
Xerox DocuPrint Network Printer Series Troubleshooting Guide for Models 96/4635/180 NPS

**THE DOCUMENT COMPANY
XEROX**

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

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.**

Ozone information

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

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.

- Always connect equipment to a properly grounded electrical outlet. If in doubt, have the outlet checked by a qualified electrician.



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

- 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 operating company.

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This *Xerox DocuPrint Network Printer Series Troubleshooting Guide* describes how to solve some specific problems that may occur when you are using the Xerox DocuPrint 96, 4635, or 180 Network Printing System (NPS).

About this guide

This guide is designed for Xerox DocuPrint 96/4635/180 NPS operators whose job consists of the routine operation of one of these systems.

Users should have an understanding of Printer Controller operations.

Before using this guide, become familiar with its contents and conventions.

Contents

This section lists the contents of this guide:

- Chapter 1, “Calling for service,” describes the information to have on hand when calling for support service.
- Chapter 2, “Fault masking,” describes how the Model 96/4635/180 NPS masks a problem so that the job will continue to print.
- Chapter 3, “Troubleshooting Xerox Client Software installation,” provides solutions to common problems with software installation.
- Chapter 4, “Troubleshooting a Novell implementation,” describes some ways to troubleshoot a Novell implementation by viewing log messages.
- Chapter 5, “Clearing paper misfeeds and jams,” illustrates how to clear paper misfeeds and jams from various parts of the paper path.
- Chapter 6, “Using sample documents,” describes how you can print sample documents to test the printing capability of your system.
- Chapter 7, “Adjusting print quality and speed,” provides various methods for optimizing print quality and speed.
- Chapter 8, “Correcting stacker problems,” provides solutions to common stacker problems.
- Chapter 9, “System unresponsive,” provides solutions to specific printer problems.

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 <RETURN>).
- 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**).
- “Enter”—Within procedures, the two-step process of keying in data and pressing <RETURN> (for example, enter y).
- Italics—Document and library names are shown in italics (for example, the *Xerox DocuPrint Network Printer Series Troubleshooting Guide*).
- Quotes—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 Network Printer Series includes the following documents:

Decomposition Service and Tools Guide

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 Language

Installation Planning Guide

Messages Guide

System Overview Guide

Troubleshooting Guide

Glossary

Master Index

Customer Information Quick Reference Card

Printer Controller Commands 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 Interactive Customer Documentation CD*.

1. Calling for service

Before calling your customer service support center, make sure you have read this chapter and have tried the corrective actions described here. If the problem persists, gather the necessary information and call the customer support center.

Information to have on hand when calling for service

To report DocuPrint hardware or software problems in the United States, call the following number:

1-800-822-2979

For customers outside the United States, call your local service representative.



Note: A model-specific phone number is attached to your printer at installation time.

Before calling, make note of the following:

- Status code numbers and messages that appear on the controller screen and the printer console
- Indicator lights that are lit
- Name of your printer: DocuPrint 96, 4635, or 180 NPS
- Serial number for your printing system (a 9-digit alphanumeric code located on the frame inside the printer, behind the narrow door to the far left, on the front of the printer).
- Problems you are having with the system.

Additional information you may wish to note prior to calling includes:

- An explanation of how output differs from what was expected.
- An assessment of whether the symptoms follow a pattern or occur randomly.
- A list of special conditions that may be related to the problems:
 - New applications
 - Changes made to the software
 - Recent service performed
 - Previous conditions under which the application has printed properly.

Give this information to a customer service representative, who will discuss the information and give you an estimated time of arrival or assist you over the phone to resolve the problem.

Enabling and disabling the modem for remote service

Your system may be set up to use Sixth Sense Technology—a remote communication capability. Sixth Sense Technology is a suite of tools that allow service personnel to connect with a system and evaluate its performance. The service person can troubleshoot problems remotely, transfer, apply, and remove patches remotely, and, if an on-site call is required, arrive with the solution to fix the problem.

An external modem allows your system to be accessed by remote service technicians.

You may be instructed to enable the modem so that the technician can dial into your system. Prior to enabling the modem, be sure to use the Stop All command so that printing and queueing are stopped during the remote service session.

When the remote service session is complete, disable the modem and enter the Start All command to resume printing and queueing.

Refer to the *Guide to Configuring and Managing the System* chapter “Using utility commands” for more information on the commands used for remote service.

If security is a concern, you can turn off the modem, or you can physically disconnect the cable from the system when it is not being used.



Caution: Depending on the commands used by the technician, the printer may start up during the remote service session. You should not attempt to operate the system or perform any tasks at the printer during the remote service session.

2.

Fault masking

This chapter describes the behavior of the 96/4635/180 NPS while printing with fault conditions in existence.

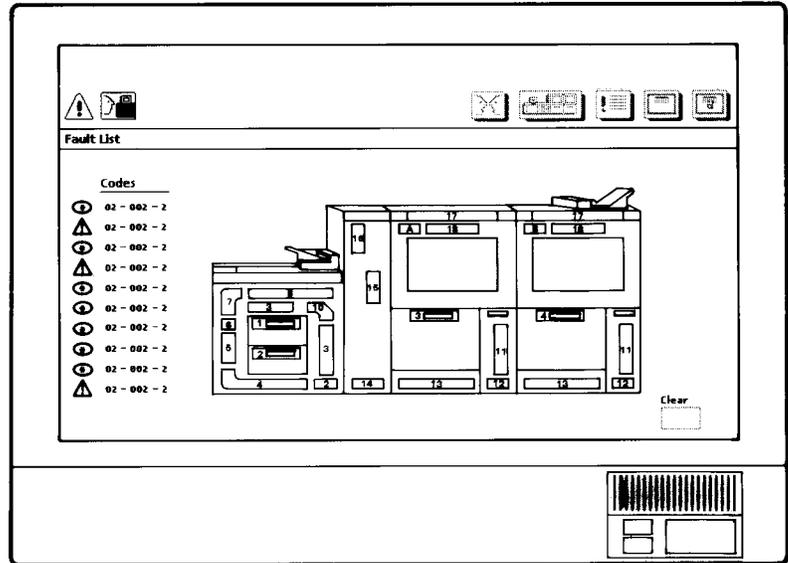
The DocuPrint 96, 4635, and 180 NPS enable you to continue printing while certain faults or conditions exist in parts of the printer not currently in use. Such faults or conditions are said to be masked. If, for example, you are printing a job using feeder tray 1 and stacker bin A, the printer continues printing even if feeder tray 2 is jammed or if stacker bin B is full.

When there is a masked fault or condition, the Hint icon (a light yellow circle with an asterisk inside) appears on the printer console and the Attention light goes on. A message, preceded by an asterisk, also appears in line 3 of the message area of the printer console. To display the area containing the masked fault (for example, the location of the paper jam), touch the Fault List icon (shown below) on the printer console to display the Fault List screen.

Figure 2-1. **Fault List icon**



Figure 2-2. **Fault List screen**



The Fault List screen displays any outstanding fault codes and shows a mimic of the printer; the area containing the masked fault is highlighted in light yellow. For greatest printer productivity, clear any masked faults at your earliest opportunity.

When the printer stops because of a fault, display the Fault List screen after clearing the fault to see if there are any masked faults. Clear these masked faults before continuing with the print job.

When there is a fault that cannot be masked and therefore causes the printer to stop, the Fault icon (a dark yellow triangle with an exclamation point inside) appears on the printer console and the Attention light flashes. The Fault screen appears on the printer console, highlighting (in dark yellow) the area(s) of the printer containing the fault and giving instructions for clearing the fault.

If a fault exists in the system at the time that a masked fault occurs, the printer console displays only the Fault icon. The remaining masked fault condition messages still display in the message area of the printer console.

3. Troubleshooting Xerox Client Software installation

If you are unable to install the Xerox Client Software, or if you install it and all requests submitted fail, try the following:

- Make sure the Xerox Client print command does not clash with the local print command on the client system. To verify this, at the prompt (or on a new shell window prompt, for Sun clients), enter `print`. You should see the usage message for the Xerox Client print command.

If not, make sure the environment variable `path` includes the subdirectory `/usr/xerox/nps/client/bin` and `/usr/bin` before the subdirectory containing the local print command. Also, resolve any print command aliases that might be set in the `.cshrc` file.

If you see the message “Server or Directory Unreachable” after executing a print command, perform the following steps:

1. If the Printer Controller software is newly installed, verify that job processing has been started at the Printer Controller.
 2. At the client, verify the host file exists and contains the Printer Controller name and TCP/IP address.
 3. Verify the network connections between the Printer Controller and the client. Enter **ping <Printer Controller name>**; if that fails, enter **ping <Printer Controller name TCP/IP address>**. Verify that the TCP/IP address of the Printer Controller is the same as the one in the host file on the client.
 4. Check for hardware problems.
- Verify that the `cconf` file (`/usr/xerox/nps/client/cconf`) contains the default Printer Controller name that most recently performed the client installation. Try submitting requests to another Printer Controller by using the server override switch in the print command.
 - If you are unable to install the software, make sure the client hard disk meets the minimum requirements. Otherwise, you may run out of disk space during the installation, and you may get misleading error messages.

The following table, “*Xerox Client Software installation error messages*” provides a reference to error messages that may display during installation of Xerox Client Software.

Table 3-1. **Xerox Client Software installation error messages**

Error message	Description
Installation not complete. Problems may have occurred during the transfer of files. Please verify that all files have been transferred and contact your system administrator for assistance.	Appears if any of the client files are missing at the end of installation.
Usage: <Printer__Controller__Name> or Usage: instsun4 <Printer__Controller__Name> or Usage: instsun3 <Printer__Controller__Name> or Usage: instult <Printer__Controller__Name>	Appears when the Printer Controller Name is not used as the argument to the installation commands. The <Printer__Controller__Name> is the name of the Printer Controller that the installation commands use to install the Client Software.

4. Troubleshooting a Novell implementation

The following tables describe some ways to troubleshoot a Novell implementation from the log messages that appear in the DocuPrint NPS log /varnag/DocuPrint.

Table 4-1. **PSERVER problems**

Problem	Probable Cause	Resolution
Log message says there is a problem locating a NetWare server.	DocuPrint is not getting SAP packets for the server. <ul style="list-style-type: none"> • There is a basic connectivity or routing problem. • The framing type has been set incorrectly during installation. • The file server name has been set incorrectly during installation. 	If there is an external connectivity problem: <ul style="list-style-type: none"> • Check Novell file server console screen for messages. • Check that the server is running and connected to the network. If it is an incorrect framing type or server name, your Xerox service representative must change the configuration on the DocuPrint NPS Printer Controller.
Log message says there is an error in connecting to the file server.	DocuPrint NPS is getting SAP packets with information about the server, but cannot communicate with it. <ul style="list-style-type: none"> • There is a basic connectivity or routing problem. • DocuPrint NPS has an incorrect network number. 	If there is an external connectivity problem: <ul style="list-style-type: none"> • Check Novell file server console screen for messages. • Check that the server is running and connected to the network. If it is an incorrect network number, your Xerox service representative must change the configuration on the DocuPrint NPS Printer Controller
Log message says there is a failure to log in.	Password problem. <ul style="list-style-type: none"> • Server does not accept unencrypted logins • DocuPrint NPS does not have the correct password. 	If the server is not properly configured, enter SET ALLOW UNENCRYPTED PASSWORDS=ON at the server console. If DocuPrint has the wrong password, your Xerox service representative must change the password.

Table 4-1. **PSERVER problems** (continued)

Problem	Probable Cause	Resolution
Log message indicates failure to login and password settings are correct.	A PSERVER with DocuPrint's PSERVER name is running on the file server or on another machine (this could even be another DocuPrint configured to use the same PSERVER name). The file server should only have a PSERVER defined with the same name as the DocuPrint PSERVER, there should not be an instance of PSERVER running under that PSERVER definition.	Stop the PSERVER instance.
Log message says "Error finding queue."	Queue not created.	At the file server, create the queue, set up the printer for the PSERVER and be sure it will service the appropriate queue.
Log message says "Netware PServer <name> not found."	The PSERVER has not been defined on the file server.	Define a PSERVER with the correct name on the file server and restart the system.
Log message says that there was an error attaching to the queue.	DocuPrint does not have access to the queue.	Ensure that there is a printer defined for the PSERVER on the file server and that the printer is defined to service the desired queue.

