



Troubleshooting

To better help our customers - this HP LaserJet 2200 series troubleshooting page is simply a guide / additional information for your convenience, as you search for assistance in repairing your machine. Although this information is provided for your convenience it is recommended, for the most part, that a technician inspects your office equipment.

It is recommended to consult with a professional when ordering your printer part(s).

Chapter contents

Media-handling problems

- Print test pages
- Engine test
- Self test/configuration page
- Jam troubleshooting
- Media problems

Evaluate the test pages

- Status-log messages
- Verify installed options

Image-formation troubleshooting

- Image defect tables
- Repetitive defect ruler
- Half self test functional check
- Drum-rotation functional check

Media troubleshooting

- Determine the problem source:
 - Isolate a paper path
 - Isolate a media brand
 - Isolate a media type
- Evaluate media use practices
- Evaluate environmental conditions

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Media-handling problems

Print test pages

To confirm that the printer can pick and move print media, generate a self test/configuration page by pressing **GO** and **JOB CANCEL** simultaneously when the printer is in a ready state. If the printer cannot produce a self test/configuration page, generate an engine-test page. If an engine-test page does not print, see "Jam troubleshooting" on page 193.

Engine test

The engine test verifies that the print engine is functioning correctly. This test is very useful for isolating printer problems, because it does not involve the formatter. Because the engine test prints a full page of lines across the entire printable area, it is also useful for checking and adjusting registration.

The engine test prints from the first tray found that contains media and can be activated with the formatter installed or removed. See "Engine test" in chapter 3 for engine test procedures.

Note

Make sure that the toner cartridge is installed in the printer. Also, the print motor must be idle and the printer must be in standby mode.

In order to produce an engine test print, media must be loaded into the printer. The system checks for media in tray 2, then in tray 1, and finally in tray 3 (if installed). If media is loaded in both tray 1 and tray 2 the media will be duplexed.

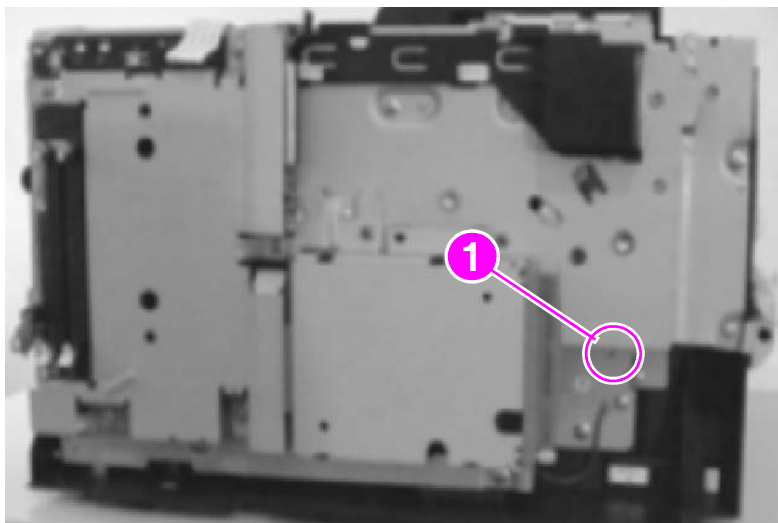


Figure 157. Engine test button

Self test/configuration page

Use the configuration page to view the current printer settings, to help troubleshoot printer problems, or to verify installation of optional accessories such as memory (DIMMs), JetDirect cards, and printer languages. See "Self test/configuration page" in chapter 3 for a sample page.

Note

If status log information exists, it will print in the status area of the configuration page. If an HP JetDirect print server EIO card is installed, a JetDirect configuration page will also be generated.

Jam troubleshooting

Jams occur in the printer when print media does not reach or clear a photosensor along the printer paper path within a specific amount of time. The following table contains general questions and topics to explore before troubleshooting.

Table 34. General jam troubleshooting questions

Problem	Action
What is the frequency of the jams (for example: continuous, one jam per 100 pages, one jam per 1000 pages)?	Verify with the customer. See “Troubleshooting with control-panel messages” on page 182 and “Status-log messages” on page 198, and evaluate the Status Log.
Do jams occur with a specific type of media?	Try using media that you know is of good quality. See “Media troubleshooting” on page 209
Where does the leading edge of the first sheet of media in the printer paper path stop when a jam occurs? Are any sheets damaged or torn?	Attempt to duplicate the problem. Inspect the paper path and all paper path mechanical assemblies located before the leading edge of the jam. Use the chapter 3 to aid in locating jams.
Is the customer loading the trays or cassettes correctly?	Observe the customer loading media. Instruct the customer to break the ream, and not to fan the media. See “Media troubleshooting” on page 209
Is the customer overfilling the trays or cassettes?	Observe the customer loading media in the trays or cassettes. Make sure that the media is not over the maximum fill marks in the trays or cassettes.
Are the tray guides set correctly?	Make sure all front and rear tray 2 and optional 250-sheet or 500-sheet feeder guides are set correctly.
Does the printer need cleaning?	Inspect the paper path and paper-path rollers.

Locating and correcting jams

See "Pickup/feed system" in chapter 5 for an account of the operation of the paper-feed system. After reading that section, use the diagrams listed below to locate and troubleshoot the possible causes of the jam.

- See figure 165, “Printer paper path, sensors, and signals,” on page 220.
- See figure 166, “Tray 3 paper path, sensors, and signal lever,” on page 221.
- See figure 167, “General printer-component locations (1 of 2),” on page 222.

The process of correcting jams might be simplified by categorizing jams according to frequency, location, and type of jam. See figure 158, “Frequency of jams process flow,” on page 194 and figure 159, “Location of jams” on page 195.

Frequency of jams process flow

Use the troubleshooting process flow figure to help determine the cause of jams. See figure 154, "Troubleshooting process flow," on page 180. Jams in the paper path that occur intermittently are most often related to a deficiency in the media or environment. See "Media troubleshooting" on page 209 for information about these defects.

Paper-path jams that occur frequently, and in the same location of the printer, are most likely the result of a hardware problem.

