the Source Mapping for "Lower" to "Lower-Standard" and set your application paper source to the lower tray for both Letter and Legal pages. **The printer will automatically switch between the trays according to the paper size requested**. The only disadvantage is that Control Panel messages may be misleading. Whether alerting you to load Letter or Legal paper, the Control Panel will always

display “Lower-Standard” as the location to load that paper size. You must know which paper size goes into which tray.

Example 5

You do not have a lower base installed. You want to print mostly on white A4 paper but sometimes on pre-printed A4 paper. You occasionally print on DL envelopes.

1. Load the standard tray with white A4 paper stock.
2. Load the MP tray with pre-preprinted A4 paper stock (face down).
3. Set **Source Mapping** for “Standard” to “Standard.”
4. Set **Source Mapping** for “Manual” and “Manual Envelope” to “MP Tray.”
5. Set **MP Tray Size** to “A4 (210x297)”
6. In either your software application or the Xerox printer driver, set paper source to:
   - — Standard tray for white A4 pages.
   - — Manual (MP Tray) for pre-printed A4 pages.
   - — Manual (MP Tray) for DL envelopes. (You could have also set paper source to Manual Envelope for DL envelopes.)

The printer will pull white A4 paper from the standard tray. It will pull pre-printed A4 pages from the MP tray. For each DL envelope, the printer halts and the Control Panel displays a message requesting a DL envelope to be loaded in the MP tray. Remove the pre-printed paper and place one envelope in the MP tray. Press **Enter** * to print.

Additionally, you might set **Source Mapping** for “Lower” and “Large Capacity” sources to “MP Tray” so that you could select the lower tray or large capacity for pre-printed paper if more convenient.

Example 6

You have a lower base (with either a universal tray or an A4 tray) installed, and you have a DL envelope tray—see *Figure 2.6 (page 2-10)*. You want to print mostly on white A4 paper but sometimes on DL envelopes. Occasionally, you print on color or pre-printed A4 paper.

1. Load the lower tray with white A4 paper stock.
2. Insert the DL envelope tray, filled with DL envelopes, in the standard paper source.
3. Load the MP tray with color or pre-printed A4 paper stock (face down).
4. Set **Source Mapping** for "Standard" to "MP Tray."
5. Set **Source Mapping** for "Lower" to "Lower."
6. Set **Source Mapping** for "Manual" and "Manual Envelope" to "Standard."
7. Set **MP Tray Size** to "A4 (210x297)."
8. Set **Default Source** to "Lower" to cover print jobs that do not contain a paper source selection.
9. In either your application or the Xerox printer driver, set paper source to:
   - — Lower tray for white A4 pages.
   - — Standard tray for color or pre-printed A4 pages.
   - — Manual for DL envelopes.

Because of the Source Mapping settings in steps 4-6, above, the printer will pull white A4 paper from the lower tray. It will pull DL envelopes from the standard tray. It will pull color or pre-printed A4 pages from the MP tray.

Make sure there is one sheet of A4 stationery in the MP tray each time you print this document.

Example 7

You do not have a lower base installed. You want to use pre-printed stationery for the first page and regular stock for the other pages of your document. Your software application has the capability to ask for the first page of a document from a different source than the remainder of the document. *The Xerox PCL 5e emulation Windows printer driver also has this capability.* It is assumed your pre-printed stationery is the same size as your regular stock.

1. Load the standard tray with regular paper stock.
2. Load the MP tray with pre-printed stationery (face down).
3. Set **Source Mapping** for "Standard" to "Standard."
4. Set **Source Mapping** for "Lower" to "MP Tray."
5. Set **MP Tray Size** to the same size as your pre-printed stationery.
6. In either your software application or the Xerox PCL 5e emulation Windows printer driver, set paper source for the first page to Lower and set paper source for the remaining pages to Standard.

The printer will pull the first page from the MP tray and all other pages from the standard tray.

Alternatively, you could substitute any paper source, except standard, for "Lower" in the fourth and sixth steps above.

Note

Refer to the Document Services for Printing Guide *for more information about the printer driver.*

Example 8

You do not have a lower base installed. You want to use pre-printed stationery for the first page and regular stock for the other pages of your document. Neither your software application nor your printer driver has the capability to ask for the first page of a document from a different source than the remainder of the document. It is assumed your pre-printed stationery is the same size as your regular stock.

1. Load the standard tray with regular paper stock.
2. Put one page of the pre-printed stationery in the MP tray (face down).
3. Set **Source Mapping** for "Standard" to "MP-Standard."
4. Set **MP Tray Size** to the same size as your pre-printed stationery.
5. In your application, set paper source to Standard.

The printer will pull the first page from the MP tray and all other pages from the standard tray.

Make sure there is one sheet of pre-printed stationery in the MP tray each time you print this document.

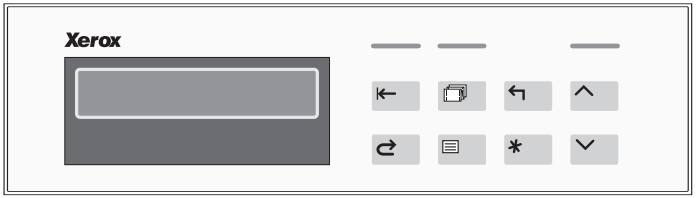
Chapter 3

Using the Control Panel

Overview

Shown in Figure 3.1, the Control Panel is both informative and interactive. Not only does it display status and user actions required, the Control Panel also enables you to change printer settings to control how the 4505/4505ps and 4510/4510ps printers operate in your environment.

Figure 3.1 Control Panel



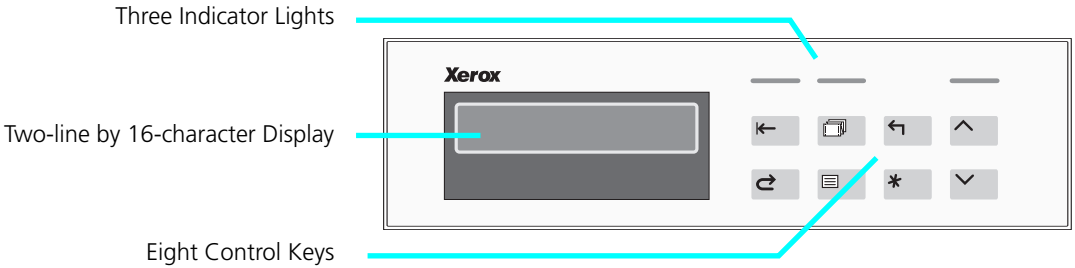
This chapter describes the following:

- Control Panel display and keys
- Control Panel menu selections
- Guidelines for configuring the printer to meet your printing needs

Control Panel Features

The three major components of the Control Panel are shown in Figure 3.2:

Figure 3.2 Control Panel components



The Display

The Control Panel display:

- Presents a **hierarchy of menu options and settings** to configure and control the printer.

  See *"Navigating the Menu System" (page 3-8)* for information on the menu system hierarchy.

- Informs you of **printer status conditions** such as when toner is low, where to load paper, and so on.

See *"Displayed Control Panel Messages" (page 7-5)* for a complete list of messages.

The Indicator Lights

Shown in Figure 3.3, three *indicator* lights—also called LEDs for light-emitting diodes—show the activity status of the printer.

Figure 3.3 Indicator lights

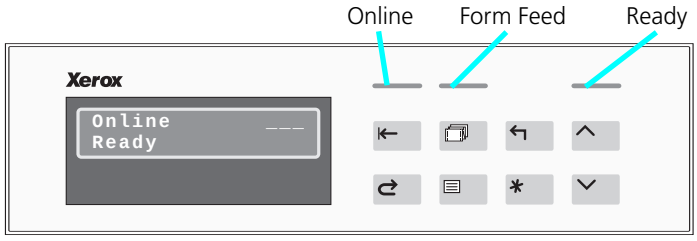


Figure 3.4 describes the function of each indicator light.

Figure 3.4 Indicator light functions

Indicator	Description
Online	The light is on when the printer is warmed up and available for printing. The light goes off when: • You press **Online** ⇤ to take the printer offline. • There is a failure or operation that makes the printer unavailable.
Form Feed	The light comes on when a *partial page* has been prepared for printing, rather than an entire page. To eject the partial page, press **Form Feed** ⧉ when the printer is offline. See *Figure 3.5 (page 3-6)* for information on the **Form Feed** ⧉ key.
Ready	The light comes on when the printer is powered ON and remains lit unless a failure makes the printer unavailable. The **Ready** light flashes to indicate that the printer is *receiving* data to print.

The Keys

As described in Figure 3.5, the Control Panel keypad consists of **eight** keys, identified as international symbols and labeled in English.

Figure 3.5 Control Panel keys and their functions

Key	Description

Online	Toggles between **online** and **offline**.
	When online, the printer is able to receive and print pages.
	When offline, page processing and printing halts, but the printer is still able to respond to status requests. You must take the printer **offline** to:
	• Access the menu system with **Menu** or **Reset**
	• Insert or remove a font card.
	• Perform tasks such as forcing a form feed for a partially printed page.
	The printer goes offline automatically when it has a fault condition such as a paper jam or an open cover. Use **Online** to put the printer back online after correcting such conditions.
	The online message indicates a "closed" switch; that is, printing continues:
	`Online ___`
	The offline message indicates an "open" switch; that is, printing halts:
	`Offline _/_`

Reset	Displays the Reset Menu and the first function: **Reset Printer**. Press **Up** or **Down** repeatedly to step through the other Reset Menu functions one at a time. See *"Reset Menu" (page 3-65)*. The printer must be offline for **Reset** to function.
Form Feed	Prints a partial page if one exists in the printer. *It does not send a blank sheet of paper through the printer.* The printer must be offline for the **Form Feed** key to function. **Form Feed** only works in PCL mode, not in PostScript mode. See *"PCL Menu Options" (page 3-18)* for more information.
Menu	Displays the Main Menu and the first submenu: **Language**. In any submenu, press **Menu** to take you to the top of the Main Menu. See *"Main Menu System" (page 3-12)* for a full description. The printer must be offline for **Menu** to function.

Figure 3.5 Control Panel keys and their functions *(continued)*

Key	Description
Esc ↰	In the menu system, exits the current menu level and returns to the previous one. Press **Esc** ↰ at any time in the menu system to take you to the previous level. No changes to values will be saved unless you first press **Enter** * Press **Esc** ↰ while at Reset Menu or the top level of Main Menu to exit either menu.
Enter *	In the menu system, accesses, sets, or invokes the displayed submenu, value, or function: • When a submenu is displayed, press **Enter** * to access a submenu. • When a printer setting is displayed, press **Enter** * to set the current value as the default value. • In PCL, press **Enter** * to override a paper mismatch. • When a printer action is displayed, such as any of the Test Menu (page 3-61) or Reset Menu (page 3-65) functions, press **Enter** * to invoke the action. Out of the menu system, acts as a Continue key: • After certain error conditions when **Auto Continue** is *Off*, press **Enter** * to continue the printing process. See **Auto Continue** (page 3-59) for more information.
Up ^	In the menu system, scrolls backward (up) through submenus or through the current list of values or functions. For numeric values such as number of **Copies**, press **Up** ^ to increase the number. Scrolling wraps—if the first item in a list is displayed, press **Up** ^ to display the last item in the list. Press **Up** ^ for more than two seconds to scroll continuously. During scrolling, there may be a greater increment for each step than that for single presses. For example, for the PCL Menu setting **Pitch** (page 3-20), the single press increment is 0.01 whereas the scrolling increment is 1.00.
Down v	In the menu system, scrolls forward (down) through the submenus or through the current list of values or actions. For numeric values such as number of **Copies**, press **Down** v to decrease the number. Scrolling wraps—if the last item in a list is displayed, press **Down** v to display the first item in the list. Press **Down** v for more than two seconds to scroll continuously. During scrolling, there may be a greater increment for each step than that for single presses. For example, for the PCL Menu setting **Pitch** (page 3-20), the single press increment is 0.01 whereas the scrolling increment is 1.00.

Navigating the Menu System

The 4505/4505ps and 4510/4510ps Control Panel contains **two** menu structures:

- **Main Menu** and its submenus:
  - **Language**
  - **PCL Menu**
  - **PostScript Menu** (when the PostScript option is installed)
  - **Interface Menu**
  - **System Menu**
  - **Test Menu**

  The Main Menu system is accessed by pressing **Menu** Each of the submenus may have other submenus, settings, or functions. See *"Main Menu System" (page 3-12)* for more information.
- **Reset Menu** and its functions:
  - **Reset Printer**
  - **Reset Menus**
  - **Reset I/f Cards** (available only in firmware release 4.0 and when a network option is installed)
  - **Reset All**
  - **Cancel PS Job** (when the PostScript option is installed)

  The **Reset Menu** is accessed by pressing **Reset** There are no submenus. See *"Reset Menu" (page 3-65)*.

Note

Take the printer **offline** *(page 3-6) to access the* **Main Menu** *or the* **Reset Menu**.

Menu System Indicators

As shown in Figure 3.6, three symbols called *indicators* may appear on menu displays.

Figure 3.6 Menu indicator symbols on the Control Panel display

Symbol	Description	Example
>	Indicates another **menu** level below this one.	`Main Menu` `Language >`
=	Indicates that a value or setting follows the **option** on the bottom line.	`Language =` `Français`
*	After a **setting**, indicates it is the current value.	`Language =` `English *`

Setting a Menu Option

To set a **Main Menu** option or to invoke a **Test Menu** or **Reset Menu** function, follow the steps below:

1. **Press Online ⇤ to take the printer offline.**

   You will see:

   ```
   Offline      _/_
   Press a key...
   ```

2. **Press Menu ▤ to access the Main Menu or press Reset ↻ to access the Reset Menu.**

3. **Press Down ∨ or Up ∧ to scroll through the list of submenus, options, or functions.**

4. **When you see the submenu, option, or function you want, press Enter ***

   If you selected a submenu or option you did not want, press **Esc** ↰ to return to the previous level; then make the selection you want and press **Enter** * to accept it.

5. **If necessary, repeat Step 3 and Step 4 to go through submenu levels to reach all desired options or functions.**

   If many possibilities exist, such as 1 through 99 for number of **Copies**, you can scroll quickly by holding down the key.

   After pressing **Enter** * to accept a setting, you will briefly see on the top line of the display:

   ```
   * saved *
   ```

   This indicates the value has been saved as the current setting.

6 **You may either continue to work in the menu system by repeating the steps above, or exit and return to normal operation by pressing Online** ⇤

Note

If you press **Online** ⇤ *before* **Enter** * *the value will not be saved.*

Other ways to exit a menu option or the menu system completely are as follows:

- In the **Main Menu**, press **Menu** ▤ to return to the top of the **Main Menu**.
- Press **Esc** ↰ from **Main Menu** or **Reset Menu** to exit the menu system and display the following message:

```
Offline      _/_
Press a key...
```

Main Menu System

The **Main Menu** system is hierarchical, based on a cascading system of submenus, each containing other submenus or options designed to configure the printer for your environment. The **Main Menu hierarchy** is depicted in *Figure 3.7 (page 3-13)*.

Note

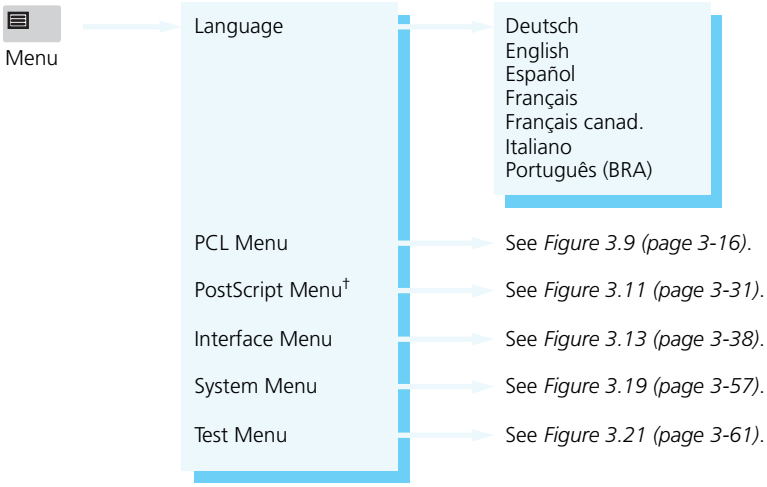
In this chapter, factory settings are shown **boldfaced** *and followed by an asterisk (*****). See Chapter 1: Introduction* (page 1-4) *for a definition of factory setting.*

When you change a factory setting or an existing setting to a new value, the new value becomes the **current** *setting.*

On the printer, the current setting always appears **first** *in the list of values and is followed by an asterisk (*). The other possible values are located by pressing* **Up** ^ *or* **Down** v *to scroll through the list.*

See "Reset Menu" (page 3-65) for information on how to revert to factory settings.

Figure 3.7 Main Menu hierarchy



† Appears only when the PostScript option is installed.

Language

Language includes a list of international languages used to display messages on the Control Panel and used to print text on the Configuration Sheet (page 3-62).

Language Options

Figure 3.8 shows the **Language** options and their English equivalent. See *"Setting a Menu Option" (page 3-10)* for the steps to find and change the language option.

Note

The **Language** *option is not changed by the* **Reset Menus** *function (page 3-66).*

Figure 3.8 Language options

Options	English Equivalent
Deutsch	German
English	International English
Español	Spanish
Français	French
Français canad.	French Canadian
Italiano	Italian
Português (BRA)	Brazilian Portuguese

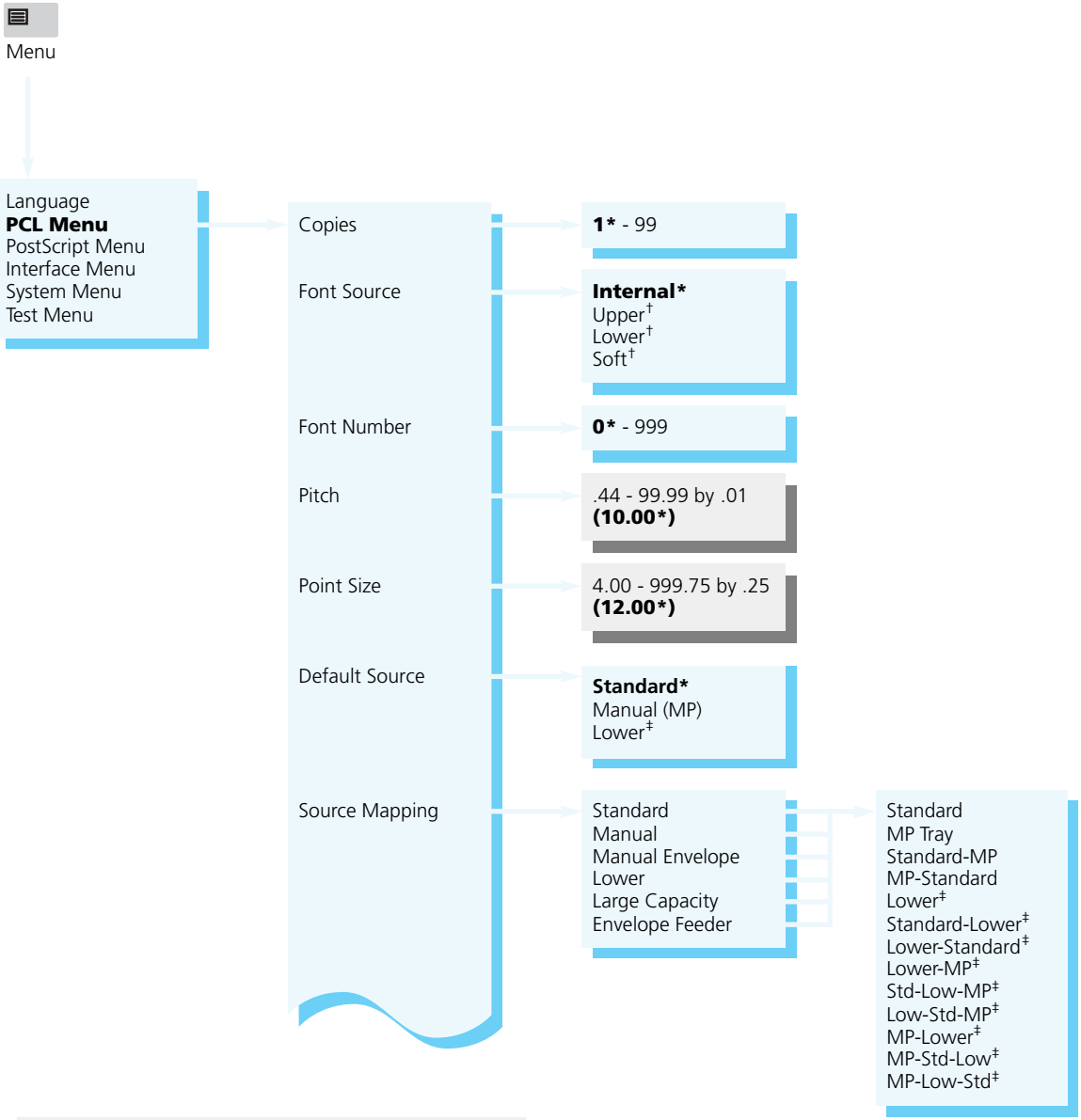
PCL Menu

PCL Menu options establish the *default* configuration for the printer. PCL (Printer Control Language) is used by software applications to send information and instructions to the printer.

PCL Menu Hierarchy

The **PCL Menu hierarchy** is depicted in *Figure 3.9 (page 3-16).*

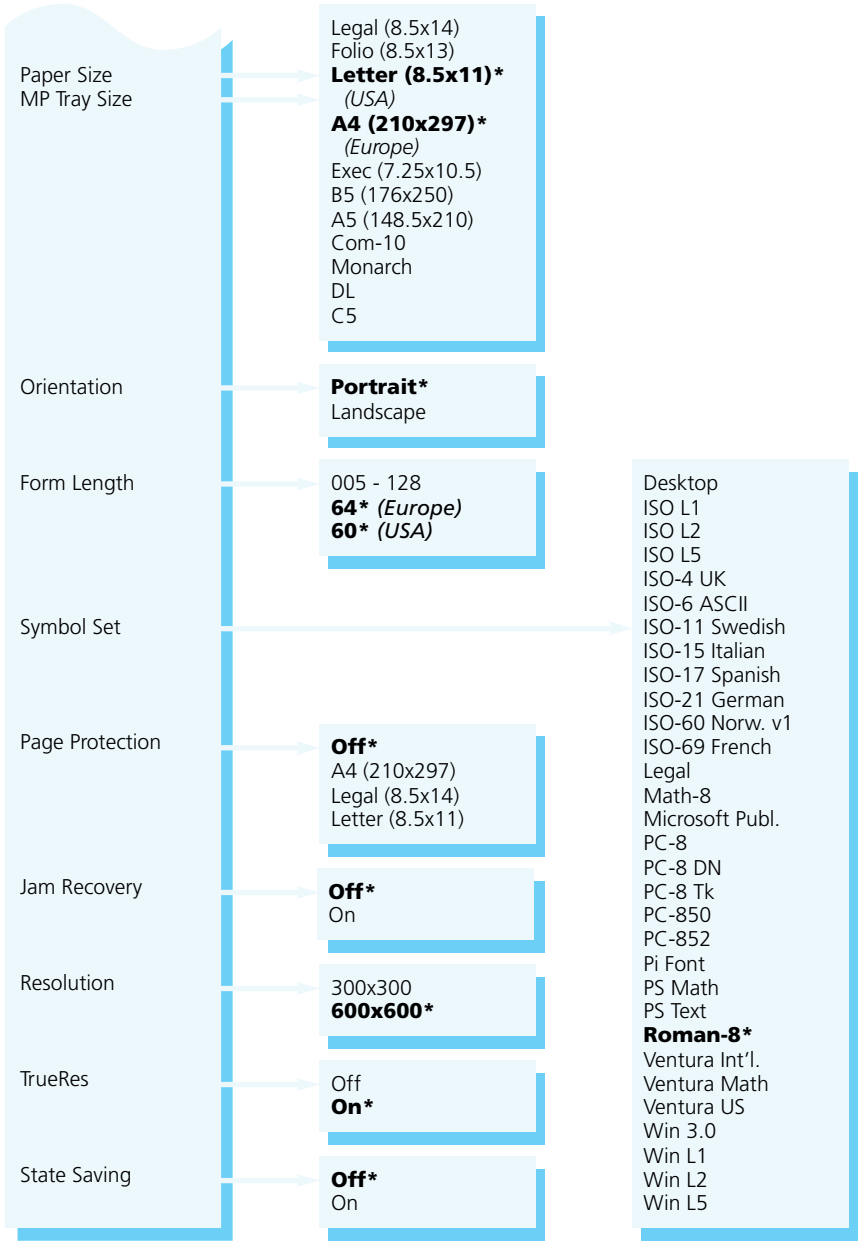
Figure 3.9 PCL Menu hierarchy showing factory settings



Appears only when the default font is scalable.

†Appears only when font cards are installed or downloaded fonts are available.
‡Appears only when an optional lower base is installed.

Figure 3.9 PCL Menu hierarchy *(continued)*



Note: The default for Jam Recovery is **On** for firmware release 4.0. The default is **Off** (as shown at right) for releases > 4.0. To determine the firmware release of your printer, print a Configuration Sheet.

PCL Menu Options

PCL Menu options and their settings are described in *Figure 3.10 (page 3-19)*. Factory settings are **boldfaced**, followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting, or refer to the *Document Services for Printing Guide* to use the RUI to change settings.

Settings for certain **PCL Menu** options may be overridden from many software applications. If your software application specifies a value for any option below, the printer **PCL Menu** setting will be ignored:

- **Copies**
- **Font Source**
- **Font Number**
- **Pitch**
- **Point Size**
- **Default Source**
- **Paper Size**
- **Orientation**
- **Form Length**
- **Symbol Set**

Note

The Xerox printer driver allows your software application to specify three additional PCL Menu options:

- **Page Protection**
- **Resolution**
- **TrueRes**

Figure 3.10 PCL Menu options showing factory settings

Option	Setting	Description
Copies	**1*** - 99	Number of times each page is printed. Most software applications override this setting. If your application does not, the printer assumes the default setting here.
Font Source	**Internal*** Upper† Lower† Soft† † *Upper* and *Lower* appear only when a font card is installed. *Soft* appears when there is a downloaded font.	Location of the default font in PCL. *Internal* refers to the font set residing in the printer's permanent memory. These fonts are resident in the printer and cannot be altered. *Upper* and *Lower* refer to the two font card slots and appear **only** when a font card is installed in a slot. See *Chapter 1: Introduction* (*page 1-3*) for location of the font card slots. When a font card contains its own default font, the current **Font Source** is overridden. You must change the **Font Source** manually if you do not want to use the default font on the font card. *Soft* refers to fonts permanently downloaded to printer memory. *Soft* appears **only** if there is a permanently downloaded font. Note *The* **Font Source** *setting returns to its factory setting ("Internal") if* **Symbol Set** *(page 3-25) is changed.* *If the* **Font Source** *setting specifies a location other than "Internal",* **Font Number** *(page 3-20) reverts to 0 automatically.*

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Font Number	**0*** - 999	Default font in PCL. Only **Font Number** values valid for the **Font Source** location (page 3-19) are displayed. For example, if you have *internal* fonts only, the maximum **Font Number** is 50. **Font Number** values are printed on the **PCL Font List** (page 3-63) in the first column. Print a **PCL Font List** to find the correct number to use with this setting. **Note** *The* **Font Number** *setting returns to its factory setting (0) if the* **Symbol Set** *(page 3-25) default is changed.* *If the* **Font Source** *setting (page 3-19) specifies a location other than "Internal",* **Font Number** *reverts to 0 automatically.*
Pitch	.44 - 99.99 by .01 (**10.00***)	Number of characters per inch (cpi) for the font represented by **Font Number** (page 3-20). Appears only when the **Font Number** setting specifies a scalable fixed pitch font, such as Courier. **Up** ^ increments pitch at .01 cpi, from .44 to 99.99 cpi. **Down** v decrements at .01 cpi. Most software applications override this setting. If your application does not, the printer assumes the default setting here.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Point Size	4.00 - 999.75 by .25 (**12.00***)	Point size (a measurement for type height, 1 point equals 0.351 mm or approximately 1/72 inch) for the font represented by **Font Number** (page 3-20). Appears only when the **Font Number** setting specifies a scalable proportional spaced font, such as Times New Roman. Most software applications override this setting. If your application does not, the printer assumes the default setting here.
Default Source	**Standard*** Manual (MP) Lower†	Default paper source in PCL if none is specified by your software application. The printer uses **Default Source** when there is no paper source specified in the print job. Some software applications have a paper source selection called "Auto Select" or "Auto Sheet Feed" which usually results in the omission of a paper source selection in a print job. When the printer uses **Default Source, Source Mapping** (page 3-22) is used to determine the actual tray or slot from which the printer pulls paper. See *Chapter 2: Handling Paper*, *"Selecting a Paper Source" (page 2-22)* for more information on the interaction of **Default Source** and **Source Mapping**.

† Appears only when an optional lower base is installed.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Source Mapping Options (Paper Sources): Standard Manual Manual Envelope Lower Large Capacity Envelope Feeder	Standard MP Tray Standard-MP MP-Standard Lower† Standard-Lower† Lower-Standard† Lower-MP† Std-Low-MP† Low-Std-MP† MP-Lower† MP-Std-Low† MP-Low-Std† † Appears only when an optional lower base is installed.	**Source mapping** enables you to control *from your software application* the location from which the printer pulls paper. Each of the six paper sources that can be requested through your application maps to one of the **Source Mapping** settings. *Standard* is the factory setting for the Standard, Lower, and Large Capacity paper sources. *MP Tray* is the factory setting for Manual, Manual Envelope, and Envelope Feeder. See *Figure 2.12 (page 2-26)* for factory settings with and without a lower base installed. When a paper source (e.g., Standard) is mapped to a *sequence* of trays (e.g., *Standard-MP*), the printer may switch between them for two purposes: 1) To increase paper capacity. When the current tray becomes empty, the printer automatically switches to the next tray in the sequence, provided the paper size is the same. 2) To search for the correct paper size to print a page. If the paper size specified in your software application does not match what is loaded in the current tray, the printer automatically searches the next tray in the sequence for a paper size that matches. For more information on taking full advantage of **Source Mapping** and for detailed examples of usage, see *"Selecting a Paper Source" (page 2-22)*.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Paper Size	Legal (8.5x14) Folio (8.5x13) **Letter (8.5x11)*** *(USA)* **A4 (210x297)*** *(Europe)* Exec (7.25x10.5) B5 (176x250) A5 (148.5x210) Com-10 Monarch DL C5 See *Figure 2.3 (page 2-6)* for more paper dimensions.	Paper size used to print a page if no paper size is specified by your software application. The Xerox printer driver supports all **Paper Size** settings. However, without the Xerox printer driver installed, not all paper sizes may be supported by your software application. The **Defaults** setting (page 3-60) in the System Menu determines whether the factory setting for **Paper Size** is "A4 (210x297)" or "Letter (8.5x11)".
MP Tray Size	Legal (8.5x14) Folio (8.5x13) **Letter (8.5x11)*** *(USA)* **A4 (210x297)*** *(Europe)* Exec (7.25x10.5) B5 (176x250) A5 (148.5x210) Com-10 Monarch DL C5 See *Figure 2.3 (page 2-6)* for more paper dimensions.	**MP Tray Size** communicates the paper size feeding through the MP tray. The MP tray does not have a size sensor; therefore, you must explicitly tell the printer what MP tray paper size to expect. The printer compares the paper size communicated in the print job to the **MP Tray Size** setting. If different, the printer displays a message informing you what paper size to feed through the MP tray. The **Defaults** setting (page 3-60) in the System Menu determines whether the factory setting for **MP Tray Size** is "A4 (210x297)" or "Letter (8.5x11)".
Orientation	**Portrait*** Landscape	Page orientation. *Portrait* refers to a vertical page; *Landscape* refers to a horizontal page. Most software applications override this setting. If your application does not, the printer assumes the default setting here.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Form Length	005 - 128 **64*** *(Europe)* **60*** *(USA)*	Number of lines per page used in PCL. The **Form Length** setting is automatically adjusted when the **Paper Size** (page 3-23) default is changed. For example, if you set **Paper Size** to "A4 (210x297)" **Form Length** is adjusted to 64 automatically. If **Paper Size** is set to "Letter (8.5X11)," **Form Length** is adjusted to 60. Most software applications override this setting. If your application does not, the printer assumes the default setting here. The **Defaults** (page 3-60) in the System Menu determines whether the **Form Length** factory setting is 64 or 60.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Symbol Set	Desktop ISO L1 ISO L2 ISO L5 ISO-4 UK ISO-6 ASCII ISO-11 Swedish ISO-15 Italian ISO-17 Spanish ISO-21 German ISO-60 Norw. V1 ISO-69 French Legal Math-8 Microsoft Publ. PC-8 PC-8 DN PC-8 Tk PC-850 PC-852 Pi Font PS Math PS Text **Roman-8*** Ventura Int'l. Ventura Math Ventura US Win 3.0 Win L1 Win L2 Win L5	Collection of characters available for a font, including uppercase and lowercase alphabets, punctuation marks, and special characters such as open and close quotation marks or international characters. Most software applications override this setting. If your application does not, the printer assumes the default setting here. Note: *When you change* **Symbol Set**, *the settings for* **Font Number** *(page 3-20) and* **Font Source** *(page 3-19) are reset to their factory settings automatically.*

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Page Protection	**Off*** A4 (210x297) Legal (8.5x14) Letter (8.5x11) See *Figure 2.3 (page 2-6)* for more paper dimensions.	Use to reserve memory for a full page of the selected paper size. When *Off*, memory is not reserved for an entire page. It then becomes possible for a page to be too complex to compose. The result is a `Page Too Complex` error message and the page may be printed on more than one sheet of paper. When set to a paper size, each page is composed into reserved memory before the paper starts to move through the printer. The printer may slow down slightly with **Page Protection**; however, you will be assured of printing a complex page on one sheet of paper. **Page Protection** can be overridden by software when the Xerox printer driver is installed. See *"Printer Settings that Affect Memory" (page 3-67)* for further information.
Jam Recovery Note: The default for Jam Recovery is **On** for firmware release 4.0. The default is **Off** (as shown at right) for releases > 4.0. To determine the firmware release of your printer, print a Configuration Sheet.	**Off*** On	Determines how the printer recovers from a paper jam. It is set independently for PCL and PostScript. When *On*, the printer reprints any pages in the printer at the time of the jam, after the jam has been cleared. The printer does this by using a portion of memory to store data. This setting can reduce printer speed with minimum memory installed. Printer speed can be increased by installing additional memory and/or using the default setting of *Off*. When *Off*, some pages may be lost after the jam has been cleared. The print job must be resent, specifying those pages that did not print as a result of the paper jam. See *"Printer Settings that Affect Memory" (page 3-67)* for further information.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
Resolution	300x300 **600x600***	Dots per inch (dpi). Some software applications override this setting. If your software application does not, the printer assumes the default setting here. **Resolution** can be overridden by software when the Xerox printer driver is installed. Higher resolutions use more printer memory. See *"Printer Settings that Affect Memory" (page 3-67)* for further information.
TrueRes	Off **On***	When *On*, smooths the curves in characters and graphics to reduce coarseness, thereby improving image quality. **TrueRes** can be overridden by software when the Xerox printer driver is installed.