The following table describes troubleshooting RPRINTER problems.

Table 4-2. **RPRINTER problems**

Problem	Probable Cause	Resolution
<p>Log message says:</p> <ul style="list-style-type: none"> • "Cannot locate any Netware print server from the net." • "Requested server <name> not responding." 	<p>DocuPrint NPS is not getting SAP packets advertising the print server.</p> <ul style="list-style-type: none"> • There is a basic connectivity or routing problem. • The incorrect framing type has been set. • The print server is not running. For RPRINTER, there must be a PSERVER running on the file server with the name specified to DocuPrint NPS at installation time. 	<p>If there is an external connectivity problem: PSERVER should work when it is repaired.</p> <p>If it is an incorrect framing type, your Xerox service representative must change the configuration on the DocuPrint NPS Printer Controller.</p> <p>If print server is not running, start one.</p>

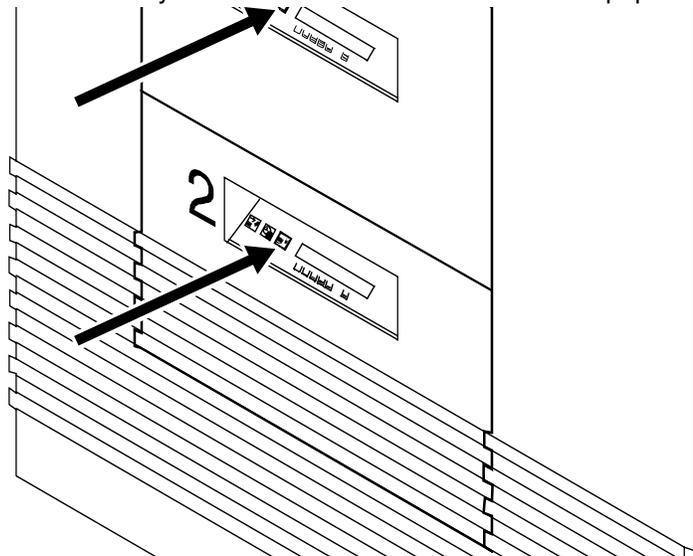
5. Clearing paper misfeeds and jams

This chapter shows the steps for clearing paper misfeeds and jams from various areas of the printer.

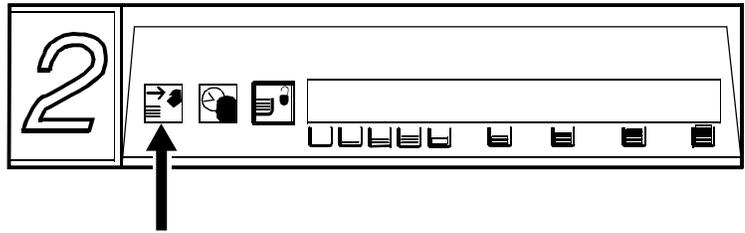
Clearing a feeder tray fault

When paper is misfed from the paper trays, complete the following steps:

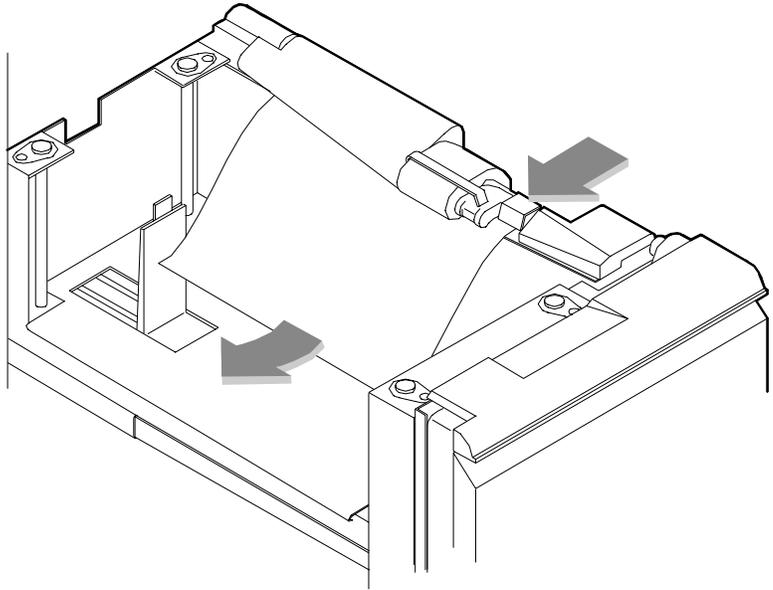
1. Go to the paper tray indicated by the message and graphic displays of the printer control console.
2. Press the Tray Unlock button on the front left of the paper tray.



3. When the Ready To Open indicator is lit, pull the bar up and out to open the tray. Pull the tray all the way out for best results.

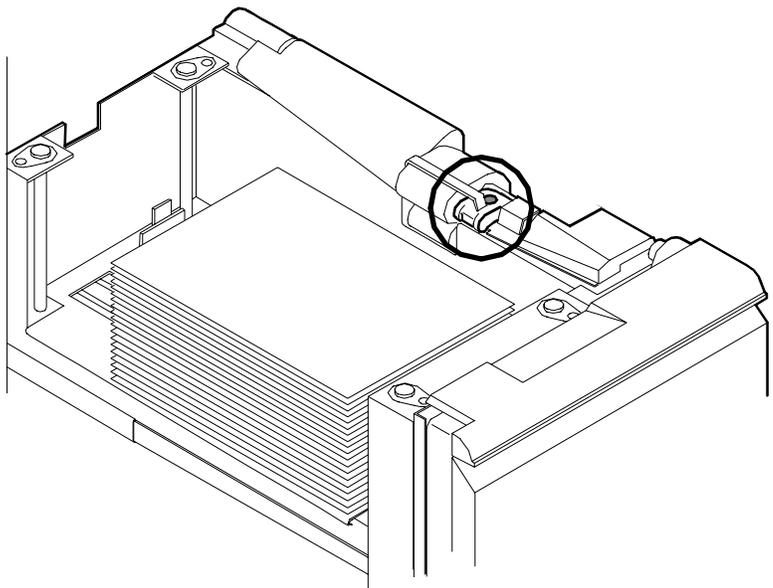


4. Press the green lever to unlatch the paper feeder assembly.



5. Remove and discard any partially fed paper. Make sure the paper supply is neatly stacked and the stack is not higher than the MAX line on the length guide. Make sure the length guide is firmly touching the back edge of the stack.

6. Latch the paper feeder assembly by pressing the green dot until the assembly clicks into place.



7. Slide the tray back into the printer until the tray latches and press the Continue button to resume printing.
8. Discard any pages sent to the sample tray or unused stacker tray when the paper jam was detected.



Note: If the 96/4635/180 NPS does not continue printing after a paper tray fault or after paper is loaded, open then close the tray. The system should resume printing.

Frequent misfeeds

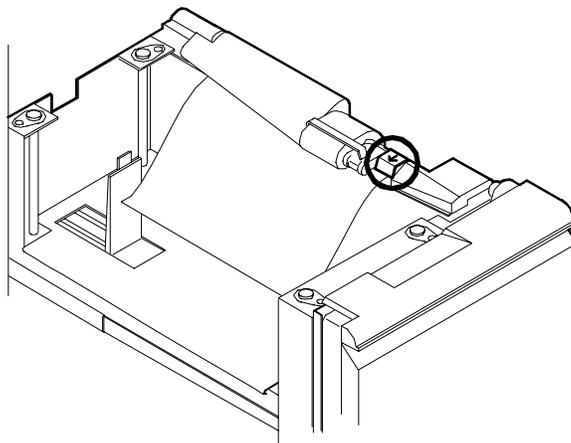
Frequent misfeeds may be caused by a glazed feed belt, especially if one tray feeds the same kind of paper better than another tray does. (Glazing is caused by a buildup of the chemicals found on most papers.)

If you suspect that the belt is glazed, try cleaning it with film remover obtained from your service representative.



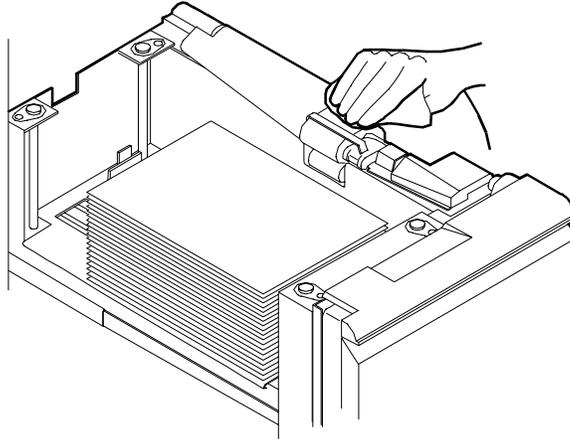
Caution: Clean the feed belt only to correct misfeeds, not as routine maintenance. Because the belt is rubber, frequent cleaning dries it out and makes it fail prematurely. 

1. Clear any misfeeds that have occurred, but do not latch the paper feeder assembly. If necessary, unlatch it by pressing down on the bright green lever on the right side of the paper tray.

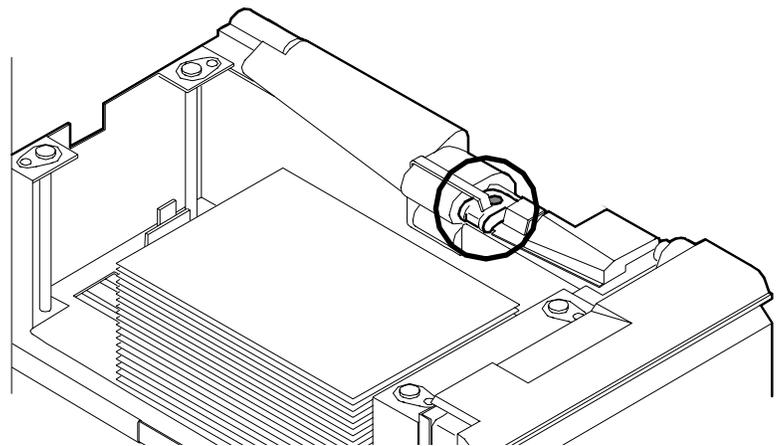


2. Lightly moisten a lint-free towel with film remover and thoroughly wipe the outside surface of the feed belt in the same direction as the ribs on the belt. (Wiping from side to side might

pull the belt off its track.) Allow a few seconds for the film remover to evaporate.



3. Latch the paper feeder assembly by pressing down on the bright green dot. Slide the paper tray completely back into the printer



Operate the system as usual. If you still experience misfeeds, place a service call.

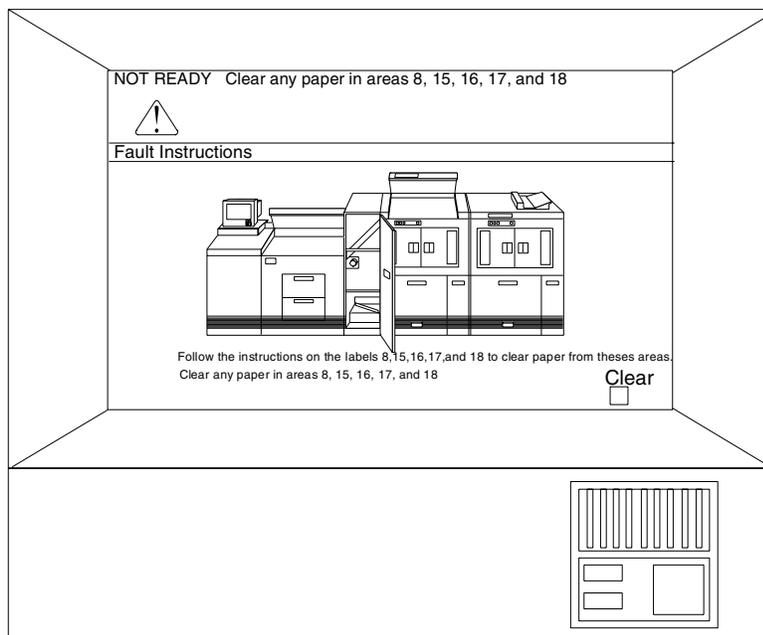
Clearing paper jams

Each area of the printer where jams can occur has detailed message labels that tell you how to clear the jam.

