XEROX

Xerox 4050/4090/4450/4650
Laser Printing Systems
Operator Guide

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Notices

Laser safety

The Xerox 4050/4090/4450/4650 Laser Printing Systems (LPS) are certified to comply with laser performance standards set by the U.S. Department of Health, Education, and Welfare and by IEC 825 for non-U.S. markets as a Class 1 laser product. This is a class of laser products that does not emit hazardous radiation. This is possible only because the laser beam is inaccessible during all modes of customer operation.

WARNING: Use of controls or adjustments, or performances other than specified herein, may result in hazardous radiation exposure.

Operational safety

Your Xerox equipment and supplies are designed and tested to meet strict safety requirements. These requirements include safety agency examination, approval, and compliance with established environmental standards. Attention to the following notes ensures the continued safe operation of your equipment.

U.S. only: If you need any additional safety information concerning the equipment or if you need Xerox-supplied materials, call the following toll-free number: 1-800-828-6571.

Always:

- Connect 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.

- Place equipment on a solid support surface with adequate strength for the weight of the machine.

- Use materials and supplies designed specifically for your Xerox equipment.

  WARNING: Use of unsuitable materials may result in poor performance and can possibly create a hazardous condition.

Never:

- Move or relocate the printer or the system controller without first contacting Xerox for approval.

- Use a ground adaptor plug to connect equipment to a power resource receptacle that lacks a ground connection terminal.

- Attempt any maintenance function that is not specifically described in this guide.
- Remove any covers or guards that are fastened with screws. There are no operator-serviceable areas within these covers.
- Override or “cheat” electrical or mechanical interlock devices.
- Use supplies or cleaning materials for other than their intended purposes.
- Operate the equipment if unusual noises or odors are noticed. Disconnect the power cord from the power source receptacle and call your Xerox service representative to correct the problem.

Ozone information

This product produces ozone during normal operation. The ozone produced is dependent on copy volume and is heavier than air. Providing the proper environmental parameters as specified in the Xerox installation intructions ensures that concentration levels meet safe levels.

U.S. only: If you need additional ozone information, request the Xerox publication, *Ozone,* by calling Xerox Product Safety at the following toll-free number: 1-800-828-6571.

Radio communication

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules, for U.S. markets, and with the EEC 82/449 standard for VDE 08791 Class A device, for non-U.S. markets. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

CAUTION: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this guide, may cause harmful interference to radio communications. Operation of this equipment in a residental area is likely to cause harmful interference that users are required to correct at their own expense.

Table of contents

Introduction

The *Xerox 4050/4090/4450/4650 Laser Printing Systems Operator Guide* provides step-by-step instructions on operating and caring for your Xerox 4050/4090/4450/4650 Laser Printing System (LPS). It is designed as a reference tool to help you with printer setup, all facets of printing, maintenance, and other general tasks that are part of an operator's job; therefore, it should be kept near the printer and readily available.

Refer to the *Xerox 4450 Mid-Range Printer Product Reference* for information specific to the 4450 mid-range printer.

This reference is intended for users who have some experience using Xerox laser printing systems.

Document conventions

This reference uses the following conventions:

BOLD BLUE	Uppercase bold blue text indicates required characters, values, or keywords.
...	Ellipses indicate that you can repeat a parameter or option, or list a series of parameters or options.
bold	Bold is used for emphasis. Bolded characters also indicate user input.
black italics	Lowercase black italics are used for variable information.
`TERMINAL FONT`	Terminal or monospace font is used to represent text that displays on the system screen.
	The carat character represents a required space.
UPPERCASE	Uppercase letters are used for command names.
Enter	The word “enter” indicates that you type the requested user input, then press the Return key.
	CAUTION: Cautions alert you to an action that could damage hardware or software.
	WARNING: Warning alert you to conditions that may affect the safety of people.

Related publications

You can find additional information related to the Xerox 4050/4090/4450/4650 LPS in the following publications.

Publication	Number
Xerox 4050/4090/4450/4650 LPS Master Index	720P94030
Xerox 4050/4090/4450/4650 LPS Product Reference	720P94060
Xerox 4050/4090/4450/4650 LPS Bypass Transport Instructions, V3.5/3.8	720P22320
Xerox 4050/4090/4450/4650 LPS Bypass Transport Operator Training Guide Flipcharts Supplement	720P22340
Xerox 4050/4090/4450/4650 LPS Bypass Transport Operator Training Guide Supplement	720P22330
Xerox 4050/4090/4450/4650 LPS System Administration Guide	720P94010
Xerox 4050/4090/4450/4650 LPS Installation Planning	720P92990
Xerox 4050/4090/4450/4650 LPS Operator Command Summary	720P93050
Xerox 4050/4090/4450/4650 LPS Command Reference	720P94020
Xerox 4050/4090/4450/4650 LPS Operator Training Guide	720P22070
Xerox 4050/4090/4450/4650 LPS Operator Training Guide Flipcharts	720P22080
Xerox 4050/4090/4450/4650 LPS Print Description Language (PDL) Reference	720P94090
Xerox 4050/4090/4450/4650 LPS System Administration Quick Reference Card	720P93090
Xerox 4050/4090/4450/4650 LPS Forms Creation Guide	720P93990
Xerox 4050/4090/4450/4650 LPS Forms Creation Quick Reference Card	720P93100
Xerox 4050/4090/4450/4650 LPS Message Guide	720P93020
Xerox 4050/4090/4450/4650 LPS Print Description Language (PDL) Quick Reference Card	720P93090
Xerox Dynamic Document Interface Command Summary	720P13680
Xerox Dynamic Document Interface Operator Guide	720P13670

Printing color jobs

If your 4050/4090/4450/4650 LPS runs software version V3.8 or XDDI, print jobs you create with color commands print in black and shades of gray. Remember the following when printing color jobs on your LPS:

- You must recompile forms that use color commands.
- You must print the job you created with color commands to verify that the colors meet your requirements. Applications build color sets differently, resulting in color variation on the LPS. If the print job does not meet your color specifications, adjust your color command selection, and retry the print job.
- If your color print job calls for a solid color to print on a black background, the LPS prints the entire job as solid black.

1. Overview

This chapter describes the standard and optional components of the Xerox 4050/4090/4650 Laser Printing Systems (LPS), as well as the tasks you will perform in your function as operator.

Primary operator tasks

Table 1-1 provides an overview of the major tasks you perform as printer operator and describes how these tasks fit into the process of printing a job on the 4050/4090/4450/4650 LPS.

Table 1-1. **Operator task flow overview**

Tasks	Procedure	Chapter and section
Set up the system	1. Power on the system.	2 "Powering up the LPS"
Set up print job source		
Offline jobs	1. Load the job tape.	3 "Loading a 9-track tape" 3 "Loading an 18-track cartridge tape"
	2. Place the appropriate tape drive online.	3 "Placing a tape online"
Online jobs	1. Establish communication with the host:	
	Channel-attached host: Place the LPS online.	3 "Communicating with the channel-attached host"
	Network environment: Start HIP.	3 "Communicating through the host interface processor"
Run the print job	1. Set up feeder tray.	4 "Setting up feeder trays"
	2. Set up output trays.	4 "Setting up output bins"
	3. — Allow the job to be queued.	4 "Managing print jobs"
	— Cancel the job.	4 "Managing print jobs"

Table 1-1. **Operator task flow overview** (continued)

Tasks	Procedure	Chapter and section
	4. Print a sample, if desired:	4. "Printing samples"
	— Change paper size if necessary.	5. "Changing paper size"
	— Change form alignment if necessary.	5. "Adjusting form alignment"
	5. Start the job.	4. "Starting a print job"
	6. Check job and queue status.	4. "Checking job and printer status"
	7. Manage print jobs and queues.	4. "Managing print jobs"
Maintain print jobs	• Add paper.	5. "Loading feeder trays"
(perform if requested by the controller)	• Add dry ink.	5. "Adding dry ink"
	• Remove output from the output bin.	5. "Unloading output trays"
	• Add stitcher wire.	5. "Adding stitcher wire"
Maintain the printer	• Various tasks:	6. "Printer maintenance"
(perform at periodic intervals)	— Clean tape and disk drives. — Copy and back up files. — Reset the date and time.	

LPS features

The Xerox 4050, 4090, 4450, and 4650 Laser Printing Systems are versatile, high-performance printing systems. They enable host mainframe computers and network-connected devices (such as workstations and graphic scanners) to produce documents incorporating graphics, forms, logos, signatures, and fonts. Available fonts range in size from 4 points to 24 points, in all four orientations (portrait, inverse portrait, landscape, inverse landscape) and many publishing typefaces to meet your printing requirements. In addition to the standard set of fonts that is delivered with the LPS, Xerox Font Services can develop custom fonts.

With the 4050, 4090, 4450, and 4650, management information systems and data processing environments have a high-performance printer in which built-in intelligence eliminates the need for the host computer to store and manage document resources.

4050 LPS

The 4050 prints at a rate of up to 50 pages per minute with a resolution of 300 dots per inch (dpi). Two 50 MB system disks come standard on your 4050, with expansion available of up to 200 MB. It has 8 MB of standard font memory, which is expandable to 16 MB.

Systems with an HPSCSI board and running XDDI software can support a shared disk, which can send jobs through a front end host. This feature allows the host to send PostScript, PCL5, LCDS, and text files at high speed to the printer through an HPSCSI adapter.

4090 LPS

The 4090 prints at a rate of up to 92 pages per minute with a resolution of 300 dpi. Systems running software version 3.5 have two standard 170 MB system disks. Two additional 170 MB disks or 380 MB disks are available, for expansion of up to 1,100 MB. Systems running software version 3.8 come standard with either two 170 MB or two 182 MB system disks, with optional expansion of up to 1,124 MB. Your 4090 has 64 megabits of font memory, which is expandable to 128 megabits.

Systems with an HPSCSI board and running XDDI software can support a shared disk, which can send jobs through a front end host. This feature allows the host to send PostScript, PCL5, LCDS, and text files at high speed to the printer through an HPSCSI adapter.

4650 LPS

The 4650 prints at a rate up to 50 pages per minute with a resolution of 600 dpi. The 4650 accepts both 300 dpi and 600 dpi jobs. Systems running version 3.5 software come with two standard 170 MB system disks. Two additional 170 MB disks or 380 MB disks are available, for expansion of up to 1,100 MB. Systems running software version 3.8 come with either two 170 MB or two 182 MB standard system disks, with optional expansion of up to 1,124 MB. Your 4090 has 64 megabits of font memory, which is expandable to 128 megabits.

4450 LPS

Refer to the *Xerox 4450 Mid-Range Printer Product Reference* for information specific to the 4450 mid-range printer.

System components

The 4050/4090/4450/4650 LPS consist of two base components shown in figure 1-1. Your system may also have optional components. This section helps you identify both the standard and optional components in your system.

Figure 1-1. **LPS base components**

1 System controller
2 Printer

System controller

You interact with the system through the components of the system controller shown in figure 1-2. The system controller also contains the central processing unit and the system disks.

The configuration of the 4050 LPS system controller is slightly different than the 4090/4650 system controller. When viewed from the front, the terminal sits on top of the left side of the 4050 system controller, and on top of the right side of the 4090/4650 system controller. Figure 1-2 shows the 4090/4650 system controller.

Figure 1-2. **System controller**

1 Terminal
2 System controller panel
3 Diskette drive

The system controller panel shown in figure 1-3 contains important controls for operating the printer.

Figure 1-3. **System controller panel**

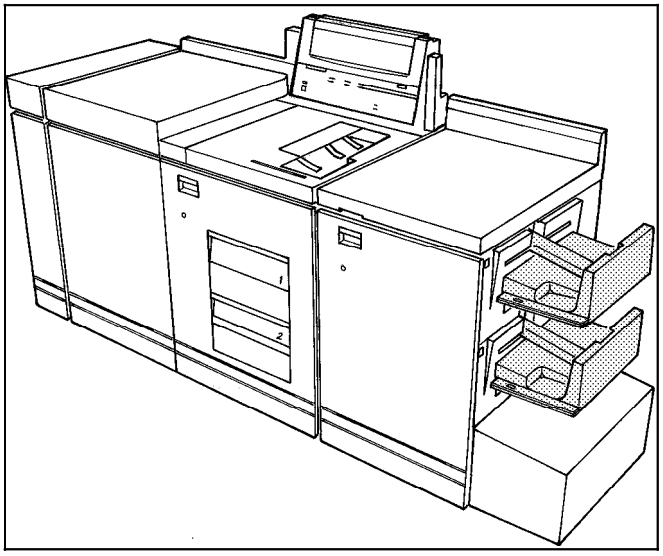
Optional components

There are several hardware options available for your LPS to increase productivity. This section presents each option.

Printer

The printer has two stacker options: the dual stacker shown in figure 1-4 and the stitcher/stacker shown in figure 1-5.

Figure 1-4. **Printer with the dual stacker option**



The dual stacker offers a choice of two separate output trays. The stitcher/stacker offers the ability to staple sets.

Figure 1-5. **Printer with the stitcher/stacker option**

Both stacker options also provide a sample tray for additional limited output. The sample tray receives sample prints, rejected pages, and transparencies.

The printer has two feed trays, shown in figure 1-5. Your LPS may also have an optional high-capacity feeder, which adds two feed trays to your system for a total of four feeder trays.

The printer control console shown in figure 1-6 displays important messages, attention signals, and information about the setup of your system. The printer control console also contains a graphic mimic of the system for finding the location of paper jams.

Figure 1-6. **Printer control console**

1. **Message display**
2. **Graphic display**
3. **Information button**
4. **Print quantity display**
5. **Stop button**
6. **Continue button**
7. **Wire percentage indicator**
8. **Feeder tray indicators**
9. **Sample button**
10. **Power on/off switch**

Message display: Shows printer status and simple operating and maintenance instructions.

Graphic display: Shows the area of the printer that requires attention.

Information button: Press this button for information when *i* is displayed on the message display. While *i* continues to display, you can receive further information by pressing the button.

Print quantity display: Displays the number of prints completed. Printer fault messages (such as L152) display here as well.

Stop button: Pressing this button halts printing.

Continue button: Pressing this button resumes printing.

Wire Percentage indicator: Displays the amount of stitcher wire remaining on the spool (stitcher/stacker output module configurations only).

Feeder Tray indicators: Indicates the feeder trays selected and the paper size loaded.

Sample button: Pressing this button causes the printer to deliver a print sample to the sample tray of the next image waiting in the queue.

Power on/off switch: This switch is for Service personnel only for switching the printer module power off and on.

System controller options

This section provides an overview of the optional tape drives your system may have.

9-track reel-to-reel magnetic tape drive

The 9-track magnetic tape drive can be added to the system controller as an alternative to online operation. The drive uses 9-track 1,600 bits per inch (bpi) phase encoded (PE) and 6,250 bpi group code recording (GCR) encoded magnetic tapes.

Figure 1-7. **9-track reel-to-reel magnetic tape unit**

9-track magnetic tape drive

18-track cartridge tape system (180 CTS)

The 18-track cartridge tape system (180 CTS) offers alternative or additional offline capability for inputting print and nonprint data to the LPS. It reads and writes IBM- and ANSI-compatible 1/2-inch/13 mm tape in the 18-track IBM 3480 data format.

Figure 1-8. **18-track cartridge tape system**

1 Single transport configuration
2 Dual transport configuration

1/4-inch cartridge tape drive

The 1/4-inch cartridge (QIC) tape drive is also mounted within the system controller cabinet. This unit provides an alternative source for loading and backing up user files and loading or unloading fonts to the system disks.

The capacity of the 1/4-inch cartridge tape drive is either 320 MB or 525 MB, depending on the choice of DC6320 or DC6525 tape cartridges. Both tapes are 1/4-inch cartridge ANSI compatible, and they can be used interchangeably without hardware or software recognition.

High-capacity feeder

The high-capacity feeder (HCF) is an option that can be added to your printer. This option increases efficiency and allows you to use specialized applications. The LPS base configuration includes two feeder trays (feeder trays 1 and 2). The HCF option provides two additional feeder trays (feeder trays 3 and 4), increasing the feeder capacity by approximately 2,000 sheets.

Figure 1-9. **LPS with high-capacity feeder**

1 HCF
2 Feeder tray 3
3 Feeder tray 4

Bypass transport

The bypass transport option enables third-party finishing equipment to connect to your LPS. For more information about the bypass transport, refer to the *Xerox 4050/4090/4450/4650 LPS Bypass Transport Instructions.*

Figure 1-10. **Printer with bypass transport**

Print job sources

Your LPS can process print jobs from a variety of sources. Print job sources can be divided into two main categories: online and offline. Your LPS may have either one or both connection types.

The shared disk option on the 4090/4050 is realized through an HPSCSI adapter which can be installed inside the system controller. This adapter allows the printer to receive PostScript,

PCL5, LCDS, and text format files from the front end adapter at high speed.

To process online jobs through a network connection or through a direct channel connection, your system is equipped with an interface appropriate for the connection. The interface is mounted inside the system controller cabinet. If you are unsure of the interfaces installed in your system, consult your system administrator.

Offline jobs are run from data stored on magnetic tape. You use one or both of the tape drives discussed previously in this chapter to process offline jobs with your LPS.

Basic system functions

You use special function keys and command syntax to operate the LPS.

Function keys

<ALT> Activates the extended (alternate) characters in the green keyboard. You must hold down the key.

<BACKSPACE> Deletes the character to the left of the cursor.

<CAP LOCK> Makes all characters you enter uppercase (all caps). This key toggles on and off.

<CLEAR SCREEN> Clears all data from the screen and the display memory. The cursor returns to column 1, line 1, in the upper-left corner of the screen.

<CON> Resumes (continues) processing.

<CTRL><E> Deletes the character highlighted by the cursor.

<CTRL><X> Deletes the current line.

<CTRL><Z> Clears all data from the screen and the display memory. The cursor returns to column 1, line 1, in the upper-left corner of the screen.

<DELETE> Deletes the character to the left of the cursor.

<ENTER> Executes commands entered at the command line.

<HOME> Moves the cursor to the beginning of the current line.

<JOB STATUS> Displays status information about the print job. There can be a delay of a few seconds before the status displays.

<LEFT ARROW>	Moves the cursor left one space.
<LINE DELETE>	Deletes the current line.
<PRINTER STATUS>	Displays printer status information. There can be a delay of a few seconds before the status displays.
<RIGHT ARROW>	Moves the cursor right one space.
<SAMPLE>	Sends a sample of the next page to be printed to the sample tray. Does not interrupt printing.
<SHIFT>	Activates the symbols on the upper portion of the numeric keys, such as punctuation and special characters.
<SPACE BAR>	Inserts a space at the cursor position.
<STOP>	Halts processing temporarily.
<TAB>	Moves the cursor eight spaces to the right.

Commands

You enter commands at the command line of the system controller. The LPS accepts your commands whenever the following prompt displays:

```
READY FOR COMMANDS
```

For a command to be recognized by the system, you must do the following:

1. Enter the command in the format specified by the system.
2. Press <ENTER> to execute.

If you make an error entering a command, the system displays the following message:

```
OS2710 Invalid command. Re-enter.
```

1. Verify the command syntax:
   - — Keyword is correct
   - — All required parameters are included
   - — Parameters are correct
   - — Parameter values are valid
   - — Commas are in place for all parameters skipped.
2. Enter the command again.

Commands are not case-sensitive. You can enter them using lowercase, uppercase, or a combination of the two.

The command syntax is made up of the following two elements:

- Keywords
- Parameters.

Keywords

All commands begin with a keyword. This word sends a specific instruction to the system (for example, SAMPLE).

You can enter keywords in any of the following ways:

- Full spelling (for example, SAMPLE)
- Abbreviation (for example, SAM)
- Three or more characters, up to the full command (for example, REALLOC for REALLOCATE).

A few commands begin with more than one keyword (for example, PQA STA). Exceptions to this are I, O, A (for INPUT, OUTPUT, and ALL) and Q for QUEUE.

Other exceptions to keywords are words for CARTRIDGE and TAPE. CAR and TAP are reserved and cannot be used as file names.

Parameters

Most parameters are optional. You use them to refine commands. For example, the "I" in STOP I specifies input processing. Likewise, the "O" in STOP O specifies output processing.

If you use more than one parameter, follow these guidelines:

- Separate each parameter with a comma (for example, PQA CONTINUE,2,S).
- Do not include spaces around the commas.
- Enter parameters in the order specified for that command.

If you want to omit a parameter, you must enter a comma in its place (for example, PQA CONTINUE,,S). The default value set for the omitted parameter is then used.

For more information about commands, refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*.

2. Setting up the LPS

This chapter describes the procedures for powering up and logging onto the system.

Powering up the LPS

Follow this procedure to power up the system.

1. Select local or remote control of the system.

   Press the Local button on the system controller panel to use the internal power supply, or press the Remote button to use a remote power supply. Contact your system administrator if you are not sure what power supply to use.

2. Press the System Power On button.

   Either the Local status indicator or the Remote status indicator lights show the power supply you selected (refer to step 1).

   The Power On indicator lights.

   A cursor appears on the system controller display for about 15 seconds while the system completes its initial diagnostic tests, then READY $ appears on the display. There may be a delay of up to 80 seconds before the $ appears.

3. Boot the operating system software.

   Your system may be set up to boot automatically after powering on. This control is set by the system administrator. In this case, you do not need to boot the operating system software.

   If your system does not boot automatically, enter <B> at the system controller keyboard.

When the booting process is complete, the system controller displays the following messages:

```
                              XEROX 4090
                         LASER PRINTING SYSTEM
                        Version V4 Revision X.X
Copyright 1991, 1992, 1993,1994 Xerox Corporation.  All rights reserved.
              Disk ID = system name JAN 3, 1994  15:06:16
```

When initialization is complete, the system displays the ready message:

```
OS1000 READY FOR COMMANDS
```

4. Log on to the system.

   Logging on to security level 1 is automatic. This security level is usually appropriate for an operator. However, if you want to enter the SETTIME command, you must log on to security level 2.

   To log on to level 2, enter the LOGON command:

   LOGON 2 [,*password*]

   Your system administrator must provide you with the password for security level 2. For more information about logging on, refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*.

   After powering on, allow four to seven minutes for the printer to warm up. When the printer is ready, you hear a tone, and the system displays the following message on the printer control console:

   ```
   READY--JOB START WILL BE DELAYED 20-40 SECONDS FOR PRINT
   QUALITY ADJUSTMENT
   ```

3. Setting up print job sources

You can transmit print jobs to the system from one of four sources:

- From a magnetic tape. This is known as an offline job source. The system supports 18-track cartridge tape, 9-track (1600/6250 bpi) 1/2-inch and 1/4-inch cartridge tape, and 9-track magnetic tape formats to print offline jobs:
  - — Mount the tape on the appropriate tape drive. Refer to the "9-track magnetic tapes" or "18-track cartridge tapes" section in this chapter.
  - — Establish communication between that tape drive and the controller. Refer to the "Receiving offline jobs" section in this chapter.
- From a channel-attached host computer. This is known as an online job source. Refer to the "Communicating with the channel-attached host" section in this chapter.
- From a network connection through the host interface processor. This is also an online job source. Refer to the "Communicating through the host interface processor" section in this chapter.
- From a front end host (such as a Sun SPARCstation 10) and Entire® APPLICATION software using the shared disk option to print files.