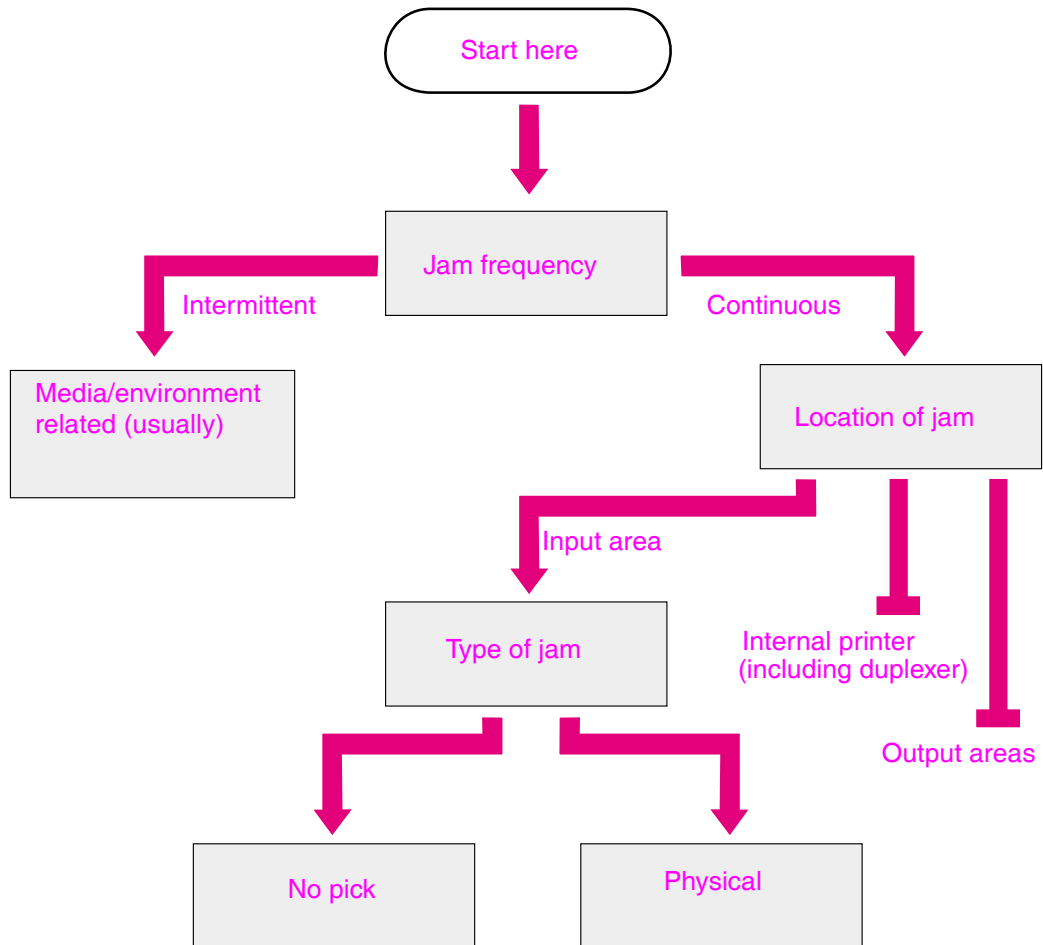


Figure 158. Frequency of jams process flow

Location of jams

Frequently occurring jams can be further categorized by their location in the printer. The four major areas of the printer are the input area, the internal area, the duplexer, and the output area. Because the pick-and-feed operation is almost identical for trays 1, 2, and 3, jams in the input area follow the same pattern.

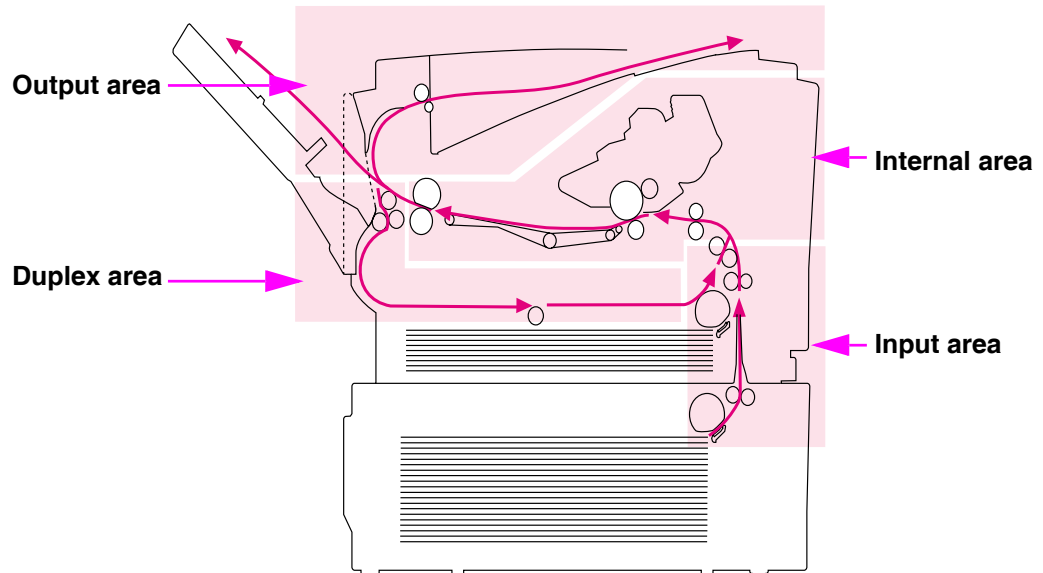


Figure 159. Location of jams

Type of jam

Input jams can result from either the failure of the printer to pick the media from a tray, or the failure to move the media through the input area of the printer. Failure to pick up the media can result from either a defect in the pickup roller or in the separation pad.

The following tables summarize the actions for input, internal, duplexer, and output jams.

Table 35. Input jams

Possible cause	Recommended action
Tray photo sensors are blocked or inoperative	Inspect and replace if necessary PS23005 (tray 1) PS1305 (tray 2) PS2001 (250 sheet tray 3) PS2103 (500 sheet tray 3)
Pickup roller is dirty or inoperative	Clean or replace RB2-2900-000CN (tray 1) RB2-2891-000CN (tray 2) RB2-2891-000CN (250-sheet feeder, tray 3) RB2-6304-000CN(500-sheet feeder, tray 3)
Pickup assembly is defective	Replace RG5-4128-000CN (tray 1) RG5-5551-000CN (tray 2)
Separation pad	Inspect and replace if necessary RF5-3272-000CN (tray 1) RB2-6349-000CN (tray 2) RB2-3008-000CN (250-sheet tray 3) RB2-6474-000CN (500-sheet tray 3)
Feed rollers	Inspect and replace if necessary RB2-3490-0000CN (tray 2 and 250-sheet feeder, tray 3) RB2-6476-0000CN (500 sheet feeder, tray 3)
Solenoids	Inspect and replace if necessary SL2901908501 (tray 2) SL2001 (250 sheet tray 3) SL2002 (500 sheet tray 3)
Paper feeder PCB (250-sheet tray 3) is defective Paper feeder PCB (500-sheet tray 3) is defective	Replace RG5-4277-000CN (250 sheet tray 3) Replace RG5-5630-000CN (500 sheet tray 3)
Engine controller PCB	Replace RG5-5567-000CN
Power supply assembly	Replace RG5-5563-000CN (110 V) Replace RG5-5573-000CN (220 V)