Each handle, lever, or knob that must be moved to clear a jam is bright green and marked with an arrow indicating the direction it moves.

Follow these steps to clear a paper jam:

1. Go to the area of the printer indicated by the messages and display on the printer control console.



2. Open any printer doors necessary to access the area.
3. Clear the jammed paper from the area, following the instructions on the Printer Controller message labels and the messages on the printer control console. Refer to the section "Printer areas" for more information.



Note: You may find that the printer has already cleared the paper jam area to the sample or purge trays.

4. Close any printer doors that were opened.
5. Press the Continue button to resume printing.
6. Discard any damaged sheets sent to the sample tray or purge tray.



Note: You may find that the printer has already cleared the paper jam area to the sample or purge trays.

Checking job integrity following a paper jam

When printing resumes following a paper jam, there is a slight possibility that duplicate sheets may be printed or sheets may be missing from a job. For that reason, you should check job integrity once the job has been printed.

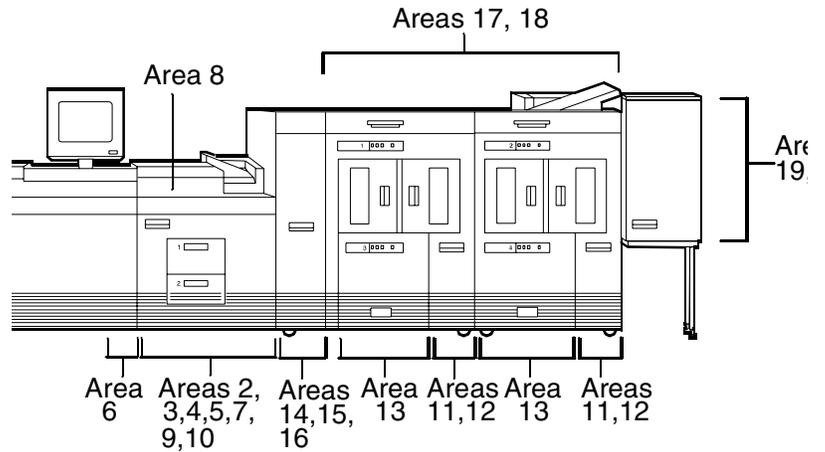
Follow this procedure:

1. The printer offsets the rest of the job following a paper jam. Locate that section.
2. Check this section and the sheets immediately before the first offset sheet to see if there are any missing or duplicate sheets in the job.

Printer areas

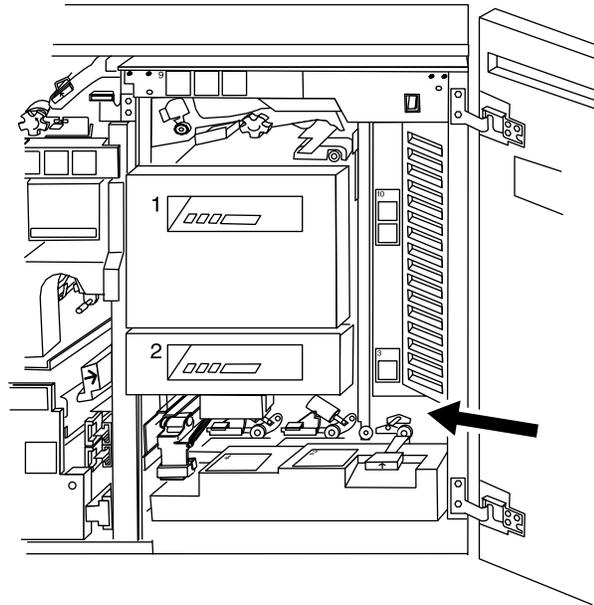
This section provides illustrations of the various areas of the printer where jams may occur.

The following illustration shows all the jam clearance areas for the 96/4635/180 printer.

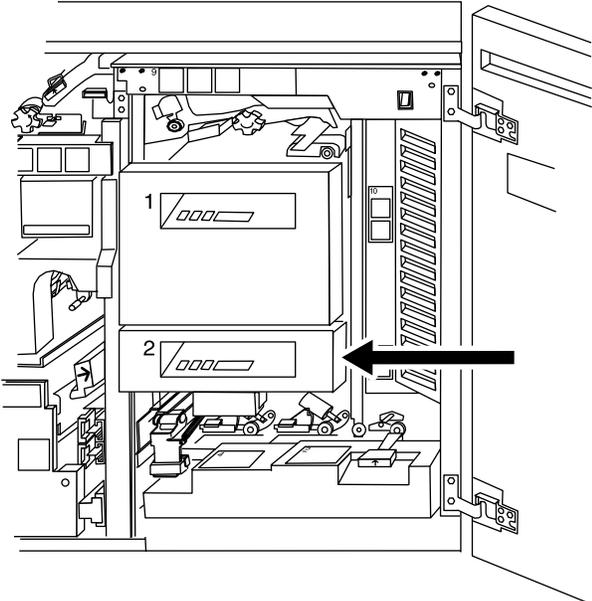


The following illustrations show the individual jam clearance areas of the 96/4635/180 printer.