9-track magnetic tapes

Improper handling of 9-track tapes can cause damage to tapes and to tape drives, which can result in unreadable data. Observe the following guidelines when handling 9-track tapes:

- Do not allow dust, dirt, or smoke to come in contact with the tapes, tape storage area, or tape drives.
- Do not touch the tape beyond the first few feet on the reel.
- Do not place tapes near electric motors or other devices that generate electromagnetic energy.
- Do not pull on the tape at the end of a reel. Wind tape off the supply reel by turning the reel at the hub.
- Make sure that the components of a tape drive are clean and dry before mounting the tape.
- Store tapes vertically in racks in a clean, climate-controlled environment. If the temperature or humidity of the tape storage environment differs from the printer environment, condition tapes for 24 hours in the printer environment before using them.

Write protection of 9-track magnetic tapes

Write protected 9-track magnetic tapes have a removable write-enable ring that fits into the inside of the reel, as shown in figure 3-1. Removing the write-enable ring prevents the system from writing data onto the tape. This protects the data on the tape from accidental erasure.

Figure 3-1. **9-track magnetic tape write protection**

In most cases, you do not need to write data to a tape when running print jobs, so it is not necessary to have the write-enable ring installed.

18-track cartridge tapes

Improper handling of cartridge tapes can cause damage to tapes and to tape drives, which can result in unreadable data. Observe the following guidelines when handling cartridge tapes:

- Inspect each cartridge for obvious damage before inserting it into the cartridge tape drive.
- Always remove cartridges from the tape drive before powering off the drive.
- Store cartridges vertically in racks in a clean, climate-controlled environment. If the temperature or humidity of the tape storage environment differs from the printer environment, condition the cartridges for 24 hours in the printer environment before using them.
- Never attempt to open the cartridge, remove the tape from the cartridge, or force open the feed slot door.
- Do not expose the cartridges to extreme heat, humidity, or direct sunlight.
- Do not place tapes near electric motors or other devices that generate electromagnetic energy.
- Do not attempt to clean a cartridge with anything other than a dry, lint-free cloth.
- If the leader block comes off a cartridge tape, repair the cartridge using a leader block repair kit before loading it.
- Do not attempt to insert a cartridge if its label is peeling off. Peel the old label completely off and replace it with another label.

- Do not write on a tape cartridge label while it is on the cartridge. If you want to change a label, write a new label, remove the old label, and replace it with the new label.

Write protection of cartridge tapes

An 18-track cartridge tape has a thumbwheel on the side of the cartridge for write protection, as shown in figure 3-2. Write protection prevents the system from writing data onto the tape. This protects the data on the tape from accidental erasure.

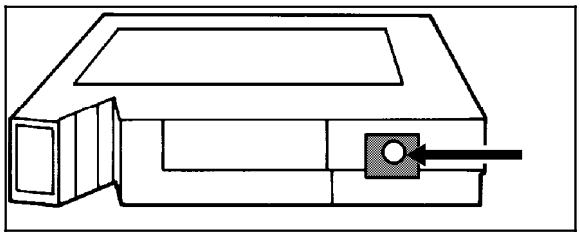


Figure 3-2. **18-track cartridge tape write protection**

To enable write protection (prevent data from being erased), turn the thumbwheel so that the white dot is showing in the window.

To disable write protection (allow data to be written to the tape), turn the thumbwheel so that the white dot is not showing in the window.

In most cases, you do not need to write data to a tape when running print jobs, so it is safer to enable write protection before loading tapes.

Loading an 18-track cartridge tape

Follow these steps to load a 18-track cartridge tape:

1. Inspect the cartridge for visible damage.

   For more specific information on checking for signs of damage, refer to the guideline for handling tapes at the beginning of this section.

   CAUTION: Loading a damaged tape can damage the tape drive and result in data loss.

2. Hold the cartridge with the smooth side on top and the leader block toward the drive.

3. Insert the cartridge into the entry slot and slide it all the way into the drive opening until it stops.

   CAUTION: When you insert a cartridge, never force it.

Loading and unloading a floppy diskette from the system controller

Follow these steps to load and unload a floppy diskette:

1. Before inserting a floppy diskette into the floppy diskette drive, make sure the lever is in the open (horizontal) position. Insert the floppy diskette, label side up, until the jacket is solidly against the stops. Move the lever clockwise to the closed (vertical) position.

1 Lever
2 Floppy diskette drive
3 Floppy diskette

2. To remove the floppy diskette from the diskette drive, move the lever counterclockwise to the open position. The floppy diskette should pop out slightly. Place the diskette in its protective envelope.

Using the 9-track magnetic tape drive

Another optional 9-track magnetic tape drive resides in a cabinet on top of the controller. Figure 3-3 shows the basic parts of this component.

Figure 3-3. **9-track magnetic tape drive components**

1 Control panel

At the upper-left corner are the touch-sensitive switches that direct the magnetic tape drive. Some tape drive commands may also be keyed in at the keyboard. Each of these switches is described in the "Control panel switches" section.

2 Power switch

The main power switch (circuit breaker) is at the upper-right corner of the tape deck. In the OFF position (the 0 side pressed), the input AC voltage is removed from the tape drive power supply. In the ON position (the 1 side pressed), the transport is powered on by reapplying the input AC voltage.

3 File reel

The file reel (supply reel) is mounted onto the upper hub. The tape may be either a job tape or a scratch tape for diagnostics.

3a Hub latch

3b Hub latch release button

4 Fixed reel

The fixed reel is the one permanently attached to the tape transport. Sometimes known as the machine reel, it functions as a take-up reel for the tape supply.

5a and 5b Air bearings

Two air bearing sensor assemblies (upper [b] and lower [a] air bearings) are used to guide the tape across the magnetic head on an air cushion and to measure air pressure reflection. The pressure signal is processed by the control system, which maintains constant tape velocity and air pressure by changing the reel motor speed whenever appropriate.

6 Magnetic head assembly

This assembly consists of a read/write head and an erase head. The dual-gap read/write head unit is designed to perform the read/write functions in a 9-track format. It allows a write-to-tape operation, a read-only operation, or a read-after-write operation. During a write operation, a full-width erase head erases the tape while it moves forward before the tape passes over the write head.

7 Erase head

8 BOT/EOT assembly

Located next to the magnetic head assembly, this assembly optically detects the beginning-of-tape (BOT) and the end-of-tape (EOT) markets. Photosensors detect light reflected from the BOT and EOT markers on the tape so that the tape drive can recognize starting and stopping areas.

9 Tape cleaner

The cleaner consists of two blades and a vacuum port to strip unwanted particles off the tape surface. It is designed so that the first blade cleans the tape in the forward direction and the second cleans it in the reverse direction. The vacuum port removes the unwanted particles from that area.

10 File protect sensor (not shown)

This sensor consists of a reflective ring around the file (supply) hub and a photosensor next to it that are used to detect the presence or absence of the write-enable ring on the file reel.

11 Cover interlock (not shown)

There is an interlock associated with the door latch as a safety device. The tape unit can be operated only when the door is closed.

Control panel switches

Two types of functions are controlled by the switches on the control panel: operator and maintenance. Switches to the left of the two-digit LED display are the operator functions, and switches to the right of the display are for maintenance functions. When the magnetic tape drive is online to the printer, maintenance functions do not work. Figure 3-4 shows the control panel switches.

Figure 3-4 **Control panel switches**

- **Logic Off switch and indicator**

  If pressed while the magnetic tape drive is powered on, logical power (the DC power to the circuit boards) is removed. The indicator light comes on to signal a standby power condition.

- **Logic On switch and indicator**

  If pressed while the circuit breaker is on and the magnetic tape drive is in a standby power condition, the logical power (the DC power to the circuit boards) is returned to the magnetic tape drive.

- **File protect indicator**

  The file protect indicator is lit when the write-enable ring in the magnetic tape reel is absent. When this indicator is on, data cannot be written to or erased from the tape.

- **BOT indicator**

  The BOT indicator is lit when the tape is positioned at the BOT marker (a reflective band on the tape indicating the beginning of data).

- **Load/Rewind switch**

  If the magnetic tape drive is powered on and a tape threaded, press the Load/Rewind switch to initiate tape loading. If the tape has already been loaded and threaded, press the Reset switch and then the Load/Rewind switch to rewind the tape to the BOT marker.

  Note: Following the load or rewind operation, the unit automatically sets to 25 inches per second (ips) start/stop mode and positions the tape accordingly. The rewind rate is 75 ips.

- **Unload switch**

  If a tape is loaded, press the Reset switch and then the Unload switch to unload the tape completely from the fixed reel and the tape path. If a tape is threaded but not loaded, pressing the Unload switch causes the tape to slowly unload to the supply reel.

- **On Line switch and indicator**

  If a tape is loaded, press the On Line switch to place the magnetic tape drive online to the system controller. The indicator lights whenever the magnetic tape drive is online. The magnetic tape drive must be online to the printer to receive data from magnetic tape or to respond to entered tape commands.

- **Reset switch and indicator**

  The Reset indicator is lit whenever a magnetic tape drive error condition occurs or at the completion of a diagnostic test. Press the Reset switch to take the magnetic tape drive offline from the printer. Tape motion stops, and error status is cleared.

  You must also press the Reset switch, taking the unit offline to use other touch-sensitive switches (such as the Unload and Rewind). Only entered tape control commands are accepted when the magnetic tape unit is online to the printer.

  Note: Some control faults require a power-off/power-on sequence to clear. Refer to the *Xerox 4850/4890 HighLight Color LPS Message Guide* for additional information.

- **High-density indicator**

  The high-density indicator is lit whenever the magnetic tape drive is operating in the group code recording (GCR) mode. GCR refers to the specific density of data as it is recorded on the tape, which is measured in bits per inch (bpi). The tape drive operates in 1600 bpi Phase Encoded (PE) or 6250 bpi (GCR) modes. The default for writing is 1600 bpi. There is no default for reading because the system checks the speed and reads it accordingly.

- **Two-digit LED display**

  When in offline diagnostic test mode, the diagnostic test numbers and results of the microdiagnostic or exerciser routines display. When the reset indicator lights, a diagnostic fault code or an online operational failure code displays.

- **Diagnostics indicator**

  The diagnostics indicator is lit when the magnetic tape drive is in diagnostic test mode.

- **Test switch**

  When the magnetic tape drive is not online, press the test switch to enter diagnostic test mode. If the magnetic tape drive is online, there is no response because the maintenance/diagnostic functions do not operate in the online mode.

- **Step switch**

  When the magnetic tape drive is in diagnostic test mode, press the Step switch to advance diagnostic test numbers. If the magnetic tape drive is online, there is no response because the maintenance and diagnostic functions do not operate in the online mode.

- **Execute switch**

  When the magnetic tape drive is in diagnostic test mode, press the Execute switch to start the diagnostic test indicated by the numbers in the two-digit display window. If the magnetic tape drive is online.

- **CE switch**

  This switch aids the service representative with special diagnostics. If the magnetic tape drive is online, there is no response because the maintenance/diagnostic functions do not operate in the online mode.

  CAUTION: This switch is used for higher-level diagnostics, which only a service representative can interpret. Improper use could cause incorrect status codes and responses, or information on the magnetic tape could be destroyed.

Powering on the tape drive

Follow these steps to power on the tape drive:

1. Open the tape transport door. The power switch is located in the upper-right corner of the tape deck.
2. Press down the side of the Power switch marked 1.

Loading a 9-track tape

Follow these steps to load a 9-track tape:

1. Press the large button in the center of the supply hub (the latch release) to unlock the hub. Place the job tape reel firmly on the hub, with the read/write ring side (if applicable) facing away from you.

2. Press the file reel latch until it clicks, to relatch the hub and lock the reel in place.

3. Carefully unwind about 3 to 4 feet (1 meter) of tape from the reel. Loosely drape it over the top of the upper air bearing. Leave some slack between the reel and the air bearing.

   CAUTION: When handling the tape, try to touch only the edges and never handle the tape beyond the BOT reflective strip. You could damage or destroy data beyond that point.

4. Insert the tape sideways into the slot between the head covers. Gently guide it beneath the lower air bearing and drape it over the top of the fixed reel.

   CAUTION: Make sure that the tape is correctly positioned over all tape path components or tape damage may occur.

5. Insert your index finger through one of the holes in the fixed reel to hold the leading edge of the tape firmly against the center of the reel. Wind the reel clockwise until the tape laps over enough of itself to be secured to the reel.

6. Once the tape is secured, continue to wind the reel in the clockwise direction to gently take up the remaining slack in the tape path. The tape is now threaded but not loaded.
7. Close the door to load the tape.

   Note: Until you close the door, the cover interlock in its electrical sensing system continues to disable the command switches on the operator control panel.
8. Press the Load Rewind switch on the operator control panel. The BOT indicator lights as soon as the beginning of the tape is found.

   Note: If the tape drive cannot find the BOT within 25 feet (7.62 meters) in the forward direction, it reverses to search for it. If the tape drive cannot find the BOT in either direction, it stops, and an error status code appears in the two-digit LED display on the operator control panel.

   You must now place the tape drive online to the LPS.

Placing a tape online to the LPS

Follow these steps to place a tape online:

1. Press the On Line switch to place the unit online to the system controller. The switch may be pressed while the loading operation is in progress. When the online indicator lights, loading is complete. The tape is now threaded and loaded. You are ready to start jobs.

   Note: If the online indicator does not light when you press the switch, refer to the "9-track magnetic tape drive on the controller cabinet problems" section of the "Solving problems" chapter.
2. If your LPS is connected to both a 9-track magnetic tape drive and an 18-track cartridge tape system, you must tell the printing system which tape drive you intend to use. You do

this by entering **MTU 0** or **MTU 1**. The unit number is assigned to the tape drive at installation by a service representative. Check with your service representative or your system administrator if you are unsure of the number assigned to your 9-track magnetic tape drive.

CAUTION: To avoid writing on an unprotected tape by mistake, always enter your tape drive choice before beginning a job.

Taking a tape offline from the LPS

Press the Reset switch on the control panel to place the unit offline to the system controller.

Unloading a tape

A tape may be unloaded either manually or automatically (by a keyboard command).

Unloading a tape manually

1. Press the Reset switch on the control panel to take the transport offline from the system controller.
2. Press the Unload switch. The tape rewinds onto the file reel until the end clears the fixed reel and the tape path.

   Tape unloading is performed at low speed. If there is a considerable amount of tape on the fixed reel and you want to unload it more quickly, first press the Load Rewind switch and then the Unload switch.

   Note: Pressing only the Load Rewind switch causes the tape to rewind at the faster rate, but it stops at the BOT marker instead of completely clearing the tape path.
3. Open the door and press the large button in the center of the supply hub to unlatch it and release the tape reel. Remove the reel.
4. Close the door to prevent dust accumulation.

Unloading a tape by using the keyboard commands

When the tape drive is online to the system controller, you can perform the unload operation through the keyboard. As a safety precaution, the system ignores the TAPE UNLOAD command while a job is printing.

1. Enter **TAPE UNLOAD**. The tape rewinds completely back onto the supply reel.
2. Remove the file reel by following steps 3 and 4 of the "Unloading a tape manually" procedure, above.

Powering off the tape drive

Once you have unloaded and removed the tape from the transport, press down the side of the Power switch marked 0. (The Power switch is in the upper-right corner of the tape deck.)

Using the 18-track 180 Cartridge Tape System

The 18-track 180 Cartridge Tape System (CTS) is an alternative to the 9-track magnetic tape drive. It also provides additional offline capability. It reads and writes to IBM- and ANSI-compatible 1/2-inch tape in the 18-track IBM 3480 data format. Like the 9-track magnetic tape drive, the CTS can be used as a source for the loading and backing up of non-printing files (such as forms and fonts) to and from the system disks, as well as providing an input source for print jobs.

The 18-track CTS uses standard 1/2-inch chromium dioxide cartridge tapes. Tape loading is fully automatic as soon as the tape is inserted into the feed slot and the door is closed. The 18-track CTS may be ordered with one or two tape transports. If only one is ordered initially, a second may be added at a later date. Figure 3-5 shows both the single and dual transport CTS.

Figure 3-5. **18-track CTS**

Locating CTS components

Figure 3-6 shows the components of the CTS.

Figure 3-6. **Components of the CTS**

1 Tape transport

The tape transport is where the tape is processed (read/write functions) and includes the status and control panel. You can have one or two tape transports in your cartridge.

2 Power control panel

A description of the switches on the control panel, shown in figure 3-7, is provided below.

Figure 3-7. **Control panel switches**

1 Emergency Power Off (EPO) switch

Pressing the EPO switch starts an uncontrolled power down that can result in lost data and system problems. Once you press the EPO switch, you must place a service call, because only a service representative can restore power to the system.

2 Power on/off switch

Under normal circumstances, the power switch is used to power the tape system on and off. When you put the power switch in the off position, you start an orderly power-down process. When a situation exists that threatens the safety of an individual or the equipment, you can press the EPO switch. The green indicator on the upper half of the power switch lights when the tape drive is powered on.

3 Feed slot

The feed slot is where cartridges are inserted for loading. An elevator behind it lowers cartridges to their operating position and raises them again to the feed slot for you to remove when completed. The door must be closed before the elevator can work. The Unload button is used to open this door whenever the transport is neither processing a tape nor in a ready mode (ready indicator light is not lit). The tape drive stays cleaner when the feed slot door is kept closed, whether or not there is a tape loaded.

4 Status and control panel

There is a status and control panel for each tape transport. Located above the transport, it contains the message window, three LED message lights, a ready indicator light, and three tape drive control buttons.

Status and control panel components

Figure 3-8 shows the status and control panel.

Figure 3-8. **Status and control panel components**

1 Ready indicator light

This indicator lights when you press the Ready button, and the transport is ready to read and write tapes. While this light is on, the tape drive ignores the Rewind and Unload buttons if they are pressed.

2 Ready button

Pressing the Ready button enables the read/write functions of the tape drive. Pressing it again disables the read/write functions. If the cartridge tape system is the only magnetic tape device connected to your LPS, pressing the Ready button on puts the tape drive online. Pressing the Ready button again takes it offline. The CTS does not allow you to use the Unload or Rewind buttons while it is in the ready

mode. While the tape drive is ready and online to the LPS, you must enter the TAPE UNLOAD and REWIND commands.

3 Unload button

If a tape is loaded, pressing the Unload button causes the tape drive to completely rewind the tape into the cartridge and deliver the cartridge back to the feed slot for removal. The tape drive ignores the Unload button as long as the drive is in the ready mode (when the ready light is on). Alternatively, you can enter the TAPE UNLOAD command when the tape drive is online to the LPS.

Note: If the feed slot door is closed but no tape is in the drive, the door opens when you press the Unload button, regardless of whether or not the ready light is on.

4 Rewind button

If the tape system is powered on and a cartridge is loaded, pressing the Rewind button rewinds the tape to the BOT marker. The tape drive ignores this button while it is in the ready condition (when the ready light is on). Alternatively, you can enter the TAPE REWIND command when the tape drive is online to the system.

5 Message window

The 10-character message window is where the transport displays status messages. Some messages contain 4-digit status codes that refer to common problems. Others explain what the tape drive is currently doing; for example, unloading, rewinding, or cleaning. Figure 3-9 shows what you see while a cleaning tape is being run.

Figure 3-9. **Message window**

6 Offline light

When this yellow rectangle is lit and you can see the word OFFLINE, the transport is offline from the LPS.

7 Operator light

When this red rectangle is lit and you can see the word OPERATOR, the transport needs operator assistance. A problem exists that must be handled before the transport can continue. A message appears in the message window indicating what to do or providing you with a status message for your service representative.

8 Select light

When this green rectangle is lit and you can see the word SELECT, this transport is selected for operation. Once it is operating, the light blinks on and off as it is receiving instructions from the controller.

Powering on the 180 CTS

Follow these steps to power on the 180 CTS:

1. Locate the power control panel on the lower-left side of the font door.
2. Press the Power switch to the ON position by pressing down on the side marked 1.

   The CTS goes through a series of self-tests and initialization. While it is going through this process, the following message displays:

   ```
   *SELFTEST*
   ```

   Then the following messages display:

   ```
   DOWNLOAD 0, TESTING 0, TEST DONE, FUNCTIONAL.
   ```

   Note: In the "download" and "testing" messages, the number may be 0, 1, 2, or 3, depending on how many tape transports you have. These are the numbers assigned to each transport by the service representative when your system is installed. The numbers are used only by the service representative.
3. When the tape system has completed its initialization or boot process, a single asterisk (*) appears in the message window. The transport is now ready for you to load a tape and place the CTS online to your LPS.

Loading a tape

Follow these steps to load a tape:

1. As soon as the asterisk appears in the message window, you can load a tape. Carefully insert the cartridge into the feed slot, with the label side up and the latch in the right corner (away from you).

   When you insert the cartridge, the red operator light comes on, and the following message displays:

CLOSE DOOR

2. Close the feed slot door by gently pulling down the handle until the door latches shut.

The operator light goes off, and the following message displays if the file is unprotected:

READY U

The following message displays if the file is protected:

READY F

Loading a 1/4-inch cartridge tape

Follow these steps to load a 1/4-inch cartridge tape:

1. Locate the 1/4-inch cartridge tape drive, mounted in the system controller cabinet next to the floppy disk drive.
2. Press the cover release button.

   The tape drive door partially opens.
3. Manually open the door completely.
4. Insert the cartridge (label facing to the left) into the feed slot.
5. Close the tape drive door.

   The tape loads automatically.

   If the tape has loaded properly, the LED indicator light is green.

   If the LED indicator light is flashing red, the tape has not loaded properly. Refer to the "Solving problems" chapter, or see your system administrator.

Placing a tape online to the LPS

Follow these steps to place a tape online:

1. If the following message displays, press the Ready button to enable the read/write mode:

   NT READY U or NT READY F

   The ready indicator light comes on, and the `nt ready` message changes to `ready`.

   If you have only the cartridge tape system for your system, you are now ready to print jobs. Your system is automatically online to the LPS as long as the ready indicator light is on.

2. If your LPS is connected to both a 9-track magnetic tape drive and an 18-track cartridge tape system, you must specify the tape drive. You do this by entering **MTU 0** or **MTU 1**. The 0 and 1 are assigned to each tape drive at installation by a service representative. Check with your service representative or your system administrator if you are not sure if 0 or 1 was assigned to your 18-track CTS.

   Note: This is not necessarily the same number you see in the message display window of each cartridge tape transport when the cartridge tape system is powered on and goes through its testing and downloading routines.

CAUTION: To avoid writing on an unprotected tape by mistake, always enter your tape drive choice before beginning a job.

Now that your tape drive is loaded and online to the LPS, you are ready to print jobs.

Unloading a tape

Follow these steps to unload a tape:

1. When the EOT is reached or a job is completed, the transport rewinds and unloads the cartridge. The feed slot door opens automatically. When it does, carefully remove the cartridge.

   To remove a tape at any other time, first press the Ready button to take the transport out of the read/write mode. The ready indicator light must be off.