Table 36. Internal jams

Possible cause	Recommended action
Tray photo sensors are blocked or inoperative	Inspect and replace if necessary PS23005 (tray 1) PS1305 (tray 2) PS2001 (250-sheet tray 3) PS2103 (500-sheet tray 3)
Registration assembly is defective	Replace RG5-5556-000CN
Transfer Roller assembly is defective	Replace RG5-5581-000CN
Toner cartridge is defective	Inspect and replace if necessary C4096A
Transport assembly is defective	Inspect and replace if necessary RB2-6272-000CN (belt) RB2-6272-000CN (belt)

Table 36. Internal jams (continued)

Possible cause	Recommended action
Engine controller PCB	Replace RG5-5567-000CN
Power supply assembly	Replace RG5-5563-000CN (110 V) Replace RG5-5573-000CN (220 V)
Fusing assembly is defective	Replace (includes PS2301) RG5-5559-000CN (110 V) RG5-5569-000CN (220 V)

Table 37. Duplex jams

Possible cause	Recommended action
Unlatched duplexer tray	Latch duplexer tray
Reverse-paper sensor Duplexer pickup paper sensor	Replace PS501 Replace PS503
Position guide assembly	Replace RG5-5553-000CN
Engine controller PCB	Replace RG5-5567-000CN
Power supply assembly	Replace RG5-5563-000CN (110 V) Replace RG5-5573-000CN (220 V)

Table 38. Output jams

Possible cause	Recommended action
Fusing assembly is defective	Replace (includes PS503) RG5-5559-000CN (110 V) RG5-5569-000CN (220 V)
Upper/lower face-down delivery rollers	RG5-5541-000CN RG5-5542-000CN RF5-3275-000CN
Engine controller PCB	Replace RG5-5567-000CN
Power supply assembly	Replace RG5-5563-000CN (110 V) Replace RG5-5573-000CN (220 V)

Media problems

If jams persist, even when the print engine is fully functional, the problem might be with the quality and type of media being used. See “Media troubleshooting” on page 209

Evaluate the test pages

Status-log messages

Use the status log to diagnose and troubleshoot intermittent printer errors, or to gain information about multiple error conditions that occur simultaneously. You can either display or print the event log.

Status log information prints automatically on the self test/configuration page. The status log retains the printer's last 10 error messages. (The status log only appears when errors have been registered.)

Status-log messages are listed in "Control-panel light messages" on page 182, according to their corresponding error light configuration. For a complete listing of status codes, see the *HP LaserJet 2200 series printer software technical reference*, (C7058-90937). The complete PDL status code listing is contained in the appendix of the printer job language technical reference. Also refer to Hewlett-Packard's website: www.hp.com.

Hint

If the message requesting that you load a tray persists, or if a message indicates that a previous print job is still in the printer's memory, press **GO** to print or press **JOB CANCEL** to clear the job from the printer memory.

Verify installed options

Verify all options installed in the printer are reflected in the configuration page. If an installed device is not shown, reseal the device and print a new configuration page.

Image-formation troubleshooting

When working with customers, obtain a print sample before troubleshooting the printer. Ask the customer to describe the quality expected from the printer. The print sample also helps clarify the customer's description of the problem.

Often an image-formation problem can be linked to media that is outside the specifications Hewlett-Packard has established for optimum printer performance. See "Media troubleshooting" on page 209 for help with persistent image-formation problems.

Table 39. Image-quality checks

Image-quality checks	Action
Does the problem repeat on the page?	Use the "Repetitive defect ruler" on page 207.
Is the toner cartridge full and is it manufactured by HP?	See "Check the toner cartridge" on page 200.
Is the customer using print media that meets all HP specification standards?	See "Media specifications" in chapter 2.
Is the print sample similar to those in the image defect tables?	Compare the sample to the tables and perform the actions recommended in the "Image defect tables" on page 201.
Is the problem on the toner cartridge or the transfer roller?	Perform the "Half self test functional check" on page 208 to determine the location of the defect. If a dark and distinct toner image is present on the drum's surface, assume that the first four functions of the electrophotographic process are functioning (cleaning, conditioning, writing, and developing—See "Image formation system" in chapter 5), and troubleshoot the failure as a transfer or fusing problem.
Is the customer using a media type recommended for this product?	See "Media troubleshooting" on page 209.

Check the toner cartridge

Image-formation defects are often the result of problems with the toner cartridge. Use the following list to verify that the toner cartridge is still operating correctly.

Perform all of the following checks before replacing the toner cartridge.

- Verify that the toner cartridge has toner. The full toner cartridge weight is approximately 1105 grams; empty weight is approximately 900 grams.
- Check the toner cartridge to see if it has been disassembled or refilled.
- Verify that the toner cartridge is seated properly in the printer cavity.
- Inspect the cartridge for toner leaking through worn seals. (Manual rotation of the drum can cause internal damage and toner spills can result.)
- White areas on the page can indicate the drum has been exposed to light for too long.

Note

The toner cartridge is rated for 5,000 images at 5 percent coverage. Check the surface of the photosensitive drum in the cartridge to see if it has been damaged or scratched. Touching the drum will contaminate the photosensitive surface and may cause spotting and defects during printing.

EconoMode

EconoMode creates draft-quality printing by reducing the amount of toner on the printed page by up to 50 percent. Advise the customer to turn EconoMode on or off either from the printer driver or a software application.

CAUTION

Hewlett-Packard does not recommend full-time use of EconoMode. If EconoMode is used full-time, it is possible the toner supply will out last the mechanical parts in the toner cartridge.

Image defect tables

The printer output quality is subject to user judgment. This section of the manual helps define print-quality defects and the factors that affect print quality.

The print samples shown in the following figures illustrate some print-quality defects. Keep copies of print-quality defects you encounter in the field and an explanation of their causes to use for future reference.