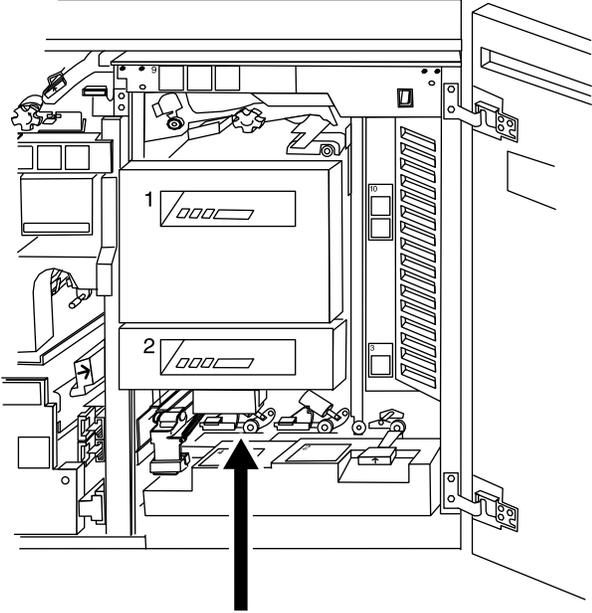
Area 2



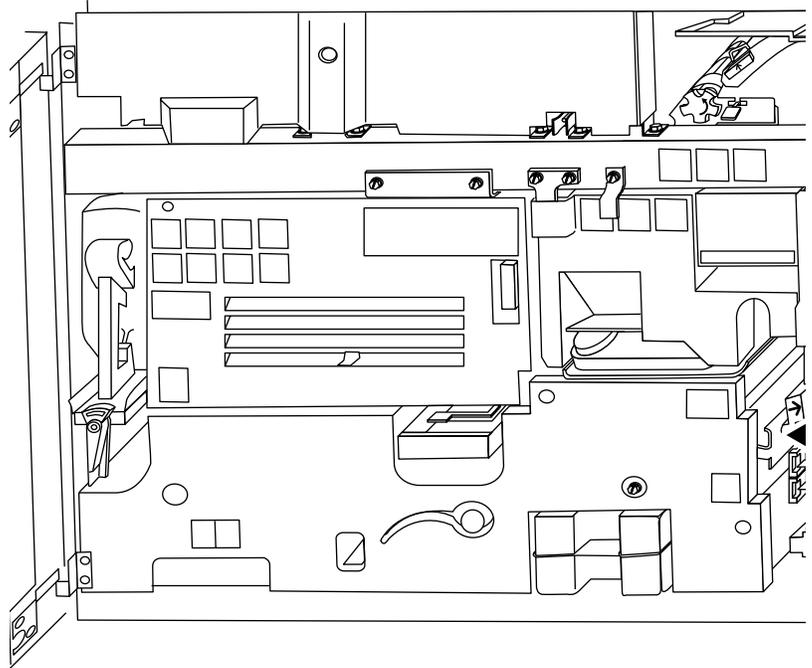
Area 3



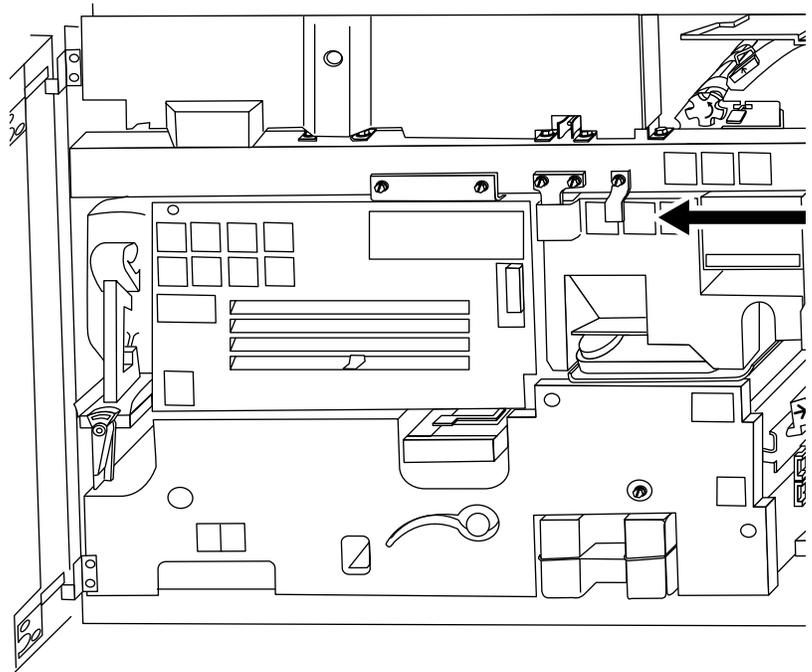
Area 4



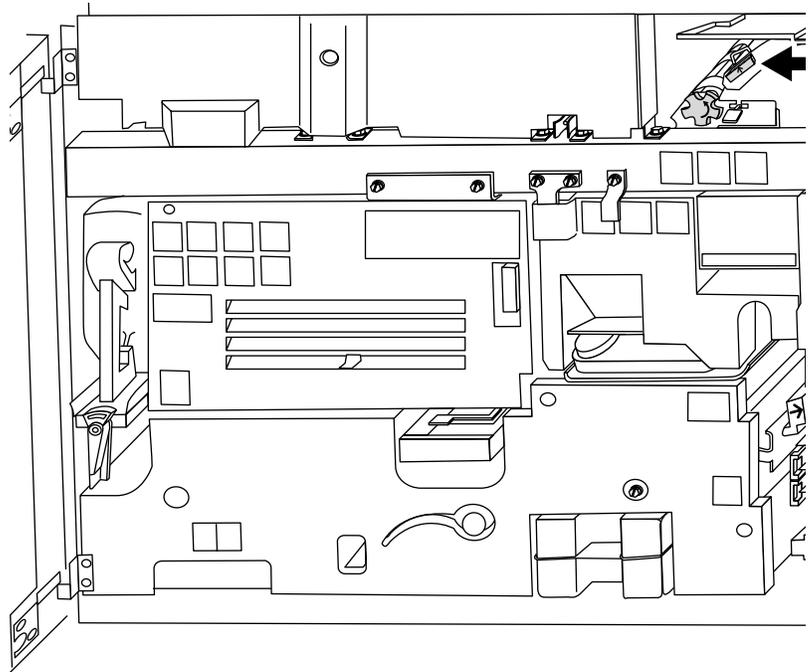
Area 5



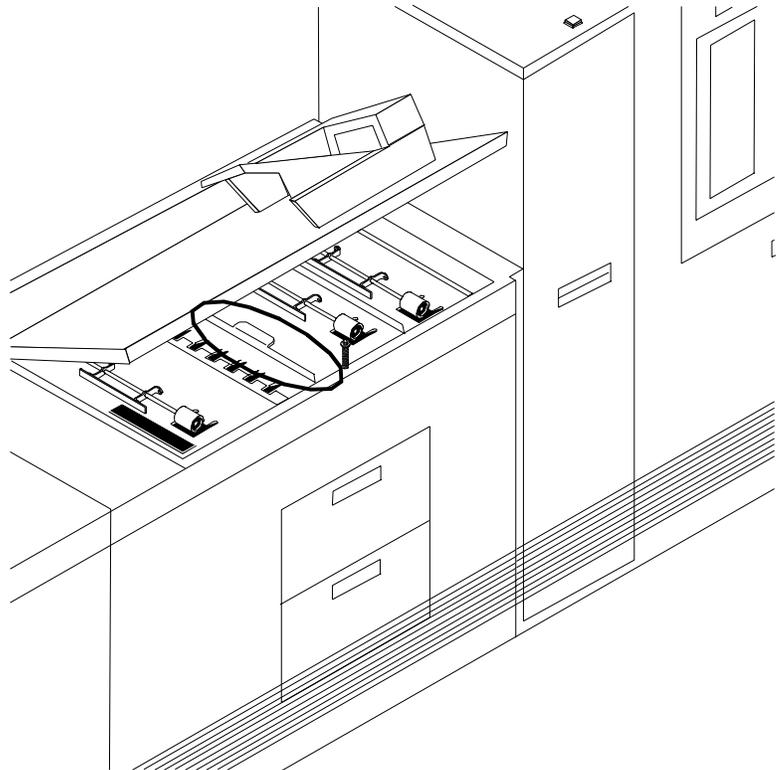
Area 6



Area 7



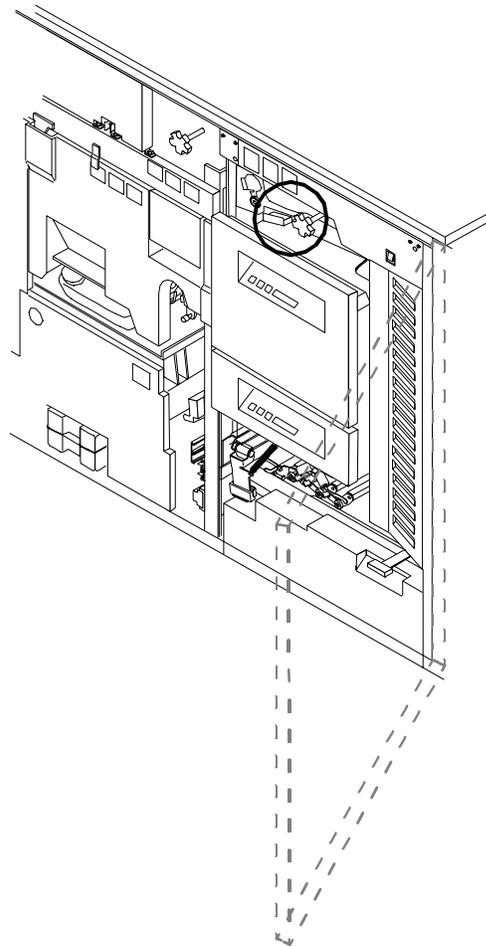
Area 8





Note: If jammed paper rips as you are removing it from area 8, you may have to use the pinch lever in area 9 to remove the paper. Refer to the “Notes” section following the figure illustrating area 9.

Area 9



Note: Pull the area 9 green lever toward you to unlatch it. Make sure you relatch the lever once you have cleared any paper in this area. You may also want to pull out tray 1 and hold the green lever down in order to remove paper wedged in this area more easily.

Area 9 also has a green knob (located to the right of the lever), which can be turned to help you clear paper.

Using the pinch lever to access area 9: If paper rips as you are removing it from area 9, or if you have difficulty removing paper from this area, you may have to use the pinch lever located further inside area 9. Follow this procedure:

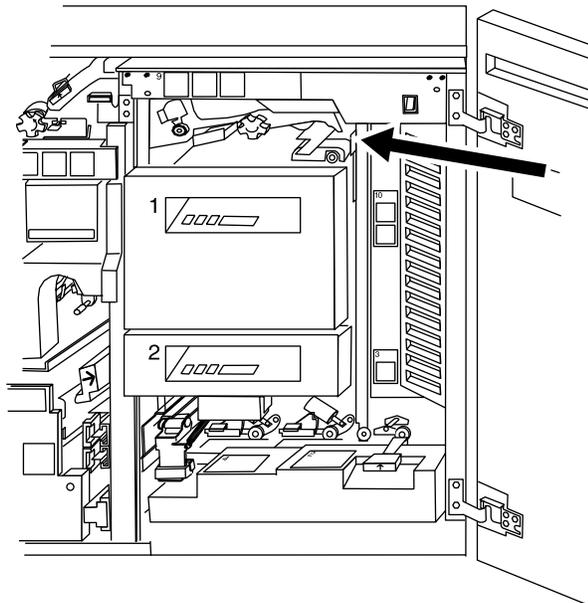
1. Locate the green pinch lever directly behind area 9.
2. Carefully reaching your hand into the area, press the edges of the pinch lever and lift it up.



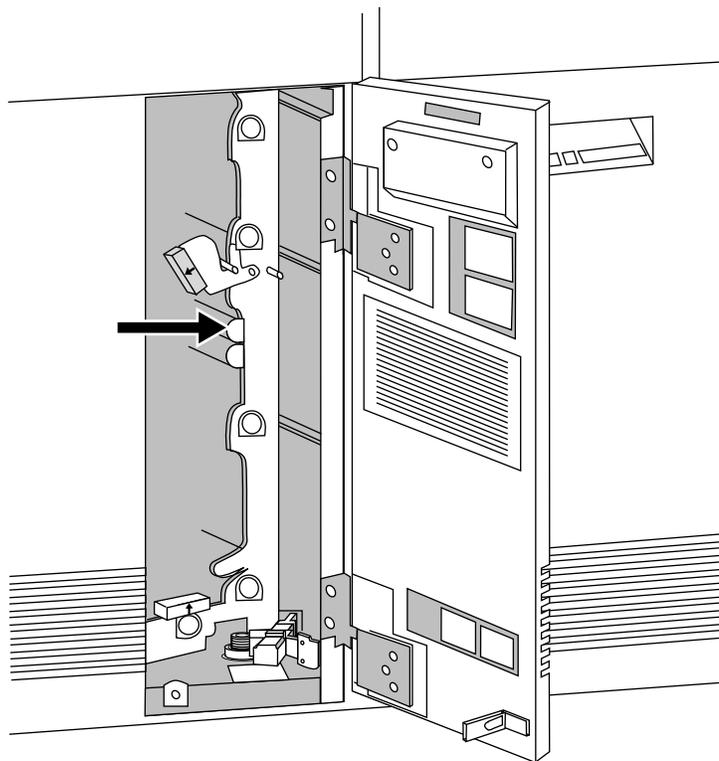
Warning: This area of the printer may be hot. Be careful when inserting your hand.

3. Remove any paper caught in this area.
4. Replace the green pinch lever to its original position.
5. Discard any paper you removed.

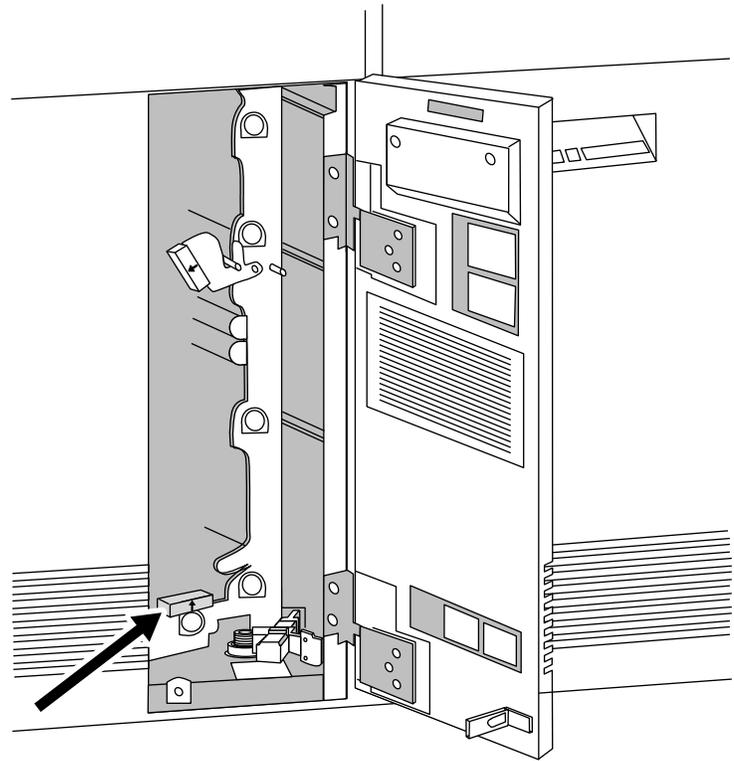
Area 10



Area 11

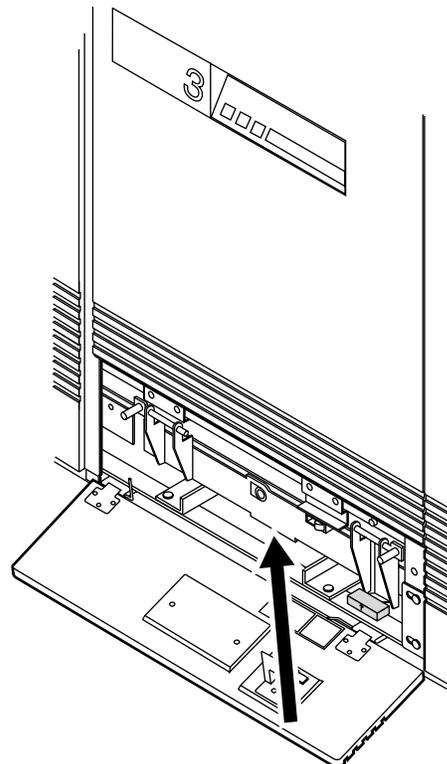


Area 12

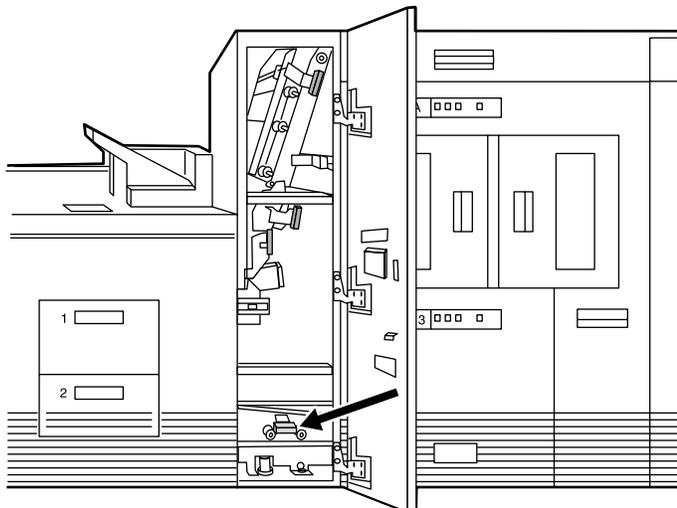


Note: For 180 printers, when clearing area 12, you are required to clear areas 12 and 13.