2. Press the Unload button on the transport status and control panel.

   If the tape needs to be rewound before unloading, the following message displays during that process:

   ```
   REWINDING
   ```

   The following message displays for the few seconds required to return the cartridge to the feed slot and open the door:

   ```
   UNLOADING
   ```

   Note: To use the TAPE UNLOAD command from the keyboard, the tape drive must be online to the LPS.

3. When the feed slot door opens and the cartridge is unloaded, remove the tape cartridge carefully.

Taking a tape offline from the LPS

Any time the ready indicator light is off, the CTS is offline from the LPS.

Press the Ready button once so that the ready indicator light goes off. The following message displays if a cartridge tape is still in the drive:

NT READY U or NT READY F

If there is no tape in the drive, a single asterisk (*) appears.

Powering off the CTS

Once you have unloaded and removed the tape cartridge from the transport, press down the side of the power switch marked 0.

Receiving offline jobs

Before printing offline jobs, you must identify the tape drive where you mounted the tape containing the print job.

If your system is equipped to process offline jobs, you may have a 9-track magnetic tape drive, a 180 CTS, or your system may have both. These are your print job sources for offline jobs.

Your system may also be equipped with a 1/4-inch cartridge tape drive. This is not a source for print jobs.

The system recognizes two keywords for specifying the tape drive where the job tape is mounted: TAPE and CARTRIDGE. You must identify the physical tape drive assigned to each of these keywords. You identify the device using the SUB DEVICE command. For example, if you are using a cartridge you would enter a substitute device command, such as SUB DEV SFCTS FOR TAPE.

The TAPE keyword applies to 9-track magnetic tape drives. Your system has only one option for a 9-track magnetic tape drive, so you do not need to identify the physical device for this keyword. If an open reel tape drive is installed in your system, the TAPE keyword identifies this device by default.

The CARTRIDGE keyword applies to cartridge tape drives. Your system has two options for a cartridge tape drive: the 18-track 180 CTS (1/2-inch cartridge tape drive), and the 1/4-inch cartridge tape drive. The 1/4-inch cartridge tape drive is not a source for print jobs, but it may be identified for copying and backing up files.

- If only one of these tape drive options is installed in your system, you do not need to identify the physical device for the CARTRIDGE keyword.
- If both cartridge tape drives are installed in your system, you must identify the drive using the SUB DEVICE command.

To identify the 18-track 1/2-inch cartridge tape drive with the CARTRIDGE keyword, enter the following command:

SUB DEV SFCTS FOR CAR

To identify the 9-track cartridge tape drive and the 1/4-inch cartridge tape drive with the CARTRIDGE keyword, enter the following command:

SUB DEV SCTS FOR CAR

The device specification remains in effect until you enter a new SUB DEVICE command. For more information about the SUB DEVICE command, refer to the *Xerox 4850/4890 HighLight Color LPS Command Reference*.

Communicating with the channel-attached host

A system that is channel attached to a host can receive data from the host in online mode. Before data can be sent to the printer, both the printer operator and the host operator must issue commands to place the LPS online to the host.

All system operations and maintenance tasks can be performed while the printing system is online. However, you may be asked to take the system offline for service or other purposes, and to bring it back online when ready to resume operation.

Placing the LPS online

Follow these steps to place the LPS online:

1. Enter **ONLINE**.

   The system responds by displaying:

   ```
   OS0030 System is "ON-LINE"
   OS1000 READY FOR COMMANDS
   ```

2. Enter **START** and begin normal job processing.

   Until a START command is entered, the LPS is in an online but not ready state, and the host does not transmit any data.

3. Request the host operator to vary the system online.

   For more information on starting print jobs, refer to the "Printing jobs" chapter.

Taking the LPS offline

Follow these steps to take the system offline:

1. Request the host operator to drain or purge the output from the host to the LPS, then vary the system offline at the host.
2. Press <JOBS STATUS> to determine if the system is idle.
3. If the job queue is empty, enter **OFFLINE**, or **ENDJOB** followed by **OFFLINE**.

   Entering the **ENDJOB** command prints any pages remaining in the print file. Then press <JOBS STATUS> again to verify that the queue is empty. Enter the **OFFLINE** command.

4. Enter **CONTINUE I** or press <CON>. The following message displays:

```
OS0040 System is "OFF-LINE"
```

Communicating through the Shared Disk Interface processor

Follow these steps to place the Shared Disk Interface (SDI) online to the system:

1. Enter **SDI** to put SDI online and start it.
2. Send the jobs from the front end.

For more information, refer to the *Xerox Shared Disk Option Operator Guide*.

Communicating through the host interface processor

The system can communicate with hosts that are not channel-attached, in a range of communication environments, or with other networked devices through the host interface processor (HIP) software. All you have to know is the interface or mode you use to communicate with the host or network. A brief description of each mode is provided in the "Selecting a communication mode" section later in this chapter. For more information, refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference.*

Starting HIP

To start HIP, enter **HIP**.

This is an abbreviated way of entering the commands HIP ONLINE and HIP START, and is the routine method of starting the HIP task. After you enter the HIP command, the following messages display:

```
HP0010 HOST INTERFACE PROCESSOR loaded
OS1000 READY FOR COMMANDS   15:52:21
HP1210 HOST ONLINE, ACCEPTING ALL JOBS
OS1000 READY FOR COMMANDS   15:52:23.
```

If the host is not online and not responding, the following message displays every 15 seconds until the host comes online or HIP is terminated.

```
HP1240 HOST NOT RESPONDING
```

For a complete explanation of all the HIP options available, refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*.

Selecting a communication mode

Enter **HIP HOST**, specifying the communication mode.
HIP HOST {871|DMR|XNS|XPF|XPS}

When you enter this command, you can specify one of the following:

- 871—Identifies a host in an SNA/SDLC or BSC environment.
- DMR—Identifies a VAX/VMS host in a DDCMP environment.
- XNS—Identifies a network environment.
- XPF—Identifies an IBM host in an MVS/XA or an MVS/ESA environment.
- XPS—Identifies Xerox Print Services (XPS) Manager as the printer front end to other hosts. (This option is available in XDDI only.)

If your LPS interfaces with only one host, then HIP automatically performs this function each time it is loaded.

Changing hosts

Follow these steps to change hosts:

1. Make sure HIP is loaded and offline.

   Refer to the "Starting HIP" section above and "Taking HIP offline" section later in this chapter, if you are uncertain how to perform either task.

2. Enter **HIP HOST**, as described in the previous section, to select a new mode.

   If HIP is not offline or if the system is not idle, the command is rejected, and one or more of the following messages display:

   ```
   HP2020 SELECTED HOST NOT PRESENT ON SYSTEM
   HP2400 HIP INTERFACE MUST BE OFFLINE. ENTER HIP OFFLINE
   HP7100 CANNOT CHANGE HOST WHILE JOBS ARE PENDING OR ACTIVE
   ```

Placing HIP online

For the system to receive files, you must place the interface online. Enter **HIP ONLINE [ALL]**:

The ALL parameter specifies that both print and nonprint files are accepted; otherwise, only print files are accepted. As print jobs are received, they are entered into the HIP job queue before being entered into the Queue Manager queue.

One of the following messages displays:

```
HP1210 HOST ONLINE. Accepting ALL jobs.
HP1220 HOST ONLINE. Accepting print jobs only.
HP2010 No HOST selected.
HP2030 ALL not allowed at current LOGON level.
HP0200 Failed to go ONLINE.
```

ONLINE ALL is accepted in logon level 2 and above for all hosts except for XNS hosts. HIP is always in ONLINE ALL mode for XNS hosts.

If the selected host is not online and responding, the following message displays every 30 seconds until the host comes online or the online request is terminated using HIP OFFLINE command:

```
HP1240 HOST not responding.
```

Note: You may find that HIP is stopped. In that case, enter **HIP STA** or **HIP START**. The system responds with `OS1000 READY FOR COMMANDS.`

Taking HIP offline

To take HIP offline and stop it from accepting files from the host, enter **HIP OFFLINE**.

The system response is delayed to the end of the current file if a file is being transmitted. The following messages display:

```
HP1200 OFFLINE pending End Of Transmission.
HP1207 OFFLINE pending end of current active XNS session.
HP1230 HOST OFFLINE.
```

The following are reasons the message `HP1230 HOST OFFLINE` occurs:

- If an XNS transmission error occurs, the HIP requests retransmission of data starting with the data packet following the last successfully received packet. If the packet cannot be successfully retransmitted, the request is aborted and the session with the client is terminated.
- The HIP also terminates an XNS session (and aborts a print request if one is in progress for that session) if it is expecting data from a client but has not received a packet from that client in 40 seconds.
- If HIP has not received a packet within 60 seconds after the last packet was received, it attempts to determine if an interface problem exists. To do this, it broadcasts requests for Clearinghouse and Time servers on the net. If HIP does not receive any responses, it assumes an interface problem has occurred. To correct this problem, HIP takes the interface offline (to reset the controller) and attempts (up to five times) to bring the interface back online.

4. Printing jobs

This chapter explains the procedures for setting up paper trays, processing a print job, and checking print status displays.

Printing task flow overview

The following table shows the sequence of tasks involved in overseeing a print job.

Table 4-1. **Printing task flow overview**

Tasks	Procedure	Chapter and section
Set up print job source		
Offline jobs	1. Load the job tape.	3 "Loading an 18-track cartridge tape" 3 "Using the 9-track magnetic tape drive"
	2. Place the tape drive online.	3 "Receiving offline jobs"
Online jobs	1. Establish communication with the host:	
	Channel-attached host: Place the LPS online.	3 "Communicating with the channel-attached host"
	Network environment: Start HIP.	3 "Communicating through the host interface processor"
SDI jobs	1. Set the SDI online. 2. Start SDI. 3. Send the job from the front end.	3 "Communicating through the Shared Disk Interface processor"
Run the print job	1. Set up feeder tray.	4 "Setting up feeder trays"
	2. Set up output trays.	4 "Setting up output trays"
	3. Print a sample, if desired:	4 "Printing samples"
	— Change paper size,, if necessary.	5 "Changing paper size"
	— Change form alignment, if necessary.	5 "Adjusting form alignment"
	4. Start the job.	4 "Starting a print job"
	5. Check job and queue status.	4 "Checking job and printer status"

Table 4-1. **Printing task flow overview** (continued)

Task	Procedure	Chapter
Maintain print jobs (perform if requested by the controller)	• Add paper.	5 "Loading feeder trays"
	• Add dry ink.	5 "Adding dry ink"
	• Remove output from the output tray.	5 "Unloading output trays"
	• Add stitcher wire.	5 "Adding stitcher wire"

Setting up feeder trays

Each job may have its own paper feeding requirements, including the paper size, color, or stock type. A single job may require several different paper stocks. When a job is ready to print, you must set up the feeder trays so that the job can feed the proper paper stocks.

1. Determine the paper stock requirements of the job.

   The paper stock requirements are coded into the job by the person who created the job. The job may designate a specific paper tray loaded with a certain paper stock. This is called a cluster. This specification is the preference of the person who coded the job.

   When a job is ready for printing, the system displays messages indicating the paper stock to load in specific trays according to the cluster. You have the option of loading the trays according to these specifications or overriding them.

2. Once you have determined which stocks to load in specific trays, you must load them with the correct stock.

Setting up output trays

In most cases, output is delivered to the stacker trays in automatic switching mode if the dual stacker is installed on your system, or to the only output tray on the stitcher/stacker if it is installed. You may need to redirect the output to a specific tray or to the sample tray for one of the following reasons:

- One of the output trays has malfunctioned
- The job is printing on transparencies, in which case it must be directed to the sample tray.

Printing samples

You can obtain sample prints of the following:

- Forms, logos, graphic images, or fonts for reference when creating jobs. Programmers at your site may ask you to sample these files.

  Programmers may request using the HARDCOPY command to sample non-color graphic image files because it provides more detailed information about the file. For more information on the HARDCOPY command, refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*.

- The current job while the job is running. You can use sample prints to check print quality and form alignment before printing the entire job.
- The test alignment pattern to check print quality and form alignment when no job is pending.

To sample a form, logo, graphic image, or font file, or to sample pages from a job that is temporarily suspended, enter the sample command:

SAMPLE [{*filename*}[,S | D][,*copies*]

filename
The name of the file to sample, including the file extension.

Example: SAMPLE SAMPLE.FRM,D,2,INKS='BLUE'

[S|D]
S prints the sample pages in simplex mode; D prints the sample pages in duplex mode.

[*copies*]
The number of copies of the sample pages to print.

Follow these steps to sample pages from the current job while the job is running:

1. Verify that the job is more than three pages long.

   If the job is less than three pages, the system cannot deliver sample pages.

2. Do one of the following: press <SAMPLE> on the keyboard, press the Sample button on the printer control console, or enter the SAMPLE command with no parameters.

   The system delivers sample pages to the sample tray. When you sample pages from a job in progress, the system reprints the sampled pages and delivers them to the current output tray to maintain the integrity of the output.

Starting a print job

Before starting a print job, make sure the system is set up properly for that job. Follow the steps in the "Printing task flow overview" at the beginning of this chapter.

You start a print job by entering the START command at the system controller keyboard. The procedure for starting an offline or online print job differs from the procedure for starting a print job in the HIP queue.

Starting an offline or online print job

The job descriptor entry (JDE) contains information the system needs to print the job, including the form data, fonts, name and location of the data file, and so forth. The JDE may be stored in a job descriptor library (JDL) file. The person who programmed the job provides the names of these files.

The JDE file must reside on the system disk. You may need to first copy the JDE file and any other necessary non-data files (such as fonts and forms) to the system disk before starting the job. Refer to the "Copying and backing up files" section of the "Printer maintenance" chapter).

The job data may be read off a magnetic tape (for offline jobs) or sent through the host channel (for channel-attached host online jobs). When you enter the START command, the system looks for the data file specified in the JDE on the physical tape drive, selected when setting up the print job source in the case of offline jobs, or in the host channel. Refer to the "Receiving offline jobs" section in the "Setting up print job sources" chapter.

Enter the START command:

START [[*jdename*][,[*jdlname*][,S | M][,*copies*] [,REPORTS:r1,r2...][INTERPRESS]]]

jdename
: The name of the JDE containing the job information. The *jdename* is usually provided by the person who created the job.

jdlname
: The name of the JDL file containing the JDE specified in the first parameter. The *jdlname* is usually provided by the person who created the job.

[S | M]
: This option pertains to print jobs on tape or cartridge (offline) only.

  S
  : Specifies single report mode, which processes only one report at a time. Use this mode when changes must be made to the job specification from one job to the next.

  M (default)
  : Specifies multiple report mode, which processes all reports without stopping.

copies
: The number of copies of each report requested.

[REPORTS:r1,r2...]
The numbers of specific reports within the job you want to print, or the form name you want to use.

You may print selected reports for offline jobs only. To specify selected reports, enter **REPORTS:** followed by the numbers of the selected reports in the order you want to print them. For example:

START 21,POWGRP,M,2,REPORTS:1,3-5,2

This example command requests that the system print reports number one, then three through five, then two.

If no REPORTS: parameter is specified, all reports are printed.

You can also select specified reports after the START command by interrupting the print job and entering the SPACE *n* REPORTS command. Refer to the "Selecting reports within a job" section later in this chapter for more information.

INTERPRESS
The INTERPRESS parameter is valid for offline jobs only.

Specifies that you are submitting data in Interpress format from tape or cartridge. For example:

START 21,POWGRP,M,2,,INTERPRESS

Starting a print job through HIP

To start or continue jobs in the HIP internal queue, enter the HIP START command:

HIP START [DUMP][*job-ids*]

DUMP
Starts the job specified in the *job-ids* parameter (or the next job in the HIP queue if no *job-id* is specified) using the START command parameters in the DUMPJOB command in the HIP file. The system prints one job only. After the job finishes, HIP issues a HIP STOP command.

job-ids
One or more job id numbers of the jobs you want to print.

If you do not specify a job id, the system prints all jobs in the HIP queue in the order shown in the queue.

If you do specify one or more job ids, the system moves those jobs to the head of the job queue and submits them for printing. When these jobs finish printing, the system submits all remaining jobs in the queue in the order stored.

Jobs that have already been submitted may not be specified in the *job-ids* parameter. If a job id you specify is invalid for any reason, the system displays the following message:

```
HP1150 Cannot start job(s): n [...]
```

Check the START command you entered to verify that you typed the job id correctly. If so, the job is probably already in progress.

Selecting reports within a job

You can only select specific reports within a job for offline jobs.

If you have not yet entered the START command for the job, you can specify the reports to print and their order in the START command. Refer to the section, "Starting an offline or online print job," earlier in this chapter.

Follow these steps if you entered the START command but the job has not started printing:

1. Enter **SPACE *n* REPORTS**, replacing *n* with the number of reports to skip. You can move forward by entering a positive value for *n*, or backward by entering a negative value for *n*.
2. Press <CON> to continue.

Follow these steps if you entered the START command and the job is already printing:

1. Interrupt the print job by doing one of the following: press <STOP> on the keyboard, the Stop button on the printer control console, or enter **STOP** at the keyboard.
2. Enter **SPACE *n* REPORTS**, replacing *n* with the number of reports to skip.

   You can move forward by entering a positive value for *n*, or backward by entering a negative value for *n*.
3. Press <CON> to continue.

Printing multiple copies of large jobs

When multiple copies of a report are printed in collated mode, the system processes all pages of the first copy from first to last, then repeats the process for each additional copy requested. The mode (collated or noncollated) is specified by the person who created the job.

Offline jobs

When a report in an offline job is too large to fit on one tape, you may be prompted to mount and unload each tape once for each copy. The system displays the following message:

```
OS2020 Mount next volume 'CONTINUE I' when ready
```

The person who created the job may have split the report into smaller parts that fit onto a single tape. This eliminates the need to mount and unload tapes for each copy; however, the segments of each report must be assembled by hand when printing is complete.

Online jobs

If the system cannot store the entire report on the system disk and multiple copies of the report are requested, the system displays the following messages:

```
0S6300 Current report saturates disk. Enter option:
CONTINUE I         -  CONTINUE MULTICOPY MOD
PRINT 1            -  PRINT ONE COPY OF CURRENT REPORT
ENDJOB             -  PRINT ALL COPIES SO FAR, END
ABORT O            -  ABORT CURRENT REPORT
ABORT              -  ABORT CURRENT JOB
```

Enter one of the following commands:

CONTINUE I
: Continues multicopy printing in sections. When printing is complete, assemble the copies of the report manually.

PRINT 1
: Prints only one complete copy of the report. Additional copies can be printed by resubmitting the job from the host once for each copy desired.

ENDJOB
: Prints the pages already formatted by the system and ends the job.

ABORT O
: Cancels the current report and starts to print the next report.

ABORT *n*
: Cancels the current job. (*n* is the current job number.)

Checking job and printer status

You can obtain status information on the job currently printing, the job queue, or the printer.

Checking printer status

When you press <PRINTER STATUS> or enter the PSTATUS command, the system displays the current status of the feeder and stacker trays. You may request status information either before or during a print job. If the system controller is occupied with nonprint functions, it ignores the request.

Figure 4-1. **Printer status display**

```
Paper trays:                              Output Trays:
           Feed Tray                       Select: AUTO
           Tray 1 8.5 X 11      IN USE   Tray 1 IN USE
           Tray 2 8.5 X 14      READY
           Tray 3 8.5 X 11      READY
           Tray 4 8.5 X 11      READY

      Stitcher:    READY

      Xerographic Mode:BLACK Dry Ink Color:BLACK

      Attention light:  ENABLED, STEADY

      Blade:  DISABLED

      Darkness           (Lightest=1, Darkest=7)
              Black 4
```

Checking the HIP job queue status

You can review the current status of your job by entering the following command:

HIP SHOW JOBS [*parameter*]

This command displays the current status of the selected jobs in the HIP jobs queue as well as the current status of the HIP processor. The format of the display depends on the parameter.

The following parameter options are available:

ABORTED	Displays all jobs that have been aborted
ACTIVE	Displays all jobs in the active state: QUEUED, ACTIVE, OQUEUED, or PRINTING.
ALL	Displays all jobs in all queues.
CANCELLED	Displays all jobs that have been cancelled.
COMPLETED	Displays all jobs in a completed state: PRINTED, STORED, SEND, or ABORTED.
CONTINUE	Continues a previously requested display if all jobs in the queue were not displayed.
PAGE[*n*]	Divides the queue up to 20 jobs, which are ordered from the oldest completed job to newest completed job received.
PENDING	Displays all jobs in the pending state: PENDING or RECEIVING (but not submitted to the operator communications subsystem (OCS)).
PRINTED	Displays the jobs in the printed state: PRINTED or TRUNCATED.
SUMMARY	Displays a summary of the job queue.

Job queue display

The job queue display screen consists of two lines of header information, up to 20 lines of jobs status information, and a message indicating the end of the display. If there are fewer than 20 jobs in the selected state, only that number displays. If there are more than 20 jobs in the selected state, all jobs are not shown, and the following message displays:

```
HP2145 Enter 'HIP SHOW JOBS CONTINUE' for more.
```

In this case, enter **HIP SHOW JOBS CONTINUE** to display the additional jobs. The format of a normal display screen is shown in figure 4-2.

Figure 4-2. **HIP job status display**

```
Host:XNS:    READY          HIP: STARTED  Filemode: All Jobs
  JID#       Host name      Received      Status       Job#     Time
     1       HLCA016 - Bl   13:16:28      Completed    485      13:18:18
     2       HLCA016 - Bl   13:16:37      Completed    486      13:19:04
     3       HLCA051 - Fa   13:16:49      Completed    487      13:20:30
     4       HLCA051 - Fa   13:17:12      Completed    488      13:21:53
     5       HLCA052 - Fa   13:17:33      Completed    489      13:23:07
     6       HLCA052 - Fa   13:17:55      Completed    490      13:24:12
     7       HLCA053 - Fa   13:18:20      Printing     491      13:23:42
     8       HLCA054 - Fa   13:18:44      Active       492      13:24:34
HP1110 End of job display.
```

The following are the descriptions of the status messages for the HIP job queue display:

RECEIVE	The job is currently being received.
SENDING	The job is currently being sent.
PENDING	The job is waiting to be sent.
QUEUED	The job is in the OCS job queue waiting to be processed.
ACTIVE	The job is being processed by input or output.
OQUEUED	The input phase is complete, and the job is queued for printing.
PRINTING	The input phase is complete, and printing is in progress.
TRUNCATED	The transfer was ended before completion.
COMPLETED	The job was completed normally.
STORED	The file was stored in a permanent file directory.
SENT	The file was successfully sent to the host.
ABORTED	The job was aborted using an HIP or OCS ABORT command.
HOSTABORT	The job was aborted using the host command.
REJECTED	The transfer from the host to the OEM was rejected.
CANCELLED	The transfer was cancelled by a host restart.

Note: If the status message shows TRUNCATED, the data transfer may have ended before it completed. Check the output and resend the job if necessary.

Checking job status

To check on the status of jobs while they are printing, press <JOBS STATUS> or enter the following JOBS command:

JOBS [QUEUE | ALL | *n* | MULTIPLE] [*attribute*][BRIEF | CLASSIC | FULL]

QUEUE
Displays all reports queued for printing (waiting in line to be processed).