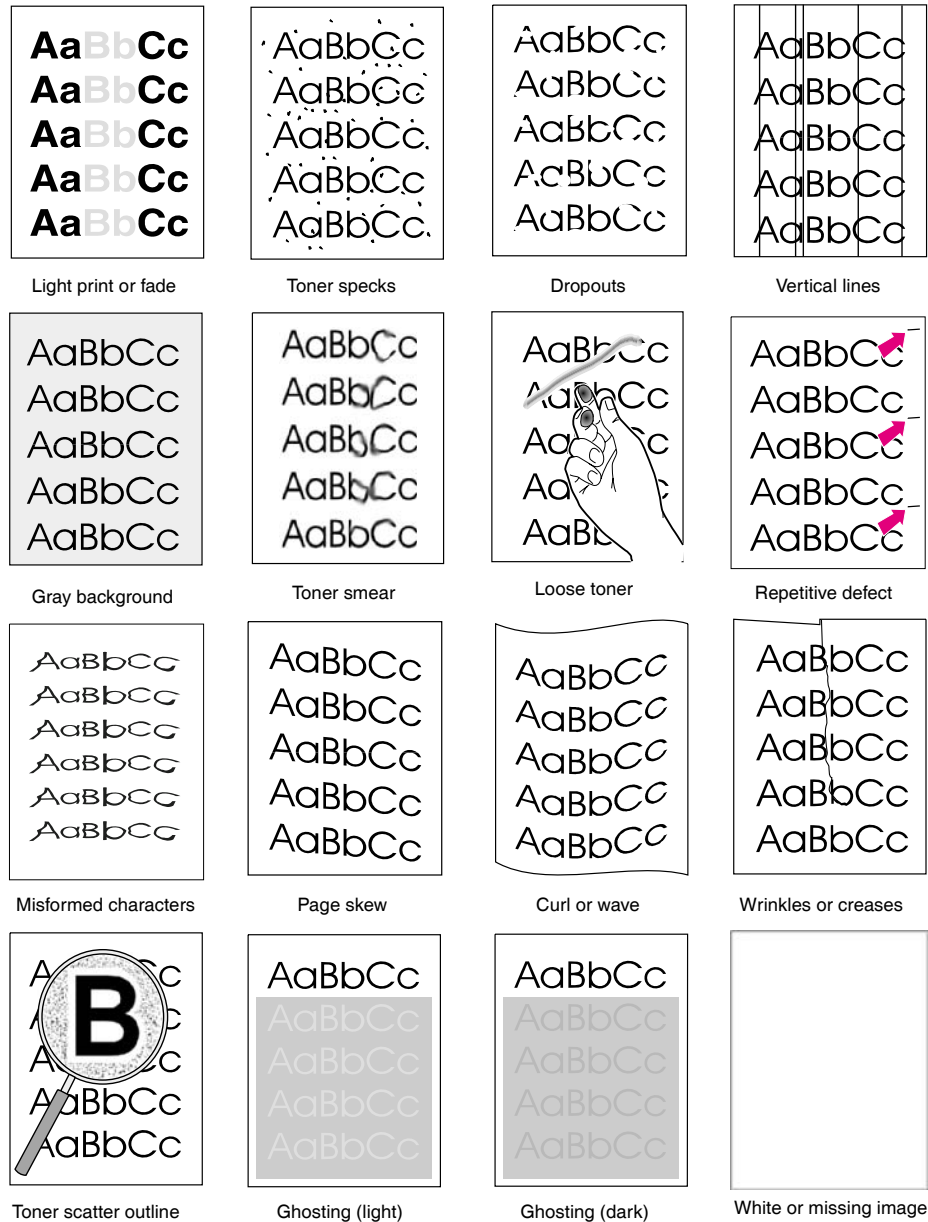


Figure 160. Image defects examples

Table 40. Image defects

Problem	Cause	Solution
<p>Light print, or fade</p> <p>AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc</p>	Wrong toner density setting.	<ul style="list-style-type: none"> Through the software, adjust the toner density setting. Make sure EconoMode is off.
	Print media does not meet printer specifications or is stored improperly.	<ul style="list-style-type: none"> Print a few more pages to see if the problem corrects itself. Turn over the stack of media in the tray. Also try rotating the media 180 degrees. If the print media does not meet HP specifications, replace the media and advise the customer to use the recommended print media and store it properly.
	The toner supply is low	<ul style="list-style-type: none"> Temporarily extend the toner cartridge life by redistributing the toner. If this does not improve the print quality, install a new toner cartridge.
<p>Toner specks</p> <p>AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc</p>	The transfer roller is dirty.	<ul style="list-style-type: none"> Clean the inside of the printer or use the printer's cleaning page.
	Print media does not meet printer specifications or is stored improperly.	<ul style="list-style-type: none"> Print a few more pages to see if the problem corrects itself. Turn over the stack of media in the tray. Also try rotating the media 180 degrees. If the print media does not meet HP specifications, replace the media and advise the customer to use the recommended print media and store it properly.
	The paper path is dirty.	<ul style="list-style-type: none"> Clean the inside of the printer or use the printer's cleaning page.
<p>Dropouts</p> <p>AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc</p>	Single sheet of paper is defective.	<ul style="list-style-type: none"> Try to reprint the job.
	Moisture content of the paper is uneven or the paper has moist spots on it.	<ul style="list-style-type: none"> Try paper from a different source.
	Paper lot is bad.	<ul style="list-style-type: none"> Try a different kind or brand of paper.
	The toner cartridge might be defective.	<ul style="list-style-type: none"> Check vertical repetitive defects. Replace the toner cartridge.
<p>Vertical lines</p> <p>AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc</p>	Defective toner cartridge.	<ul style="list-style-type: none"> Replace the toner cartridge.
	Contaminated fuser entrance guide.	<ul style="list-style-type: none"> Clean the guide.
	Scratches on the fuser.	<ul style="list-style-type: none"> Replace the fuser.

Table 40. Image defects (continued)



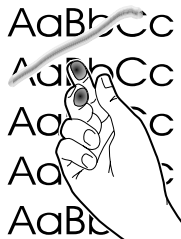
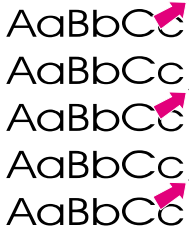
Problem	Cause	Solution
<p>Gray background</p> 	<p>Print media does not meet printer specifications or is stored improperly.</p> <p>Printer's operating environment does not meet specifications.</p> <p>Wrong toner density setting.</p> <p>Faulty toner cartridge.</p>	<ul style="list-style-type: none"> Print a few more pages to see if the problem corrects itself. Turn over the stack of media in the tray. Also try rotating the media 180 degrees. If the print media does not meet HP specifications, replace the paper. Make sure the printer's operating environment meets specifications. Through the software, adjust the toner density setting. Make sure EconoMode is off. Replace the toner cartridge.
<p>Toner smear</p> 	<p>Contamination in the printer.</p> <p>Paper might be too smooth.</p> <p>Defective toner cartridge.</p> <p>Wrong fuser setting for paper type.</p>	<ul style="list-style-type: none"> Print a few more pages to see if the problem corrects itself. Clean the inside of the printer or use the printer's cleaning page. Check the paper (or other print media) type and quality. Replace the toner cartridge. (See instructions with the toner cartridge.) From the control panel, change the fuser mode setting or choose another paper type from the printer driver.
<p>Loose toner</p> 	<p>Contamination in the printer.</p> <p>Toner cartridge is defective.</p> <p>Paper might be too smooth.</p> <p>Defective fuser.</p>	<ul style="list-style-type: none"> Print a few more pages to see if the problem corrects itself. Clean the inside of the printer. Replace the toner cartridge. Check the paper (or other print media) type and quality. Replace the fuser.
<p>Repetitive defects</p> 	<p>Contamination or defect on internal parts.</p> <p>Toner cartridge is damaged.</p> <p>Defective fuser.</p>	<ul style="list-style-type: none"> Try printing additional pages. Clean the inside of the printer. See the "Repetitive defect ruler" on page 208. Replace the toner cartridge. Replace the fuser.

