

Xerox DocuPrint 96/4635/180/2000 Series NPS/IPS

System Overview Guide

721P90170
Version 8.0
October 2002

Xerox Corporation
701 S. Aviation Boulevard
El Segundo, CA 90245

©2002 by Xerox Corporation. All rights reserved.

Copyright protection claimed includes all forms and matters of copyrightable material and information now allowed by statutory or judicial law or hereinafter granted, including without limitation, material generated from the software programs which are displayed on the screen, such as icons, screen displays, looks, etc.

Printed in the United States of America.

Publication number: 721P90170

Xerox® and all Xerox products mentioned in this publication are trademarks of Xerox Corporation. Products and trademarks of other companies are also acknowledged.

Changes are periodically made to this document. Changes, technical inaccuracies, and typographic errors will be corrected in subsequent editions.

Table of contents

Safety	vii
Laser safety	vii
Ozone information: U. S. only	viii
Operation safety: U. S.	viii
Operation safety: Europe	ix
Warning markings	ix
Electrical supply	x
Ventilation	x
Operator accessible areas	x
Maintenance	xi
Before cleaning your product	xi
CE mark: Europe only	xi
Radio and telecommunications equipment directive (Europe only)	xii
For further information	xiii
Introduction	xv
About this guide	xv
Contents	xv
Conventions	xvi
Related publications	xvii
1. System overview	1-1
Functional overview of the NPS/IPS	1-1
Throughput speed	1-2
Resolution	1-2
System components overview	1-3
Connectivity printing configurations	1-3
NPS/IPS concurrent printing	1-4
Document Feeding and Finishing Architecture (DFA)	1-4
SNMP support	1-4
IPP support	1-6
Sixth Sense	1-6
Software license	1-7
2. Printer controller overview	2-1
Printer controller components	2-2
Sun Blade 1000 workstation	2-2
Sun Ultra 60 workstation	2-5

Printer controller software and fonts	2-7
3. Printer components and options	3-1
Printer components	3-1
Printer configurations	3-8
Paper paths	3-10
4. Network printing environment	4-1
Client workstations and system software	4-1
Client software	4-2
Submitting print jobs	4-2
Communicating with the network	4-3
Job status feedback	4-5
Ethernet LAN	4-6
Token Ring	4-6
Multiple network connectivity	4-7
5. IPDS printing environment	5-1
Host connectivity	5-1
Host environments	5-1
Channel interface —channel-attached systems only	5-3
Host Channel Unit (HCU)—channel-attached systems only ...	5-4
IPDS data stream	5-5
Software features for IPDS	5-6
IOCA Replicate and Trim	5-6
Trace facility	5-6
Overstrike, underscore, subscript, and superscript	5-6
Color image support	5-7
Background color for OCA colors	5-7
Bi-level IOCA colors	5-7
Outline font support	5-7
6. Magnetic ink character recognition (MICR)	6-1
96/4635/180 MICR NPS/IPS printing features	6-1
MICR output	6-3
Verifying MICR output with the MICR Position and Dimension Gauge	
6-5	
Verifying MICR output with the MICR comparator	6-5
A. Supplies	A-1
Paper and other throughput stocks	A-1
Selecting paper	A-1
Paper width and printer performance	A-3
Paper care	A-10
Other supplies	A-12
Dry ink	A-13

Fuser agent	A-13
Developer	A-14
Diskettes	A-14
Cartridge tapes	A-14
Stacker containers and pallets	A-14
Fonts	A-15
MICR tools	A-15
MICR Positioning and Dimension Gauge	A-16
MICR comparator	A-16
Consumable supplies tables	A-17
Paper and special stocks tables	A-17
Complete supplies list—96/4635/180 printers	A-22
Ordering supplies	A-23
Supplies checklist	A-25
B. Paper performance guidelines	B-1

Safety

Laser safety

WARNING

Adjustments, use of controls, or performance of procedures other than those specified herein may result in hazardous light exposure.

The Xerox DocuPrint printers are certified to comply with the performance standards of the U.S. Department of Health, Education, and Welfare for Class 1 laser products. Class 1 laser products do not emit hazardous radiation. The DocuPrint printers do not emit hazardous radiation because the laser beam is completely enclosed during all modes of customer operation.

The laser danger labels on the system are for Xerox service representatives and are on or near panels or shields that must be removed with a tool.

DO NOT REMOVE LABELED PANELS OR PANELS NEAR LABELS. ONLY XEROX SERVICE REPRESENTATIVES HAVE ACCESS TO THESE PANELS.

DANGER

**LASER RADIATION WHEN OPEN
AVOID DIRECT EXPOSURE TO BEAM**

Ozone information: U. S. only

This product produces ozone during normal operation. The amount of ozone produced depends on copy volume. Ozone is heavier than air. The environmental parameters specified in the Xerox installation instructions ensure that concentration levels are within safe limits. If you need additional information concerning ozone, call 1-800-828-6571 to request the Xerox publication 600P83222, *OZONE*.

Operation safety: U. S.

Your Xerox equipment and supplies have been designed and tested to meet strict safety requirements. They have been approved by safety agencies, and they comply with environmental standards. Please observe the following precautions to ensure your continued safety.

WARNING

Improper connection of the equipment grounding conductor may result in risk of electrical shock.

- Always connect equipment to a properly grounded electrical outlet. If in doubt, have the outlet checked by a qualified electrician.
- Never use a ground adapter plug to connect equipment to an electrical outlet that lacks a ground connection terminal.
- Always place equipment on a solid support surface with adequate strength for its weight.
- Always use materials and supplies specifically designed for your Xerox equipment. Use of unsuitable materials may result in poor performance and may create a hazardous situation.
- Never move either the printer or the printer controller without first contacting Xerox for approval.
- Never attempt any maintenance that is not specifically described in this documentation.
- Never remove any covers or guards that are fastened with screws. There are no operator-serviceable areas within these covers.
- Never override electrical or mechanical interlocks.

- Never use supplies or cleaning materials for other than their intended purposes. Keep all materials out of the reach of children.
- Never operate the equipment if you notice unusual noises or odors. Disconnect the power cord from the electrical outlet and call service to correct the problem.

If you need any additional safety information concerning the equipment or materials Xerox supplies, call Xerox Product Safety at the following toll-free number in the United States:

1-800-828-6571

For customers outside the United States, contact your local Xerox representative or operating company.

Operation safety: Europe

This Xerox product and supplies are manufactured, tested and certified to strict safety regulations, electromagnetic regulations and established environmental standards.

Any unauthorised alteration, which may include the addition of new functions or connection of external devices, may impact the product certification.

Please contact your Xerox representative for more information.

Warning markings

All warning instructions marked on or supplied with the product should be followed.



This WARNING alerts users to areas of the product where there is the possibility of personal damage.



This WARNING alerts users to areas of the product where there are heated surfaces, which should not be touched.

Electrical supply

This product shall be operated from the type of electrical supply indicated on the product's data plate label. If you are not sure that your electrical supply meets the requirements, please consult your local power company for advice.



This product must be connected to a protective earth circuit. This product is supplied with a plug that has a protective earth pin. This plug will fit only into an earthed electrical outlet. This is a safety feature. Always connect equipment to a properly grounded electrical outlet. If in doubt, have the outlet checked by a qualified electrician.

To disconnect all electrical power to the product, the disconnect device is the power cord. Remove the plug from the electrical outlet.

Ventilation

Slots and opening in the enclosure of the product are provided for ventilation. Do not block or cover the ventilation vents, as this could result in the product overheating.

This product should not be placed in a built-in installation unless proper ventilation is provided, please contact your Xerox representative for advice.

Never push objects of any kind into the ventilation vents of the product.

Operator accessible areas

This product has been designed to restrict operator access to safe areas only. Operator access to hazardous areas is restricted with covers or guards, which would require a tool to remove. Never remove these covers or guards.

Maintenance

Any operator product maintenance procedures will be described in the user documentation supplied with the product. Do not carry out any maintenance on the product, which is not described in the customer documentation.

Before cleaning your product

Before cleaning this product, unplug the product from the electrical outlet. Always use materials specifically designated for this product, the use of other materials may result in poor performance and may create a hazardous situation. Do not use aerosol cleaners, they may be flammable under certain circumstances.

CE mark: Europe only



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

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

March 9, 1999: Council Directive 99/5/EC, on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

A full declaration of conformity, defining the relevant directives and referenced standards, can be obtained from your Xerox representative.

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

This is a Class A product. In a domestic environment this product may cause radio frequency interference, in which case the user may be required to take adequate measures.

Shielded interface cables must be used with this product to maintain compliance with Council Directive 89/36/EEC.

Radio and telecommunications equipment directive (Europe only)

Certification to 1999/5/EC Radio Equipment and Telecommunications Terminal Equipment Directive:

This Xerox product has been self-certified by Xerox for pan-European single terminal connection to the analog public switched telephone network (PSTN) in accordance with Directive 1999/5/EC.

The product has been designed to work with the national PSTNs and compatible PBXs of the following countries:

Austria	Germany	Luxembourg	Sweden
Belgium	Greece	Netherlands	Switzerland
Denmark	Iceland	Norway	United Kingdom
Finland	Ireland	Portugal	
France	Italy	Spain	

In the event of problems, contact your local Xerox representative in the first instance.

This product has been tested to, and is compliant with, TBR21, a specification for terminal equipment for use on analog switched telephone networks in the European Economic area.

The product may be configured to be compatible with other country networks. Please contact your Xerox representative if your product needs to be reconnected to a network in another country. This product has no user-adjustable settings.

NOTE: Although this product can use either loop disconnect (pulse) or DTMF (tone) signaling, it should be set to use DTMF signaling. DTMF signaling provides reliable and faster call setup.

Modification or connection to external control software, or to external control apparatus not authorized by Xerox, invalidates its certification.

For further information

For more information on Environment, Health and Safety in relation to this Xerox product and supplies, please contact the following customer help lines:

Europe:+44 1707 353434

USA:1 800 8286571

Canada:1 800 8286571

Introduction

This guide provides an overview of the individual components of the NPS/IPS printing system and how they work together. It is designed to provide you with background information that can be used to make informed decisions regarding printer use and performance.

NOTE: You may be using the DocuPrint NPS/IPS software extension on a DocuPrint 2000 EPS system. The 2000 Series printer models are the 100, 135, 155, and 180. These printers are comparable in capabilities to the DocuPrint NPS/IPS models 96, 4635, and 180.

About this guide

This guide provides information to help you quickly determine hardware, software, and connectivity requirements for printing from various clients to the DocuPrint NPS/IPS.

This reference is useful for users who want to understand the overall DocuPrint NPS/IPS. Managers can use the reference information to assist them in making planning decisions.

Contents

This section lists the contents of this guide:

- Chapter 1, “System overview,” describes the features of the DocuPrint 96/4635/180 NPS/IPS.
- Chapter 2, “Printer controller overview,” describes the hardware and software components of the printer controller.
- Chapter 3, “Printer components and options,” describes the printer components and possible configurations. It also traces the path of the paper through printer, which is helpful in locating possible paper jams.
- Chapter 4, “Network printing,” provides information that is specific to network printing.

- Chapter 5, “IPDS printing,” provides information that is specific to IPDS printing.
- Chapter 6, “Magnetic ink character recognition (MICR),” discusses the special features of the 96, 4635, and 180 MICR NPS/IPS systems, and the requirements for MICR printing on the NPS/IPS.
- Appendix A, “Supplies,” provides information and specifications on paper and other media used with the NPS/IPS, as well as instructions for ordering supplies.
- Appendix B, “Paper performance guidelines,” provides guides that summarize the capabilities of the paper trays, duplex printing considerations, and paper stock considerations.

Conventions

This guide uses the following conventions:

- **All caps and angle brackets:** Within procedures, the names of keys are shown in all caps within angle brackets (for example, press <ENTER>).
- **Angle brackets:** Variable information, or the position of a specified argument in the command syntax, appears in angle brackets (for example, List Fonts <Pattern>).
- **Bold:** Within procedures, text and numbers that you enter are shown in bold (for example, enter **privilege operator**).
- **The word “enter” within procedures:** The two-step process of keying in data and pressing <ENTER> (for example, enter **y**).
- **Italics:** Document and library names are shown in italics (for example, the *Xerox DocuPrint NPS/IPS Guide to Managing Print Jobs*).
- **Quotation marks:** Keywords you can enter as arguments appear in quotes (for example, “USLetter”).
- **Vertical bars:** Alternatives to specified arguments are separated by vertical bars (for example, Set Time <Time | Remote Host Name | IP Address>).

NOTE: Notes are hints that help you perform a task or understand the text.

CAUTION

Cautions alert you to an action that could damage hardware or software.

WARNING

Warnings alert you to conditions that may affect the safety of people.

Related publications

The Xerox DocuPrint NPS/IPS documentation set includes the documents listed below.

NOTE: For a list of IBM reference manuals for IPDS printing, refer to the Solutions Guide for IPDS Printing.

- *Guide to Configuring and Managing the System*
- *Guide to Managing Print Jobs*
- *Guide to Performing Routine Maintenance*
- *Guide to Submitting Jobs from the Client*
- *Guide to Using Page Description Languages*
- *Installation Planning Guide*
- *System Overview Guide*
- *Troubleshooting Guide*
- *Solutions Guide for IPDS Printing*
- *Decomposition Service and Tools Guide*
- *Glossary*
- *Master Index*
- *Generic MICR Fundamentals Guide*
- *Customer Information Quick Reference Card*
- *Printer Controller Commands Quick Reference Card*
- *Operator Quick Reference Card*
- *Submitting your Jobs from Macintosh Quick Reference Card*

- *Submitting your Jobs from UNIX & DOS Quick Reference Card*
- *Submitting your Jobs from Windows NT 4.0 (QuickPrint) Quick Reference Card*
- *Submitting your Jobs Using Windows NT 4.0 Drivers Quick Reference Card*

The documentation set also includes an electronic version, the DocuPrint NPS/IPS Interactive Customer Documentation CD.

1. System overview

This chapter introduces the DocuPrint NPS/IPS printing system and describes its major and optional components.

Functional overview of the NPS/IPS

The NPS/IPS printers support the processing and printing of PDL and ASCII jobs from network workstations, as well as IPDS jobs from an IBM host. Supported PDL formats are PostScript levels 1 and 2, HP PCL 5e, and TIFF.

Your organization may print only IPDS jobs, network PDL jobs, or jobs from both environments.

DocuPrint 96, 4635, 180, and the 2000 Series NPS/IPS printers support:

- Printing at a rated speed of up to 96 ppm (96), or 135 ppm (4635), or 180 ppm (180) in 600 dpi (see “Resolution” section later in this chapter for more information)
- Printing simplex and duplex
- Processing and printing of network PDL jobs and IPDS jobs without soft boot to switch modes
- Multiple weights, sizes and types of paper (refer to the “Supplies” appendix for details)
- Ordered sets of pre-collated variable stock
- Optional module for enhanced finishing and output to third-party finishing devices
- Optional high-capacity feeder/stackers
- Sixth Sense, a diagnostic tool that provides system assessment and problem analysis.
- Support printing of check applications that require MICR technology (MICR printers only).

Throughput speed

The 96, 4635 and 180 NPS/IPS can print at the following speeds, using stocks 8 by 10 inches / 203 by 254 mm or larger:

- **96 and 96 MICR:** Up to 96 impressions per minute
- **4635 and 4635 MICR:** Up to 135 impressions per minute
- **180 and 180 MICR:** Up to 180 impressions per minute.

With small paper sizes

When you use the smaller papers, such as 7 by 10 inches / 178 by 254 mm or B4, with the 7 by 10-inch paper option kit, the throughput rates increase:

- **4635/4635 MICR:** Up to 154 impressions per minute
- **180/180 MICR:** Up to 206 impressions per minute

NOTE: The 7 by 10-inch kit is not available on the 96 IPS.

Monthly print volume

The monthly print volumes for these systems are:

- **96:** Up to 3 million impressions
- **4635:** Up to 4 million impressions
- **180:** Up to 6 million impressions

Resolution

The DocuPrint 96/4635/180 provides high print quality at 600 dpi resolution. It can receive data at 240, 300, or 600 dpi.

The following table shows how data streams of different resolutions are interpolated.

Table 1-1. **Data stream conversion**

Printer	Incoming input resolution of document		
	240 dpi data	300 dpi data	600 dpi data
180 NPS/IPS	Interpolated by printer to 600 x 1920 dpi	Interpolated by printer to 600 x 2400 dpi	Print at 600 x 600 dpi
96/4635 NPS/IPS	Converted by controller to 300 or 600 dpi, then interpolated by printer to 600 dpi	Interpolated by printer to 600 x 600 dpi	Print at 600 x 600 dpi

NOTE: For more information on specifying appropriate resolution settings, refer to the Guide to Managing Print Jobs and the Guide to Configuring and Managing the System. For IPDS printing, refer to the Solutions Guide for IPDS printing.

System components overview

DocuPrint NPS/IPS	The entire DocuPrint NPS/IPS system includes the printer (also known as an IOT or print engine), printer controller, printer interface, and all appropriate software. “DocuPrint printer” or “printer” refers to the base printer engine (IOT) only, without the printer controller and interface.
Xerox-supplied printer controller	The printer controller includes a processor, DVD-ROM (or CD-ROM) drive, diskette drive, keyboard, mouse, and a monitor. The printer controller accepts the print job from the client workstation or host, converts the files into page images, and sends the page images to the printer. The user interface at the printer controller allows you to perform tasks such as monitoring job status, prioritizing jobs, and configuring the system.
Xerox-supplied printer interface	The printer interface cables provide high-speed data transport and communication between the printer controller and the printer.
Xerox-supplied DocuPrint printer	The printer accepts data from the printer controller and prints the document according to the print options specified by the user. The printer also provides optional paper stacking and collating.

Connectivity printing configurations

The NPS/IPS can process network PDL and IPDS jobs concurrently.

To support the submission of jobs from a variety of hosts, configuration possibilities include:

- The same Token Ring or Ethernet connection can be used for both IPDS and Postscript/PCL.
- Both a Token Ring card and an Ethernet card can reside in the Sun workstation controller, with one being used for IPDS and the other for PostScript/PCL.

- Bus and tag attachment through the channel interface board or through the Host Channel Unit (HCU) can be used for IPDS jobs from a channel-attached host; Token Ring or Ethernet connection can be used for jobs submitted over the network.

NPS/IPS concurrent printing

The Xerox NPS/IPS can receive a variety of data streams including IPDS, PostScript Levels 1 and 2, PCL 5e, TIFF, and ASCII. The system automatically senses the type of job and processes it appropriately.

When your system is printing IPDS jobs, it can accept network PDL data streams in the background. When network PDL jobs are printing, only one IPDS job can be queued.

Document Feeding and Finishing Architecture (DFA)

The Document Feeding and Finishing Architecture (DFA) on the NPS/IPS supports all third-party finishing devices currently validated for the LCDS (J11) printers. The bypass transport option is required for in-line finishing devices.