Figure 3.10 PCL Menu options showing factory settings *(continued)*

Option	Setting	Description
State Saving	**Off*** On	Reserves memory for saving permanently downloaded fonts and macros, when the printer switches from using the PCL printer language to using the PostScript printer language, or when the printer steps down in **Page Protection** or **Resolution**. When *Off*, all permanently downloaded fonts and macros are cleared from memory when switching PDLs. They must be downloaded again when the printer switches back to PCL from PostScript. When *On*, permanently downloaded fonts and macros are stored in printer memory. You eliminate the time to download them again when the printer switches back to PCL.  **Note** *Temporary fonts and macros are always cleared at the end of every print job.* **State Saving** requires 10 MB (MegaBytes) of memory if the PostScript option is installed. If the PostScript option is not installed, **State Saving** may be selected with less than 10 MB. This will prevent loss of downloaded PCL fonts and macros if applications change the setting of **Resolution** or **Page Protection**. Enabling **State Saving** can have an effect on printing speed with minimum memory installed. It is recommended that this option not be enabled without 10 MB of printer memory.

PostScript Menu

PostScript Menu options establish the default PostScript configuration for the printer. PostScript may be used by software applications to send information and instructions to the printer.

Note

The 4505ps and 4510ps printers are factory-equipped with PostScript.

PostScript is available as an option for the 4505 and 4510 printers. See Appendix D: Ordering Information.

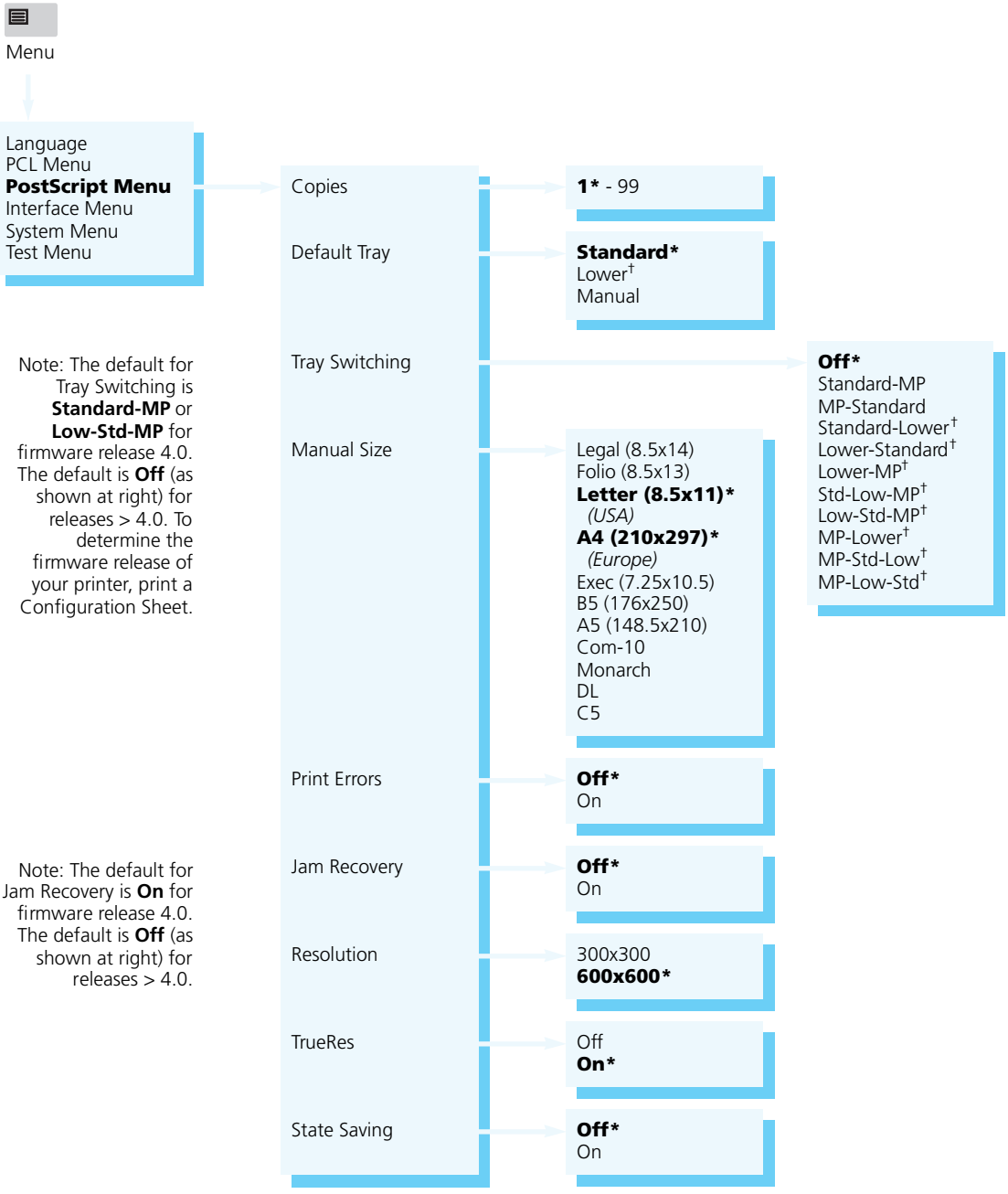
Note

PostScript Users:
The Xerox Windows PostScript driver allows you to either download the PostScript header with every job, or download it only once. If the printer is used in a network or other shared environment, where both PCL and PostScript jobs are printed, the header will be deleted whenever the printer switches from PostScript to PCL. Banner sheets printed from Novell networks cause the printer to switch between PostScript and PCL. If Banner Sheets are printed, insure that the printer's **Language Sensing** *option is* On. *To avoid the loss of the PostScript header, select "Download Each Job" in the PostScript driver. The "Already Downloaded" option may be selected in the driver if at least 10 MB of memory is installed in the printer and the printer's* **State Saving** *option is set to* On *in the printer's* **PostScript menu**. *You must download the header at least once for each power on cycle. If several different PostScript applications are used, the "Download Each Job" option will guarantee that the correct header is always available.*

PostScript Menu Hierarchy

Figure 3.11 (page 3-31) shows the **PostScript Menu hierarchy**, *which appears only when the PostScript option is installed*.

Figure 3.11 PostScript Menu hierarchy showing factory settings



†Appears only when an optional lower base is installed.

PostScript Menu Options

PostScript Menu options and their settings are described in Figure 3.12. Factory settings are **boldfaced**, followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting, or refer to the *Document Services for Printing Guide* to use the RUI to change settings.

Default settings for certain **PostScript Menu** options may be overridden from many software applications. If your software application specifies a value for an option below, the **PostScript Menu setting** will be ignored:

- **Copies**
- **Default Tray**
- **Manual Size**
- **Tray Switching**

Note

The Xerox printer driver allows your software application to specify additional PostScript Menu options:

- **Resolution**
- **TrueRes**

Figure 3.12 PostScript Menu options showing factory settings

Option	Setting	Description
Copies	**1*** - 99	Number of times each page is printed. Most software applications override this setting. If your application does not, the printer assumes the default setting here.
Default Tray	**Standard*** Lower† Manual † Appears only when an optional lower base is installed.	Paper tray used if none is specified in your software application.

Figure 3.12 PostScript Menu options showing factory settings *(continued)*

Option	Setting	Description
Tray Switching Note: The default for Tray Switching is **Standard-MP** or **Low-Std-MP** for firmware release 4.0. The default is **Off** (as shown at right) for releases > 4.0. To determine the firmware release of your printer, print a Configuration Sheet.	**Off*** Standard-MP MP-Standard Standard-Lower† Lower-Standard† Lower-MP† Std-Low-MP† Low-Std-MP† MP-Lower† MP-Std-Low† MP-Low-Std† † Appears only when an optional lower base is installed.	Sequence of trays the printer uses when printing a page of a PostScript print job. If the tray requested for the page is included in this sequence, then the whole sequence is used instead of the requested tray. The first tray used is the one in the sequence, going from left to right, that satisfies all page requirements. If the requested tray is not included in this sequence, then the requested tray alone is used. For example, if this setting is "Lower-Standard" and the standard tray (upper) is requested, then the lower tray will be used first provided that it contains the requested size of paper. When this sequence is being used and the current tray runs out of paper, then the next tray in the sequence that has the same size paper will be used. Settings that include the lower tray only appear in the menu when an optional lower base is installed. Settings that begin with MP allow for printing of the first pages of a job on special stock by placing the required number of sheets of the special stock in the MP tray. The factory default is Low-Std-MP when a lower tray is installed, or Standard-MP when a lower tray is not installed.  Caution **Do not remove either the standard or lower tray when the printer is feeding paper.** PostScript drivers other than the Xerox driver may simply enable or disable **Tray Switching**; they can not specify a setting.

Figure 3.12 PostScript Menu options showing factory settings *(continued)*

Option	Setting	Description
Manual Size	Legal (8.5x14) Folio (8.5x13) **Letter (8.5x11)*** *(USA)* **A4 (210x297)*** *(Europe)* Exec (7.25x10.5) B5 (176x250) A5 (148.5x210) Com-10 Monarch DL C5	Paper size to expect in the manual slot if none is specified in your software application. **Manual Size** communicates the paper size feeding through the MP tray. The MP tray does not have a size sensor; therefore, you must explicitly tell the printer what MP tray paper size to expect. The printer compares the paper size communicated in the print job to the **Manual Size** setting. If different, the printer displays a message informing you what paper size to feed through the MP tray. The **Defaults** option (page 3-60) in the System Menu determines whether the factory setting for **Manual Size** is "A4 (210x297)" or "Letter (8.5x11)." The Xerox Windows PostScript driver allows you to select either "MP Tray" or Manual Feed" to designate the printer's MP tray as the paper source. If "MP Tray" is selected from the driver, the setting of **Manual Size** on the printer Control Panel must match the paper size requested in the driver. If **Manual Size** and the selection of the paper size in the driver do not match, the page may be formatted incorrectly. You can change the setting of **Manual Size** in the PostScript Menu after the Control Panel prompts you to load the appropriate paper in the MP tray. The setting of **Manual Size** on the Control Panel only affects paper fed from the MP tray. This setting is ignored for paper fed from the standard or lower trays.
Print Errors	**Off*** On	Control of PostScript's built-in error handler (debugger). Should the printer encounter a PostScript error while printing a job, PostScript prints an error sheet when **Print Errors** is *On*. This is useful on a network, as an error sheet will alert the user that the print job had errors and was flushed.

Figure 3.12 PostScript Menu options showing factory settings *(continued)*

Option	Setting	Description
Jam Recovery Note: The default for Jam Recovery is **On** for firmware release 4.0. The default is **Off** (as shown at right) for releases > 4.0. To determine the firmware release of your printer, print a Configuration Sheet.	**Off*** On	Determines how the printer recovers from a paper jam. It is set independently for PCL and PostScript. When *On*, the printer reprints any pages in the printer at the time of the jam, after the jam has been cleared. The printer does this by using a portion of memory to store data. This setting can reduce printer speed with minimum memory installed. Printer speed can be increased by installing additional memory and/or using the default setting of *Off*. When *Off*, some pages may be lost after the jam has been cleared. The print job must be resent, specifying those pages that did not print as a result of the paper jam. See *"Printer Settings that Affect Memory" (page 3-67)* for further information.
Resolution	300x300 **600x600***	Dots per inch (dpi). Some software applications override this setting. If your software application does not, the printer assumes the default setting here. **Resolution** can be overridden by software when the Xerox printer driver is installed. Higher resolutions require more printer memory. See *"Printer Settings that Affect Memory" (page 3-67)* for further information.
TrueRes	Off **On***	When *On*, smooths the curves in characters and graphics to reduce coarseness, thereby improving image quality. **TrueRes** can be overridden by software when the Xerox printer driver is installed.

Figure 3.12 PostScript Menu options showing factory settings *(continued)*

Option	Setting	Description
State Saving	**Off*** On	Reserves memory for saving the contents of virtual memory, when print jobs switch from PostScript to the PCL printer language or when the printer steps down in **Page Protection** or **Resolution**. When *Off*, if print jobs switch from PostScript to PCL, the contents of virtual memory are cleared.† When *On*, **State Saving** saves virtual memory contents, eliminating the time to download again when switching back to PostScript. **State Saving** requires 10 MB (MegaBytes) of memory if the PostScript option is installed. If the PostScript option is not installed, **State Saving** may be selected with less than 10 MB. This will prevent loss of downloaded PCL fonts and macros if applications change the setting of **Resolution** or **Page Protection**. Enabling **State Saving** can have an effect on printing speed with minimum memory installed. It is recommended that this option not be enabled without 10 MB of printer memory.  Note *The contents of virtual memory will not be saved if there is not enough free memory.* † In Microsoft Windows, the PostScript printer driver has an option for determining whether header information (general instructions PostScript needs before processing a print job) is sent with every print job or just once at the start of a PostScript session. The header is stored in virtual memory. If you set the header option to send it to the printer once, turning **State Saving** *On* means the header will not need to be sent again upon return to PostScript operation.

Interface Menu

The **Interface Menu** contains submenus for the **parallel** and **serial** ports on the printer as well as submenus for **network interface** ports *when a network option(s) is installed*.

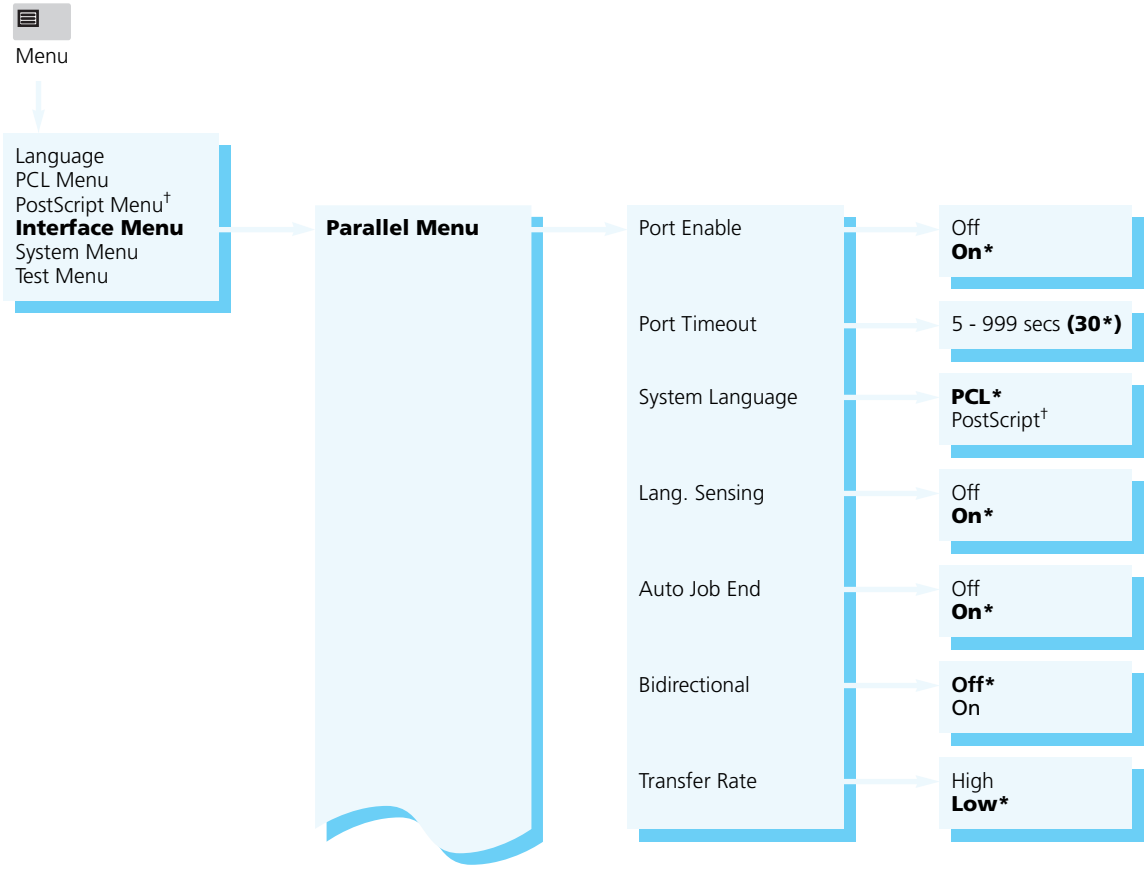
The **Interface Menu** may include submenus for the following:

- **Parallel Menu** (See page 3-41.)
- **Serial Menu** (See page 3-45.)
- **LocalTalk Menu** (See page 3-50.)
- **Ethernet Menu** (See page 3-51.)
- **Token Ring Menu** (See page 3-54.)

Interface Menu Hierarchy

Figure 3.13 (page 3-38) shows the **Interface Menu hierarchy**.

Figure 3.13 Interface Menu hierarchy showing factory settings



† Appears only when the PostScript option is installed.

Figure 3.13 Interface Menu hierarchy showing factory settings *(continued)*

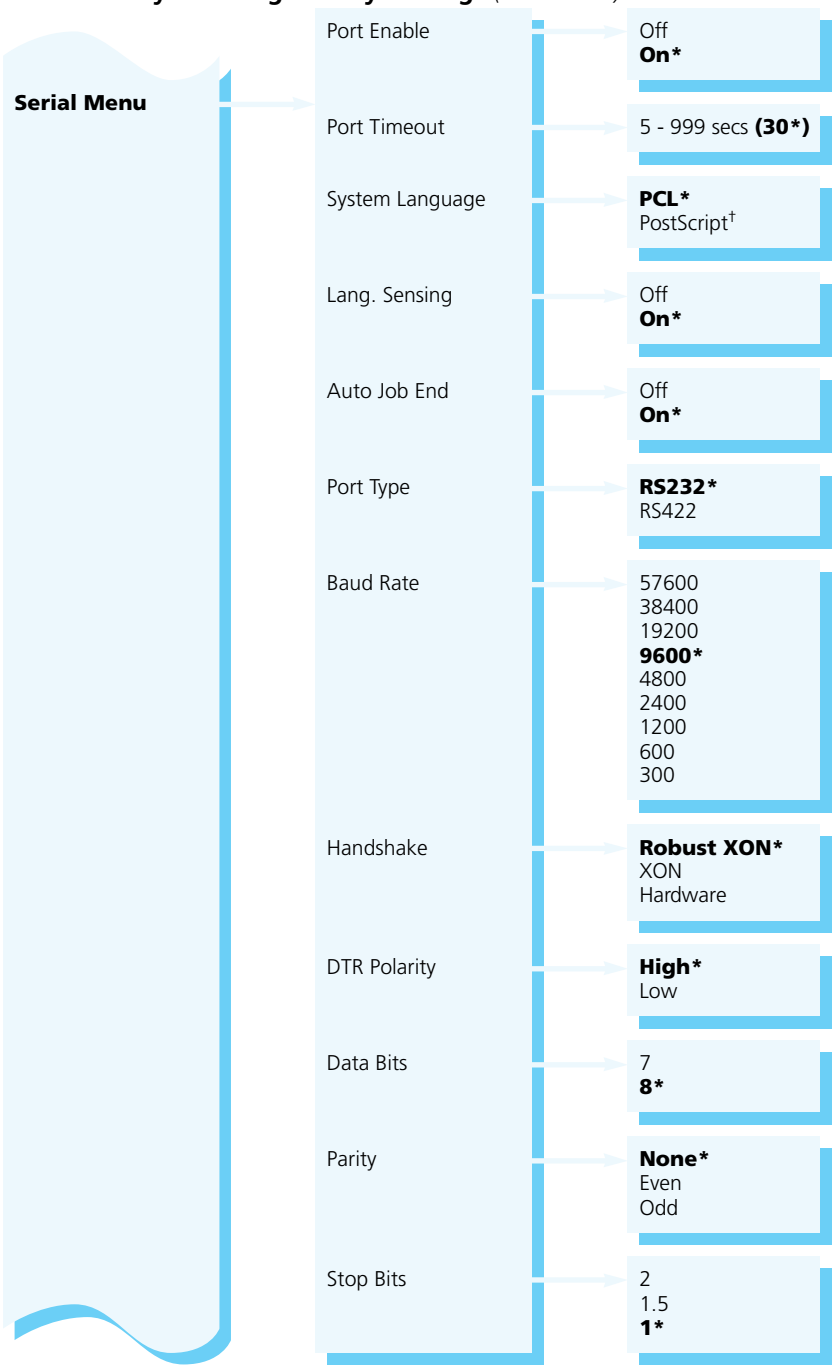
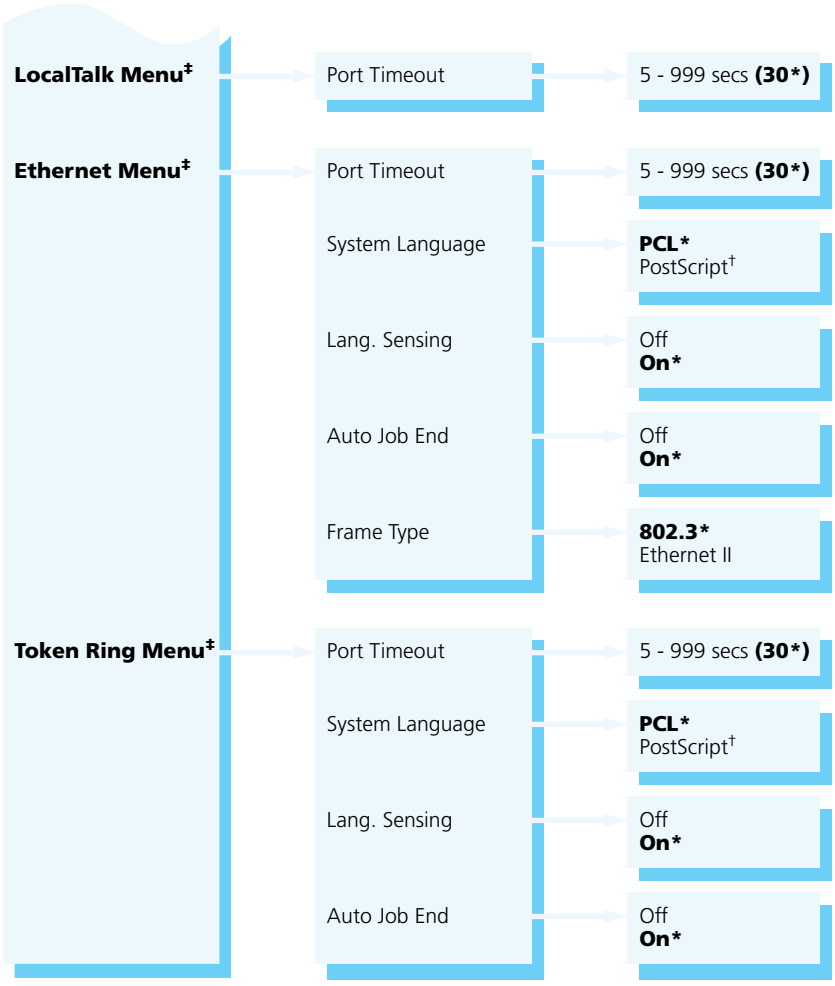


Figure 3.13 Interface Menu hierarchy showing factory settings *(continued)*



Note: The Frame Type option (as shown at right) is available for firmware release 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.

† Appears only when the PostScript option is installed.
‡ Appears only when the option is installed.

Parallel Menu Options

The **Parallel Menu**, a submenu of the **Interface Menu**, *Figure 3.13 (page 3-38)*, contains options for configuring the printer's bidirectional parallel port.

Figure 3.14 describes each **Parallel Menu** option. Factory settings are **boldfaced** and followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting, or refer to the *Document Services for Printing Guide* to use the RUI to change settings.

Figure 3.14 Parallel Menu options showing factory settings

Option	Setting	Description
Port Enable	Off **On***	Activation of the parallel port. When *On*, the parallel port is enabled so that the printer can receive print jobs through it. The parallel port becomes part of a port polling sequence that includes all enabled ports. See *Appendix C: I/O Port Polling* for information. When *Off*, the port is disabled so no communication occurs through this port with the host. If you are not using the parallel port, you can set **Port Enable** *Off*.
Port Timeout	5-999 secs (**30***)	Time interval for determining when to end an incomplete print job and poll the next port in the polling sequence. **Port Timeout** works in conjunction with **Auto Job End** (page 3-43). See *Appendix C: I/O Port Polling* for more information.
System Language	**PCL*** PostScript† † Appears only when the PostScript option is installed.	Page description language (PDL) the printer will use for print jobs coming through the parallel port. When **Lang. Sensing** (page 3-42) is *On*, **System Language** is used only when the printer cannot detect the PDL used in the incoming print job.

Figure 3.14 Parallel Menu options showing factory settings *(continued)*

Option	Setting	Description
Lang. Sensing	Off **On***	Automatic recognition of the page description language (PDL) used in an incoming print job. When *On*, if the parallel port receives print jobs of different PDLs—such as a PostScript print job followed by a PCL print job—it can automatically sense which PDL the print job is using. It does this by sampling the incoming data stream, then switching to the perceived language for that job or to the **System Language** setting if it fails to sense the language. When *On*, if **State Saving** (page 3-28) in the PCL Menu or **State Saving** (page 3-36) in the PostScript Menu is also *On*, the permanently downloaded fonts and macros are saved in memory, eliminating the time to download them again when switching between PDLs occurs.

Figure 3.14 Parallel Menu options showing factory settings *(continued)*

Option	Setting	Description
Auto Job End	Off **On***	Automatic ending of a print job that does not finish. When *On*, after the current print job has paused long enough to exceed the **Port Timeout** (page 3-41) interval and no data has been received on any other port, the print job will be stopped. Any partial page is ejected from the printer and the print job is cleared from memory. Use **Auto Job End** *On* when the printer serves multiple users on a network. This assures that one user's print job will finish and all pages will exit the printer whether or not another user sends a print job. No partial pages will be left unprinted. When *Off*, the print job does not end after the timeout interval. Instead, the printer waits to continue until another print job is received on any port. A partial page will remain unprinted until the next print job is received. See **Form Feed** (page 3-6) for information on ejecting partial pages. Note: **Auto Job End** *should be* On *if the printer is on a network.* If you are not sharing the printer with other users and if you find that one page is split and printed on multiple pages, set **Auto Job End** *Off* or increase the **Port Timeout** interval. It could be the **Port Timeout** is exceeded before the rest of the page can be sent. Also see *"Printer Settings that Affect Memory" (page 3-67)* for other ways to correct the problem of one page printing on multiple pages.

Figure 3.14 Parallel Menu options showing factory settings *(continued)*

Option	Setting	Description
Bidirectional	**Off*** On	Activation of two-way communications between the printer and your computer. **Bidirectional** *On* enables the printer to send messages to your computer.  Caution **Only set Bidirectional *On* if you have a software application that supports it.**
Transfer Rate	High **Low***	Relative speed of the port. The *High* setting will free up the host more quickly for other processing. If your computer cannot handle the high speed, data may be lost.

Serial Menu Options

The **Serial Menu**, a submenu of the **Interface Menu,** *Figure 3.13 (page 3-38)*, contains options for configuring the printer's serial port.

Figure 3.15 describes each **Serial Menu** option. Factory settings are **boldfaced** and followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting, or refer to the *Document Services for Printing Guide* to use the RUI to change settings.

Figure 3.15 Serial Menu options showing factory settings

Option	Setting	Description
Port Enable	Off **On***	Activation of the serial port. When *On*, the serial port is enabled so that the printer can receive print jobs through it. The serial port becomes part of a port polling sequence that includes all enabled ports. See *Appendix C: I/O Port Polling* for information. When *Off*, the port is disabled so no communication occurs through this port with the host. If you are not using the serial port, you can set **Port Enable** *Off*.
Port Timeout	5-999 secs (**30***)	Time interval for determining when to end an incomplete print job and poll the next port in the polling sequence. **Port Timeout** works in conjunction with **Auto Job End** (page 3-47). See *Appendix C: I/O Port Polling* for more information.
System Language	**PCL*** PostScript† † Appears only when the PostScript option is installed.	Page description language (PDL) the printer will use for print jobs coming through the serial port. When **Lang. Sensing** (page 3-46) is *On*, **System Language** is used only when the printer cannot detect the PDL used in the incoming print job.

Figure 3.15 Serial Menu options showing factory settings *(continued)*

Option	Setting	Description
Lang. Sensing	Off **On***	Automatic recognition of the page description language (PDL) used in an incoming print job. When *On*, if the serial port receives print jobs of different PDLs—such as a PostScript print job followed by a PCL print job—it can automatically sense which PDL the print job is using. It does this by sampling the incoming data stream, then switching to the perceived language for that job or to the **System Language** setting if it fails to sense the language. When *On*, if **State Saving** (page 3-28) in the PCL Menu or **State Saving** (page 3-36) in the PostScript Menu is also *On*, the permanently downloaded fonts and macros are saved in memory, eliminating the time to download them again when switching between PDLs occurs.

Figure 3.15 Serial Menu options showing factory settings *(continued)*

Option	Setting	Description
Auto Job End	Off **On***	Automatic ending of a print job that does not finish. When *On*, after the current print job has paused long enough to exceed the **Port Timeout** (page 3-45) interval and no data has been received on any other port, the print job will be stopped. Any partial page is ejected from the printer and the print job is cleared from memory. Use **Auto Job End** *On* when the printer serves multiple users on a network. This assures that one user's print job will finish and all pages will exit the printer whether or not another user sends a print job. No partial pages will be left unprinted. When *Off*, the print job does not end after the timeout interval. Instead, the printer waits to continue until another print job is received on any port. A partial page will remain unprinted until the next print job is received. See **Form Feed** (page 3-6) for information on ejecting partial pages. Note: **Auto Job End** *should be* On *if the printer is on a network.* If you are not sharing the printer with other users and if you find that one page is split and printed on multiple pages, set **Auto Job End** *Off* or increase the **Port Timeout** interval. It could be the **Port Timeout** is exceeded before the rest of the page can be sent. Also see *"Printer Settings that Affect Memory" (page 3-67)* for other ways to correct the problem of one page printing on multiple pages.
Port Type	**RS232*** RS422	Serial interface standard.