Area 13

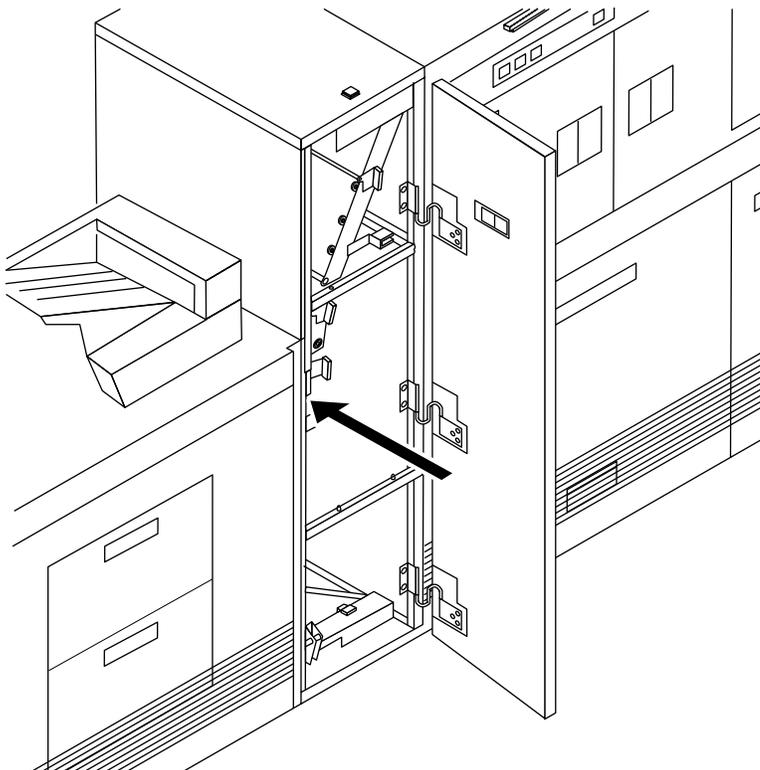


Area 14

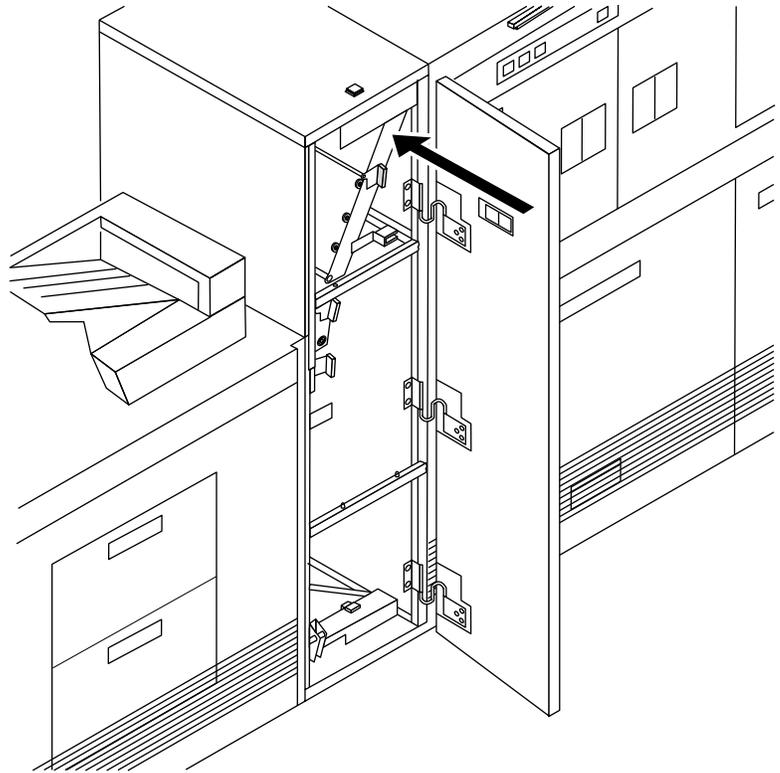


Note: You may sometimes find paper lying on top of area 14, even though there is no message indicating a jam in this area. Discard the paper.

Area 15

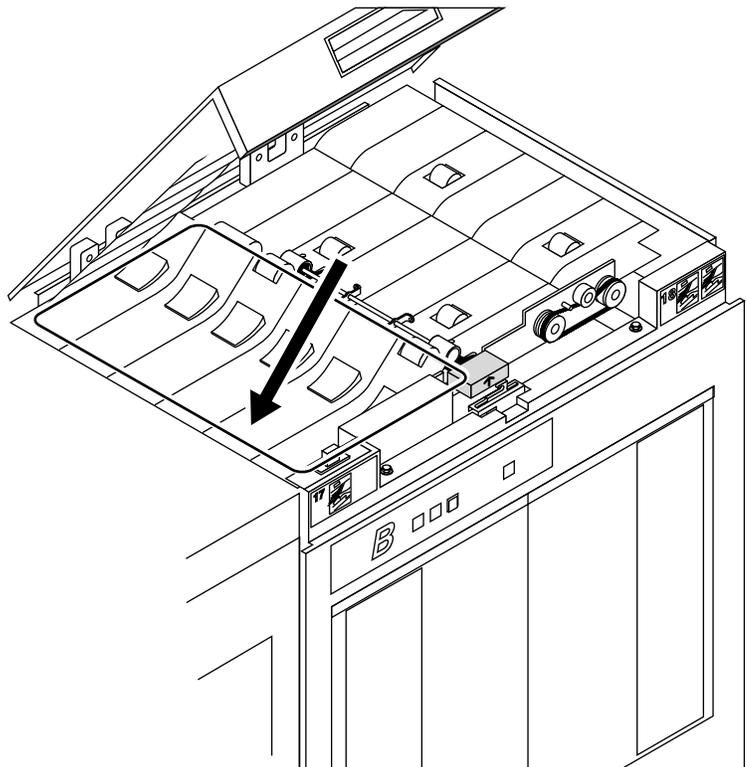


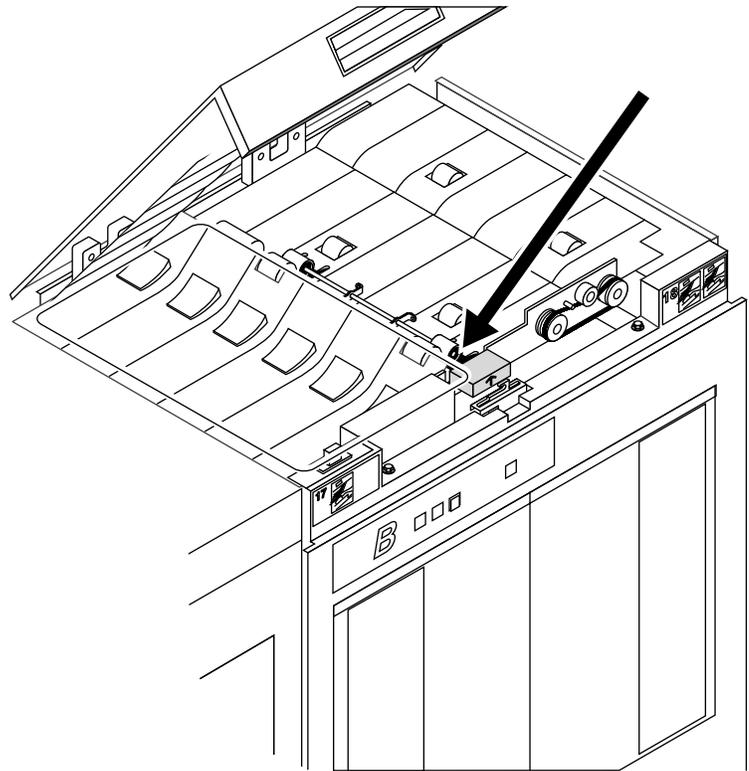
Area 16



Note: For 180 printers, when clearing area 16, you are required to clear areas 16 and 17.

Area 17



Area 18

Note: Sometimes the printer control console messages direct you to discard the last sheet delivered to the stack following a jam in area 18. Check for this message when clearing an area 18 paper jam.

If your printer has frequent jams in this area, you may need to clean the Q1107A sensor. Refer to the “Cleaning the sensors and the reflecting surfaces” section of the *Guide to Performing Routine Maintenance*.

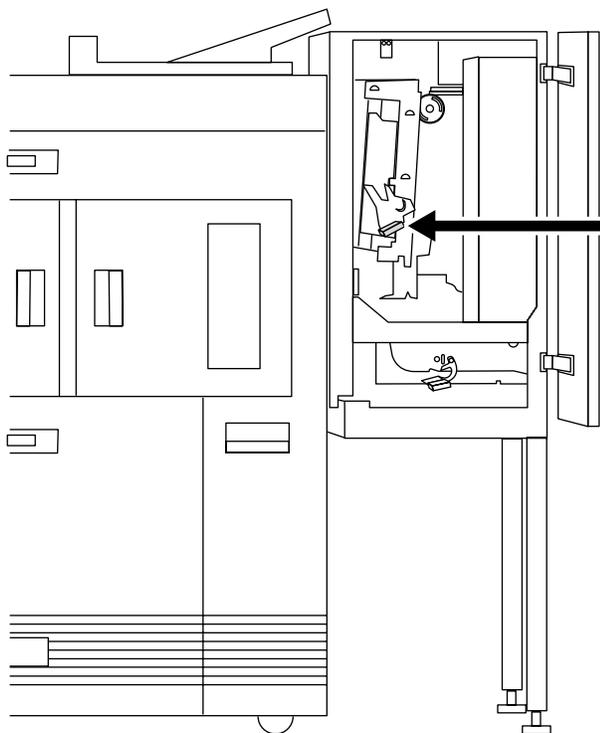
Clearing bypass transport paper jams

If your printer is configured with a bypass transport module, you should check for paper jams in areas 19 and 20 after clearing an area 18 paper jam.

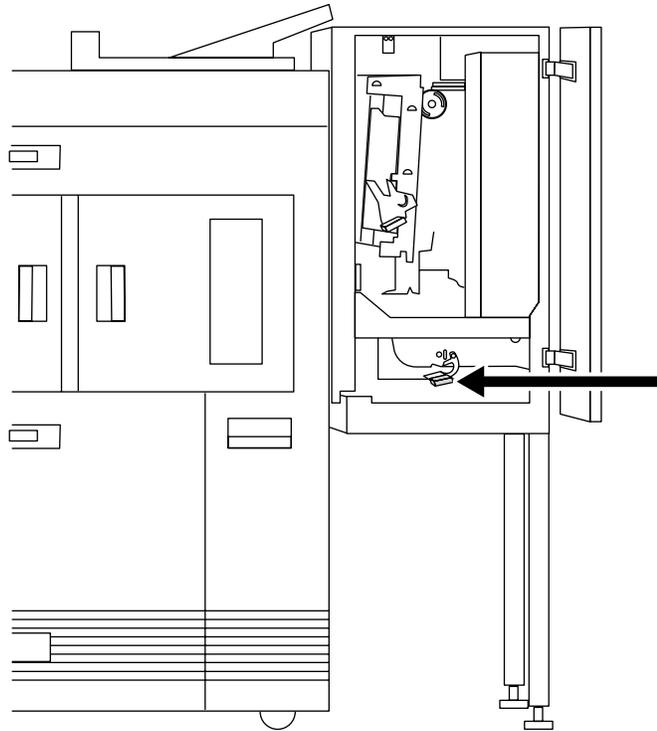
To clear bypass transport jams:

1. Open the bypass transport module door.
2. Press the area 19 green lever in the direction of the arrow printed on it.

Area 19



3. Remove any paper in the exposed area.
4. Press the green lever to the left until the latch catches.
5. Press the area 20 green lever in the direction of the arrow printed on it.

Area 20

6. Remove any paper in the exposed area.
7. Press the green lever down and to the left until the latch catches.
8. Close the bypass transport

Paper curl and paper jams

Too much curl in the paper stock can cause paper jams. You can adjust the decurler lever to eliminate most of these problems. Refer to the paper curl chart at the end of this chapter to determine the amount of curl in the paper stock.