SNMP support

The system provides functionality to export the state of a printer using the Simple Network Management Protocol (SNMP), thus allowing printer management software to monitor and report on the printer state.

SNMP is a standardized communications protocol for managing arbitrary networked devices from different vendors, such as workstations, servers, printers, or routers. The information to be communicated is presented as variable name/value pairs, defined in a set of standardized management information bases (MIBs). The MIBs define the legal variables, their types, and possibly a fixed set of values.

SNMP was designed to facilitate managing a heterogeneous set of networked devices that communicate using TCP/IP. Specifically, it addressed management of the network itself and the network traffic between those devices. Over time, MIBs were defined to expand the types of devices that could be managed using SNMP. For example, MIBs were defined specific to managing a workstation or a printer.

The system currently supports variables defined in the following MIBs:

- MIB-II (RFC 1156)

This MIB defines the basic set of variables any device running TCP/IP should make accessible. It includes, for a particular device, variables for information such as a system description, information about each of the network interfaces present on the device, and information about all the IP datagrams sent and received by the device.
- Host Resources MIB (RFC 1514)

This MIB defines variables useful in managing a “host” system. In this context, a host is a computer that is directly used by human beings and that communicates with other similar computers attached through a network. The Host Resources MIB includes information such as how long the system has been up, descriptions of the processors and attached storage devices, and possibly information about software running on the host.
- Printer MIB (RFC 1759)

This MIB defines information useful in managing a printer. It includes information about the physical status of the printer, such as the number of input trays, the media loaded in them, and the number and types of marking engines included in the printer.

Most variables in these MIBs are supported in a standard way, as described in the standard documentation, except that writing to read/write variables is not supported. All variables are treated as read-only. In all cases, the NPS/IPS SNMP implementation supplies textual information only in English.

IPP support

The system supports the Internet Printing Protocol (IPP), which allows you to:

- Add the printer to your PC directly as an Internet printer with a URL, rather than indirectly as an lpr-connected local printer.
- Use an IPP client to access the printer. A limited subset of IPP operations is supported; query the IPP client for details.

Sixth Sense

Sixth Sense is a unique suite of diagnostic tools that allows Xerox customer service engineers, analysts, and consultants to serve customers more effectively.

Sixth Sense is intended to automate and expedite the range of service-related support functions. Sixth Sense is a tool that enables Xerox to provide benchmark service support. Xerox customers benefit from the ability to bring broader support to focus more quickly.

For example, Sixth Sense can allow the Service Representative to repeatedly "preview" the condition of the system prior to an actual site visit. This may provide the ability to determine the correct part or piece of information to have on hand when the site visit is made.

Sixth Sense is a no-charge feature available to customers through Xerox Service. The customer need only provide an analog phone line for use by the Sixth Sense modem connection. For those customers unable to dedicate a phone line to the Sixth Sense connection, three and five port phone share devices are available for purchase.

To take advantage of Sixth Sense, the customer needs to:

- Request Sixth Sense enablement through Xerox Service
- Provide an analog phone line
- If necessary, purchase an optional phone share device.

More information about the Sixth Sense can be found in the *Troubleshooting Guide* for your system.

Software license

In order to use the operating system software, the owner must obtain a software license from Xerox. The license, which is a 20-character text string, is entered at the printer controller keyboard.

Your Xerox service representative can obtain this license text string for you and enter it when the printer is installed or when the software is upgraded. Although your service representative usually does this for you, you are able to enter your license string yourself from the NPS/IPS main window.

Until the license string is entered, your printer cannot print or receive data. You can, however, perform all offline tasks, such as setting up virtual printers.

For details on obtaining and entering the license string, refer to the *Guide to Configuring and Managing the System*.

2. Printer controller overview

The printer controller manages print options, provides the user interface, and runs system management and diagnostic operations on demand. The following is an explanation of tasks that enable the job to be printed:

- The printer controller detects which job protocol is being sent.
- Print option parameters are stored in the Job Pool Manager (JPM) database, which maintains a database of all jobs. This database contains a reference to the print data on the fixed disk, as well as the print options parameters for the print data. The JPM responds to the printer controller commands for deleting, holding, and prioritizing jobs.
- Print data is stored on the printer controller disk for queuing and while printing.
- When the printer controller begins processing a job, it sends the print data to the decomposer. The decomposer converts the print data into a bitmap in the resolution appropriate to the printing device.

The decomposer utilizes font data from font files stored on the printer controller disk or font information sent to the printer controller with the print job.

- When processed data comes back from the decomposer, the printer controller Device Driver transmits the print data and print option parameters to the printer. Printing is then initiated.
- After the job has been printed successfully, the print data file is deleted from the disk. If an error inhibits job completion, the printer controller manages the recovery and completion of the job.

The system can manage the processing of multiple jobs and the printing of another job simultaneously. When you are printing IPDS jobs, the printer controller is able to queue multiple PostScript and PCL jobs at the same time. When you are printing PostScript and PCL jobs, you can send only one IPDS job.

Printer controller components

The printer controller consists of a specially-configured Sun workstation and uses proprietary Xerox hardware, firmware, and software.

Your system may use one of two platforms for the printer controller:

- Sun Blade 1000
- Sun Ultra 60 workstation

Sun Blade 1000 workstation

The printer controller is based on the Sun Blade 1000, a workstation with a high-performance architecture for complex processing tasks. It contains the following hardware components:

- Processor (system unit) containing the following:
 - Two UltraSPARC III 750 Mhz central processing unit (CPU) modules
 - 4 GB memory (four 1 GB Dual In-line Memory Modules, or DIMMs)
 - 36 GB hard disk drive
 - DVD-ROM drive
 - 3.5 inch diskette drive
- Keyboard and mouse
- Monitor
- Optional Token Ring board
- Two printer controller Interface (PCI) boards installed in the processor to interface with the print engine.

Optional components

For channel connection to a host for IPDS printing, the system may use a channel interface board that is connected to a channel cable connector box.

An external 4 mm tape drive is available and recommended for backing up site files. A typical color calibration file is 1.5 MB.

A second internal 36 GB hard disk drive is optional, as are two additional external disks.

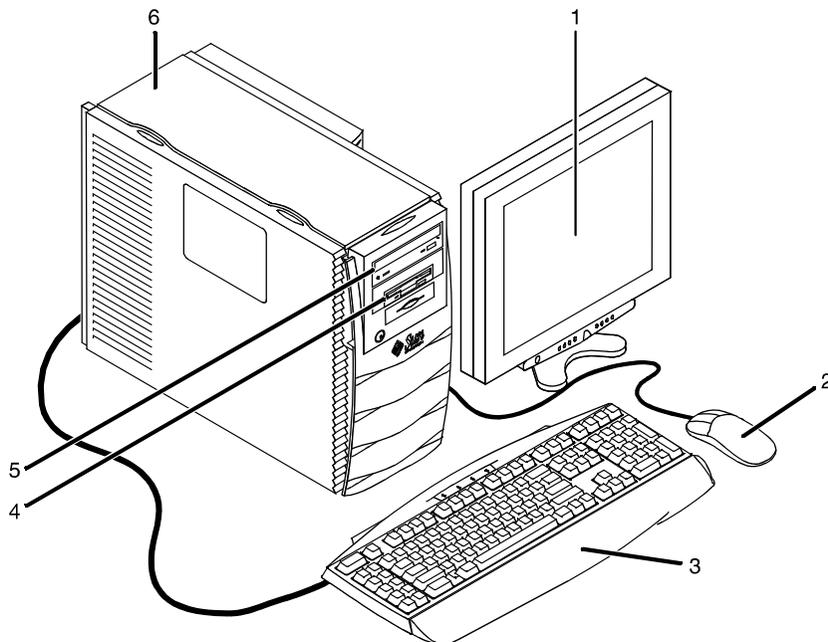


Figure 2-1. Components of the printer controller

1. Monitor
2. Mouse
3. Keyboard
4. Diskette drive
5. DVD-ROM drive
6. Processor

Processor The central processing unit contains the memory, internal disk drive, a graphics board, a DVD-ROM drive, a diskette drive, power receptacle and outlet, connectors and ports.

- **Memory:** Four 1 GB Dual In-line Memory Modules, or DIMMs are provided as a standard feature of the processor.
- **Hard disk drive:** A 36 GB primary disk drive is provided as a standard feature of the processor. The operating system, the NPS/IPS application, and any queued print jobs are stored on the internal disk. This disk cannot be used to store other applications or data except as directed by your service representative.
- **Graphics board:** The Creator-3D series 3 graphics board is provided as a standard feature of the processor.

- **Diskette drive:** Diskettes inserted into a diskette drive are used to install fonts and to load files to, and back up files from, the internal disk drive. The diskette drive uses industry standard 3.5 inch, 1.44 MB, double-sided, high-density diskettes.
- **DVD-ROM drive:** The DVD-ROM drive is a high density, read-only, optical laser storage device used for loading the NPS/IPS operating system and other files. The CD-ROM drive is located in the processor above the diskette drive.
- **Back panel:** The back panel of the processor has a power receptacle and outlet, connectors, connector openings, and ports. The following figure shows the back panel of the controller.

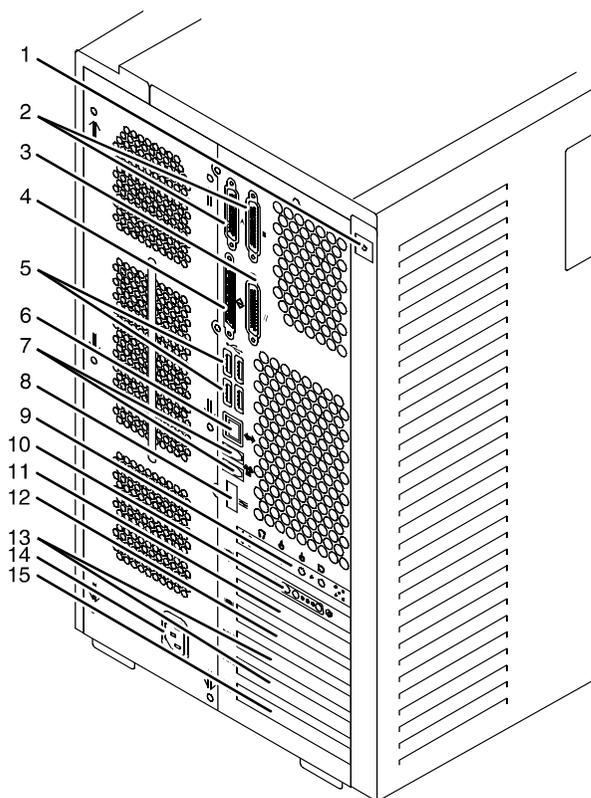


Figure 2-2. Back panel of the printer controller

1. Access panel lock block
2. Serial connectors A and B, DB-25
3. Parallel connector
4. SCSI connector
5. Universal serial bus (USB) connectors

6. Twisted-pair Ethernet (TPE) connector
7. IEEE 1394 connectors
8. Fibre Channel-Arbitrated Loop (FC-AL) connector
9. Audio module headphones, line-in, line-out, and microphone connectors
10. Graphics card / video connector (frame buffer 0)
11. PCI card slot 4
12. Graphics card / video connector (frame buffer not used)
13. PCI card slots 3 and 2
14. Power connector
15. PCI card slot 1

Keyboard The keyboard consists of alphanumeric keys similar to a typewriter, symbols and special character keys, an extended character set, and function keys. You can use the keyboard to make selections, and to enter commands that control functions such as requesting sample prints, or shutting down the system.

Mouse Use the mouse to select, move, or resize the windows.

Display monitor The 18.1-inch LCD monitor allows you to interact with the printer and to monitor its interaction with the various components. During a print job, printer error messages may display to notify you of any unexpected conditions.

NOTE: For information on channel-attached systems, refer to the chapter, "IPDS printing environment".

NOTE: Printer controller hardware configurations are subject to upgrade.

Sun Ultra 60 workstation

A PCIM2 card for the Sun Ultra 60 is installed in the processor. The printer cable is connected to the processor. In addition, the processor contains the connectivity boards for Ethernet and optional Token Ring. The disk stores the operating system, the system software, and any buffered pages.

Optional components

For channel connection to a host for IPDS printing, the system may use an HCU.

An external 4 mm tape drive is available and recommended for backing up site files. A typical color calibration file is 1.5 MB.

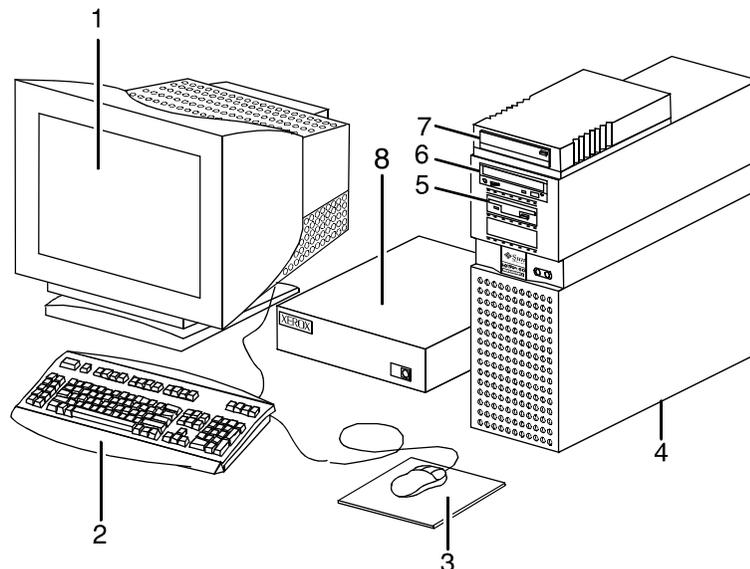


Figure 2-3. Printer controller components (Sun Ultra 60)

1. Monitor
2. Keyboard
3. Mouse
4. Processor
5. Diskette drive
6. CD-ROM
7. Optional cartridge tape drive
8. Optional HCU

Processor

The central processing unit contains the memory, internal disk drive, a CD-ROM drive, a diskette drive, power receptacle and outlet, connectors and ports.

- **Diskette drive:** The floppy disk drive is located in the processor. It uses industry standard 3.5 inch, 1.44-MB, double-sided, high-density floppy disks. This disk drive is not an input source for print jobs or for any other data or application. It is reserved exclusively for use by a service representative to update software and to store files.

- **CD-ROM:** The CD-ROM drive, located in the processor above the diskette drive, is a high-density, read-only, optical laser storage device used for loading the software, fonts and other files.
- **Cartridge tape drive:** The Sun Ultra 60 offers an optional 8 GB, 4 mm external SCSI cartridge tape drive. Unlike the diskette and CD drives, this tape drive is not an input source for print jobs or for any other data or application. It provides the service representative with another means of loading system maintenance files or saving diagnostic information.

Keyboard The keyboard consists of alphanumeric keys similar to a typewriter, symbols and special character keys, an extended character set, and function keys. You can use the keyboard to make selections, and to enter commands that control functions such as requesting sample prints, or shutting down the system.

Mouse Use the mouse to select, move, or resize windows.

Display monitor The display monitor has a high-resolution color screen, which displays the user interface screen.

NOTE: For information on channel-attached systems, refer to the chapter, "IPDS printing environment".

NOTE: Printer controller hardware configurations are subject to upgrade.

Printer controller software and fonts

The installation of printer controller software is performed by your service representative once all the hardware components are in place and properly connected. The following is a summary of major software components installed on the printer controller:

- Xerox printer controller software
 - UNIX Sun operating system

NOTE: The Sun operating system used on the controller is based on the standard Sun operating system; however, it has been customized for use with the Xerox printer controller. Therefore, not all standard Sun operating system features are available.

- DocuPrint Print Service Software including software components for the user interface, driver, decomposers, Job Pool Manager, and other operating system utilities.
- Xerox Client Software
 - Xerox client protocol software (print command) can be downloaded to client workstations or PCs as a means of sending jobs.
- Adobe Type 1 PostScript fonts
 - Courier (Courier, Bold, Oblique, Bold Oblique)
 - Helvetica (Helvetica, Bold, Oblique, Bold Oblique, Light, Light Oblique, Black, Black Oblique Condensed, Condensed Oblique, Condensed Bold, Condensed Bold Oblique Narrow, Narrow Bold, Narrow Oblique, Narrow Bold Oblique)
 - ITC AvantGarde Gothic (Book, Book Oblique, Demi, Demi Oblique)
 - ITC Bookman (Demi, Demi Italic, Light, Light Italic)
 - ITC Garamond (Light, Light Italic, Bold, Bold Italic)
 - ITC Korinna (Korinna, Kursiv Regular, Bold, Kursive Bold)
 - ITC Zapf Chancery (Medium Italic)
 - ITC Zapf Dingbats (Medium)
 - New Century Schoolbook (Roman, Bold, Italic, Bold Italic)
 - Palatino (Roman, Bold, Italic, Bold Italic)
 - Symbol (Medium)
 - Times (Roman, Bold, Italic, Bold Italic)

Using font installation commands, you can load other Type 1 PostScript fonts in *.PFB file format from a MS-DOS-formatted, 3.5-inch diskette or CD-ROM or DVD-ROM. Refer to the *Guide to Configuring and Managing the System* for more information on the font installation commands. Type 1 and Type 3 PostScript fonts can also be downloaded with a print job.

- PCL fonts: Intellifont (scalable)
 - CG Times (Medium, Italic, Bold, Bold Italic)
 - Universe (Medium, Italic, Bold, Bold Italic)
 - Universe Condensed (Medium, Italic, Bold, Bold Italic)
 - Courier (Medium, Italic, Bold, Bold Italic)

- Letter Gothic (Medium, Italic, Bold)
- Albertus [Medium (semi-bold), Extra Bold]
- Antique Olive (Medium, Italic, Bold)
- Clarendon Condensed (Bold)
- Coronet (Medium Italic)
- Garamond [Antique (medium), Kursiv (Italic), Halbfett (Bold), Kursiv Halbfett (Bold Italic)]
- Marigold (Medium)
- CG Omega (Medium, Italic, Bold, Bold Italic)
- PCL fonts: TrueType (scalable)
 - Arial (Medium, Italic, Bold, Bold Italic)
 - Times new Roman (Medium, Italic, Bold, Bold Italic)
 - Symbol (Medium)
 - Wingdings (Medium)
- PCL fonts: Bitmap
 - Line Printer (16.67 pitch / 8.5 point medium)

NOTE: The resident fonts are used for PostScript and PCL printing.

3. Printer components and options

The printer processes the electronic data and images received from the controller and produces the printed output. This chapter describes the components and options available for the printer.

Printer components

The components of the 4635 and 180 NPS/IPS base printer are shown in the following figure. The 96 NPS/IPS standard printer configuration has one inverter feeder/stacker module, with the option of adding a second feeder/stacker module as shown.

