

LASERJET: PRINT QUALITY AND TONER/EP CARTRIDGES Q&A 05/12/88

PRINT QUALITY

Q: I'm getting a dark, vertical smear down my page. What's causing this?

A: If the smear appears down the right edge of the paper, you may need to clean or replace your separation belt (if you are using a LaserJet, LaserJet +, or LaserJet 500+). If the smear appears down the center of the page, you may be using the wrong type of paper. Check to see that your paper meets LaserJet specifications

Q: What causes a dark, vertical smear towards the center of my page?

A: This may be caused by using unsupported bond papers (mainly 25%, 50%, or 100% cotton) in dry environments. This has been an acute problem in areas where the ambient temperature has been 20 to 40 degrees F. (-6.6 to 4.4 degrees C.) with a relative humidity of 10% to 25%. The operating range for the LaserJet is 20% to 80% relative humidity. Most of the Central and Eastern U.S. and Canada experience these conditions during winter and may see this problem.

The problem occurs when the customer is using or has used an unsupported paper or a combination of supported and unsupported papers. This wears the teflon coating off of the Feeder Guide Assembly, exposing the plastic underneath the teflon coating. The friction caused by the paper rubbing the Feeder Guide creates a static charge to develop. The static charge attracts the toner and causes the smear.

Q: What kind of paper should I use with my LaserJet?

A: The LaserJet is designed to work well with most types of paper, although some variables in their composition may significantly affect print quality and paper handling. Paper manufactured for photocopying (such as Canon NP or Xerox 4024) provides good results for general purpose applications. For other applications where cotton bond is desirable (i.e. company letterhead), HP has obtained good results using papers such as Gilbert Neu-Tech and Neenah NP. Textured papers with woven or rough finishes may adversely affect print quality.

Note: HP does not recommend or advocate the use of any particular paper. The papers mentioned above are only a few that tested well with the LaserJet. Always test paper prior to purchase to ensure

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desirable performance.

EP CARTRIDGES

Q: What is the EP cartridge?

A: EP stands for electrophotographic. The EP cartridge contains a large percentage of the printing process. It contains the photosensitive drum, toner and primary corona.

Q: When installing the EP cartridge, I flexed the removable tab until it broke off. When I pulled the tab, it broke away from the attached sealing tape. How do I remove the tape?

A: Try grasping the tape with pliers or your hands to remove it. If this doesn't work, you should return the cartridge as defective.

Q: I replaced my EP cartridge and now nothing is printing?

A: You probably forgot to remove the sealing tape before inserting the cartridge. Refer to Section V of the owner's manual.

Q: How can I extend the toner cartridge's life once the print begins to fade?

A: When your pages begin to show white streaks, remove the EP cartridge and rock it back and forth four or five times to distribute any remaining toner. Replace the cartridge and use it until the print begins to fade again. Once this happens, the cartridge will have to be replaced.

Q: When my EP cartridge runs out of toner, why can't I have it refilled rather than purchase a new one?

A: HP does not recommend the use of refilled toner cartridges. The toner cartridge is a consumable with a finite expected life. When the cartridges are refilled, they are exceeding their designed life. The electrophotographic drum (EP drum) in the cartridge shows performance degradation with use. A refilled cartridge may show unacceptable print quality very soon after being refilled, causing unnecessary and unjustified service calls for the printer. Since the use of unsupported media is inadequate maintenance and misuse of the printer, the service due to use of a refilled cartridge would not be covered under warranty.

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Q: I changed my EP cartridge in my LaserJet and now my printer fades from left to right. What is wrong?

A: Make sure the doctor pin is in place. The doctor pin holds the doctor blade in place which allows the toner to distribute evenly across the page. The pin can work itself loose in the shipping process. The doctor pin is located on the end of the cartridge that is inserted into the printer at the upper left hand side (11:00 position). If the pin (it resembles a screw) is not in place, you will see a small hole. You can either replace your doctor pin using your pin from the previous EP cartridge, or return your cartridge for replacement.

Q: What is the shelf life of a toner cartridge?

A: The estimated life of a toner cartridge is approximately two years for an unopened cartridge, and 6 months for an open cartridge. These estimates are based on storage temperatures between 32 to 95 degrees F.

The problem occurs when the cartridge is used on low grade or unapproved paper or a combination of approved and unapproved papers. This wears the rubber rollers and the fuser blade assembly, exposing the plastic rollers and fuser coating. The friction caused by the paper rubbing on the rollers creates a static charge to develop. This charge attracts the toner and causes the smears.

Q: What kind of paper should I use with LaserJet?