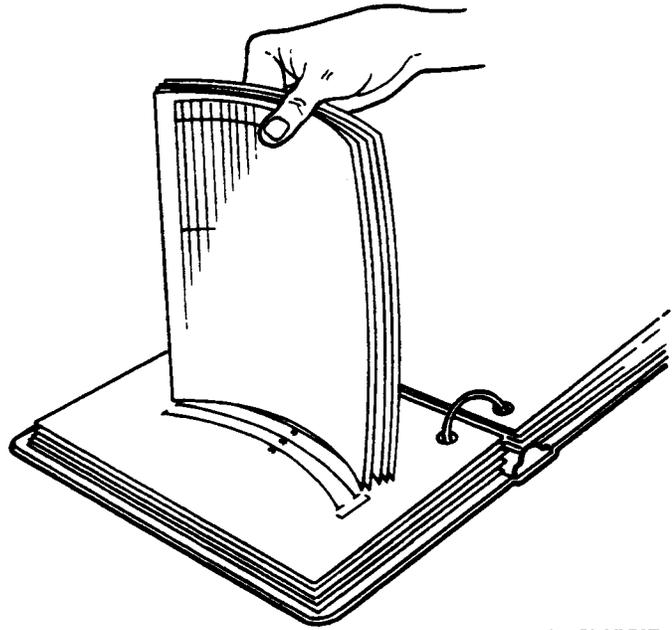
Measuring the paper curl

To measure the paper curl:

1. Print five one-sided (simplex) 8.5 by 11 inch or A4 sheets.
2. Measure the amount of curl in the prints by holding the five prints in the top center of the short edge.

Keep the image toward you.

Figure 5-1. **Measuring the paper curl**



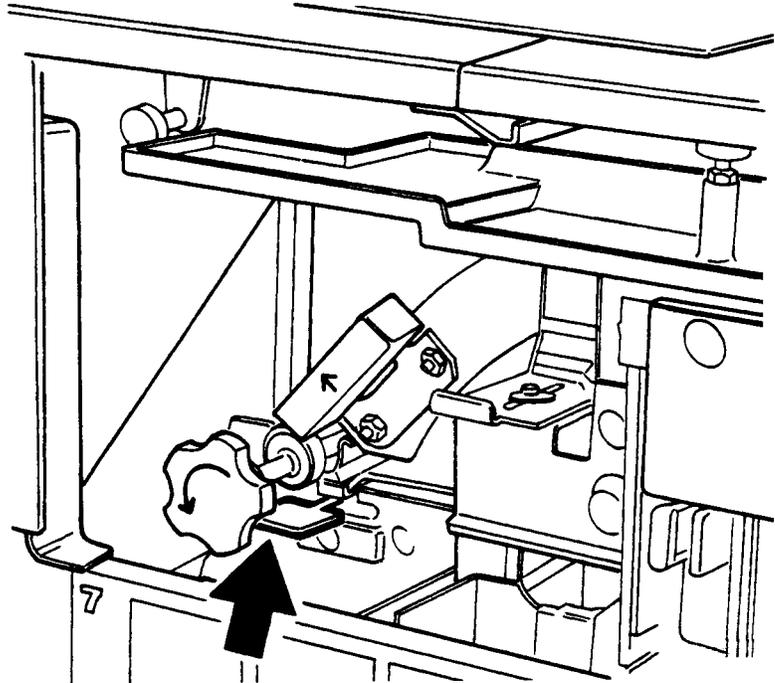
3. Place the bottom edge of the prints over the paper curl measurement chart located at the end of this chapter.
 - If the print curl on the printed paper stock measures between +2 and -2, do not change the decurler setting.
 - If the curl is between +2 and +3, or -3 and -4, use the following procedure to adjust the decurler lever.

Adjusting the decurler lever

To adjust the decurler lever:

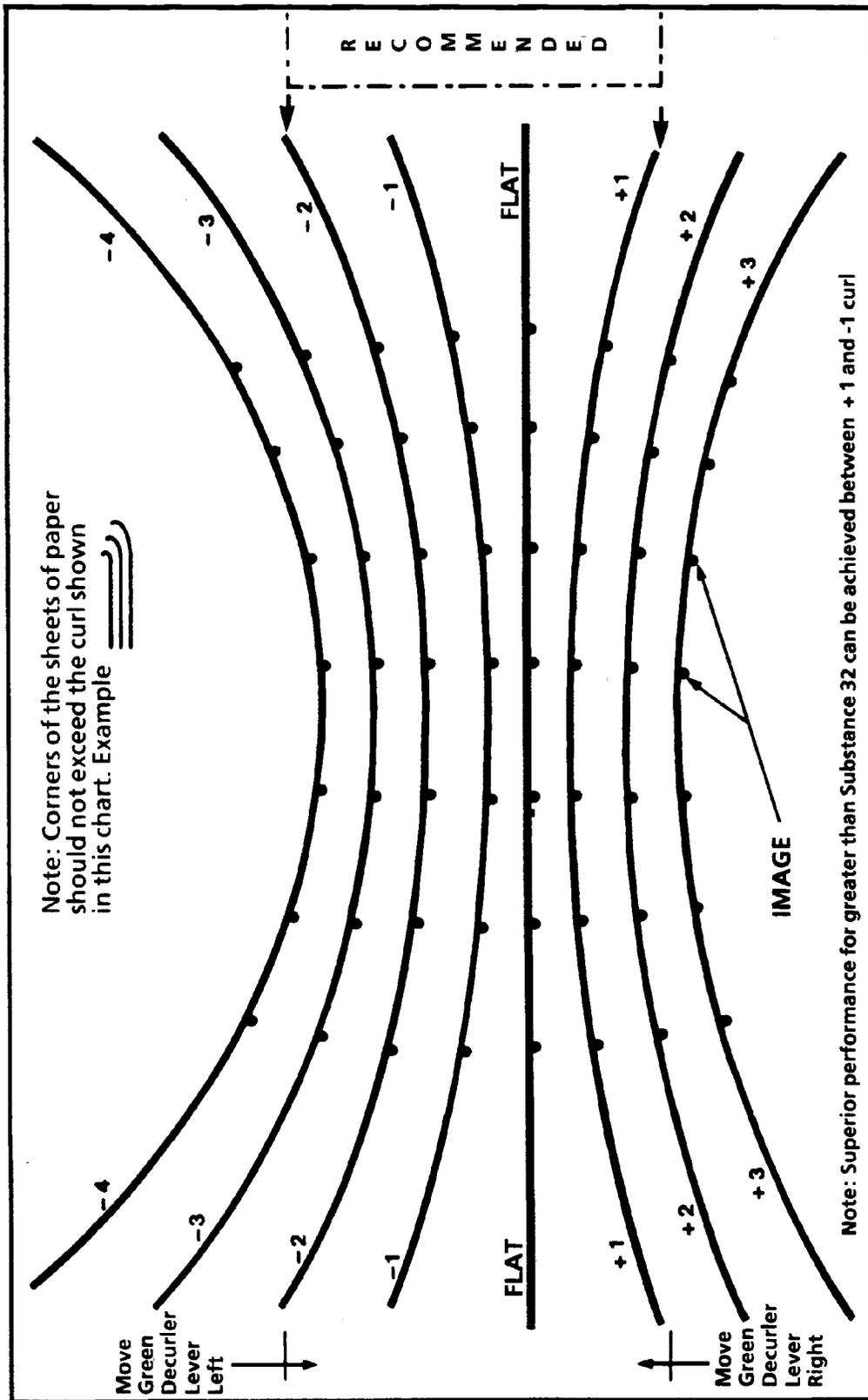
1. Open the right door of the printer and locate the decurler lever.

Figure 5-2. **Decurler lever**



2. If the print curl is +2 or more, move the green decurler lever to the right.
3. If the print is -3 or more, move the green decurler lever to the left.
4. If the decurler adjustment does not eliminate the paper curl problem, turn the paper stack over in the feeder tray.
5. If there is still a paper curl problem, perform steps 1 to 4 again.
6. If all else fails, insert paper from a new ream.

Figure 5-3. Paper curl chart



6. Using sample documents

You can use sample documents to test the print quality of your DocuPrint printer.

Listing and printing sample documents

The List Sample Documents command shows what sample documents are available.

DocuPrintFAQ

One sample document, DocuPrintFAQ, provides a list of frequently asked questions (FAQ) and answers about DocuPrint NPS. This document may contain information that can help you resolve some problems.

List Sample Documents

Use the List Sample Documents command to list the available sample documents.

Access level Administrator or operator

Syntax List Sample Documents

Arguments None



Note: The Sample button on the printer control panel is not supported.

Example Listing sample documents:

```
PS-op>list sample documents
Available Sample Documents are:
100 pages
2pages
4pages
50pages
dfaq0397
dpps
FontDir
HC
iso8859-1
maze
mesh50
mesh100
pclfont
shapes
StdPCLFonts
StdPSFonts
testgray
testxerox
worm
XeroxSpiral
XGFGoldenJob
XGFLicenseRequestForm
XRXPJ1
XRXPJ2
```

Print Sample Document

Use the Print Sample Document command to print the sample document you select from the list. If you do not enter arguments with the command, the system prompts you for them.

Access level Administrator or operator

Syntax Print Sample Document <Document> <Copies> <Plex> <Staple>
<Resolution> <Media> <Stacker group>

- Arguments**
- <Document>
Indicates the name of the sample document you want to print. The name is case-sensitive.
 - <Copies>
Indicates the number of copies of the sample document you want to print.
 - <Plex>
Indicates whether the sample document prints on one side of each page or on both sides of each page. Specify "simplex," "duplex," or "tumbleduplex."
 - <Staple>
Indicates whether the sample document is stapled after it prints. Specify "Staple" or "DontStaple"
 - <Resolution>
Indicates the printing resolution.

<Media>

Indicates the media you want to use for printing the sample document. Use the syntax <size:type:color:weight> to specify media. Specify "USLetter," "USLegal," "A4" or "n xn" for the size. Use a text string to indicate the media type and color. Specify weight in grams per square meter (gsm).

<Stacker group>

Indicates you want the sample document to output to a specified stacker. You can specify "Top," "1," or "2."

Example Printing one duplex unstapled copy of the sample document "shapes" at 300 dpi resolution on USLetter, white paper, output to stacker 1:

```
PS-op>print sample document shapes 1 duplex dontstaple 300 USLetter::white 1
```



Note: When Print Sample Document is invoked with output to the top Tray with stitching finish, the stitching is ignored.

7. Adjusting print quality and speed

This chapter considers means for checking and optimizing print quality and speed.

Installing the custom transfer assist blade

If you use nonstandard paper sizes, you should install the custom transfer assist blade to ensure good print quality.



Caution: The custom transfer assist blade comes as a kit with detailed instructions. Be sure to follow the instructions carefully.

To prevent damage to the printer, have your service representative show you how to customize and install a custom transfer assist blade for the first time.

You must use the standard transfer assist blade with standard paper of the following sizes:

- In U.S. markets
 - 11.1—11.4 inches (282—290 mm)
 - 11.8—12.1 inches (300—307 mm)
 - 13—13.5 inches (330—343 mm)
- In non-U.S. markets
 - 11.1—11.4 inches (282—290 mm)
 - 11.8—12.1 inches (300—307 mm)



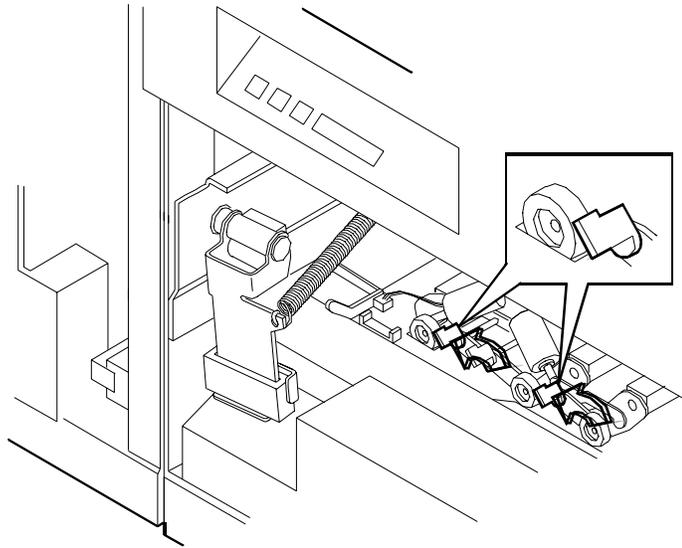
Note: With these paper sizes, transfer efficiency may be reduced.