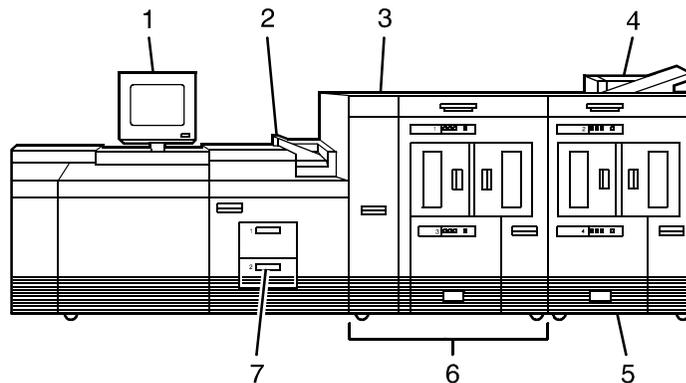


Figure 3-1. DocuPrint 96, 4635, and 180 printer components

1. Printer console
2. Sample tray
3. Attention light
4. Purge tray
5. Feeder/stacker module
6. Feeder/stacker module with inverter
7. Processor feeder trays

NOTE: The DocuPrint MICR NPS/IPS models utilize the same hardware and operating system as the non-MICR NPS/IPS models. However, the Image Development systems have been modified to enable MICR font reproduction.

Processor feeder trays

Two processor feeder trays are located in the main part of the printer:

- The main tray (tray 1) holds up to 1100 sheets of 20 pound or 80 gsm (grams per square meter) paper.
- The auxiliary tray (tray 2) holds up to 600 sheets of 20 pound or 80 gsm paper.

Each tray can handle paper from 8 x 10 inches/203 x 254 mm to 9.02 x 14.33 inches/230 x 364 mm.

Feeder tray control panels

Each processor feeder tray and HCF tray has a control panel consisting of a button, indicators, and paper level displays.

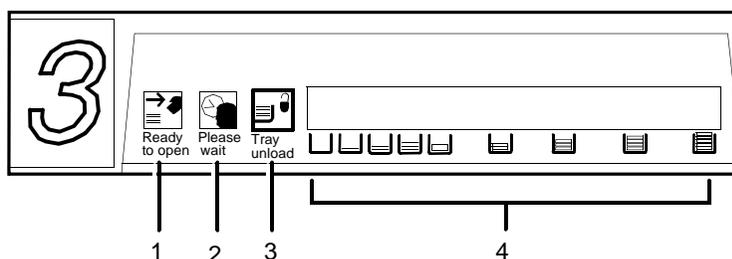


Figure 3-2. Feeder tray control panel

1. Ready to Open indicator
2. Please Wait indicator
3. Tray Unlock button
4. Paper Level indicators

1. Ready to Open indicator

This indicator glows when paper can be added to the tray.

2. Please Wait indicator

This indicator shows that the tray is in motion. It is lit when the Tray Unlock button is pressed, when the tray is being lowered, or when the tray is being raised. The indicator goes off when the tray elevator reaches its destination.

3. Tray Unlock button

You can use this button any time the Please Wait indicator is off.

- If the tray is in use when this button is pressed, the feed selection changes to the backup tray if one exists. Otherwise, printing stops.
- If the tray is in use and selected as a backup tray, pressing this button causes the tray elevator to lower and the tray is no longer available for auto switching.
- If the tray elevator is in the raised position and the tray is not in use or selected as a backup tray, pressing this button causes the elevator to lower with no effect on printing operations.

4. Paper Level indicators

These indicators display the approximate quantity of paper within the tray. The display shows paper by quarter reams up to one ream, and then by full reams. The green indicator light appears above the Paper Level indicator which shows the amount of paper in the tray.

7 by 10 inch / 178 by 254 mm enablement

The optional 7 by 10 inch enablement feature allows your DocuPrint 4635 and 180 NPS/IPS to print on paper sized from 7 by 10 inches / 178 by 254 mm to 9.02 by 14.33 inches / 230 by 364 mm.

NOTE: The 7 by 10 inch enablement feature is not available on the DocuPrint 96 NPS/IPS.

Inverter

The inverter is part of the inverter feeder/stacker module. It allows for proper collation of the print job. It directs printed output to the sample tray, when required. It also directs output to optional third-party finishing devices in the proper orientation.

High-capacity feeder

There is a high-capacity feeder (HCF) tray located in the bottom half of each feeder/stacker module (trays 3, 4, 5 and 6, depending on the number of feeder/stacker modules installed).

Each HCF tray can hold up to 2600 sheets of 20 pound or 80 gsm paper.

NOTE: When configured, each HCF tray can handle paper sized from 7 by 10 inches / 178 by 254 mm to 17 by 14.33 inches / 432 by 364 mm. To feed papers smaller than 8 inches / 203.2 mm, an optional 7 by 10 inch enablement kit must be installed. 17-inch/ 432 mm paper can be fed only short edge first.

An elevator moves the tray up or down when it is in use. The HCF trays have Paper Level switches which detect the position of the elevator to determine the fullness of the tray. Paper Size switches detect the size of the paper loaded in the trays.

High-capacity stacker

The 4635 and 180 NPS/IPS printers can contain up to four high-capacity stacker (HCS) bins as part of the feeder/stacker modules (stacker bins A, B, C and D). The 96 NPS/IPS printer can contain up to two high-capacity stacker (HCS) bins as part of the feeder/stacker modules (stacker bins A and B).

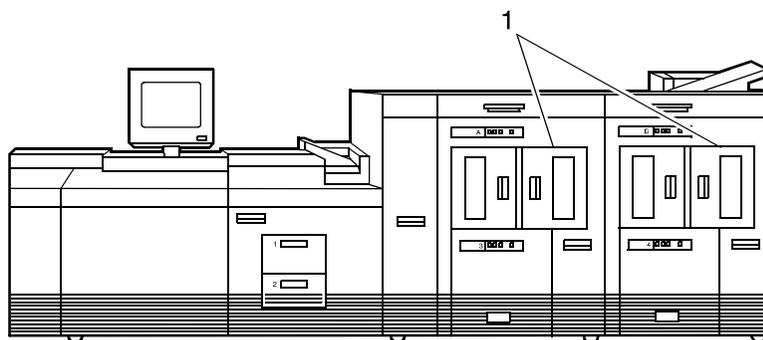


Figure 3-3. High-capacity stackers

Each HCS can hold 2500 sheets of 20 pound or 80 gsm paper stacked on the bin platform.

NOTE: For large paper sizes such as 11 by 17 inches or A3, there is a stack limit of about 1500 sheets. This limit is needed to keep the total weight of the stack within safe limits for unloading and lifting.

A stacking elevator maintains the paper at the proper level for stacking and lowers the stack for unloading. There is an offset mechanism that offsets printed sets toward the front or back of the HCS bin. Each HCS bin has unlinked double doors to provide you with easy, yet safe, access for unloading paper from the printer.

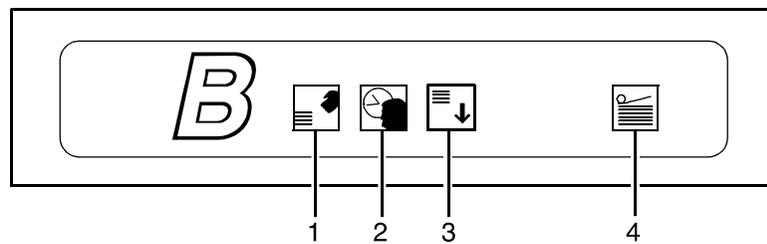


Figure 3-4. High-capacity stacker bin control panel

1. Ready to Unload indicator

When this indicator glows, you can remove printed sheets from the stacker bin.

2. Please Wait indicator

When this indicator glows, the elevator is in motion. This indicator goes off when the platform reaches its destination.

3. Bin Unload button

Pressing this button causes the bin elevator to lower. If the bin is in use and is part of a STACKER GROUP combination, the printed pages begin stacking in the other stacker bin. If the bin is not in use, there is no effect on printing operations.

If this is the only bin in a STACKER GROUP, printing will stop.

4. In Use indicator

When this indicator glows, the bin is selected to receive the next printed sheet.

Purge tray The purge tray is located on top of the feeder/stacker module. Aborted sheets (for example, damaged sheets or sheets cleared after a paper jam) are sent to this tray. The purge tray can hold up to 100 sheets of paper.

Attention light An attention light is mounted on top of the inverter module. The attention light signals when the printer requires operator attention:

- **Off:** No printer problems exist that require your attention.
- **Steady light:** A situation exists that needs your attention (such as low dry ink condition).
- **Flashing:** The printer has stopped and requires your attention immediately.

NOTE: When the attention light starts flashing, an explanatory message appears on the printer console display. A similar message appears on the printer controller screen.

Sample button The Sample button on the 180, 4635, or 96 printer duplicates one of the sheets in the paper path and delivers it to the sample tray. This sheet can be used to check quality and alignment while printing. The button is disabled for MICR printers.

Sample tray The sample tray located on top of the printer holds up to 100 sheets of paper. It receives output such as transparencies, sample prints or system files, and waste sheets that cannot be sent to the purge tray.

Printer console The printer console is the color monitor located on top of the printer. It contains message areas and graphic displays that alert you to paper jams and other fault conditions, such as low toner. The printer console also contains buttons that allow you to control certain functions of the printer, such as continuing an interrupted job, without returning to the printer controller.

The printer console has the following features:

- Local controls and displays for jam clearance, paper loading/unloading, and diagnostics/service (used by the service representative). Two types of messages are displayed on the printer console: fault messages, which relate to printer malfunctions, and information messages, which relate to printer conditions such as low dry ink.
- Touch-sensitive areas that allow you to select options by touching the printer console screen. A tone sounds when you touch one of these areas.
- Printer alarm consisting of three beeps, repeated for ten seconds. The alarm is generated by any event that stops the printer.

The alarm stops after three cycles or as soon as you start to clear the fault condition (for example, when you open doors or covers specified in the clearance instructions). You can stop the alarm by pressing one of the printer console buttons or by selecting a function through the touch screen.

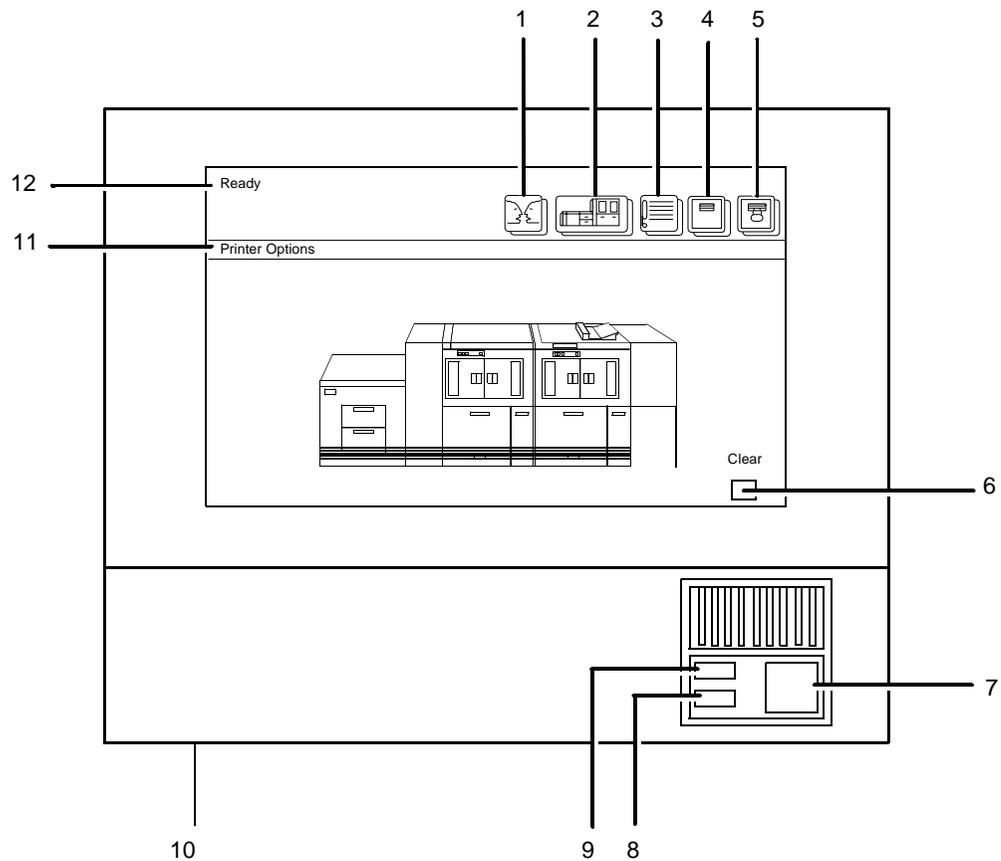


Figure 3-5. Printer console

1. Language icon
2. Printer icon
3. Fault List icon
4. Tools icon
5. Guarded Tools icon (not available on the 96 NPS)
6. Clear button
7. Continue button
8. Stop button
9. Sample button
10. Brightness control thumbwheel
11. Icon area
12. Message area

Printer configurations

The DocuPrint 96 NPS/IPS base system is configured with one inverter feeder/stacker module; one additional feeder/stacker module is optional. Input enablement and bypass transport devices can also be used.

NOTE: The input enablement and bypass transport devices are offered as optional components. These options allow you to customize your printer for increased efficiency and specialized applications, such as roll feed and finishing devices. The middle feeder/stackers are also optional for the 4636 and 180 NPS/IPS.

The DocuPrint 96, 4635, and 180 NPS/IPS are available in the following configurations, some of which may include the bypass transport and/or Input Enablement kit.

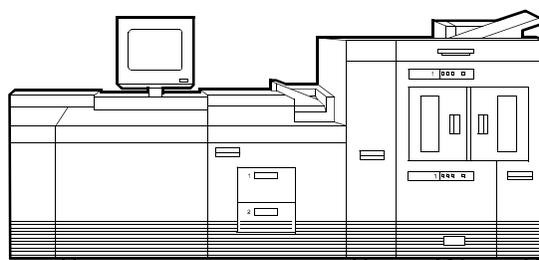


Figure 3-6. DP 96 NPS/IPS: Printer + inverter feeder/stacker

The DocuPrint 4635 and 180 are available in the configurations shown in the following figures.

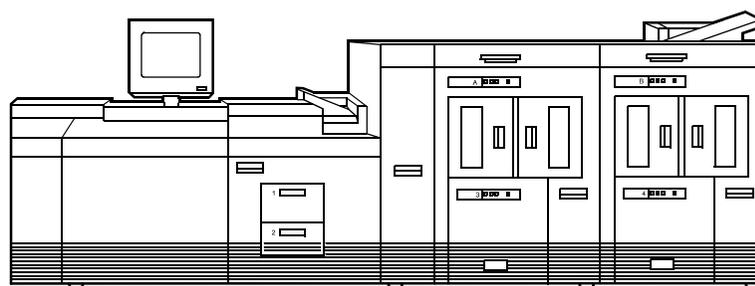


Figure 3-7. Printer + inverter feeder/stacker + feeder/stacker

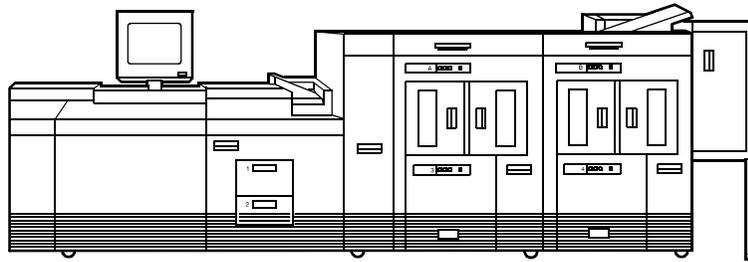


Figure 3-8. Printer + inverter feeder/stacker + feeder/stacker + feeder/stacker + bypass transport

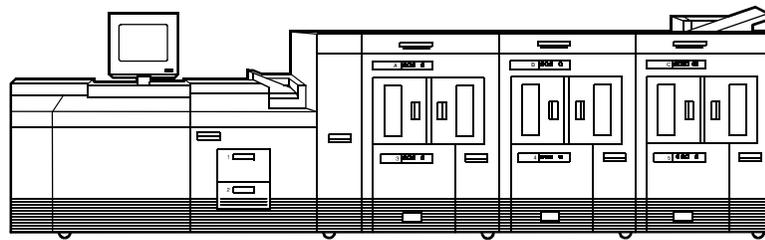


Figure 3-9. Printer + inverter feeder/stacker + feeder/stacker + feeder/stacker

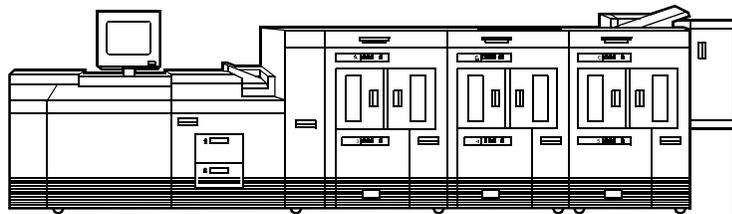


Figure 3-10. Printer + inverter feeder/stacker + feeder/stacker + feeder/stacker + bypass transport

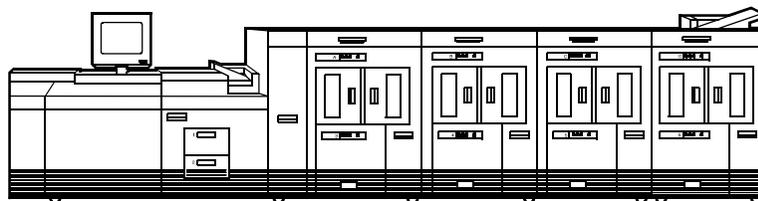


Figure 3-11. Printer + inverted feeder/stacker + feeder/stacker + feeder/stacker + feeder/stacker

NOTE: The bypass transport device is not available for this configuration four feeder/stacker modules). The Input Enablement kit is available for this configuration on the 180 NPS/IPS only.

Paper paths

The paper path is the route that materials (paper, transparencies, labels, and so on) follow through the printer from the feeder trays to the output trays.

Paper path through the printer

The following figure illustrates the entire printer paper path.