Table 40. Image defects (continued)

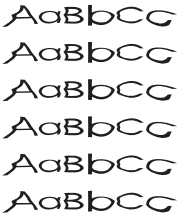

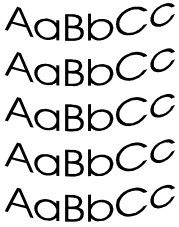
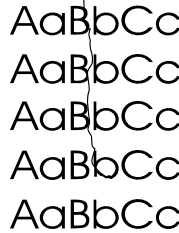
Problem	Cause	Solution
<p>Misformed characters</p> 	<p>Maintenance due.</p>	<ul style="list-style-type: none"> ● Print a few more pages to see if the problem corrects itself. ● Make sure that the environmental specifications for the printer are being met. ● Print a demo page to verify that the problem persists. ● Perform maintenance actions as required.
	<p>Paper might be too smooth.</p>	<ul style="list-style-type: none"> ● Check the paper (or other print media) type and quality.
<p>Page skew</p> 	<p>Print media does not meet printer specifications or is stored improperly.</p>	<ul style="list-style-type: none"> ● Print a few more pages to see if the problem corrects itself. ● Verify that there are no torn pieces of media inside the printer. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media.
	<p>Print media is not loaded correctly or trays are not adjusted properly.</p>	<ul style="list-style-type: none"> ● Make sure print media is loaded correctly and that the guides fit properly against the media stack.
	<p>Registration assembly is improperly installed.</p>	<ul style="list-style-type: none"> ● Be sure that the registration assembly is installed correctly.
<p>Curl or wave</p> 	<p>Print media does not meet printer specifications or is stored improperly.</p>	<ul style="list-style-type: none"> ● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media.
	<p>Printer's operating environment does not meet specifications.</p>	<ul style="list-style-type: none"> ● Make sure the printer's operating environment meets specifications.
	<p>Wrong output bin.</p>	<ul style="list-style-type: none"> ● Print to a different output bin (top or rear output bin).
<p>Wrinkles or creases</p> 	<p>Print media does not meet printer specifications or is stored improperly.</p>	<ul style="list-style-type: none"> ● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet hp specifications, replace the paper.
	<p>Print media is loaded incorrectly.</p>	<ul style="list-style-type: none"> ● Make sure print media is loaded correctly and that the guides fit properly against the media stack.
	<p>Wrong tray.</p>	<ul style="list-style-type: none"> ● Print from a different tray (such as tray 1).
	<p>Wrong output bin for print media type.</p>	<ul style="list-style-type: none"> ● Print to a different output bin (top or rear output bin).

Table 40. Image defects (continued)

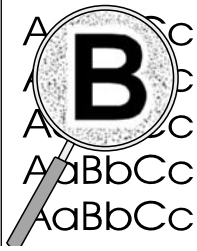


Problem	Cause	Solution
<p>Toner scatter outline</p> 	<p>Print media does not meet printer specifications or is stored improperly.</p> <p>Maintenance due.</p>	<ul style="list-style-type: none"> ● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the paper. <ul style="list-style-type: none"> ● Print a few more pages to see if the problem corrects itself. ● Print a demo page to verify problem persists. ● Perform maintenance actions as required.
<p>Ghosting (light)</p> 	<p>This type of defect might occur when using preprinted forms, a large quantity of narrow media, or a fuser mode that is set too high for your media.</p>	<ul style="list-style-type: none"> ● Print a few more pages and see if the problem corrects itself. ● Make sure that print media type and quality meet HP specifications. ● If the defect occurs later in a print job, turn the printer off for ten minutes, and then turn the printer on to restart the print job. ● Check your fuser mode.
<p>Ghosting (dark)</p> 	<p>This type of defect might occur when using preprinted forms, a large quantity of narrow media, or a fuser mode that is set too high for your media.</p>	<ul style="list-style-type: none"> ● Print a few more pages and see if the problem corrects itself. ● Make sure that print media type and quality meet HP specifications. ● If the defect occurs later in a print job, turn the printer off for ten minutes, and then turn the printer on to restart the print job. ● Check your fuser mode.

Table 40. Image defects (continued)

Problem	Cause	Solution
White or missing image	No toner is available for print.	<ul style="list-style-type: none"> Remove sealing tape or replace the toner cartridge.
	Defective laser shutter.	<ul style="list-style-type: none"> Check that the laser shutter operates freely when the toner cartridge is installed.
	Toner cartridge guide damaged, improperly positioned, or missing.	<ul style="list-style-type: none"> Make sure the guide is installed properly above the toner cartridge.
	No transfer roller voltage.	<ul style="list-style-type: none"> Without transfer roller voltage, toner cannot be attracted from the surface of the drum to the print media. Perform the half self test functional check to check all other electrophotographic processes. See “Half self test functional check” on page 208. Replace the transfer roller if necessary.
	No developing bias.	<ul style="list-style-type: none"> Clean the high-voltage power supply contacts. With no developing bias charge, toner is not attracted to the drum. Replace the power supply.
	No drum ground path.	<ul style="list-style-type: none"> With no ground path, the drum cannot discharge. The negative charge on the drum repels toner, and leaves a white page with bubble print. Check the drum ground spring and reconnect it, if necessary. Replace the power supply PCB.
	Defective laser scanner cable assembly.	<ul style="list-style-type: none"> Low-level signals exchanged between the laser/scanner assembly and the engine controller PCB might be affecting laser output. Replace the laser/scanner cable assembly.

Repetitive defect ruler

Repetitive print defects are usually caused by a specific roller in the printer or the toner cartridge. Use the figure below to isolate the cause of repetitive print defects. Align the first occurrence of the defect with the top of the “ruler” (at the top or bottom of the misprinted page), and measure to the next occurrence of the defect to determine the roller in question. When the defect pattern matches the pattern of the ruler, replace the indicated roller.