Figure 3.15 Serial Menu options showing factory settings *(continued)*

Option	Setting	Description
Baud Rate	57600 38400 19200 **9600*** 4800 2400 1200 600 300	Speed at which data is transferred. **Baud rate** translates approximately to *bits per second*. Note: *The serial port* **Baud Rate** *setting must match the host computer baud rate setting.* *Your software application may set the baud rate. If not, use the DOS MODE command to modify the baud rate on the host computer. Refer to your DOS documentation for more information.*
Handshake	**Robust XON*** XON Hardware	Data flow control. (Flow control, also known as handshaking, is the cooperation between the host computer and printer for data transfer. XON signals the host computer to send more data. XOFF is the converse signal that tells the host computer to stop and wait.) *Robust XON* sends the XON signal continuously. *Robust XON* helps ensure that handshaking works with a host computer that fails to receive the XON signal. *XON* sends the signal only once. *Hardware* is used when the host computer cannot operate in XON/XOFF handshaking mode. ***Hardware* requires a cable with the DTR (Data Terminal Ready) pin connection enabled**.
DTR Polarity	**High*** Low	Serial port's DTR (Data Terminal Ready) signal sent from the printer to notify the host computer that it is ready to receive data. *High* is standard for most computers; it uses true logic (+5 V). *Low* is typically used on nonstandard equipment; it uses inverted logic (0 V).

Figure 3.15 Serial Menu options showing factory settings *(continued)*

Option	Setting	Description
Data Bits	7 **8***	Number of data bits in a character. Note: *The* **Data Bits** *setting must match the host computer data bits setting.*
Parity	**None*** Even Odd	How the parity bit is used in error checking. The parity bit may be checked against the received character by means of an *Even* or *Odd* error checking mechanism. Note: *The* **Parity** *setting must match the host computer parity setting.*
Stop Bits	2 1.5 **1***	Number of stop bits in each character. (Stop bits signal the end of a character.) Note: *The* **Stop Bits** *setting must match the host computer stop bits setting.*

LocalTalk Menu Option

The **LocalTalk Menu**, a submenu of the **Interface Menu,** *Figure 3.13 (page 3-38)*, contains a single option for configuring the printer's LocalTalk port, *when the LocalTalk option has been installed*.

The LocalTalk option supports AppleTalk protocols. For detailed information on the supported protocols, refer to *Networking: LocalTalk* packaged with the LocalTalk option.

Figure 3.16 describes the option. The factory setting is **boldfaced** and followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change the setting.

Figure 3.16 LocalTalk Menu option showing factory setting

Option	Setting	Description
Port Timeout	5-999 secs (**30***)	Time interval for determining when to poll the next port in the polling sequence, after the LocalTalk port has been inactive for this amount of time.

Ethernet Menu Options

The **Ethernet Menu**, a submenu of the **Interface Menu,** *Figure 3.13 (page 3-38),* contains options for configuring the printer's Ethernet port, *when the Ethernet option has been installed*.

The Ethernet option supports the following protocols:

- Novell NetWare, Version 3.11
- TCP/IP
- EtherTalk
- DEC LAT
- Microsoft LAN Manager

For detailed information on the supported protocols, refer to *Networking: Ethernet* packaged with the Ethernet option kit.

Figure 3.17 describes each **Ethernet Menu** option. Factory settings are **boldfaced** and followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting, or refer to the *Document Services for Printing Guide* to use the RUI to change settings.

Figure 3.17 Ethernet Menu options showing factory settings

Option	Setting	Description
Port Timeout	5-999 secs (**30***)	Time interval for determining when to end an incomplete print job and poll the next port in the polling sequence. **Port Timeout** works in conjunction with **Auto Job End** (page 3-53). See *Appendix C: I/O Port Polling* for more information on how port polling works.
System Language	**PCL*** PostScript† † Appears only when the PostScript option is installed.	Page description language (PDL) the printer will use for print jobs coming through the Ethernet port. When **Lang. Sensing** (page 3-52) is *On*, **System Language** is used only when the printer cannot detect the PDL used in the incoming print job.

Figure 3.17 Ethernet Menu options showing factory settings *(continued)*

Option	Setting	Description
Lang. Sensing	Off **On***	Automatic recognition of the page description language (PDL) used in an incoming print job. When *On*, if the Ethernet port receives print jobs of different PDLs—such as a PostScript print job followed by a PCL print job—it can automatically sense which PDL the print job is using. It does this by sampling the incoming data stream, then switching to the perceived language for that job or to the **System Language** setting if it fails to sense the language. When *On*, if **State Saving** (page 3-28) in the PCL Menu or **State Saving** (page 3-36) in the PostScript Menu is also *On*, the permanently downloaded fonts and macros are saved in memory, eliminating the time to download them again when switching between PDLs occurs.

Figure 3.17 Ethernet Menu options showing factory settings *(continued)*

Option	Setting	Description
Auto Job End	Off **On***	Automatic ending of a print job that does not finish. When *On*, after the current print job has paused long enough to exceed the **Port Timeout** (page 3-51) interval and no data has been received on any other port, the print job will be stopped. Any partial page is ejected from the printer and the print job is cleared from memory. Use **Auto Job End** *On* when the printer serves multiple users on a network. This assures that one user's print job will finish and all pages will exit the printer whether or not another user sends a print job. No partial pages will be left unprinted. When *Off*, the print job does not end after the timeout interval. Instead, the printer waits to continue until another print job is received on any port. A partial page will remain unprinted until the next print job is received. See **Form Feed** (page 3-6) for information on ejecting partial pages. Note: **Auto Job End** *should be* On *if the printer is on a network.* If you are not sharing the printer with other users and if you find that one page is split and printed on multiple pages, set **Auto Job End** *Off* or increase the **Port Timeout** interval. It could be the **Port Timeout** is exceeded before the rest of the page can be sent. Also see *"Printer Settings that Affect Memory" (page 3-67)* for other ways to correct the problem of one page printing on multiple pages.
Frame Type Note: This option is available for firmware release 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.	**802.3*** Ethernet II	Protocol standard frame type. Refer to your network software documentation for the correct frame type.

Token Ring Menu Options

The **Token Ring Menu**, a submenu of the **Interface Menu,** *Figure 3.13 (page 3-38)*, contains options for configuring the printer's Token Ring port, *when the Token Ring option has been installed*.

The Token Ring option supports the following protocols:

- Novell NetWare, Version 3.11
- Microsoft LAN Manager

For detailed information on the supported protocols, refer to *Networking: Token Ring* packaged with the Token Ring option kit.

Figure 3.18 (page 3-55) describes each **Token Ring Menu** option. Factory settings are **boldfaced** and followed by an asterisk (*****). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting.

Figure 3.18 Token Ring Menu options showing factory settings

Option	Setting	Description
Port Timeout	5-999 secs (**30***)	Time interval for determining when to end an incomplete print job and poll the next port in the polling sequence. **Port Timeout** works in conjunction with **Auto Job End** (page 3-56). See *Appendix C: I/O Port Polling* for more information on how port polling works.
System Language	**PCL*** PostScript† † Appears only when the PostScript option is installed.	Page description language (PDL) the printer will use for print jobs coming through the Token Ring port. When **Lang. Sensing** (page 3-55) is *On*, **System Language** is used only when the printer cannot detect the PDL used in the incoming print job.
Lang. Sensing	Off **On***	Automatic recognition of the page description language (PDL) used in an incoming print job. When *On*, if the Token Ring port receives print jobs of different PDLs—such as a PostScript print job followed by a PCL print job—it can automatically sense which PDL the print job is using. It does this by sampling the incoming data stream, then switching to the perceived language for that job or to the **System Language** setting if it fails to sense the language. When *On*, if **State Saving** (page 3-28) in the PCL Menu or **State Saving** (page 3-36) in the PostScript Menu is also *On*, the permanently downloaded fonts and macros are saved in memory, eliminating the time to download them again when switching between PDLs occurs.

Figure 3.18 Token Ring Menu options showing factory settings *(continued)*

Option	Setting	Description
Auto Job End	Off **On***	Automatic ending of a print job that does not finish. When *On*, after the current print job has paused long enough to exceed the **Port Timeout** (page 3-55) interval and no data has been received on any other port, the print job will be stopped. Any partial page is ejected from the printer and the print job is cleared from memory. Use **Auto Job End** *On* when the printer serves multiple users on a network. This assures that one user's print job will finish and all pages will exit the printer whether or not another user sends a print job. No partial pages will be left unprinted. When *Off*, the print job does not end after the timeout interval. Instead, the printer waits to continue until another print job is received on any port. A partial page will remain unprinted until the next print job is received. See **Form Feed** (page 3-6) for information on ejecting partial pages. Note: **Auto Job End** *should be* On *if the printer is on a network.* If you are not sharing the printer with other users and if you find that one page is split and printed on multiple pages, set **Auto Job End** *Off* or increase the **Port Timeout** interval. It could be the **Port Timeout** is exceeded before the rest of the page can be sent. Also see *"Printer Settings that Affect Memory" (page 3-67)* for other ways to correct the problem of one page printing on multiple pages.

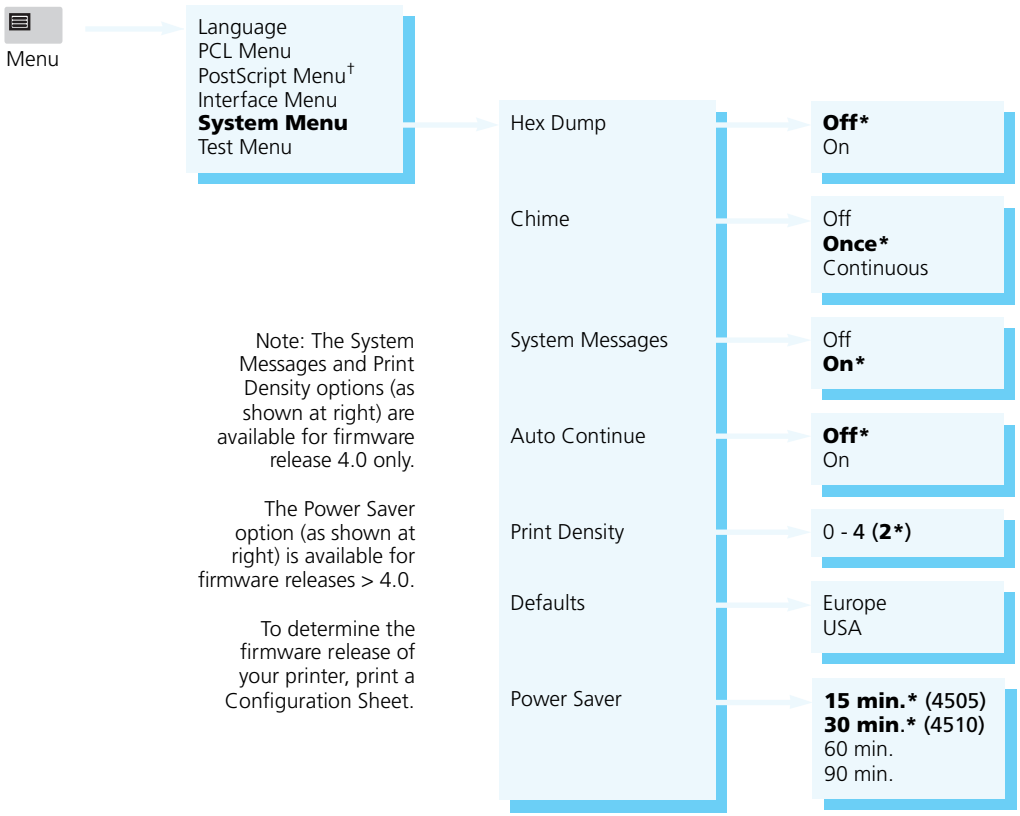
System Menu

The **System Menu** options set general printer features.

System Menu Hierarchy

Figure 3.19 highlights the **System Menu hierarchy**.

Figure 3.19 System Menu hierarchy showing factory settings



† Appears only when the PostScript option is installed.

System Menu Options

In Figure 3.20, **System Menu** options and their settings are described. Factory settings are **boldfaced**, followed by an asterisk (*). See *"Setting a Menu Option" (page 3-10)* for the steps to find and change a setting, or refer to the *Document Services for Printing Guide* to use the RUI to change settings.

Figure 3.20 System Menu options showing factory settings

Option	Setting	Description
Hex Dump	**Off*** On	Print output as hexadecimal codes instead of normal print data. When *Off*, data is printed normally. When *On*, **Hex Dump** is used for error checking and error analysis. Note: *When* **Hex Dump** *is* On*, the Control Panel menus are not available.*
Chime	Off **Once*** Continuous	Audible chime signal for attention. When *Once*, the printer sounds one audible chime when needing attention. When *Continuous*, the printer sounds frequent audible chimes when needing attention. When *Off*, no chime sound is produced.
System Messages Note: This option is available for firmware release 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.	Off **On***	Display of system error messages. When *On*, system error messages are displayed. When *Off*, no system messages are displayed.

Figure 3.20 System Menu options showing factory settings *(continued)*

Option	Setting	Description
Auto Continue	**Off*** On	Control of the resumption of printing after system errors occur. Certain errors may occur that halt printer operations. Two examples are: `Out of Memory` and `Page Too Complex`. When **Auto Continue** is *Off*, the printer does not automatically resume. **Enter** * *must* be pressed before normal printer operations can continue. When **Auto Continue** is *On*, the printer automatically resumes operation after certain system errors if **Enter** * is not pressed within ten seconds**. The *On* setting is useful in a networked environment**.
Print Density Note: This option is available for firmware release 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.	**0 - 4 (2*)**	Darkness of the print. 0 is the lightest and 4 is the darkest. A darker print density uses more toner and may reduce the life of the EP cartridge.

Figure 3.20 System Menu options showing factory settings *(continued)*

Option	Setting	Description
Defaults	Europe USA	Control of default paper size settings in various menus. There is no standard factory-set default for this option; the default varies by world region. When *Europe*, all paper size-related options are set to A4 (210x297) and **Form Length** is set to 64. When *USA*, all paper size-related options are set to Letter (8.5x11) and **Form Length** is set to 60. The **Config. Sheet** (page 3-62) is printed at **Defaults** size, regardless of actual paper size.  Note *Perform a* **Reset Menus** *(page 3-66) after changing* **Defaults***.*
Power Saver Note: This option is available for firmware releases > 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.	**15 min.*** (4505) **30 min.*** (4510) 60 min. 90 min.	The Xerox 4505/4510 printers conform to EPA Energy Star guidelines. The printer will enter a low power state after 15 minutes of inactivity on the 4505 and after 30 minutes of inactivity on the 4510. This timeout is adjustable to 15, 30, 60 or 90 minutes via this option. When in the low power state, the printer displays `Power Saver Mode` on the Control Panel. When a print job is received while in the power saver mode, the printer may require up to 30 seconds of warm up time before the first sheet is fed from the input tray.

Test Menu

Test Menu options are functions that provide output to help you maintain high quality printing.

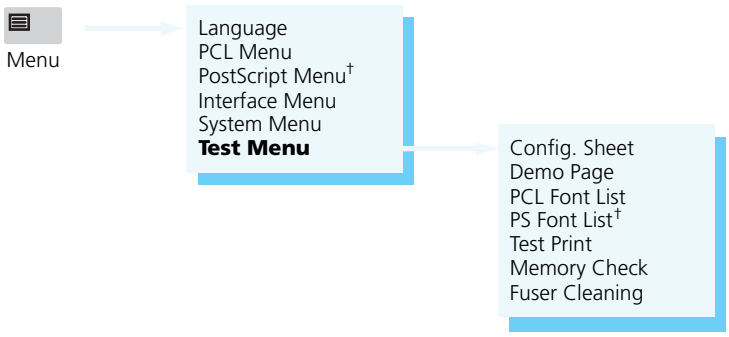
Note

Options in the **Test Menu** *are* **functions** *to be performed by the printer rather than settings. There are no submenus.*

Test Menu Hierarchy

Figure 3.21 shows the **Test Menu** hierarchy.

Figure 3.21 Test Menu hierarchy



Note: The Demo Page option (as shown at right) is available for firmware releases > 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.

† Appears only when the PostScript option is installed.

Test Menu Functions

Figure 3.22 describes each **Test Menu** function. See *"Setting a Menu Option" (page 3-10)* for the steps in performing a **Test Menu** function.

Figure 3.22 Test Menu functions

Function	Description
Config. Sheet	Configuration Sheet to show the printer's current information and menu settings. The Configuration Sheet contains a variety of information such as: • Number of sheets printed to date. • Total printer memory (RAM) available. • Firmware versions for the printer controller. • Firmware versions for Ethernet, LocalTalk, and Token Ring, when installed. • PostScript revision level, when installed. • Current menu settings. • Information on installed options, including the lower base. The Configuration Sheet is printed from the **Default Source** (page 3-21) at the current **Resolution** setting (page 3-27), both specified in the PCL Menu, using A4 (210x297) paper if the System Menu setting for **Defaults** (page 3-60) is *Europe*, or using Letter (8.5x11) paper if **Defaults** is *USA*. **Config. Sheet** will cause a printer reset.
Demo Page Note: This option is available for firmware releases > 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.	Demo Page listing Connectivity, Paper Handling, Print Quality and Page Description Languages of the printer. The Demo Page is printed from the **Default Source** (page 3-21), specified in the PCL Menu, at 600 dpi using A4 (210x297) paper if the System Menu setting for **Defaults** (page 3-60) is *Europe*, or using Letter (8.5x11) paper if **Defaults** is *USA*. **Demo Page** will cause a printer reset.

Figure 3.22 Test Menu functions *(continued)*

Function	Description
PCL Font List	Complete list of all PCL fonts currently available in the printer. PCL fonts include those that are internal, on font card(s), and permanently downloaded soft fonts. See **Font Source** (page 3-19) for font storage locations. The **PCL Font List** prints font number, typeface name, whether the font is fixed pitch or proportionally spaced, point size or scalable indication, orientation, other font characteristics, and a font sample. Printing a **PCL Font List** will cause a printer reset, ejecting any partial pages and clearing any incomplete jobs, temporary fonts, and macros from memory. Note: *The* **Font Number** *(page 3-20) may change based on what fonts you have loaded and what* **Symbol Set** *(page 3-25) you are using.*
PS Font List	Complete list of the 35 PostScript language typefaces. With PostScript installed, the **PS Font List** shows all resident PostScript fonts available in the printer, as well as a sample of each. Downloaded PostScript fonts are not shown.
Test Print	"Test pattern" for analysis of print quality over the entire page; intended for use by service technicians. The number of **Test Prints** produced is determined by **Copies** (page 3-19) and printed from the **Default Source** (page 3-21), both specified in the **PCL Menu**, using the paper size set in **Paper Size** (page 3-23). **Test Print** will cause a printer reset, clearing any incomplete jobs.

Figure 3.22 Test Menu functions *(continued)*

Function	Description

Memory Check	Complete check of printer memory (resident and any SIMMs installed) and a reporting of the results on the Control Panel display.
	
	Memory Check is more extensive than the check performed when the printer is powered on. When you invoke **Memory Check**, you will see:
	
	`Memory Check`
	`Please Wait....`
	
	Before **Memory Check**, any partial pages are ejected and any incomplete print jobs, permanently downloaded fonts, and macros are cleared from memory. After **Memory Check** is finished, it reboots the printer to its power-on state.
	
	If a problem occurs, the Control Panel will display a numeric diagnostic code. See *"Displayed Control Panel Messages" (page 7-5)* to locate the diagnostic message associated with the numeric code.

Fuser Cleaning	Invokes the fuser cleaning cycle, which is recommended each time the EP cartridge is replaced. See *"Fuser Cleaning Cycle" (page 6-9)* for complete instructions on performing the fuser cleaning operation. When fuser cleaning is finished, the printer will be reset, clearing any incomplete print jobs.

Reset Menu

The **Reset Menu** offers several functions to reset various printer functions.

Note

Options in the **Reset Menu** *are* **functions** *to be performed by the printer rather than settings. There are no submenus.*

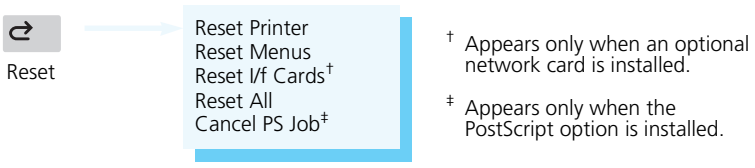
Reset Menu Hierarchy

Figure 3.23 shows the **Reset Menu hierarchy**.

Figure 3.23 Reset Menu hierarchy

Note: The Reset I/f Cards option (as shown at right) is available for firmware release 4.0 only.

To determine the firmware release of your printer, print a Configuration Sheet.



Reset Menu Functions

Figure 3.24 (page 3-66) describes each **Reset Menu** function. See *"Setting a Menu Option" (page 3-10)* for the steps in performing a **Reset Menu** function.

Note

For all types of reset (except **Reset I/F/Cards** *for firmware release 4.0), the printer clears any temporarily downloaded fonts and print macros from memory, as well as ejects any partially printed pages.*

Figure 3.24 Reset Menu options

Option	Description
Reset Printer	Reset of the printer's PCL and PostScript printer languages to their power-on state. **Reset Printer** is useful when you have printing problems. First, cancel the print job from the host. Second, invoke **Reset Printer**. **Reset Printer** cancels any print jobs being processed and clears all temporary fonts and macros. Note: **Reset Printer** *does not change the menu settings of any network option. However, any current print jobs being processed by a network option will be discarded.*
Reset Menus	Reset of menus to their factory settings. **Reset Menus** does not affect the **Language** setting (page 3-14), the System Menu **Defaults** setting (page 3-60), or the System Menu **Print Density** setting (page 3-59). The printer remains offline, so you can work with other menus.
Reset I/f Cards Note: This option is available for firmware release 4.0 only. To determine the firmware release of your printer, print a Configuration Sheet.	Reset of network interface card(s) to their power-on state. **Reset I/f Cards** appears only if a network card is installed. Use this type of reset if one or more of the network interfaces is not communicating properly.
Reset All	All reset functions are performed: • **Reset Printer** • **Reset Menus** • **Reset I/f Cards**
Cancel PS Job	Cancellation of the current PostScript job. This function appears only if PostScript is installed. The PostScript job is flushed from memory—the entire print job is discarded. **Cancel PS Job** is useful when a fault in your software application causes a PostScript error. For example, a PostScript programming error could cause an infinite loop which **Cancel PS Job** would exit.

Printer Settings that Affect Memory

Certain **PCL Menu** and **PostScript Menu** options affect the printer's performance and memory usage, as described in *"PCL Menu" (page 3-15)* and *"PostScript Menu" (page 3-29)*.

Figure 3.25 provides more detailed information on these options.

Figure 3.25 PCL and PostScript Menu options that affect printing speed and memory usage

Option	Description
Page Protection **PCL Menu** (page 3-26)	When a page is particularly complex with graphics or dense text, the printer may not be able to process it rapidly enough to keep up with normal printing operations. Data may be lost or one page may be split on multiple pages. **Page protection** is a technique that reserves memory to ensure the entire page can be created and printed before the actual printing process. The trade-off in performance is matched by the certainty that an entire complex page may be printed. **Page Protection** is related to **Resolution** (page 3-27 for PCL, page 3-35 for PostScript, and page 3-68) since the amount of memory needed for a page depends on its resolution. The higher the resolution, the more memory needed. See *Figure 3.26 (page 3-69)* for memory requirements. Your software application may change the **Page Protection** level (e.g., from *Legal* to *Letter*). When that occurs, the printer's memory is reconfigured. Downloaded fonts and macros may be cleared from memory unless **State Saving** (page 3-28 for PCL, page 3-36 for PostScript, and page 3-68) is set. If any request for memory cannot be satisfied, you will be notified on the Control Panel. If you frequently see the following error message `Page Too Complex` you may want to set **Page Protection** to be able to print the entire page. Otherwise, if you do not see frequent warning messages, set **Page Protection** *Off*.

Figure 3.25 PCL and PostScript Menu options that affect printing speed and memory usage

Option	Description
Jam Recovery **PCL Menu** (page 3-26) **PostScript Menu** (page 3-35)	A paper jam may cause a page image being printed to become lost. When **Jam Recovery** is *On*, the printer will automatically reprint the image of the jammed page, after the jam has been cleared. Because the printer holds a page image in memory longer with **Jam Recovery**, if a low memory condition occurs there can be a slight performance impact and the printer may require more memory. If sufficient memory exists, **Jam Recovery** has no impact.
Resolution **PCL Menu** (page 3-27) **PostScript Menu** (page 3-35)	The printer prints at 600 or 300 dpi. The factory setting is 600 dpi. Your software application may be able to set **Resolution** and override the setting here. Whether a new **Resolution** is set by your application or on the Control Panel, the new **Resolution** becomes effective with the next print job or with a printer reset. Unless **State Saving** (page 3-28 for PCL, page 3-36 for PostScript, and page 3-68) is *On*, downloaded fonts and macros may be cleared from memory. The higher the resolution, the more memory required. See *Figure 3.26 (page 3-69)* for memory requirements.
State Saving **PCL Menu** (page 3-28) **PostScript Menu** (page 3-36)	When **State Saving** is *Off*, fonts and printer macros permanently downloaded from your software application are cleared from memory when: • The printer switches from one page description language (PDL) to another (such as from PostScript to PCL). • A memory reconfiguration takes place (such as for a new **Page Protection** or **Resolution** setting). When **State Saving** is *On*, the printer reserves memory to retain the downloaded fonts and macros. Thus, the fonts and macros do not have to be downloaded to memory again when switching PDLs or reconfiguring memory. You may set **State Saving** separately for the PCL and the PostScript environments. The printer requires 10 MB of memory to enable State Saving when PostScript is installed. If PostScript is not installed, State Saving may be enabled with 6 MB of memory.

Minimum Memory Requirements

The memory requirements shown in Figure 3.26 provide for optimal memory usage and printer performance.

Note

If you encounter memory warning messages, try different combinations of **Resolution** *and* **Page Protection** *before purchasing additional memory.*

Figure 3.26 Minimum memory requirements

Setting	300 dpi	600 dpi
PCL with **Page Protection** *Off*	2 MB	2 MB
PCL with **Page Protection** set	2 MB	6 MB
PostScript (and PCL)	6 MB	6 MB
PostScript and/or PCL with **State Saving** *On*	10 MB	10 MB

Note

Install a 4 MB or 16 MB SIMM to increase printer memory capacity. See Chapter 5: Adding Printer Options *for the SIMM installation procedure.*

Chapter 4

Using Fonts

Overview

A **font** is a collection of characters of one typeface, one weight, and one posture. An example is Courier New Italic. A font generally contains uppercase and lowercase alphabets, numbers, and special characters such as punctuation marks.

A **font family** is composed of one typeface in all its available weights and postures. Courier New, for example, has medium, italic, bold, and bold italic.

Bitmapped and Scalable Fonts

Fonts are normally categorized according to the manner in which they are generated:

- **Bitmapped** font

  A bitmapped font contains digitized images of each character in the font. Each symbol (that is, character, number, or punctuation mark) is a **complete image** in digitized form.

  Each symbol is stored as a bitmap (or raster) that represents the black or white parts of the symbol. The bitmaps are copied onto the paper when printing takes place.

- **Scalable** font

  A scalable font contains characters described by mathematical formulae that produce **character outlines**. A mathematical formula describes a line between two points which constitutes one line of the character's outline. The images printed on paper are digitized as the page is being printed. During digitization, the image may be scaled, sloped, or rotated.

  There exists a variety of mathematical models used to construct scalable fonts, but the two most popular are Bézier and B-spline.

  Scalable fonts are also known as **contour** or **outline** fonts.

At one time, computers used bitmapped fonts only. One set of bitmapped fonts was needed to display characters on a terminal screen, and another set was needed for printing. These were called **screen fonts** and **printer fonts**, respectively.

Today, software applications use many scalable fonts because they can be used for both screen and printer.

Where Fonts Reside

Screen fonts are always stored on the host computer, not the printer.

Printer fonts may reside in three places:

- **Printer ROM** holds *resident* fonts, installed at the factory on memory chips on the printer controller board. See *"Fonts Resident on the Printer" (page 4-5)* for a complete list.
- A **font card** inserted into the printer holds additional PCL fonts. The 4505/4505ps and 4510/4510ps printers provide two slots for font cards. See *Chapter 1: Introduction* (page 1-3) for font card location.
- **Software applications** contain additional fonts that may be *downloaded* to printer memory, in some cases, for the entire time the printer is turned on. See *"Downloading Fonts" (page 4-13)* for more information.

Fonts Resident on the Printer

The 4505/4505ps and 4510/4510ps printers are equipped with resident fonts installed at the factory on memory chips on the printer controller board.

Resident fonts are used by software applications that communicate with the printer in **PCL (Printer Command Language)**. See *Appendix B: Printer Commands (Escape Sequences)* for more information on all PCL commands.

Note

The 4505ps and 4510ps printers are factory equipped with the PostScript option that makes available 35 PostScript fonts. To review the PostScript fonts, print a **PS Font List** *(page 3-63). Also, refer to your PostScript reference documentation.*

Resident fonts available to PCL include the following:

- 10 TrueType fonts. See *"TrueType Fonts" (page 4-6).*
- 35 Intellifont fonts. See *"Intellifont Fonts" (page 4-7).*
- 1 PCL Bitmap font. See *"PCL Bitmap Font" (page 4-8).*

TrueType Fonts

TrueType fonts are used by Microsoft Windows 3.1 or later and may be printed to PostScript and non-PostScript printers.

The **ten** resident TrueType fonts on the 4505/4505ps and 4510/4510ps printers are:

Arial
Arial Bold
Arial Bold Italic
Arial Italic
Symbol
Times New Roman
Times New Roman Bold
Times New Roman Bold Italic
Times New Roman Italic
Wingdings

Intellifont Fonts

Intellifont is a scalable font format. The printers are fully compatible with this font format and provide these 35 resident Intellifont fonts:

Antique Olive Medium
Antique Olive Italic
Antique Olive Bold
Albertus Medium
Albertus Extra Bold
CG Omega Medium
CG Omega Italic
CG Omega Bold
CG Omega Bold Italic
CG Times Medium
CG Times Italic
CG Times Bold
CG Times Bold Italic
Clarendon Cond. Bold
Coronet Medium Italic
Courier Medium
Courier Italic
Courier Bold
Courier Bold Italic
Garamond Antiqua
Garamond Kursiv
Garamond Halbfett
Garamond Kursiv Halbfett
Letter Gothic Medium
Letter Gothic Italic
Letter Gothic Bold
Marigold Medium
Univers Medium
Univers Italic
Univers Bold
Univers Bold Italic
Univers Cond. Medium
Univers Cond. Italic
Univers Cond. Bold
Univers Cond. Bold Italic

PCL Bitmap Font

The printers have one resident bitmap font called **Line Printer**. It comes in only one typeface, weight, and posture.

The Line Printer font may be used to provide:

- Line printer emulation for a print job.
- Backward compatibility for those applications that make use of the line printer font.

Note

To review the PCL fonts in your printer, print a **PCL Font List** (page 3-63).

Adding Fonts

Utilizing fonts in addition to resident fonts can add new dimensions to your work. Additional fonts are available through the following:

- PostScript option. See *"PostScript" (page 4-9).*
- Font cards for PCL fonts. See *"Font Cards" (page 4-10).*
- Software applications. See *"Fonts within Software Applications" (page 4-11).*

PostScript

Thirty-five **PostScript** fonts (Adobe Type 1) are available to your printer, either factory-installed on the 4505ps and 4510ps printers, or user-installable on the 4505 and 4510 printers as an option. See *Appendix D: Ordering Information* for more information on the PostScript option.

Many additional PostScript fonts are available through Adobe Systems, Inc. and may be used when the PostScript option is installed on your printer.

If you have a 4505ps or 4510ps printer, see *"PostScript Menu" (page 3-29)* for PostScript printer settings.