ALL
Displays all reports queued for printing and the status of up to 100 completed reports.

n
Displays the status of all reports queued for printing, held, active, or printing to the specified number (*n*) of completed reports. The number entered must be less than 100.

MULTIPLE
Displays all jobs requiring multiple primaries that are currently in the queue. The MULTIPLE selection is unique to XDDI.

[*attribute*]

stitch
Displays all reports that require stitching.

entry-string
Displays entries that match the specified entry-string.

pstring
Displays all reports that require the specified primary.

state-name
Displays all reports that match the specified name, for example, JOBS HELD or JOBS QUEUED.

pstring & stitch
Displays all entries that require stitching.

pstring ! stitch
Displays all entries that require stitching.

cluster - *xxxxx*
Displays all entries with a cluster name matching the one specified.

For a more detailed description of the attributes, refer to the "System commands" chapter in the *Xerox 4050/4090/4450/4650 LPS Command Reference*.

BRIEF
Displays entries in the brief display format.

CLASSIC
Displays the individual entries in the traditional format.

FULL
Displays entries in the expanded display format.

The SHOW QUEUE STATUS command displays the number of MULTIPLE and STITCH jobs.

Managing print jobs

For various reasons, you may need to stop the print job that is currently running. You can interrupt a job and then resume printing where it left off, or you can cancel a job.

Aborting a print job

You can use the ABORT command to stop a job or a report that is either printing or being processed for printing. The CANCEL command is identical to the ABORT command, and you can use it interchangeably with the ABORT command.

ABORT Enter this command with no parameters to abort any currently active nonprint task such as FDL or PDL processing. However, if a job is being input or is printing, the ABORT command must have a parameter, otherwise the following message displays:

```
OS1190 Invalid parameter, command ignored
```

ABORT O Enter this command to abort the report that is printing. The system displays the following message:

```
OS1820 OUTPUT processing is aborting current report.
```

Printing continues with the next report.

ABORT I This command aborts the report currently being processed for printing (in the input phase). It is typically used in response to an error message, where you are given the choice of continuing or aborting a specific report after a problem has been identified. In response to an ABORT I command, the following message displays:

```
OS1800 INPUT processing aborting.
```

ABORT *job-id* To abort a specific job, enter **ABORT *job-id***, where *job-id* is the job number for that job. This command aborts all reports of the specified job that have not printed.

RESET When RESET is used, all jobs in the queue are deleted and have to be resent from the host. RESET stops all processing in the system, including accounting. Therefore, you should use RESET only if the ABORT command fails to produce the desired results.

If you enter the RESET command, the following message displays:

```
RESET WILL CLEAR JOB QUEUE CONFIRM WITH 'Y' OR 'N'
```

If you enter **Y**, all processing stops, and all jobs in the queue are cleared.

CAUTION: The RESET command can cause substantial data loss. Do not use the RESET command without first checking with your system administrator.

With the stitcher/stacker output configuration, a few sheets are held in the stitching tray when you enter RESET. These sheets are released when the next print job begins.

Ending a print job

The ENDJOB command signals to the system that the current print job is the last job coming from the host. All formatted pages in the output queue are printed. This command can only be used in online mode.

Interrupting a print job

If you need to interrupt a job during printing for any reason, do one of the following: use one of the three variations of the STOP command (STOP, STOP I, or STOP O), press <STOP> on the keyboard, or press the Stop button on the printer control console. It is important to understand the difference among these variations.

STOP command

If you enter the STOP command, the following messages display:

```
OS0510 INPUT stopped
OS0500 OUTPUT stopped
```

This command stops both input and printing.

STOP I command

If you enter the STOP I command, the following message displays:

```
OS0510 INPUT stopped
```

This command stops input, but printing continues until output catches up with input.

STOP O command

If you enter the STOP O command, the following message displays:

```
OS0500 OUTPUT stopped
```

This command stops the printing, but input continues.

<STOP> key

The <STOP> key on the keyboard stops both input and printing, just like the STOP command.

Stop button

The Stop button on the printer control console stops only the printing, just like the STOP O command. Input is not affected.

What to do when the system stops printing

The LPS may stop printing because all jobs being held in the queue require an unavailable resource. A series of messages appear indicating that the reports that cannot be printed are being held in the queue.

Enter **JOBS ALL FULL** to display the reports being held in the queue. An asterisk appears next to the attribute that is causing the job to be held. Using this information, take the appropriate corrective action: change the color dry ink, substitute inks, disable stitching, and so forth.

Resuming an interrupted print job

If a print job has been interrupted, either by you, by the software, or by a condition such as a misfeed or low paper, use the CONTINUE command when you are ready to resume. This section describes the variations of this command.

CONTINUE command

If you enter the CONTINUE command, the following message display:

```
OS0010 Resuming INPUT
OS0020 Resuming OUTPUT
```

Both input and printing resume.

CONTINUE I command

If you enter the CONTINUE I command, the following message displays:

```
OS0010 Resuming INPUT
```

Input resumes, but printing does not.

CONTINUE O command

If you enter the CONTINUE O command, the following message displays:

```
OS0020 Resuming OUTPUT
```

Printing resumes, but input does not.

<CON> key

If you press <CON>, both input and printing resume, as if you entered the CONTINUE command.

Continue button

If you press the Continue button on the printer control console, only printing resumes, not input. Pressing the Continue button acts as a CONTINUE O command.

Stopping a HIP print job

To stop HIP from submitting jobs for processing, enter the following command:

HIP STOP

Jobs already submitted for processing are not affected.

5. Print job maintenance

This chapter describes the tasks you perform to maintain the quality of printed copies from your LPS.

Adding dry ink

When the dry ink supply is low, the system displays a message on the printer control console. Add dry ink at your earliest convenience. If you do not add dry ink in a timely manner, the printer eventually stops.

Note: Do not discard damaged, unused dry ink bottles. Return the bottles to Xerox for exchange (or credit in the U.S.).

Follow these steps to add dry ink:

1. Open the middle and left printer doors.
2. Locate the appropriate dry ink area.
3. Spread a drop cloth on the floor under the dry ink area.

1. Cartridge handle
2. Green handle

4. Pull the empty dry ink bottle towards you until it stops.

   The bottle is recapped as you pull it back onto its lid.

   CAUTION: If there is still dry ink in the bottle, the ink may spill as you move the bottle back onto its lid.

5. Lift the green handle to the unlatched position. Remove the empty bottle and discard it.
6. Rotate the new dry ink bottle at least 10 times to thoroughly mix the contents.

7. Insert the new bottle into the printer, pushing the bottle well into the recess.

1. Cartridge handle
2. Paper seal

8. Move the green handle to the latched position to secure the lid of the cartridge.
9. Slide the cartridge all the way into the printer.
10. Hold the cartridge in place with one hand, and remove the white paper seal by pulling it toward you with the other hand. Discard the seal and the drop cloth.

Note: If any dry ink gets on your hands, wash them with soap and cold water. Heat sets the ink permanently. If any dry ink gets on your clothes, brush them with a dry paper towel or a stiff-bristled brush. If this does not remove the ink immediately, launder with detergent and cold water. Dry cleaners should be told that the spot is dry ink for a copy machine so they will not use a solvent that sets the stain.

Adding stitcher wire

Contact your service representative if the stitcher is out of wire. This should seldom happen since the representative checks the wire supply on each service call and replaces the spool as needed.

The Wire Percentage indicator, located on the printer control console, displays the approximate percentage of stitcher wire remaining on the spool. The service representative can set the display to flash at a predetermined percentage to warn you that you are running low on stitcher wire. When the spool is empty, the printer stops, the print quantity display shows the fault message L152, and the message display shows the following message:

```
STITCHER IS OUT OF WIRE OR
SPOOL NOT ROTATING PRESS? i
```

When *i* is pressed again, the following message displays:

```
TRAINED OPERATOR CHECK WIRE
MANAGEMENT SYSTEM PRESS i
```

When *i* is pressed once more, the following message displays:

```
IF UNABLE TO FIX, PRESS CONTINUE
TO RESUME WITHOUT STITCHING i
```

The system controller displays the following message:

```
0S3050 Stitcher is out of wire
```

followed by:

```
0S2000 Enter 'CONTINUE O' to resume printing
```

If you continue the job without replacing the wire, the sets will print normally without being stapled. The stitcher status reported in the printer status display will be `OUT OF WIRE`.

Adjusting form alignment

Form alignment refers to the position of the printed image on the page. In some cases, the form prints correctly, but its position on the page is skewed from top to bottom or from side to side. You adjust the form alignment when:

- The alignment is incorrect because the printer needs adjustment. The alignment of your system is exceptionally accurate and very rarely needs adjustment. You can use this procedure to temporarily correct the problem until the printer is serviced.
- A job has been coded incorrectly. If you adjust the alignment for a specific form, remember to restore the alignment to its original settings when the job is completed.

Follow these steps to change the form alignment:

1. Check the current alignment settings by entering **ALIGN**.

The system displays a message showing the current settings for the horizontal skew value (measured in dots) and the vertical skew value (measured in scan lines):

```
OS1380 Alignment is 36 scan lines and 0 dots.
```

Write down these values so that you can restore the alignment to the normal settings, if necessary.

2. Print a sample page for reference. If you suspect that the form is not aligned properly because the printer needs adjustment, print the alignment test pattern form. Enter the ALIGN command as follows:

   ALIGN,,TEST

The alignment test pattern form is the only reliable way of checking printer adjustment.

If you are adjusting the alignment to correct a problem with a specific form, you do not need to print the test pattern form. Use a sample page from the job for reference.

3. Determine the adjustment necessary.

   If you are correcting a problem with the printer adjustment, use a ruler to measure the horizontal and vertical skew on the alignment test pattern form. The test image should be centered on the page.

   If you are correcting a problem with a specific form, use a ruler to measure the horizontal and vertical skew on that form.

Refer to the test pattern form shown in this procedure. Note that the test form is in landscape orientation. You must measure horizontal and vertical skew values according to the orientation shown on the test pattern form.

4. Convert the measurements to dot and scan line values.

   Horizontal skew is measured in dots. One inch is equal to 300 dots. Convert your measurement to dots by multiplying inches by 300. Refer to the test pattern form for the correct orientation of the image to the page. To move the image to the right, add dots to the current value (determined in step 1). To move the image to the left, subtract dots. You cannot enter a negative number.

   Vertical skew is measured in scan lines. One inch is equal to 300 scan lines. Convert your measurement to scan lines by multiplying inches by 300. Refer to the test pattern form for the correct orientation of the image to the page. To move the image toward the bottom of the page, add scan lines to the current value (determined in step 1). To move the image up, subtract scan lines. You cannot enter a negative number.

5. Change the alignment values by entering the following ALIGN command:

   ALIGN *scans*,*dots*,[TEST]

   scans
   Specifies the number of scan lines (across a portrait page or down a landscape page) in dots. The range is 1 to 296, inclusive.

   dots
   Specifies the number of dots along each scan line (up a portrait page or across a landscape page) in dots. The range is 0 to 1499, inclusive.

   [TEST]
   Prints the alignment test pattern form with the new alignment values.

6. Verify the new form alignment by repeating steps 2 and 3. If the form alignment is correct, continue printing jobs. If the alignment needs further adjustment, repeat steps 4 and 5.

7. Continue printing jobs.

   - If you have set the alignment for one particular job, print only that job.
   - If you have set the alignment for one particular job, restore the form alignment settings to the original values. Enter the ALIGN command using the original values determined in step 1.

Changing paper size

When you change to 8.5 by 14 inch paper after an extended run of 8.5 by 11 inch or A4 paper, run 20 copies of the test pattern to clean the fusing system. Enter the following command:

SAMPLE TEST.FRM,20

If you fail to do this before starting the first print job, the first 20 pages of the job are of poor quality.

Loading feeder trays

The LPS provides the following displays for monitoring the condition of each feeder tray:

- The green indicator lights on the outside of each tray provide a graphic display of how much paper is left in each feeder tray. Each light in the display represents about 125 sheets of 20 pound/80 gsm paper.

- Messages appear on the system controller display and on the printer control console when trays containing required stock become low. The graphic display on the printer control console shows the location of empty feeder trays.

The following occurs when a feeder tray containing a required stock becomes low:

- If the required stock is available in another tray, the printer switches to that tray. You may load the first tray while the printer is feeding from the backup tray.
- If the required stock is not available in another tray, the printer stops and displays a message requesting that you load paper.
- If the backup feeder tray paper supply becomes low, the system displays a message indicating which tray needs to be loaded. You may load this tray while the printer is feeding from the backup tray.

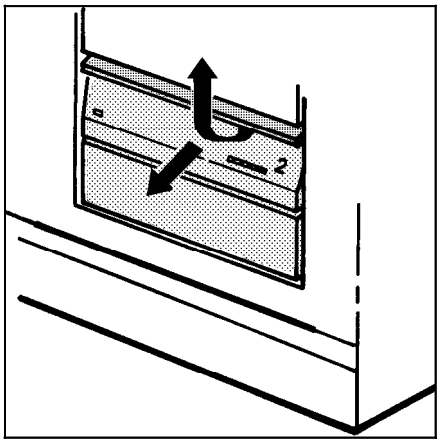
You may load trays while jobs are printing, provided that the printer is not currently feeding from that tray.

Follow these steps to load paper for all feeder trays, whether dual or high capacity:

1. Check the Ready to Open indicator on the feeder tray door.

   If it is not lit, press the Tray Unlock switch and wait for the Ready to Open indicator to light before opening the feeder tray.

2. Lift and pull out on the blue bar along the top of the feeder tray.



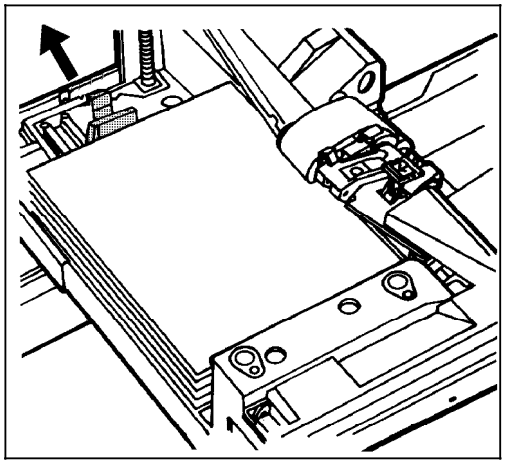
   Slide the tray all the way out for best access and ease of loading.

3. Press the bright green lever in the direction of its arrow to unlatch the paper feeder assembly.

CAUTION: Attempting to move the lever in any other direction could break it.

Remove any partially fed paper from the feeder assembly and discard it. Transparencies and other stiff materials should not be discarded unless they are damaged.

4. Remove any paper remaining in the tray and set it aside to be placed on top of the new paper.
5. Slide the length guide toward the rear of the printer.



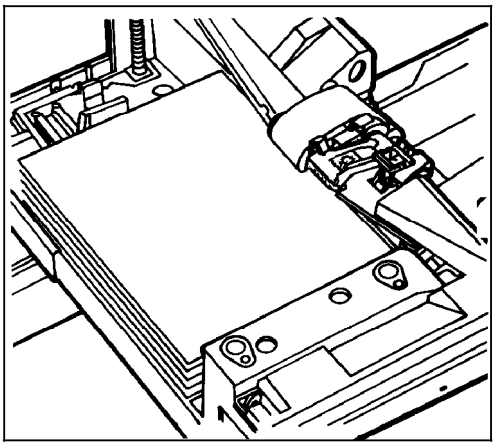
6. Load paper in the tray.

   Carefully position the paper in the right-front corner. Avoid fanning the paper unless you are loading predrilled paper.

   Do not load paper above the MAX line on the length guide; too much paper in the paper tray could result in paper misfeeds.

7. Pull the length guide forward to touch the back of the paper stack.

8. Relatch the paper feeder assembly by pressing the green dot until the assembly clicks into position.



9. Slide the tray into the printer until it latches. You are ready to resume printing.

Selecting feeder trays

The system provides two feeder trays (1 and 2) as part of the base configuration. Two additional feeder trays are available with the high-capacity feeder option (trays 3 and 4). You have the option of selecting any of the trays individually or as a single grouping of several trays, called a cluster.

Understanding clusters

Clusters provide a means of feeding specific paper stock to a print job. A cluster is a group of related paper trays. The trays assigned to a cluster usually contain the same size and type of paper. This allows common stock to feed from more than one tray.

Clusters are usually set up and named by the person who programs the print job. The cluster name consists of 1 to 6 alphanumeric characters, beginning with an alphabetic character. The name can represent the type of stock used in the job. The cluster definition and the name allow the system to locate the feeder trays with the correct paper stock to use for a specific job. Clusters allow you to use more than one size of paper within a job and to use groups of trays within a job as if they were only one tray.

Based on messages from the system, you load the correct stock into the feeder trays and identify the stock in each tray. The system then selects the stock as required by the print job. It does this by selecting a feeder tray for each page by checking the cluster name and paper size associated with the page.

Matching paper size to image size

Commands to change paper size are written into the print jobs when they are created. The system checks the paper size required for the job against the paper size currently being used. If the sizes do not match, one of the following series of messages displays:

```
OS2260 Paper in selected tray too large.  Change if desired
OS2000 Enter 'CONTINUE O' to resume printing

OS2261 Paper in selected tray too small.  Change paper
OS2000 Enter 'CONTINUE O' to resume printing

OS2262 Paper in cluster xxxxxx is too large.
OS2000 Enter 'CONTINUE O' to resume printing

OS2263 Paper in cluster xxxxxx is too small.
OS2000 Enter 'CONTINUE O' to resume printing
```

You can either change the paper in the selected tray (or cluster), or switch to another tray so that it is loaded with the correct paper size.

Note: If necessary, you can print on paper that is too large, but the printer does not allow you to print on paper that is too small. If you specified a paper size larger than the paper size loaded in the current tray, you must change the paper, select another tray with the correct size, abort the report, or space over pages until you reach a page that is the correct size for the paper in the tray.

Paper sizing and clusters

Different trays within a cluster can hold different size paper. An A in the ASIZ column of the cluster display on your system controller display indicates whether a cluster can contain trays of different sizes.

```
CLUSTER NAME       ASIZ          -----PREFER-----    -----CURRENT-----    -----STATUS-----
WHITE                A                 1 2                 1 2              HAS TRAYS
```

The person who codes the job using the above cluster tells the printer how to make the automatic sizing choices. Depending on how the job was coded, the printer either stops, asks you to correct a tray sizing problem and enter CONTINUE O, or makes its own selections. For example, if a mismatch occurs where the paper is larger than the paper specified in the job, the printer continues to print on any paper that is the size it needs or larger. If you encounter any problems related to paper sizing and clusters, contact your lead operator or systems specialist.

Current trays and preferred trays

Current trays in a cluster are those loaded with the correct stock. The CLU command establishes or deletes current trays for a cluster. Preferred trays in a cluster are those recommended when the cluster was created. The CLP command defines or deletes preferred trays for a cluster.

You can display the current trays in a cluster, confirm the preferred trays recommended by the cluster, or override them and choose another specific cluster or tray to use for feeding paper to a job.

A cluster remains in the cluster database while it has at least one preferred tray. You can still use a cluster after its preferred trays are deleted, provided you assign at least one current tray to the cluster. When those current trays are reassigned or deleted, the cluster is deleted from the database.

Displaying cluster status

You can display the status of any cluster or tray associated with a cluster. A cluster is active when at least one tray contains the stock specified for the cluster, and you have established that tray as a current tray. A cluster is inactive when no tray is loaded with the stock specified for the cluster. Both types of clusters are in use when they are called by a job that finds trays defined for the cluster. A cluster is missing when it is called by a job that cannot find either a preferred or current tray defined for that cluster.

To display information about all clusters or information based on the preferred trays in a cluster, enter the following CLP command:

CLP [*cluster-name*|*tray-number*]

[*cluster-name*|*tray-number*]

cluster-name
Displays cluster information about the specified cluster only. Omit this parameter to display information about all clusters.

tray-number
Displays all clusters having the specified tray number as a preferred tray.

To display information about clusters based on the current trays in a cluster, enter the following CLU command:

CLU [*cluster-name*|*tray-number*]

[*cluster-name*|*tray-number*]

Displays cluster information about the specified cluster only. Omit this parameter to display information about all clusters having current trays.

tray-number
Displays all clusters having the specified tray number as a current tray.

The following sample shows the cluster display format. If CLU was used, only the first four lines display.

CLUSTER	ASIZ	--PREFER--	--CURRENT--	--STATUS--
MAIN	A	1	1	HAS TRAYS
AUX	A	2	2	HAS TRAYS
AUTO		1 2 3 4	1 2 3 4	HAS TRAYS
WHITE	A	1 2		IS DEFINED
RED		3		IS DEFINED

- CLUSTER—The name of the cluster.
- ASIZ (auto size)—An A in this column indicates that the cluster can have multiple sizes of paper.
- PREFER—The trays defined by the programmer as the recommended trays in which to load the stock for greatest efficiency.
- CURRENT—The trays, if any, that you loaded with the requested stock of the cluster and defined as the current trays for that cluster.
- STATUS:
  - — HAS TRAYS displays for an active cluster (loaded with stock).
  - — IS DEFINED displays for an inactive cluster (not loaded with stock).
  - — UNDEFINED displays when a job calls a missing cluster (no preferred or current trays defined). The cluster cannot be used until you define it.

Setting current trays

Follow these steps to confirm preferred trays:

1. Load the required stock into the feeder tray (or trays) requested by the screen prompt.
2. Enter **CLU *cluster-name* SET**.

   This command notifies the system that the cluster is loaded exactly as specified by the defined preferred trays. The cluster status is updated to show that the preferred trays are also the current trays. If the cluster name is omitted, the definition of the current tray is updated with the preferred definition for each active cluster.

Follow these steps to override preferred trays:

1. Load the required stock into your chosen feeder tray (or trays).
2. Enter **CLU *cluster-name tray-number*** and press <ENTER>, for example, **CLU RED 3**. To assign more than one tray, separate each tray number by a comma, for example, **CLU RED 1,2,3**.

   The cluster status is updated to show the current trays you have just assigned to the cluster.

3. Enter **CLU** and press <ENTER> to verify that your chosen trays are removed from the current set of any clusters where trays were previously assigned.

To set current trays without removing trays from another active cluster:

Add **/NR** to the end of any CLU command you use to assign specific trays to a cluster, for example, **CLU RED 3,4/NR**.

Modifying current trays

To add trays:

Enter **CLU *cluster-name* + *tray-number*** and press <ENTER>, for example, **CLU RED +4**.

To delete trays:

Enter **CLU *cluster-name* — *tray-number*** and press <ENTER>, for example, **CLU RED -4** .

Redefining the preferred trays

To define preferred trays:

Enter **CLP *cluster-name* + *tray-number*** and press <ENTER>, for example, **CLP RED 3**. To assign more than one tray, separate each tray number by a comma, for example, **CLP RED 1,2,3**.

To add trays:

Enter **CLP *cluster-name* + *tray-number*** and press <ENTER>, for example, **CLP RED +4**.