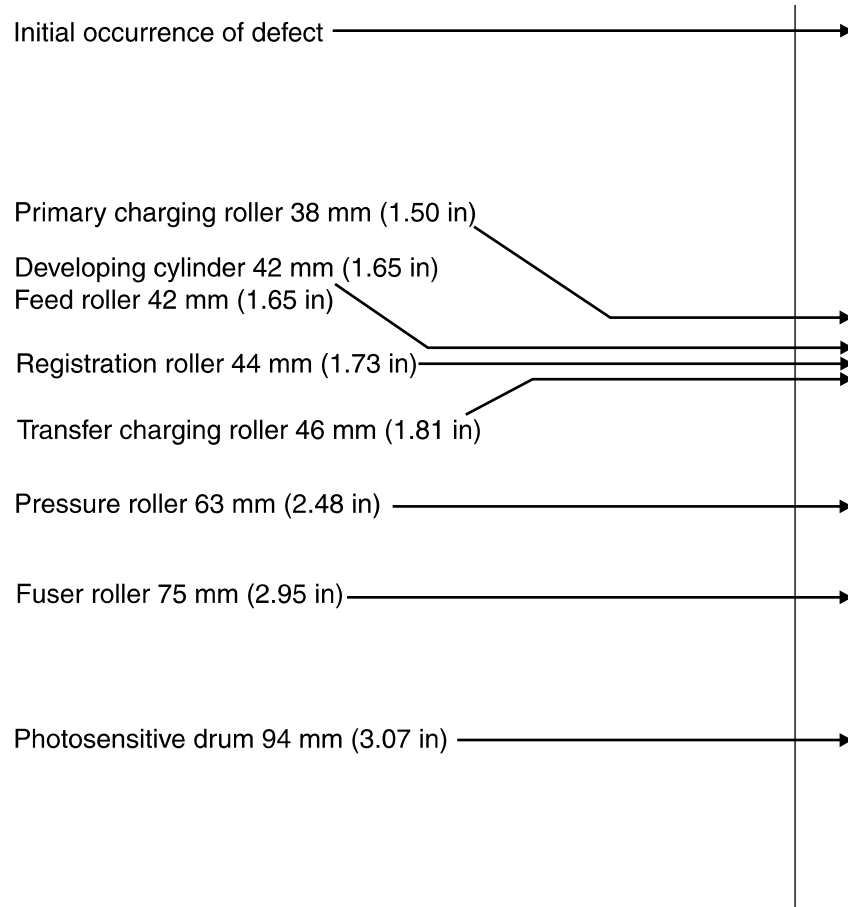


Figure 161. Repetitive defect ruler

Half self test functional check

The electrophotographic process can be subdivided into the following stages:

- Cleaning (removes excess toner from drum surface)
- Conditioning (places a uniform electrical charge on drum)
- Writing (laser strikes surface of drum to create latent image)
- Developing (forms the toner image on drum)
- Transferring (charges transfer the image to paper)
- Fusing (heat and pressure produces a permanent image)

The purpose of the half self test check is to determine which process is malfunctioning. Perform the test as follows:

Step 1 Print a configuration page from tray 1.

Step 2 Open the top cover after the trailing edge of the paper enters the printer. At this point, the leading edge of the paper should have advanced beyond the toner cartridge.

Step 3 Remove the toner cartridge.

Step 4 Open the toner cartridge drum shield to view the drum surface.

If a dark and distinct toner image is present on the drum's surface, assume that the first four functions of the electrophotographic process are functioning (cleaning, conditioning, writing, and developing) and troubleshoot the failure as a transfer or fusing problem.

If no image is present on the photosensitive drum, perform the drum rotation functional check.

Drum-rotation functional check

The photosensitive drum, located in the toner cartridge, must rotate for the print process to work. The photosensitive drum receives its drive from the main drive assembly. To verify whether the drum is rotating:

- 1 Open the top cover.
- 2 Remove the toner cartridge.
- 3 Mark the cartridge drive gear with a felt-tipped marker. Note the position of the mark.
- 4 Install the toner cartridge and close the top cover. The start-up sequence should rotate the drum enough to move the mark.
- 5 Open the printer and inspect the gear that was marked in step 3. Verify that the mark moved. If the mark did not move, inspect the main drive assembly to make sure it is meshing with the toner cartridge gears. If the drive gears function and the drum does not move, replace the toner cartridge.

Note

This test is especially important when the customer is using refilled toner cartridges.

Media troubleshooting

Media defects can cause jams and image defects. If the previously described conditions are corrected and do not eliminate the printing problem, continue to investigate the media as the source of the defect.

Problems with print media are sometimes difficult to detect. Follow a standard troubleshooting procedure to help isolate media-related problems. The steps to follow are:

- “Determine the problem source: print media or printer” on page 209.
- “Isolate a paper path” on page 209.
- “Isolate a media brand” on page 210.
- “Isolate a media type” on page 211.
- “Evaluate media use practices” on page 215.
- “Evaluate environmental conditions” on page 215.

Determine the problem source: print media or printer

When determining the cause of a printer failure, a distinction must be made between problems that relate to the printer itself and those that involve print media. Often a problem that seems to be related to the printer is actually a matter of poor print-media selection or handling. To determine if a problem is caused by the printer or by the media, try a few simple steps to remedy the situation:

- Turn media over in the tray to print on the reverse side.
- Rotate sheets 180 degrees (end to end) to feed with a different leading edge.

If the symptoms cease, or change in some way, it can be assumed that the problems are caused by the print media.

Isolate a paper path

Try using the straightest paper path

Some problems can be avoided by using the straightest available paper path. Usually this means paper feeds from the upper paper tray or manual feeder, and exits into the rear output bin (if available). This path is recommended for envelopes and media with a heavy basis weight.

Determine if the problem is caused by duplexing

Paper that has just made a pass through the printer can show increased media curl. Media curl increases image dropout, and creates pickup and stacking problems. When the second pass is made, print media might not meet the specifications for moisture and curl. Dry paper can hold static charges that affect print quality and stacking of the duplexed page. Media shrinkage resulting from a second pass through the printer can cause image misalignment on the duplexed page.

Isolate the source of the jam

Define the source of the media that is jamming:

- tray 1
- tray 2
- tray 3 (250-sheet or 500-sheet)
- duplexer

Determine where media jams occur

Check where media stops when a jam occurs. Types of jams include:

- input paper jams
- internal paper-path jams
- duplexer
- output-bin jams

Determine whether the printer is experiencing misfeeds or multifeed jams

The following are some possible causes of misfeeds or multifeed jams:

- The media might be too stiff. Check basis weight and measure caliper. See "Basis-weight field test" in chapter 9 and "Caliper field test" in chapter 2.
- The paper might be too smooth. Check the finish.
- The paper might be too heavy or too light. Check basis weight.
- The customer might be attempting to print embossed paper, pre printed forms, or perforated paper that does not meet HP specifications. See "Isolate a media brand" on page 210 below or details about issues involved in printing on embossed paper.
- The paper might be loaded incorrectly. Turn over the sheets in the paper tray to determine if in-ream curl is causing misfeeds.
- The customer might be fanning media before loading it into the tray.
- The customer might be adding media in small amounts. Do not add small amounts of media or mix types of media in the tray.
- The printer or media storage environment might be too humid or too dry. (As a result, media might be too moist or too dry.) Determine if this is the case and advise the customer.