PostScript fonts are used by the PostScript Level 2 printer language. If you plan to program in the PostScript Level 2 printer language, refer to Adobe Systems, Inc. PostScript language reference documentation.

Note

The **Lang. Sensing** *settings in the Parallel (page 3-42), Serial (page 3-46), Ethernet (page 3-52), and Token Ring (page 3-55) Menus enable automatic switching between the PostScript and PCL printer languages.* **PostScript and PCL fonts are not interchangeable**.

Font Cards

The 4505/4505ps and 4510/4510ps printers are equipped with two font card slots. See page 1-3 for the physical location of the slots. See *Chapter 5: Adding Printer Options* for font card installation.

Font cards for the 4505/4505ps and 4510/4510ps contain PCL fonts only. In addition, font cards may contain one or more scalable fonts or bitmapped fonts. However, bitmapped and scalable fonts are not mixed on the same card.

A font card may contain its own *default* font. In this case, its default font becomes the printer's default font. To change the default font, see *Chapter 3: Using the Control Panel*, **Font Source** (page 3-19).

Caution

To avoid problems when inserting or removing a font card, take the printer offline by pressing Online ⇤

PCL font cards may be purchased from Xerox / Rank Xerox. See *Appendix D: Ordering Information*.

Fonts within Software Applications

Certain software applications offer additional fonts to those supplied with your printer. These fonts are stored on the host and then *downloaded* into printer memory by the software application when printing.

Unless specified as permanently downloaded fonts (see page 4-13), software application fonts are downloaded to printer memory before being used for a specific printer job, and are removed from printer memory after completion of that print job.

Note

Installation of the Xerox printer driver provides the printer with the capability of recognizing which fonts are resident and which are not. **Selecting resident fonts saves memory and time**.

Selecting a Font

How is a font selected for printing?

The general answer is that you select a font **within the application you are running**. For example, if you are using a word processing application, you will select a font *from the font list* within the application.

If desired, you may select a font (PCL fonts only) from the Control Panel or Remote User Interface (RUI). For an explanation of how to do this, see *Chapter 3: Using the Control Panel*, **Font Number** (page 3-20), or refer to the *Documentation Services for Printing Guide* for the RUI.

A font selected from the Control Panel or RUI becomes the **default** font for the printer unless overridden by the selection of a different font from your software application.

Downloading Fonts

Whether you do or do not use additional fonts, it is helpful to know a few facts about how the printer uses fonts either resident in the printer or **downloaded** (transferred) from the host.

Each time you specify a font in a document to be printed, the font is downloaded to printer, *unless the font is already*:

- Resident in the printer's ROM (read-only memory)—*PCL only.*
- Specified in the printer driver as permanently downloaded to the printer's internal memory—*PCL only.*
- Installed on the PostScript card—*PostScript only.*
- Installed on a font card—*PCL only.*

Consult your software application's user documentation for a discussion of fonts associated with that application.

Temporary and Permanent Fonts

Temporary fonts are PCL fonts downloaded for a particular print job. As soon as the print job is finished, the fonts are cleared from memory. *They must be downloaded for each print job that uses them*. Downloading may have an impact on performance, depending on the number of fonts being downloaded. As a result, the print job using downloaded fonts may take longer than one using resident fonts.

As an example, when you print a mostly-text document in a resident font, printing time is optimal.

If you print that same document using a downloaded font, the time to print the first page is substantially longer than it was for your resident-font document. The remaining pages also take longer to print than those of the resident-font document.

Note

For optimal performance, use **resident** *fonts whenever applicable since they do not require downloading time.*

Permanently downloaded fonts are PCL fonts downloaded in the same way temporary fonts are, but they *remain downloaded* for all print jobs until the printer is powered off. They are *permanent* only as long as the printer is on.

Similar to resident fonts or those on font cards, permanently downloaded fonts reduce the processing time for a print job that uses them. The distinction is that permanently downloaded fonts occupy printer memory that might be used otherwise.

How do you know if a font is permanently downloaded?

- Specify a font to be permanently downloaded when it is installed or setup within a software application.
- Print a **PCL Font List** (page 3-63) to see all resident fonts, all fonts installed on any font card, and *all permanently downloaded fonts*.

Note

In general, it is not recommended that you permanently download fonts. Even if unused, permanent fonts occupy printer memory that cannot be used for other purposes.

In a networked environment, carefully coordinate the use of permanently downloaded fonts. Avoid allowing multiple users to specify permanently downloaded fonts since printer memory may be consumed rapidly and may cause printer faults.

Additional memory (SIMMs) will enable the printer to hold more downloaded fonts. See Chapter 1: Introduction, "Memory Considerations" (page 1-6) and Chapter 5: Adding Printer Options for more information about printer memory.

Chapter 5

Adding Printer Options

Overview

The following printer options are available for the 4505/4505ps and 4510/4510ps printers:

- **4 MB or 16 MB SIMM.** *One 4 MB SIMM is factory-installed on the 4505ps and 4510ps printers.*

  SIMMs (single in-line memory modules) are small circuit boards with memory chips that can be installed on the printer controller board. Up to two SIMMs can be installed in the printers. The maximum memory capacity of the 4505/4505ps and 4510/4510ps is 16 MB. See *"Installing a SIMM" (page 5-4).*

- **PostScript**. *Factory-installed on the 4505ps and 4510ps printers.*

  Adobe Postscript Level 2 is available to your printer, either factory-installed or as an option.

  If using a 4505ps or 4510ps printer, refer to the *PostScript Option Installation Instructions* packaged with the printer. Also, see *Chapter 3: Using the Control Panel, "PostScript Menu" (page 3-29).*

- **250-sheet lower base** with paper tray

  The 250-sheet lower base comes with a universal tray. See *Chapter 2: Handling Paper, "Optional Lower Base" (page 2-13).*

- **500-sheet lower base** with paper tray

  The 500-sheet lower base comes with either an A4 or 8.5 x 11 (Letter) tray. See *Chapter 2: Handling Paper, "Optional Lower Base" (page 2-13).*

- **Paper trays**

  A variety of trays may be ordered separately for the 4505/4505ps and 4510/4510ps printers. See *Chapter 2: Handling Paper, "Paper Trays" (page 2-8).*

- **Ethernet card**

  The Xerox Network Interface Card – Ethernet (XNIC-E'NET) supports the Novell, TCP/IP, EtherTalk, DecLat, and LAN Manager protocols and is equipped with both BNC and RJ-45 connectors.

  See *Chapter 3: Using the Control Panel, "Ethernet Menu Options" (page 3-51).*

- **LocalTalk card**

  The Xerox Network Interface Card – LocalTalk (XNIC-L'TALK) supports the AppleTalk protocols and is equipped with a DIN-8 connector.

  See *Chapter 3: Using the Control Panel, "LocalTalk Menu Option" (page 3-50).*

- **Token Ring card**

  The Xerox Network Interface Card – Token Ring (XNIC-T'RING) supports the Novell and LAN Manager protocols and is equipped with both RJ-45 and female DE-9 connectors.

  See *Chapter 3: Using the Control Panel, "Token Ring Menu Options" (page 3-54).*

- **Font card**

  Font cards are inserted into one or both of the font card slots in the printer. Font cards hold additional PCL fonts. See *"Installing a Font Card" (page 5-19).*

You can order any of these printer options from your dealer or Xerox / Rank Xerox. See *Appendix D: Ordering Information* for complete details.

Installing a SIMM

Since SIMMs are available from manufacturers other than Xerox and might not contain installation instructions for the 4505/4505ps and 4510/4510ps printers, installation instructions are provided here.

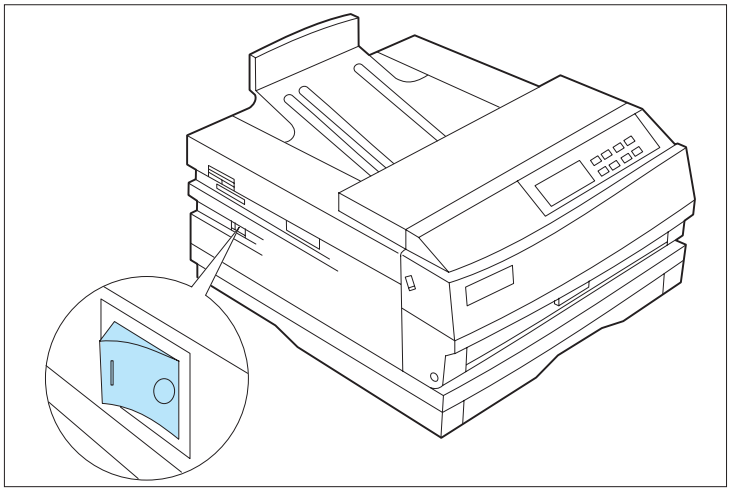
The 4505/4505ps and 4510/4510ps printers are equipped with 2 MB of resident base memory. To expand printer memory capacity, install up to two 4 MB or 16 MB SIMMs on the printer controller board. (The total maximum memory capacity is 16 MB.)

Note

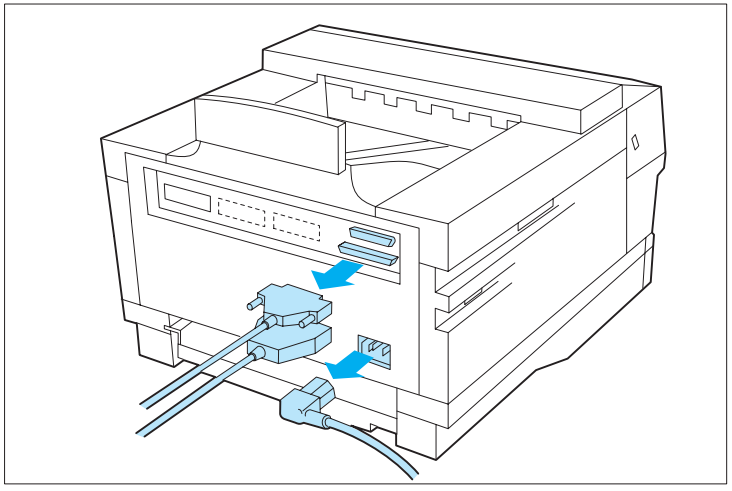
4505ps and 4510ps Users:
The 4505ps and 4510ps are each equipped with a pre-installed 4 MB SIMM for a total of 6 MB of memory.

To install a SIMM in the printer follow the steps below:

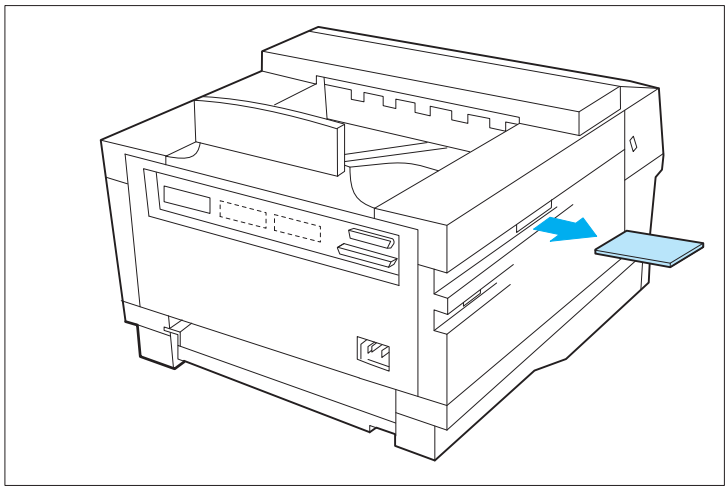
Be sure you have a ream of paper on hand before you begin this procedure.



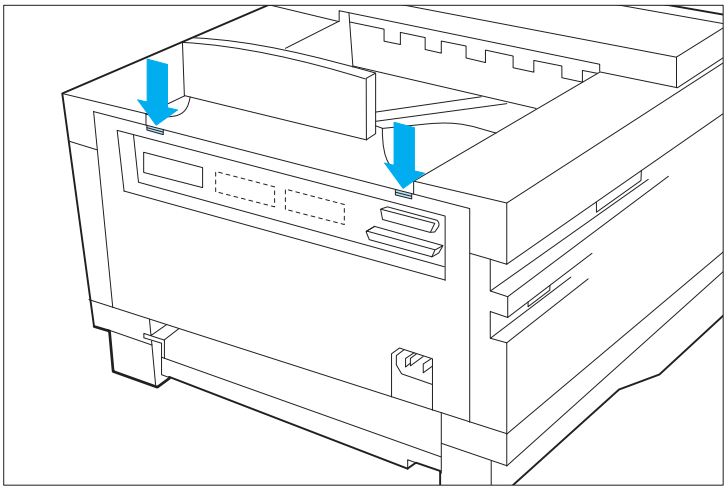
1 **Power OFF [0] the printer.**



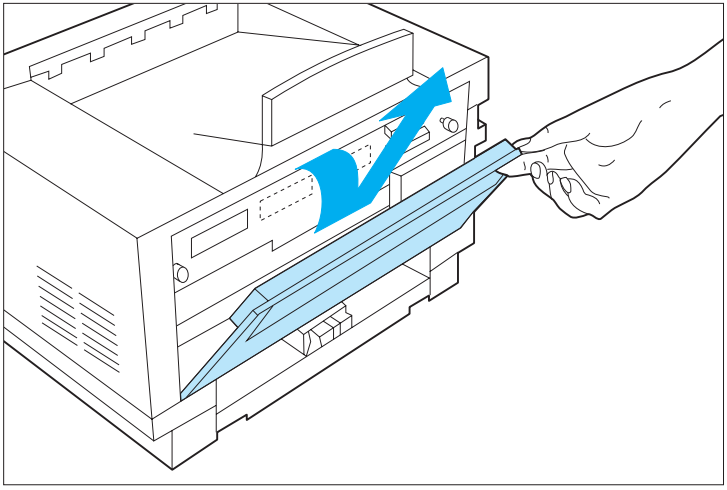
2 **Disconnect the power cord and remove all cables.**



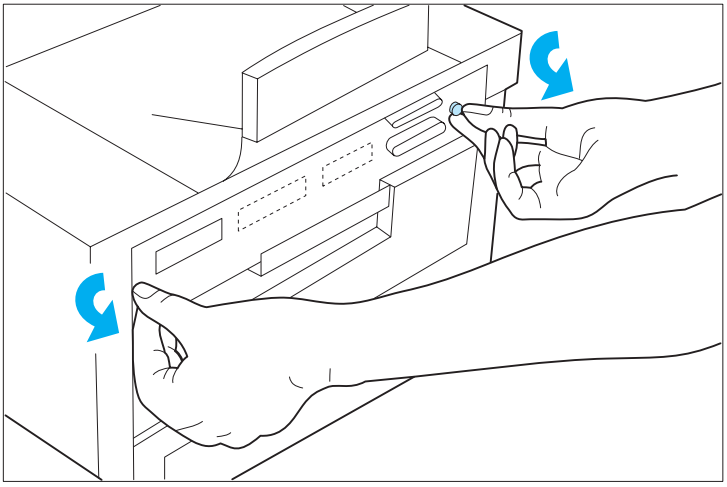
3 **Remove any installed font cards.**



4 **Release the rear cover latches.**



5 **Remove the rear cover to expose the thumb screws.**



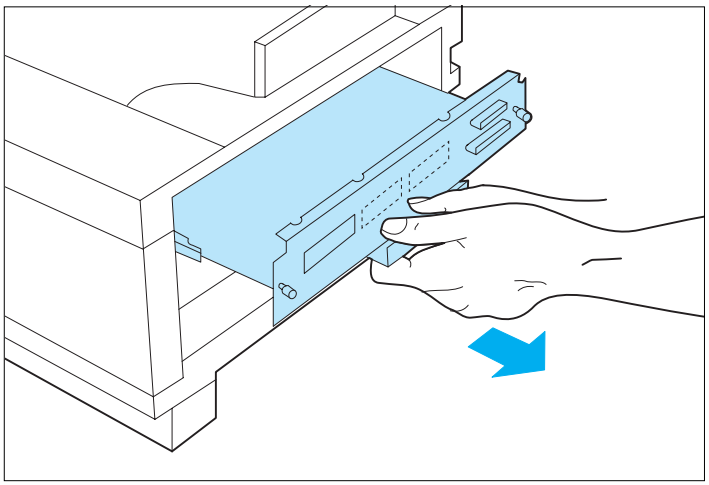
6 **With your fingers, loosen the thumbscrews.**

Thumbscrews are not removable.

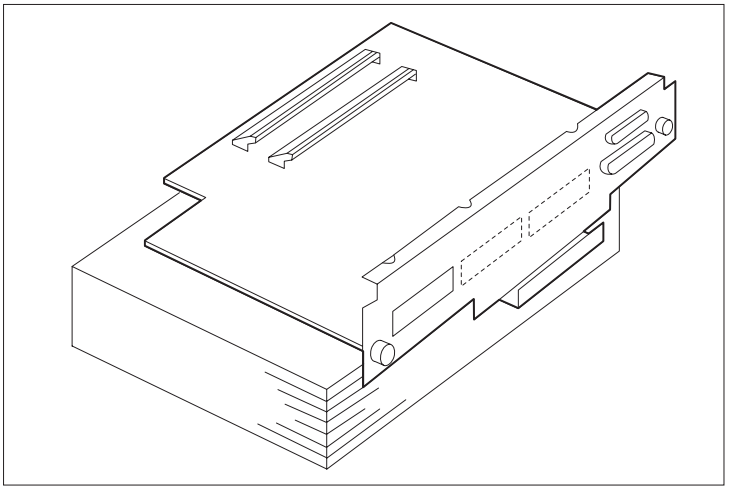
Caution

SIMMs and controller boards are sensitive to static electricity. Before installing a SIMM, discharge static electricity from your body by touching something metal, such as the metal back plate on the printer. If you walk around before finishing the installation, again discharge any static electricity.

Never remove the printer controller board while the printer is plugged in.

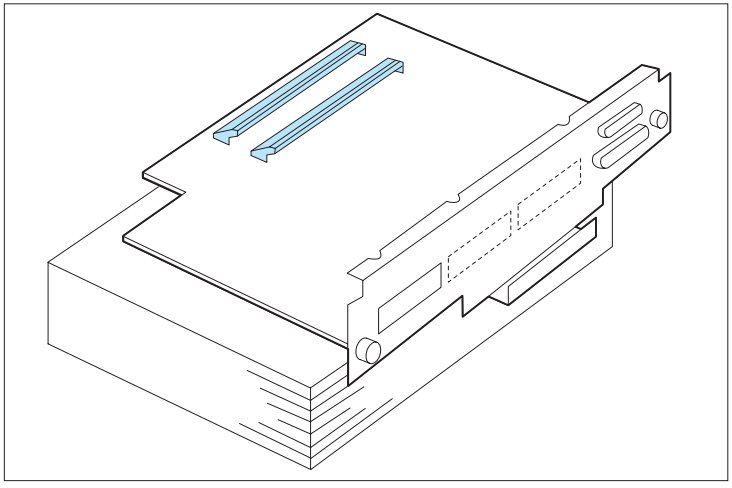


7 **To remove the controller board, pull the handle with firm, but even force.**



8 **Place the controller board on a ream of paper.**

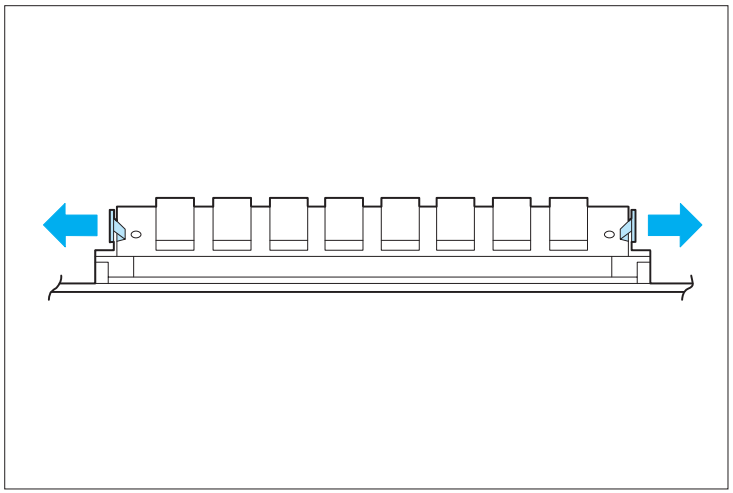
This is required to properly support the board during installation of the SIMM.



9 **Locate the SIMM slots on the printer controller board.**

If you need to replace a currently installed SIMM, continue with Step 10.

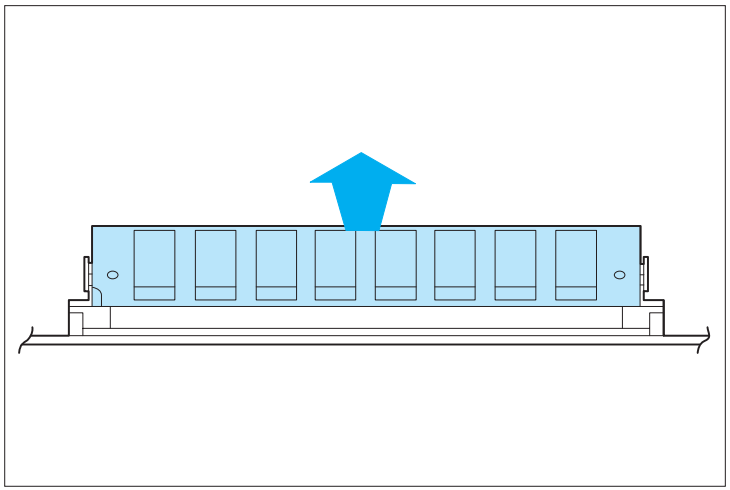
If you do not need to replace a SIMM, skip to Step 12 (page 5-11).



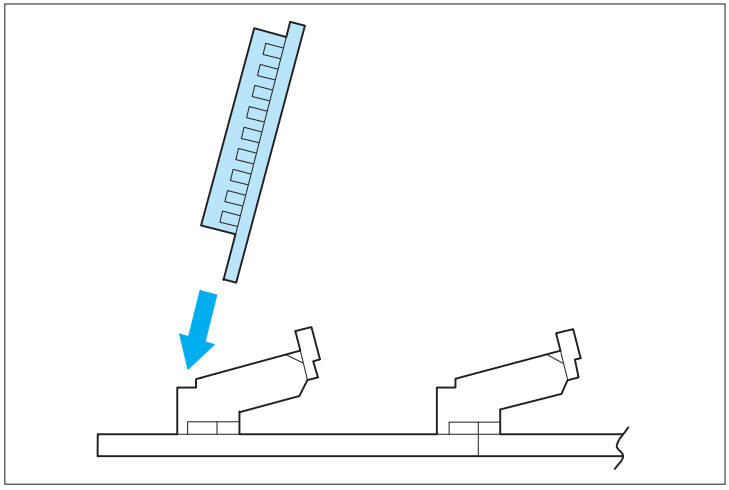
Caution

When removing a SIMM, be careful not to damage the locking clips located at each end of the SIMM slot. They may break if too much pressure is applied.

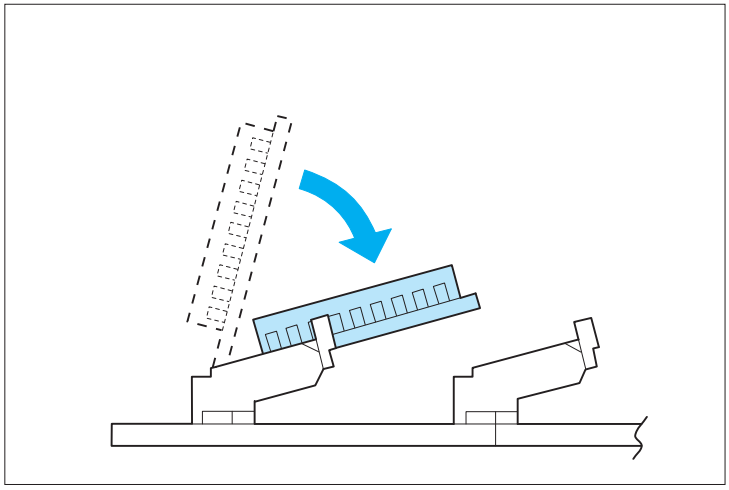
10 **Carefully release the clips of the SIMM you are replacing.**



11 **Lift the SIMM out of the slot.**



12 **Insert the new SIMM into either SIMM slot.**



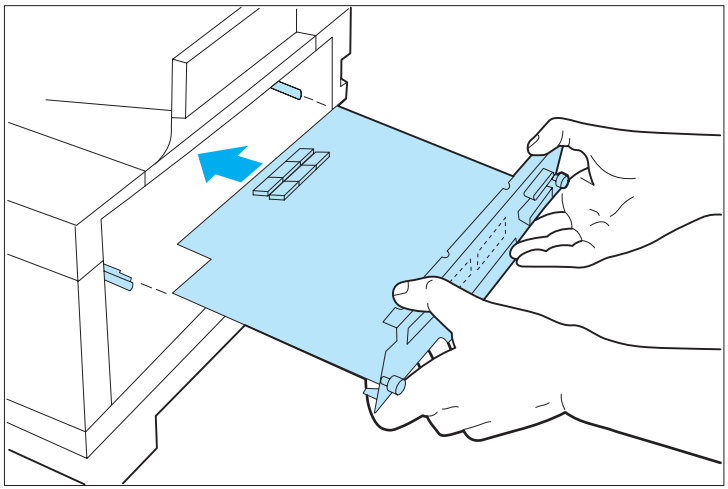
Caution

Be careful not to damage the locking clips located at each end of the SIMM slot. They may break if too much pressure is applied.

13 **Press the SIMM down until the clips lock it in place.**

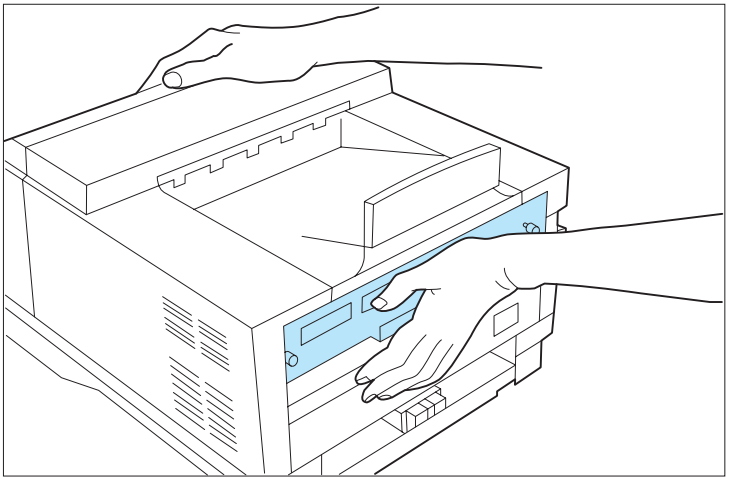
The SIMM will sit at an angle.

Install additional SIMMs in the same manner.

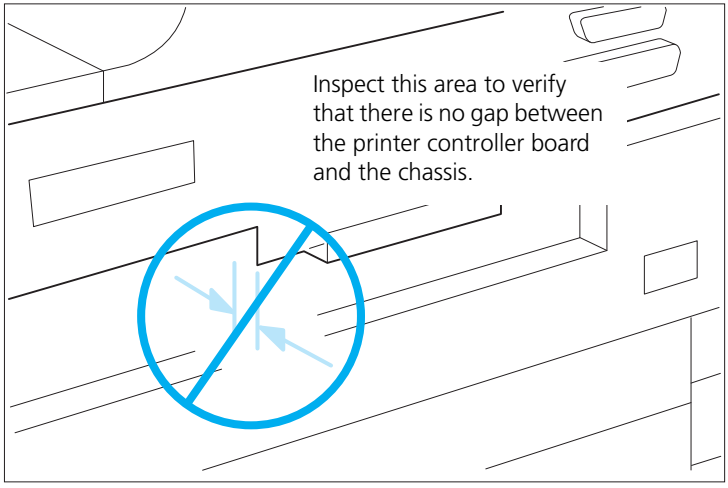


14 **Replace the printer controller board.**

Align the edge of the board in the guide rails and seat the controller board firmly.



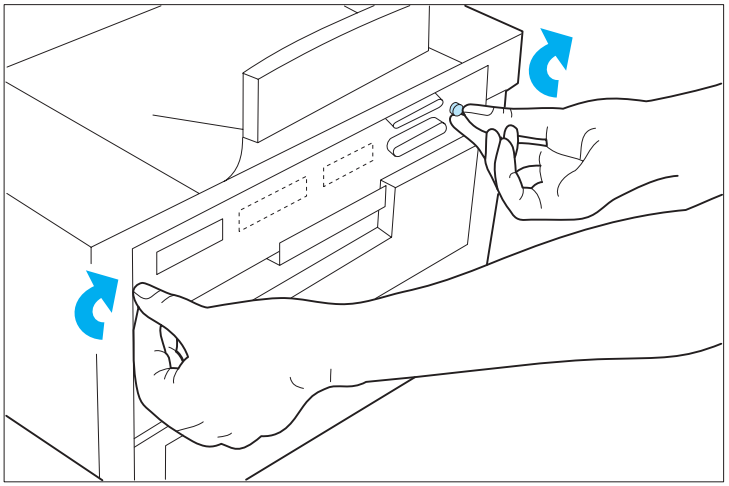
15 **Push the controller board firmly into place.**



16 **Ensure that the controller board is touching the rear of the printer chassis. There must be no space between the controller board and the chassis.**

Caution

Use only finger pressure to tighten the thumbscrews. Do not use a screwdriver because the threads will be stripped if excessive torque is applied. The screwdriver slot in the thumbscrew is only there to start the disengagement of the controller board after an extended period of time when fingers may not be able to disengage it.

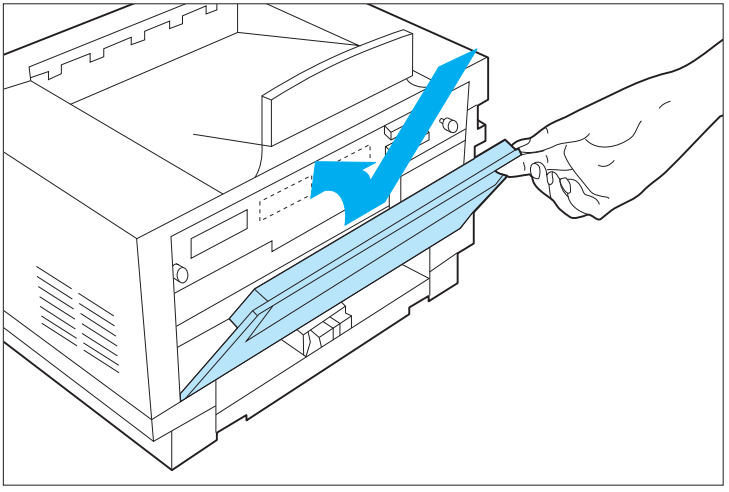


17 **Tighten the thumbscrews using only your fingers.**

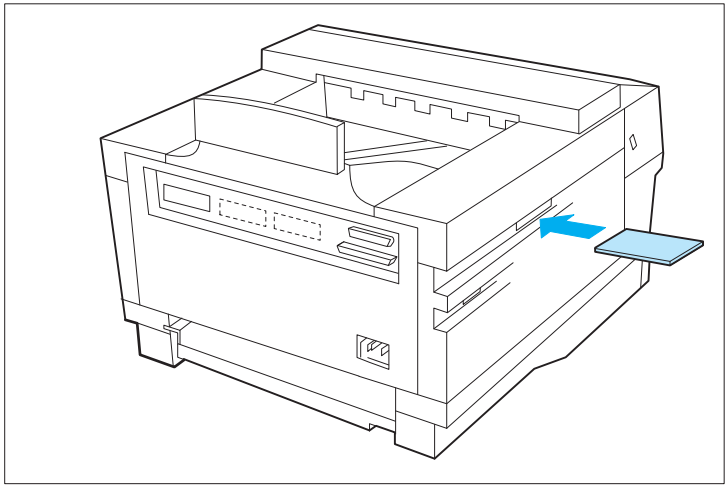
Do not use tools.