Correcting skewed printing

If the printed output is repeatedly delivered with the image skewed (crooked on the page), or the pages themselves are damaged on arrival at the output bin, you may need to adjust the registration transport roll (heavy paper) levers. This may occur with heavy weight papers. Follow this procedure:

1. Open the right and left doors of the printer and locate the heavy paper levers, behind areas 2 and 4.
2. Pull the levers forward (toward you) on the silver latch release.
3. Turn both levers to the left (counter-clockwise), as illustrated in the following figure

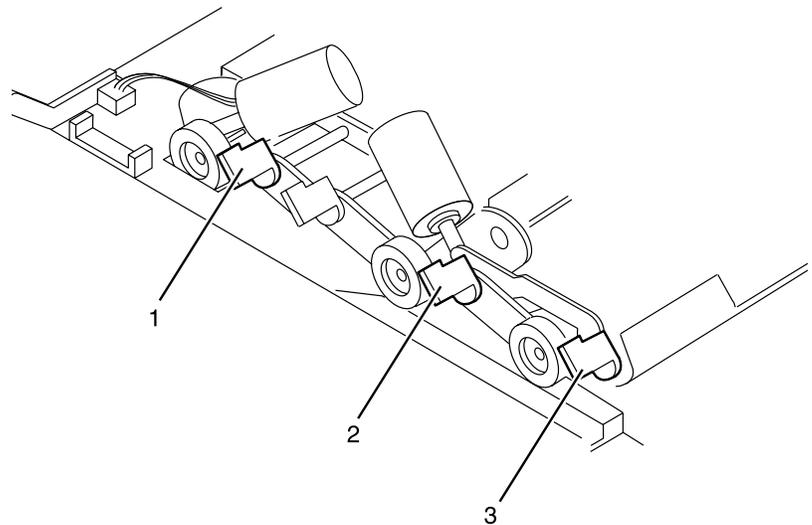
Figure 7-1. **Adjusting the registration transport roll levers**



Note: If your system is equipped with the optional 7 by 10-inch paper enablement kit, it has three levers, as illustrated below. (This kit is not available for the Model 96 NPS.)

Turn the left-most lever to the left (counter-clockwise) and the other two levers to the right (clockwise). □

Figure 7-2. **Three registration transport roll levers on system with 7 by 10-inch enablement kit**



- 1 Lever 1: Left - Maximum Pressure setting**
- 2 Lever 2: Right - Maximum Pressure setting**
- 3 Lever 3: Right - Maximum Pressure setting**

4. When the print job is complete, return the levers to their normal position.
5. Close the doors.



Note: Here are a few things to keep in mind when adjusting the registration transport roll lever:

- Position all levers for the same (either minimum or maximum) pressure setting. Do not intermix the positions of the levers.
- Paper greater than 14 inches / 352 mm in any dimension is considered oversized.
- Paper heavier than 24 pounds / 90 gsm is considered heavy weight.
- The following factors may affect the positioning of the paper levers:
 - Machine tolerance
 - Paper supplier
 - Job type (e.g., duplex).(clockwise). □

Measuring performance

You can use the DocuPrint sequencer log file to calculate print speeds. Although a stopwatch is the recommended method for obtaining sustained throughput print speeds, the sequencer log can be used to calculate speeds which include the start-up latency associated with the printer. This section describes how to calculate speeds using the sequencer log and how to minimize the start-up latency in your calculations.



Note: The sustained throughput using a stopwatch is a better measurement of the speed of the job since the several seconds of start-up time do not need to be measured. □

Refer to the following example when reading “Calculating throughput.” The **Show Log** command in this example displays a menu of logs with the current sequencer log named DocuPrint sequencer:

```

PS-admin> Show Log

1 Quit
2 /var/log/DocuPrint
3 /var/log/DocuPrint.sequencer
4 /var/log/DocuPrint.Wed
5 /var/log/DocuPrint.Tue
6 /var/log/DocuPrint.Mon
7 /var/log/DocuPrint.sequencer.Mon
8 /var/log/DocuPrint.Sun
9 /var/log/DocuPrint.Sat
10 /var/log/DocuPrint.Fri
11 /var/log/DocuPrint.sequencer.Fri
12 /var/log/DocuPrint.Thu
13 /var/log/DocuPrint.sequencer.Wed
14 /var/log/DocuPrint.sequencer.Tue
15 /var/log/DocuPrint.sequencer.Thu
16 /var/log/syslog
17 /var/adm/messages
18 /var/adm/messages.0
19 /var/adm/messages.1
20 /var/adm/messages.2
21 /usr/spool/xerox/log/nps.log
22 /usr/spool/xerox/log/nps.log.Wed
23 /usr/spool/xerox/log/nps.log.Tue

Enter choice number: 3
Enter number of lines from the end to show (or "All"): 16
Job #216 start, ftpadmin, 99995163.ps, November 19, 1996 1:16:57 pm PST
Printing duplex, 300 spi, 216 x 279 mm, 139 buf
Job #217 start, ftpadmin, 99995163.ps, November 19, 1996 1:18:38 pm PST
Job #216 stop, ftpadmin, 99995163.ps, November 19, 1996 1:19:05 pm PST
pages: 217, decomp: 84.91, elapsed: 128.49
Job #218 start, ftpadmin, 99995163.ps, November 19, 1996 1:20:14 pm PST
Job #217 stop, ftpadmin, 99995163.ps, November 19, 1996 1:20:43 pm PST
pages: 217, decomp: 83.69, elapsed: 124.94
Job #219 start, ftpadmin, 99995163.ps, November 19, 1996 1:21:46 pm PST
Job #218 stop, ftpadmin, 99995163.ps, November 19, 1996 1:22:20 pm PST
pages: 217, decomp: 84.04, elapsed: 126.62
Job #220 start, ftpadmin, 99995163.ps, November 19, 1996 1:23:19 pm PST
Job #219 stop, ftpadmin, 99995163.ps, November 19, 1996 1:23:58 pm PST
pages: 217, decomp: 84.73, elapsed: 132.42
Job #220 stop, ftpadmin, 99995163.ps, November 19, 1996 1:25:35 pm PST
pages: 217, decomp: 85.03, elapsed: 136.10

```

Calculating throughput

For measuring performance, note the start time, stop time, decomposition time, elapsed time, and pages of the job being measured:

- The start time is the time that the sequencer began to decompose the job (translate the PostScript).
- The stop time is the time the last page was printed.
- The decomposition time is the time (in seconds) spent working on the job. The decomposition time can be increased by factors such as use of highlight color, images that compress poorly, duplexing, and job size. See the *Guide to Using Page*

Description Languages for more details about factors affecting performance.

- The elapsed time, equal to the stop time minus the start time, is the total amount of time DocuPrint spent printing the job. The elapsed time includes delays for warm-up time, paper loading, jam clearing, print quality adjustments and the start-up latency associated with the first job in a set of jobs.
- The “pages” number represents the number of images printed, (not the number of sheets printed when running a duplex job).

To make a meaningful measurement of performance, obtain the measurements while the printer is running a block of jobs. Since start and stop times tend to overlap between jobs in a block, the only way to obtain a measurement using the start and stop times is to use the start time when the printer first powers up to print a block of jobs, then subtract that start time from the stop time when the printer powers down as shown in this procedure:

1. Enter **Stop Printing** at the Printer Controller.
2. Enter **Set Option ForceReport False and Set Option UseTitlePage False**. This to avoids extra pages in the output that are not included in the pages reported in the sequencer log.
3. Send a series of jobs to the DocuPrint.
4. Use the List Documents command to determine that the jobs have passed the prescanner and have a Pending status.
5. Enter **Start Printing**.



Note: If you experience delays due to empty paper trays or paper jams, repeat steps 1-5 until the jobs complete without delays. □

6. Calculate the elapsed time by subtracting the stop time of the last job from the start time of the first job.
7. Add up the total number of pages for all jobs.
8. Calculate throughput using the formula:

$$\text{PPM} = 60 \times \text{pages/elapsed time in seconds}$$

Here is the calculation for the example of the sequencer log above:

The start time was: 1:16:57 pm

The stop time was: 1:25:35 pm

(This gives an elapsed time of 8 minutes and 38 seconds, or 518 seconds)

$$\text{PPM} = 60 \times 1085/518 = 125.7 \text{ pages per minute}$$

This example illustrates the problem with calculating the elapsed time from the first job, since this job was actually printing at the maximum rate of the DocuPrint Model 4635 printer (135 ppm). The start-up latency made the printer appear to be printing at a rate 6.2 ppm lower than the maximum rate.

To verify the assumption that the sustained throughput of the job prints at the rated speed of the printer, a calculation of the rate based on the decomposition time is recommended. The decomposition time gives the theoretical maximum that the DocuPrint can print this job.

Since the DocuPrint usually decomposes more than one job at a time, the jobs are time-shared on the one processor and this will cause the decomposition time to be larger than if the DocuPrint decomposed once by itself. In the sample log, there are always 3 jobs printing at the same time and the decomposition times reported vary from 83.69 to 85.02. After submitting this job by itself, the decomposition time reported is:

```
Job #213 start, ftpadmin, 99995163.ps, November 19, 1996 1:05:04 pm PST
Printing duplex, 300 spi, 216 x 279 mm, 139 buf
Job #213 stop, ftpadmin, 99995163.ps, November 19, 1996 1:07:17 pm PST
pages: 217, decomp: 83.51, elapsed: 134.70
```

$$\text{PPM} = 60 \times 217 / 83.51 = 155.9 \text{ pages per minute}$$

This is considerably higher than the maximum speed of the printer, so it is very likely that this job prints at rated speed.

Minimizing the start-up latency

There are two ways to get a measurement that minimizes the impact of the start-up latency of the printer.

- Use a stopwatch to measure the elapsed time from when the first sheet is delivered to when the last sheet is delivered to the output tray.
- Take the start time and stop time from the sequencer for a larger block of jobs.