Isolate a media brand

If the printer jams with only one brand of media:

- Try switching media brands.
- If the paper ream in use appears to be old, open a fresh ream of the same paper and load it properly into the printer. If the problem disappears, investigate storage and handling conditions.

Isolate a media type

When jams and other problems occur frequently, it is often because the customer is using a special paper. Customers must only use print media that conforms to all Hewlett-Packard specifications, and should always test media before purchasing large quantities. Media should be tested before storage to verify quality printing results. Then, if problems arise, storage or handling conditions can isolate the most likely cause. Some types of media that might cause problems are:

- preprinted forms and special letterhead
- embossed paper
- perforated paper
- adhesive labels
- envelopes
- transparencies
- chemically treated paper
- synthetic paper
- coated paper
- other special media

Preprinted forms and special letterhead

Many preprinted forms and special letterhead papers perform well in HP LaserJet printers. However, these papers undergo processes that alter their original characteristics, and care must be taken to ensure they conform to HP specifications. All special papers should be wrapped in moisture-proof wrapping when purchased from the paper converter or printing house.

Forms and letterhead must be printed with inks that conform to the following specifications:

- Only use ink that is heat-resistant, and that will not melt, scorch, or release hazardous emissions when subjected to 200 degrees C (392 degrees F) for 0.1 second.
- Inks must have resistance to silicon oils, and must not be affected by resin components in toner.
- Inks must not be flammable.
- Inks must not “offset” (transfer from the printed paper onto the printer, contaminating internal printer components). The principle cause of offset is ink that is not fully dried or that cannot withstand the printer fusing temperature.

Note

Do not use low-temperature inks (the kind used with thermography).

Hint

Do not purchase more media than can be easily used in a short time (about 3 months). Media stored for long periods experiences heat and moisture extremes that can be damaging. Planning is important to prevent damage to a large supply of media.

Hewlett-Packard neither warrants nor recommends the use of a particular brand of paper or print media. Media properties are subject to manufacturing changes, and Hewlett-Packard has no control over such changes. The customer assumes all responsibility for the quality and performance of media. Although testing media helps to characterize its performance, process quality control by the manufacturer.

Embossed media

Embossed media is not recommended for use in HP LaserJet printers. Media is embossed by stamping an image into the media by compressing the media fibers together at approximately 200 degrees C (392 degrees F), and sometimes by applying a thin metal foil to the surface. The printer fusing process can loosen the foil; loose foil can interfere with the mechanical and electronic operation of the printer.

Embossed paper, with or without foil, can also cause multifeed jams. Multiple embossed print media sheets tend to stick to one another.

Media with cutouts or perforations

Avoid media with cutouts or perforations for these reasons:

- Cut fibers absorb more moisture and can increase waviness and media curl. This decreases the print quality near the cutout or perforated area.
- The cutting knife leaves a sharp edge on the cutout or perforation. If this sharp edge is facing the toner cartridge drum during printing it can scratch the drum surface.
- If printing occurs over a cutout hole the transfer roller is contaminated with unused toner. Light streaks can result on the paper from the contaminated roller.

Adhesive labels

Labels are defined as media with a pressure-sensitive adhesive backing. Label stock includes the top sheet, the adhesive, and the carrier sheet (also referred to as the backing). To prevent media jams and feed problems, always use the rear output tray when printing on labels. You must use the following guide lines when using labels:

- Labels must be cut long grain (as opposed to short grain).
- Labels must totally cover the carrier sheet (no spaces between the labels).
- Labels must contain only acrylic-based adhesives.
- Labels must contain no excessive adhesive. (Adhesive from some labels can cause jamming resulting from buildup in the printer mechanism. The adhesive should not come into direct contact with the printer at any time.)
- Labels must meet Hewlett-Packard specifications for fusing compatibility.
- Labels must meet Hewlett-Packard specifications for caliper.
- Labels must have a carrier sheet that is not too smooth (which can cause the feed rollers to slip).

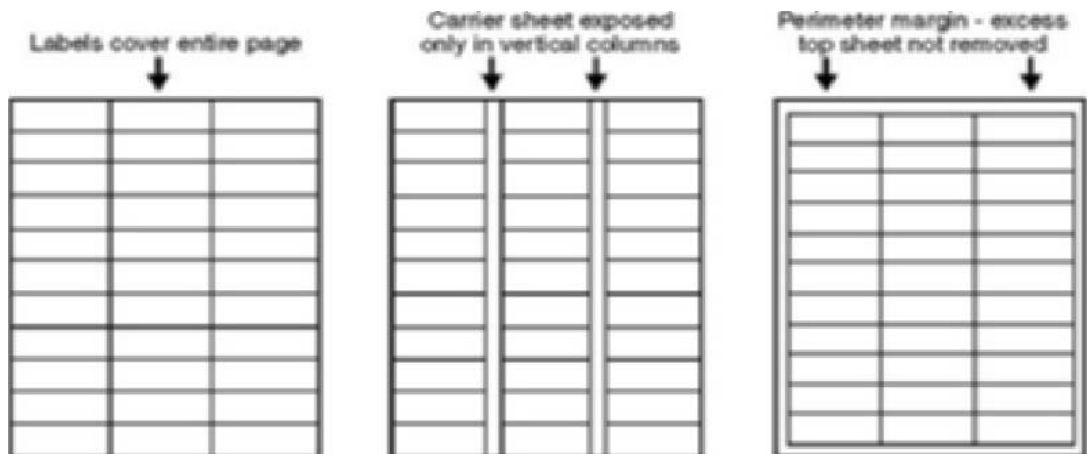


Figure 162. Adhesive labels

Envelopes

Because of the variety of folds and cuts available it is difficult to specify the types of envelopes that will perform well with HP LaserJet printers. It is very important to test a sample envelope before purchasing a large quantity. The specifications for media also apply to envelopes. Avoid envelopes that contain contact adhesives.

Following are a few recommendations for feeding envelopes:

- Closely inspect the leading edge of the envelopes before feeding them into the printer. Verify the leading edge is flat. Watch for envelope curl and loose folds. If necessary, flatten the leading edge of the envelope before feeding.
- Be patient! In manual-feed mode, the printer displays a message when prepared to accept the next envelope. Always wait for this message to appear before loading or feeding envelopes into the printer.
- Do not allow a large quantity of envelopes to accumulate in the output tray. If too many envelopes accumulate, they can interfere with the output path.
- Use the rear output tray when printing envelopes.