Note

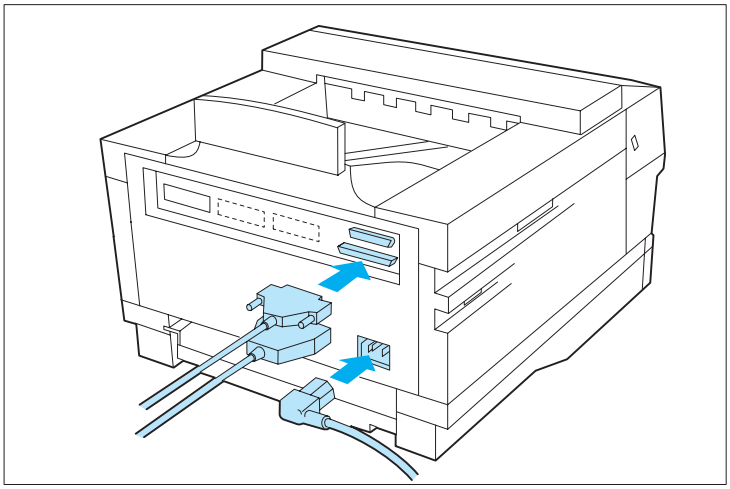
If the thumbscrews do not easily turn, reseat the controller board and try again.



18 **Replace the rear cover.**

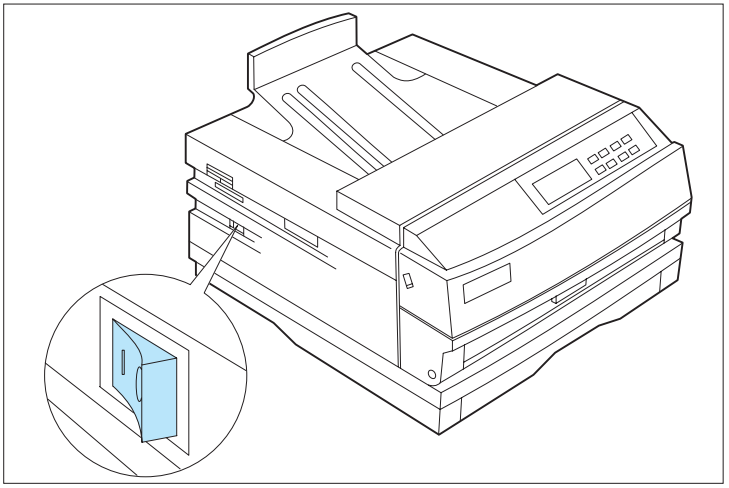


19 **Reinstall any font cards removed in Step 3.**



20 **Reconnect cables and the power cord.**

At this point, you need to print a Configuration Sheet to verify that you have properly installed the SIMMs.



1 **Power ON [1] the printer.**

If the printer does not turn on:

- Power OFF [0].
- Check all connections and the electrical supply outlet.
- Power ON [1].

If the printer still does not turn on, reseat the controller board.

2 **On the Control Panel, you may briefly see some messages. Then you will see the message:**

```
Online          ___
Ready
```

3 **Press Online** ⇤

You will see:

```
Offline        _/_
Press a key...
```

4 **Press Menu** ▤

You will see:

```
Main Menu
Language        >
```

5 **Press Down** ⌄ **or Up** ⌃ **until you see:**

```
Main Menu
Test Menu       >
```

6 **Press Enter** *

You will see:

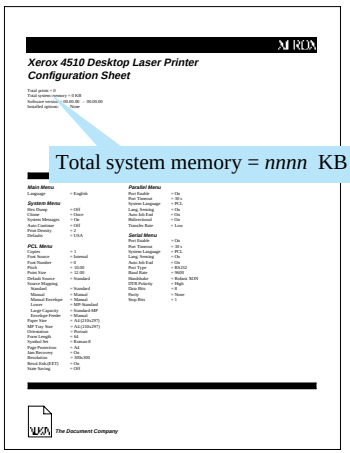
```
Test Menu
Config. Sheet
```

7 **Press Enter** * **again to start printing a Configuration Sheet.**

You will see:

```
Config. Sheet
Printing...
```

The Configuration Sheet requires a minute or so to print.



8 **Verify the SIMM has been correctly installed.**

On your Configuration Sheet, the "Total system memory" value should match the amount of memory you just installed plus the RAM resident on the printer.

Note that:

- 4 MB SIMM = 4096 KB
- 16 MB SIMM = 16384 KB

For example, if you installed a 4 MB SIMM on a new 4510:

Resident Memory	2048 KB
+ SIMM	4096 KB
	======
Total	6144 KB

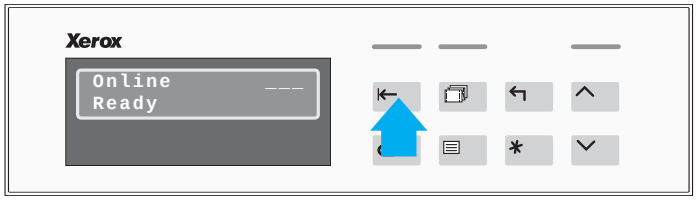
If the total system memory value is not correct, reinstall the SIMM.

Note

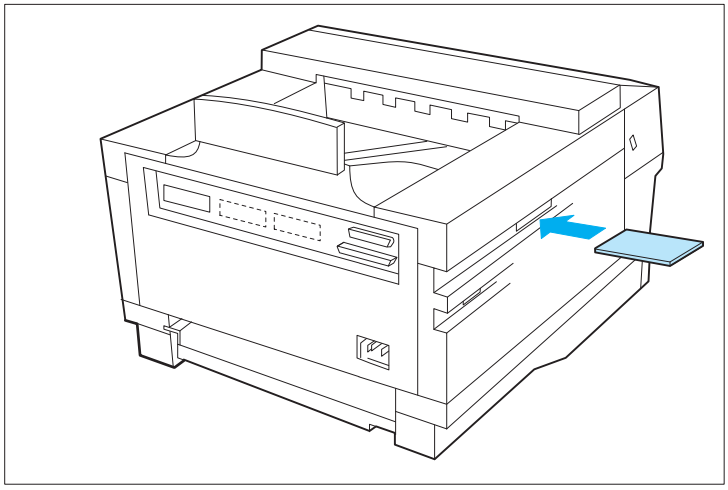
The printer recognizes up to a total of 16 MB only.

Installing a Font Card

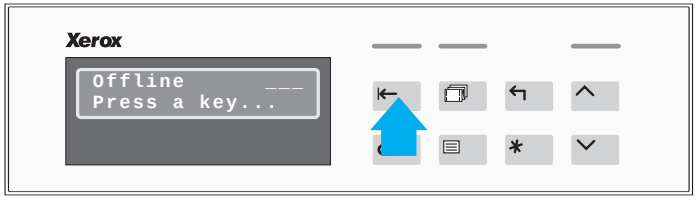
To install a font card in the printer, follow the steps below:



1 **Press Online ⇤ to take the printer offline.**



2 **Insert a font card into either font card slot.**



3 **Press Online ⇤ to put the printer online.**

4 **To verify that the printer recognizes the font card as installed, print a PCL Font List (see page 3-63).**

Note

When installing PCMCIA font cards, printing a PCL Font List will verify that the cards have been inserted correctly and are recognized by the printer. If the PCL Font List does not show the fonts on the cards, reinsert the font cards or cycle the power on the printer and print another PCL Font List to verify that the fonts on the PCMCIA cards are recognized.

Chapter 6

Maintaining the Printer

Overview

Maintaining the printer in good operating condition is essential to having a reliable, well-running machine.

This chapter describes the following:

- EP (electronic printing) cartridge replacement
- Fuser cleaning
- Regular cleaning
- Hints for transporting the printer

Replacing the EP Cartridge

An EP (electronic printing) cartridge will print approximately 4,000 pages of A4 or 8.5 x 11 (Letter) paper, under average operating conditions (5% area coverage). The number of prints per one EP cartridge will decrease if you routinely:

- Print dense text and graphics.
- Set **Print Density** (page 3-59) to a dark setting.
- Exceed five percent area coverage.

Note

An EP cartridge contains both **microfine toner** *and* **imaging drum**.

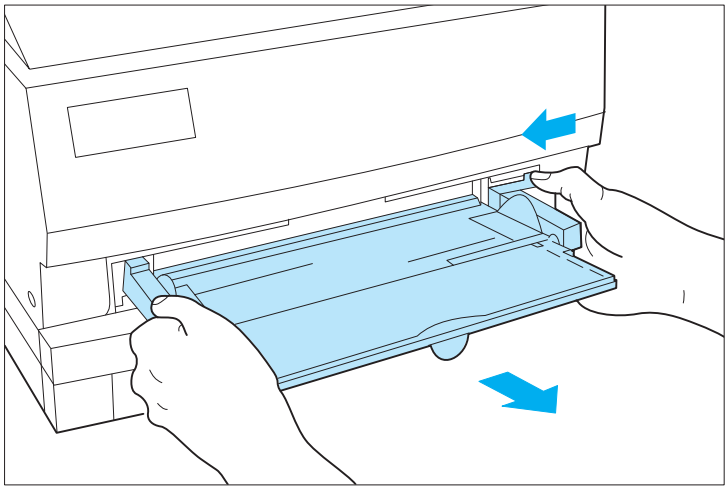
The EP cartridge is clean, efficient, and can be recycled.

The printer will alert you to the need to replace the EP cartridge by displaying this message:

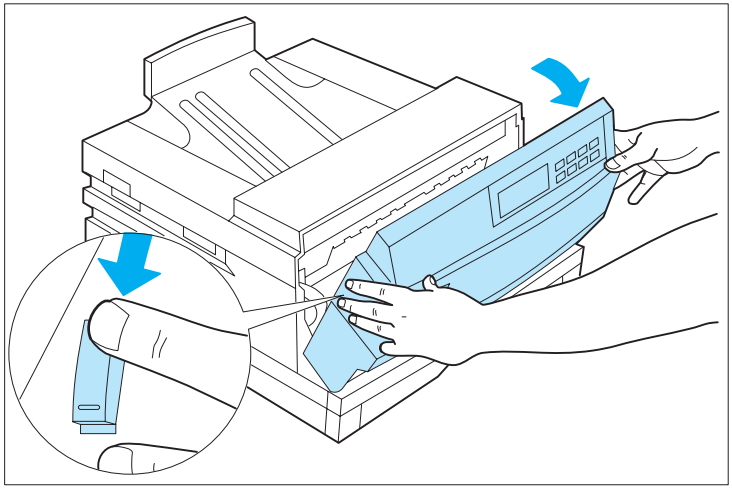
```
Toner Low
```

To order a new EP cartridge (part number 113R5), contact your dealer or Xerox / Rank Xerox.

To replace the EP cartridge, follow the steps below:



1 **Remove the Multipurpose (MP) tray, if installed.**



Caution

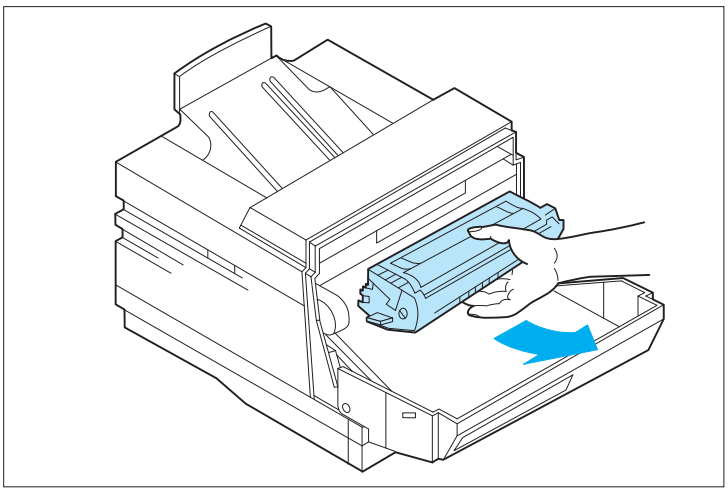
To avoid damaging the hinge, support the front cover with your hands while opening it. Do not allow the cover to fall open.

2 **Press the side latches down to release and open the front cover.**

Caution

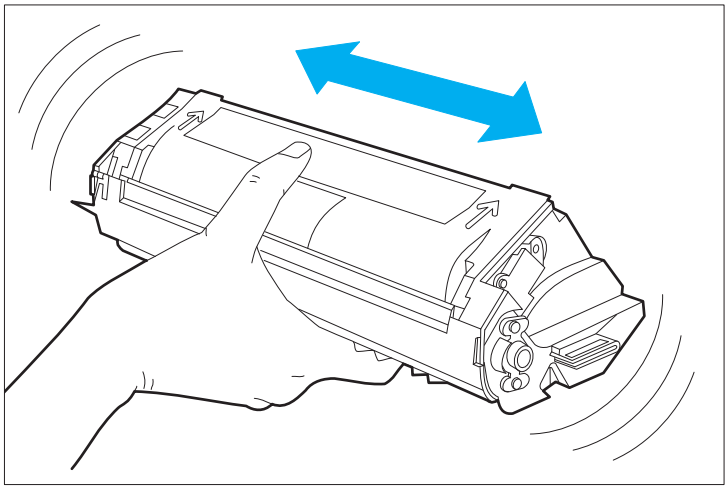
Follow these guidelines to make sure the EP cartridge is properly installed:

- **Do not expose the EP cartridge to direct sunlight or fluorescent light for more than 15 minutes. Overexposure will permanently damage the photosensitive imaging drum.**
- **Do not open the drum shutter or touch the imaging drum.**
- **Complete the EP cartridge installation within 15 minutes of removing it from its package.**

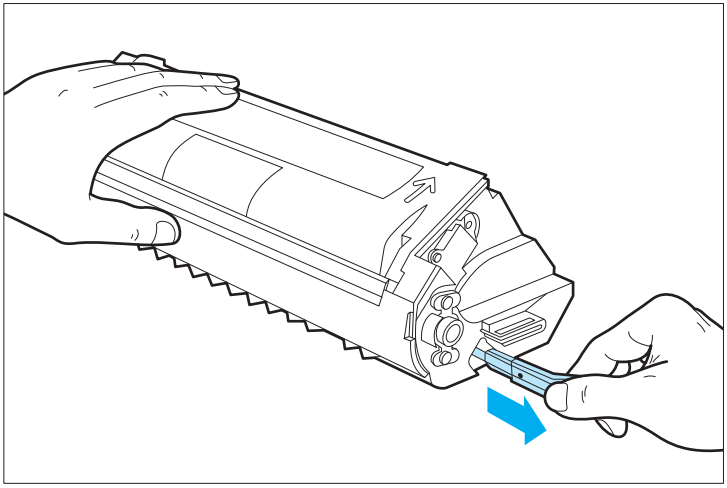


3 Remove the old EP cartridge.

Please recycle it.



4 **Unwrap, then shake the new EP cartridge 6 to 8 times to evenly distribute the toner.**

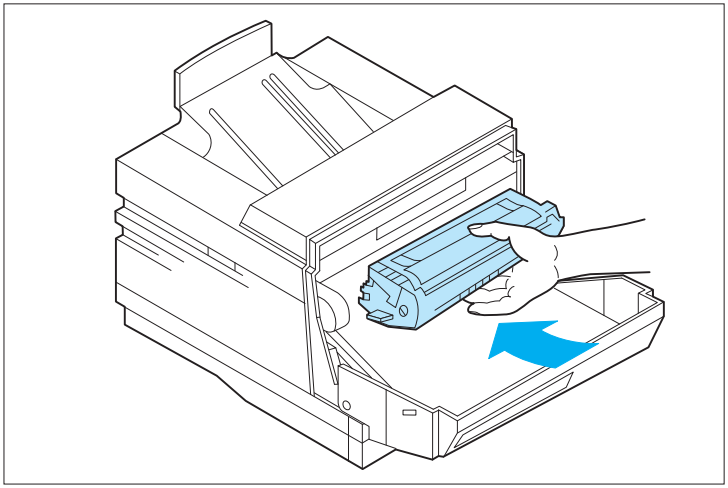


Caution **To avoid breaking the tab or tape, pull the tab *out, not up*. If the tab separates from the tape, continue to pull the tape.**

5 **Place the EP cartridge on a flat surface; pull the tab and tape from the EP cartridge.**

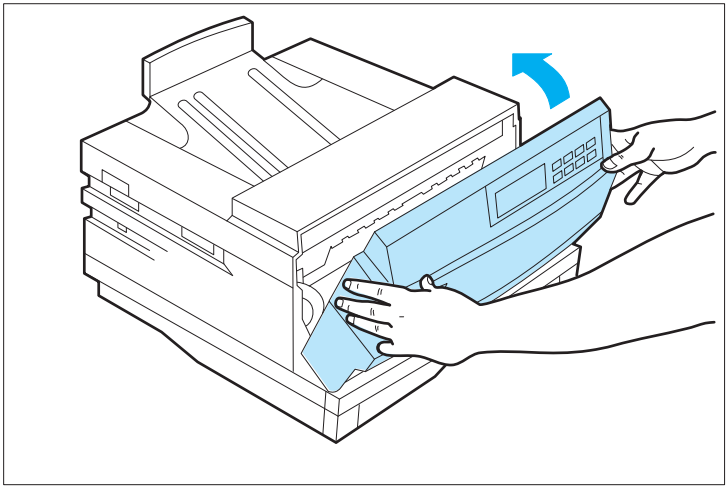
You may have to pull firmly.

Dispose of the tab and tape.



6 **Insert the EP cartridge into the guide channels marked by yellow arrows.**

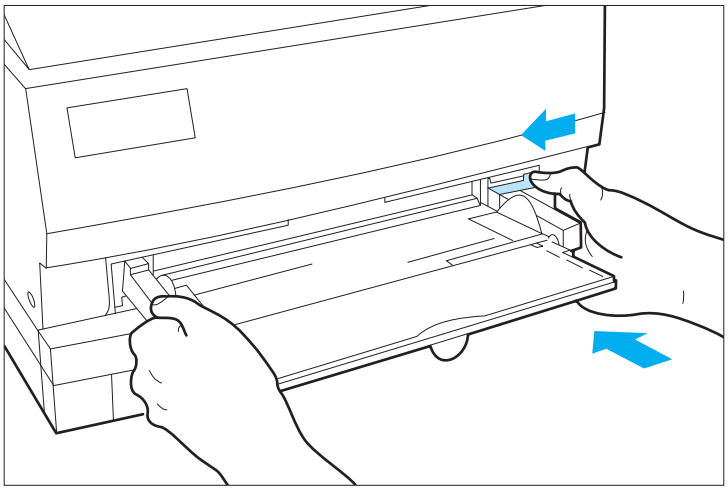
The cartridge fits securely inside the printer.



7 **Close the front cover.**

Be sure the cover is completely closed and latches locked.

If the front cover does not close, reseat the EP cartridge.



8 **If needed, reinstall the Multipurpose (MP) tray.**

9 **Perform the Fuser Cleaning Cycle.**

See *"Fuser Cleaning Cycle" (page 6-9)* for the fuser cleaning procedure.

Fuser Cleaning Cycle

To run the fuser cleaning cycle, follow the steps below.

Note

Whenever you replace an EP cartridge, run the fuser cleaning cycle. This will prevent paper jams caused by dirty fuser components.

1 On the Control Panel, press Online ⇤

You will see:

```
Offline      _/_
Press a key...
```

The fuser cleaning process uses **three** sheets of A4 or 8.5 x 11 (Letter) paper. Be sure there is paper loaded in the standard paper source.

2 Press Menu ▤

You will see:

```
Main Menu
Language       >
```

3 Press Up ^ **or Down** v **until you see:**

```
Main Menu
Test Menu      >
```

4 Press Enter *

You will see:

```
Test Menu
Config. Sheet
```

5 **Press Up ^ or Down v until you see:**

```
Test Menu
Fuser Cleaning
```

6 **Press Enter ***

You will see:

```
Fuser Cleaning
Printing...
```

Three sheets of paper—called the *cleaning sheets*—will be printed with a black band across the page.

7 **Wait for the Control Panel to display:**

```
Fuser Cleaning
Waiting...
```

All three cleaning sheets will have been printed.

8 **Place the three cleaning sheets PRINTED SIDE DOWN, arrow toward the printer, in the standard paper tray.**

9 **Press Enter * to begin the fuser cleaning cycle.**

You will see:

```
Fuser Cleaning
Please Wait...
```

No print image will be made while the cleaning sheets are being processed.

10 **When the cleaning process is complete, the Control Panel display automatically returns to:**

```
Main Menu
Test Menu      >
```

11 **On the Control Panel, press Online** ⇤

You will see:

```
Online
Ready
```

Adjusting the Print Density

The print density was adjusted at the factory to provide optimum print quality. However, should you desire to darken or lighten the print density, follow the steps below.

1. **Select the System Menu (see page 3-57).**
2. **Select Print Density.**

   The print choices are from 0 to 4. 0 is the lightest and 4 is the darkest.

If the desired print density cannot be achieved, see *Chapter 7: Troubleshooting, "Print Quality Problems" (page 7-29).*

Cleaning the Printer

For optimum performance, the printer should not be placed near vents or dust-producing equipment. Particles in the air may enter the printer and cause failures in internal mechanisms

For best results, clean the outside of the printer with a damp cloth. Do not use detergents.

Caution

Make sure the printer is powered OFF [0] before you clean it.

Transporting the Printer

When transporting the printer more than a short distance, follow the guidelines shown in Figure 6.1.

Figure 6.1 Hints for transporting the printer

Helpful Hints for Moving the Printer
Use the original shipping box and materials. If the original box or materials are not available or are unusable, use a sturdy packing box and a generous amount of cushioning or packing material.
1. Remove and pack the Multipurpose Tray.
2. Remove the EP cartridge and pack it in sturdy, light-proof material. A sealed bag is recommended to prevent toner leakage.
3. Push in the Output Tray support so that it is flush with the edge of the printer.
4. Disconnect and pack the printer. Remove and pack all printer cables. If the printer is on a network, refer to your network software guide or consult with the Network Administrator before disconnecting the network cable.
5. Disconnect and pack the power cord.
6. Locate and pack all documentation for the printer.
7. Place the printer, accessories, and documentation in the original box or in a similar box.
8. Make sure packing materials will inhibit breakage and jarring.

Chapter 7

Troubleshooting

Overview

This chapter lists some problems you might encounter while using your 4505/4505ps or 4510/4510ps, and provides some possible solutions to these problems. This chapter will help you troubleshoot problems associated with:

- Displayed control panel messages
- Paper transport
- Printer operation
- Deterioration of print quality

If you encounter a problem, locate the type of problem in this section and perform the suggested corrective actions. If you are unable to resolve the problem, contact your dealer or Xerox / Rank Xerox for service.

Before Calling for Service

Before calling for service, be sure you have thoroughly reviewed the troubleshooting section provided for your type of problem and have performed the suggested corrective actions.

When calling for service, be prepared to provide the following information:

- The serial number of your printer. See *"Locating Your Printer's Serial Number" (page 7-4).*
- Your name and your company's name
- A description of the problem, including the severity of the problem:
  - **Critical**

    Printer is down and/or user has no production capability

    – inability of a critical application (job) to run

    – frequency of failure precludes production use

    – critical integrity defect

— **Serious**

Printer is operational but production capability is seriously degraded

– inability of a major application (job) to run

– failure requires frequent operational intervention to maintain productivity

– non-critical integrity defect

— **Moderate**

Printer is operational, but production capability is reduced

– a non-critical application (job) can not be printed

– continuing, but infrequent failure requiring operational intervention

– a non-critical product feature or function does not work

- If any special conditions have occurred:
  - — New application (job) being run?
  - — Did application run correctly before?
  - — Have there been any modifications to the application (job)?
  - — Have there been any modifications to the host system?
  - — Has service been performed recently on the printer?
  - — Does application (job) print properly on another printer (either Xerox or other type which supports same emulation)?

Also have available:

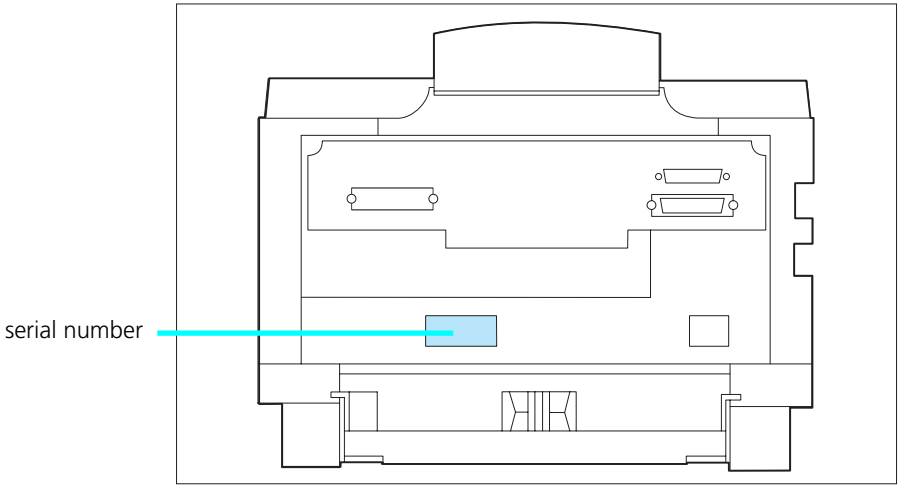
- Any error code or message displayed on the Control Panel
- A copy of the Configuration Sheet
- A copy of the output with the problem
- A copy of the print job as it was input

If possible, be near the printer when you call so you can perform any suggested corrective actions.

Locating Your Printer's Serial Number

Your printer's serial number is located on the printer frame behind the rear cover. See Figure 7.1.

Figure 7.1 Locating your printer's serial number



Displayed Control Panel Messages

Control Panel messages are listed in alphabetical order in Figure 7.2, preceded by numerical diagnostic error codes.

Not listed are the Control Panel menu options, settings, or functions covered in *Chapter 3: Using the Control Panel.*

Note

Some two-line messages are separated by the top line and bottom line. In these instances, look up each line of the message separately.

In Figure 7.2, "ACTION" *indicates what you must do to respond to or clear the message.*

You might see a five digit number in the lower right of the Control Panel. Five-digit codes are for use by manufacturing and service centers only. The user can ignore five-digit codes.

Figure 7.2 Control Panel messages

Message	Description/Action
0001† † Appears in the top left side of the display. Indicates which module failed.	The main controller board has failed. ACTION: Replace controller, or contact your dealer or Xerox / Rank Xerox.
0040† † Appears in the top left side of the display. Indicates which module failed.	A PostScript checksum error has occurred. ACTION: The PostScript card has failed and needs to be replaced.
0100† † Appears in the top left side of the display. Indicates which module failed.	SIMM in slot 0 has failed. ACTION: Move the SIMM to Slot 1; see *"Installing a SIMM" (page 5-4)*. If a memory error (0101) occurs again, replace the SIMM. If there is no error, the main controller board has failed. Contact your dealer or Xerox / Rank Xerox.

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
0101† † Appears in the top left side of the display. Indicates which module failed.	SIMM in slot 1 has failed. ACTION: Move the SIMM to Slot 0; see *"Installing a SIMM" (page 5-4)*. If a memory error (0100) occurs again, replace the SIMM. If there is no error, the main controller board has failed. Contact your dealer or Xerox / Rank Xerox.
1000† † Appears in the top left side of the display. Indicates which module failed.	Communication has failed between the printer controller and the printer. ACTION: Verify the controller board is seated properly. If the message still appears, replace the controller, replace the interface between the controller and printer engine, or replace the print engine; or, contact your dealer or Xerox / Rank Xerox.
2000† † Appears in the top left side of the display. Indicates which module failed.	A key on the Control Panel is stuck in the down position. ACTION: Press any key. If no response, the Control Panel may need to be replaced. Contact your dealer or Xerox / Rank Xerox.
Both Cards Out Replace Original	Upper and lower font cards were removed while the printer was offline, but the cards were still being used by the software application. ACTION: To clear the error message and resume printing, reseat or reinstall the cards. Press **Online** ⇤ On completion of the print job, you can take the printer offline and remove the cards.
Card Err. both Power Off & On	Both the upper and lower font cards were removed while the printer was online. ACTION: Power OFF the printer, then power it ON to resume.
Close Cover	The main cover is open. ACTION: Close it, then press **Online** ⇤ to resume normal operation.
Comm. Error	If your printer is configured for **serial**, a framing or parity error has occurred on the serial interface. ACTION: You have a mismatch between your printer and the host. Check your printer serial configuration (baud rate, handshake, parity, etc.) to be certain the serial settings match your host (page 3-45). If problem persists, contact your dealer or Xerox / Rank Xerox. If your printer is configured for **parallel**, the printer is not able to communicate with the host using bidirectional parallel. ACTION: Check the parallel cable to make sure it is connected properly on both the printer and the host. Inspect the parallel cable for any defects; if wires are broken or the cable appears to be damaged, replace the cable. Check the host to be certain that it is configured properly. Under the Parallel Menu, turn **Bidirectional** *Off*. If problem persists, contact your dealer or Xerox / Rank Xerox.

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Config. Sheet Printing...	The Configuration Sheet is printing. See **Config. Sheet**, page 3-62. ACTION: None
Ethernet Fail	The Ethernet card (XNIC-E'NET) has failed and cannot be used. ACTION: Press **Enter** * to allow the printer to continue as if the Ethernet card were not installed. This error is not subject to **Auto Continue** (page 3-59). Print a Configuration Sheet. If the sheet does not show Ethernet as present, contact your dealer or Xerox / Rank Xerox.
Flushing...	For PostScript only, the print job could not be printed and is being parsed out and discarded. ACTION: The message remains until the print job being flushed is complete, which may require further data to be sent from the host.
Fuser Cleaning Please Wait...	The **Fuser Cleaning** (page 3-64) function has been selected from the Test Menu. This message appears when the three cleaning sheets have been printed, placed in the input tray, and are now being fed into the printer. ACTION: None
Fuser Cleaning Printing...	The **Fuser Cleaning** (page 3-64) function has been selected from the Test Menu. The three cleaning sheets are being printed. ACTION: None
Fuser Cleaning Waiting...	The **Fuser Cleaning** (page 3-64) function has been selected from the Test Menu. The cleaning sheets have been printed. ACTION: Place the three cleaning sheets, printed side down and arrow toward printer, in the standard paper tray. Press **Enter** *
Fuser Failure Service Required	Fuser assembly has failed; printing cannot resume. ACTION: Contact your dealer or Xerox / Rank Xerox.
Hex Dump	Hex dump mode is *On*. Used for debugging. See **Hex Dump** (page 3-58). ACTION: None

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Install EP Cartridge	The EP cartridge is missing or not installed correctly. ACTION: Reseat existing cartridge or install a new cartridge. See *"Replacing the EP Cartridge" (page 6-3)*. If problem continues, contact your dealer or Xerox / Rank Xerox.
IOT NVM Fail Service Required	Nonvolatile Memory (NVM) has failed on the print engine (also called the IOT—Image Output Terminal). Printing cannot resume. ACTION: Contact your dealer or Xerox / Rank Xerox.
Laser Failure Service Required	Laser assembly has failed; printing cannot continue. ACTION: Contact your dealer or Xerox / Rank Xerox.
Last Page	The printer was busy processing data from a host but the last page was not completed and the last page timeout has expired. This message appears until either: • More data arrives. or • **Port Time Out** expires and **Auto Job End** is *On*. or • PostScript "waittimeout" expires. ACTION: None.
Load A4	ACTION: Load A4 paper into the tray(s) indicated on the top line of the display.
Load A5	ACTION: Load A5 paper into the tray(s) indicated on the top line of the display.
Load B5	This message is for the manual bypass slot (MP tray) only. ACTION: Load B5 (ISO) paper into the MP tray.
Load C5	ACTION: Load C5 paper into the tray(s) indicated on the top line of the display.
Load Com-10	ACTION: Load Com-10 envelopes (or paper) into the tray(s) indicated on the top line of the display.
Load DL	ACTION: Load DL envelopes (or paper) into the tray(s) indicated on the top line of the display.
Load Exec	ACTION: Load Executive paper into the tray(s) indicated on the top line of the display.
Load Folio	ACTION: Load Folio paper into the tray(s) indicated on the top line of the display.