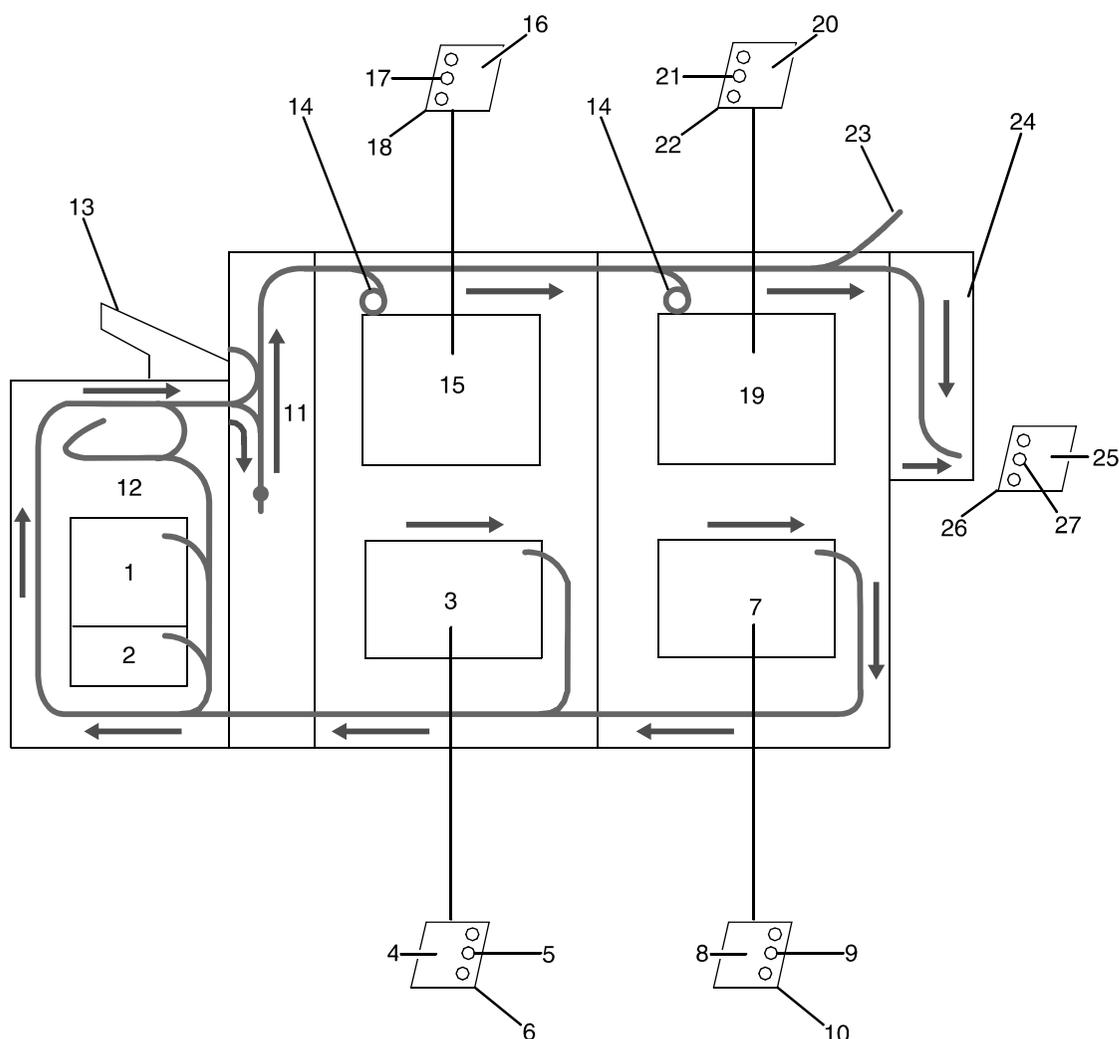


Figure 3-12. Route of paper through 96/4635/180 printer

1. Processor feeder tray 1
2. Processor feeder tray 2
3. High-capacity feeder tray 3
4. Side 1 of sheet leaving feeder tray
5. Drilled holes (on right edge)
6. Origin 0,0: portrait feeder tray 4
7. High-capacity feeder tray 4
8. Side 1 of sheet leaving feeder tray
9. Drilled holes (on right edge)
10. Origin 0,0: portrait feeder tray 4
11. Inverter
12. Duplex inverter
13. Sample tray
14. Disk inversion
15. High-capacity stacker bin A
16. Side 2 of sheet stacked in bin
17. Drilled holes (on left edge)
18. Origin 0,0: portrait orientation
19. High-capacity stacker bin B
20. Side 2 of sheet stacked in bin
21. Drilled holes (on left edge)
22. Origin 0,0: portrait orientation
23. Purge tray
24. Bypass transport
25. Side 2 of sheet passing through bypass transport
26. Drilled holes (on left edge)
27. Origin 0,0: portrait orientation

**Input enablement
paper path**

The following figure shows the paper path and the dimensions of the input enablement area from a printer front view. The input enablement kit option supports third-party feeding devices.

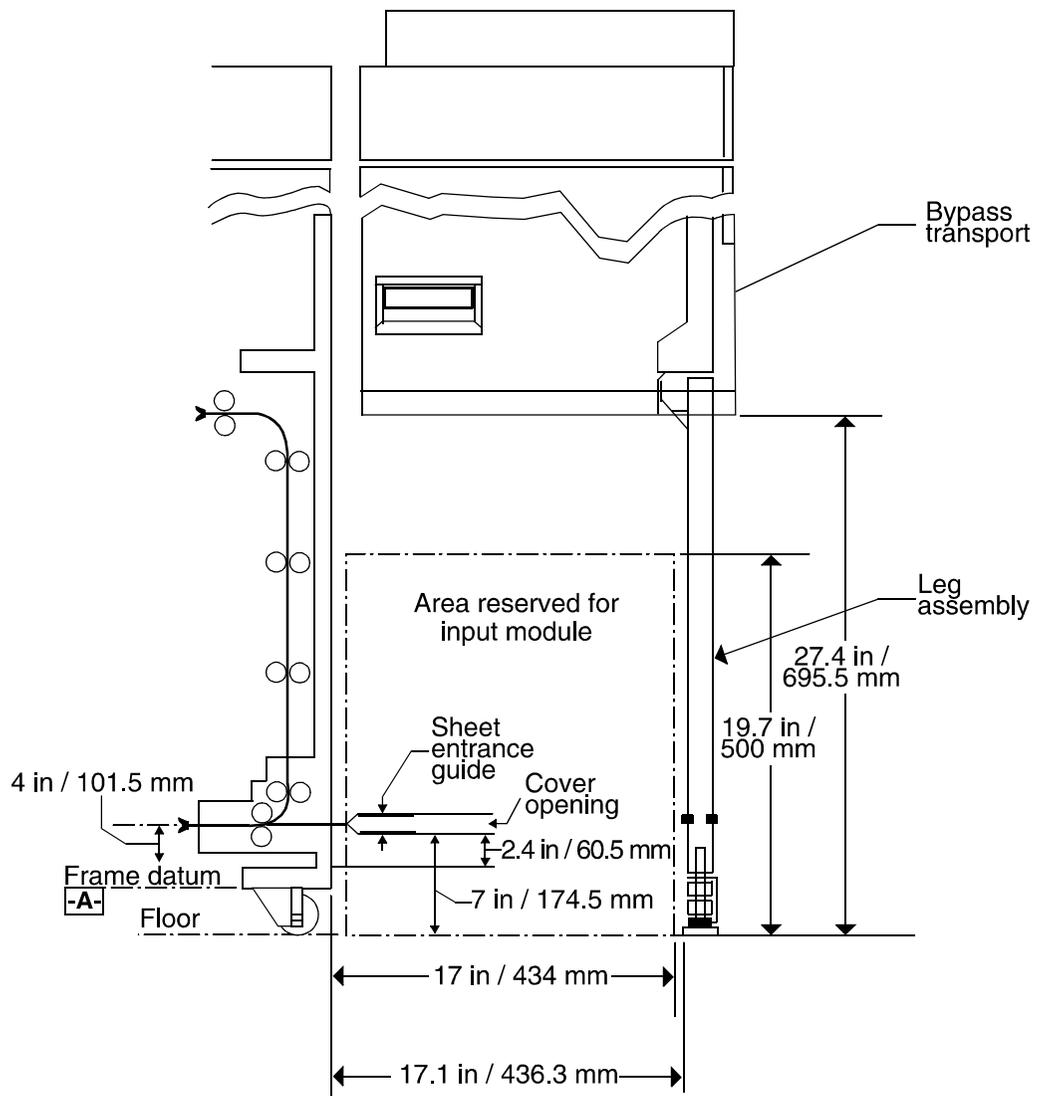


Figure 3-13. Input enablement paper path and dimensions

The following figure shows the dimensions of the bypass transport portion of the paper path.

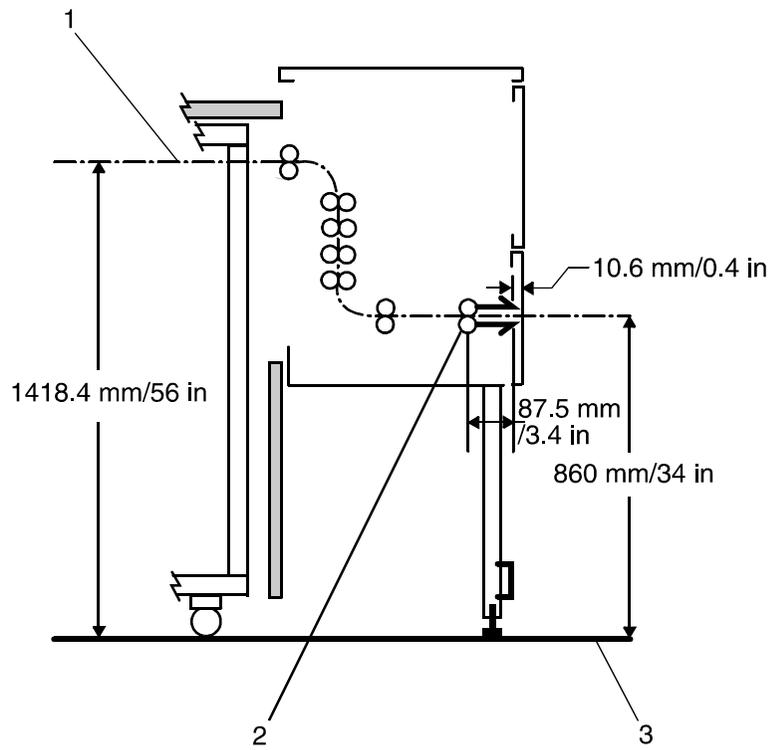


Figure 3-14. Bypass transport dimensions

4. Network printing environment

The NPS/IPS system supports the personal computer (PC), Sun workstation, DEC workstation, HP/Apollo, IBM RS/6000 and Apple Macintosh. It accepts PostScript levels 1 and 2, PCL 5, TIFF, and ASCII output.

Client workstations and system software

To send print jobs to the printer, the customer needs to provide the proper client hardware, operating system, and network software.

Print data originates at the client workstation, mainframe or minicomputer. This is where a user creates and formats documents according to specifications with the help of application software. The printer supports the following types of networked client workstations and operating systems:

- Sun workstation running a Sun or Linux operating system
- PC running MS-DOS 6.2 and Microsoft Windows 95, 98, NT, 4.0, 2000, and ME using Ethernet with TCP/IP or Novell NetWare 3.11 and 3.12.

NOTE: Customers using Novell 4.1 must set the "Bindery Emulation Mode" to be backwards compatible with Novell 3.11 and 3.12.

- IBM RS/6000 running IBM AIX, version 4.1
- HP/Apollo running HP-UX, version 10.01
- DECStation 5000/200 running DEC Ultrix, version 4.3
- Apple Macintosh, System 7, 7.5, or 8.x, using AppleTalk through EtherTalk, phase 1 or 2
- Any system that supports RFC-1179 lpr/lpd.

The software may be compatible with workstation models and software versions other than those listed above.

Client software

On your PC or workstation, you must install or set up a supported means of submitting jobs to the printer. Depending on your system, you can use the following:

- Xerox drivers for Windows 3.x, 95/98, or NT/2000
- Xerox Document Submission Software for DOS, Windows 3.x, 95/98, NT/2000, or Macintosh
- Third-party drivers
 - Some PostScript drivers can be used in conjunction with Xerox-supplied PPD files
 - HP Color LaserJet for PCL 5c jobs
 - HP LaserJet 4 for monochrome jobs
- Third-party TCP/IP lpd utility
- Apple/Macintosh Printer Access Protocol (PAP)

NOTE: The printing options vary according to the network software that is loaded on the client workstation.

Submitting print jobs

There are basically two ways you can submit print jobs: You can send print data directly from the application to the printer; or you can create a PDL data file on the workstation and then send the data file to the printer. The method you choose depends on the workstation configuration and the job submission requirements.

Sending the print data directly from the application to the printer is accomplished with a Xerox print driver or a third-party driver. This method is sometimes referred to as “transparent printing.” It may not support all available print options, such as number of copies, simplex or duplex printing, and stitching.

The other way to submit print jobs to the printer is by creating a PDL data file. After the file is created, the user closes the document and submits the job using one of the following methods:

- **lpr command:** Provides options for submitting print jobs. The functionality of the lpr command is dependent on the TCP/IP software installed on the workstation.

- **Xerox Client Software:** Provides a print command for submitting jobs and specifying print options. The functionality of the print command is dependent on the TCP/IP software installed on the workstation.
- **Xerox DocuPrint Document Submission Client software for the Macintosh:** Provides a graphical user interface for submitting jobs and specifying print options.
- **Xerox DocuPrint Print Submission software for Windows 3.x, Windows 95/98, Windows NT, and Windows 2000:** Provides graphical user interfaces for submitting jobs and specifying print options.
- **Internet Printing Protocol for Windows 2000:** Allows job submission over the Internet.

In many cases, the workstation can be set up for more than one method of job submission.

The application software provides the capability to print the document using a page description language (PDL). The application produces print data in one of the supported page description language formats, for example PostScript level 2.

Communicating with the network

After the print data has been prepared for printing and combined with print options data—either by the application software or by a print job submission utility—the print job is sent over the network.

The printer supports TCP/IP, AppleTalk, and Novell NetWare network communications protocols.

Client workstations require a network software utility that submits the job using the appropriate network protocol. This software must be installed and running for jobs to be submitted successfully to the printer. Once this software is installed, its operation is transparent to the user.

The Macintosh uses Printer Access Protocol (PAP) to communicate with one or more DocuPrint printers. For convenience, your network may be divided into zones. A zone can be any logical grouping of individual workstations and printers. Your network administrator defines your zone when setting up the network.

Shown below are the workstations, networking options, and job submission methods available for each client.

Table 4-1. Clients

Client workstation hardware	Operating system	Ethernet connection	Protocol; <i>Translation requirements</i>	Job submission method
Sun Microsystems	Solaris SunOS	Standard	TCP/IP; none	Print using the lpr command or Xerox Client Software.
IBM PC and compatible	MS-DOS	Optional Ethernet interface card (for example, 3Com 3C503)	TCP/IP; <i>network communication utility recommended</i>	Print to disk file, then send using the lpr command or Xerox Client Software.
IBM PC and compatible	Windows 3.1	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; <i>network communication utility recommended with TCP/IP</i>	Print directly from application or use Xerox DocuPrint Print Submission software for Windows.
IBM PC and compatible	Windows 95/98	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; <i>network communication utility recommended with TCP/IP</i>	Print directly from application or use Xerox DocuPrint Print Submission software for Windows.
IBM PC and compatible	Windows NT	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; <i>network communication utility recommended with TCP/IP</i>	Print directly from application or use Xerox DocuPrint Print Submission software for Windows.
IBM PC and compatible	Windows 2000	Optional Ethernet interface	TCP/IP or Novell Netware 3.1x; <i>network communication utility recommended with TCP/IP</i>	Print directly from application or use Xerox DocuPrint Print Submission software for Windows, or the Internet Printing Protocol (IPP)
Digital Equipment Corporation DECstation	ULTRIX	Optional Ethernet interface	TCP/IP; none	Print directly from application, or use the lpr command or Xerox Client Software.

Table 4-1. Clients (Continued)

Client workstation hardware	Operating system	Ethernet connection	Protocol; Translation requirements	Job submission method
Apple Macintosh	Apple OS	Optional Ethernet interface	AppleTalk using EtherTalk Phase I or II; <i>none</i>	Print directly from application or use Xerox DocuPrint Print Submission Client software for the Macintosh.
IBM RS/6000	IBM AIX	Standard	TCP/IP; <i>none</i>	Print using Xerox Client Software.
HP/Apollo	HP-UX	Standard	TCP/IP; <i>none</i>	Print using Xerox Client Software.

Job status feedback

Client workstations display fault messages and additional information, such as the status of feeder trays and output bins. If properly configured, the workstations may be able to display job status, as shown below.

Table 4-2. Job status feedback

Platform	Job status capability
Sun workstation	Job status and job deletion are available by issuing the appropriate command at the command line. Job status information is available for jobs submitted using Xerox Client Software.
IBM and compatible personal computers	Job status and job deletion are available depending on the TCP/IP software installed on the workstation. You must issue the appropriate command at the command line. Job status information is available for jobs submitted using Xerox Client Software. Job status information is available using the Novell PCONSOLE utility if the printer is configured with a RPRINTER or PSERVER enabled.
Apple Macintosh	Job status information is available at the workstation through AppleTalk.
IBM RS/6000 and HP/Apollo	Job status information is available for jobs submitted using Xerox Client Software or lpstat (native utility).

To determine the status of jobs submitted using the `lpr` command, you must issue an `lpq` command at the command line. Some application software packages may provide a simplified means of obtaining job status, such as through the use of icons.

The job status command (lpq) is available at client workstations unless your TCP/IP network communications utilities do not support it.

Xerox Client Software provides commands for listing the status of the job and for listing the queue. These commands are available for jobs submitted using Xerox Client Software.

AppleTalk provides job status information at the client workstation through the print monitor function. Workstation users can also determine the status of a virtual printer.

NOTE: Job status is also available by establishing a telnet connection to the Printer Controller to access the user interface from your workstation. Printer and additional status information is also available. You can also use a Web browser to obtain job status. See the Guide to Configuring and Managing the System for more information.

Ethernet LAN

Users of networked client workstations may send print jobs to the printer over the Ethernet LAN using either the TCP/IP, AppleTalk using EtherTalk Link Access Protocol (ELAP), or Novell NetWare as the network protocol.

Regardless of printing or transmission protocol, the Ethernet connection to the Printer Controller must be compatible with the Institute of Electrical and Electronics Engineers (IEEE) 802.3 standard.

Token Ring

Users of networked client workstations may send print jobs to the printer over a Token Ring network using TCP/IP, Novell NetWare or AppleTalk network protocol.

Regardless of the printing transmission protocol, the Token Ring connection to the Printer Controller must be compatible with the Institute of Electrical and Electronics Engineers (IEEE) 802.5 standard.

Multiple network connectivity

The system supports multiple network connectivity, that is, the ability for protocols such as TCP/IP to run on more than one network interface. For TCP/IP, the system can support any combination of Ethernet or Token Ring. One interface is designated as the primary network interface. Novell NetWare can run on only the primary network interface, but the type of interface can be selected.

AppleTalk can run on only one network interface, but it does not have to be the primary one.

5. IPDS printing environment

The NPS/IPS emulates an IBM AFP Group 3 page printer with the Advanced Function Image and Graphics (AFIG) option. It can print in all the following PSF environments: MVS, VM (channel-attached only), VSE (channel-attached only, OS/2, OS/400 (with TCP/IP only), and AIX.

NOTE: Although PSF/VSE does not support TCP/IP directly, a printing system with PSF/2, PSF/6000, or IBM InfoPrint Manager can attach to a PSF/VSE system and the PSF/2, PSF/6000, or IBM InfoPrint Manager can furnish the TCP/IP support for the printer.