The main causes of problems with envelopes on HP LaserJet printers are:

- folds (two or more thicknesses of paper)
- edge creases (sharp or rounded)
- glued edges (sealing when fused)
- uneven printing surfaces

For fewer problems, follow these guidelines:

- Corner folds must be well-creased, and contain no more than two thicknesses of paper.
- Envelopes must lie flat.
- Paper grain should be diagonal.
- Adhesives must meet HP specifications for fusing compatibility.
- Basis weight must not exceed 11 kg (28 lb).
- Under no circumstances should envelopes have clasps, snaps, or windows, or use synthetic materials. Severe damage to the printer can result.

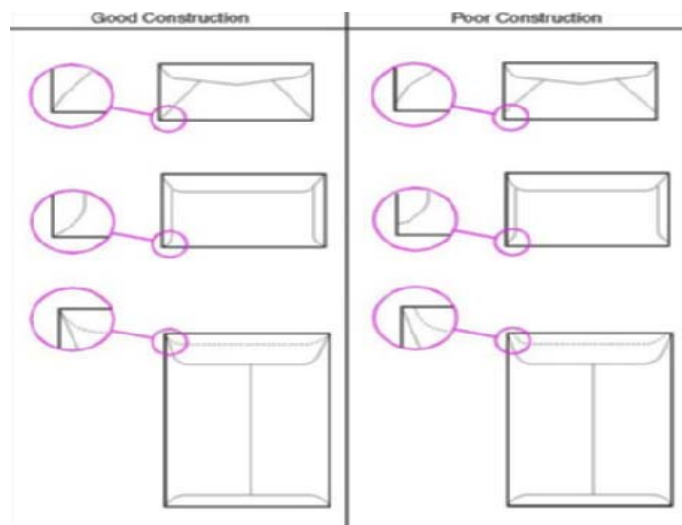


Figure 163. Envelope sample

Transparencies

Printing on transparencies presents a special set of challenges. The surface resistance of a transparency can be infinite, causing the transparency to act like paper with 0 percent moisture content. This can result in streaks and smudging. Static charges can accumulate on some transparent stock and cause multifeed jams. Also, certain brands and types of transparencies do not tolerate exposure to the fuser.

The user should only select transparencies that meet HP specifications. Among the common precautions are:

- Print transparencies to the top output bin to avoid jams.
- Transparencies must have correct resistivity (not built-up static charge).
- Transparencies must meet HP specifications for fusing compatibility.
- Each sheet should be removed from the tray and placed on a flat surface before printing the next sheet. This will keep the toner from rubbing off from the one sheet to the sheet before it has had time to cool.

Chemically treated media

Coatings such as lacquers, polymers, laminations, or other chemicals protect the paper but can cause problems in the fuser and transfer areas of Hewlett-Packard LaserJet printers. The surface resistivity and moisture content can be greatly altered, resulting in print-quality problems. Hard surface coatings increase wear on the rollers and media guides. All chemically treated media must meet Hewlett-Packard specifications for fusing compatibility.

Synthetic media

Synthetic medias (those manufactured from man-made fibers) do not perform as well as bond media in any printer, especially Hewlett-Packard LaserJet printers. All synthetic media must meet Hewlett-Packard specifications, especially for caliper and fusing compatibility.

Coated media

Do not use coated media. Most coated media does not meet specifications for fusing compatibility and other specifications for HP LaserJet printers.

Other special media

- 1 Odd sizes. Check minimum and maximum supported sizes in chapter 2.
- 2 Carbonless media. No carbon required (NCR) media is not supported by HP LaserJet printers.
- 3 Recycled media. Choose recycled media that meets Hewlett-Packard specifications. Note that recycled media might not be as bright as indicated in the specifications. Hewlett-Packard recommends that recycled media contain no more than 5 percent groundwood. See chapter 2 for testing information.

Evaluate media use practices

Handling and loading

Often differences in techniques, missed steps, or media-handling methods are responsible for problems. Be sure the media is loaded correctly in the printer.

Note

Make sure that all printer users are observing these guidelines.

Printer maintenance

General cleanliness of the printer is the most important part of printer maintenance. Printers using media that creates a lot of dust and debris might require an aggressive maintenance schedule. Media dust accumulates in the following areas:

- pickup rollers
- media guides

Take extra time to clean and inspect the paper path. If problems continue after cleaning, inspect for wear or damage.

Media stacking

Consider the following guidelines when advising the customer about stacking media:

- Do not store cartons of reams directly on the floor; cartons should be placed on a pallet or on shelves.
- Do not stack cartons more than six on top of one another.
- Stack each carton squarely on top of the other.
- Stack each carton upright.
- Do not store individual reams in such a manner that they will curl or warp along the edges.
- Do not place anything on top of stored media.
- Do not place the media close to heating or air conditioning vents or open windows.

Evaluate environmental conditions

Printing environment

Ideally, the printing environment should be at room temperature and not too dry or too humid. Print media absorbs and loses moisture rapidly.

Temperature extremes and excessive humidity can damage print media. Heat causes the moisture in the media to evaporate. Cold causes the moisture in the media to condense. Heating systems and air conditioners remove most humidity. When media loses moisture, streaks and smudging result. When paper absorbs moisture, light print and dropouts result.

Media storage environment

Media storage environmental conditions directly affect the feed operation.

Hint

Do not purchase more media than can be easily used in a short time (about 3 months). Media stored for long periods experiences heat and moisture extremes that can be damaging. Planning is important to prevent damage to a large supply of media.

Hewlett-Packard neither warrants nor recommends the use of a particular brand of paper or print media. Media properties are subject to manufacturing changes Hewlett-Packard has no control over such changes. The customer assumes all responsibility for the quality and performance of media. Although testing media helps to characterize its performance, process quality control by the manufacturer.

Unconverted media in sealed reams can remain stable for several months before use. Converted media has greater potential for environmental damage, especially if it is not wrapped with a moisture-proof barrier.

The media storage environment should be properly maintained to ensure optimum printer performance. The required condition is 20 degrees to 24 degrees C (68 degrees to 75 degrees F), with a relative humidity of 45 percent to 55 percent. The following guidelines should be considered when evaluating the customer's media storage environment:

- Media should be stored at or near room temperature.
- The air should not be too dry or too humid.
- The best way to store an opened ream of paper is to rewrap it tightly in its moisture-proof wrapping. If the printer environment is subject to extremes, unwrap only the amount of media to be used during the day's operation to prevent unwanted moisture changes.