Using the second method, the same job as in the first example was submitted 10 times to measure the throughput for 2170 pages. Here is part of the log:

```
Sequencer restart at November 19, 1996 3:50:20 pm PST
Job #236 start, ftpadmin, 99995163.ps, November 19, 1996 3:52:22 pm PST
Printing duplex, 300 spi, 216 x 279 mm, 139 buf
Job #237 start, ftpadmin, 99995163.ps, November 19, 1996 3:53:58 pm PST
Job #236 stop, ftpadmin, 99995163.ps, November 19, 1996 3:54:34 pm PST
    pages: 217, decomp: 88.31, elapsed: 131.98
Job #238 start, ftpadmin, 99995163.ps, November 19, 1996 3:55:28 pm PST
Job #237 stop, ftpadmin, 99995163.ps, November 19, 1996 3:56:11 pm PST
    pages: 217, decomp: 84.58, elapsed: 132.81
Job #239 start, ftpadmin, 99995163.ps, November 19, 1996 3:56:58 pm PST
Job #238 stop, ftpadmin, 99995163.ps, November 19, 1996 3:57:48 pm PST
    pages: 217, decomp: 85.04, elapsed: 139.87
Job #240 start, ftpadmin, 99995163.ps, November 19, 1996 3:58:27 pm PST
Job #239 stop, ftpadmin, 99995163.ps, November 19, 1996 3:59:27 pm PST
    pages: 217, decomp: 84.39, elapsed: 148.88, compress: 3.88x, min free:
102400K
    compress pages: 3, expand pages: 0
Job #241 start, ftpadmin, 99995163.ps, November 19, 1996 4:00:04 pm PST
Job #240 stop, ftpadmin, 99995163.ps, November 19, 1996 4:01:04 pm PST
    pages: 217, decomp: 91.60, elapsed: 156.97, compress: 4.23x, min free:
101586K
    compress pages: 21, expand pages: 0
Job #242 start, ftpadmin, 99995163.ps, November 19, 1996 4:01:41 pm PST
Job #241 stop, ftpadmin, 99995163.ps, November 19, 1996 4:02:43 pm PST
    pages: 217, decomp: 90.62, elapsed: 158.70, compress: 4.05x, min free:
101849K
    compress pages: 22, expand pages: 0
(More)
Job #243 start, ftpadmin, 99995163.ps, November 19, 1996 4:03:21 pm PST
Job #242 stop, ftpadmin, 99995163.ps, November 19, 1996 4:04:20 pm PST
    pages: 217, decomp: 94.55, elapsed: 159.71, compress: 4.23x, min free:
101586K
    compress pages: 26, expand pages: 0
Job #244 start, ftpadmin, 99995163.ps, November 19, 1996 4:04:57 pm PST
Job #243 stop, ftpadmin, 99995163.ps, November 19, 1996 4:05:57 pm PST
    pages: 217, decomp: 88.65, elapsed: 156.45, compress: 3.91x, min free:
101784K
    compress pages: 14, expand pages: 0
```

```

Job #245 start, ftpadmin, 99995163.ps, November 19, 1996 4:06:34 pm PST
Job #244 stop, ftpadmin, 99995163.ps, November 19, 1996 4:07:31 pm PST
  pages: 217, decomp: 90.09, elapsed: 154.39, compress: 4.39x, min free:
101877K
  compress pages: 13, expand pages: 0
Job #245 stop, ftpadmin, 99995163.ps, November 19, 1996 4:09:08 pm PST
  pages: 217, decomp: 87.61, elapsed: 154.50, compress: 5.48x, min free:
101893K
  compress pages: 7, expand pages: 0

```

In the example shown in this log, here is the calculation:

The start time was: 4:09:08 pm

The stop time was: 10:23:31 pm

(This gives an elapsed time of 16 minutes and 30 seconds, or 990 seconds)

PPM = $60 \times 2170/990 = 131.5$ pages per minute

As you can see for the same job, the calculated throughput approaches the maximum speed of the printer as the start-up latency becomes less important and the calculation is closer to the actual sustained throughput of the job.

300 dpi versus 600 dpi performance

There is one additional issue to consider when running performance tests with the Model 96, 4635, or 180 systems. The above examples were run at 300 spots per inch resolution. When a block of jobs starts, the DocuPrint will report the printing resolution, the page size of the document, and the number of page buffers available in the software for the job. At 300 dpi, on 216 x 279 mm paper (UsLetter), 139 page buffers are reported allocated. This is consistent with a DocuPrint Printer Controller with 192 MB of memory installed.

When running jobs at 600 dpi, the amount of available page buffers available is 4 times smaller. This leads to a corresponding decrease in the overall performance of a job. Here is the sequencer log entry when the above job is run at 600 dpi:

```

Job #214 start, ftpadmin, 99995163.ps, November 19, 1996 1:10:37 pm PST
Printing duplex, 600 spi, 216 x 279 mm, 35 buf
Job #214 stop, ftpadmin, 99995163.ps, November 19, 1996 1:13:38 pm PST
  pages: 217, decomp: 147.92, elapsed: 181.47, compress: 15.08x, min
free: 101670K
  compress pages: 5, expand pages: 0

```

As shown above, only 35 page buffers are allocated at 600 dpi. The decomposition rate of this job at 600 dpi is:

PPM = $60 \times 217/147.92 = 88.0$ pages per minute,

which represents the maximum rate that this job can be printed at 600 dpi.

Setting page order

DocuPrint delivers documents with the pages face down in the order presented in the Page Description Language. The order can be changed by setting the PageOrder attribute.

If the Staple attribute is set, DocuPrint must deliver the document face up. In order to deliver the stapled document in the correct order, it must image the document in reverse page order. In order to image a document in reverse page order, the entire document must be processed before printing starts.

For the best print speed, ensure that each PostScript program has the pages in the correct order for the finishing requirement for the document:

- No finishing is required: PDL should be in ascending page order. PageOrder attribute should be set to ascend.
- Stapling is required: PDL should be in descending page order.
- Duplex printing is required: there should be an even number of pages. Page order should be set to descend.



Note: If you are using a third-party finishing device connected to DocuPrint by a bypass transport, the page delivery order is determined by the requirements of the third-party device (face up or face down). To maximize performance, place the pages in the PostScript master in the order in which they are required by the finishing device. □

Product features that affect print quality

You can improve the appearance of your documents by being aware of potential problems created through the use of proprietary PostScript extensions and device-dependent operators.

Proprietary PostScript extensions

When PostScript masters that use proprietary PostScript extensions to enable printer-specific features are printed on different PostScript printers, there may be appearance inconsistencies. For example, some versions of the Apple Macintosh PostScript driver download encrypted proprietary image “smoothing” operators to Apple LaserWriters. The downloaded PostScript code uses the **product** operator to determine if it is being used on a LaserWriter. If not, the proprietary code is bypassed by doing a **flushfile**. This allows the PostScript master to print on non-LaserWriter products. As a result, PostScript masters generated on a Macintosh with Apple proprietary features may produce output that varies between LaserWriter and non-LaserWriter PostScript printers.

Device-dependent operators

Some PostScript operators result in device-dependent PostScript files. “Device dependence” means that devices having different output characteristics may produce different-looking output even though they use the same software. This section documents the most serious examples of device dependence. The *PostScript Language Reference Manual*, second edition, lists all of the graphics state operators that are considered device-dependent.



Note: Depending on the emitter used, color-related operators may be used even for monochrome jobs. On DocuPrint NPS, color jobs undergo a color to monochrome mapping process. Therefore, if these operators are included in the PostScript jobs, they can affect the output. □

Gray shading—setscreen and setcolorscreen

The PostScript operators **setscreen** and **setcolorscreen** control the PostScript halftone software that simulates various intensity levels of gray and color inks. Since each PostScript product may have a different default halftone definition, the halftone patterns and gray scale range may differ also. Because **setscreen** is inherently device dependent (especially when used for pattern fills), PostScript masters look different on almost every different model of PostScript printer.

The operators are also used to perform pattern fills, since PostScript Level 1 does not have a pattern fill operator. (PostScript Level 2 has pattern fill operators.) As stated in the *PostScript Language Reference Manual*, first edition, “Remember that everything pertaining to halftones is, by definition, device-dependent. In general, when an application provides its own halftone specifications, it sacrifices portability. Associated with every device is a default halftone definition that is appropriate for most applications.”

In addition to the device-dependent nature of halftoning, a spot function is used by **setscreen** and **setcolorscreen** to determine the order of pixel darkening in the halftone cell. When two pixels have the same spot function value, their ordering values are determined arbitrarily. Duplicate spot function values are very common. In fact, almost all the various default spot functions generate duplicate values. Therefore, different PostScript implementations yield different halftone patterns, resulting in visual differences in the output.

Gray shading—settransfer and transfer function

The PostScript operators **settransfer** and **setcolortransfer** are used to change the procedure for mapping perceived color values in the output of the print device into specified color values in the PostScript master. PostScript devices use an internal transfer array or procedure that takes into account the printing characteristics of their marking engines in order to produce levels of color.

Transfer functions are called by the **setmykcolor**, **setbsbcolor**, **setrgbcolor**, and **setgray** operator before processing of the desired color level that is specified in the master. The transfer function takes a value from the stack and leaves another value on the stack for each color component (red, green, blue, and gray).

The PostScript language provides a scheme for overwriting the internal transfer function of a printing device by providing the **settransfer** and **setcolortransfer** operators. However, some Xerox PostScript devices do not allow you to overwrite their internal transfer function.

Typically, a master tries to replace the internal transfer function with a null transfer function such as:

`{ } settransfer`, or

`{ } { } { } setcolortransfer`

If either of the above procedures is successful, the transfer functions return the same color levels that are passed to them without modifying or mapping the level. On printers which do not allow the overwriting of the transfer function, the **settransfer** operator does not affect the mapping of gray values between the output of the print device and specified levels of color.



Note: **Settransfer** actually sets the transfer functions for all four color components (red, green, blue, and gray) to the same value. The **setcolortransfer** operator sets the transfer functions individually. □

Smooth curves—**setflat**

PostScript masters that use the PostScript operator **setflat** produce inconsistent output across different PostScript printers. **setflat** controls curve rendering smoothness. PostScript curve operators use cubic Bezier control points to define the curve shape. These curves can be rendered from straight line segments. Normally the line segments are so short that the curve appears smooth. The **setflat** operator indirectly controls the length of the straight line segments. As stated in the *PostScript Language Reference Manual*, second edition, “If the flatness parameter is large enough to cause visible straight line segments to appear, the result is unpredictable. **setflat** sets a graphics state parameter whose effect is device-dependent. It should not be used in a page description that is intended to be device-independent.”

Invisible strokes—**0 setlinewidth**

PostScript masters that use the PostScript operator **setlinewidth** are not consistent across different PostScript printers. **setlinewidth** controls the width of a stroked line. When **setlinewidth** is executed with an input of zero, it produces a line that is one pixel wide. On devices whose dot size is small, single-pixel-width lines may be invisible.

Scan conversion—**fill, eofill, and stroke**

Scan conversion algorithms are implementation-dependent, so different PostScript printers paint (“turn on”) different dots, resulting in output differences. For filled circles, PostScript printers differ in the dots they paint at the edge of the circle; thus, some printers produce slightly larger circles than others. For large circles this is not noticeable, but for small circles, it is.

Sections 2.2 and 6.5 of the *PostScript Language Reference Manual*, second edition, discuss scan conversion. Section 6.5 states that scan conversion details are not part of the PostScript standard.

8. Correcting stacking problems

This chapter describes stacker problems other than paper jams. It suggests corrective actions when printed sets are thrown around the stacker or the bin. (See “Clearing paper misfeeds and jams” for stacker paper jams.)

Symptom	Probable cause	Action
Papers are thrown around the stacker.	Someone unloaded paper by opening the top cover of the stacker bin.	Unload the bin following the normal procedure. See “Unloading Stacker bin” in <i>Guide to Performing Routine Maintenance</i> .
Paper stack falls over or slides around the bin	Excessive paper curl	Try adjusting for paper curl (See “Paper curl and paper jams” in <i>Guide to Performing Routine Maintenance</i>)
Printing stops and the printer console displays a message indicating that an incorrect paper size is loaded in a feeder tray.	Incorrect paper size or a damaged sheet.	<ol style="list-style-type: none">1. Check the paper in the indicated tray.2. If the paper is not the correct size, load the correct size paper or select another feeder tray containing the correct paper size. <p>If the paper size is correct, press the Continue button to resume printing.</p>

9. System unresponsive

This chapter describes problems in which your monitor shows no image, the printer does not respond when you press the Continue button, or the printer main window does not respond.

Symptom	Probable cause	Action
Blank display: pressing a key fails to restore image.	Monitor is switched off; brightness and contrast controls are misadjusted; or there is a more serious problem.	<ol style="list-style-type: none">1. Make sure that the monitor is switched on.2. Make sure that the brightness and contrast controls (if available) are turned far enough to the left to brighten the screen.3. If switch is on and controls are turned to the left, call the service representative.
You have cleared all faults that are listed on the printer control console, but the Attention light is still on and the following message is displayed: Output is stopped. See message at the System Display	There is an uncleared output fault.	Follow the instructions in the output message and press the Continue button.
Printer is totally unresponsive even after pressing the Continue button.	Unknown	Enter Restart Sequencer . If that fails to correct the problem, enter Restart System . If the printer is still unresponsive, call your service representative. Refer to <i>Guide to Configuring and Managing the System</i> for more information on Restart Sequencer.
The first job to print after a reboot or a diagnostics session takes 30 to 60 seconds longer than usual.	This is normal operation.	No action is needed. Subsequent jobs should print without a delay.

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