Host connectivity

Host environments

The system emulates an IBM AFP Group 3 page printer with the Advanced Function Image and Graphics (AFIG) option and can print in all the following PSF environments:

- MVS
- VM (channel-attached only)
- VSE (channel-attached only)
- OS/2
- OS/400 (with TCP/IP only)
- AIX

NOTE: Although PSF/VSE does not support TCP/IP directly, a printing system with PSF/2, PSF/6000, or InfoPrint Manager can attach to a PSF/VSE system and the PSF/2, PSF/6000, or InfoPrint Manager can furnish the TCP/IP support for the printer.

NOTE: There is no minimum host operating system software level required. The minimum PSF level needed to support full color is v.3.2.

The NPS/IPS can be set up to receive data from the IBM host in one of two ways:

- Through a bus and tag channel connection.

NOTE: If your system will be channel-attached, the printer controller requires an additional component—either a channel interface board and channel cable connector box, or a Host Channel Unit (HCU) that serves as an interface between the IBM host and the printer controller.

- Through a Token Ring or Ethernet interface using TCP/IP.

NOTE: Your system supports only one other connectivity option in addition to Ethernet. For example, Ethernet and channel connection or Ethernet and Token Ring.

NOTE: A transmission rate of at least 16 megabits per second should be used with a Token Ring interface. (Overall performance depends on network traffic and job density.)

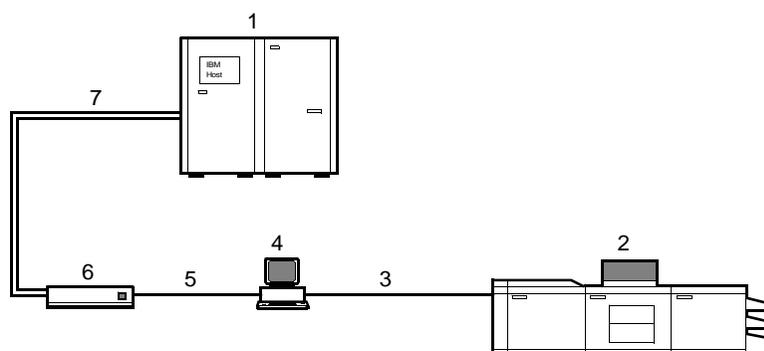


Figure 5-1. Printing system: channel-attached configuration

1. Host system (PC or mainframe)
2. Printer
3. Printer interface cables
4. Printer controller
5. Internal channel cable
6. Host Channel Unit (HCU)
7. Bus and tag cables

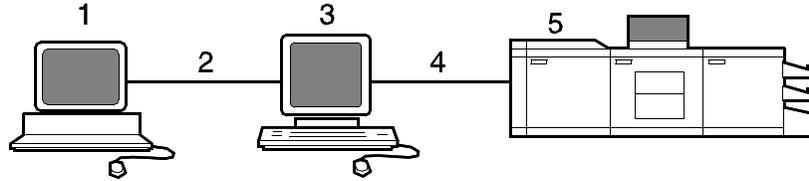


Figure 5-2. Printing system: TCP/IP configuration

1. Host system (PC or mainframe)
2. Interface network (Ethernet or Token Ring)
3. Printer controller
4. Printer interface cables
5. Printer

For information on the various printer configuration options, refer to the “Printer components and options” chapter of this guide.

Channel interface —channel-attached systems only

Your system may use a channel interface board and connector box for channel connection to a host for IPDS printing. The channel interface board, connected to a channel cable connector box, handles all IPDS communications and handshaking with PSF on the host when the NPS/IPS is receiving data over a channel. (It is not used when the NPS/IPS is printing data using TCP/IP.)

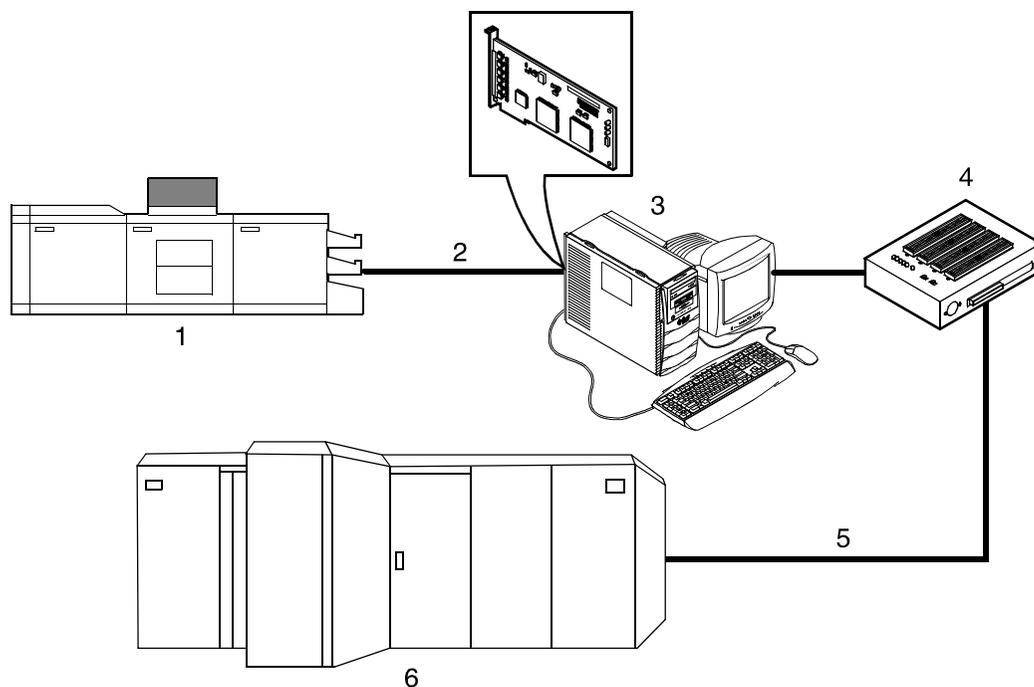


Figure 5-3. Channel board and control unit

1. Printer
2. Printer control and video cable
3. Printer controller with channel interface board
4. Channel cable connector box
5. Channel cables
6. Host system

NOTE: The customer is responsible for obtaining, stringing, and maintenance of the bus and tag cables. The bus and tag cables must be fully populated cable sets.

Host Channel Unit (HCU)—channel-attached systems only

Your system may use a Host Channel Unit (HCU) for channel connection to a host for IPDS printing.

The HCU handles all IPDS communications and handshaking with PSF on the host when the system is receiving data over a channel. It is not used when the system is printing data using TCP/IP.

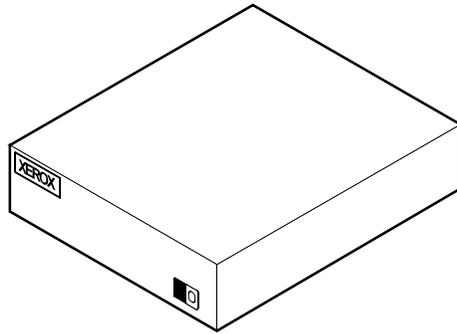


Figure 5-4. Host Channel Unit (HCU)

The front panel of the HCU provides a single-digit LED display that enables you to monitor power-up and offline status, and alerts you to error conditions. (Refer to the Messages Guide for an explanation of the HCU codes.)

The back panel of the HCU has a power switch and outlet, bus and tag cable input and bypass connectors, and a dual serial port.

NOTE: The customer is responsible for obtaining, stringing, and maintenance of the bus and tag cables. The bus and tag cables must be fully populated cable sets.

IPDS data stream

All IPDS resources (print data sets, page definitions, form definitions, page segments, fonts, and overlays) that are supported by the IBM 3825 and 3827 printers are supported by the Xerox software. Additionally, the data towers that are supported within the AFP environment by the IBM 3825 and IBM 3827 printers are fully supported by the software. Data towers supported are:

- **IM Image IMD1**
- **FOCA:** Font Object Content Architecture
- **MO:DCA-P:** Mixed Object Document Content Architecture for Presentation
- **PTOCA PT1, PT2, and PT3:** Presentation Text Object Content Architecture
- **IOCA:** Image Object Content Architecture
- **GOCA:** Graphics Object Content Architecture
- **BCOCA:** Bar code Object Content Architecture

- **OL1:** Overlay One
- **PS1:** Page Segment One
- **Line mode data streams**

Each of the data objects follow the same object rule of containing delimiting fields with structured fields describing each object.

Software features for IPDS

This section describes some of the software features for IPDS printing.

IOCA Replicate and Trim

The printer supports Replicate and Trim, which improves the processing of IM and IO images that contain large areas of shaded graphics. (IM images are resolution-dependent images that cannot be compressed or scaled; IO images are resolution-independent.)

The IOCA Replicate and Trim capability allows for faster transmission to the printer of AFP applications with IM images that have large or widespread shaded areas. It also reduces the storage area required on the host and on the printer.

Trace facility

To help diagnose problems, the system provides a trace mechanism. Trace files store system configuration information, maintain TCP/IP protocol headers, and time-stamp all records.

For detailed information on this feature, refer to the “Using utility commands” chapter in the *Guide to Configuring and Managing the System*.

Overstrike, underscore, subscript, and superscript

Support for the PT2 Subset of PTOCA enables the printer to print overstrikes, underscores, subscripts, and superscripts where specified in jobs.

Color image support

Some IM1 images (for example, logos) can be converted to IOCA for resolution correction. The bi-level IOCA feature enables such IM1 images to be printed in color on the highlight-color printer. PSF does not strip the color information from the print job.

Also supported are JPEG compressed IOCA, as well as JPEG and EPS files in object containers.

NOTE: Hosts may not support JPEG files in object containers.

Background color for OCA colors

Users can specify COLOR on DRAWBOX (i.e., background color) as long as the color is restricted to colors defined with the OCA model.

Bi-level IOCA colors

The printer accepts the new IOCA color spaces in the extended controls (referred to as the “4E” color triplets). These include the Highlight Color and Standard OCA Color.

Outline font support

The printer supports the use of IBM outline fonts for both single-byte and double-byte applications. These fonts must be downloaded during the jobs.

These outline fonts allow users to specify a single font that can be rasterized in a variety of point sizes by the printer. The IBM outline fonts are based on Adobe type 1 and type 0 fonts that are in PostScript format.

6. Magnetic ink character recognition (MICR)

96/4635/180 MICR NPS/IPS printing features

The 96, 4635, and 180 MICR NPS/IPS meet ABA standards and ANSI and ISO specifications for automatic check handling. These printing systems print the MICR line and the rest of the check at the same time, which reduces processing time and cost. Their special features include the following.

MICR fonts Xerox provides a set of 300 dpi MICR fonts for use on the 96/4635/180 MICR NPS/IPS. You must use only these Xerox-supplied MICR fonts to have the high print quality Xerox guarantees.

The 96/4635/180 MICR NPS/IPS creates machine-readable documents using the standard E13B and CMC7 fonts. These fonts support 14 characters, including the numerals zero through nine.

The “Test” fonts are non-readable MICR hollow bitmap (or outline) fonts, provided for testing MICR applications and printing non-negotiable documents.

E13B font set: The E13B series includes:

- E13B
- E13B Landscape
- E13B Test
- E13B Test Landscape.

CMC7 font set: The CMC7 set is an alternative set of MICR fonts that has been adopted in various countries outside the U.S., and is the official standard in France. Like the E13B font, it is magnetically readable, but with a different character design and recognition criteria. The series includes:

- CMC7
- CMC7 Landscape
- CMC7 Test
- CMC7 Test Landscape.

Check Performance Guarantee

The Xerox Check Performance Guarantee means Xerox stands behind the performance of its MICR printers and inks. However, if any E13B or CMC7 font is used other than the ones supplied by Xerox, this guarantee is invalidated.

300/600 dpi resolution

The 96/4635/180 MICR receives data at 300 dpi and interpolates it to print at 600 dpi. All AFP resources, including fonts, required for MICR print jobs must be available at 300 dpi. Print image size can be up to 14.33 by 17 inches.

NOTE: Non-MICR 240 dpi fonts must be converted to 300 dpi before they can be used on the 96/4635/180 MICR.

Transfer Assist Blade

When you enable MICR using the job attribute MICRMode, the NPS/IPS makes adjustments so that the MICR line on your documents prints all the way to the edges of the paper with no fading or lightening. To ensure reliable print quality of the entire MICR line, you must have the Transfer Assist Blade installed in your 96/4635/180 MICR printers.

NOTE: The Custom Transfer Assist Blade should be used on your 96/4635/180 MICR when you are using nonstandard paper sizes. This will ensure acceptable MICR line quality.

Check example

The following figure shows a check (U. S.) printed with a MICR line. The entire MICR line, which consists of numbers and symbols, is printed in magnetic ink.

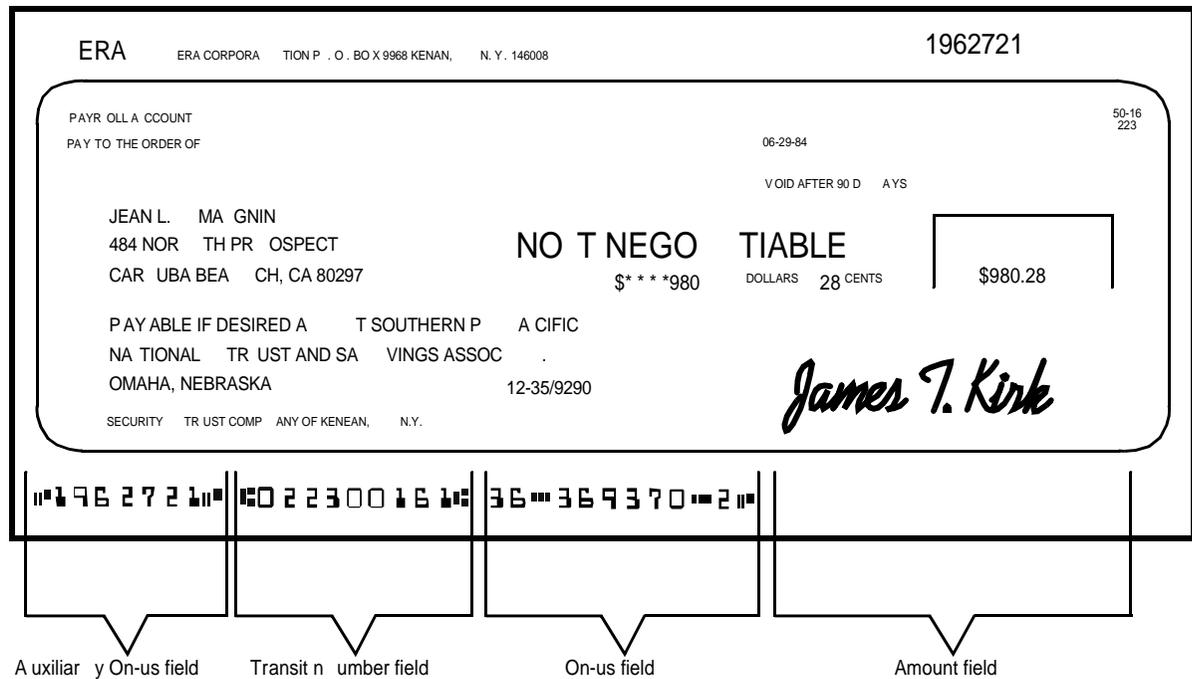


Figure 6-2. Parts of the MICR Clear Band on a U. S. check

- **Transit:** There are two transit symbols in a MICR line. The numbers between the transit symbols indicate the institution on which the check is drawn and the location which the document should be sent for processing.
- **Amount:** There are two amount symbols in a MICR line. The numbers between the amount symbols indicate the amount of the check. Generally, the amount information is added to the MICR line by the bank during processing.
- **On-Us:** The field to the left of this symbol contains the account number. The content of the On-Us field is determined by the issuing institution. The branch of the bank on which the check is drawn may also be indicated in this field.

In general, the account number, bank branch number, and check number are easily recognizable. Typically, the serial number for the check displays to the right of the On-Us symbol.

On larger business size checks, this symbol also defines the Auxiliary On-Us field located on the left end of the check. Generally, this optional field contains a multiple digit serial number.

- **Dash:** The dash symbol can be used as a separator in the On-Us field. For example, some banks use the dash to separate the bank branch number from the account number. However, reader and sorter manufacturers discourage this use as it can cause detection problems.

Verifying MICR output with the MICR Position and Dimension Gauge

The MICR Position and Dimension Gauge, which consists of a thin sheet of flexible plastic attached to the bottom of a piece of hard thick plastic, is provided in a kit that includes a small magnifying glass.

The gauge is used by placing the printed output between the two pieces of plastic, which allows for a comparison of the MICR output elements against industry standard output. This process verifies the character spacing, horizontal and vertical alignment as well as checks for spots and voids.

Verifying MICR output with the MICR comparator

The 8 power (8X) Comparator with MICR Grid is used to compare the characters on the MICR output to industry standard output.

The comparator is an optical tool that magnifies each character eight times. It has a built-in measuring scale that measures the size of the MICR characters and checks for spots and voids (deletions). Keep the following in mind when using the 8 power (8X) Comparator with MICR Grid:

- Patterned paper can cause viewing problems. White paper should be used when performing quality evaluations.
- The quality of the MICR output may vary with the type of paper used.
- Handle the comparator with care. The grid is printed on the bottom and may be damaged or worn off in time.

The comparator can be used with transmitted light or reflected light.

Transmitted light To use the comparator with transmitted light, place the bottom of the comparator on the document and hold the document in front of a transmitted light source. This allows the light to be transmitted through the document. This is particularly useful when checking for voids and verifying the edges of the characters.

Using the comparator with transmitted light is the most accurate method of verifying character quality, as transmitted light tends to make the line more narrow and make spots appear smaller.

Reflected light To use the comparator with reflected light, place the bottom of the comparator on the document and hold the document in front of a reflected light source.

Using the comparator with reflected light is the most accurate method of checking for spots.

A. Supplies

This appendix provides information and specifications for the media you use with your Xerox DocuPrint 96, 4635, or 180 printer. Instructions for ordering supplies are also provided.

Consumable supplies (those that are depleted during operation of the system), such as paper, dry ink, developer, fuser agent, etc., must be ordered for your printer. It is important that an adequate supply of these items be on hand for installation, and that your supply be maintained afterwards.

Paper and other throughput stocks

The success of any print run is greatly dependent on the proper selection, care, and handling of the stock used.

Selecting paper

You need to select your paper carefully. If you do not use the proper paper, you increase the probability of paper jams and misfeeds. The stocks you use must meet the specifications set forth by Xerox for operability in the printer. For additional information about paper specifications, refer to *Helpful Facts about Paper*, delivered with your printer.