A: The LaserJet is designed to print on a wide range of paper, although some variations in paper quality may occasionally affect print quality. Hewlett-Packard manufactures our photocopied paper to meet the needs of a wide range of applications and a variety of paper weights (20 to 100 lb. weight). HP has also developed good results using a variety of other brands of paper. However, HP recommends using HP LaserJet paper for the best print quality.

HP does not recommend the use of any particular paper. The papers mentioned above are those that have been tested with the LaserJet. Always check the paper weight to ensure

TECHNICAL SUPPORT

Toner Refills: Buyer Beware

Before you take your toner cartridge to a toner refiller, remember that there's more than just toner inside the cartridge. The following information will help clarify why you should purchase a new HP toner cartridge when you run out of toner.

Replacing Toner Cartridges Guarantees High Quality Print

Each toner cartridge contains a supply of toner plus many of the consumable parts required in the laser printing process: the corona wires, imaging drum, and developer units. These parts wear out over time and affect the quality of your output. More importantly, when they become overly worn, they can cause unnecessary wear on the parts inside the LaserJet. The diagram, right, describes the parts inside the toner cartridge and how they affect print quality as they wear down.

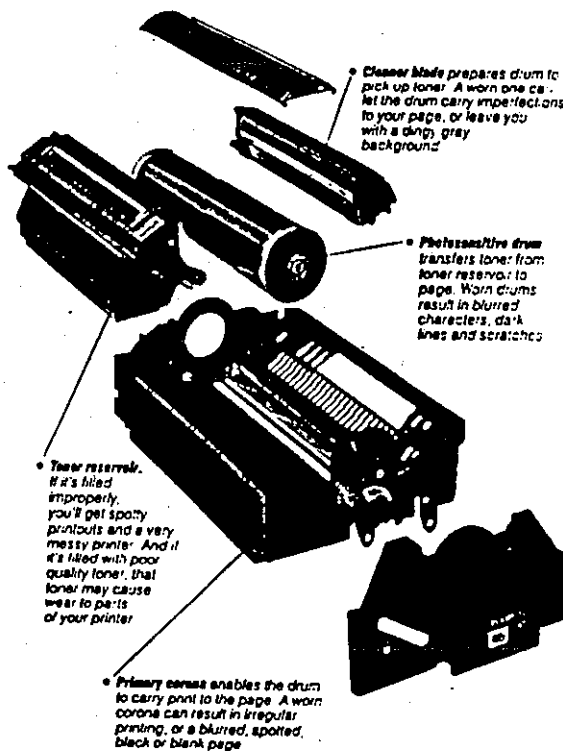
You can expect about 3000 pages of output from the LaserJet, Plus, and 500 Plus toner cartridge (HP 92285A). The Series II toner cartridge (HP 92295A) produces approximately 4000 pages. At \$125 per cartridge (retail), that's roughly four cents per page for the

LaserJet Plus and three cents per page for the Series II (excluding paper). Moreover, each new toner cartridge comes with a 90 day, money-back guarantee. In addition, all the parts inside the cartridge are new, ensuring you 3000 to 4000 high-quality pages of output.

Questions to Ask Toner Refillers

Before jeopardizing the performance of your LaserJet and spending your money, ask the toner refiller these questions:

- How many high quality copies will I receive from a refilled cartridge?
- How used are the corona, drum, and blade of the cartridge I received from the toner refiller?
- Am I getting my own cartridge back?
- Is the toner reservoir being properly filled to avoid damaging my LaserJet?
- Is the quality of the toner used by the refiller going to affect the print quality of my documents?
- Who do I call if the refilled cartridge damages my LaserJet?



Are Bargain Prices Worth the Risk?

The following table illustrates each of the benefits you receive when you purchase a new cartridge. Ask a toner refiller if his compare.

ITEM	NEW	REFILL
Replace: drum	yes	?
cleaner blade	yes	?
corona	yes	?
Include toner	yes	yes
HP supported	yes	?

Although you may be saving money in the short term by refilling your toner cartridge, you can ensure the high-quality output and performance of your LaserJet by spending more on new toner cartridges.

NOTES FROM HP

Toner Cartridges: More Than Just Toner

The name "toner cartridge" is misleading. Along with the HP tested toner, a toner cartridge contains:

- Cleaner blade: scrapes excess toner from photosensitive drum.
- Photosensitive drum: transfers toner from reservoir to page.
- Primary corona: enables drum to carry the print to page.