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Load Legal	ACTION: Load Legal paper into the tray(s) indicated on the top line of the display.
Load Letter	ACTION: Load Letter paper into the tray(s) indicated on the top line of the display.
Load Monarch	ACTION: Load Monarch envelopes into the tray(s) indicated on the top line of the display.
LocalTalk Fail	The LocalTalk card (XNIC-L'TALK) has failed and cannot be used. ACTION: Press **Enter** * to allow the printer to continue as if the LocalTalk card were not installed. This error is not subject to **Auto Continue** (page 3-59). Print a Configuration Sheet. If the sheet does not show LocalTalk as present, contact your dealer or Xerox / Rank Xerox.
Lower	Lower tray needs paper. ACTION: The message on the bottom line advises what size paper to load. Either load that size or press **Enter** *
Lower Card Err **Power OFF & ON**	Lower font card was removed while the printer was online. ACTION: Power OFF [0] the printer, then power it ON [1] to resume normal operations.
Lower Card Out **Replace Original**	Lower font card was removed while the printer was offline, but the card was still being used by the software application. ACTION: To clear the error message, take the printer offline and return the card to its slot. Then press **Online** ⇤ to resume printing. On completion of the print job, you can take the printer offline and remove the card.
Lower Tray Empty	The lower tray does not contain paper. ACTION: Load paper in the lower tray.
Lower Tray Out	The lower tray has been removed or is not properly inserted. ACTION: Insert lower tray.
Low-Std-MP	Paper needs to be added to the lower, standard, or MP tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
Lower-MP	Paper needs to be added to the lower or MP tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Lower-Standard	Paper needs to be added to the lower or standard tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
MP Tray	The printer is requesting paper in the MP tray. ACTION: The message on the bottom line advises what size paper to insert. You may use the paper size requested or any size the MP tray will accept. If the paper size requested is not the same as the MP Tray Size, press **Enter** * See *"Multipurpose Tray" (page 2-11)*.
MP-Low-Std	Paper needs to be added to the MP, lower, or standard tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
MP-Lower	Paper needs to be added to the MP or lower tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
MP-Standard	Paper needs to be added to the MP or standard tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
MP-Std-Low	Paper needs to be added to the MP, standard, or lower tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
Memory Check Please Wait...	**Memory Check** was invoked from the Test Menu. See *"Test Menu" (page 3-61)*. The printer resets upon completion. ACTION: None
Memory Failure Service Required	Printer controller memory has failed; printing cannot resume. ACTION: • Perform a **Memory Check** (page 3-64) to see if you can locate the problem. • Try powering OFF [0] the printer then ON [1] again. If the problem persists, contact your dealer or Xerox / Rank Xerox.
NV Memory Fail Service Required	Nonvolatile memory in the printer engine or controller has failed; printing cannot resume. ACTION: Contact your dealer or Xerox / Rank Xerox.

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Offline _/_	Printer is offline, not in menu mode, and without any fault conditions. Offline does not mean the printer is disconnected from the computer. It means page formatting and printing are halted. ACTION: To put the printer online, press **Online** ⇤
Online ___	Printer is online and either processing data or ready to accept print jobs. ACTION: None
Open Cover **Clear Paper Path**	Printer has a paper jam. ACTION: Open the cover and remove paper from the paper path. See *"Paper Jams" (page 7-19)*.
Out of Memory	Current job cannot print because it exceeds available memory. See *"Printer Settings that Affect Memory" (page 3-67)*. • For PCL, the bottom line displays, `Press *` – Even though **Auto Continue** (page 3-59) may be *On*, you will see the message below for ten seconds: `Press *` – The printer waits ten seconds, then resumes (in effect, pressing **Enter** * for you). • For PostScript, it displays `Flushing...` The page is ejected from the printer. Depending on the cause of the problem, your print job may continue or be ended. ACTION: • Reduce resolution to 300 dpi. • Install additional memory. See *"Installing a SIMM" (page 5-4)*. • Contact your dealer or Xerox / Rank Xerox.

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Page Too Complex	In PCL, the printing on a page is broken up into horizontal bands. When **Page Protection** is *Off*, as a page is processed, each band has a limited time to be composed and imprinted on the page. `Page Too Complex` means the current page cannot print because there is not enough time to compose it. ACTION: Press **Enter** * The page will be ejected and the print job will continue. The page that was too complex will be printed on more than one sheet of paper. To achieve printing on one sheet, set **Page Protection** (page 3-26) to the appropriate page size and send the print job again. Even though **Auto Continue** (page 3-59) may be *On*, you will see the message below for ten seconds: `Press *` The printer waits ten seconds, then resumes (in effect, pressing **Enter** * for you).
PCL Font List Printing...	**PCL Font List** (page 3-63) is printing. ACTION: None
Please Read Last Print	The **Fuser Cleaning** (page 3-64) function has been selected from the Test Menu. Three fuser cleaning sheets have been printed. ACTION: Read and follow the instructions printed on the fuser cleaning sheets.
Power Saver On	Power consumption is reduced by means of the power saver mode. When no printing has occurred for 10 minutes, the printer will automatically go into Power Saver mode. ACTION: None (Treat this message the same as the "Online/Ready" message.)
Press *	The printer has a PCL error. ACTION: Press **Enter** * This message functions with the System Menu option **Auto Continue** (page 3-59). When **Auto Continue** is *On*, this message is cleared automatically after ten seconds, and normal printing operation resumes.
Press a key...	The printer has just been taken offline. ACTION: No more processing can take place until you press another key (any key).
Processing...	Printer is processing data from a computer for printing. ACTION: None

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
PS Font List Printing...	List of PostScript fonts (page 3-63) is printing. ACTION: None
Ready	Printer is online and waiting for data to print. ACTION: None
Reset Menus Please Wait...	**Reset Menus** has been invoked from the Reset Menu (page 3-65). Returns all menu settings except the **Language** (page 3-14) setting and the System Menu **Defaults** (page 3-60) setting to their factory setting and clears any print jobs, temporary fonts, and macros from memory. ACTION: None
Reset Printer Please Wait...	**Reset Printer** or **Reset All** has been invoked from the Reset Menu (page 3-65). The printer clears any print jobs and temporary fonts and macros from memory, then goes online. ACTION: None
Self Test...	The printer is in power-on diagnostics. This message appears shortly after power-on as soon as the Control Panel is initialized and can display text. If there is no failure during power-on diagnostics, the next message displayed will indicate the printer is online and ready to receive data. ACTION: None
Standard	Standard tray needs paper. ACTION: The message on the bottom line advises what size paper or envelope to load. Either load that size, or press **Enter** *
Standard-Lower	Paper needs to be added to either the standard or lower tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
Standard-MP	Paper needs to be added to either the standard or MP tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *
Std-Low-MP	Paper needs to be added to the standard, lower, or MP tray. ACTION: The message on the bottom line advises what type of paper or envelope to load. Either load that size, or press **Enter** *

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Std. Tray Empty	The standard tray does not contain paper. ACTION: Add paper to the standard tray.
Std. Tray Out	The standard tray has been removed or is not properly inserted. ACTION: Insert the standard tray.
Temp Font/Macro	The printer was busy processing PCL data from a host system but the job was not completed since temporary fonts and macros were not deleted. The last page timeout has expired. This message appears until: • Another print job is received. • The **Port Timeout** expires and **Auto Job End** is *On*. See *Chapter 3: Using the Control Panel*, *"Interface Menu" (page 3-37)*. ACTION: None
Test Print Printing...	A Test Print is being printed (for use by service technicians). The message clears once the printing is completed. ACTION: None
Token Ring Fail	The Token Ring card (XNIC-T'RING) has failed and cannot be used. ACTION: Press **Enter** * to allow the printer to continue as if the Token Ring card were not installed. This error is not subject to **Auto Continue** (page 3-59). Print a Configuration Sheet. If the sheet does not show Token Ring as present, contact your dealer or Xerox / Rank Xerox.
Toner Low	Toner is getting low in the EP cartridge, but printing will continue without interruption. ACTION: Replace the EP cartridge as soon as possible.
Turn Power Off Then On	A fatal error has occurred. ACTION: Power OFF [0], then ON [1].
Upper Card Err Power Off & On	Upper font card was removed while the printer was online. ACTION: Power OFF [0] the printer, then power it ON [1] to resume normal operations.

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Upper Card Out Replace Original	Upper font card was removed while the printer was offline, but the card was still being used by the application. ACTION: To clear the error message, take the printer offline and return the card to its slot. Then press **Online** ⇤ to resume printing. On completion of the print job, you can take the printer offline and remove the card.
Waiting...	The printer was busy processing data from a host but the print job was not completed. This message appears until: • Another print job is received. • The **Port Timeout** expires and **Auto Job End** is *On*. See *Chapter 3: Using the Control Panel*, *"Interface Menu" (page 3-37).* • The last page timeout expires. • The PostScript "waittimeout" expires. Refer to the PostScript reference documentation. ACTION: None
Warming up Please Wait...	Fuser has not warmed up yet. Message disappears when the printer is ready. The message displays at power-on and may display after the cover has been opened for some time or when the printer is exiting power-saver mode. ACTION: None
Warning 300/A4	This message appears in PCL when the printer has changed resolution to 300 or page protection to A4; appears in PostScript when the page size is A4 and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/A5	This message appears in PCL when the printer has changed resolution to 300 or page protection to A5; appears in PostScript when the page size is A5 and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Warning 300/B5	This message appears in PCL when the printer has changed resolution to 300 or page protection to B5; appears in PostScript when the page size is B5 and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/C10	This message appears in PCL when the printer has changed resolution to 300 or page protection to Com-10; appears in PostScript when the page size is Com-10 and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/C5	This message appears in PCL when the printer has changed resolution to 300 or page protection to C5; appears in PostScript when the page size is C5 and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/DL	This message appears in PCL when the printer has changed resolution to 300 or page protection to DL; appears in PostScript when the page size is DL and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Warning 300/EXE	This message appears in PCL when the printer has changed resolution to 300 or page protection to Executive; appears in PostScript when the page size is Executive and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/FOL	This message appears in PCL when the printer has changed resolution to 300 or page protection to Folio; appears in PostScript when the page size is Folio and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/LGL	This message appears in PCL when the printer has changed resolution to 300 or page protection to Legal; appears in PostScript when the page size is Legal and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/LTR	This message appears in PCL when the printer has changed resolution to 300 or page protection to Letter; appears in PostScript when the page size is Letter and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None

Figure 7.2 Control Panel messages *(continued)*

Message	Description/Action
Warning 300/MON	This message appears in PCL when the printer has changed resolution to 300 or page protection to Monarch; appears in PostScript when the page size is Monarch and the printer has changed resolution to 300. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None
Warning 300/OFF	This message appears in PCL when the printer has changed resolution to 300 or page protection to OFF. This is a transient warning to advise that, due to insufficient memory to print with the requested settings, either the resolution or page protection has been changed. The message clears when the next job prints. ACTION: None

Paper Jams

Your printer has been designed to provide reliable, trouble free operation. However, it is not unusual to experience an occasional paper jam. Paper jams occur most often when:

- The paper stock does not meet specification. See *"Paper Specifications" (page 2-6).*
- The paper stock is in poor condition.
- The paper stock has been improperly loaded into the paper trays. See *"Loading Paper" (page 2-14).*
- The printer needs cleaning. See *"Fuser Cleaning Cycle" (page 6-9).*
- Printer parts have worn and need to be replaced.

When first powered ON, the printer detects any jammed paper. The movement of paper through the printer is constantly being monitored by the printer's controllers.

When the printer detects a misfeed or a paper jam, the printing process is halted, and the Control Panel message

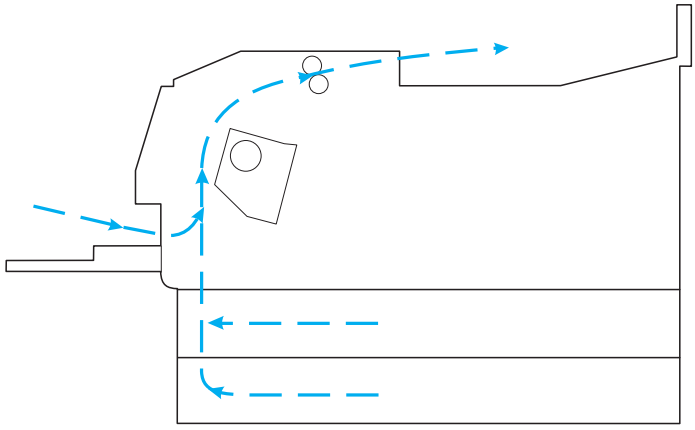
```
Open Cover
Clear Paper Path
```

is displayed. This message indicates that a jam was detected in the printer. The entire paper path should be checked each time a paper jam is cleared.

After the paper jam has been cleared, the printer will resume operation to complete the print job.

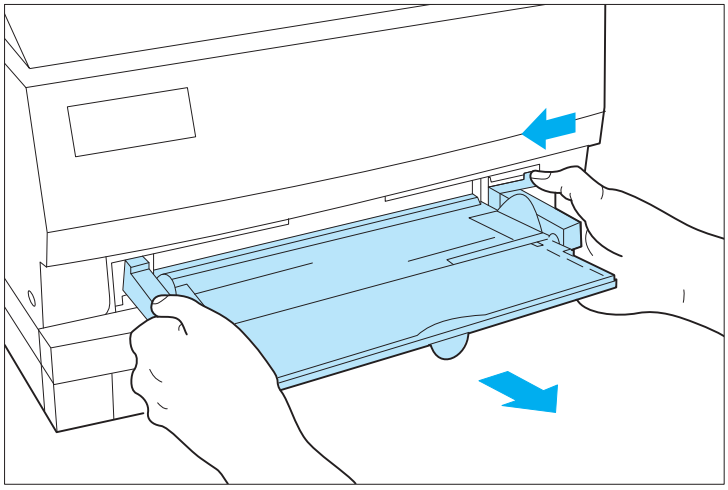
The paper path is depicted in Figure 7.3. (The figure includes the optional lower base.)

Figure 7.3 Printer paper path

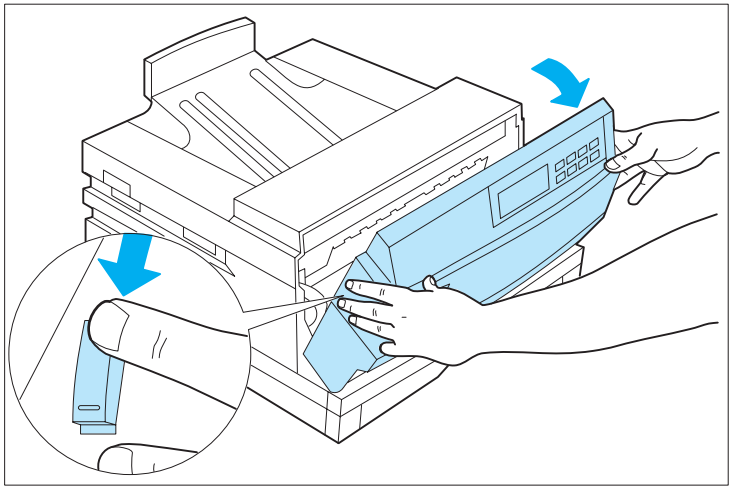


The following section provides detailed step-by-step procedures for clearing paper jams as well as some tips to help troubleshoot reoccurring jams.

Clearing Paper Jams from the Standard Tray or Lower Base

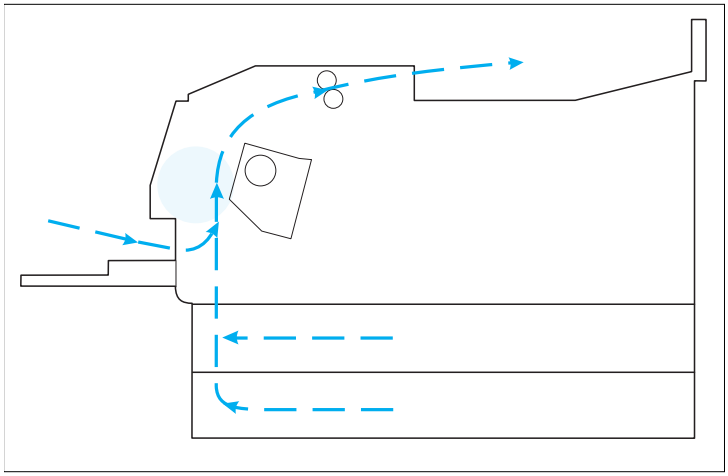


1 **If the MP Tray is installed, remove it before opening the Front Cover.**



2 **Open the front cover by pressing down on the release latches on both sides of the front cover.**

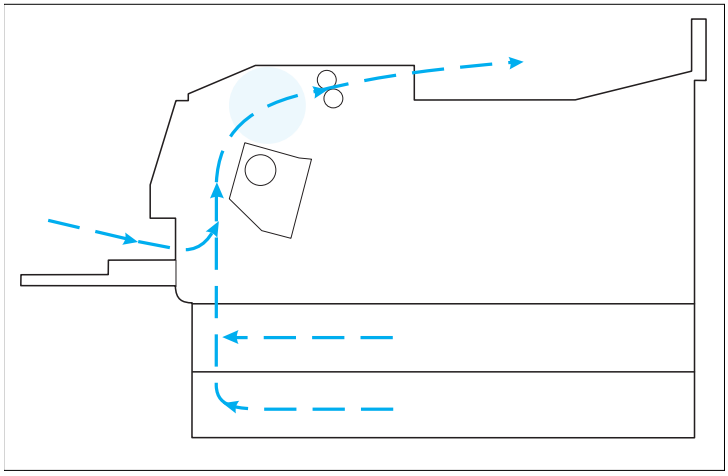
Caution **The area inside the printer near the fuser may be hot.**



3 **Remove any paper visible in the paper transportation area inside the printer by gently pulling it upward.**

Caution

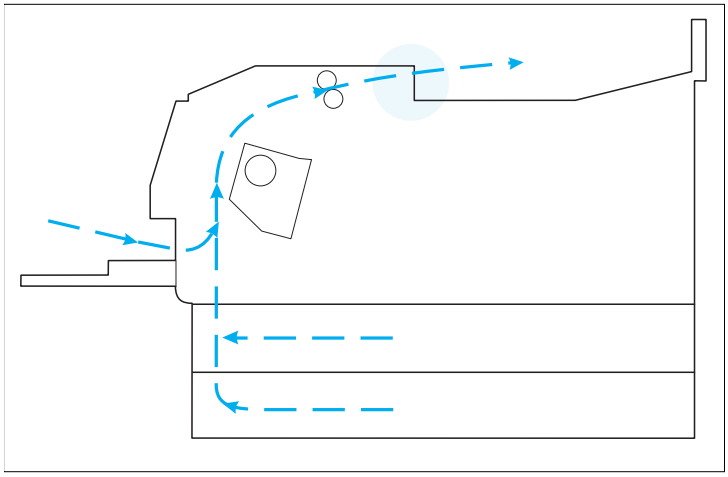
Paper removed from this area may have unfused toner on it which will soil your hand or clothing if touched.



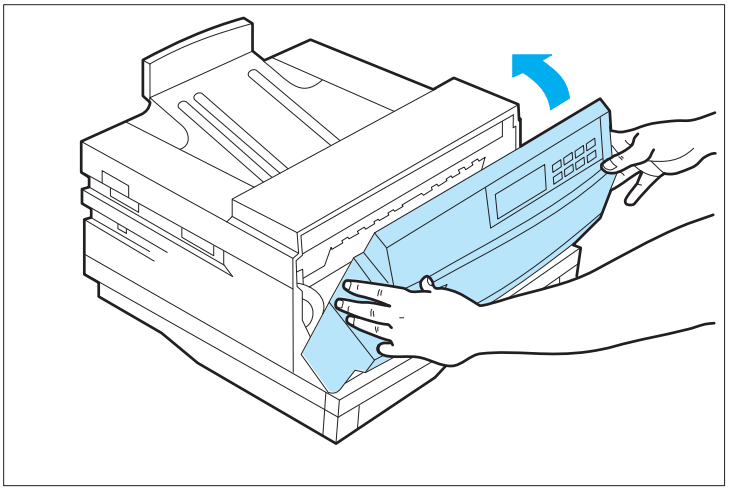
4 **Remove any paper entering the fuser area by gently pulling the paper toward the front of the printer.**

Note

If paper is well into the fuser, it can be removed by pulling the jammed sheet toward the rear of the printer. See Step 5.



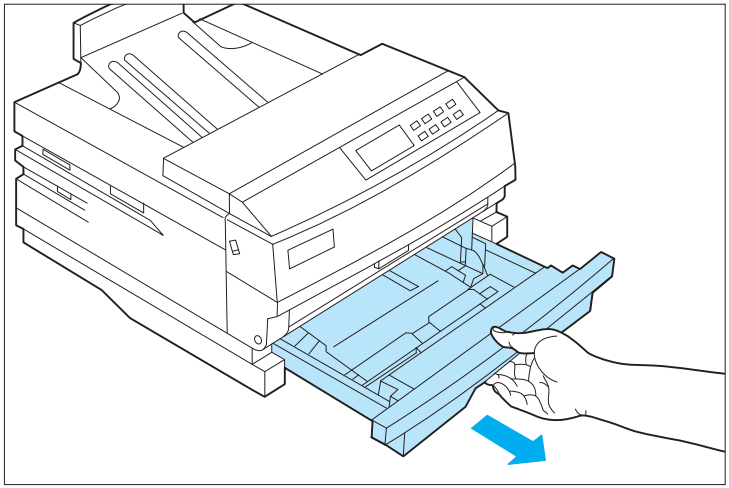
5 **Remove any paper exiting the fuser area by gently pulling it toward the rear of the printer.**



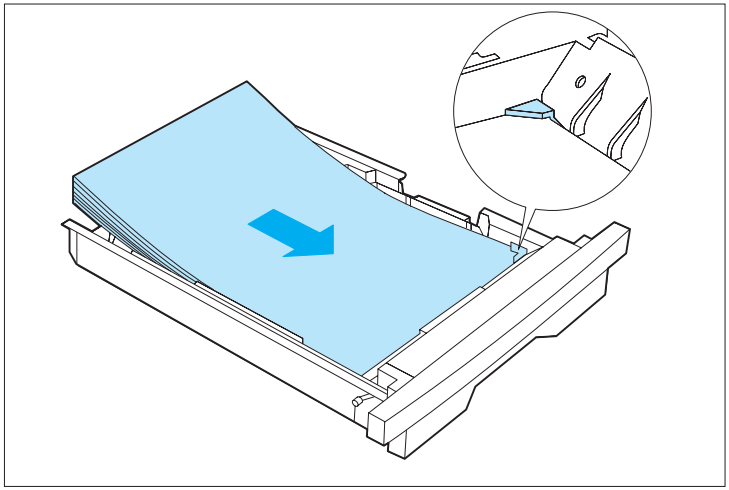
6 **Close the Front Cover.**

Note

When the Lower Base is in use when a jam occurs, the standard tray may need to be removed to clear a paper jam. Check for paper that may be jammed between the Lower Base and the standard tray slot.



7 **Remove the paper tray(s) in use and remove any paper that may have been misfed out of the paper tray(s).**



8 **Ensure that the paper is loaded correctly into the tray(s) with the lead edges under the metal corners tabs.**

If a universal tray is being used, ensure that the paper guides are adjusted against the paper stock. See *"Loading the Standard or Lower Paper Tray" (page 2-14).*

Clearing Paper Jams from the MP tray

1. **When the multi-purpose (MP) tray is being used and a jam occurs, remove all the paper in the tray.**
2. **Remove any paper that has partially fed into the MP slot.**
3. **Remove the MP tray.**
4. **Open the front cover and remove any paper that is in the paper transport areas. See "Clearing Paper Jams from the Standard Tray or Lower Base" (page 7-21), Steps 1 through 5, to assure all paper has been removed from the paper path.**
5. **Close the front cover.**
6. **Reinstall the MP tray.**
7. **Reload paper stock into the MP tray.**

Note

Regardless of where the paper is jammed, you must open and close the Front Cover to clear the "Open Cover Clear Paper Path" Control Panel message.

Printer Operational Problems

Figure 7.4 lists common operational problems and recommended actions.

Figure 7.4 Printer Operational Problems

Problem	Action
Printer will not print	1. Power printer OFF, then ON. 2. Print a Configuration Sheet (see *page 3-62*). • If Configuration Sheet prints, printer is OK. Check your software application and your printer connection. See below. • If Configuration Sheet does not print, contact your dealer or Xerox / Rank Xerox.
A file sent from the host does not print	1. Check if printer is Online. 2. Send a plain text file (i.e., one without printing commands embedded in it) to the printer. (You may need to depress the form feed key when the LED remains lit if Auto Job End is not set.) • If file prints correctly in the default font, with all of the characters in the original file, the printer is seeing the same data that the host is sending, and the interface or communication line is functioning correctly. • If no data prints (or the last page indicator does not come on): A. Check configuration to be certain the printer is configured properly. B. If using the parallel or serial port, the port may be disabled on the printer. Check the Configuration Sheet for the port you are using to see if Port Enable is ON. If OFF, set to ON and try again. C. If using an optional Xerox network interface card (XNIC) (i.e., Ethernet, LocalTalk, or Token Ring), check the Configuration Sheet to see if the printer is acknowledging that the XNIC is present. (Refer to XNIC installation instructions packaged with the option.) – If the XNIC is not acknowledged, power OFF printer and unplug. Pull out controller board, remove the XNIC and check that connector pins are not bent. If bent, straighten. Reseat the XNIC securely, put controller board back in printer, power ON and print Configuration Sheet. If XNIC is still not acknowledged, the XNIC has failed. Contact your dealer or Xerox / Rank Xerox. – If the XNIC is acknowledged, check if printer is recognized by the host. (Refer to the Troubleshooting chapter of the respective XNIC installation guide.)

Figure 7.4 Printer Operational Problems *(continued)*

Problem	Action
	D. If garbled data, check Configuration Sheet to confirm that the correct emulation is selected or Language Sensing is ON. Also, check that data transfer matches host configuration (i.e., Transfer Rate, Baud Rate, Handshake, Data Bits, etc.). If not, correct configuration on printer and try again.
A printed page does not look like it should	1. Make certain that the software application you are using to create your print job is configured properly. Refer to your software documentation. 2. Send a file containing PCL or PostScript commands to the printer. • If your page prints as it should, your printer and interface are functioning properly. • If your information prints correctly, but doesn't look right, you may have: – An error in your command sequence/operator – A missing downloaded font – A mismatched printer option against your host formatting – A missing or misaligned font card • Command errors may be identified by looking at your input file or by using the Hex Dump feature on the printer. You can determine which fonts are in the system by printing a PCL or PS Font List. And you can verify your data setup by printing a Configuration Sheet and checking your printer setup.
In a job, a requested font, which is on a font card, does not print	1. Print a PCL Font List (See *Chapter 3*.) • If your requested fonts print on the Font List, your print job may need correcting. • If your requested fonts do not print on the Font List, power the printer OFF, remove and reinstall the font card. Power the printer back ON, and print another PCL Font List. • If font card is still not being recognized, try another slot or font card, then print another Font List. – If a different font slot works, contact your dealer or Xerox / Rank Xerox to correct the defective slot. – If a new font card is recognized, contact your dealer or Xerox / Rank Xerox about replacing the defective card.

Figure 7.4 Printer Operational Problems *(continued)*

Problem	Action
The text printed is a listing of the PostScript commands instead of the PostScript job	1. Make certain that the software application you are using to create your job is configured properly. Refer to your software documentation. 2. If Language Sensing is set to OFF, make certain that the **System Language** setting for the port you are using is set to PostScript. See the *"Interface Menu Hierarchy" (page 3-37)*. 3. If Language Sensing is set to ON, the job sent to the printer might have included an incorrect header and therefore not have indicated that a PostScript Job was being sent. • Set System Language to PostScript in the appropriate Interface Menu (i.e. Parallel, Serial, etc.) and try sending the job again. • Check your software to make sure the PostScript header file is being sent to the printer.
A legal document prints but the edges are cut off	1. Set Page Protection to Legal. If page is still being clipped, more memory needs to be installed.
A PostScript job fails to print	1. Check the configuration and be certain the proper emulation is selected; also check the configuration of your printer driver configuration. 2. If Language Sensing is set to ON, set System Language to PostScript in the appropriate Interface Menu (i.e. Parallel, Serial, etc.) and resend the job. 3. Set Print Errors to ON and resend job. • If error page prints, this means that there is a problem in the PostScript coding. Correct the coding problem and resend the job. • If job does not print and no error page was printed, set Page Protection to OFF. • If job still does not print, this job may require additional memory.

Print Quality Problems

Figure 7.5 lists common print quality problems, the likely cause, and recommended actions.

Figure 7.5 Print Quality Problems

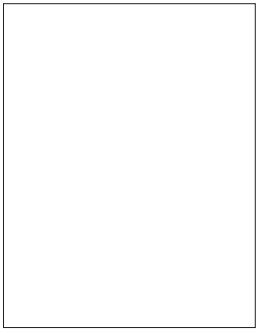
Problem	Possible Causes	Corrective Actions
Light/faint prints Overall image is lighter than normal. 	1. Toner level low/empty 2. Print Density adjustment set too low 3. Damp paper stock 4. Contaminated Bias Transfer Roll	1. Replace EP cartridge. 2. Adjust Print Density (see *Chapter 6*). 3. Replace paper stock. 4. Contact your dealer or Xerox / Rank Xerox.
Blank Prints Entire printed page is blank with no visible print. 	1. Defective EP cartridge 2. No printable data received from computer	1. Replace EP cartridge. 2. Produce a Test Print (see *Chapter 6*). If the Test Print is normal, check the following: • Interface cable between computer and printer • Printer set up and application software If the Test Print is blank, contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

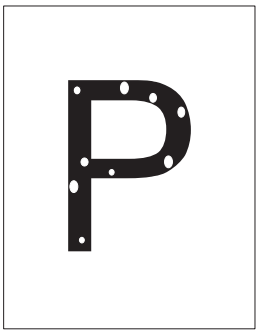
Problem	Possible Causes	Corrective Actions
Background/black prints Overall darkness or localized dark bands in the non-image areas. 	1. Defective EP cartridge 2. Print Density adjustment set too high 3. Contaminated Bias Transfer Roll 4. Defective Laser, Controller, Fuser Assembly	1. Replace EP cartridge. 2. Adjust Print Density (see *Chapter 6*). 3. Contact your dealer or Xerox / Rank Xerox. 4. Contact your dealer or Xerox / Rank Xerox
Spot deletions Areas of the print are extremely light or missing. 	1. Damp paper stock 2. Defective EP cartridge 3. Contaminated Bias Transfer Roll	1. Replace paper stock. 2. Replace EP cartridge. 3. Contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

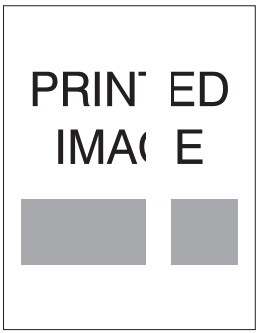
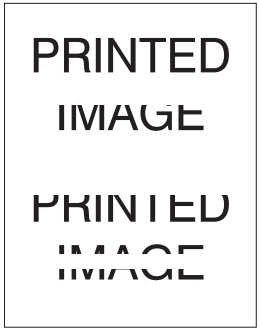
Problem	Possible Causes	Corrective Actions
Vertical line deletions Localized print deletions forming narrow lines running in the direction of paper movement. 	1. Defective EP cartridge 2. Defective paper stock, creases, folds, etc. 3. Contaminated Bias Transfer Roll	1. Replace EP cartridge. 2. Replace paper stock. 3. Contact your dealer or Xerox / Rank Xerox.
Horizontal line deletions Localized print deletions appearing as bands running across the page perpendicular to the direction of paper movement. 	1. Defective EP cartridge 2. Defective paper stock, creases, folds, etc. 3. Contaminated Bias Transfer Roll	1. Replace EP cartridge. 2. Replace paper stock. 3. Contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

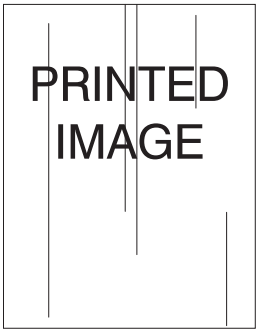
Problem	Possible Causes	Corrective Actions
Vertical dark streaks Black lines running across the print in the direction of paper movement. 	1. Defective EP cartridge 2. Contaminated paper path 3. Contaminated Bias Transfer Roll	1. Replace EP cartridge. 2. Clean paper path to remove any toner accumulations. 3. Contact your dealer or Xerox / Rank Xerox.
Horizontal dark streaks Black lines running across the page perpendicular to the direction of paper movement. 	1. Defective EP cartridge 2. Contaminated paper path 3. Contaminated Bias Transfer Roll	1. Replace EP cartridge. 2. Clean paper path to remove any toner accumulations. 3. Contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

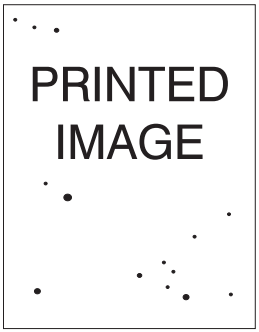
Problem	Possible Causes	Corrective Actions
Dark spots/marks 	1. Defective EP cartridge 2. Contaminated paper path 3. Contaminated Bias Transfer Roll	1. Replace EP cartridge. 2. Clean paper path to remove any toner accumulations. 3. Contact your dealer or Xerox / Rank Xerox.
Residual image Ghost images of previous pages is produced along with the current page. 	1. Defective EP cartridge	1. Replace EP cartridge. If problem is not resolved, contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

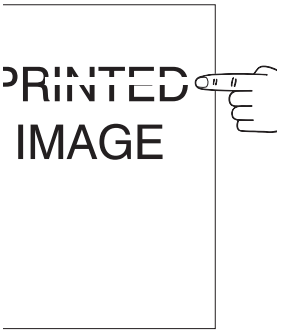
Problem	Possible Causes	Corrective Actions
Unfused or partially fused image The printed image is not fully fused to the paper and easily rubs off. 	1. Damp paper stock 2. Heavy or unusual paper stock 3. Light image density 4. Defective Fuser Module	1. Replace paper stock. 2. Refer to *Chapter 2* for printer throughput capabilities. 3. Replace EP cartridge. 4. Contact your dealer or Xerox / Rank Xerox.
Skewed prints Printed image is not parallel to the edge of the paper. 	1. Paper improperly loaded into paper tray 2. Obstructed paper path 3. Contaminated paper path 4. Dirty/worn Paper Feed Rolls	1. Check trays for proper paper loading (see *Chapter 2*). 2. Inspect paper path for obstructions (torn pieces of paper, etc.). 3. Inspect/clean paper path to remove residual toner and paper dust. 4. Contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

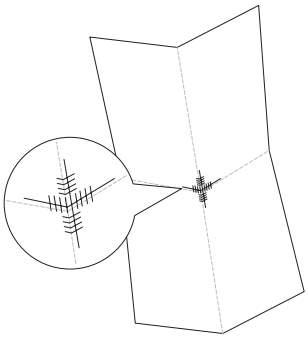
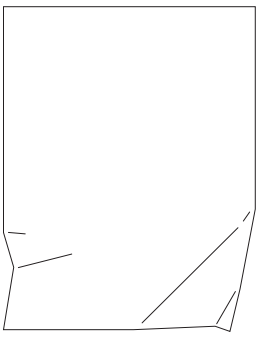
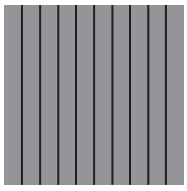
Problem	Possible Causes	Corrective Actions
Image misregistration The printed image is mispositioned on the page. 	1. Paper improperly loaded into paper tray 2. Wrong paper size for application	1. Check trays for proper paper loading (see *Chapter 2*). 2. Check paper stock and printer configuration. 3. If problem is not resolved, contact your dealer or Xerox / Rank Xerox.
		Produce a Test Print (see *Chapter 3*) • Fold and crease the Test Print as shown. • Both horizontal and vertical folds should fall within plus or minus two lines. If the pattern registers OK, the problem may be in your software application.
Damaged prints Prints are wrinkled, creased, or torn. 	1. Poor paper condition 2. Paper improperly loaded into paper tray 3. Obstructed paper path 4. Defective Fuser Module	1. Inspect/replace paper stock. 2. Check trays for proper paper loading (see *Chapter 2*). 3. Inspect paper path for obstructions (torn pieces of paper, etc.). 4. Contact your dealer or Xerox / Rank Xerox.