Acceptable paper stocks and sizes

Your 96, 4635 or 180 printer accepts the following standard size cut-sheet papers:

- **7 by 10 inches / 178 by 254 mm** (with 7-inch kit option)
- **B5:** 7.17 by 10.12 inches / 182 by 257 mm (with 7-inch option)
- **US Letter:** 8.5 by 11 inches / 216 by 279 mm
- **US Legal:** 8.5 by 14 inches / 216 by 356 mm
- **A4:** 8.27 by 11.69 inches / 210 by 297 mm
- **B4 (European):** 9.84 by 13.89 inches / 250 by 353 mm

- **JIS B4 (Japanese):** 10.12 by 14.33 inches / 257 by 364 mm
- **US Ledger/US Tabloid:** 11 by 17 inches / 279 by 432 mm
- **A3:** 11.69 by 16.54 inches / 297 by 420 mm.

Recommended weight and grade:

Use a good quality, xerographic-grade paper. For best results, use paper that is 20-pound or 80 gsm (grams per square meter) bond, xerographic grade. Xerox 4024 Dual Purpose Paper provides optimal performance in the printer. Refer to the consumable supplies table later in this appendix.

Use paper within these parameters:

- **Lightest:** 16-pound or 65 gsm bond
- **Heaviest:** 110-pound or 200-gsm index.

NOTE: It is recommended that you use 24-pound paper with MICR applications, or paper specified by your local banking regulatory authority.

Characteristics

The paper stock should have the following characteristics:

- Low moisture content (a paper-to-moisture ratio below 5.7 percent). Paper with higher moisture content may curl and jam.
- Smooth surface
- Moisture-resistant wrapping
- No defects (bent edges, uneven surfaces)
- Grain long (parallel with the long side of paper).

Paper is usually fed into the printer with the long side as the leading edge (except 11 by 17-inch or A3 paper). When you purchase paper, buy long-grain paper. Make sure the grain is parallel with the long side (long-grain) for the most reliable feeding and stacking.

Special stocks

Following are some guidelines for choosing and using special materials:

- **Labels:** Must be the type designed for high-speed printers and must meet the specifications described in the section above. Loading instructions are printed on all paper trays.

Use only the processor feeding trays (trays 1 and 2) for labels. Load labels in the tray with the label side up.

You can direct printed labels to any output tray. Be sure the printed labels are stacked *face up* in the output tray, to avoid ink offsetting and jams due to delamination.

- **Transparencies:** Must be the type designed for high-speed printers and must meet the specifications described in the section above. Loading instructions are printed on all paper trays.

Load transparencies with the opaque strip to the right. All printed transparencies are delivered to the sample tray.

As long as they meet your printer's paper specifications, you can also use:

- **Tinted paper:** Available in a variety of colors, it has many uses, including calling attention to certain printed material, separating special sections, or dividing chapters of a report.
- **Preprinted paper:** May be letterhead, forms, or logos.
- **Predrilled paper:** Has a varying number of holes for use in binders or binder rings. Before loading predrilled paper, fan it to remove loose plugs that could cause paper jams. Load predrilled paper in the printer with holes to the right.
- **Perforated paper**
- **Pre-cut or full tabs**
- **Carbonless paper**

Paper width and printer performance

The width of the paper you use for your print job is directly related to the rate at which the 96, 4635, and 180 printer can print a job. The rate at which a job prints is the throughput speed and is measured in pages per minute (ppm). You will want to keep in mind the following information on the relationship of paper width to printer performance, when selecting paper for your applications.

The printer operates in different pitch modes. The pitch mode the printer uses for a specific print job is based on the paper size on which that job is printed. The following tables list the pitch mode boundary values, paper widths, and related printing speeds supported on the 96/4635/180 printer. These charts show that the shorter the paper width, the higher the pitch mode and the faster the throughput speed—higher pages per minute (ppm) rate. (“Pages per minute” is synonymous with “impressions per minute.”)

Table A-1. Throughput data: 96 printer

Pitch	Paper width	Speed
5	7.4 to 12.12 in. / 188 to 308 mm	96 ppm
4	12.12 to 15.31 in. / 308 to 389 mm	77 ppm
3	15.31 to 17 in. / 389 to 432 mm	58 ppm

Table A-2. Throughput data: 4635 printer

Pitch	Paper width	Speed
8	7 to 7.4 in. / 178 to 188 mm	154 ppm
7	7.4 to 9.01 in. / 188 to 229 mm	135 ppm
6	9.01 to 10.19 in. / 229 to 259 mm	116 ppm
5	10.19 to 12.12 in. / 259 to 308 mm	96 ppm
4	12.12 to 15.31 in. / 308 to 389 mm	77 ppm
3	15.31 to 17 in. / 389 to 432 mm	58 ppm

Table A-3. Throughput data: 180 printer

Pitch	Paper width	Speed
8	7 to 7.4 in. / 178 to 188 mm	206 ppm
7	7.4 to 9.01 in. / 188 to 229 mm	180 ppm
6	9.01 to 10.19 in. / 229 to 259 mm	154 ppm
5	10.19 to 12.12 in. / 259 to 308 mm	128 ppm
4	12.12 to 15.31 in. / 308 to 389 mm	103 ppm
3	15.31 to 17 in. / 389 to 432 mm	77 ppm

When the printing speed appears to degrade, you may be able to improve it by running the print job in a higher pitch mode.

Paper size/pitch mode minimum and maximum

The illustrations in this section show the pitch modes in which you can operate with the smallest and largest size papers supported by the 96/4635/180 printer.

Using small paper sizes in 8-pitch mode:

Printing in 8-pitch mode provides the highest throughput speed available: up to 154 ppm for the 4635 printer and up to 206 ppm for the 180 printer. (The 96 printer does not support 8-pitch mode.) However, you should keep the following in mind when you select the paper you want to use for this mode:

- Paper sizes smaller than 8 inches / 203 mm are supported only when the optional 7-inch paper kit is installed on the printer.
- The leading edge of any paper used in the printer cannot be less than 10 inches / 254 mm long.

The following figure illustrates the maximum and minimum paper sizes supported in 8-pitch mode.

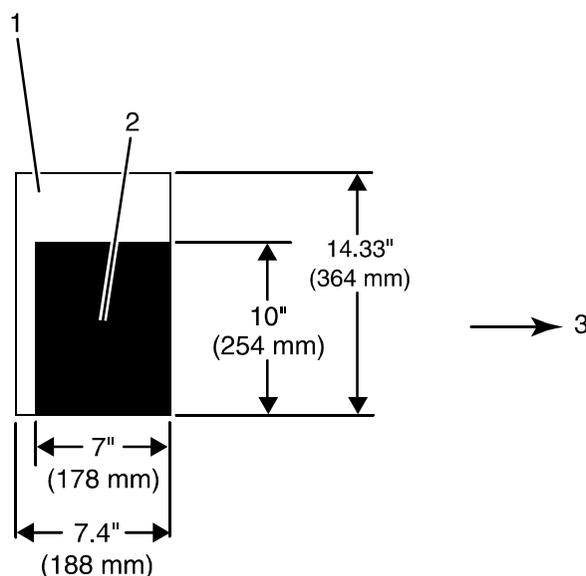


Figure A-1. 8-pitch mode paper sizes (4635 and 180 only)

1. Maximum paper size for 8 pitch mode
2. Minimum paper size for 8 pitch mode
3. Travel direction of sheets out of paper tray

Using large paper sizes in 3-pitch mode:

Large paper sizes—widths of 15.31 to 17 inches / 389 to 432 mm—are supported only in 3-pitch mode and must feed short edge first. These paper sizes slow down the throughput speed (as shown in tables above).

NOTE: The 96/4635/180 printer can support 14 by 17-inch / 356 by 432 mm, 20 pound or 80 gsm paper stock in 3-pitch mode. However, printing performance is not guaranteed for all types of paper of this size. Heavy (110-pound / 200 gsm) and light (16-pound / 60 gsm) large papers can cause jams throughout the system and are not recommended.

The following figure illustrates the maximum and minimum paper sizes supported in 3-pitch mode.

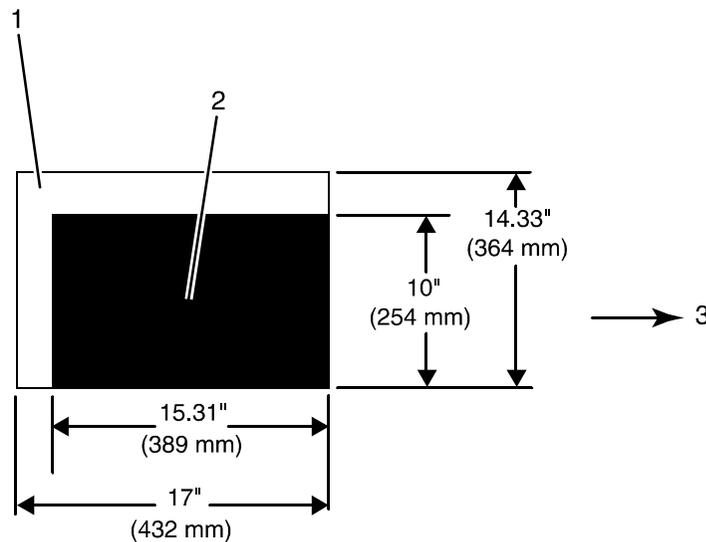


Figure A-2. 3-pitch mode paper sizes

1. Maximum paper size for 3 pitch mode
2. Minimum paper size for 3 pitch mode
3. Travel direction of sheets out of paper tray

**Feed direction for
some standard
paper sizes**

Currently, 14 inches / 356 mm is the maximum paper length supported for long edge feeding (5 to 8 pitch mode). Any papers with long edges greater than this (such as 11 by 17 inch / 279 by 432 mm paper) must be loaded for short edge feeding (3 or 4 pitch mode).

The following figures illustrate how some of the supported standard paper sizes, in various pitch modes, feed through the printer.

European papers:

The following diagrams show how A4 and A3 paper sizes feed through the printer.

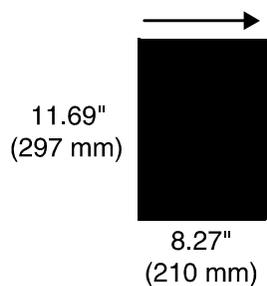


Figure A-3. A4 (210 by 297 mm) paper feeding (long edge feed)

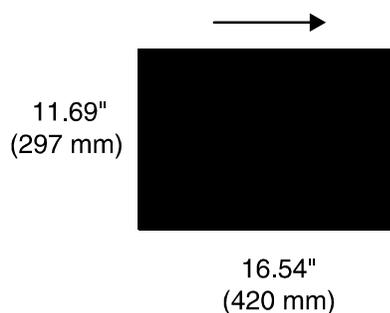


Figure A-4. A3 (297 by 420 mm) paper feeding (short edge feed)

US papers:

The following diagrams show how US Letter and US Ledger (or US Tabloid) paper sizes feed through the printer.

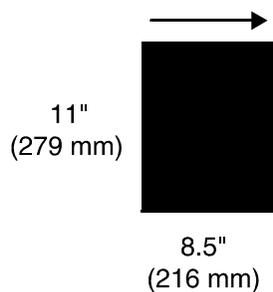


Figure A-5. US Letter (8.5 by 11 inch) paper feeding (long edge feed)

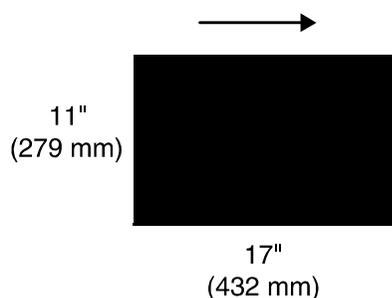


Figure A-6. US Ledger or US Tabloid (11 by 17 inch) paper feeding (short edge feed)

B4 papers:

There are two sizes of B4 paper—European or ISO (9.84 by 13.89 inches / 250 by 353 mm) and Japanese or JIS B4 (14.33 by 10.12 inches / 364 by 257 mm). European B4 feeds long edge first, while JIS B4 feeds *either* long edge or short edge first.

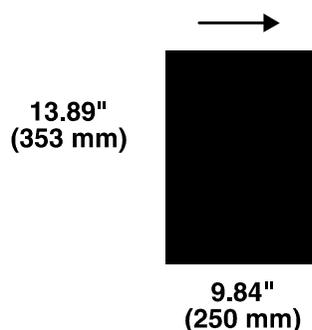


Figure A-7. B4 (250 by 353 mm) paper feeding (long edge feed)

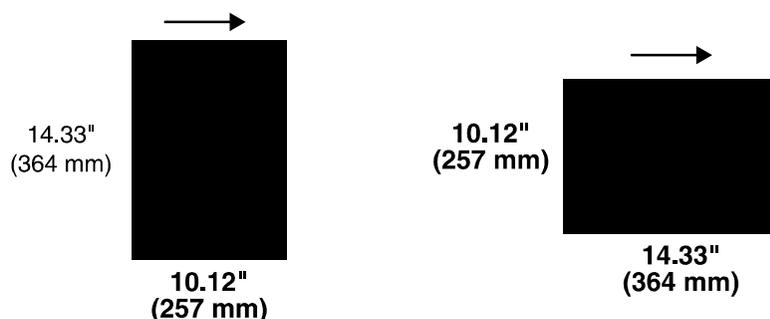


Figure A-8. JIS B4 (257 by 364 mm) paper feeding (long edge feed and short edge feed)

Paper care

Once you have purchased your paper, you must be sure it is stored and conditioned properly, so that it performs optimally in the printer with a minimum of jams.

Storing paper Paper tends to curl under the heat that is present inside xerographic equipment. To minimize the amount of curling, use paper with low moisture content. Paper with excessive moisture content has a tendency to jam because of the greater curl. The maximum recommended moisture content is 5.7 percent.

Keep these points in mind when preparing your paper storage area:

- Store paper in its own wrapper; do not leave it unwrapped or where it can be damaged by dampness or heat.
- Store paper on a flat surface and not on its side or edge.
- Store reams of paper in a closed cabinet.
- Always store paper in a cool, dry area. Store on pallets or shelves, not on the floor.
- Plan ahead and keep at least a day's supply of paper in the same area as the printer to allow environmental stabilization prior to printing.

For more detailed information on paper for Xerox printers, refer to *Helpful Facts about Paper*, provided with your printer.

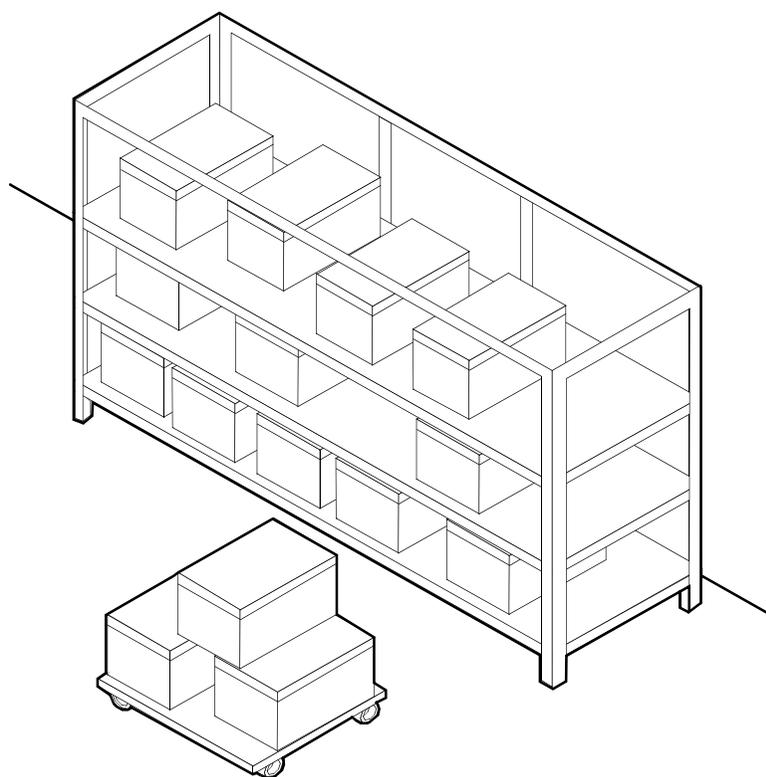


Figure A-9. Storing paper correctly

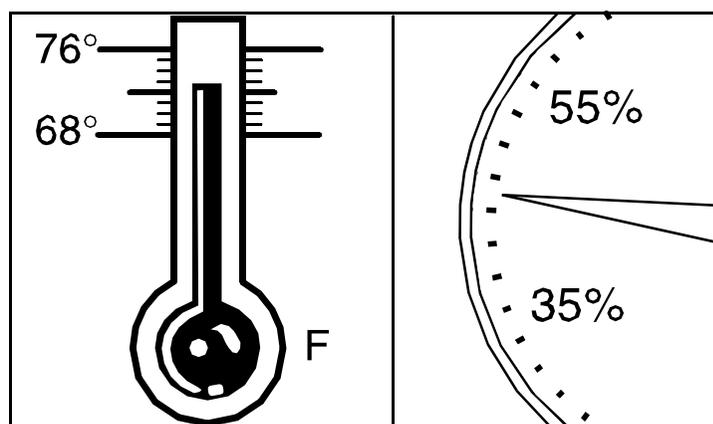


Figure A-10. Recommended temperature and humidity for paper storage

**Conditioning
paper**

Because temperature and humidity affect paper performance in the printer, you need to condition paper before using it. To do this, store paper for a specified length of time in the same type of environment as your printer.

The length of time you should condition your paper depends on the amount of paper and the difference between the storage and operating temperatures.

Use the following chart to determine the length of time needed to condition stacked cartons of paper.

NOTE: The numbers in the top two rows indicate the temperature difference between the storage area and the operating environment, not actual room temperatures.

Table A-4. Paper conditioning: Recommended temperature differences between storage and operating areas

Temperature differences between storage and operating areas							
Fahrenheit							
10°	15°	20°	25°	30°	40°	50°	
Centigrade							
5.5°	8.5°	11°	13°	17°	22°	28°	
Cartons	Hours						
1	4	8	11	14	17	24	34
5	5	9	12	15	18	25	35
10	8	14	18	22	27	38	51
20	11	16	23	28	35	48	67
40	14	19	26	32	38	54	75

Example: (See the shaded rows in the table above.) If you want to move ten cartons of paper from a storage area with a temperature of 90 oF to an operating area with a temperature of 75 oF (a 15o difference), you should do so at least 14 hours before using the paper.

Other supplies

This section describes the supplies other than paper that are necessary for installation and afterward. Your sales representative will help you place your initial supply order.

Dry ink

Dry ink (also called toner) is the black powder which forms the image on the printed page. There are three cartridges of dry ink in each carton. You should keep at least one extra cartridge on hand at all times. The disposable cartridges are easily changed with no mess. The consumption rate of Xerox dry ink is approximately one cartridge per 60,000 pages. Use only dry ink that is specified for use in the 96, 4635, or 180 printer, as described in the consumable supplies table.

MICR dry ink

MICR dry ink is the magnetic black powder which forms the image on the printed MICR document. There are three cartridges of MICR dry ink in each carton. The consumption rate of Xerox MICR dry ink is approximately one cartridge per 60,000 pages. Use only MICR dry ink in your 96/4635/180 MICR printer.