To delete trays:

Enter **CLP *cluster-name* - *tray-number*** and press <ENTER>, for example, **CLP RED -4**.

To turn autosize on:

Enter **CLP *cluster-name* /A**, followed by any other parameters you need to redefine the cluster, and press <ENTER>; for example, **CLP RED/A, +4**.

To turn autosize off:

Enter **CLP *cluster-name* /-A**, followed by any other parameters you need to redefine the cluster, and press <ENTER>; for example, **CLP RED/ -A +4**.

Assigning all system trays to a cluster

To add all feeder trays in your printing system to a cluster, key in ALL at the end of any CLU or CLP command you use to define or modify a cluster, for example, **CLP WHITE ALL**.

To delete all the system trays from a cluster, key in -ALL at the end of the command, for example, **CLU RED -ALL**.

Changing the stock in a tray assigned to an active cluster

Follow these steps to avoid feeding a job the wrong stock:

1. Lower the tray to prevent its selection before the change of stock is complete.
2. Enter the necessary CLU command to add the tray to the new stock cluster. This step also removes the tray from the cluster feeding the job that is still running.
3. Load the tray with the new stock.

If you are changing the paper stock in response to a system prompt, enter **CLU *cluster-name* SET**.

Points to note when redefining clusters

- In some sites, access to the CLP command may be restricted.
- When you assign a current tray to a cluster, that tray is automatically deleted from the list of current trays for any other cluster where it was previously assigned. This can result in the previous cluster being deleted if all of its current trays are reassigned, and it has no preferred trays assigned to it. You can avoid this situation by always maintaining preferred trays for all clusters or by using the /NR parameter (keeping the following point in mind).
- Exercise caution when using the SET and NR parameters because one tray can easily be assigned to more than one cluster by mistake. To avoid that situation, use the following commands only during printing:
  - CLU *cluster-name* SET
  - CLU SET
  - CLU *cluster-name* SET/NR
  - CLU SET/NR.

Error conditions

Tray overlap This condition occurs when the same current trays have been assigned to more than one cluster. You must remedy the problem by reassigning the current trays.

Sizing error The current trays in the cluster contain paper of different sizes, but autosize is not set for the cluster. Enter **CLP *cluster-name* /A** to turn autosize on.

The printer cycles up again only after each of these errors is remedied.

Using the FEED command

The choice of feeder trays for each job can be established either as part of the job setup or by you, the operator. When you are using the FEED command to select feeder trays, keep the following points in mind:

- The MAIN cluster is predefined as tray 1, the AUX cluster as tray 2, and the AUTO cluster as all the trays physically present in the printer. However, all of these clusters may have been redefined at installation. You can also override these definitions with the CLUSTER (CLU) and CLP commands.
- The FEED 1 and FEED MAIN commands will not have the same result, even if the main cluster consists of only tray 1.
- Remember to enter the FEED MAIN command after a change of shift or after the printer is serviced. A previous operator or a service representative may have instructed the LPS to use a specific tray or cluster to override all the tray specifications within the jobs you start. The FEED MAIN command returns control to the printer.

Use the following FEED command to select a tray, cluster name, or cluster mode (MAIN, AUX, and AUTO):

FEED [MAIN | AUX | AUTO | *tray-number* | *cluster-name*]

(no parameters)
: If the printer is in FEED MAIN or FEED AUX mode, the command with no parameters toggles to the other of these two modes. If the printer is not in one of these two modes, the command has no effect.

MAIN
: Feeds from the MAIN cluster and gives the printer control of paper sources to ensure that all sheets from a designated stock name are fed from the assigned cluster.

AUX
: Feeds from the AUX cluster and overrides the feed source specified in the job.

AUTO
: Feeds from the AUTO cluster.

tray-number
: Feeds from a specified feed tray until you enter another FEED command. This command overrides the feed source specified in the job.

cluster-name
: Feeds from a specified feed tray until you enter another FEED command. This command overrides the feed source specified in the job.

Selecting output trays

Use the SELECT command to specify where the system delivers the printed output. If your LPS has the dual stacker configuration, your choices are tray 1, tray 2, or the sample tray. If your printer has a stitcher/stacker, your choices are tray 1 or the sample tray.

You may specify that the output be directed to a single tray, or you may specify automatic switching. With the automatic switching feature enabled, the printer switches to the other tray when the current tray becomes full. Automatic switching is the default mode set when the printer is powered on.

Transparencies must be delivered to the sample tray.

To change the output tray specification, enter the following SELECT command:

SELECT *tray-designation*[,SAMPLE]

tray-designation

AUTO

Selects automatic switching mode.

SELECT AUTO means that bins 1 and 2 are identical as far as the user is concerned and that either may be used, provided it is empty when you start a job.

If SELECT AUTO is entered when a Bypass Transport output device is attached to the printer, the following message displays:

```
OS1295 Destination trays not configured for this
command
```

TRAY

Selects the sample tray.

If you want to specify an alternate sample tray, refer to the description of the SAMPLE parameter below.

tray-number

Selects a specific tray by the tray number or by entering **E** for the Bypass Transport output device. With the stitcher/stacker, tray 1 is the only valid tray number. The following command example instructs the system to use tray 1 as the output tray:

SELECT 1

The following command example instructs the system to use Bypass Transport output device as the output tray:

SELECT E

The following command example instructs the system to use stitcher stacker as the output tray.

SELECT 1

SAMPLE

If you want to specify an alternative sample tray, enter the tray number as the tray designation, followed by the SAMPLE parameter. Use this option when the other output is more than 100 pages or when the sample tray is not functioning properly. The following command example instructs the system to use tray 1 as the sample tray. Do not use this option when printing transparencies.

SELECT 1,SAMPLE

The Bypass Transport output device cannot be used as the sample tray.

If SELECT 2,SAMPLE is entered when a Bypass Transport and bin 2 are attached to the printer, the following message displays:

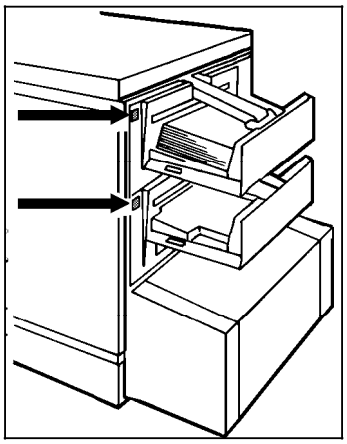
```
OS1295 Destination trays not configured for this command.
```

Changing the output tray specification while the job is printing

You can change the output tray specification while a job is printing. This allows you to unload output trays before they become full. Make sure that the other output tray is empty before redirecting output.

There are two ways of changing the output tray specification while a job is printing:

- Enter the **SELECT** command at the system controller.
- Press the tray selection button next to the tray to receive the printed output. This option is available only on the dual stacker.



When redirecting output while the job is printing, you may specify that the system completes the current report before switching trays. This option prevents a report from being split between two trays.

To keep reports together in the output tray, enter **SEPARATE**. Enter the command before the tray is full. The switch takes place as soon as the current report has finished printing.

To cancel the SEPARATE command, enter **SEPARATE OFF**.

Unloading output trays

You can unload output trays while the system is printing.

When a stacker tray is full, the following occurs:

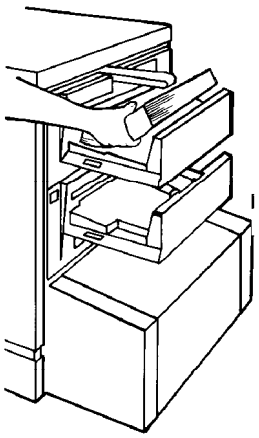
- The Tray Full indicator lights on the appropriate stacker tray (applies to dual stacker only).
- A message displays on the printer control console that indicates which output tray is full.
- In automatic switching mode, the system automatically switches over to the second tray (if it is empty) when one tray is full (applies to the dual stacker only).
- If only one tray was selected or if both output trays are full, the printer stops.
- The picture on the graphic display shows the location of the full tray.

Unloading dual stacker trays

Follow these steps to unload dual stacker trays:

1. Raise the scuffer arm.

2. Remove the stack of prints.



3. If the printer has stopped, resume printing by pressing the Continue button on the printer control console, or press <CON> on the keyboard.

Unloading the stitcher/stacker tray

Follow these steps to unload the stitcher/stacker tray:

1. Lift the black handle on the outside of the tray. Ease the tray out slowly to prevent it from falling or breaking.

1. Tray handle
2. Stacker arms

The tray slides down, then moves up. Make sure you let the tray slide all the way out before removing the paper.

A false tray-full condition occurs when you remove small stapled sets without pulling out the tray. The counter is not reset, causing the printer to stop before the tray is actually full.

2. Close the tray by sliding it back under the stacker arms.

   The tray clicks and slides back into place.

3. If the job is not complete, printing should resume automatically when the tray is replaced.

   If it does not, press the Continue button on the printer control console or press <CON> on the keyboard.

   You can have your service representative adjust your LPS so that printing automatically continues when the stitcher/stacker tray is unloaded and replaced.

Unloading the sample tray

The following occurs when 70 sheets are in the sample tray:

- A message appears on the printer control console.
- An audible tone sounds.

If you do not empty the tray before it reaches full capacity (100 sheets), the printer stops, and a message appears instructing you to empty the sample tray and press the Continue button to resume printing.

Follow these steps to unload the sample tray:

1. Remove the prints.

2. If the printer has stopped, resume printing by pressing the Continue button on the printer control console, or press <CON> on the keyboard.

6. Printer maintenance

This chapter contains procedures for the tasks you must perform to maintain your LPS.

Adding fuser lubricant

When the sensor in the reservoir detects a low level of lubricant, the following message displays on the printer control console:

```
LOW ON FUSER LUBRICANT
```

Once the lubricant runs out, the printer stops, and the following message displays on the printer control console:

```
FUSER LUBRICANT CONTAINER IS EMPTY
```

Printing cannot resume until you add fuser lubricant.

Follow these steps to add fuser lubricant:

1. Open the right printer door.
2. Place a drop cloth on the floor under the fuser area.

   WARNING: The fuser area can reach temperatures of approximately 370°F (188°C). Exercise care to prevent burns when working in this area.
3. Open the fuser drawer.

a. Locate the fuser drawer and move the green lever (A) counterclockwise.

b. Grasp the green handle on the fuser drawer (B) and pull it out until it stops.

4. Locate the fuser reservoir.

WARNING: Fuser lubricant contains silicone, which can cause eye irritation upon contact. Wash your hands with soap and water after you finish this procedure.

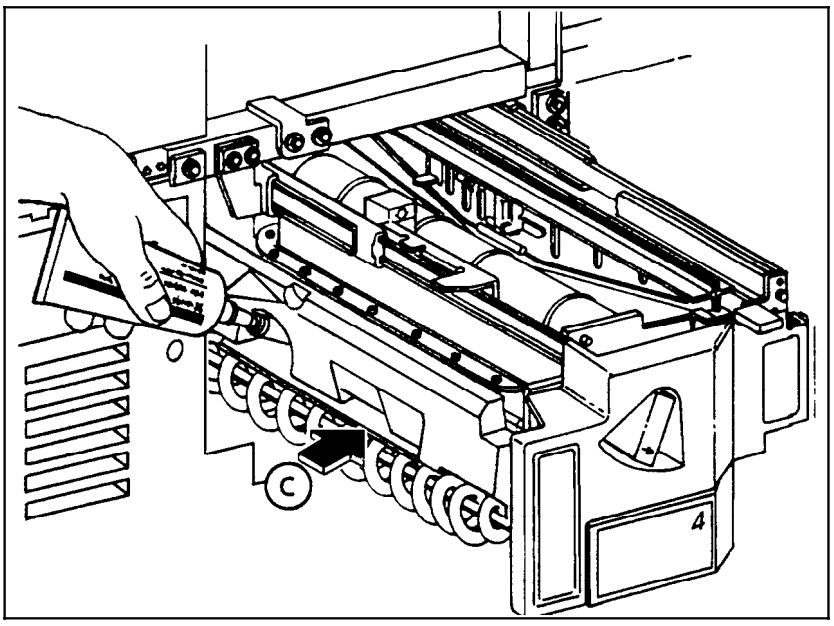
5. Fill the fuser lubricant reservoir.

   a. Remove the reservoir cap by turning it counterclockwise.

   b. Open a tube of fuser lubricant. Snip the end of the tube if it has not been opened before.

      CAUTION: The orange float that indicates the lubricant level, may stick to the reservoir wall. Be careful not to overfill the reservoir or an overflow of lubricant may occur.

   c. Carefully squeeze the fuser lubricant into the reservoir until the orange float reaches the top of the reservoir, or until you see the oil reach the top edge below the fuser cap. The reservoir may require up to two tubes of lubricant.



   d. Dispose of any empty lubricant tubes and the drop cloth in a trash receptacle. If there is any lubricant left in a tube, cap the tube and store it for future use.

   e. Replace the reservoir cap by turning it clockwise.

   WARNING: If any fuser lubricant is spilled onto the floor, it must be removed immediately. Fuser lubricant spills cause the floor to be slippery.

6. Close the fuser drawer.

a. Release the fuser drawer by pressing down on the green latch (A).

b. Push the fuser drawer in until it latches in place.

7. Close the printer doors.

   The system clears the fuser lubricant message after the printer doors are closed.

8. Wash your hands to remove any fuser lubricant.

Cleaning the 9-track magnetic tape drive

You should clean the 9-track magnetic tape drive every day, or after eight hours of operation. To achieve continued reliability and low maintenance, follow the procedure accurately.

All the 9-track magnetic tape transport components that you need to clean regularly are located on the tape deck. These components include:

- Magnetic head assembly
- EOT/BOT sensor
- Tape cleaner
- Air bearings.

In addition, you should check and clean the face of the tape deck, the reel hubs, and the cover door daily. This section contains each of these procedures.

1. **Upper air bearing**
2. **Tape cleaner**
3. **BOT/EOT block**
4. **Erase head**
5. **Magnetic read/write head**
6. **Lower air bearing**

The cleaning supplies necessary to complete these tasks are described in this chapter where appropriate.

WARNING: Cleaning solutions evaporate very quickly and give off vapors that may be irritating. For these reasons, it is important to keep the container tightly closed when not in use and to use it only in well ventilated areas. If you have sensitive skin, you may want to use gloves. Prolonged contact with skin should always be avoided.

Cleaning the reel-to-reel magnetic tape drive

Follow these steps to clean the 9-track magnetic tape unit:

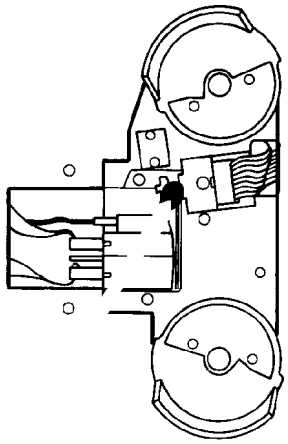
1. Remove the two plastic dust covers that protect the magnetic head components by placing your fingers on the edges of the covers and pulling them out from the face of the tape deck.

2. Clean the magnetic head using a soft, lint-free cloth, lightly moistened with the head cleaning solution. Wipe the magnetic head working surface in the same direction that the tape travels during data recording (forward).

   CAUTION: Wiping in the wrong direction could scratch and damage the head.

   Also, wipe the areas around the magnetic head to remove any dirt that the tapes may leave.

3. To clean the EOT/BOT sensor, lightly moisten a swab with the head cleaning solution. As the figure below shows, use the swab to remove any dirt or oxide that may have collected on the sensor surfaces and reflective strip.



4. To clean the tape cleaner, use the swab prepared for the EOT/BOT sensor. Carefully go over the tape cleaner blades with it to remove any dirt that may have collected.

   WARNING: The blades are razor sharp. Keep your fingers away from them.

5. Use a swab that you have lightly moistened with head cleaning solution to clean the air bearings. You may continue to use the same swab, as long as its cleaning surfaces appear to be clean and effective. Make sure that all areas are cleared of any oxide or dirt buildup. Use a small mirror, if one is available, to inspect the inner edge of the guides.

6. Replace the plastic dust covers for the magnetic head components by pressing them back into the positions from which you removed them (refer to step 1). Insert the two locating pins on each segment into holes in the face of the tape deck, and reposition the dust covers.

7. To clean the reel hubs, wipe the three hub pads using a clean, lint-free cloth that you have lightly moistened with the head cleaning solution.

8. Wipe down the face of the tape deck, the inside and outside of the dust covers, and the front door with a clean, lint-free cloth lightly moistened with any cleaning fluid that is safe for plastic or painted surfaces. Regular cleaning prevents the accumulation of dust and dirt which can transfer to the tape components.

   CAUTION: Incorrect cleaning fluids remove paint and damage cover surfaces. Make sure that any fluid used is safe for water-based paint and plastics. The transport cleaning solution is not safe for them and should be used only to clean the tape drive components.

Cleaning the 1/4-inch cartridge tape drive

The 1/4-inch cartridge tape drive heads should be cleaned at least once a week. If you use the drive for eight hours or more per day, then you should clean the drive daily. The process is simple and requires very little time.

1. If there is a cartridge in the tape drive, remove it.
2. Insert the cleaning cartridge into the tape drive and close the door.

   Cleaning begins automatically once the cartridge is inserted.
3. Allow the tape to run for approximately 30 seconds.
4. Remove the cartridge.

Replace the foam pad on the cleaning cartridge after it has been used three times. The cleaning cartridge can be used approximately 100 times.

Cleaning the diskette drive

The diskette drive should be cleaned once each month. To clean it, you must have the cleaning kit. This kit contains two cleaning disks for double-sided diskette drives and a bottle of solution.

1. Make sure the system is powered on.

   There must be power to the diskette drive to perform this procedure.

2. Apply a small amount of the cleaning solution to the cleaning disk. Apply just enough solution to saturate the area exposed in each of the two large cutouts.

3. Insert the prepared cleaning disk, label side up, into the diskette drive until the jacket is solidly against the stops, just as you would insert a diskette.

4. Move the drive lever into the closed position (clockwise) and allow the diskette drive to run for at least 30 seconds.

   CAUTION: You may run the cleaning disk for more than 30 seconds, but never more than 5 minutes. Excessive use causes premature wear to the heads.

5. Move the drive lever to the open position (counterclockwise).

6. Remove the cleaning disk.

7. Check off the usage on the label and replace it in its protective envelope. Store it with the bottle of solution in the cleaning kit box for future use. Do not use the cleaning disk more than the number of times you can make checks on the label.

Cleaning exterior surfaces

Clean the display with a soft, lint-free cloth dampened with a glass, lens, or mirror cleaner. Do not spray the liquid directly onto the display since it may cause damage.

Although the keyboard may seldom need to be cleaned, the exterior surfaces of the system controller and printer should be cleaned daily, if possible. Clean the keyboard and exterior surfaces with a mild household detergent poured or sprayed onto a cloth lightly dampened with water. Do not saturate the cloth; just dampen it. Liquids must not be allowed to drip onto anything electrical or mechanical. For the same reason, never spray or pour the cleaner directly onto the keyboard or the exterior surfaces of the system.

Copying and backing up files

You may need to copy files from one magnetic storage media to another or to back up files onto a floppy diskette or a 1/4-inch cartridge tape.

This section contains procedures for copying files and for all operator tasks related to using the floppy diskette drive.

Copying files

This section describes the procedure for copying files. You can copy files to or from any of the magnetic media (floppy diskette, 1/4-inch tape, 9-track magnetic tape, or 18-track cartridge tape) in your system, including the system disk, which cannot be removed.

If you are unfamiliar with the procedure for loading a particular medium, refer to the section of this guide named in the step.

1. Load the source tape or diskette.

   The source tape or diskette contains the file or files to copy. If the source file is on the system disk, you do not need to load the source.

   For more information about loading 9-track magnetic tapes and 18-track cartridge tapes, refer to the “Setting up print job sources” chapter.

2. Load the target tape or diskette.

   You copy the file or files from the source media to the target tape or diskette. If the target media is the system disk, you do not need to load the source.

   If you are copying files onto a diskette, and the diskette has

not been formatted, you must format the diskette. Refer to the "Formatting a diskette" section later in this chapter.

For more information about loading 1/4-inch cartridge tapes, 9-track magnetic tapes and cartridge tapes, refer to the "Setting up print job sources" chapter.

3. Enter the **COPY** command. Use the appropriate substep described below, depending on the source and target media.

   a. To copy files from an unlabeled tape to the system disk, enter the following command:

      COPY TAPE|CAR [EBCDIC|ASCII] [*disk-id*] *file-id*

      TAPE|CAR
      Specifies the tape drive where the file is located. Use TAPE if the file is on an open-reel tape, or CAR if the tape is on a cartridge tape. Use the SUB DEVICE command to identify the cartridge tape drive assigned to the CAR keyword, if there is more than one cartridge tape drive on your system (refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*).

      [EBCDIC|ASCII]
      Identifies the format of the source tape.

      [*disk-id*]

      Identifies the system disk to which the file is written (DP1:, DP1:, DP2:, or DP3:). You do not need to enter this parameter.

      file-id

      Specifies the full name of the file to copy (including its extension).

   b. To copy files from the system disk to an unlabeled tape, enter the following command:

      COPY TAPE|CAR WRITE [EBCDIC|ASCII] [*disk-id*] *file-id*

      TAPE|CAR
      Specifies the tape drive to which you want to write the file. Use TAPE if the file is on a 9-track tape, or CAR if the file is on a 18-track cartridge tape. Use the SUB DEVICE command to identify the cartridge tape drive assigned to the CAR keyword if there is more than one cartridge tape drive on your system. (Refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*.)

      [EBCDIC|ASCII]
      Identifies the format of the tape to be written.

      [*disk-id*]
      Identifies the system disk containing the file (DP0:, DP1:, DP2:, or DP3:). You do not need to enter this parameter.

      file-id
      Specifies the full name of the file to copy (including its extension).

c. To copy files from a labeled tape to the system disk, enter the following command:

COPY TAPE|CAR LABEL [REVIEW] [*disk-id*] [*input-file-id* [*output-file-id*] NEXT|ALL|*file-type*]

TAPE|CAR
Specifies the tape drive where the file is located. Use TAPE if the file is on a 9-track tape, or CAR if the tape is on an 18-track cartridge tape. Use the SUB DEVICE command to identify the cartridge tape drive assigned to the CAR keyword, if there is more than one cartridge tape drive on your system (refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference*).

[REVIEW]
Displays a warning message when the file to be copied is about to overwrite a file of the same name already on the system disk, and asks if you want to continue. Enter **Y** to overwrite the file, **N** to skip the file, or **X** to abort the copy process.

[*disk-id*]
Identifies the system disk to which the file is written (DP1:, DP2:, or DP3:). You do not need to enter this parameter.

input-file-id
Specifies the full name of the file to copy (including its extension).

[*output-file-id*]
Specifies the name of the file to be written if it is different than the name of the source file. If *output-file-id* is not specified, the name of the source file is used.

NEXT|ALL|*file-type*
Specifies which files to copy:

NEXT
Copies the next file on the tape to the system disk.