Toner Cartridges Are Designed to be Replaced

As you probably know, the laser printing process consumes some of the cartridge's toner each time a page is printed. Then as the toner supply runs low, the print quality of the page lessens. Finally, all the toner gets used. HP and its supplier designed the toner cartridge for the LaserJet family of printers to do much more than simply provide toner for the laser printing process

In order to provide trouble-free laser printing, the toner cartridge was designed to include many of the mechanical parts which wear each time a page is printed. As the toner in the reservoir is consumed, the cleaning blade, drum, and primary corona perform tasks which eventually cause them to wear out. Not only is the toner consumed (after about 3000 pages for the LaserJet, Plus, and 500 Plus, and 4000 pages for the Series II), but the key consumable parts involved in the laser printing process are worn. So you need to replace the toner and the consumable parts inside the cartridge.

Printer Damage Due to Refilled Cartridges NOT Supported by HP

When you replace the toner cartridge with a new one, you have essentially renewed the life of your LaserJet. The design specifications for high-quality laser printing are continually maintained when you replace a worn cartridge with a new one. If you merely have the toner in your cartridge refilled, you continue to wear down the parts inside the toner cartridge, which causes unnecessary wear on the LaserJet.

For this reason, any LaserJet damage claims that are attributed to the use of a refilled toner cartridge will not be honored by HP. While we understand a customer's interest in minimizing costs, our preliminary test results of refilled cartridges give us reason to urge caution.

While we have not yet performed thorough tests of different suppliers and their various refilling techniques, our results show a mixture of acceptable and unacceptable print quality from cartridge to cartridge over a range of temperatures and humidity. Due to this uncertainty, HP cannot support the use of refilled cartridges in LaserJet printers.

HP Guarantees Print Quality from New Toner Cartridges

The quality record of the LaserJet family of printers and the toner

cartridges is exceptional. We know we can guarantee the highest quality office printing solution when you purchase new toner cartridges from HP. And we back up our claim with a 90 day warranty on new toner cartridges

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1-5. SAFETY INFORMATION

The HP-33440A printer is UL 478 listed, CSA 22.2 154 certified, and manufactured in accordance with DIN IEC 380/IEC 435. The HP 33440A printer is certified as a Class I laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation. The printer also complies with the Center for Devices and Radiological Health (CDRH) regulations.

Since laser light emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

The Bureau of Radiological Health (BRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown on the back of the printer indicates compliance with the BRH regulations and must be attached to laser products marketed in the United States.

Federal Communications Commission Radio Frequency Interference Statement *

WARNING

This printer generates and uses radio frequency energy and may cause interference to radio and television reception. Your printer complies within the specifications in Subpart J of Part 15 of the Federal Communications Commission rules for a Class B computing device. These specifications provide reasonable protection against such interference in a residential installation.

The Federal Communications Commission has prepared a booklet entitled "How to Identify and Resolve Radio-TV Interference Problems" which may be helpful to you. This booklet (stock #004-000-00345-4) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

* Use of a shielded interface cable is required to comply with the Class B limits in Subpart J of Part 15 of FCC rules.

Additional Information

When servicing or adjusting the optical system of the printer, be careful not to place screwdrivers or other shiny objects in the path of the laser beam. Also, accessories such as watches and rings should be removed before working on the printer. The reflected beam, though invisible, can permanently damage your eyes.

Since the beam is invisible, the following label is attached to the insides of covers where there is danger of exposure to laser radiation:

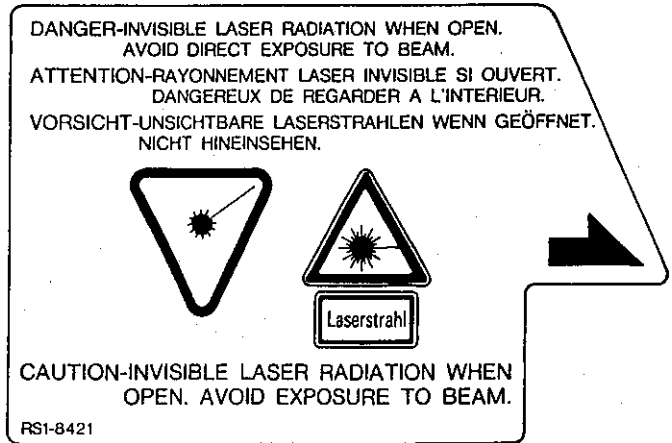


Figure 1-2. Laser Safety Label.

Warning labels are affixed to the printer wherever special service attention is needed.

According to West German standard VDE0836 (VDE-Bestimmung für die elektrische Sicherheit von Lasergeräten und Anlagen), printer servicing requires at least two servicemen.

Toner Safety

Toner is a non-toxic substance composed of plastic, iron and a small amount of pigment. Skin and clothing are best cleaned by removing as much toner as possible with a vacuum or dry tissue wipers, then washing with cold water. Hot water makes toner more difficult to remove. Toner does tend to degrade vinyl materials and contact with vinyl should be avoided.