The dry ink used with the 96/4635/180 MICR system is designed for MICR printing and does not function well when used in non-MICR systems. The same procedure used for non-MICR printing systems is used to add the dry ink to the 96/4635/180 MICR printer.

NOTE: Dry ink yields are based on 7% area coverage. Your yield may vary, depending on coverage.

CAUTION

Use only MICR dry ink in the 96/4635/180 MICR printer. Do not use standard dry ink. MICR dry ink cannot be reused.

Fuser agent

Fuser agent (the lubricant for the printer fuser) is a consumable item required by the 96/4635/180 printers. You should keep at least two boxes on hand for installation by the service representative. The consumption rate of Xerox fuser agent is approximately one bottle per 250,000 pages. For product information, refer to the consumable supplies table in this appendix.

Developer

Developer is not consumed by the printer but does have an effective life of approximately 1,000,000 pages per carton (600,000 per carton for MICR developer). Both kinds of developer are guaranteed by Xerox for 600,000 pages per carton. Developer is a required item and must be kept on hand.

Use only the developer specified for use in your 96, 4635, or 180 printer.

CAUTION

The 96/4635/180 MICR printers require a different developer, with a different part number, from the developer used in the standard 96/4635/180 printer. Be sure you use only designated MICR developer in the 96/4635/180 MICR printers.

The developer is changed by your service representative. For product information, refer to the consumable supplies table in this appendix.

Diskettes

Diskettes are optional items that provide loading and backup of fonts, forms, and user files to and from the printing system. The processor accepts 3.5-inch, 1.44 MB, double-sided, high density diskettes.

Cartridge tapes

The optional 4 mm cartridge tape drive uses 5 GB or 8 GB tapes. The optional quarter-inch cartridge (QIC) tape drive uses 150 MB QIC tapes.

Stacker containers and pallets

Stacker containers can be placed inside the stacker bins to receive and neatly stack large amounts of output. These containers are available in a variety of sizes, accommodating various standard U. S. and international paper sizes. Different sized pallets for containerless stacking can also be ordered.

Fonts

Data can be printed on DocuPrint printers in many sizes and type styles called fonts. A font is a character set which has unique characteristics, such as type style, size, weight, orientation (portrait, landscape, inverse portrait, and inverse landscape), character spacing (fixed and proportional), line spacing, and postures (Roman, italic, and so forth).

There are three classifications of fonts:

- Standard fonts
- Licensed fonts
- Custom fonts.

Standard fonts Provided with your printer's operating system software is a library of over 250 standard 300 dpi fonts, referred to as the A03 font family.

Standard fonts A library of 51 fonts is provided with your printer's operating system software.

Licensed fonts In addition to the library of standard fonts delivered with your printer, over 100 licensed fonts may be ordered from the Xerox Font Center.

Licensed fonts Additional fonts may be ordered from your local Xerox Font Center.

Custom fonts Custom fonts and graphic images such as company logos and signatures can be digitized by the Xerox Font Center for use on your printer.

Receiving fonts Fonts are received on a diskette from your local Xerox Font Center.

MICR tools

You can use the following tools to determine whether the MICR output is printing within MICR specifications:

- MICR Positioning and Dimension Gauge.
- 8 Power (X) Comparator with MICR grid.

NOTE: You should use the Custom Transfer Assist Blade to ensure acceptable MICR line quality on all MICR printing systems that use nonstandard paper sizes.

MICR Positioning and Dimension Gauge

The MICR Positioning and Dimension Gauge (part number 600T80025) consists of a thin sheet of flexible plastic attached to the bottom of a piece of hard thick plastic. The gauge is provided in a kit that includes a small magnifying glass.

To use the gauge, place the printed output between the two pieces of plastic. This allows you to compare the MICR output elements against industry standard output. Using this process, you can verify the character spacing, check the horizontal and vertical alignment, and look for spots and voids.

MICR comparator

You use the eight power (X) comparator with MICR grid to compare the characters on the MICR output to industry standard output.

The comparator is an optical tool that magnifies each character eight times. It has a built-in scale that measures the size of the MICR characters and checks for spots and voids (deletions).

Keep the following in mind when using the 8 Power (X) Comparator with MICR grid:

- Patterned paper can cause viewing problems. You should use white paper when you perform quality evaluations.
- The quality of the MICR output may vary, depending on the type of paper you use.
- Handle the comparator with care. The grid is printed on the bottom and may be damaged or worn off in time.

You can use the comparator with transmitted or reflected light.

Consumable supplies tables

A number of supplies are available from Xerox for your DocuPrint printer. Use the following tables to help determine your supply needs.

NOTE: Customers in the U. S. may use the part numbers in these tables to order supplies. Customers outside the U. S. should contact their local service organization for part numbers.

Paper and special stocks tables

The following tables list all throughput stocks available for the 96/4635/180 printers, with size, order number, and a brief description for each.

Table A-5. **Stocks list for 96/4635/180 printers**

Item	Description	Part number
Paper	Xerox paper quantities are 10 reams (5,000 sheets) to a carton unless otherwise noted below.	
8.5 x 11 inch	4024 Dual Purpose Paper	3R721
A4	4024 Dual Purpose Paper	3R2594
8.5 x 14 inch	4024 Dual Purpose Paper	3R727
8.5 x 11 inch	4024 Dual Purpose Paper, 3-hole	3R723
8.5 x 11 inch	4024 Dual Purpose Paper, 3-hole*	3R2193
8.5 x 11 inch	4024 Dual Purpose Paper, 4-hole	3R1983
8.5 x 11 inch	4024 Dual Purpose Paper, 4-hole*	3R3008
8.5 x 11 inch	4024 Dual Purpose Paper, 7-hole	3R1984
8.5 x 11 inch	4024 Dual Purpose Paper, 7-hole*	3R3010
8.5 x 11 inch	4024 Smooth	3R2675
8.5 x 14 inch	4024 Smooth	3R2677
8.5 x 11 inch	4200 Dual Purpose Paper	3R2047
8.5 x 14 inch	4200 Dual Purpose Paper	3R2051
8.5 x 11 inch	4200 Dual Purpose Paper, 3-hole	3R2641
8.5 x 11 inch	4200 Dual Purpose Paper, 4-hole	3R3012
* 5/16-inch drilled holes		
** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.		

Table A-5. **Stocks list for 96/4635/180 printers (Continued)**

Item	Description	Part number
8.5 x 11 inch	4200 Dual Purpose Paper, 7-hole	3R3014
8.5 x 11 inch	Dual Purpose Colors—Blue	3R3052
8.5 x 11 inch	Dual Purpose Colors—Blue, 3-hole	3R3068
8.5 x 14 inch	Dual Purpose Colors—Blue, 3-hole	3R3084
8.5 x 11 inch	Dual Purpose Colors—Green	3R3056
8.5 x 11 inch	Dual Purpose Colors—Green, 3-hole	3R3072
8.5 x 14 inch	Dual Purpose Colors—Green	3R3088
8.5 x 11 inch	Dual Purpose Colors—Pink	3R3058
8.5 x 11 inch	Dual Purpose Colors—Pink, 3-hole	3R3074
8.5 x 14 inch	Dual Purpose Colors—Pink	3R3090
8.5 x 11 inch	Dual Purpose Colors—Yellow	3R3054
8.5 x 11 inch	Dual Purpose Colors—Yellow, 3-hole	3R3070
8.5 x 14 inch	Dual Purpose Colors—Yellow	3R3086
8.5 x 11 inch	Dual Purpose Colors—Buff	3R3060
8.5 x 11 inch	Dual Purpose Colors—Buff, 3-hole	3R3076
8.5 x 14 inch	Dual Purpose Colors—Buff	3R3092
8.5 x 11 inch	Dual Purpose Colors—Goldenrod	3R3062
8.5 x 11 inch	Dual Purpose Colors—Goldenrod, 3-hole	3R3078
8.5 x 14 inch	Dual Purpose Colors—Goldenrod	3R3094
8.5 x 11 inch	Dual Purpose Colors—Ivory	3R3064
8.5 x 11 inch	Dual Purpose Colors—Ivory, 3-hole	3R3080
8.5 x 14 inch	Dual Purpose Colors—Ivory	3R3096
8.5 x 11 inch	Dual Purpose Colors—Gray	3R3066
8.5 x 11 inch	Dual Purpose Colors—Gray, 3-hole	3R3802
8.5 x 14 inch	Dual Purpose Colors—Gray	3R3098
8.5 x 11 inch**	Dual Purpose Colors, Rainbow Pack—35,000 sheets per carton**	3R3107
8.5 x 11 inch	10 Series Dual Purpose Paper	3R2950
8.5 x 11 inch	10 Series Dual Purpose Paper, 3-hole	3R2952
8.5 x 11 inch	10 Series Dual Purpose Paper, 3-hole*	3R3016
* 5/16-inch drilled holes		
** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.		

Table A-5. **Stocks list for 96/4635/180 printers (Continued)**

Item	Description	Part number
8.5 x 14 inch	10 Series Dual Purpose Paper	3R2954
8.5 x 11 inch	10 Series Smooth	3R54
8.5 x 14 inch	10 Series Smooth	3R83
8.5 x 11 inch	4024 Dual Purpose, reinforced 3-hole*	3R2057
A3	4024 Dual Purpose paper	3R91721
A3	4024 Dual Purpose paper	3R2594
9.5 x 11 inch	65-pound divider white 2,500 sheets per carton	3R3428
11 x 17 inch	4024 Dual Purpose Paper 2500 sheets per cartons	3R729
11 x 17 inch	4024 Dual Purpose Paper, 7-hole* 2500 sheets per cartons	3R3074
Transparencies	Xerox transparencies are packaged 100 sheets to a box.	
8.5 x 11 inch	Clear, with a white strip on the edge	3R2780
8.5 x 11 inch	Clear, with removable strip	3R3108
8.5 x 11 inch	Clear, high speed, with paper backing	3R3028
Labels (gummed)	Xerox labels are packaged 100 sheets to a box.	
8.5 x 11 inch	33 labels per sheet	3R3139
8.5 x 11 inch	6 labels per sheet	3R3146
8.5 x 11 inch	Custom form (uncut)	Contact Xerox Supplies Order Service
8.5 x 11 inch	1-up label	3R4476
8.5 x 11 inch	1-up label	3R4475
8.5 x 11 inch	1-up label	3R4474
* 5/16-inch drilled holes		
** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.		

Table A-5. **Stocks list for 96/4635/180 printers (Continued)**

Item	Description	Part number	
Tab stock	Xerox tab stock is packaged in 5-tab sets. 250 sheets per carton.		
	Straight collated singles (forward, top down):		
	• Non-drilled 90-pound, Index white	3R4417	
	• Non-drilled 90-pound, blue	3R4425	
	• Three-hole 90-pound, Index white	3R4418	
	• Three-hole 90-pound, blue	3R4426	
Cover stock	Xerox cover stock is packaged 2,500 sheets per carton.		
	8.5" x 11"	65-pound, blue	3R3044
	8.5" x 11"	65-pound, white	3R3041
* 5/16-inch drilled holes			
** Rainbow pack contains 750 sheets each of blue and yellow, 500 sheets each of green and pink, and 250 sheets each of buff, gray, goldenrod, and ivory.			

Table A-6. Carbonless stocks for 96/4635/180 printers

Size	Parts	Sequence	Sheets	Sheets per carton	Sets per carton	Cartons per pallet	Part number
8.5 in. x 11 in. *	2	Reverse/ Straight	Alternating CB-White CF-Canary	5000	2500	40	3R4225
	2	Straight/ Double	Alternating CB-White CB-White CF-Canary CF-Canary	5000	2500	40	3R4226
	2	Reverse/ Straight	Alternating CB-White CF-Pink	5000	2500	40	3R4227
	3	Straight	Alternating CB-White CFB-Canary	5010	1670	40	3R4230
	3	Straight/ Double	Alternating CB-White CB-White CFB-Canary CFB-Canary CF-Pink CF-Pink	5010	1670	40	3R4231
	4	Straight	Alternating CB-White CFB-Canary CFB-Pink CF-Goldenrod	5000	1250	40	3R4235
	N/A	N/A	CB-White	5000	N/A	40	3R4236
	N/A	N/A	CFB-White	5000	N/A	40	3R4238
	N/A	N/A	CFB-Canary	5000	N/A	40	3R4239
	N/A	N/A	CFB-Pink	5000	N/A	40	3R4240
	N/A	N/A	CF-White	5000	N/A	40	3R4242
	N/A	N/A	CF-Canary	5000	N/A	40	3R4243
	N/A	N/A	CF-Pink	5000	N/A	40	3R4244
N/A	N/A	CF-Goldenrod	5000	N/A	40	3R4245	

* All papers are packaged 500 sheets per ream, with 10 reams per carton. Each ream contains only complete carbonless sets (that is, 501 sheets in a three-part ream for 167 sets).

Table A-6. Carbonless stocks for 96/4635/180 printers (Continued)

Size	Parts	Sequence	Sheets	Sheets per carton	Sets per carton	Cartons per pallet	Part number
8.5 in. x 14 in.*	2	Reverse/ Straight	Alternating CB-White CF-Canary	5000	2500	30	3R4228
	3	Straight	Alternating CB-White CFB-Canary CF-Pink	5010	1670	30	3R4233
	N/A	N/A	CB-White	5000	N/A	30	3R4237
	N/A	N/A	CFB-Canary	5000	N/A	30	3R4241
	N/A	N/A	CF-Canary	5000	N/A	30	3R4246
	N/A	N/A	CF-Pink	5000	N/A	30	3R4247

* All papers are packaged 500 sheets per ream, with 10 reams per carton. Each ream contains only complete carbonless sets (that is, 501 sheets in a three-part ream for 167 sets).

Complete supplies list—96/4635/180 printers

The following table lists the supplies in addition to paper that are available for your printer. Use this table to help you determine your supplies needs.

Table A-7. Complete supplies list for 96/4635/180

Item	Description	Part number	Items/ carton	Expected yield / carton
Dry ink	Consumption rate is approximately one cartridge per 60,000 pages.	6R206	3/carton	180,000 pages/carton <i>NOTE: Dry ink (toner) yields are based on 7% area coverage. Your yield may vary, depending on coverage.</i>
Dry ink, MICR	Packaged 3 cartridges per carton. Consumption rate is approximately one cartridge per 60,000 pages.	6R819	3/carton	180,000 pages/carton
Dry ink waste bottle		93K460		
Developer	Packaged 2 bottles per carton. Effective life is approximately one carton per 1,000,000 pages. (2 bottles required for replacement.)	5R161	2/carton	1,000,000 pages/ carton

Table A-7. Complete supplies list for 96/4635/180 (Continued)

Item	Description	Part number	Items/ carton	Expected yield / carton
Developer, MICR	Packaged 2 bottles per carton. Effective life is approximately one carton per 600,000 pages. (2 bottles required for replacement.)	5R573	2/carton	600,000 pages/carton
Fuser agent	Packaged 1 bottle per carton. Consumption rate is approximately one bottle per 250,000 pages.	8R2955	1/carton	250,000 pages/bottle
Cleaning supplies	Foam-tipped swabs	99P87256		
	Lint-free towels	35P2163		
	Magnetic head cleaning kit. Packaged 2 diskettes per box.	8R3811		
	1/4-inch cartridge head cleaning kit	9R88432		
	Hub and Transport Cleaner	99P87486		
	4 mm cartridge drive head cleaning kit	9R01189		
Diskettes	3.5-inch, 1.44 MB, double-sided, high density diskettes. Packaged 10 diskettes per box.	8R7683	10/box	
Cartridge tapes	1/4-inch (26-track) blank cartridge tape (QIC), 150MB	9R84168		
	4mm blank cartridge tape, 5GB	9R01190		
	4mm blank cartridge tape, 8GB	109R00314		

Ordering supplies

To avoid unnecessary downtime, always have an adequate amount of the necessary supplies. To do this, you need to establish a procedure for checking and ordering supplies. A supplies checklist is provided at the end of this chapter to help you with this task. It lists the supplies needed for the printer and contains a column for you to enter the date when you want to place the order and a column to record the date of the actual order. The consumable supplies table, above, contains a list of Xerox supplies available for the printer.

It is important that you check your supplies regularly and order before you run out. Plan on approximately five working days for delivery after placing the order. You can make arrangements to receive them sooner in emergency situations.

Your Xerox sales representative can help you submit the initial order of supplies needed for installation. These items include paper, dry ink, MICR dry ink, fuser agent, developer, and MICR developer.

Once your printer volume is established, planning ahead and buying Xerox supplies in quantity can save you money. Your Xerox supply specialists can help you. There are two centers available to assist you:

- To order Xerox paper, transparencies, labels, dry ink, MICR dry ink, developer, MICR developer, fuser agent, cartridge tapes, and diskettes, call the Xerox Supply Center at 1-800-822-2200, weekdays between 7:30 a.m. and 6:00 p.m., Pacific time.

If you prefer, you may mail orders to the following address:

Xerox Corporation
P. O. Box 25075
Santa Ana, CA 92799-5075

- To order cleaning supplies, call the Xerox Customer Parts and Product Support Center at 1-800-828-5881, weekdays between 5:30 a.m. and 5:00 p.m., Pacific time, (U.S. only).

You may also mail cleaning supply orders to the following address:

Xerox Corporation
Parts Marketing Center
Building 214-07S
P. O. Box 1020
Webster, NY 14580

Please provide the following information when placing orders:

- Your customer number (provided by your Xerox sales representative)
- Your printer model
- Your supply order, including the following information:
 - Item name
 - Part number
 - Quantity desired
 - If your company requires a purchase order for payment of an invoice, you need to provide the purchase order number to Xerox at the time you place the order.

Supplies checklist

The following table is a checklist that you can use to keep track of the supplies you order. Use this checklist to help record the supplies you require, the date on which the order should be placed, and the actual date of the order.

Table A-8. **Supplies checklist for 96/4635/180 printer**

Item	Description and part number	Quantity	Date to order	Date ordered
Paper				
Transparencies				
Labels				
Dry ink				
MICR dry ink				
Developer				
MICR developer				

Table A-8. **Supplies checklist for 96/4635/180 printer (Continued)**

Item	Description and part number	Quantity	Date to order	Date ordered
Fuser agent				
Floppy disks				
Cleaning supplies				

B. Paper performance guidelines

The following guides summarize the capabilities of the paper trays, duplex printing considerations, and paper stock considerations.