ALL
Copies all files on the tape to the system disk.

file-type
Copies all files with a specified extension (file type) to the system disk.

d. To copy files from the system disk to a labeled tape, verify that the tape is initialized. If it is not, refer to the *Xerox 4050/4090/4450/4650 LPS Command Reference* for information on the VOLINIT command. Then enter the following command:

COPY {TAPE|CAR} WRITE [/BF:n] LABEL [*disk-id*] {*file-id* [*output-file-id*] ALL|*file-type*}

{TAPE|CAR}
Specifies the tape drive where the file is to be written. Use TAPE if the file is on an 9-track tape, or CAR if the tape is on a cartridge tape. Use the SUB DEVICE command to identify the cartridge tape drive assigned to the CAR keyword if there is more than one cartridge tape drive on your system.

[*disk-id*]
Identifies the system disk containing the file (DP1:, DP2:, or DP3:). You do not need to enter this parameter.

file-id
Specifies the full name of the file to be copied (including its extension).

[*output-file-id*]
Specifies the name of the file to be written if it is different than the name of the source file. If *output-file-id* is not specified, the name of the source file is used.

ALL **|** *file-type*
Specifies the files to copy:

ALL
Copies all files on the tape to the system disk.

file-type
Copies all files with a specified extension (file type) to the system disk.

e. To copy files from the system disk to a diskette, enter the following command:

FLOPPY SAVE [REVIEW] [*disk-id*] [*input-file-id* [*output-file-id*] ALL | *file-type*]

[REVIEW]
Displays a warning message when the file to be copied is about to overwrite a file of the same name already on the diskette, and asks if you want to continue. Enter **Y** to overwrite the file, **N** to skip the file, or **X** to abort the copy process.

[*disk-id*]
Identifies the system disk containing the file (DP1:, DP2:, or DP3:). You do not need to enter this parameter.

[input-file-id]
Specifies the full name of the file to copy (including its extension).

[output-file-id]
Specifies the name of the file to be written, if it is different than the name of the source file. If no *output-file-id* is specified, the name of the source file is used.

ALL **|** *file-type*
Specifies the files to copy.

ALL
Copies all files on the tape to the diskette

file-type
Copies all files with a specified extension (file type) to the diskette.

If the files you are copying exceed the storage capacity of the diskette, the system displays the following messages:

```
** DISKETTE IS FULL **
REMOVE CURRENT DISKETTE
AND INSERT ANOTHER DISKETTE
ENTER:    C   CONTINUE COPYING
          X   TO ABORT CURRENT SAVE
```

Unload the diskette in the drive and load a formatted disk, then enter **C** to continue the copying process.

f. To copy files from a diskette to the system disk, enter the following command:

FLOPPY RESTORE [REVIEW] [*disk-id* [*input-file-id* [*output-file-id*] ALL | *file-type*]

REVIEW
: Displays a warning message when the file to be copied is about to overwrite a file of the same name already on the system disk, and asks if you want to continue. Enter **Y** to overwrite the file, **N** to skip the file, or **X** to abort the copy process.

[*disk-id*]
: Identifies the system disk to copy the file to (DP1:, DP2:, or DP3:). You do not need to enter this parameter.

file-id
: Specifies the full name of the file to copy (including its extension).

[*output-file-id*]
: Specifies the name of the file to be written if it is different than the name of the source file. If *output-file-id* is not specified, the name of the source file is used.

ALL | *file-type*
: Specifies the files to copy.

  ALL
  : Copies all files on the tape to the system disk.

  file-type
  : Copies all files with a specified extension (file type) to the system disk.

Handling diskettes

Observe the following guidelines when handling diskettes:

- Hold the diskette by its cover. Do not touch the portions that show through the cutout areas in the disk cover.
- Store the diskette in its protective sleeve when it is not in use.
- Write on diskette labels before you apply them to the diskette. Do not write on diskettes or on labels that are attached to the diskette.
- Do not attempt to clean a diskette.

- Do not expose diskettes to excessive heat or sunlight, or to magnets or magnetized objects such as displays, telephones, and so forth.
- Do not bend or fold a diskette.

Follow these steps to load a diskette:

1. Make sure that the disk drive lever is in the open position.

   If the lever is in the closed position, there may be a diskette loaded in the drive. Turn the lever to the open position and remove the diskette.

2. Insert the diskette with the label facing to the left until it is completely inside the drive.

   You can feel the diskette hit the stops.

3. Turn the lever clockwise 1/4 turn to the closed position.

   If you feel any resistance when turning the lever, make sure that the diskette is inserted completely into the drive.

Formatting a diskette

You must format a diskette before you use it.

CAUTION: Formatting a disk erases all data on the diskette. Before you format a diskette, verify that the diskette is unformatted (has never been used) or that the information on the diskette can be erased.

1. Load the diskette.

   For more information about loading a diskette, refer to the "Loading and unloading a floppy diskette from the system controller" section in the "Setting up print job sources" chapter.

2. Enter the following FLF FORMAT command:

   FLF FORMAT
   [DENSITY=HIGH|LOW][,SECTORCHECK=YES|NO]

   [DENSITY=HIGH|LOW]
   You can buy high-density diskettes or low-density diskettes. The density determines the storage capacity of the diskette. The system detects the type of diskette you loaded and formats the diskette accordingly.

   You may format a high-density diskette in the low-density format (for compatibility with another system) by specifying the LOW option.

   If you attempt to format a low-density diskette using the HIGH option, the system displays the following message:

   ```
   FL1500  High density not available
   FL1150  Proceeding at low density
           should formatting continue? (Y/N)
   ```

   If you want to format the diskette, enter **Y**; otherwise, load a high-density diskette and enter the FLF FORMAT command again.

   [SECTORCHECK=YES|NO]
   Verifies that the format process was successful by checking each sector of the diskette. This option increases the time required to perform the format process.

3. When the formatting and initialization are complete, the system displays the following messages:

   ```
   FL1055 Total number of bad sectors = 000000

   Please enter floppy label up to 30 characters:
   ....*....*....*....*....*....*....*
   Enter a label for the diskette if you wish.
   ```

   Enter a label for the diskette.

   Note: If the system reports bad sectors on the diskette, you may want to consult with your system administrator about formatting another diskette. Bad sectors on a diskette may limit its storage capacity and, in some cases, may make diskettes unreliable.

   When the system displays the following message, the diskette is formatted, initialized, and ready to use:

   ```
   FL1580 Floppy initialization complete
   ```

Replacing the pressure roll wiper

Replace the wiper when:

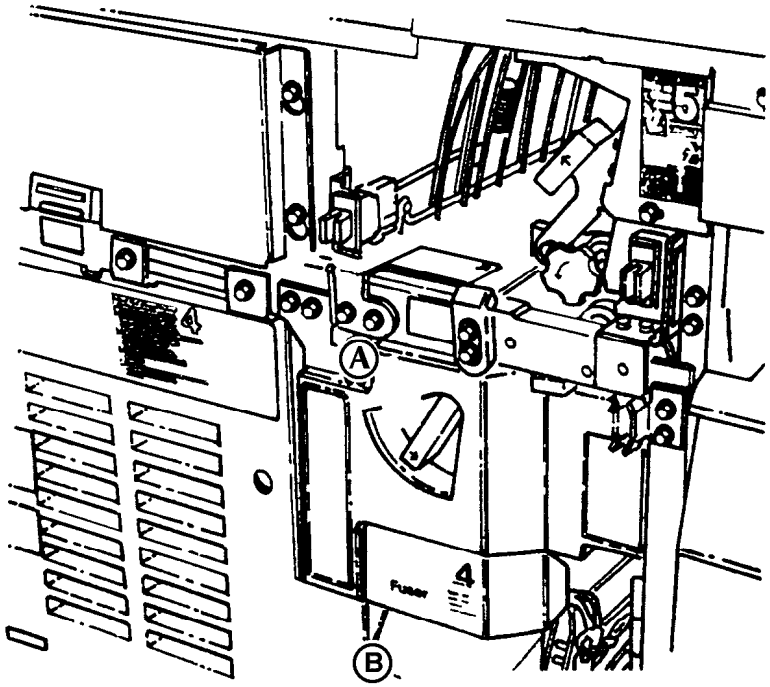
- Excessive oil or dirt buildup appears on the wiper.
- The first few prints of a job have oil or dirt on them.
- An interval of 80,000 to 100,000 prints are made. The number of prints made is determined by job ticket quantities or by viewing the billing meter in the ADMINISTRATION mode.

The following materials are required:

- New pressure roll wiper and drip pan pad
- Gloves
- Cleaning cloth
- Drop cloth for the floor.

WARNING: Perform this task only when the fuser is cool. Exercise care to prevent burns when working in this area. Do not perform this task if the fuser is hot.

1. Power off the printer.
2. Open the printer doors.
3. Open the fuser drawer.
   a. Locate the fuser drawer.
   b. Move the green lever (A) counterclockwise.
   c. Grasp the green handle on the fuser drawer (B) and pull it out until it stops.



4. Determine if the fuser is cool.

Place your hand approximately 1 inch (25 mm) above the fuser area.

If you feel heat, STOP, leave the fuser drawer out, and wait for the fuser to cool. DO NOT touch the fuser while it is hot.

If you DO NOT feel heat, continue with the procedure.

5. Put on gloves.

   WARNING: Fuser agent contains silicone that causes eye irritation upon contact. Wash your hands with soap and water after you finish this procedure.

6. Locate the pressure roll wiper.

7. Remove the pressure roll wiper assembly.

   a. Pull upward on the upper wiper rod to release the rod, as shown.

b. Remove the lower rod from the springs and lift the wiper assembly away.

8. Remove the upper and lower rods from the wiper assembly.
9. Place the used wiper and drip pad in the plastic bag that came with the new wiper.
10. Dispose of the bag in a trash receptacle.
11. Use a clean cloth and wipe the dirt off the entire pressure roll. Wipe the roll while rotating it.

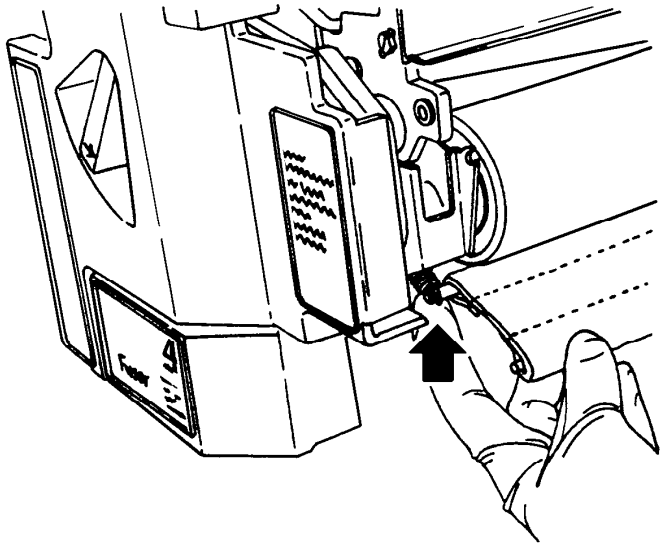
12. Discard the cloth in the trash receptacle when you are finished.
13. Carefully place the new drip pad in the drip pan.
    a. Insert the short rod in the upper loop of the new wiper.

b. Insert the long rod through the drip pan and the lower loop of the new wiper.

14. Install the new wiper.

CAUTION: Make sure that the smooth side of the wiper is facing the pressure roll.

a. Insert the lower rod onto the springs on both ends of the pressure roll, as shown below.



b. Center the wiper on the pressure roll. Pull up the wiper and place the upper rod onto the brackets on both ends of the pressure roll, as shown below.

c. Release the fuser drawer by pressing down on the green latch (A).

d. Push the fuser drawer in until it latches in place.

16. Close the processor doors.
17. Remove the gloves. Do not let any residue come in contact with your skin. Dispose of the gloves in a trash receptacle.
18. Power on the printer.
19. Wash your hands.

Setting the time and date

The system must be idle when setting the system time and date. (Idle means offline, not printing, and not performing any nonprinting tasks.)

You must also log on to level 2 to use the SETTIME command.

To change the time or date display without rebooting the system, enter the following SETTIME command:

SETTIME [*date*][*time*]

[*date*]
Specifies the date to set as the system date. Use the mm/dd/yy or mm-dd-yy format. Months may be expressed as numbers or using the common three-character abbreviations.

[*time*]
Specifies the time to set as the system time. Use the hh:mm:ss format in a 24-hour clock. You can separate numbers by a colon or by a space. You do not need to enter the seconds.

Example: SETTIME 04-APR-93 14:27

Use the TIME command to verify the time and date maintained by the system, or to turn the display on and off.

TIME [ON | OFF]

ON
Turns display on, and keeps it updated.

OFF
Turns display off.

Time and status display

The time and status display has one to five lines of information, each consisting of two spaces and eight characters of status information. Figure 6-1 shows the display format.

Figure 6-1. **Time and status display**

```
..hh:mm:ss
..PF: xx%
..QM:nnn
..IiiiOooo
..HostStat
```

The first line is always the current time of day.

The second line reflects the percentage of the print file currently free, or unused. The percentage can range from 0% to 100%. The 0% indicates print file saturation. A 100% indicates the print file is empty. If this information is not provided by the Queue Manager task for any reason, this line will not be displayed, and all following lines of the Time-of-Day display will be moved up. Note that the print file may indicate less than 100% free when the print queue is empty. This situation is caused by one or more cylinders being marked unavailable due to bad areas of the system disk being included in the print file area. This situation can also occur if areas of the print file are manually declared to be flawed and unavailable through the BBU utility program. For more information on the print file, refer to the REALLOCATE command.

The third line reflects the number of reports currently in the Queue Manager queue. The number *nnn* can range from 1 to 999. If more than 999 reports are in the queue, the line is displayed as:

QM: >999

This information is only displayed if it is not zero. If there are no reports in the queue, this line is not displayed, and all following lines of the Time-of-Day display will be moved up.

The fourth line reflects the status of input and output processing if they are processing. Otherwise, this line is blank.

The fifth line reflects the status of the remote input source if the system has one and it is active; otherwise, this line is blank.

The meanings of status codes displayed on the fourth and fifth lines are shown in table 6-1.

Table 6-1. **Status display information**

Iiii	**Input status**
WAIT	Waiting for a job
TAPE	Processing a tape job
DISK	Processing a disk job
HOST	Processing an online job
HIP	Processing a HIP job
SDI	Processing an SDI job
Oooo	**Output status**
WAIT	Waiting for a job
JAM	Printer jammed and must be cleared
PRsd	Actively printing: source and destination are indicated by "sd"
IDLE	Neither input nor output processing is active
Host	**Remote source**
HOST	IBM channel host (through online/XPAF)
XNS	Ethernet host
871	871-CM host
DMR	DMR-11 host
XPS	Xerox Print Services Manager
Stat	**Remote source status**
OFFL	No communication between host and LPS
NRDY	Communication established but LPS not ready to receive data or commands from host
WAIT	LPS ready and waiting for data or commands from host
RECV	LPS actively receiving data or commands from host
SEND	Host actively sending data or commands to LPS
SPND	LPS has suspended communication with the host
ONLP	LPS pending receipt from host
SESN	Active XNS session

If the remote source is a host computer and the printer needs your intervention, the host is notified through status information, and the third line is replaced by the following message:

A T T N.

If your LPS uses the HIP and the IBM online channel interface concurrently, the time and status display in the upper right-hand corner of the screen may not always be correct. The third line of this display indicates the selected remote interface and its current status. When both interfaces are active, they are both updating the same status fields, and only the most recent update will be seen. As a result, the displayed current host may be, and will remain, incorrect. The current status continues to display the most recent status change of whichever interfaces are active.

7. Shutting down the LPS

The procedures in this chapter describe powering off your LPS.

Powering off the system

The system has a power saver feature designed to save energy and to reduce wear on moving parts. You only need to power off the system when it will be idle for 8 hours or more.

Depending on whether your system is receiving jobs from an offline source or an online source, follow one of the procedures described in this section to power off your system.

Online

Follow these steps to power off the LPS if your system is receiving jobs from an online source:

1. Contact the host system operator and request that the output from the host to the LPS be drained and the system be varied offline from the host.
2. Press <JOBS STATUS> to determine if the system is idle.

   If the queue has no jobs waiting to print, the following message displays on the controller:

   ```
   JOB QUEUE IS EMPTY
   ```

   If the job queue is not empty, enter the ENDJOB or the DRAIN command to print any pages remaining in the print file. Then press <JOBS STATUS> again to verify the queue is empty.
3. Enter **OFFLINE.**
4. Enter **CONTINUE I** or press <CON>.

   CAUTION: Failure to have the system offline prior to powering off causes problems with the host system.

   When the following message appears, press the System Power Off button: `OS0040 System is 'OFF-LINE'`

This affects the entire system: the printer as well as the system controller. Do not press the On/off switch on the printer.

Offline

Follow these steps to power off the LPS if your system is receiving jobs from an offline source:

1. Press <JOBS STATUS> to determine if the system is idle.
2. Unload the tape, cartridge, or diskette. For more information on unloading tapes and cartridges, refer to the relevant section in the "Setting up print job sources" chapter.

   CAUTION: If a tape or cartridge is loaded when the system Power Off button is pressed, data on the tape or cartridge could be destroyed.
3. Press the System Power Off button on the system controller panel.

This turns off the entire system: the printer as well as the system controller. Do not press the On/off switch on the printer.

8. Solving problems

Follow the procedures in this chapter if problems arise during the operation of your LPS. If additional help is required, refer to the card in the back of this book for instructions on contacting a Xerox support service.

Aid to problem solving

If you have trouble identifying the cause of errors, you can log the commands you enter and the system responses in a special file using a function called the Data Capture Utility (DCU). If you feel that this feature could be beneficial to your work on the system, consult your system administrator or refer to the *Xerox 4050/4090/4450/4650 LPS System Administration Guide*.

9-track magnetic tape drive on the controller cabinet problems

In case you encounter magnetic tape drive problems, you can take the following remedial steps to resolve the problem. For further information, refer to the "Using the 9-track magnetic tape drive" section of the "Setting up print job sources" chapter.

Responding to 9-track magnetic tape drive error messages

If magnetic tape drive errors are reported by the system controller display, first clean the tape path thoroughly.

Note: The diagnostic codes that indicate a tape drive failure begin with the number 21.

During cleaning, take time to inspect the tape path components for defects, such as damaged tape cleaner blades, loose air bearings, and cracked or misaligned reel flanges causing contact with tape edges. Cleaning and inspecting components take only minutes but go a long way toward maintaining the reliability of the transport and minimizing downtime.

If cleaning does not resolve the problem, load another tape of known good quality (to eliminate the possibility of the problem being caused by a defective tape). If the problem persists and there are no other operator-correctable actions indicated by the status code on the operator control panel, perform Diagnostic Test 01 and place a service call.

Diagnostic Test 01

The built-in Diagnostic Test 01 is used to verify a malfunction when a fault code indicates transport failure. Test 01 should be performed prior to calling for service because the information obtained assists the service representative. As soon as a problem becomes evident through fault code messages, record or log all fault messages so that the service representative can determine not only the type of malfunction but also the circumstances under which the fault occurred.

Follow these steps to perform Diagnostic Test 01:

1. Press the Power switch off and then on. This causes the tape drive to perform a diagnostic self-check. If a fault is indicated at this time, do not attempt further testing. Place a service call.
2. Thread a scratch tape through the tape path and onto the take-up reel but do not load it.

   Note: A scratch tape is a tape of known good quality that has no needed data written on it. It must have a write-enable ring installed because Test 01 performs the read/write function during its operation.

   CAUTION: The use of anything other than a scratch tape while performing any diagnostic test could result in severe data loss. Always install a scratch tape of known good quality before performing any diagnostic tests.
3. Close and latch the door.
4. Press the Reset switch.

5. Press the Test switch. The diagnostic indicator illuminates, and the display indicates 01.
6. Press the Execute switch. Test 01 starts with the display panel stepping through the number pairs from 00, 11, 22, 33, through 99. Make sure that these numbers appear correctly and in sequence. Also, make sure that all indicators except Logic Off, BOT, and High Density are lit.

   Test 01 continues with various tape motion and read/write exercises for approximately 10 minutes if a 10.5 inch reel (2400 feet/731.5 meters) is used.

If the test runs to completion, it was successful. The transport performs a rewind/unload operation. The digital display indicates 00 and the Reset indicator illuminates. This does not mean that the problem is resolved, only that some of the possible causes have been eliminated by the diagnostic program. When placing the service call, make sure to indicate whether or not Diagnostic Test 01 was successful.

If the test does **not** run to completion when it stops and a numerical fault code appears in the display window, refer to the operator-correctable actions list inside the door of the tape drive unit (lower half of the list) and follow those directions. Reinitiate Test 01 to see if it can run to completion. If not, report any and all numbers when placing the service call.

Additional diagnostic tests

Your service representative may ask you to perform the additional diagnostic tests 02 and 03.

Diagnostic Test 02

In some cases, your service representative may ask you to perform Diagnostic Test 02 to check tape tension. Never attempt to perform this test, except when directed to do so by a service representative.

Follow these steps if directed to perform Diagnostic Test 02:

1. Make sure that the transport is powered on. Thread a scratch tape but do not load it. Close and latch the door.
2. First press the Reset switch, then the test switch. The diagnostics indicator should be lit, and 01 should appear in the display window.
3. Press the Step switch **one time**. The numerical display steps from 01 to 02. If you press it too many times, press the Reset switch and repeat this step.
4. Press the Execute switch. Test 02 starts and runs for less than 30 seconds.

If 00 displays at the completion of the test, it was successful. If the test was unsuccessful, the diagnostic program halts, the Reset indicator lights, and a numerical fault code appears on the display. Record this number and report it when placing the service call.

Diagnostic Test 03

Your service representative may also ask you to perform Diagnostic Test 03 to check the velocity control servo system. Never attempt to perform this test, except when directed to do so by a service representative.

Follow these steps if directed to perform Diagnostic Test 03:

1. Make sure that the transport is powered on. Do not thread a tape. Remove it from the tape path if one is already threaded. Close the door.
2. First press the Reset switch and then the Test switch. The diagnostics indicator should be lit, and 01 should appear in the display window.
3. Press the Step switch **twice**. The numerical display steps from 01 to 02 and then to 03. If you press it too many times, press the Reset switch and repeat this step.
4. Press the Execute switch. Test 03 runs for less than one minute.

If 00 displays at the completion of the test, it was successful. If the test was successful, the diagnostic program halts, the Reset indicator lights, and a numerical fault code appears on the display. Record this number and report it when placing a service call.

Paper jams

Materials sometimes jam when leaving the feeder trays or moving through the paper path. You must clear the jam before printing can continue. The system provides the following aids for cleaning jams:

- The message display of the printer control console indicates the areas of the printer that you must check or clear. The graphic mimic on the printer control console shows the location of the areas in the printer and the doors to open to access them.

It is possible for the printer control console to indicate an existing paper jam, while the system controller display shows the following message:

```
ENTER CON O.
```

If you press <CON> without clearing the paper jam, the following printer jam message appears on the system controller display:

```
PRINTER JAM IN AREA  see IOT.
```

- Jam clearance message labels are located inside the printer where needed.

- Each handle, lever, or knob you use to clear a jam is bright green and marked with an arrow indicating the direction it moves in.