Figure 7.5 Print Quality Problems *(continued)*

Problem	Possible Causes	Corrective Actions
TrueRes Smoothing problems TrueRes Smoothing is a technology that smooths the jagged edges of curved or near vertical/horizontal lines. Produce Test Prints (see *Chapter 3*) with TrueRes switched both ON and OFF. Inspect the TrueRes target on the Test Print. If:		
1. TrueRes is not functional (no apparent difference between ON and OFF setting)	1. Failed Controller.	1. Replace Controller. Contact your dealer or Xerox / Rank Xerox.
2. TrueRes appears excessively dark:  or TrueRes appears insufficient 	2. Print Density set to dark/light.	2. Adjust Print Density (see *Chapter 6*).

Appendix A

Printer and Cable Specifications

4505 and 4505ps Printer Specifications

Imaging method	Electro-Photography
Exposure system	Semiconductor laser beam (laser diode) scanning
Image resolution	600 x 600 dpi and 300 x 300 dpi
Warm up time	Less than 60 seconds after power on
Continuous print speed	5 ppm (pages per minute)
Processor	16 MHz AMD 29200 RISC
Maximum Monthly Duty Cycle	Up to 10,000 prints
Nominal voltage	220/240 V 110/115 V
Nominal frequency	50/60 Hz
Power consumption	Less than 450 W during operation; power saver mode operational after 10 minutes of not printing
Noise level	Less than 45 dB during operation and warm-up; less than 40 dB in standby
Temperature	5°C / 41°F to 35°C / 95°F during operation
Humidity	15% to 85% during operation
Dimensions	35.2 x 39.4 x 25.3 cm 13.9 x 15.5 x 10 inches
Weight	12 Kgs / 26.5 lbs
Maximum memory capacity	16 MB

Factory-provided features

2 MB printer memory

One 250-sheet universal paper tray

Multipurpose (MP) paper tray

EP (electronic printing) cartridge

Power cord (110 volt printers only)

Document Services for Printing software diskettes

User documentation

On the 4505ps printer:

Additional **4 MB SIMM** (for a total of 6 MB)

PostScript option

Options

4 MB SIMM

16 MB SIMM

250-sheet Base with universal tray

500-sheet Base with A4 or 8.5 x 11 (Letter) tray

Paper trays (in a variety of sizes)

PostScript kit

Ethernet network interface card (XNIC-E'NET)

LocalTalk network interface card (XNIC-L'TALK)

Token Ring network interface card (XNIC-T'RING)

PCL font cards

Note

See Appendix D *for information about ordering options.*

Printable Area

See *Figure A.1 (page A-6)* for printable area dimensions. (The printer cannot print outside the printable area.)

4510 and 4510ps Printer Specifications

Imaging method	Electro-Photography
Exposure system	Semiconductor laser beam (laser diode) scanning
Image resolution	600 x 600 dpi and 300 x 300 dpi
Warm up time	Less than 60 seconds after power on
Continuous print speed	10 ppm (pages per minute)
Processor	20 MHz AMD 29200 RISC
Maximum Monthly Duty Cycle	Up to 20,000 prints
Nominal voltage	220/240 V 110/115 V
Nominal frequency	50/60 Hz
Power consumption	Less than 450 W during operation; power saver mode operational after 10 minutes of not printing
Noise level	Less than 50 dB during operation and warm-up; less than 40 dB in standby
Temperature	5°C / 41°F to 35°C / 95°F during operation
Humidity	15% to 85% during operation
Dimensions	35.2 x 39.4 x 25.4 cm 13.9 x 15.5 x 10 inches
Weight	14.0 Kgs / 31 lbs
Maximum memory capacity	16 MB

Factory-provided features

2 MB printer memory

One 250-sheet universal paper tray

Multipurpose (MP) paper tray

EP (electronic printing) cartridge

Power cord (110 volt printers only)

Document Services for Printing software diskettes

User documentation

On the 4510ps printer:

Additional **4 MB SIMM** (for a total of 6 MB)

PostScript option

Options

4 MB SIMM

16 MB SIMM

250-sheet Base with universal tray

500-sheet Base with A4 or 8.5 x 11 (Letter) tray

Paper trays (in a variety of sizes)

PostScript kit

Ethernet network interface card (XNIC-E'NET)

LocalTalk network interface card (XNIC-L'TALK)

Token Ring network interface card (XNIC-T'RING)

PCL font cards

Note

See Appendix D *for information about ordering options.*

Printable Area

See *Figure A.1 (page A-6)* for printable area dimensions. (The printer cannot print outside the printable area.)

Figure A.1 PCL and PostScript printable area dimensions

Printer Language	Paper Size	Printable Area Width	Printable Area Length
PCL	All paper sizes	Determined by the formula: W – 8.5 mm (or W – .33 inch) where W = physical paper width	Determined by the formula: L – 8.5 mm (or L – .33 inch) where L = physical paper width
PostScript	A4	200 mm 7.89 inches	289 mm 11.36 inches
	8.5 x 11 (Letter)	207 mm 8.11 inches	271 mm 10.67 inches
	Executive	175 mm 6.93 inches	258 mm 10.17 inches
	8.5 x 14 (Legal)	207 mm 8.11 inches	347 mm 13.67 inches
	Com-10	96 mm 3.73 inches	233 mm 9.17 inches
	DL	100 mm 3.95 inches	212 mm 8.33 inches
	Monarch	89 mm 3.52 inches	182 mm 7.17 inches
	Folio	207 mm 8.11 inches	347 mm 12.67 inches
	A5	141 mm 5.55 inches	200 mm 7.89 inches
	B5 (ISO)	167 mm 6.61 inches	241 mm 9.53 inches
	C5	154 mm 6.08 inches	220 mm 8.68 inches

Cable Specifications

Figure A.2 shows parallel and serial interface information to help you obtain the correct printer cable.

Figure A.2 4505/4505ps and 4510/4510ps parallel and serial cable characteristics

Type	Commonly Used for	Communication Protocol	Printer Connector Type
Standard Centronics Parallel† Cable	Most PC systems today	Bidirectional (Centronics standard)	36-pin male
Standard Serial‡ Cable	PCs and modems	RS-232C or RS-422A	25-pin male

† Xerox has certified Parallel cables with these printers at a maximum of 6 feet.
‡ Xerox has certified Serial cables with these printers at a maximum of 4 feet.

Parallel Interface

Today most single-user computer systems (IBM PC and compatibles) utilize the parallel interface because it allows more data at a time to be transferred from the computer to the printer than does a serial interface. If the printer is not connected to a network, printing through the parallel interface is most desirable.

The printers support a bidirectional parallel port, compatible with the IEEE standard 1284-B, with forward transfer rates of 100 KBytes or 1 MBytes.

The FAULT signal (pin no. 32) goes true (low) under the following conditions:

- Off-line mode selected
- Cover open (interlock open)
- Paper out
- Paper jam
- Any machine fault

The FAULT signal goes false (high) when all the above conditions are corrected.

The Centronics bidirectional parallel interface is designed to provide plug-to-plug compatibility with a 36 pin Amphenol 57-40360 (or equivalent) connector that connects to an Amphenol 57-30360 (or equivalent) connector. The cable length has been certified at 6 feet, and will be the twisted pair type 22AWG -15 pairs. Pin assignment and functions for the Centronics interface are designated in Figure A.3.

Figure A.3 Centronics connector pin assignment

Signal Pin #	Signal Name	Source	Function
1	/STROBE	HOST	Host Check
2	DATA 0	BIDIRECTIONAL	Data Bit 0
3	DATA 1	BIDIRECTIONAL	Data Bit 1
4	DATA 2	BIDIRECTIONAL	Data Bit 2
5	DATA 3	BIDIRECTIONAL	Data Bit 3
6	DATA 4	BIDIRECTIONAL	Data Bit 4
7	DATA 5	BIDIRECTIONAL	Data Bit 5
8	DATA 6	BIDIRECTIONAL	Data Bit 6
9	DATA 7	BIDIRECTIONAL	Data Bit 7
10	/ACK	PRINTER	Printer Acknowledge
11	BUSY	PRINTER	Printer Busy
12	PE	PRINTER	Out of Paper
13	SELECT	PRINTER	Printer Select
14	/AUTOFEED	HOST	Host Busy
15	N/C	- - - - - -	Not Defined
16	GND		Logic GND
17	GND		Chassis GND

Figure A.3 Centronics connector pin assignment *(continued)*

Signal Pin #	Signal Name	Source	Function
18	+ 5V	PRINTER	Printer Logic High
19	GND		Signal GND (*/Strobe*)
20	GND		Signal GND (*Data 0*)
21	GND		Signal GND (*Data 1*)
22	GND		Signal GND (*Data 2*)
23	GND		Signal GND (*Data 3*)
24	GND		Signal GND (*Data 4*)
25	GND		Signal GND (*Data 5*)
26	GND		Signal GND (*Data 6*)
27	GND		Signal GND (*Data 7*)
28	GND		Signal Ground (*PE, SELECT, /ACK*)
29	GND		Signal Ground (*BUSY, /FAULT*)
30	GND		Signal Ground (*AUTOFEED, /SELECTIN, /INIT*)
31	/INIT	HOST	Reset Signal
32	/FAULT	PRINTER	Machine Status
33 - 35	N/C	- - - - - -	Not Defined
36	/SELECTIN	HOST	Select Input

RS-232C Serial Interface (CCITT V.24)

The RS-232C Serial Interface complies with the EIA 232C standard which defines the interconnect of Data Terminal Equipment (DTE) and Data Communication Equipment (DCE).

Data Rates

The user may select line speeds of 300, 600, 1200, 2400, 4800, 9600, 19200 and 38400 baud. **Default setting is for 9600 baud**.

Encoding

Asynchronous communication in the printers supports 7 or 8-bit ASCII data. The string of data bits is encapsulated by 1 Start bit, 1 or 2 Stop bits and may have an appended Parity bit. Parity (even, odd or none), the number of stop bits and 7 or 8 bit data are selectable from the front panel UI. **Default settings are for 8 bit data with 1 stop bit and parity none**.

Protocols

Character protocols are used to regulate the flow of information between machine and host. The software handshaking protocol of XON/XOFF, Robust XON/XOFF, and DTR Polarity are available – DTR provides the hardware handshaking. **The default setting is for Robust XON/XOFF**.

Connections

The connector for the RS-232 interface is the 25 pin “D” Shell type. The use of short cables for interconnect is recommended. Cable length has been certified at 4 feet.

The interface signals and their associated pin assignments are identified in the Figure A.4.

Figure A.4 Pin assignment for RS-232C

Signal Name	Pin #	RS-232C Function	Direction
Chassis GND	1	GND	- - - - - -
Transmitted Data	2	Data	From Printer
Received Data	3	Data	To Printer
Request to Send	4	Control	From Printer
Clear to Send	5	Control	To Printer
Data Set Ready	6	Control	To Printer
Signal GND	7	GND	- - - - - -
Carrier Detect	8	Control	To Printer
N/C	9, 10, 12	- - - - - -	- - - - - -
Send Data Noninverted	11	- - - - - -	- - - - - -
Receive Data Noninverted	13	- - - - - -	- - - - - -
Send Data inverted	14	- - - - - -	- - - - - -
N/C	15, 17 – 19	- - - - - -	- - - - - -
Receive Data Inverted	16	- - - - - -	- - - - - -
Data Terminal Ready	20	Control	From Printer
N/C	21 – 25	- - - - - -	- - - - - -

RS-422A Serial Interface (CCITT V.11 and X.27)

The RS-422A Serial Interface is hardware compatible with the EIA RS-422 standard which defines the interconnect of Data Terminal Equipment (DTE) and Data Communication Equipment (DCE).

Data Rates

The user may select line speeds of 300, 600, 1200, 2400, 4800, 9600, 19200 and 38400 baud. **Default setting is for 9600 baud**.

Encoding

Asynchronous communication in the printers supports 7 or 8-bit ASCII data. The string of data bits is encapsulated by 1 Start bit, 1 or 2 Stop bits and may have an appended Parity bit. Parity (even, odd or none), the number of stop bits and 7 or 8 bit data are selectable from the front panel UI. **Default settings are for 8 bit data with 1 stop bit and parity none**.

Protocols

XON/XOFF provides the software handshaking on the RS-422 interface. **Robust XON/XOFF is the default**.

Connections

The connector for the RS-422A interface is the 25 pin “D” Shell type. The use of short cables for interconnect is recommended. Cable length has been certified at 4 feet.

The interface signals and their associated pin assignments are identified in the Figure A.5.

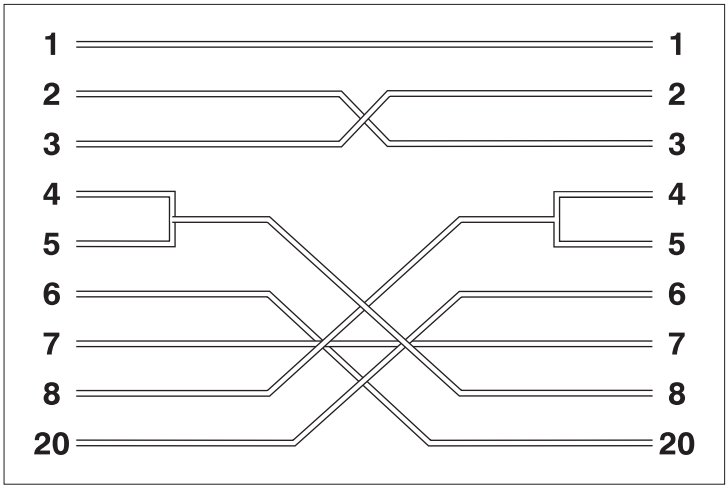
Figure A.5 Pin assignment for RS-422A

Signal Name	Pin #	RS-422A Function	Direction
Chassis GND	1	GND	- - - - - -
Transmitted Data	2	- - - - - -	- - - - - -
Received Data	3	- - - - - -	- - - - - -
Request to Send	4	- - - - - -	- - - - - -
Clear to Send	5	- - - - - -	- - - - - -
Data Set Ready	6	- - - - - -	- - - - - -
Signal GND	7	GND	- - - - - -
Carrier Detect	8	- - - - - -	- - - - - -
N/C	9, 10, 12	- - - - - -	- - - - - -
Send Data Noninverted	11	Data	From Printer
Receive Data Noninverted	13	Data	To Printer
Send Data inverted	14	Data	From Printer
N/C	15, 17 – 19	- - - - - -	- - - - - -
Receive Data Inverted	16	Data	To Printer
Data Terminal Ready	20	- - - - - -	- - - - - -
N/C	21 – 25	- - - - - -	- - - - - -

Null Modem

A null modem is a device that eliminates both a modem and a telephone line. When the printers are used with an asynchronous serial interface connected to a DTE host (such as a PC-compatible), a modem, modem eliminator, or a null modem is required. Figure A.6 shows null modem wiring.

Figure A.6 Null Modem wiring



Network Interface

Network interface communication is the most common for enabling multiple users to print from a host system.

For **network interface** cables, refer to your network software documentation.

Appendix B

Printer Commands (Escape Sequences)

PCL Printer Commands

PCL printer commands—also called *escape sequences*—are used by software applications to **control how fonts and graphics are printed on the page**. Figure B.1 lists the PCL printer commands for the 4505/4505ps and 4510/4510ps printers.

Figure B.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	027 038 108 # ... # 088	1B 26 6C # ... # 58
Long Edge (Left) Offset Registration	# of Decipoints (1/720")	$^{E}_{C}$&l#U	027 038 108 # ... # 085	1B 26 6C # ... # 55
Short Edge (Top) Offset Registration	# of Decipoints (1/720")	$^{E}_{C}$&l#Z	027 038 108 # ... # 090	1B 26 6C # ... # 5A
Unit Of Measure	# = Number of units per inch	$^{E}_{C}$&u#D	027 038 117 # ... # 068	1B 26 75 # ... # 44
PAGE CONTROL COMMANDS				
Page Length and Size				
Paper Source	Eject Page	$^{E}_{C}$&l0H	027 038 108 048 072	1B 26 6C 30 48
	Main Paper Source (Standard)	$^{E}_{C}$&l1H	027 038 108 049 072	1B 26 6C 31 48
	Manual Feed (MP)	$^{E}_{C}$&l2H	027 038 108 050 072	1B 26 6C 32 48
	Manual Envelope Feed (MP)	$^{E}_{C}$&l3H	027 038 108 051 072	1B 26 6C 33 48
	Alternate Paper Source (Lower)	$^{E}_{C}$&l4H	027 038 108 052 072	1B 26 6C 34 48

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Page Size	Executive	$^{E}_{C}$&l1A	027 038 108 049 065	1B 26 6C 31 41
	Letter	$^{E}_{C}$&l2A	027 038 108 050 065	1B 26 6C 32 41
	Legal	$^{E}_{C}$&l3A	027 038 108 051 065	1B 26 6C 33 41
	A4	$^{E}_{C}$&l26A	027 038 108 050 054 065	1B 26 6C 32 36 41
	A5	$^{E}_{C}$&l70A	027 038 108 050 048 048 048 065	1B 26 6C 32 30 30 30 41
	Folio	E$_{C}$&l71A	027 038 108 051 048 048 049 065	1B 26 6C 33 30 30 31 41
	Monarch	$^{E}_{C}$&l80A	027 038 108 056 048 065	1B 26 6C 38 30 41
	COM 10	$^{E}_{C}$&l81A	027 038 108 056 049 065	1B 26 6C 38 31 41
	DL	$^{E}_{C}$&l90A	027 038 108 057 048 065	1B 26 6C 39 30 41
	C5	$^{E}_{C}$&l91A	027 038 108 057 049 065	1B 26 6C 39 31 41
	B5 (ISO)	$^{E}_{C}$&l100A	027 038 108 049 048 048 065	1B 26 6C 31 30 30 41
Page Length	# of Lines (5-128)	$^{E}_{C}$&l#P	027 038 108 #...# 080	1B 26 6C #...# 050
Orientation				
Orientation	Portrait	$^{E}_{C}$&l0O	027 038 108 048 079	1B 26 6C 30 4F
	Landscape	$^{E}_{C}$&l1O	027 038 108 049 079	1B 26 6C 31 4F
	Reverse Portrait	$^{E}_{C}$&l2O	027 038 108 050 079	1B 26 6C 32 4F
	Reverse Landscape	$^{E}_{C}$&l3O	027 038 108 051 079	1B 26 6C 33 4F
Print Direction	# Degrees of Rotation (counter-clockwise. 90° increments only)	$^{E}_{C}$&a#P	027 038 097 # ... # 080	1B 26 61 # ... # 50

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Margins and Text Length				
Top Margin	# of Lines	$^{E}_{C}$&l#E	027 038 108 # ... # 069	1B 26 6C # ... # 45
Text Length	# of Lines	$^{E}_{C}$&l#F	027 038 108 # ... # 070	1B 26 6C # ... # 46
Left Margin	# of Columns	$^{E}_{C}$&a#L	027 038 097 # ... # 076	1B 26 61 # ... # 4C
Right Margin	# of Columns	$^{E}_{C}$&a#M	027 038 097 # ... # 077	1B 26 61 # ... # 4D
Clear Horizontal Margins	—	$^{E}_{C}$9	027 057	1B 39
Perforation Skip Mode				
Perforation Skip	Disable	$^{E}_{C}$&l0L	027 038 108 048 076	1B 26 6C 30 4C
	Enable	$^{E}_{C}$&l1L	027 038 108 049 076	1B 26 6C 31 4C
Horizontal Column Spacing				
Horizontal Motion Index (HMI)	# of 1/120″ Increments	$^{E}_{C}$&k#H	027 038 107 # ... # 072	1B 26 6B # ... # 48

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Vertical Line Spacing				
Vertical Motion Index (VMI)	# of 1/48" Increments	$^{E}_{C}$&l#C	027 038 108 # ... # 067	1B 26 6C # ... # 43
Line Spacing (Lines per inch)	1 line/inch	$^{E}_{C}$&l1D	027 038 108 049 068	1B 26 6C 31 44
	2 lines/inch	$^{E}_{C}$&l2D	027 038 108 050 068	1B 26 6C 32 44
	3 lines/inch	$^{E}_{C}$&l3D	027 038 108 051 068	1B 26 6C 33 44
	4 lines/inch	$^{E}_{C}$&l4D	027 038 108 052 068	1B 26 6C 34 44
	6 lines/inch	$^{E}_{C}$&l6D	027 038 108 054 068	1B 26 6C 36 44
	8 lines/inch	$^{E}_{C}$&l8D	027 038 108 056 068	1B 26 6C 38 44
	12 lines/inch	$^{E}_{C}$&l12D	027 038 108 049 050 068	1B 26 6C 31 32 44
	16 lines/inch	$^{E}_{C}$&l16D	027 038 108 049 054 068	1B 26 6C 31 36 44
	24 lines/inch	$^{E}_{C}$&l24D	027 038 108 050 052 068	1B 26 6C 32 34 44
	48 lines/inch	$^{E}_{C}$&l48D	027 038 108 052 056 068	1B 26 6C 34 38 44
CURSOR POSITIONING				
Vertical and Horizontal				
Vertical Position	# of Rows	$^{E}_{C}$&a#R	027 038 097 # ... # 082	1B 26 61 # ... # 52
	# of Units	$^{E}_{C}$*p#Y	027 042 112 # ... # 089	1B 2A 70 # ... # 59
	# of Decipoints	$^{E}_{C}$&a#V	027 038 097 # ... # 086	1B 26 61 # ... # 56
Horizontal Position	# of Columns	$^{E}_{C}$&a#C	027 038 097 # ... # 067	1B 26 61 # ... # 43
	# of Units	$^{E}_{C}$*p#X	027 042 112 # ... # 088	1B 2A 70 # ... # 58
	# of Decipoints	$^{E}_{C}$&a#H	027 038 097 # ... # 072	1B 26 61 # ... # 48
Half Line Feed		$^{E}_{C}$=	027 061	1B 3D

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
End-of-Line Termination				
Line Termination	CR=CR; LF=LF; FF=FF	$^{E}_{C}$&k0G	027 038 107 048 071	1B 26 6B 30 47
	CR=CR+LF; LF=LF; FF=FF	$^{E}_{C}$&k1G	027 038 107 049 071	1B 26 6B 31 47
	CR=CR; LF=CR+LF; FF=CR+FF	$^{E}_{C}$&k2G	027 038 107 050 071	1B 26 6B 32 47
	CR=CR+LF; LF=CR+LF; FF=CR+FF	$^{E}_{C}$&k3G	027 038 107 051 071	1B 26 6B 33 47
Push/Pop Position				
Push/Pop Position	Push	$^{E}_{C}$&f0S	027 038 102 048 083	1B 26 66 30 53
	Pop	$^{E}_{C}$&f1S	027 038 102 049 083	1B 26 66 31 53
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

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	MC Text	$^{E}_{C}$(12J	027 040 049 050 074	1B 28 31 32 4A
	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

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	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
Spacing				
Primary Spacing	Fixed	$^{E}_{C}$(s0P	027 040 115 048 080	1B 28 73 30 50
	Proportional	$^{E}_{C}$(s1P	027 040 115 049 080	1B 28 73 31 50
Pitch				
Primary Pitch	# Characters/inch	$^{E}_{C}$(s#H	027 040 115 # ... # 072	1B 28 73 # ... # 48
Set Pitch Mode	10.0	$^{E}_{C}$&k0S	027 038 107 048 083	1B 26 6B 30 53
	Compressed (16.5-16.7)	$^{E}_{C}$&k2S	027 038 107 050 083	1B 26 6B 32 53
	Elite (12.0)	$^{E}_{C}$&k4S	027 038 107 052 083	1B 26 6B 34 53
Point Size				
Primary Height	# Points	$^{E}_{C}$(s#V	027 040 115 # ... # 086	1B 28 73 # ... # 56
Style				
Primary Style	Upright (Solid)	$^{E}_{C}$(s0S	027 040 115 048 083	1B 28 73 30 53
	Italic	$^{E}_{C}$(s1S	027 040 115 049 083	1B 28 73 31 53
	Condensed	$^{E}_{C}$(s4S	027 040 115 052 083	1B 28 73 34 53
	Condensed Italic	$^{E}_{C}$(s5S	027 040 115 053 083	1B 28 73 35 53
	Compressed (Extra Condensed)	$^{E}_{C}$(s8S	027 040 115 056 083	1B 28 73 38 53
	Expanded	$^{E}_{C}$(s24S	027 040 115 050 052 083	1B 28 73 32 34 53
	Outline	$^{E}_{C}$(s32S	027 040 115 051 050 083	1B 28 73 33 32 53

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	Inline	$^{E}_{C}$(s64S	027 040 115 054 052 083	1B 28 73 36 34 53
	Shadowed	$^{E}_{C}$(s128S	027 040 115 049 050 056 083	1B 28 73 31 32 38 53
	Outline Shadowed	$^{E}_{C}$(s160S	027 040 115 049 054 048 083	1B 28 73 31 36 30 53
Stroke Weight				
Primary Font Stroke Weight	Ultra Thin	$^{E}_{C}$(s-7B	027 040 115 045 055 066	1B 28 73 2D 37 42
	Extra Thin	$^{E}_{C}$(s-6B	027 040 115 045 054 066	1B 28 73 2D 36 42
	Thin	$^{E}_{C}$(s-5B	027 040 115 045 053 066	1B 28 73 2D 35 42
	Extra Light	$^{E}_{C}$(s-4B	027 040 115 045 052 066	1B 28 73 2D 34 42
	Light	$^{E}_{C}$(s-3B	027 040 115 045 051 066	1B 28 73 2D 33 42
	Demi Light	$^{E}_{C}$(s-2B	027 040 115 045 050 066	1B 28 73 2D 32 42
	Semi Light	$^{E}_{C}$(s-1B	027 040 115 045 049 066	1B 28 73 2D 31 42
	Medium (book or text)	$^{E}_{C}$(s0B	027 040 115 048 066	1B 28 73 30 42
	Semi Bold	$^{E}_{C}$(s1B	027 040 115 049 066	1B 28 73 31 42
	Demi Bold	$^{E}_{C}$(s2B	027 040 115 050 066	1B 28 73 32 42
	Bold	$^{E}_{C}$(s3B	027 040 115 051 066	1B 28 73 33 42
	Extra Bold	$^{E}_{C}$(s4B	027 040 115 052 066	1B 28 73 34 42
	Black	$^{E}_{C}$(s5B	027 040 115 053 066	1B 28 73 35 42
	Extra Black	$^{E}_{C}$(s6B	027 040 115 054 066	1B 28 73 36 42
	Ultra Black	$^{E}_{C}$(s7B	027 040 115 055 066	1B 28 73 37 42

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Primary Typeface Family				
Typeface Family	LinePrinter	$^{E}_{C}$(s0T	027 040 115 048 084	1B 28 73 30 54
	Albertus	$^{E}_{C}$(s4362T	027 040 115 052 051 054 050 084	1B 28 73 34 33 36 32 54
	Antique Olive	$^{E}_{C}$(s4168T	027 040 115 052 049 054 056 084	1B 28 73 34 31 36 38 54
	Clarendon	$^{E}_{C}$(s4140T	027 040 115 052 049 052 048 084	1B 28 73 34 31 34 30 54
	Coronet	$^{E}_{C}$(s4116T	027 040 115 052 049 049 054 084	1B 28 73 34 31 31 36 54
	Courier	$^{E}_{C}$(s4099T	027 040 115 052 048 057 057 084	1B 28 73 34 30 39 39 54
	Garamond Antiqua	$^{E}_{C}$(s4197T	027 040 115 052 049 057 055 084	1B 28 73 34 31 39 37 54
	Letter Gothic	$^{E}_{C}$(s4102T	027 040 115 052 049 048 050 084	1B 28 73 34 31 30 32 54
	Marigold	$^{E}_{C}$(s4297T	027 040 115 052 050 057 055 084	1B 28 73 34 32 39 37 54
	CG Omega	$^{E}_{C}$(s4113T	027 040 115 052 049 049 051 084	1B 28 73 34 31 31 33 54
	CG Times	$^{E}_{C}$(s4101T	027 040 115 052 049 048 049 084	1B 28 73 34 31 30 31 54
	Univers	$^{E}_{C}$(s4148T	027 040 115 052 049 052 056 084	1B 28 73 34 31 34 38 54
	Arial	$^{E}_{C}$(s16602T	027 040 115 049 054 054 048 050 084	1B 28 73 31 36 36 30 32 54
	Times New Roman	$^{E}_{C}$(s16901T	027 040 115 049 054 057 048 049 084	1B 28 73 31 36 39 30 31 54
	Symbol	$^{E}_{C}$(s16686T	027 040 115 049 054 054 056 054 084	1B 28 73 31 36 36 38 36 54