Table B-1. Trays 1 and 2 performance guide

Paper	Superior performance	Good performance	Performance limits and suggested alternatives
Size range ^a	8 by 10 to 9 by 14 inches / 203 by 254 to 229 by 356 mm. Includes: <ul style="list-style-type: none"> 8.5 by 11 inches A4 (210 by 297 mm) 		Paper smaller than 8 by 10 inches / 203 by 254 mm cannot be used. For paper larger than 9 by 14 inches / 229 by 356 mm, refer to "Performance Guide for trays 3, 4, 5 and 6."
Weight range	20 to 110 pounds / 80 to 200 gsm	16 to 20 pounds/60 to 80 gsm ^b	Weights outside the limits shown are not recommended. Refer to the "Paper Stocks guide," later in this chapter, for additional information.
Capacity	Tray 1: 1100 sheets, 20 pound or 80 gsm paper Tray 2: 600 sheets, 20 pound or 80 gsm paper		For greater capacity, use trays 3, 4, 5 and 6 and the Autoswitch feature.
Type or condition	<ul style="list-style-type: none"> Xerographic paper in good condition Predrilled stock (fanned thoroughly) Tab stock (in perfectly flat condition) 	<ul style="list-style-type: none"> Transparencies High-speed label stock Slightly curled paper^c Intermixed weights Paper with reinforced binding edges 	<ul style="list-style-type: none"> Excessively curled paper^d Manual two-sided (duplex) prints Freshly printed offset prints

- Optional 7 X 10 enablement kit allows 7 by 10 inches / 178 by 254 mm paper size.
- Make sure that heavy weight paper levers (located in areas 2 and 4 of the printer) are in the appropriate position for the weight of paper being used.
- Curl direction should be determined before loading paper into trays. For additional information, refer to the "Clearing paper misfeeds and jams" chapter in your Troubleshooting Guide.
- Curl direction should be determined before loading paper into trays. For additional information, refer to the "Clearing paper misfeeds and jams" chapter in your Troubleshooting Guide.

Table B-2. Trays 3, 4, 5 and 6 (or high capacity trays) performance guide

Paper	Superior performance	Good performance	Performance limits and suggested alternatives
Size range ^a	8 by 10 to 11.69 by 17 inches / 203 by 254 to 297 by 432 mm. Includes: <ul style="list-style-type: none"> • 11 by 14 inches • 11 by 17 inches • B4 (250 by 353 mm) • A3 (297 by 420 mm) 		Smaller or larger sizes cannot be used.
Weight range	20 to 110 pounds / 80 to 200 gsm	16 to 20 pounds/60 to 80 gsm ^b	Weights outside the limits shown are not recommended.
Capacity	Tray 3: 2600 sheets, 20 pound / 80 gsm paper Tray 4: 2600 sheets, 20 pound/80 gsm paper		For greater capacity, use the Autoswitch feature.
Type or condition	<ul style="list-style-type: none"> • Xerographic paper in good condition • Predrilled stock (fanned thoroughly) 	<ul style="list-style-type: none"> • Slightly curled paper^c • Manual two-sided (duplex) prints • High speed label stock 	<ul style="list-style-type: none"> • Excessively curled paper^d • Curl direction should be determined before loading paper into tray.^e • DO NOT use mylar reinforced paper in trays 3, 4, 5 or 6. Hardware damage may result. Use trays 1 or 2.

a. Optional 7 by 10-inch enablement kit allows 7 by 10 inches / 178 by 254 mm paper size.

b. Make sure that heavy weight paper levers (located in areas 2 and 4 of the printer) are in the appropriate position for the weight of paper being used.

c. Curl direction should be determined before loading paper into trays. For additional information, refer to the “Clearing paper misfeeds and jams” chapter in your Troubleshooting Guide.

d. Curl direction should be determined before loading paper into trays. For additional information, refer to the “Clearing paper misfeeds and jams” chapter in your Troubleshooting Guide.

e. Curl direction should be determined before loading paper into trays. For additional information, refer to the “Clearing paper misfeeds and jams” chapter in your Troubleshooting Guide.

Table B-3. Two-sided (duplex) printing performance guide

Paper	Superior performance	Good performance	Performance limits and suggested alternatives
Size range ^a	8 by 10 to 11.69 by 17 inches / 203 by 254 to 297 by 432 mm.		Smaller or larger sizes cannot be used.
Weight range	20 to 110 pounds / 80 to 200 gsm ^b		Weights outside the limits shown are not recommended. If show through occurs, adjust print quality or use heavier weight paper.
Type or condition	<ul style="list-style-type: none"> Xerographic paper in good condition Predrilled stock (fanned thoroughly) 	<ul style="list-style-type: none"> Slightly curled paper^c Paper with reinforced binding edges Tabs Refer to the Paper Stocks Guide for additional information.	<ul style="list-style-type: none"> Excessively curled paper^d Avoid Transparencies Stock not defined here is included in the Paper Stocks Guide, which follows.

- a. Optional 7 by 10-inch enablement kit allows 7 by 10 inches / 178 by 254 mm paper size.
- b. Make sure that heavy weight paper levers (located in areas 2 and 4 of the printer) are in the appropriate position for the weight of paper being used.
- c. Curl direction should be determined before loading paper into trays. For additional information, refer to the “Clearing paper misfeeds and jams” chapter in your Troubleshooting Guide.
- d. Curl direction should be determined before loading paper into trays. For additional information, refer to the “Clearing paper misfeeds and jams” chapter in your Troubleshooting Guide.

Table B-4. Paper stocks guide

Stock type	Instructions for use
16 pound / 60 gsm paper	<ul style="list-style-type: none"> Load paper with ream wrapper seam side down. If there is no arrow on the ream wrapper, load paper in trays 3, 4, 5 and 6 only, with curl up. Duplexing 16-pound paper is not recommended. Best performance can be expected from trays 3, 4, 5 and 6.
20 pound or 80 gsm paper	Load paper with ream wrapper seam down. If there is no arrow on the ream wrapper, load paper in trays 3 and 4 only, with curl up.
65 pound card stock 110 pound / 200 gsm paper (index)	Run from any tray.
20 pound or 80 gsm dual-purpose 3-hole drilled 4-hole drilled 7-hole drilled	<ul style="list-style-type: none"> Load with holes to the RIGHT. Use the Shift task to avoid printing near the holes. Fan paper thoroughly and check for loose paper plugs prior to loading

Table B-4. Paper stocks guide (Continued)

Stock type	Instructions for use
Non-tearing 3-hole	<ul style="list-style-type: none"> • Load in trays 1 and 2 only. • Load with holes to the RIGHT. • DO NOT run two-sided (duplex) prints.
Non-tearing	<ul style="list-style-type: none"> • Load in trays 1 and 2 only. • DO NOT run two-sided (duplex) prints.
Xerox carbonless paper	<ul style="list-style-type: none"> • Load paper in trays 3, 4, 5 and 6 only. • Only Xerox carbonless paper is recommended for high speed Xerographic equipment.
3-hole drilled, edge reinforced dual-purpose	<ul style="list-style-type: none"> • Use trays 1 and 2. • Load paper with holes to the right, reinforced side DOWN. • In two-sided (duplex) printing, degraded print quality may occur near the reinforcement. • Leave stock in wrapper until use to achieve maximum stock flatness. • Run with no more than 200 sheets in a tray.^a
Transparencies— Oversized (8.5 by 14 inches, 0.5 inch white stripe/216 by 356 mm, 1 mm white strip)	<ul style="list-style-type: none"> • Load with the white stripe to the RIGHT in trays 1 and 2 (“shiny” side UP for best performance). • Simplex only.
Preprinted stock	<p>Certain types of ink or insufficient drying time may cause the ink to adhere to various machine components and printed sheets. Allow at least 3 hours of drying time before using preprinted stock.</p> <p>CAUTION: Certain preprinted stocks lie unevenly in the feeder trays. If the right side of the stack is higher than the left in trays 3, 4, 5 and 6 SEVERE hardware damage can occur. Load the stock in trays 1 or 2 or load fewer sheets.</p>
Transparencies— Paper-backed, high-speed, removable stripe	<ul style="list-style-type: none"> • High-speed paper-backed transparencies may be run from trays 1 and 2 with paper side DOWN. • Run no more than 50 removable stripe transparencies at one time. • Load the transparencies on top of approximately 50 sheets of paper.
Tab stock	<ul style="list-style-type: none"> • Load into trays 1 and 2 with tabs to the LEFT. • For best performance, print should be centered on the tab and should not extend to either edge. • Use tab stock in perfectly flat condition. DO NOT use deformed, bent, or damaged tabs.
9-inch cover stock 110 pound/200 gsm	Load into any tray.
High-speed label stock	<ul style="list-style-type: none"> • Load FACE UP. • DO NOT run two-sided (duplex) prints.

Table B-4. Paper stocks guide (Continued)

Stock type	Instructions for use
Letterhead	<ul style="list-style-type: none"> Load into trays with side 1 UP and top edge toward the front of the tray (avoid placing the print in line with the feed belt in trays 1 and 2). Avoid using freshly preprinted paper.
Manual two-sided (duplex) prints	<ul style="list-style-type: none"> Load into trays with printed side DOWN and top edge toward the front of the tray (avoid placing the print in line with the feed belt in trays 1 and 2). Print the second side as soon as possible after the first side to prevent wrinkling and excessive curl.
Textured paper	Heavily textured paper may yield prints with ragged character appearance and/or deletions. To test, print a sample sheet.

a. You can order a mylar reinforcement tray which allows a feeder tray to handle up to 500 sheets of this type of stock. Contact your service representative for additional information.

Table B-5. Stacker bin performance guide

Paper	Superior performance	Good performance	Performance limits and suggested alternatives
Size range ^a	8 by 10 to 11.69 by 17 inches /203 by 254 to 297 by 432 mm		Smaller or larger sizes cannot be used.
Weight range	20 to 110 pounds or 80 to 200 gsm	Lighter than 20 pounds or 80 gsm and no lighter than 16 pounds/60 gsm	Weights outside the limits shown here are not recommended.
Capacity			<ul style="list-style-type: none"> Capacity automatically limited so stack weight will not exceed 30 lbs/13.g kg Selectable with bin capacity programming (Refer to the “Bin full criteria and setting bin limits” section of the “Status and print tasks” chapter for instructions.
Stack quality	<ul style="list-style-type: none"> Xerographic paper in good condition 20 pound or 80 gsm and heavier stock Very low to no output curl 	<ul style="list-style-type: none"> Lighter weight stocks with low output curl Intermixed stocks 	<ul style="list-style-type: none"> Adjust process decurler Flip paper in paper feeders Limit stack capacity to acceptable limits.

Table B-5. Stacker bin performance guide (Continued)

Paper	Superior performance	Good performance	Performance limits and suggested alternatives
Type or condition	<ul style="list-style-type: none"> • Xerographic paper in good condition • Predrilled stock • No cut-outs, perforated or intermixed weights 	<ul style="list-style-type: none"> • Labels, preprinted forms, perforated stocks • Intermixed weights 	<ul style="list-style-type: none"> • High output curl stocks can cause severe stack quality problems • Tab stock intermixed with smaller stocks results in degraded stack quality • Reinforced mylar should be limited to small stacks of 200 sheets or less or sent to the sample tray

a. Optional 7 by 10-inch enablement kit allows 7 by 10 inches / 178 by 254 mm paper size.

Index

Numerics

- 3-pitch mode A-6
- 4 mm cartridge tape
 - ordering A-14
- 8 power (X) Comparator with MICR grid
 - 6-5, A-15
- 8-pitch mode A-5

A

- Adobe fonts 2-8
- Advanced Function Image and Graphics (AFIG) 5-1
- AFP environment 5-5
- amount symbols 6-4
- attention light 3-1, 3-5
- Auxiliary On-Us field 6-4

B

- back panel, Sun workstations 2-4
- BCOCA (Bar code Object Content Architecture) 5-5
- Bin Unload button 3-5
- bus and tag
 - channel connection 5-2
- bypass transport 1-4

C

- carbonless paper A-3
- cartridge tape
 - ordering A-14
- CE mark xi
- central processing unit 2-3, 2-6
- channel cable connector box 5-3
- channel interface board 5-3
- channel-attached
 - systems 5-3, 5-4
- Check Performance Guarantee 6-2
- checklist

- supplies A-25–A-26
- cleaning supplies A-23
- CMC7 fonts 6-2
- command
 - job status 4-6
 - lpq 4-5
 - lpr 4-5
- commands
 - font installation 2-8
- components
 - printer controller 2-2
- conditioning paper A-11
- connections, Ethernet 4-4–4-5
- connectivity
 - multiple 4-7
- connectivity boards 2-5
- consumable supplies table A-17
- control panel
 - HCF feeder tray 3-2
- conventions xvi
- Customer Transfer Assist Blade 6-2

D

- dash symbol 6-5
- Data Control Interface Module (DCIM2)
 - card 2-5
- data streams 5-1, 5-5
- developer A-14, A-22
- DFA 1-4
- diagnostic tools 1-6
- dimension gauge 6-5
- diskettes A-14, A-23
- Document Feeding and Finishing
 - Architecture, *see* DFA
- documentation xvii
- drives
 - disk 2-4
 - DVD-ROM 2-4

dry ink

- toner A-13, A-22
- waste bottle A-22

Dual Mode 5-1

DVD-ROM drive 2-4

E

E13B fonts 6-1

Ethernet 2-5

- configurations using 5-2
- connections 4-4–4-5
- description 4-6

F

feedback, job status 4-5–4-6

feeder trays

- processor 3-2
- see *also* high-capacity feeder

font installation commands 2-8

fonts

- Adobe Type 1 2-8
- PCL 2-8, 2-9

fonts, MICR

- CMC7 fonts 6-2
- E13B fonts 6-1

fuser

- agent A-23
- shield A-23

G

GOCA (Graphics Object Content Architecture) 5-5

H

hardware

- network options 4-4–4-5

HCF feeder trays

- capacities 3-2
- control panel 3-2

HCU 5-4

Hewlett-Packard

- PCL fonts 2-8, 2-9

high-capacity feeder 3-3

high-capacity stacker 3-4

Host Channel Unit 5-4

I

IBM AFP Group 3 page printer 5-1

IBM, outline fonts 5-7

In Use indicator 3-5

ink, dry A-22

input enablement

- paper path 3-11

inverter feeder/stacker module 3-1, 3-3

IOCA (Image Object Content Architecture)
5-5

IOCA colors 5-7

IOCA Replicate and Trim 5-6

IPDS data streams 5-1, 5-5

IPP 1-6

J

job

- status
 - command 4-6
 - feedback 4-5–4-6
- submission
 - methods 4-2–4-5

K

keyboard 2-5, 2-7

L

labels

- selecting A-2

LAN

- Ethernet 4-6
- Token Ring 4-6

laser safety vii

license, software 1-7

lpq command 4-5

lpr command 4-5

M

MICR

- comparator with MICR grid 6-5, A-15
- dry ink A-13, A-22
- fonts 6-1
- output, readability 6-3
- Positioning and Dimension Gauge A-15
- printing features 6-1–6-2
- MICR Clear Band 6-3

- MICR Grid 6-5
- MICR line 6-3
- MICR Mode screen 6-2
- MICR Position and Dimension Gauge 6-5
- MO:DCA-P (Mixed Object Document Content Architecture for Presentation 5-5
- monthly print volume 1-2

- N**
- network
 - communication
 - overview 4-3–4-5
 - protocols 4-3–4-5
 - communications 4-4–4-5
 - multiple connectivity 4-7

- O**
- OCA colors 5-7
- On-Us symbol 6-4
- operating systems
 - requirements 4-4–4-5
- operating systems supported 5-1
- operation safety, Europe ix–xi
- operation safety, U. S. viii–ix
- ordering supplies A-23–A-24
- outline fonts 5-7
- overstrike support 5-6
- ozone production information viii

- P**
- page description language, *see* PDL
- paper
 - characteristics A-2
 - conditioning A-11
 - feed direction A-7–A-9
 - ordering A-17, A-23
 - path
 - described 3-10
 - input enablement 3-11
 - printer 3-10
 - performance guides B-1
 - recommended weight, grade A-2
 - selecting A-1
 - size A-1
 - sizes A-3–A-9
 - storing A-10
 - supplies A-17–A-22
- Paper Level indicators 3-3
- PCIM2 card 2-5
- PCL data streams 5-1
- PCL fonts 2-8, 2-9
- PDL 4-3
- perforated paper A-3
- performance guides, paper B-1
- Please Wait indicator 3-2, 3-5
- PostScript data streams 5-1
- PostScript fonts 2-8
- precut paper A-3
- predrilled paper A-3
- preprinted paper A-3
- print jobs
 - submitting 4-2–4-5
- print volume, monthly 1-2
- printer
 - throughput speed A-3–A-5
- printer control console
 - components 3-6
- printer controller
 - components 2-2
- printers
 - capabilities 1-1
 - components
 - attention light 3-1, 3-5
 - high-capacity feeder 3-3
 - high-capacity stacker 3-4
 - inverter feeder/stacker module 3-1, 3-3
 - printer control console 3-6
 - processor feeder trays 3-2
 - purge tray 3-1, 3-5
 - sample tray 3-1
 - configurations 3-8–3-10
 - paper path 3-10
- processor 2-3, 2-6
- protocols
 - network communication requirements 4-3–4-5
 - translation requirements 4-4–4-5
- PSF compatibility 5-1
- PSF/VSE 5-1
- PT2 Subset 5-6

PTOCA (Presentation Text Object Content Architecture) 5-5, 5-6
publications xvii
purge tray 3-1, 3-5

R

Ready to Open indicator 3-2
Ready to Unload indicator 3-5
reflected light, MICR comparator 6-6
requirements
 operating systems 4-4–4-5
 translation protocol 4-4–4-5
resolution
 MICR, 300/600 dpi 6-2

S

safety
 hotline numbers ix
 laser vii
 operation viii–xi
sample tray 3-1
selecting
 labels A-2
 paper
 characteristics A-2
 size A-1
 transparencies A-2
Sixth Sense 1-6
SNMP 1-4
software
 features, IPS 5-6
 supported products 5-5
 system 4-1
software license 1-7
stacker
 high-capacity 3-4
status, job command 4-6
submitting print jobs 4-2–4-5
subscript support 5-6
superscript support 5-6
supplies
 cartridge tapes A-14
 checklist A-25–A-26
 cleaning A-23
 consumable tables A-17
 developer A-14, A-22

diskettes A-14, A-23
dry ink
 toner A-13, A-22
 waste bottle A-22
fuser
 agent A-23
 MICR tools A-15
 paper A-1, A-17–A-22
supplies table A-17

T

TCP/IP
 Ethernet interface 5-2
telephone numbers
 Xerox Parts and Product Support Center A-24
throughput speed 1-2
tinted paper A-3
Token Ring 2-5, 5-2
Token Ring LAN 4-6
toner, *see* dry ink
trace facility 5-6
Transfer Assist Blade 6-2
transit symbols 6-4
translation requirements, protocol 4-4–4-5
transmission rate 5-2
transmitted light, MICR comparator 6-6
transparencies
 selecting A-2
trays
 elevators 3-4
 purge 3-1, 3-5
 sample 3-1

U

underscore support 5-6
UNIX
 Sun operating system 2-7

W

waste bottle, dry ink A-22
workstations
 client 4-1
 description 4-1–4-5

X

Xerox Client Software 2-8

Xerox Customer Parts and Product
Support Center A-24