Follow these steps to clear a paper jam:

1. Go to the area of the printer indicated by the messages and the graphic mimic on the printer control console.
2. Open the printer doors to access the area.
3. Clear any paper from that area following the instructions on the message labels printed on that area, the messages on the printer control console, and the instructions in this section listed by the area number.

   Clear paper from only the area specified in the error message.

4. If the system sent waste sheets to the sample tray, remove those sheets and discard them.
5. Close any printer doors you opened.
6. Press the Continue button to resume printing.
7. When the job finishes printing, check the output to make sure there are no missing or duplicate pages.

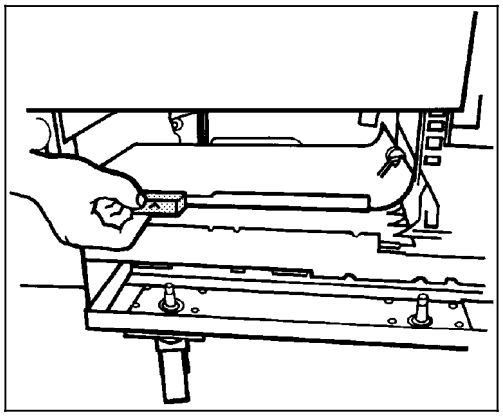
Clearing area 1A

Remove and discard any paper found in area 1A.

Lift the three green handles one by one. Each time you lift a handle, remove and discard any paper found beneath the open section. Lower the handles before continuing.

Clearing area 2A

Lift the green handle. Remove and discard any paper you find in this area.



Clearing areas 3 through 5

When paper jams occur in areas 3 through 5, three extra blank sheets are sent through the printer to make sure that the fuser is clean. These sheets are sent to an unused stacker tray and should be discarded. You are not charged for these sheets. If the job is directed into stacker tray 1 or 2, the discarded copies are sent to the sample tray. If the job is directed to the sample tray, discard copies are sent to an empty stacker tray.

Follow these steps to clear area 3:

1. Push and hold the green handle to the right (in the direction of the arrow marked on it).
2. Remove and discard any paper found there.
3. Release the handle and close the door.

Follow these steps to clear area 4:

1. If there is a jam in both areas 4 and 5, clear area 5 first.
2. With your left hand, move and hold the green latch to the right (the direction of the arrow marked on it). With your right hand, pull out the large green handle until the fuser unit latches in the fully open position.

3. Raise the small green handle at the front of the fuser assembly.

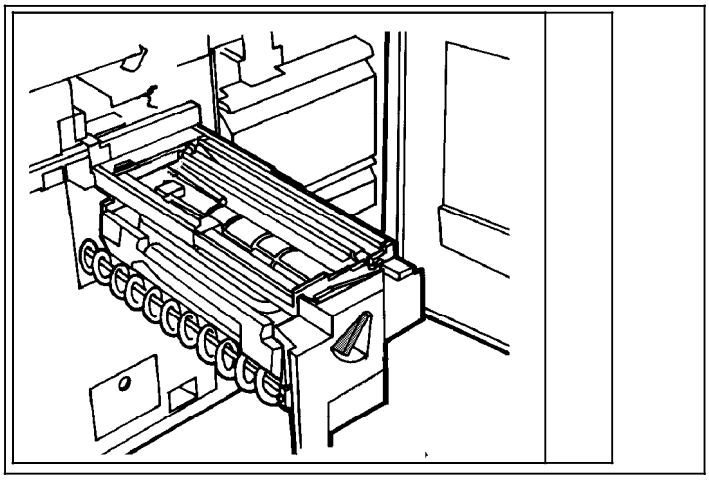
WARNING: Parts of this area are hot enough to cause some discomfort after prolonged contact. Exercise caution.

4. Remove and discard any paper found in this area.

CAUTION: Do not use a sharp object to remove paper wrapped around the fuser rolls. Attempting to do so could damage the roller and require its replacement.

5. Return the small green handle to its original position.

6. Push down on the green release latch.



7. Slide the fuser unit back into the printer until it latches into the closed position.

Follow these steps to clear area 5:

1. If paper is caught in the rollers between areas 4 and 5, first turn the green knob in the direction of the arrow marked on it.

   This ensures that the paper has completely moved into area 5, where you can remove it without tearing it.

2. Push and hold the green handle to the left (in the direction of the arrow marked on it). Remove and discard any paper found there.

3. Release the green handle.

Clearing areas 6 and 6A

Follow these steps to clear area 6:

1. Open the top cover of the printer. Remove and discard any paper.

Follow these steps to clear area 6A of the high-capacity feeder (HCF):

1. Open the top cover of the HCF. (Also open the top cover of the stacker, if the printer control console message display indicates it needs to be opened.)

2. Remove and discard any sheets under the HCF cover.

   If the printer control console message display also indicates a problem in the output module, remove and discard those sheets as well. Refer to the appropriate "Areas" section of this chapter for detailed instructions.

Clearing area 7

Area 7 of the paper path is used only during two-sided (duplex) printing. Follow these steps to clear area 7:

1. Pull the block-shaped set separator toward you and hold it in that position.

2. Remove and discard any paper in the duplex tray or beginning to feed from it.

3. Return the set separator to its upright position.

Clearing areas 8 and 9

Follow these steps to clear area 8:

1. Open the top cover of the output module as indicated on the graphic display of the printer control console and remove any paper found there.

Follow these steps to clear area 9:

1. Locate the green handle on the upper-right side of area 9.

2. Pull the green handle down and to the left (in the direction of the arrow marked on it) to hold the assembly open.

3. Remove any paper.

Clearing areas A and B

Follow these steps to clear area A of the stitcher/stacker:

1. Open the top cover of the stitcher/stacker and locate area A in the center.

2. The instruction label for area A indicates that you should remove only the paper under this paper guide.

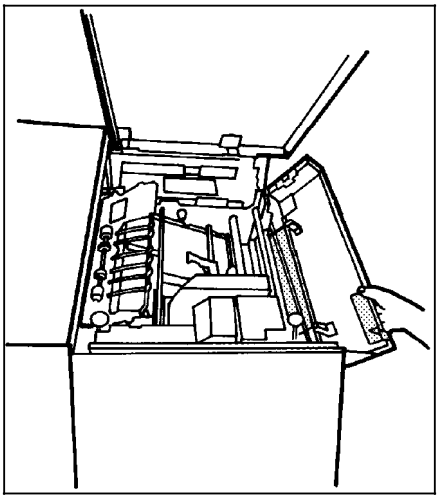
   The paper guide is a spring-loaded, heavy wire form guide that pops up when you open the cover.

3. Remove and discard any paper found in this area.

Follow these steps to clear area B of the stitcher/stacker:

1. Open the top cover of the stitcher/stacker and locate the side cover of area B on the right.

2. Open the side cover of the stitcher/stacker by pushing the cover to the right (in the direction of the large green arrow at the front of the cover).



3. Remove only the set of prints leaving the stitcher/stacker at the right and place it on the output in the stacker tray. Do not remove any other pages from this area.

   The pages were compiled by the stitcher/stacker into a set (stapled or not), but something prevented the set from being delivered to the stacker. You put the set in the stacker tray because the system has counted it as completed.

Clearing the stacker tray

A jam can occur when the paper does not stack smoothly in the stacker trays. If some paper weights stack well while others do not, the scuffer arms may need to be adjusted. Some printers must be adjusted by a service representative. Others have adjustable weights on the underside of the scuffer arms. If your LPS has scuffer arm weights, adjust them as shown below.

- If the paper appears to climb up the outside edge of the tray, move the weight toward the machine.
- If the paper is not driven far enough into the tray, move the weight away from the machine.

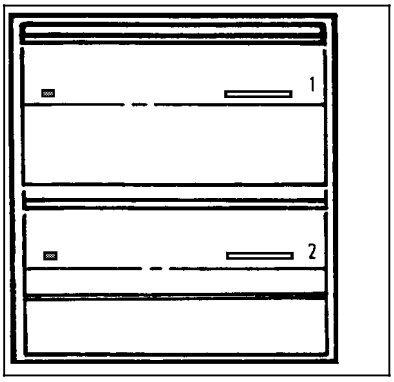
Lightweight paper generally requires less pressure while heavyweight paper requires greater pressure.

Paper misfeeds

Follow these steps to clear paper misfeeds:

1 Go to the paper tray indicated by the message and graphic displays of the printer control console.

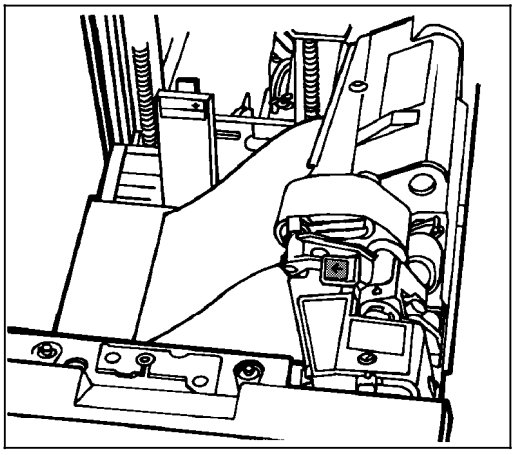
2. Press the Tray Unlock button located on the front left of the paper tray.



3. When the Ready to Open indicator lights, pull the blue bar up and out to open the feeder tray.

   Pull the tray all the way out for best results.

4. Press the green lever to unlatch the paper feeder assembly.



5. Remove and discard any partially fed paper.

6. Make sure that the paper supply is neatly stacked, the stack is not higher than the MAX line on the length guide, and the length guide is firmly touching the back edge of the stack.

   Note: Transparencies and other stiff materials need not be discarded unless they are damaged.

7. Relatch the paper feeder assembly by pressing the green dot until the assembly clicks in place.

8. Slide the tray back into the printer until the tray latches.

9. Press the Continue button on the printer control console to resume printing.

10. Discard any pages sent to the sample tray or unused stacker tray when the jam was detected.

Frequent paper misfeeds

If the printer misfeeds frequently, the problem may be caused by a glazed feed belt, especially if you notice that one tray feeds the same paper better than another one. (Glazing is caused by a buildup of the chemicals found on most papers.)

If you suspect that this is the problem, cleaning the feed belt may eliminate the need to place a service call.

Only clean the feed belt to correct a problem, not as a routine maintenance procedure.

Follow these steps to clear the feed belt:

1. Clear any misfeeds that have occurred but do not relatch the paper feeder assembly.

   The paper feeder assembly must be unlatched to clean the belt. If necessary, unlatch it by pressing down on the bright green lever on the right side of the paper tray.

2. Clean the belt.

   Lightly moisten a lint-free towel with cleaning solution and wipe the outside surface of the feed belt thoroughly in the same direction as the ribs on the belt. Allow a few seconds for the cleaning solution to evaporate.

3. Relatch the paper feeder assembly by pressing down on the bright green dot.

4. Slide the paper tray completely back into the printer.
5. Operate the system as usual.

   If you are still experiencing misfeeds, place a service call.

Stitcher/stacker problems

The following conditions may occur with the stitcher/stacker output configuration. Both the condition and suggestions for recovery are included in this section.

- The system displays the following messages:

  ```
  OS3026 If fault persists enter 'STITCH OFF'
  OS3020 Finisher fault
  ```

  The first time this happens, press the Continue button on the printer control console to see if the system can repair itself. If the system does not repair itself and the fault message reappears when you try to restart the job, enter **STITCH OFF**. The stitcher remains off until you enter the STITCH ON command.

- The printer stops, and the following messages display on the controller:

  ```
  OS3020 Finisher fault -- See printer message
  OS3025 If fault persists enter 'SEL TRAY' or 'ABORT O' or
  OS2000 Enter 'CONTINUE O' to resume printing
  ```

  The first time you see these messages, enter **CONTINUE O** to see if the system can repair itself. If it cannot repair itself and the messages reappear, either abort the job or enter **SELECT TRAY** to send the output to the sample tray and call service to report the problem. Remember that the system defaults to the stacker tray at the end of a job, so you must enter **SELECT TRAY** before each new job until the stitcher/stacker has been serviced.

- The number displayed in the Wire Percentage indicator of the printer control console begins to flash.

  This happens when the percentage of wire remaining on the spool reaches a point set by your service representative. Once the flashing begins, the following messages appear on the printer control console when you start a new print job:

  ```
  READY TO PRINT
  STITCHER LOW ON WIRE
  PRESS i

  TRAINED OPERATOR REPLACE WIRE
  SPOOL OR CALL SERVICE i

  JOB IS PRINTING --
  STITCHER IS LOW ON WIRE
  ```

  Add stitcher wire or contact your Xerox Service Representative to add wire, as soon as practical. Refer to the "Adding stitcher wire" section in the "Print job maintenance" chapter for further information.

- The last few printed sets are not stapled. One of the following situations has occurred:

  — The stitcher/stacker is out of staple wire (indicated by fault code L152 in the print quantity display of the printer control console).

  — There is a stitch wire jam (indicated by fault code L172 in the print quantity display of the printer control console).

  — There is a malfunction of the staple head (indicated by a number of possible fault codes in the print quantity display of the printer control console).

  Contact your supervisor or your service representative. Until the problem is resolved you may continue printing the job without stitching the output.

- The printer control console displays the following message:

  ```
  OFFSET FAILED, SET IN OUTPUT BIN NOT OFFSET
  ```

  However, the printed sheets in the stitcher/stacker tray are offset normally. This situation may indicate a faulty component in the offsetting mechanism of the stitcher. Call service for further assistance. Clear the message by pressing the Continue button on the printer control console.

Blank display

To prolong the life of the system controller display, the light is turned off, and the display becomes blank when it has not been used for 15 minutes. As soon as any key is pressed, the image returns exactly as it was prior to turning itself off. There is no loss of information. Older displays will become blank only if the time display is turned off. Newer displays will become blank regardless of the time display status unless the DCU reminder is on, and are user-adjustable.

If there is no display when you press a key, ensure that the power switch on the right side of the display is in the On position. Also check the brightness and contrast control dials (on the lower right-hand edge of the display); turn them to the left to make the screen brighter. If the display is turned on, the dials are all the way to the left, and the display screen is still blank, place a service call.

Rasterization messages

When a line is too complex for the system to process normally, the output processor directs the image generator to produce a bitmap image instead of aborting the page. This process call rasterization can take anywhere from 3 to 20 minutes. The following messages display on the controller:

```
OS1620 Local density problem has caused a printer cycle down.
OS1625 Local density problem rasterization in progress.
```

Do not press any keys until the process is complete. Any commands normally allowed during print mode (for example, FEED, JOBS, PSTATUS, SELECT, and so forth), and entered while rasterization is in progress, are delayed until the rasterization process is finished.

When the process is complete, the following message displays:

```
OS1627 Local density problem rasterization is complete
```

The printer cycles up and prints the problem page.

Printer fails to respond to the system controller

Certain conditions may indicate a loss of communication between the system controller and the printer after the following message displays:

```
PRESS CONTINUE TO RESUME PRINTING
```

The following conditions indicate a loss of communication:

- The printer does not respond when you press Continue.
- The printer does not respond to directions from the system controller through the keyboard.

Follow these steps to restore the communication between the system controller and printer:

1. Press the Continue button on the printer control console if directed to do so.

   If the printer responds and resumes printing, do not follow the rest of this procedure.

2. If the printer does not respond and resumes printing, enter the RESET command at the keyboard.

   Note: Make sure that the system is varied offline from the host before doing this.

3. Enter the PSC command. This should put the printer back in communication with the system controller.

   Ask your service representative to make this command a logon level 2, otherwise, you cannot access it.

4. Retry the command. If the printer still does not respond, inform your supervisor or a service representative.

System rollover

A system rollover is a recovery technique the system uses to initiate a restart following a fatal error. This error may be induced by either a software or hardware failure.

System rollover recovery

Follow these steps to recover from a system rollover:

1. If your system is in an online configuration, the system displays the following message:

   ```
   OS2576 System rollover while online. Check host then enter
   'C'
   ```

   Enter **C** to initiate the recovery procedure. From this point on, the recovery procedure is the same for online and offline systems.

2. Print the abort data for analysis.

   The system displays the following message:

   ```
   System recovery from xxx abort Task = xxx
   Print abort data for later analysis (y/n)?
   ```

   a. After this message, the system displays a series of register values and flag settings. Record these values for review by your analyst.

   b. Enter **Y** and give the resulting printout to your system administrator or your site representative.

3. Make a backup copy of the abort data.

   Your system may display the following message:

   ```
   COPY COREIM.SYS TO MEMSAV.SYS (Y/N)?
   ```

If you wish to make a copy of the abort data in a file, enter **Y**. This preserves the abort data even if the system rolls over again immediately.

4. Save the abort data to tape.

   If your system is equipped with a tape drive, the system displays the following message:

   ```
   WANT TO CAPTURE ABORT DATA ON TAPE (Y/N)?
   ```

   If you wish to save the abort data on tape for later reference by your system administrator or site representative, enter **Y**. Be prepared to unload the current tape (if one is mounted) and load a scratch tape.

5. Select the recovery option.

   When the system rolls over, the system provides several options for recovering the reports that were held in the queue at the time of the rollover. If there are entries in the queue, the system displays the following menu:

```
Job recovery
------------------
The crashing system is <task name>

1.   Full recovery: No data loss
2.   Partial recovery: Abort problem report or Job
3.   Do not recover: Reset Queue
4.   Do not recover: Clear Queue
     Enter recovery option [default = n]
```

   Choose one of the four recovery options. In most cases, the system default is the best choice. However, you should be thoroughly familiar with the choices before choosing one. All four options are described in detail below.

Power loss

If the LPS loses power while printing due to an electrical power outage or the power cord becoming unplugged, the job is interrupted. In an online system, any lost data must be recovered. Data is not necessarily lost; however, it is important to take the printer offline as soon as possible to prevent data being sent before the printer is ready to receive it.

Basic recovery procedure

1. Press the Power Off and System On buttons on the system controller panel. The system begins rebooting.
2. Enter **Y** when the system prompts you if you want to attempt data file recovery. In the event of a power failure, you must initiate file recovery to recover the file content.

   Not all data may be recovered. The amount of data that can be recovered depends on when the last system checkpoint was taken because of the method used by the system to restore its dynamic (active) memory.

3. Check the output in the stacker trays to find the last completed page. Resubmit any jobs that are incomplete.

You can save all HIP data before rebooting by entering the following command before the boot command:

HIP END.

Recovery in an online system

1. Enter **C** at the keyboard.

   The controller display should prompt you, but if the prompt does not appear, enter **C** anyway.

2. If there is no response from the system after you enter **C**, press the Power Off and System On buttons on the system controller panel.

3. Enter **Y** when the system prompts you to attempt data file recovery.

   In the event of a power failure, you must initiate file recovery to recover the file content.

4. Check the output in the stacker trays to find the last completed page.

   Ask the host operator to retransmit the job or jobs beginning at that point.

Calling for service

Before calling the Customer Service Support Center (CSSC), make sure you have read this chapter and have tried the corrective actions described here. If the problem persists, gather the necessary information (described in this section) and call the appropriate CSSC phone number.

Using the PROBLEM command before placing a service call

There are two conditions under which you should enter the PROBLEM command:

- When the system recognizes a problem that cannot be corrected and directs you to enter the PROBLEM command.
- When you are experiencing difficulties that you want to report to service. Prior to placing a service call, you should enter **PROBLEM** to get the 6-digit dispatch code from the system.

1. When you enter **PROBLEM**, the following messages display:

```
PROBLEM F01       PROBLEM ANALYSIS:RUNNING

PROBLEM ANALYSIS RESULTS - DISPATCH CODES

WHICH OF THE FOLLOWING TYPES OF PROBLEMS DO YOU WISH TO
REPORT?

    1. COPY QUALITY PROBLEMS
    2.     FREQUENT JAMS
    3.     OUTPUT TRAY PROBLEMS
```

```
    4.    PAPER TRAY PROBLEMS
    5.    TAPE PROBLEMS
    6.    OTHER SYSTEM PROBLEMS
    7.    NO OTHER SYSTEM PROBLEMS
2.  INDICATE SELECTION BY ENTERING NUMBER.
```

When you select options 1, 3, 4, or 5, messages appear requesting more detail about the problem you are reporting.

When you select option 2 the following messages appear:

```
PROBLEM ANALYSIS RESULTS-DISPATCH CODES (DISPATCH CODE AND
MESSAGE)

    1. TO REPORT ADDITIONAL PROBLEMS.

    2. NO MORE PROBLEMS TO REPORT.
```

3. If you select option 1, you are returned to the previous problem menu. If you select option 2, the following messages appear:

```
CALL THE FIELD SERVICE DISPATCHER AND REPORT THESE NUMBERS

(DISPATCH CODES)

OPERATOR --- INDICATE THE ACTION YOU HAVE TAKEN.

    1. SERVICE CALL HAS BEEN PLACED. WAITING FOR SERVICE.

    2. SERVICE CALL HAS BEEN PLACED. RETURN TO THE
       OPERATING SYSTEM.

    3. SERVICE NUMBERS COPIED FOR LATER CALL. RETURN TO THE
       OPERATING SYSTEM.

    4. NONE OF THE ABOVE. RETURN TO THE OPERATING SYSTEM.

INDICATE SELECTION BY ENTERING NUMBER.
```

4. If you select any option other than 1, you can continue using the LPS. If you select option 1, the following messages appear:

```
SERVICE CALL PLACED.

WAITING FOR CE

    1.    REDISPLAY DISPATCH CODES

    2. RETURN TO OPERATING SYSTEM

INDICATE SELECTION BY ENTERING NUMBER.
```

5. Select option 1 to see the dispatch codes.
6. Select option 2 to continue using the LPS.

   Make sure you record the 6-digit dispatch code to report to the representative at the CSSC.

   Note: The following message refers to the CSSC:

```
CALL THE FIELD SERVICE DISPATCHER AND REPORT THESE NUMBERS
```

Information to have at hand when calling

Before contacting service, make note of the following:

- Status code numbers and messages that appear on the display, including the 6-digit code number that results from running the PROBLEM command.

- Status messages that appear on the printer control console.
- Indicator lights that may or may not be lit.
- Status codes that appear in the display window of the operator control panel if there is a tape drive problem.

  Note: You must perform Diagnostic Test 01 before placing a service call for a tape drive problem.

Your call will be answered by a representative who will ask you for the following information:

- Model number of your printer (4050, 4090, 4450, or 4650)
- Your printing system serial number (located on a panel inside the printer, behind the center door)
- Your name
- Your company name
- The system condition or status.

This information is given to a customer service representative who will call you back to discuss the information and give you an estimated time of arrival or assist you over the phone to resolve the problem.

A. Paper

Important facts about paper

As the operator of the LPS, you need to be aware of the importance of taking good care of the paper used in it. Using the correct type of paper and taking the time to store and condition it properly helps to keep your printer running at optimum speed and efficiency, with fewer time-wasting paper jams.

Paper specifications

Sizes

- 8.5 by 11 inches (216 by 279 mm)
- A4 (210 by 297 mm or 8.27 by 11.69 inches)
- 8.5 by 14 inches or 216 by 356 mm.