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	Wingdings	$^{E}_{C}$(s31402T	027 040 115 051 049 052 048 050 084	1B 28 73 33 31 34 30 32 54
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	027 038 100 048 068	1B 26 64 30 44
	Enable Floating	$^{E}_{C}$&d3D	027 038 100 051 068	1B 26 64 33 44
	Disable	$^{E}_{C}$&d@	027 038 100 064	1B 26 64 40
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	027 042 099 # ... # 068	1B 2A 63 # ... # 44
Font and Character Control	Delete all Fonts	$^{E}_{C}$*c0F	027 042 099 048 070	1B 2A 63 30 46
	Delete all temporary fonts	$^{E}_{C}$*c1F	027 042 099 049 070	1B 2A 63 31 46
	Delete last font ID specified	$^{E}_{C}$*c2F	027 042 099 050 070	1B 2A 63 32 46
	Delete last character specified	$^{E}_{C}$*c3F	027 042 099 051 070	1B 2A 63 33 46
	Make font temporary	$^{E}_{C}$*c4F	027 042 099 052 070	1B 2A 63 34 46
	Make font permanent	$^{E}_{C}$*c5F	027 042 099 053 070	1B 2A 63 35 46
	Copy/Assign the currently invoked font as temporary	$^{E}_{C}$*c6F	027 042 099 054 070	1B 2A 63 36 46

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Soft Symbol Set Management / Creation				
Set Symbol Set	ID #	$^{E}_{C}$*c#R	027 042 099 # ... # 082	1B 2A 63 # ... # 52
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	027 042 099 048 083	1B 2A 63 30 53
	Delete all temporary symbol sets	$^{E}_{C}$*c1S	027 042 099 049 083	1B 2A 63 31 53
	Delete current soft symbol set (last ID #)	$^{E}_{C}$*c2S	027 042 099 050 083	1B 2A 63 32 53
	Make current soft symbol set temporary	$^{E}_{C}$*c4S	027 042 099 052 083	1B 2A 63 34 53
	Make current soft symbol set permanent	$^{E}_{C}$*c5S	027 042 099 053 083	1B 2A 63 35 53
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
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	027 042 099 # ... # 069	1B 2A 63 # ... # 45

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
GRAPHICS				
Raster Graphics				
Raster Resolution	75 dots/inch	$^{E}_{C}$*t75R	027 042 116 055 053 082	1B 2A 74 37 35 52
	100 dots/inch	$^{E}_{C}$*t100R	027 042 116 049 048 048 082	1B 2A 74 31 30 30 52
	150 dots/inch	$^{E}_{C}$*t150R	027 042 116 049 053 048 082	1B 2A 74 31 35 30 52
	200 dots/inch	$^{E}_{C}$*t200R	027 042 116 050 048 048 082	1B 2A 74 32 30 30 52
	300 dots/inch	$^{E}_{C}$*t300R	027 042 116 051 048 048 082	1B 2A 74 33 30 30 52
	600 dots/inch	$^{E}_{C}$*t600R	027 042 116 054 048 048 082	1B 2A 74 36 30 30 52
Raster Graphics Presentation	Follows orientation	$^{E}_{C}$*r0F	027 042 114 048 070	1B 2A 72 30 46
	Follows physical page	$^{E}_{C}$*r3F	027 042 114 051 070	1B 2A 72 33 46
Start Raster Graphics	Left Raster Graphics Margin	$^{E}_{C}$*r0A	027 042 114 048 065	1B 2A 72 30 41
	Current Cursor	$^{E}_{C}$*r1A	027 042 114 049 065	1B 2A 72 31 41
Raster Y Offset	# of Raster Lines of vertical movement	$^{E}_{C}$*b#Y	027 042 098 # ... # 089	1B 2A 62 # ... # 59
Set Raster Compression Mode (Method)	Unencoded	$^{E}_{C}$*b0M	027 042 098 048 077	1B 2A 62 30 4D
	Run-Length Encoded	$^{E}_{C}$*b1M	027 042 098 049 077	1B 2A 62 31 4D
	Tagged Image File Format	$^{E}_{C}$*b2M	027 042 098 050 077	1B 2A 62 32 4D
	Delta Row	$^{E}_{C}$*b3M	027 042 098 051 077	1B 2A 62 33 4D

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	Adaptive compression	$^{E}_{C}$*b5M	027 042 098 053 077	1B 2A 62 35 4D
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	027 042 114 066	1B 2A 72 42
	preferred	$^{E}_{C}$*rC	027 042 114 067	1B 2A 72 43
Raster Height	# Raster Rows	$^{E}_{C}$*r#T	027 042 114 # ... # 084	1B 2A 72 # ... # 54
Raster Width	# Pixels of the Specified Resolution	$^{E}_{C}$*r#S	027 042 114 # ... # 083	1B 2A 72 # ... # 53
THE PRINT MODEL				
Imaging				
Select Current Pattern	Solid Black (default)	$^{E}_{C}$*v0T	027 042 118 048 084	1B 2A 76 30 54
	Solid White	$^{E}_{C}$*v1T	027 042 118 049 084	1B 2A 76 31 54
	HP-defined Shading Pattern	$^{E}_{C}$*v2T	027 042 118 050 084	1B 2A 76 32 54
	HP-defined Cross-Hatched Pattern	$^{E}_{C}$*v3T	027 042 118 051 084	1B 2A 76 33 54
	User-defined pattern	$^{E}_{C}$*v4T	027 042 118 052 084	1B 2A 76 34 54
Source Transparency Mode	Transparent	$^{E}_{C}$*v0N	027 042 118 048 078	1B 2A 76 30 4E
	Opaque	$^{E}_{C}$*v1N	027 042 118 049 078	1B 2A 76 31 4E
Pattern Transparency Mode	Transparent	$^{E}_{C}$*v0O	027 042 118 048 079	1B 2A 76 30 4F
	Opaque	$^{E}_{C}$*v1O	027 042 118 049 079	1B 2A 76 31 4F

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Rectangle Dimensions				
Rectangle Width (Horizontal Size)	# of dots	$^{E}_{C}$*c#A	027 042 099 # ... # 065	1B 2A 63 # ... # 41
	# of decipoints	$^{E}_{C}$*c#H	027 042 099 # ... # 072	1B 2A 63 # ... # 48
Rectangle Height (Vertical Size)	# of dots	$^{E}_{C}$*c#B	027 042 099 # ... # 066	1B 2A 63 # ... # 42
	# of decipoints	$^{E}_{C}$*c#V	027 042 099 # ... # 086	1B 2A 63 # ... # 56
Fill Rectangular Area	Solid Black	$^{E}_{C}$*c0P	027 042 099 048 080	1B 2A 63 30 50
	Erase (solid white fill)	$^{E}_{C}$*c1P	027 042 099 049 080	1B 2A 63 31 50
	Shaded Fill	$^{E}_{C}$*c2P	027 042 099 050 080	1B 2A 63 32 50
	Cross-hatched Fill	$^{E}_{C}$*c3P	027 042 099 051 080	1B 2A 63 33 50
	User-Defined	$^{E}_{C}$*c4P	027 042 099 052 080	1B 2A 63 34 50
	Current Pattern	$^{E}_{C}$*c5P	027 042 099 053 080	1B 2A 63 35 50
Pattern ID	% of Shading or Type of Pattern or User Pattern ID	$^{E}_{C}$*c#G	027 042 099 # ... # 071	1B 2A 63 # ... # 47
Shading	2% Gray	$^{E}_{C}$*c2G	027 042 099 050 071	1B 2A 63 32 47
	10% Gray	$^{E}_{C}$*c10G	027 042 099 049 048 071	1B 2A 63 31 30 47
	15% Gray	$^{E}_{C}$*c15G	027 042 099 049 053 071	1B 2A 63 31 35 47
	30% Gray	$^{E}_{C}$*c30G	027 042 099 051 048 071	1B 2A 63 33 30 47
	45% Gray	$^{E}_{C}$*c45G	027 042 099 052 053 071	1B 2A 63 34 35 47
	70% Gray	$^{E}_{C}$*c70G	027 042 099 055 048 071	1B 2A 63 37 30 47
	90% Gray	$^{E}_{C}$*c90G	027 042 099 057 048 071	1B 2A 63 39 30 47

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
	100% Gray	$^{E}_{C}$*c100G	027 042 099 049 048 048 071	1B 2A 63 31 30 30 47
Pattern	1 Horiz. Line	$^{E}_{C}$*c1G	027 042 099 049 071	1B 2A 63 31 47
	2 Vert. Lines	$^{E}_{C}$*c2G	027 042 099 050 071	1B 2A 63 32 47
	3 Diagonal Lines	$^{E}_{C}$*c3G	027 042 099 051 071	1B 2A 63 33 47
	4 Diagonal Lines	$^{E}_{C}$*c4G	027 042 099 052 071	1B 2A 63 34 47
	5 Square Grid	$^{E}_{C}$*c5G	027 042 099 053 071	1B 2A 63 35 47
	6 Diagonal Grid	$^{E}_{C}$*c6G	027 042 099 054 071	1B 2A 63 36 47
USER-DEFINED PATTERN / MANAGEMENT CREATION				
Define Pattern	# of bytes	$^{E}_{C}$*c#W[Data]	027 042 099 # ... # 087	1B 2A 63 # ... # 57
User-Defined Pattern Control	Delete all patterns	$^{E}_{C}$*c0Q	027 042 099 048 081	1B 2A 63 30 51
	Delete all temporary patterns	$^{E}_{C}$*c1Q	027 042 099 049 081	1B 2A 63 31 51
	Delete current pattern	$^{E}_{C}$*c2Q	027 042 099 050 081	1B 2A 63 32 51
	Make pattern temporary	$^{E}_{C}$*c4Q	027 042 099 052 081	1B 2A 63 34 51
	Make pattern permanent	$^{E}_{C}$*c5Q	027 042 099 053 081	1B 2A 63 35 51
Set Pattern Reference	Rotate with orientation	$^{E}_{C}$*p0R	027 042 112 048 082	1B 2A 70 30 52
Point	Follow physical page	$^{E}_{C}$*p1R	027 042 112 049 082	1B 2A 70 31 52

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
MACROS				
Macro ID	Macro ID #	$^{E}_{C}$&f#Y	027 038 102 # ... # 089	1B 26 66 # ... # 59
Macro Control	Start Macro Def.	$^{E}_{C}$&f0X	027 038 102 048 088	1B 26 66 30 58
	Stop Macro Def.	$^{E}_{C}$&f1X	027 038 102 049 088	1B 26 66 31 58
	Execute Macro	$^{E}_{C}$&f2X	027 038 102 050 088	1B 26 66 32 58
	Call Macro	$^{E}_{C}$&f3X	027 038 102 051 088	1B 26 66 33 58
	Enable Overlay	$^{E}_{C}$&f4X	027 038 102 052 088	1B 26 66 34 58
	Disable Overlay	$^{E}_{C}$&f5X	027 038 102 053 088	1B 26 66 35 58
	Delete Macros	$^{E}_{C}$&f6X	027 038 102 054 088	1B 26 66 36 58
	Delete All Temp. Macros	$^{E}_{C}$&f7X	027 038 102 055 088	1B 26 66 37 58
	Delete Macro ID	$^{E}_{C}$&f8X	027 038 102 056 088	1B 26 66 38 58
	Make Temporary	$^{E}_{C}$&f9X	027 038 102 057 088	1B 26 66 39 58
	Make Permanent	$^{E}_{C}$&f10X	027 038 102 049 048 088	1B 26 66 31 30 58
STATUS READBACK				
Set Status Readback Location Type	Invalid Location	$^{E}_{C}$*s0T	027 042 115 048 084	1B 2A 73 30 54
	Currently Selected	$^{E}_{C}$*s1T	027 042 115 049 084	1B 2A 73 31 54
	All Locations	$^{E}_{C}$*s2T	027 042 115 050 084	1B 2A 73 32 54
	Internal	$^{E}_{C}$*s3T	027 042 115 051 084	1B 2A 73 33 54
	Downloaded	$^{E}_{C}$*s4T	027 042 115 052 084	1B 2A 73 34 54
	Cartridge	$^{E}_{C}$*s5T	027 042 115 053 084	1B 2A 73 35 54
	User-Installed ROM (SIMMs)	$^{E}_{C}$*s7T	027 042 115 055 084	1B 2A 73 37 54

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
Set Status Readback Location Unit	All entities of the Location Type	$^{E}_{C}$*s0U	027 042 115 048 085	1B 2A 73 30 55
	Entity 1 or Temporary	$^{E}_{C}$*s1U	027 042 115 049 085	1B 2A 73 31 55
	Entity 2 or Permanent	$^{E}_{C}$*s2U	027 042 115 050 085	1B 2A 73 32 55
	Entity 3	$^{E}_{C}$*s3U	027 042 115 051 085	1B 2A 73 33 55
	Entity 4	$^{E}_{C}$*s4U	027 042 115 052 085	1B 2A 73 34 55
Inquire Status Readback Entity	Font	$^{E}_{C}$*s0I	027 042 115 048 073	1B 2A 73 30 49
	Macro	$^{E}_{C}$*s1I	027 042 115 049 073	1B 2A 73 31 49
	User-defined Pattern	$^{E}_{C}$*s2I	027 042 115 050 073	1B 2A 73 32 49
	Symbol Set	$^{E}_{C}$*s3I	027 042 115 051 073	1B 2A 73 33 49
	Font Extended	$^{E}_{C}$*s4I	027 042 115 052 073	1B 2A 73 34 49
Flush All Pages	Flush All complete pages	$^{E}_{C}$&r0F	027 038 114 048 070	1B 26 72 30 46
	Flush All Page Data	$^{E}_{C}$&r1F	027 038 114 049 070	1B 26 72 31 46
Free Memory Space	—	$^{E}_{C}$*s1M	027 042 115 049 077	1B 2A 73 31 4D
Echo	# = Echo value (-32767 to 32767)	$^{E}_{C}$*s#X	027 042 115 # ... # 088	1B 2A 73 # ... # 58
PROGRAMMING HINTS				
End-Of-Line Wrap	Enabled	$^{E}_{C}$&s0C	027 038 115 048 067	1B 26 73 30 43
	Disabled	$^{E}_{C}$&s1C	027 038 115 049 067	1B 26 73 31 43
Display Functions	ON	$^{E}_{C}$Y	027 089	1B 59
	OFF	$^{E}_{C}$Z	027 090	1B 5A

Figure B.1 PCL printer commands *(continued)*

Function	Parameter	Command	Decimal Value	Hexadecimal Value
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	027 042 099 # ... # 075	1B 2A 63 # ... # 4B
HP-GL/2 Plot Vertical Size	Vertical size in inches	$^{E}_{C}$*c#L	027 042 099 # ... # 076	1B 2A 63 # ... # 4C
Set Picture Frame Anchor Point	Set anchor point to cursor position	$^{E}_{C}$*c0T	027 042 099 048 084	1B 2A 63 30 54
Picture Frame Horizontal Size	Decipoints	$^{E}_{C}$*c#X	027 042 099 # ... # 088	1B 2A 63 # ... # 58
Picture Frame Vertical Size	Decipoints	$^{E}_{C}$*c#Y	027 042 099 # ... # 089	1B 2A 63 # ... # 59

HP-GL/2 Context Printer Commands

In Figure B.2, parameters in brackets [] are optional.

Figure B.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		
Transparency Mode	TR	0 - Off (opaque) 1 - On (transparent)
Screened Vectors	SV	[screen_type[,shading[,index]]]
VECTOR GROUP		
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	x1_control_pt, y1_control_pt x2_control_pt, y2_control_pt x3_control_pt, y3_control_pt . . . [x1_control_pt, y1_control_pt x2_control_pt, y2_control_pt x3_control_pt, y3_control_pt];

Figure B.2 HP-GL/2 Context Printer Commands *(continued)*

Command	Mnemonic	Parameters
Bezier Relative	BR	x1_control_pt_increments, y1_control_pt_increments, x2_control_pt_increments, y2_control_pt_increments x3_control_pt_increments, y3_control_pt_increments . . . [x1_control_pt_increments, y1_control_pt_increments, x2_control_pt_increments, y2_control_pt_increments, x3_control_pt_increments, y3_control_pt_increments];
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		
Circle	CI	radius [,chord_angle];
Fill Rectangle Absolute	RA	x_coordinate, y_coordinate;
Fill Rectangle Relative	RR	x_increment, y_increment;
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

Figure B.2 HP-GL/2 Context Printer Commands *(continued)*

Command	Mnemonic	Parameters
CHARACTER GROUP		
Select Standard Font	SS	None
Select Alternate Font	SA	None
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];
Transparent Data	TD	[mode];
Define Variable Text Path	DV	[path [,line]];

Figure B.2 HP-GL/2 Context Printer Commands *(continued)*

Command	Mnemonic	Parameters
LINE AND FILL ATTRIBUTES GROUP		
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]; *(required, 1 for black (recommended) or 0 for white)*
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]]; *(width and height must be less than 255)*
User Defined Line Type	UL	[index [,gap1 . . . gapn]];
CONFIGURATION AND STATUS GROUP		
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];

Control Codes

Figure B.3 Control Codes

Function	Symbol	Decimal Value	Description
Backspace	B_S	8	Move one column left unless at left margin, in which case no action is taken.
Horizontal Tab	H_T	9	Move to next horizontal tab stop. The tab stops are at the left margin, and every eight columns to the right of the left margin.
Line Feed	L_F	10	Move to next print line while maintaining current column position.
Form Feed	F_F	12	Move to the first line at top of the next page while maintaining current column position.
Carriage Return	C_R	13	Move to left margin on the current print line.
Shift Out	S_O	14	Select characters that follow from the current secondary font until receipt of a Shift In.
Shift In	S_I	15	Select characters that follow from the current primary font until receipt of a Shift Out.
Escape	E_C	27	Indicates the beginning of a special control sequence (escape sequence).
Space	S_P	32	Move one column to the right unless already at the right margin, in which case no action is taken.

Appendix C

I/O Port Polling

The 4505/4505ps printers provide a parallel port, serial port, and **one** additional network interface port option, *all of which may be active at the same time*.

The 4510/4510ps printers provide a parallel port, serial port, and **three** additional network interface port options, *all of which may be active at the same time*.

To coordinate automatic switching among the ports, the printer monitors the parallel, serial, and network interface ports for incoming data. When a print job is detected on one port, the printer sends a busy signal to the other ports and queues the print job into memory for processing. This is called **port polling**. Note that while all ports may be simultaneously active, only one port at a time is able to receive a print job.

For the 4505/4505ps printers:
When print jobs are pending on all three ports (parallel, serial, and the network interface port), the port polling sequence is:

1 Parallel

2 Serial

3 Network

4 Back to Parallel

For the 4510/4510ps printers:
When print jobs are pending on all five ports (parallel, serial, and the network interface ports), the port polling sequence is:

1 Parallel

2 Serial

3 Ethernet

4 Token Ring

5 Back to Parallel

Note

LocalTalk *is not a part of this sequence. When a print job is detected on the LocalTalk port, the print job is put in the queue immediately after any current job finishes.*

Except for those on the LocalTalk interface, *print jobs are processed in the sequence in which they are received by the printer.* As soon as one print job has finished, the printer continues polling until it finds another port that has received data.

If a print job is incomplete, the printer waits until the port is inactive for the **Port Timeout** period. After that, the printer ends the incomplete job and continues polling the ports when either:

- **Auto Job End** is *On*

or

- Another print job is received on a port

Therefore, the printer does not excessively service one particular port.

You may set the **Port Timeout** period and **Auto Job End** on the Control Panel or with the RUI. For additional information on **Port Timeout** or **Auto Job End**, either see *Chapter 3: Using the Control Panel*, or refer to the *Document Services for Printing Guide*.

Appendix D

Ordering Information

Printer Options

Contact your dealer or Xerox / Rank Xerox to order any of the printer options listed in Figure D.1.

Note

4505ps and 4510ps Users:

The 4505ps and 4510ps come with these options pre-installed:

- *4 MB SIMM (for a total of 6 MB memory)*
- *PostScript card*

Figure D.1 Printer options

Option/Part No.		Description	Comments
Printer Memory (SIMM)			TO INSTALL, go to: ***Chapter 5***.
97K15280	English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)	4 MB SIMM	SIMM requirements: • 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.
97K15300	English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)	16 MB SIMM	Note: *Even though up to two 16 MB SIMMs can be installed, the printer recognizes a maximum of 16 MB.*

Figure D.1 Printer options *(continued)*

Option/Part No.	Description	Comments
PostScript 97K15510 English (Xerox) 97K19490 English (Rank Xerox) 97K19500 French 97K19510 German 97K19520 Italian 97K19290 Spanish (Xerox) 97K19530 Spanish (Rank Xerox) 97K17430 English (Xerox) 97K19790 English (Rank Xerox) 97K19800 French 97K19810 German 97K19820 Italian 97K19300 Spanish (Xerox) 97K19830 Spanish (Rank Xerox)	 4505 Adobe PostScript Level 2 language interpreter 4510 Adobe PostScript Level 2 language interpreter	TO INSTALL, go to: ***Installation instructions packaged with the option***. A minimum of 6 MB of memory is required, comprised of 2 MB resident base memory plus one 4 MB SIMM purchased separately. (See *Printer Memory* option, above.)
Font Cards Contact Xerox / Rank Xerox English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)		TO INSTALL, go to: ***Chapter 5***. For PCL5e only.

Figure D.1 Printer options *(continued)*

Option/Part No.	Description	Comments
Network Interfaces		TO INSTALL, go to: ***Installation instructions packaged with the option***.
97K15330 English (Xerox) 97K19610 English (Rank Xerox) 97K19620 French 97K19630 German 97K19640 Italian 97K19270 Spanish (Xerox) 97K19650 Spanish (Rank Xerox)	Ethernet card *(with BNC and RJ-45 connectors)*	**Ethernet** card includes protocols: Novell NetWare, TCP/IP, EtherTalk, DEC LAT, and LAN Manager. **Token Ring** card includes protocols: Novell NetWare and LAN Manager. **Novell** systems require Print Server v1.2 and above, in the form of: • PSERVER.VAP for v2.x NetWare file servers • PSERVER.NLM for v3.x NetWare file servers • PSERVER.EXE for a stand-alone PC-based print server **UNIX TCP/IP** systems require: • Support for lpd or rprint (Xerox-supplied) • Clients must support TCP/IP, TELNET, and UDP • Optional load hosts require TFTP or RARP protocols **EtherTalk** systems require AppleTalk Phase 2. **DEC LAT** systems require that clients support the LAT protocol under the VAX/VMS or ULTRIX-32 operating systems. **LAN Manager** systems require: • OS/2 version 1.30 or above • Microsoft's LAN Manager version 2.1 and above • TCP/IP on the LAN Manager server
97K15320 English (Xerox) 97K19550 English (Rank Xerox) 97K19560 French 97K19570 German 97K19580 Italian 97K19260 Spanish (Xerox) 97K19590 Spanish (Rank Xerox)	LocalTalk card *(with a DIN-8 connector)*	
97K15340 English (Xerox) 97K19670 English (Rank Xerox) 97K19680 French 97K19690 German 97K19700 Italian 97K19280 Spanish (Xerox) 97K19710 Spanish (Rank Xerox)	Token Ring card *(with RJ-45 and female DE-9 connectors)*	

Figure D.1 Printer options *(continued)*

Option/Part No.		Description	Comments
PAPER HANDLING OPTIONS		*(For paper sizes, refer to the* Chapter 2: Handling Paper*.)*	
Paper Trays			TO INSTALL, go to: ***Chapter 2***.
109R00029	English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)	250-sheet Universal Tray†	Adjustable to: • A4 • 8.5 x 11 (Letter) • A5 • Executive • A4 Transparency or Label • 8.5 x 11 (Letter) Transparency or Label
109R00031	English (Xerox) Spanish (Xerox)	250-sheet 8.5 x 14 (Legal) Tray†	Adjustable to: • 8.5 x 11 (Letter) • 8.5 x 13 (Folio) • 8.5 x 14 (Legal)
109R00026	English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)	30-Envelope Tray†	Adjustable to: • COM-10 • Monarch • DL • C5
109R00024	English (Xerox) Spanish (Xerox)	500-sheet 8.5 x 11 (Letter) Tray‡	8.5 x 11 (Letter)
109R00030	English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)	500-sheet A4 Tray‡	A4

Figure D.1 Printer options *(continued)*

Option/Part No.	Description	Comments
Lower Base		TO INSTALL, go to: ***Installation instructions packaged with the option***.
97K19160 English (Xerox) 109R00105 English (Rank Xerox) 109R00106 French 109R00107 German 109R00108 Italian 97K19330 Spanish (Xerox) 109R00109 Spanish (Rank Xerox)	250-sheet Base with Universal Tray	The base attaches to the bottom of the 4505/4505ps and 4510/4510ps.
109R00111 English (Rank Xerox) 109R00112 French 109R00113 German 109R00114 Italian 109R00115 Spanish (Rank Xerox)	500-sheet Base with A4 Tray	The base attaches to the bottom of the 4505/4505ps and 4510/4510ps.
97K19170 English (Xerox) 97K19340 Spanish (Xerox)	500-sheet Base with 8.5 x 11 (Letter) Tray	The base attaches to the bottom of the 4505/4505ps and 4510/4510ps.

†Trays fit in either the 250-sheet Base or the Standard paper source.
‡Trays fit in only the 500-sheet Base.

Additional Order Items

Figure D.2 shows additional items for the 4505/4505ps or 4510/4510ps you may order from your dealer or Xerox / Rank Xerox.

Figure D.2 Additional order items

Type/Part No.	Description	Comments
EP Cartridge 113R5 English (Xerox) English (Rank Xerox) French German Italian Spanish (Xerox) Spanish (Rank Xerox)		See *Chapter 6: Maintaining the Printer* for installation instructions.
Cables		See *Appendix A: Printer and Cable Specifications* for cable information.

Figure D.2 Additional order items *(continued)*

Type/Part No.	Description	Comments
Software Diskettes		For more information on Xerox software drivers and utilities for the printer, refer to the *Document Services for Printing Guide*.
300E62150 English (Xerox) 300E62150 English (Rank Xerox) 300E62360 French 300E62210 German 300E62460 Italian 300E62410 Spanish (Xerox) 300E62410 Spanish (Rank Xerox)	DS/P Windows 3.1 PCL5e printer drivers diskette	
300E62140 English (Xerox) 300E62140 English (Rank Xerox) 300E62350 French 300E62200 German 300E62450 Italian 300E62400 Spanish (Xerox) 300E62400 Spanish (Rank Xerox)	DOS printer drivers diskette	
300E62160 English (Xerox) 300E62160 English (Rank Xerox) 300E62370 French 300E62220 German 300E62470 Italian 300E62420 Spanish (Xerox) 300E62420 Spanish (Rank Xerox)	DS/P SETUP and RUI diskette	
300E62180 English (Xerox) 300E62180 English (Rank Xerox) 300E62390 French 300E62340 German 300E62490 Italian 300E62440 Spanish (Xerox) 300E62440 Spanish (Rank Xerox)	Xerox TrueType Screen Font Pack diskette	
300E62250 English (Xerox) 300E62250 English (Rank Xerox) 300E62580 French 300E62550 German 300E62640 Italian 300E62610 Spanish (Xerox) 300E62610 Spanish (Rank Xerox)	DS/P Service Coordinator (NLM) diskette, and DS/P SMS diskette	

Figure D.2 Additional order items *(continued)*

Type/Part No.	Description	Comments
Software Diskettes *(continued)*		For more information on Xerox software drivers and utilities for the printer, refer to the *Document Services for Printing Guide*.
300K39990 English (Xerox) 300K39990 English (Rank Xerox) 300K40110 French 300K40000 German 300K40070 Italian 300K40060 Spanish (Xerox) 300K40060 Spanish (Rank Xerox)	Disk Kit, containing all of the above	
300K30151 English (Xerox) 300K30151 English (Rank Xerox) 300K40100 French 300K40090 German 300K40120 Italian 300K40110 Spanish (Xerox) 300K40110 Spanish (Rank Xerox)	Macintosh PostScript printer driver diskette	
300E62240 English (Xerox) 300E62240 English (Rank Xerox) 300E62710 French 300E62700 German 300E62730 Italian 300E62720 Spanish (Xerox) 300E62720 Spanish (Rank Xerox)	Windows PostScript printer drivers diskette	
300E62260 English (Xerox) 300E62260 English (Rank Xerox)	XNIC software DOS distribution diskette	
300E62270 English (Xerox) 300E62270 English (Rank Xerox)	XNIC software UNIX distribution diskette	
300E64510 English (Xerox) 300E64510 English (Rank Xerox)	XNIC software Lan Manager distribution diskette	

Figure D.2 Additional order items *(continued)*

Type/Part No.	Description	Comments
User Documentation		
720P53350 English (Xerox) 720P53350 English (Rank Xerox) 720P55350 French 720P54350 German 720P57350 Italian 720P56350 Spanish (Xerox) 720P56350 Spanish (Rank Xerox)	Quick Reference	
720P53020 English (Xerox) 721P53020 English (Rank Xerox) 720P55020 French 720P54020 German 720P57020 Italian 720P56020 Spanish (Xerox) 721P56020 Spanish (Rank Xerox)	Setting Up Guide	
720P53030 English (Xerox) 721P53030 English (Rank Xerox) 720P55030 French 720P54030 German 720P57030 Italian 720P56030 Spanish (Xerox) 721P56030 Spanish (Rank Xerox)	User's Guide	
720P53040 English (Xerox) 721P53040 English (Rank Xerox) 720P55040 French 720P54040 German 720P57040 Italian 720P56040 Spanish (Xerox) 721P56040 Spanish (Rank Xerox)	Document Services for Printing Guide	
720S53130 English (Xerox) 721S53130 English (Rank Xerox) 720S55130 French 720S54130 German 720S57130 Italian 720S56130 Spanish (Xerox) 721S56130 Spanish (Rank Xerox)	Document kit, containing the four preceding documents	

Figure D.2 Additional order items *(continued)*

Type/Part No.	Description	Comments
User Documentation *(continued)*		
720P53070 English (Xerox) 721P53070 English (Rank Xerox) 720P55070 French 720P54070 German 720P57070 Italian 720P56070 Spanish (Xerox) 721P56070 Spanish (Rank Xerox)	Lower Base Installation Instructions	
720P53180 English (Xerox) 721P53180 English (Rank Xerox) 720P55180 French 720P54180 German 720P57180 Italian 720P56180 Spanish (Xerox) 721P56180 Spanish (Rank Xerox)	Networking: Ethernet (XNIC-E'NET) Installation and Configuration Guide	
720P53200 English (Xerox) 721P53200 English (Rank Xerox) 720P55200 French 720P54200 German 720P57200 Italian 720P56200 Spanish (Xerox) 721P56200 Spanish (Rank Xerox)	Networking: LocalTalk (XNIC-L'TALK) Installation and Configuration Guide	
720P53190 English (Xerox) 721P53190 English (Rank Xerox) 720P55190 French 720P54190 German 720P57190 Italian 720P56190 Spanish (Xerox) 721P56190 Spanish (Rank Xerox)	Networking: Token Ring (XNIC-T'RING) Installation and Configuration Guide	
720P53210 English (Xerox) 721P53210 English (Rank Xerox) 720P55210 French 720P54210 German 720P57210 Italian 720P56210 Spanish (Xerox) 721P56210 Spanish (Rank Xerox)	PostScript Installation Instructions	

Appendix E

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 print cartridges to Xerox. We recondition the print cartridges and refill them with Xerox toner and developer. All products we manufacture meet our stringent performance standards and are backed by the same Total Satisfaction Guarantee we offer with our newly manufactured products.

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

Acoustic Noise Figures (maximums)

	4505/4505ps	**4510/4510ps**
Printing:	45.0 dB	50.0 dB
Warm-up:	45.0 dB	50.0 dB
Standby:	40.0 dB	40.0 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.

VDE Compliance Statement for International Users

Canadian EME Regulations:
This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Cet appareil numérique est conforme aux limites d'émission de bruits radioélectriques pour les appareils de Classe B stipulées dans le Réglement sur le brouillage radioélectrique du Ministere des Communications du Canada.

For Rank Xerox: This laser printer meets the requirements of EN5022 Class B.

European EME Regulations:
This equipment has been tested and determined to be compliant with VDE requirements for a Class B device.

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 locate 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 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 performance 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 you perform 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 met 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 specficerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

Glossary

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.

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.

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 emulation See Language Sensing.

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).

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.

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.

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.

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.

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.

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.

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.

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.

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/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.

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.

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.

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."

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.

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.

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.)

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.

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

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.

Queue See Print Queue.

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.

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.

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 Inline 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.

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.

String See Data String.

Supervisor See NetWare Supervisor.

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.

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.

Valid printer name A printer name that does not begin with the letters “DSP” and that terminates with the characters “_1”.

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.)

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