Weights

20- to 110-pound (substance 20-110 lb/75-200 gsm). No other weights should be used.

Note: Do not use 110-pound weight paper with the 8.5 by 14 inch size.

Paper characteristics

The system performs most efficiently with paper that has the following characteristics:

- Low moisture content (below 5.7 percent)
- Smooth surface
- Moisture-resistant wrapping
- No defects (bent edges or uneven surfaces)
- Grain long (parallel with the longest side of paper).

Xerox recommends 4024/80 gsm Dual Purpose Paper, which meets the requirements outlined above.

Special paper and materials

The 4050, 4090, 4450, and 4650 also print on the special types of paper and materials listed in this section. Make sure that all paper and materials you use meet the specifications noted in the "Paper specifications" section.

- **Predrilled** paper has a varying number of holes for use in binders or binder rings. You should fan or fluff predrilled paper before loading it into a feeder tray. This removes any loose plugs among the sheets that could cause jams within the printer.
- **Tinted** paper is available in a variety of colors. It has many uses, including calling attention to certain printed material,

separating out a special section, or dividing chapters of a report.

- **Preprinted** paper may be letterhead or may contain forms or logos.
- **Transparencies** must be loaded with the opaque strip toward the feeder direction. All transparencies are delivered face up to the sample tray.
- **Labels** must be loaded with the label side up and can be directed to any output tray.

Loading instructions are printed on both paper trays.

Paper storage

Temperature and humidity can affect the way paper behaves in your printer. Therefore, it is important that paper be stored correctly.

Always store paper:

- In its wrapper
- On a flat surface
- In a closed cabinet
- In a cool, dry area.

Figure A-1. **Storing paper correctly**

Store your paper in its original carton but do not leave cartons on the floor. Leaving cartons on the floor increases the possibility of moisture absorption. Place cartons on a wooden pallet or store them in a cabinet off the floor.

Figure A-2. **Recommended temperature and humidity for paper storage**

The following are recommended paper storage conditions:

- 68 to 76 degrees F/20 to 24.4 degrees C
- 35 to 55 percent humidity.

Paper conditioning

Because of the effects of temperature and humidity on paper performance in the printer, it is important to condition paper before using it. This is done by storing paper for a specified amount of time in the same type of environment as your system.

The length of time paper should be conditioned depends on two things:

- The difference between the storage and operating environments
- The amount of paper.

Refer to table A-1 to determine the amount of time needed to condition stacked cartons of paper when changing environments.

Note: The numbers in the top two rows indicate the degrees of difference between the storage area and the operating environment, not actual room temperatures.

Table A-1. **Paper conditioning**

For example, if you want to move 10 cartons of paper from a storage area with a temperature of 90 degrees F to an operating area with a temperature of 75 degrees F (a 15-degree difference), you should do so at least 14 hours before using the paper.

Paper curl

Before paper is cut into sheets by the manufacturer, it is stored on large rolls. After it is cut and packaged, it retains some of the curl from the rollers.

Although it is unnecessary to load paper with the curl specifically up or down, best results occur when you are consistent. For example, if you open paper with the wrapper seam up, always load it in the tray that way.

B. Meter reading and reporting

As the LPS prints jobs, it accumulates and saves usage information. Instead of using physical meters, the system controller records the page count in its memory. Each month you need to review and transmit this information to Xerox for billing purposes. This chapter describes how to extract this information and report it to Xerox.

Meter reading

During the last five working days of the month, when the system is idle, you must extract the billing information and report it to Xerox. To obtain a billing report, enter the REPORT BILLING command at the keyboard. This command gives two options for viewing the data: displayed and hardcopy (print). If you do not specify whether to display or print the information, the system only displays it.

REPORT BILLING,DISPLAY If you enter the REPORT BILLING,DISPLAY command, the information appears on the display.

REPORT BILLING,PRINT If you enter the REPORT BILLING,PRINT command, the information is sent to the printer, which produces a printed billing summary.

REPORT BILLING,DISPLAY,PRINT This command results in both a displayed and printed billing summary.

There are two meters maintained by the LPS for customer billing:

- Meter A counts all good impressions delivered to their intended output tray. This meter cannot be reset.
- Meter J counts only sheets printed in the printer diagnostic mode and delivered to their intended output tray. Like meter A, it cannot be reset.

In figure B-1, GOOD IMPRESSIONS SUCCESSFULLY DELIVERED: refers to meter A, and SHEETS PRINTED IN IOT DIAGNOSTIC MODE: refers to meter J. When reporting through the touchtone telephone system, report only meter A. When reporting through a modem, both meters are reported automatically.

Figure B-1. **Sample customer billing report**

```
                                    XEROX 4090
                                CUSTOMER BILLING REPORT

DATE:        MM/DD/YY                                                    PAGE 1
TIME:        HH:MM

CUSTOMER ID:

MACHINE ID:

*******************************************************************************

                              **** System Configuration ****
                                   Machine Type - 4090
CPU memory =  512K                                  Disk units: 0,1,2,3,floppy
CD/IG: version 4                                    Tape: dual density
Font memory: 64 megabits                            Printer characteristics
Online: address 21                                   - Speed: 92 ppm:  duplex
 -  mode 6 byte, device 3211                         - Resolution: 300 spi
Enet addr: XX-00-00-00, *0-000-000-000               - Finisher: 2-tray stacker
 -  Net address:  00-00, *000                        - Default order: 1 to n
Communications interfaces                            - Paper size: 8.5 x 11 (us Letter)
 -  871 CM                                          Language: U.S. English
Terminal Type:  ADM-11/LINK MC 2                    Graphics with  32 megabits
                                                    Graphics Type:  GVG









GOOD IMPRESSIONS SUCCESSFULLY DELIVERED:


SHEETS PRINTED IN IOT DIAGNOSTIC MODE:
```

Machine serial number request

The first time you enter a REPORT command after a full sysgen or after a system disk has been reformatted, you are prompted for the 9-character machine serial number.

The number is located on the metal plate inside the front right-hand door of the printer.

To enter the serial number:

- Enter the product code (the first three characters of the number). Any alphabetical character must be in uppercase.
- Enter the remaining six digits and press <ENTER>.

You have three chances to enter the number correctly. After that, you must reenter the entire REPORT command.

Reporting meter reads (U.S.A.)

Before you call the Xerox Electronic Meter Collection Center, make sure you have the following information:

- Meter read information (the A meter)
- The serial number for your printing system (located on a panel inside the printer, behind the center door).

If you are reporting other Xerox printers during the same call, make sure you have the serial number and meter read information for each printer before calling the Electronic Meter Read Collection System.

Read through all of the following instructions carefully before you attempt to make your first meter reading report. If you need assistance with this process, place a toll-free call to the Help Line at 1-800-433-7769, 8:30 a.m. to 5:15 p.m., Eastern time. An answering device operates during nonbusiness hours. Leave your name and phone number and your call will be returned.

Touchtone Telephone Direct Meter Read Entry System

The Touchtone Telephone Direct Meter Read Entry System is designed to guide you through an error-free meter read entry session. After reviewing this procedure and making several entries, you need these instructions only for special situations. You should have no problems in entering your meter reads. If you do, the system is designed to enable you to make any necessary corrections.

This section includes:

- Step-by-step instructions for entering your meter readings and reviewing and changing data.
- A Month End Meter Read Reporting Worksheet (figure B-2) to help you record your meter readings. The worksheet can be used as a master for making additional copies.

Figure B-2. **Month End Meter Read Reporting Worksheet**

Month End Meter Read
Reporting Worksheet

Call:
423-6168 (in Rochester, NY)
1-800-638-7979 (All other U.S. locations)

Enter:

Converted Serial Numbers	Converted Serial Numbers
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#
_____#	_____#

Enter: # to acknowledge completion of serial number/meter read entry for each machine.

Enter: **91# to end call and record entry in computer base.

For your information only:

Date of Entry: _____

For Assistance Call 1-800-433-7769.

Understanding the system

The following points are very important to understand before beginning to use the touchtone system:

- Always wait for the system voice to finish a prompt before entering data.

- Always complete each entry with the # sign. When you press the # sign, the system repeats the information you just entered and prompts you for the next piece of information for the report.
- Any time you want the system to repeat the voice prompt or message it just completed, enter **3#.
- When you want the system to cancel an entry it just read back to you, enter **4. After acknowledging the cancellation, the system prompts you to reenter the needed information.
- Use **94# to cancel all data entered for a machine. You can do this any time before you enter the # sign that completes the data entry for that machine. Refer to step 5 in the following section.
- Each letter in the serial number must be translated into numbers because letters are not individual keys on the touchtone keypad.
  - — Press the asterisk (*) to indicate that you are about to enter a letter.
  - — Next, press the number key on the touchtone pad that has the letter on it, for example, press 7 for S.
  - — Finally, press 1, 2, or 3 for the position of the letter on the key. For example, S is in the third position on the 7 key, so you press 3. The entire code for S is *73.

For example, to enter the serial number 64N7891 23, press the following keys: 64 *62789123#

Note: It is possible for a serial number to contain letters in any or all of the first three positions. If there are no letters, simply enter the nine numbers and the # sign. For help in converting your serial numbers, refer to table B-1.

Table B-1. **Letter-to-number conversion chart**

Letter	Conversion	Letter	Conversion
A	*21	N	*62
B	*22	O	*63
C	*23	P	*71
D	*31	Q	*11 **
E	*32	R	*72
F	*33	S	*73
G	*41	T	*81
H	*42	U	*82
I	*43	V	*83
J	*51	W	*91
K	*52	X	*92
L	*53	Y	*93
M	*61	Z	*13 **

**Indicates letters not on the touchtone keypad that were assigned by this system to the 7 key.

Entering meter read information

1. Call the toll-free number for the Xerox Electronic Meter Data Collection System. It operates 24 hours a day, every day, including weekends and holidays. Meter readings should be reported between the 20th and the last working day of each month.

   423-6168 (in Rochester, NY)

   1-800-638-7979 (all other U.S. locations)

   When the system answers your call, you hear the following:

   "Thank you for calling the Xerox Electronic Meter Collection System. For assistance, please call 800-433-7769."

   When special information of interest to our customers is available, a special announcement message follows this greeting. Following these initial messages, the system is ready to receive your meter readings.

2. The system prompts you for your machine serial number.

   "Please enter the machine serial number."

   Enter your machine serial number, followed by a # sign, on the telephone keypad.

Once you enter your machine serial number, the system repeats it back to you in alphanumeric form. If the number is incorrect, cancel this entry by entering **4# and reenter your serial number.

3. When the serial number has been entered and accepted, the system prompts you to: "Please enter the date of the reading or enter the # sign for today's date."

   For example, enter January 3, 1994 as S 0394 #. If a date appears to be incorrect, you receive a special message and are asked to reenter the date.

   If the system tells you your date is not within the acceptance range, it also gives you the correct range. If you do not enter a date within that range, the system refers you to the touchtone information number and terminates the call.

   When you enter a correct date, the system reads back the date; for example:

   "Date is one three ninety-four."

4. When the system finishes reading back the date, it asks for the meter reading.

   "Please enter meter A."

   Enter the A meter reading, ending with the # sign. Do not enter zeros in front of the numbers of the meter read.

   Note: From the serial number, the system knows how many meters there are to report and asks for them by name.

5. After you have entered the A meter, the system reads it back to you and says:

   "All meter reads for this machine are complete. Enter pound sign to acknowledge."

   Enter the # sign if the meter read is correctly entered. If there is a mistake, enter **4# to cancel the read, and reenter the correct meter read. Once again the system repeats the meter read to you and asks you to enter the # sign to confirm the entry. If it is correct, enter #; if it is not, repeat the cancellation/reentry process.

6. Once you have successfully completed step 5, the system says:

   "All readings accepted."

   The system next prompts you for a machine serial number. At this point you have three choices:

   a. If you have more machines to report, repeat the previous steps until you have reported all machines.

   b. If you have no more machines to report and you are sure of the accuracy of the information, enter A**91# to end the reporting session. The system responds by indicating how many machines were processed and accepted during this session.

      "Readings for ____ machines accepted. Thank you for using the Xerox Electronic Meter Reading System."

c. If you want to review the data before ending the reporting session, enter **1# to start the review. Refer to the "Reviewing and changing data" section, next, for instructions.

Note: If you would like to practice with an imaginary serial number before entering your actual serial number and meter read, you can use serial number X12377889 (which converts to *9212377889). This serial number is only a demonstration serial number; it cannot generate a bill. All procedures described in the "Entering meter read information" section may be practiced with this serial number.

Reviewing and changing data

1. To begin the review, enter **1#. The system reads the first serial number.
2. To accept the serial number and continue, enter#. The system then reads back the A meter read.
3. Continue the review by accepting with the # sign each time the entry is read back correctly.

   If an entry is read back incorrectly, enter **4# to cancel the entry and reenter the correct information after the voice prompts you to do so. Make sure to wait until the voice is finished before making entries.
4. To end the review at any time, enter **2#. When you end the review, the system asks you to enter the # sign to acknowledge the entries as complete. You may then choose to enter more machine information or terminate the session. Refer to step 6 in the previous section.

Glossary

A3 International paper size measuring 297 by 420 mm or 11.69 by 16.54 inches.

A4 International paper size measuring 210 by 297 mm or 8.27 by 11.69 inches.

B4 International paper size measuring 250 by 353 mm or 9.84 by 13.9 inches.

batch processing Process that allows for repetitive operations to be performed sequentially on batched data without much involvement from the computer operator.

BCD Binary coded decimal.

bitmap Visual representation of graphic images in which a bit defines a picture element (pixel) and a matrix of bits defines an image. For example, if a bit is 1, the corresponding pixel is printed.

blocking Process of combining two or more records into a single block of data which can moved, operated upon, stored, and so on, as a single unit by the computer.

block length Number of characters or bytes contained in a block of data (the block is treated as a unit within the computer). Block length is usually invariable within a system and may be specified in units such as records, words, computer words, or characters.

BOF Bottom of form.

BOT Beginning of tape.

bpi Bits per inch.

CCID Character Code Identifier. Code associated with the universal identifier "Xerox" to indicate the version of the Xerox character code standard used to code Interpress strings.

character set Set of all characters defined in a font, including alphabetic, numeric, and special characters such as symbols.

cluster Group of related feeder trays, usually containing the same size and type of paper (stock). Each cluster has a name, consisting of one to six alphanumeric characters.

CME Entry modifying the output printing characteristics of a report on a copy-to-copy basis.

compiler Software that translates instructions written in high-level language into machine language for execution by a system.

Copy Modification Entry See *CME*.

copy-sensitive Job in which multiple copies of a report contain different data, such as paychecks and banking statements.

cpi Characters per inch.

default Value assigned to a field by the system if no input is received from the operator. You can change the default value of a field.

DJDE Dynamic Job Descriptor Entry. Command within an input data stream used to modify the printing environment dynamically.

dot Picture element (pixel) imaged by a printer. The number of dots imaged per inch measures printer resolution, for example, 300 dots per mich (dpi). See also *spot*.

dpi Dots per inch. Indicates the number of dots per inch displayed on a terminal screen or printed to form a character or graphic.

dry ink Minute particles of resin and carbon black that can accept an electrical charge and create images. Resin and carbon black or color pigment toner are combined with developer to form the dry ink.

duplex 1. Ability of a data communications system to send and receive information simultaneously. 2. In printing, duplex means printing on both sides of the paper.

Dynamic Job Descriptor Entry See *DJDE.*

edgemarking Use of graphic objects (usually lines or boxes) that bleed off the edge of the physical page. See also *physical page*.

embedded blanks Blank spaces within a command line.

ENET Ethernet network.

EOT End of tape.

Ethernet Xerox local area network (LAN) that allows transmission of data by cable from one device to another.

FCB Forms Control Buffer. Controls the vertical format of printed output.

FCP File Control Parameter.

FCU File Conversion Utility.

FDL Forms Description language. LPS-resident source language used to design electronic forms. See also *FSL* and *form.*

FDR File directory.

FIS Font Interchange Standard. Defines the digital representation of fonts and character metrics for the generation of an entire series of Interpress fonts.

floating accent Nonspacing accent characters that can be combined with characters and printed as a composite.

font Complete set of characters of a particular font family having the same point size, weight, stress, and orientation.

Font Interchange Standard See *FIS.*

form 1. Compiled .FSL file. 2. Specific arrangement of lines, text, and graphics stored in an electronic version. Forms can be printed without variable data or merged with variable data during the printing process. See also *FDL* and *FSL*.

Forms Control Buffer See *FCB.*

Forms Description Language See *FDL.*

Forms Source Library See *FSL.*

FSL Forms Source Library. Uncompiled collection of user-created files containing FDL commands. See also *FDL* and *form*.

hexadecimal Numbering system with a base of 16. The numbers 10 through 15 are represented by A through F.

highlight color Printing with black plus another color. A range of colors, tints, and shades is printed by varying the percentage of black dots, colored dots, and the white space between the dots.

HIP Host Interface Processor.

image area Area on a physical page that may contain text or graphics.

initialize 1. To prepare a blank diskette so it can accept data. This is usually accomplished when a program is booted. 2. To set all information in a computer system to its starting values.

Interpress Industry-standard page description language developed by Xerox. Interpress documents can be printed on any sufficiently powerful printer equipped with Interpress print software.

JCB Job Control Block.

JCL Job Control Language.

JDE Job Descriptor Entry. Collection of job descriptions.

JDL Job Description Library. Collection of compiled job descriptions. See also *JSL*.

JID Job Identifier.

job Synonymous with a START command, a job is a group of print data sets called reports. A job may contain one or multiple reports.

job control Program called into storage to prepare each job or job step to be run.

Job Descriptor Entry See *JDE.*

Job Descriptor Library See *JDL.*

job management Collective functions of job scheduling and command processing.

Job Source Library See *JSL.*

JSL Job Source Library. Collection of uncompiled job descriptions. See also *JDE* and *JDL*.

keyword Required part of a command.

label Reference to a file saved on tape or disk, a record indicating the file name or date created, or other control information.

landscape Orientation in which text and images are positioned parallel to the long edge of the paper.

legal size Paper size measuring 8.5 by 14 inches or 216 by 356 mm.

letter size Paper size measuring 8.5 by 11 inches or 216 by 279 mm.

line feed Control character that (unless set to be interpreted as a line end) causes the printing system to begin printing in the current character position of the next line.

literal Alphanumeric character beginning with a letter, including an asterisk, period, colon, or slash, and not enclosed in single quotes.

logical page In Xerox printing systems, a logical page is a formatted page that is smaller than the physical page. A logical page is defined by an origin, thus allowing more than one logical page to be placed on a physical page.

lpi Lines per inch.

LPS Laser printing system.

mask Selection of bits from a storage unit by use of an instruction that eliminates the other bits in the unit. In accessing files, a file name mask is used to reference one or more files with similar file-id (identifier) syntax. In Interpress, a mask serves as a template, indicating the shape and position of an object on a page.

metacode Method of controlling the image generator. The character dispatcher uses these codes to generate scan line information. This information is sent in the form of character specifications to the image generator, which uses it to compose the bit stream that modulates the laser. Also called native mode.

monochrome Printing in one color only.

nesting Subroutine or set of data, such as a comment, contained sequentially within another set of data.

object file Source file converted into machine language (binary code).

octal System of representing numbers based on 8.

offset To place printed output sets in slightly different positions from each other in an output bin for easy separation of collated sets.

operand That which is acted upon, for example, data, in an operation or process.

operating system Software that controls the low-level tasks in a computer system, such as input or output and memory management. The operating system is always running when the computer is active.

orientation In reference to image area, describes whether the printed lines are parallel to the long edge of the paper (landscape) or the short edge of the paper (portrait).

origin In reference to image area, the upper left corner of a sheet.

overprint ratio Maximum number of variable data and form characters that can be intersected by a single scan line.

packet A group of DJDE records terminated by an END command.

page end Command character (form feed) to terminate the current page.

palette Predefined set of colors or inks. Different versions are provided with the printer and with host- or PC-based application software.

parameter Part of a command, other than the keyword. See *keyword*.

parse To read or interpret a command; to build up a parameter list from information within a command.

PCC Printer Carriage Control.

PDE Page Description Entry.

PDL Print Description Language. Language used to describe printing jobs to a laser printing system. PDL describes the input (type, format, characteristics), performs the processing functions (logical processing), and describes the output (type, format, font selection, accounting options).

PE Phase encoded.

physical page Actual page size your printer uses to print a form.

pitch Width of a fixed-pitch font expressed in characters per horizontal inch.

pixel Acronym for picture element. Smallest addressable point of a bitmapped screen that can be independently assigned color and intensity.

point In Xerox laser printing systems, a unit of measurement equal to 0.0139 inch. Points are always used to express type, size, and leading. There are 12 points to a pica and about 72 points to an inch.

portrait Orientation in which text and images are positioned parallel to the short edge of the paper.

ppm Pages per minute.

Print Description Language See *PDL.*

print file Portion of the system disk memory (up to 4 MB) reserved for temporary storage of formatted pages for printing. Pages are retained until they are delivered to the output tray.

PSC Printer Subsystem Controller.

query Request for data or other information, entered by an operator while the system is processing.

record A line of data as defined in the RECORD command.

report A single output data set, delimited by an RSTACK command or as a file. In setting a separation boundary, reports are subsets of a job.

resolution Number of dots per inch (dpi) or spots per inch (spi). The greater the number of dots, the higher the resolution and the clearer the image. The terms dots, spots, and pixels are synonymous.

scale To adjust font or image size according to given proportions.

sequential 1. In numeric sequence, usually in ascending order. 2. A file structure in which records are written one after another and cannot be randomly accessed.

set Multiple copies of the same report.

simplex printing Printing on one side of the page.

spi Spots per inch. See *resolution*.

spot A picture element imaged by the printer. Synonymous with *dot* and *pixel*.

statement Detailed instructions in a program step, written according to specific rules called syntax.

stock User-defined name in the JSL that specifies a certain type of paper for printing a job.

stockset Collection of stocks to be used on a print job. See also *stock*.

string Connected sequence of alphanumeric characters treated as one unit of data by a program.

syntax Rules governing the structure of expressions in a programming language.

system page Maximum area in which text and graphics can be imaged on a printing system.

tape density Expression of the format of a magnetic tape measured in number of bytes that can be stored per inch of tape.

TOF Top of form.

two-up Printing two logical pages on one side of a physical page.

UCSB Universal Character Set Buffer.

UCS Universal Character Set.

variable data Changeable information which is merged with a standard document to create specialized or personalized versions of that document. Variable data is not a part of a form design, but varies from page to page.

virtual page Page area selected by a forms designer for printing.

vpos Vertical positioning.

wildcard Character (usually an asterisk *) which can be inserted into a command string to indicate that it may represent one or more characters in that position.

XDDI Xerox Dynamic Document Interface.

xdot Unit of measurement representing a fraction of an inch. May also be referred to as a picture element (pixel) or spot; for example, 1/600 spots per inch (spi).

xerographic mode Either of two possible printer configurations: 1. Black mode which allows printing with black dry ink only. 2. Highlight mode which enables both highlight color and black printing.

XNS Xerox Network Systems.

XPAF, XPF Xerox Printer Access Facility.

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